Architectural Education Today
Cross-Cultural Perspectives

Ashraf M. A. Salama
William O'Reilly,
Kaj Noschis, Editors
ARCHITECTURAL EDUCATION TODAY

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Cover : Researchers in the library at the Institut du monde arabe in Paris, where metal perforated panels filter the light, acting as high-tech mashrabiyyas. Photo credit: Pascal Maréchaux.

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# Table of Contents

**Architectural Education Today**  
*Cross-Cultural Perspectives*

**Foreword**  
Suba Özkan ................................................................. 7

**Introduction**  
Asbraf M. A. Salama and Kaz Noshchis ........................................ 9

**Knowledge and Architectural Education**

- Making-Based Knowledge: Between Identity and Change  
*Halina Dunin Woyseth, Oslo, Norway* ................................... 17

- Professional Design Education and Practice  
*Peter G. Rowe, Cambridge, MA, USA* .................................... 25

- Useful Obsessions: Architecture as a Cultural Critique  
*Samer Akkach, Adelaide, Australia* .................................... 31

- Architectural Education: Cultivating Theorizing Artists or Deliberating Professionals  
*Emel Aköz, Ankara, Turkey* ............................................. 43

- Environmental Knowledge and Paradigm Shifts: Sustainability and Architectural Pedagogy in Africa and the Middle East  
*Asbraf M. A. Salama, Cairo Egypt* .................................... 51

**Profession and Architectural Education**

- Building as Social Practice  
*Marwan Ghandour, Beirut, Lebanon* .................................... 63

- "I want a Colonial House": The Architect versus The Other  
*Hana Alamuddin, Beirut Lebanon* ....................................... 71

- Reviving the Role of the Master Builder Moalem in Architectural Education  
*Mohamed Awad, Alexandria, Egypt* .................................... 77

- Teaching Between Architects and Engineers: The Challenge of Humanity’s Decent Survival  
*Pierre von Meiss, Lausanne, Switzerland* .......................... 85

**Experiences and Experiments in Architectural Education**

- Construction and Project in the Wake of Tradition  
*Attilio Petrucchioli, Bari, Italy* ....................................... 91
- Historic Architecture in Architectural Education: Advantages and Applied Techniques
  Kambiz Navai, Tebran, Iran

- Experiential Learning in Undergraduate Education
  Heba Safey Eldeen, Cairo, Egypt

- Exploring the Cube: Experiments in the Teaching of Architectural Design
  Mohammad al-Asad, Amman, Jordan

- Post-War Recovery Studies at the University of York: Interdisciplinary Education Addressing the Challenges of Rebuilding War-Torn Communities
  Sultan Barakat and Roger MacGinty York, United Kingdom

- Reading the Traditional Built Environment of Oman
  Sultan Al Harthy, Muscat, Oman

Tools for Architectural Education

- Strategies for International Design Studios: Using Information Technologies for Collaborative Learning and Design
  Anne Beamish, Cambridge, MA, USA

- The Role of Magazines in Architectural Education: The Medina Experience in Egypt
  Amr Abdel Kawi, Cairo, Egypt

Concluding Remarks

- The Boundaries of Architectural Education Today
  Nasser Rabbat, Cambridge, MA, USA

List of Participants and Contributors
Foreword: Changes in the Education of Architects

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In many academic institutions, the teaching of architecture, apart from the one-to-one relationship of teacher and student in studios tailored to develop design skills, has been informed by branches of learning grouped together as History, Theory and Criticism (HTC), sometimes generically called “theory courses.”

History refers to the past, Theory is meant to guide practice addressing the future and Criticism, implicitly circumspect, represents the present. Even though these three areas of knowledge seem to join together to form the basis for non-studio teaching, they share few commonalities as regards professional objectives and modes of operations. The only common denominator is that all of them belong to the “literature” of architecture.

History, by employing the time and experiences of the past, becomes the laboratory of what happened previously, the forces and influences that resulted in the formation of the subjects of concern to historians. Historical research relies upon determined facts; when propositions cannot be proven, they then belong to the realm of fiction, not history.

Criticism informs the profession on the validity of solutions. It can be personal, speculative, or biased but has value so long as it has originality. The more objective criticism becomes, the more its theoretical value is increased. In many ways criticism, with its discursive method, belongs more to the experiential universe of the arts than to the objective realm of science. Even though there are many interesting fact-based analyses aimed at bringing objectivity to their contents, architecture lies closer to the field of the arts and can never be reduced into the hard facts of life.

Theory is a completely different issue. The theory of architecture, as with theories of any art or science, in itself needs to inform practice. A reliable theory is one which tests its assertions through practice and informs itself accordingly. In architecture, theory is very “soft” and stuck in between the narrow space of scientific “hard” facts and the ever-changing values of socio-psychological existence. In short, what has been denoted by the acronym HTC is basically the literature of architecture that forms the intellectual basis of inference located somewhere outside the sphere of design practice.

Architecture, since its inception as a profession during the Renaissance, has always had a very ambiguous theoretical structure. The beginnings of the theory of architecture comprised a very dogmatic set of undeniable rules which were a representation of ancient Greek norms later refined through Roman architecture. The book, De Architectura, by Vitruvius, written during the reign of Julius Caesar (first century AD) became, through its reissues, the main architectural guide for theory and practice. Like many other aspects of the Renaissance, the flow and availability of information was closely linked to the invention of the printing press by Johann Gutenberg (c.1397-1468). As Marshall McLuhan has put into a nutshell in his Gutenberg Galaxy,1 the
invention allowed people to conveniently share ideas and impressions in printed form. Since then, print on paper, even though technology has developed by leaps and bounds, has remained the essence of direct consultation of images and text. It is no coincidence that the theory of architecture emerged with the development of printing.

Steven Harnad refers to a fourth revolution in the means of knowledge production as the Post-Gutenberg Galaxy. He characterizes the earlier three revolutions as those of Language, Writing, and Print. While the first revolution took place an unknown number of millennia ago, the second one is only couple of millennia earlier than our time, while printing has a much more recent history, little more that five centuries. The recent innovation of electronic print medium, even though it is less than two decades old, not only embraces the products of the previous means but also adds its own potential.

Harnad’s vision, which, a decade ago, was already self-evident and reflected in the process of our transformation into an “information society,” soon became common sense. Due to its charm and convenient access, “paper” will perhaps remain in our lives for pleasure and tradition. However, as an information medium, it is very quickly becoming obsolete; its very physicality has already been superseded by the new electronic medium.

The Aga Khan Trust for Culture has ventured into this pervasive new medium not only to distribute existing educational materials but also to invest in the production of new materials. This meeting, bringing together a group of people deeply involved in the issues of architectural education, has aimed to explore how to make use of the electronic medium that Harnad calls “skywriting”.

At the same time, the meeting provided an overview of current questions on educational experiments and approaches in many countries where the Aga Khan Trust for Culture is also actively involved. The 8th Architecture & Behaviour Colloquium at Monte Verità was an occasion to focus on these issues and the publication of the Colloquium’s proceedings will hopefully take the debate even further.

Notes:


Introduction:
An Architectural Education Responsive to Contemporary Societies

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The literature on architectural education in recent years notes that architectural practice has changed dramatically and that corresponding changes in education are needed. There are continuous attempts to massage architectural curricula, to reconfigure the structure of the educational process, to test accepted ideas, and to probe future visions. However, research findings reveal some fundamental disagreements over the goals and objectives, structures and contents, and tools and techniques required for architectural education today. While consensus is lacking on the issue of what changes and developments in education will best support the aspirations of contemporary societies, this book provides cross-cultural visions, thoughts, and experiments within which the needs of future architects can be conceptualized and the type of education that satisfies those needs can be debated.

The title of this book was the theme of the 8th Architecture and Behaviour Colloquium held in April 2001 at Monte Verita - the mountain of truth. It is a special place, inspiring exchange and sharing of reflections, and the truth it refers to is an utopian truth; the place was named by a first group of inhabitants who lived there at the beginning of the past century, a group of young people, some of them from wealthy families, who bought the mountain in order to establish a community of people devoted to the search of truth through the development of arts - music, dance, painting, and sculpture as well as a natural way of life - vegetarian food, simple clothing, craftsmanship, and building for themselves their first houses. Today, Monte Verita is a center for scientific conferences. Throughout the years the same spirit has remained, and the Museum at Villa Natta, located on the grounds, conserves a collection of Harald Szeeman who has gathered all relics and evidence of the special quality of Ascona as a place provoking utopian research. "Utopians" such as Alexander Bakunin, Rudolf Steiner, Krishnamurti, Isadora Duncan, Hermann Hesse, and Carl Gustav Jung have been inspired by the distinct nature of the region and its magnetic qualities.

A scholarly journal, Architecture & Behaviour, appeared from 1981 to 1995, producing 44 quarterly issues. The general concern was the user of space and buildings, the challenge being to get the planner and architect interested in studies centered on the interactive relationship between people and the built environment, on the user, on how buildings and built spaces are endowed with meaning and appreciated by those who live and work there. The main idea was to see how physical artifacts are rooted in human tradition. The journal was to publish research that would approach this relationship in novel ways, not by simply transposing methods from experimental laboratory or survey studies to the built environment. This turned out to be much harder than expected. The main way to do this became the publication of historically and inter-culturally
oriented studies, where time and culture were variables explaining specific uses and meanings given to space and the built environment. Another way was to publish theme issues where groups of mostly interdisciplinary researchers were given the opportunity to present a coherent group of papers showing their methodological and thematic approach to the built environment.

In 1993, the Swedish Council for Building Research proposed that Architecture and Behaviour organize a conference on the theme, "Priorities for Research on the Built Environment". They were raising in their institution the same questions that Architecture and Behaviour was tackling, namely questioning the relevance of research that was being done in the field as to its impact on architects and planners. About twenty-five researchers met in Monte Verita, in particular from the City University of New York and other academic groups that had narrowly contributed to the growth of studies in the field of environmental psychology. The conference proceedings were published as an issue of the journal where the theme of participation was widely addressed and discussed, entailing as well a questioning of the general role of social scientists in this field. The conference itself was very inspiring and it was suggested by the director of the Monte Verita seminars, Dr. Mauro Martinoni, to repeat the experience. With additional backing from the Federal Institute of Technology in Lausanne, the Colloquiums have since become an annual event, addressing timely themes with support of organizations such as Aga Khan Trust for Culture (AKTC) in Geneva and the European Association for Architectural Education (EAAE), amongst others.

Recent studies reveal that dilemmas of professional practice and the built environment have their roots in contemporary educational practices. Since education is the cornerstone of the profession and since the 'approach to' and the 'content of' that education is the backbone of architectural practice, it is essential to encounter the subject in its broadest sense and to deal with it as a rich field of research whose knowledge base, content, methods, tools, and techniques can be examined and questioned. Among the not so many attempts that have been developed over the last decade or so by individual scholars to explore the rituals of architectural education in a systematic, visionary, and research-based manner, we mention: Architectural Education in the Islamic World (Aga Khan Trust for Culture, 1986); Architectural Practice: A Critical View (Robert Gutman, 1988); Design Juries on Trial: The Renaissance of the Design Studio (Kathryn Anthony, 1991); Voices in Architectural Education (Thomas Dutton, 1993); Architecture: The Story of Practice (Dana Cuff, 1993); Architectural Education: Issues in Educational Policies and Practice (Necdet Teymur, 1993); New Trends in Architectural Education: Designing the Design Studio (Ashraf Salama, 1995); and Epistemological Foundations for Teaching Architecture (Halina Dunin-Woyseth and Kaj Noschis, 1997). In fact, the limited number of studies indicates the need for more published research and experiments on architectural education and practice.

Architectural Education Today is a response to this lack, and is divided into four parts, each of which seeks to provide an exploration of answers to critical questions that pertain to knowledge, professional practice, educational experiments and experiences, and their supporting tools. The intent is not to provide a blueprint on how improvements might occur or to offer definitive answers, but to further open architectural education, a subject that continued for years to get sparse attention, to discussion.

The first section is devoted exclusively to the issue of knowledge in architectural education. It questions issues that pertain to what type of knowledge is needed, how it can be structured, and the way in which it can be delivered to budding professionals. Halina Dunin-Woyseth elaborates on the 'making discipline' concept as an epistemological knowledge base essential for the 'making professions'. With respect to the different modes of knowledge production, she places emphasis
on two in particular. The first encompasses mono-disciplinarity and inter-disciplinarity, both of which provide a stable basic educational training and instill in individuals a sense of disciplinary identity. The second entails trans-disciplinarity, a new form of learning and problem solving involving co-operation among different parts of society and academia in order to meet the emerging complex challenges of society.

On the same line of thinking, Peter Rowe re-conceptualizes professional design education by introducing the concept of 'actionable knowledge,' a concept that distinguishes between knowing 'that' and knowing 'why' and that refers to professional decision-making as situational, analytic-synthetic, heuristic, and experiential. Rowe discusses the present curricular content with reference to: 'poiesis,' recognition and knowing what is recognized; 'morality,' formulation of a social justice that leads to social awareness then to more ethical and ultimately critical thinking; and 'scientia,' the capacity for making judgments and going into the real arena of competence. He envisions some recommendations towards the acquisition of actionable knowledge, which include aspects such as the formulation of middle-ground modalities of instruction, the introduction of practitioners into formal education, and, finally, the preparation of the learners for a life-cycle learning process.

Samer Akkach examines the agency of 'culture' - viewed as a moder way of seeing - in contemporary architectural thinking and teaching. He discusses the new academic sensibility that is shaping the ways in which architectural history and theory are approached, the role 'culture' plays in the shaping of this sensibility, and the conceptual and ethical problems inherent in cultural representations. In a conscious effort, Akkach outlines a strategy for the teaching of two introductory courses concerned with architecture and cultural difference. Emel Aközêr addresses the problem of the correct balance of practical and theoretical knowledge in teaching and learning architecture by revisiting the humanistic notions of 'practical Bildung' and 'theoretical Bildung' elucidated by Hans-Georg Gadamer in Truth and Method. 'Practical Bildung,' whose acquisition is essential for "one's filling one's profession wholly, in all its aspects," may be related to the kind of knowledge that emerges - for Aristotle and Vitruvius - from the union of 'making' and 'thinking'. 'Theoretical Bildung' is an element already involved in 'practical Bildung'. It involves another kind of thinking that is not 'calculative,' and is inherent to critical and self-critical historical understanding.

Ashraf Salama introduces 'deep sustainability' as a form of environmental knowledge that can be incorporated into architectural pedagogy. He bases his argument on the belief that architectural education can open new avenues toward the achievement of real sustainable development. By conducting a content analysis procedure, Salama investigates the status of architectural courses in a number of schools in the developing world. The Mistr International University (MIU) program, an example from Egypt, is presented as an endeavor to reconfigure the educational process in a manner that is based on new forms of knowledge and the changing demands placed on the profession by society.

The second section deals with some ritualistic aspects of professional practice and their impact on architectural education. Marwan Ghandour highlights the institutional development of architecture while tracing the evolutionary process of the profession in Lebanon. How architectural practice has been institutionalized and what is the architect's role in relation to others are two questions Ghandour attempts to answer. A discussion of issues underlying these questions reveals that the making of buildings is a phenomenon that should be integrated with the larger sociocultural context. In response, he proposes that architectural education should explicitly position
the process of making buildings into a social discourse via approaching social conditions as a daily reality worth learning from. Hana Alamuddin outlines dilemmas associated with the education and practice of architecture in Lebanon. Based on her personal experience, she introduces crucial issues on how architects see themselves vs. how others place value on them and on the services they offer. Alamuddin argues that even though the built environment is a product of teamwork, the educational setting of architecture still places emphasis on individualistic work. Communication and client-architect interaction are discussed as keys to successful professional practice. Her work offers visions through which future architects become well-informed in real life issues, have the confidence to participate with others, and the skill to open up, listen, and to get actively involved in the collaborative process needed for successful practice.

In accord with the views of Ghandour and Alamuddin, Mohamed Awad calls for the revival of the traditional role of master builder, or maqādem, in contemporary educational practices. In view of the evolution of the profession and education in Egypt, the historical debate is brought forth to highlight the importance of such a lost tradition. The assumption is that the revival of this tradition will help in bringing studios, workshops, and site experiences together in an educational process that is more attuned and more responsive to the realities and challenges facing the profession in a changing developing world.

Arguing for more effective integration of architecture into other necessary disciplines in the professional realm, Pierre von Meiss introduces the trans-disciplinary approach along the same conceptual analysis of Woyseth. While benefits of this approach are envisaged, aspects hindering its introduction to the practice of architecture are highlighted with real-life examples from Switzerland. Von Meiss frames a vision to integrate architecture and engineering as separate disciplines into an educational framework in which an architect and an engineer are consciously aware of their capabilities and limitations, thereby realizing the real need for one another.

The third section introduces endeavors carried out by committed scholars attempting to cross the boundaries between different disciplines and paradigms. Attilio Petruccioli illustrates how design and construction should be integrated, introducing the concept of "tradition" as a possible way of dealing with the inherited dilemma of isolating design and construction in educational practices, and highlighting experiences undertaken by the academics of Bari Polytechnic in an attempt to bridge the gap between the two disciplines. Crossing the boundary between history and design, Kambiz Navai argues for the importance of re-thinking the way in which historic architecture can be taught. Navai supports the idea of integration, where the current mode of teaching history as if it is detached from practical courses should be changed to a more efficient practice that enriches the educational process of architectural design. His work can be conceived as guidelines for designing a set of exercises, structured along the whole period of design education, ranging from drawing and drafting to teaching geometry, to the introduction and analysis of design elements of historical buildings. It is envisaged that these exercises would help integrate the context of history in physical terms into architectural design practices.

Crossing the boundaries between the content of knowledge and the way in which its underlying values are transmitted and conveyed to students of architecture, Heba Safey Elddeen answers the question of how lecture-theory courses can be taught in a more integrated manner. The concept of experiential learning in its broadest sense is introduced. Safey Elddeen traces some experiences of different teaching styles in three Egyptian universities, highlighting the major points of weakness and strength in each. Detailed cases that introduce the experiential learning approach in three lecture courses in MIU are critically analyzed with special emphasis on experiential learning strategies as a new learning paradigm, while utilizing the built environment as an open textbook.
In his experience with second-year undergraduate architecture students whose only academic exposure to architecture was on drafting courses, Mohammad al-Asad crosses the boundaries between abstract volumes and architectural space. He addresses the process of developing students' skills through a basic architectural design course. The experience emphasizes the value of freeing the students' preconceived notions about architecture while developing their abilities in dealing with formal composition and materials as well as sharpening their attention to details. In an attempt to link abstract qualities of form to physical realities of space, students are encouraged to deal directly with tangible materials and forms, to visualize them three-dimensionally while placing emphasis on the dialectic relationships of forms and spaces that have textures and that interact together with light.

Barakat and McGinty provide a review of the changing nature of contemporary armed conflict and its impact on the built environment and the communities within. Considering the need for reconstruction efforts in war-torn societies, they introduce the teaching approach of the Post-War Reconstruction and Development Unit of the University of York. They outline an analysis of the course leading to a professional Masters degree, specialized on the theme, highlighting different aspects of course objectives and the nature of teaching, research, and practical experience. Boundaries are also crossed in the work of Sultan Al Harthy, who adopts the premise that although there are international standards for architectural education, it should incorporate a critical approach to the reading of the traditional environment as an essential part of curricula. He argues that this approach needs to surpass the discourse of form and ornament by involving a more responsive approach, cross-disciplinary in nature. In and out of the design studio, a cultural debate should be encouraged where cultural and socio-spatial paradigms should be re-interpreted and re-defined.

The final section of the volume highlights two experiences in dealing with supportive tools for architectural education. In a changing world, Anne Beamish recognizes the need for students of architecture to work collaboratively in multicultural environments. She argues that this need can be met by telecommunication technologies, introducing the ArchNet site and its digital technology, a newly developed online community developed at MIT School of Architecture and Planning and funded by the Aga Khan Trust for Culture. Beamish analytically describes four long-distance collaborative design studios and outlines the lessons learned from this multi-faceted experience.

Amr Abdel Kawi describes his experience as an educator and founder of Medina Magazine that was established in 1998 as a proactive change agent. Medina set ambitious educational objectives vis-à-vis the professional, student, and public communities. Its objectives included: planting a seed for the revitalization of a professional forum for discourse; acting as an effective tool for information dissemination within the country; providing the student community with alternative and accessible sources of information and frames of reference; and finally, playing a role in influencing the public awareness of architecture, design, and the arts. Abdel Kawi provides an exploration of the responses of these communities to Medina's efforts, evaluates the impact these responses had on the magazine, as well as any impacts the magazine might have had on the respective communities.

In his concluding remarks, Nasser Rabbat summarizes the debate with respect to historical considerations on architectural education. He insists on the difficulties inherent in the combination of practical knowledge with intellectual disciplines that have their own methodological requirements. He also raises the central question of architecture as a commodity in today's market system. A conclusion that calls for more debate.
This book addresses academics, practitioners, graduate students, and those who make decisions about educational systems. The work presented here offers a view of experiences and thoughts, while paving the way for academics to openly debate the delivery systems of architectural education and their impact on the profession. The value lies in the fact that not only does it provide cross-cultural visions and arguments - from different parts of the world - on the body of knowledge required for architectural education today, but it introduces actual experiences that would help convey this knowledge. It is another conscious endeavor toward the betterment of the built environment.

References


Knowledge and
Architectural Education
Making-Based Knowledge: Between Identity and Change

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New Challenges to Architectural Knowledge

Prominent practitioners and educators often discuss the issue of architectural knowledge. Donald Watson, Dean of the Rensselaer Polytechnic Institute’s School of Architecture is one of the architect-educators who attempts to define a demand for knowledge in architecture. He claims the following:

“The discipline of architecture needs a rigorous knowledge base by which to support its premises and principles that define the relationship between human and community health, and between building and urban design. To date, the development of rigorous theory/knowledge building has been at the edge of the curriculum and frequently marginalized as something separate from architecture, that is: environment-behavior studies, building sciences, environment-technology studies, etc. As a result, most architectural graduates are not prepared to understand the value of their professional services. Furthermore, the standing of the profession is marginalized in the public’s eye. That is, without research, scholarship and a rigorous knowledge base, the profession cannot take stands on significant health, economic, social, political or ethical issues” (cf. Boyer & Mitgang, 1996,137-138).

Watson points out the need for a rigorous knowledge base in architecture. He believes that this knowledge could strengthen architects’ potential to understand the object proper of their professional expertise and its value in relation to other fields of expertise. Watson sees the present mode of education, which depends heavily on vocational training and which marginalizes the theoretical knowledge component in the curriculum, as a serious obstacle in the process of preparing architects for their professional challenges.

This call for a more stable basis for educational training in architecture in the form of a more balanced vocational/theoretical curriculum is agreed upon and supported by many practitioners and educators. This paper will attempt to elaborate upon Watson’s call for organized knowledge in architecture in the context of the recent discussions on different kinds of knowledge and on different modes of knowledge production.

Some Thoughts on Mono-disciplinary, Interdisciplinary and Trans-disciplinary Knowledge: Two Modes of Knowledge Production

Architecture, like other fields of vocational expertise, can be classified as a professional discipline, when we regard it in terms of a field of inquiry (Becher,1989, 5). Ulf Sandström has followed the development in profession-related studies during the recent years. He identified two trends in Swedish research in the field of professional expertise: one, oriented towards the production of mono-disciplinary, academic knowledge; the other towards subjects derived from concrete life situations, these being solution-oriented (Sandström, 2001).
King and Burnell give a broad and convincing representation of what constitutes an academic discipline. They propose several aspects: a community, a network of communications, a tradition, a particular set of values and beliefs, a domain, a mode of inquiry, and a conceptual structure (Becher, 1989, 20). Another definition, by Toulmin, focuses more on epistemological considerations, presenting disciplines as "...each characterized by its own body of concepts, methods, and fundamental aims" (Becher, 1989, 20). The latter definition is more conducive to interdisciplinarity as characterized by the explicit formulation of uniform, discipline-transcending terminology or a common methodology (Gibbons et al., 1996, 29) than the first definition. Disciplinary and interdisciplinary knowledge both constitute epistemological knowledge.

In his canonical work, Gibbons describes two parallel and competitive modes of knowledge production. Sandström's observations can be regarded here as an illustration of this situation in Sweden. Gibbons describes the two modes of knowledge production in the following way:

"Mode 1: The complex of ideas, methods, values and norms that has grown up to control the diffusion of the Newtonian model of science to more and more fields of inquiry and ensure its compliance with what is considered sound scientific practice. Mode 2: Knowledge production carried out in the context of application and marked by its: trans-disciplinarity; heterogeneity; social accountability and reflexivity; and quality control, which emphasize context- and use-dependence. It results from the parallel expansion of knowledge producers and users in society" (Gibbons et al., 1996, 167).

The definition of Mode 2 introduces the notion of trans-disciplinarity, which can be described in the following way:

"Trans-disciplinarity is a new form of learning and problem-solving involving co-operation among different parts of society and academia in order to meet complex challenges of society. Trans-disciplinary research starts from tangible, real-world problems. Solutions are devised in collaboration with multiple stakeholders. A practice-oriented approach, trans-disciplinarity is not confined to a closed circle of scientific experts, professional journals and academic departments where knowledge is produced. Through mutual learning, the knowledge of all participants is enhanced, including local knowledge, scientific knowledge and the knowledge of concerned industries, businesses, and non-governmental organizations. The sum of this knowledge will be greater than the knowledge of any single partner. In the process, the bias of each perspective will also be minimized" (Klein et al., 2001, 7).

The trans-disciplinary type of knowledge is partly based on epistemological research. While monodisciplinary and inter-disciplinary research is clearly encompassed by Mode 1, trans-disciplinary knowledge production is the very essence of Mode 2. Gibbons maintains that Mode 1 has its role mostly for providing a stable basic educational training and for instilling in individuals a sense of disciplinary identity. On the other hand, he argues that there is a demand for the aptitude to co-operate with experts from other fields and for the ability to see problems in a complementary way. Such faculties rest upon the capacity to assume multiple cognitive and, increasingly, social identities. Thus both modes of knowledge production are in demand and should find a mutual balance (Gibbons et al., 1996, 139).

In the following discussion, the concept of a 'making discipline' will be introduced. Seen from an educational perspective, the making discipline will be investigated in terms of its potential to provide a stable educational basis as well as to instill in individuals a sense of professional and disciplinary identity. The making discipline adopts a specific approach to the core research object of the built environment as a physical-spatial artifact, as well as its interplay with people.
This specific approach is that of the professionals involved in intentional processes for change in this environment, i.e., of the makers themselves; hence the name of the discipline (Dunin-Woyseth, 2001), (Dunin-Woyseth & Michl, 2001). The importance of such an approach has been recognized in a recent research document of the Association of Swedish Architects (cf. SAR’s Forskningspolicy, 1999). The criteria for professional relevance and academic legitimacy of the making discipline are discussed. This discipline's possible content, as well as a possible process leading to the development of its knowledge base, will be elaborated upon. Furthermore, its potential for an informed dialogue with other fields of various academic disciplines, with academic inter-subjectivity as common ground for communication between them are examined.

On the Concept of a Making Discipline

To distinguish the kind of knowledge pertaining to making professions, of which architecture is one besides landscape architecture, urban design, interior design etc., the term ‘making knowledge’ is being introduced. It is related to the established distinction, introduced by Gilbert Ryle, between ‘knowing how’ and ‘knowing that’ and belongs obviously to the broader category of knowing how (Ryle, 1945). And just as the knowing that has been maintained by the established academic disciplines, it can be argued that there is a case for sustaining and maintaining the making knowledge through a discipline of its own, a making discipline.

In order to develop such a making discipline, the making knowledge has to achieve disciplinary viability. It has to comply with demands of two worlds: besides the world of its own profession, it has to abide by the rules of the academic world. While the main criterion of viability in the former world is its relevance to the practice of the profession, in the latter it is the ability to fulfill the criteria of science, the meeting of which constitutes disciplinary knowledge.

Several scholars have earlier considered the ideas about disciplinarily viable design knowledge. In 1969, Herbert A. Simon introduced the concept of “the science of design” in his seminal book, The Sciences of the Artificial. There, he opposed the science disciplines, exploring natural things, to the science of design dealing with “…artificial things, how to make artifacts that have desired properties, and how to design” (Simon, 1969, 55). The emergence of the concept of “knowing how” and “the science of design” can be seen as the beginning of a process leading towards a disciplinary construction of the making knowledge. While the former can be regarded as an acknowledgement of specificity of knowledge, the latter is an attempt to formulate this knowledge as disciplinarily in kind. Among art historians, E. H. Gombrich believes that the focus of academic inquiry should be placed not, as what is most common, on tangential matters concerning artifacts, but on the craft of art, i.e., on what, in the taxonomy of this text, will be called its making aspect (Gombrich, 1991,68).

On the Knowledge Base of the Making Discipline

During the last ten years, there has been an ongoing debate on the “craft aspect”, “the making aspect”, as a core focus of the design-related research addressed by designers qua makers of design themselves. At the Scandinavian schools of architecture, research education has played the role of a forum for this debate. Questions have been posed and some answers formulated as to the character and content of the making knowledge. Last year’s issue of the Nordic Journal of Architectural Research is particularly representative of this Scandinavian discussion (No.1-2, 2000).

Some scholars regard architectural criticism as a central element in the process of establishing architectural research as an academic discipline. They assume that criticism, allowing for
bridge-building between architectural practice on the one hand, and the practice-derived and practice-oriented architectural discourse on the other, is a part of and strengthens the professional relevance of this discourse (Caldenby, 2000, 99 and Hjort, 2000, 110). Seen from the viewpoint of a practitioner, this assumption seems to be part and parcel of the intellectual identity of practicing architects, as witnessed by the US architect, Bill Hubbard Jr. He sees criticism and history as two spheres shaping the professional identity of architects. In his words "...the practice of architectural design works like this: Criticism and history thread narrative lines through buildings and their various aspects. Those narratives reveal to us paradigms of order, which we then use in our design giving to criticism and history yet other buildings through which they can thread yet other plot lines. And when they do, they will reveal yet more (or differently seen) paradigms of order for yet further use" (Hubbard Jr., 1996,98). The British architect, Leslie Martin, emphasizes the role of theory in the total account of the making knowledge in this way:

"Theory is the body of principles that explains and interrelates all the facts of a subject" (cf. Gromark, 2000,102).

From another perspective, Jerker Lundequist claims that if architecture loses its historical dimension, we also lose the ability to assess it and our ability to develop it. And it is this historical dimension, that the built environment is the history which we live in, which gives the theory and practice of architecture its specific conditions’ (Lundequist, 1999,38).

In the Anglo-Saxon education system, the knowledge base in design professions appears to be rooted in the triadic concept of History, Theory, and Criticism. Many dozens of courses at undergraduate and graduate levels, some at the doctoral level, have been offered, based on this concept (Bizios, 1991, 1994, 1998). It seems that this triadic concept of knowledge could be used in the northern part of Europe as a possible cornerstone of architects’ knowledge base, in this way meeting the criterion of professional relevance to the making knowledge.

**On What Constitutes Disciplinary Viability of a Knowledge Field**

The other criterion of disciplinary validity of knowledge is, as mentioned before, the compliance with the demands of scientific quality. To discuss the latter, Kaiser’s classification of knowledge is being introduced (Kaiser, 2000, 2nd ed., 152-169). He discusses four types of knowledge: scientific knowledge, folk knowledge, tacit knowledge and practical skills, while rejecting the concept of common sense as a possible source of knowledge.

Scientific expert knowledge is made up of two elements: certain general demands of the scientific method on the one hand and a certain social organization of the scientific community on the other. With regard to the latter, Kaiser refers to the basic norms of the scientific ethos as characterized by Robert K. Merton in 1942: communism (meaning common ownership of scientific knowledge); universalism (meaning the inclusion of all knowledge producers, regardless of origin, age, color, sex etc.); disinterestedness (meaning absence of bias with regard to special non-academic interests or values); organized skepticism (meaning the systematic and critical inquiry into all knowledge claims); and finally, originality (meaning the demand for novelty with regard to scientific insights). The demands of the scientific method are characterized as the attempt to inter-subjectively establish systematically organized knowledge claims on the basis of explicit arguments, based on empirical data, and without reference to alleged absolute truths. Science is thus the socially organized production of scientific knowledge (Kaiser, ibid. 156).

As with most of other vocational professions, the making professions can hardly be ascribed the status of an academic discipline as they stand. Yet, it could be agreed, as mentioned earlier, that these professions are on their way to establishing such a status (Sandström, 2001). The French
architectural scholar, Philippe Boudon, had already published his seminal work, "Introduction à l'Architecturologie," by 1992. A recent publication, "The Discipline of Architecture," argues in favor of promoting such developments (Piotrowski & Robinson, 2001). As the history of science informs us, scientific status is not a static phenomenon; it is rather something which is gradually attained. Certain domains of knowledge achieve such a status earlier than others. The consolidation of what today is called the social sciences and the humanities as academic disciplines took place only at the end of the nineteenth century. As Stein Haugom Olsen writes, at that time "... a network of norms developed, defining the logic of the discipline, standards for evidence, standards for valid argument, etc. Similar developments in areas have resulted in the definition and professionalization in a range of social sciences, and also in aesthetic disciplines such as literary studies and art history" (Haugom Olsen, 1996,19). Trying and failing, and trying again, is obviously the way to go in order to establish a making discipline. There is a growing perception in Scandinavian architecture education circles that such a continuous process is necessary and unavoidable (Katainen, Aura, 2000, 114). The making professions, of which architecture is a prominent member, can build their knowledge base up to the level of an academic discipline only through establishing a tradition of relevant discourse, i.e., through the process of repeated critical discussions and debates about central issues, a process that would raise the standards of quality that Olsen mentions.

The Making Discipline and Mode 1 of Knowledge Production

How can the making discipline be viewed in the context of the two modes of knowledge production? For this purpose we propose to use three perspectives of consideration. The triadic concept of the making discipline’s knowledge base, which relies on the interplay of History, Theory, and Criticism, has an interactive dynamism which can bring professional architectural expertise further through a continuous internal dialogue between the making practice and the making discipline, this dialogue being the one of the perspectives. Another one, an internal disciplinary discourse, which will define the logic of the discipline, standards of evidence, as well as standards for valid argumentation over time will lead to consolidation and a higher maturity of the making discipline over time. These two complementary perspectives of consideration can define the specific nature of both architectural expertise and architectural inquiry. Thus they can contribute to a stronger self-confidence and self-assertion of the field as a whole. These two perspectives of consideration within the making discipline should be recognized as internal with regard to the field of architecture.

The third perspective of consideration offered by the making discipline is partly an external one, and it is thus complementary to the other two perspectives. The making discipline can create a platform for communication and fruitful dialogue with the already established fields of disciplinary knowledge, which possess inherent traditions of organized skepticism and of ongoing criticism within an inter-subjective discourse. The making discipline, which would add these qualities to architecture, would elevate them to a more equal academic platform of information exchange and interaction. Thus, various knowledge perspectives could contribute to the understanding and betterment of the conditions of our physical environment. The complementarity of these three perspectives of consideration consists of three axes: one towards the professional practice, one towards internal disciplinary grounds, and one towards interchange with other knowledge disciplines.

The making discipline can thus be regarded as a specific approach from the point of view of the professionals concerned with the matters mentioned above. It is an approach "from within": a "craft approach". Being a "know-how" approach, it is complementary to the "know that" pers-
psectives of academic disciplines, which often address similar subject matters, but from different points of view through common generic academic rigors. And as such, the making discipline is promising in its potential to deliver a “missing link” in a complex picture of different perspectives of consideration, represented by other fields of knowledge in a sought-for mutual relationship.

The author is aware of the limitations of using a graphic representation of abstract constructs, but also of the potential it has for embracing complexity. Therefore the following sketch is proposed to visualize the three perspectives of consideration to illustrate how the making discipline could function with regard to Mode 1 of knowledge production:

The making discipline and its three perspectives of consideration

1. Making discipline

2. Making discipline

3. Making discipline

1. The perspective of dialogue between the making practice and the making discipline

2. The perspective of internal consolidation as an academic discipline

3. The perspective of interdisciplinary dialogue and interaction

The first two perspectives of consideration could be ascribed the making discipline as a monodisciplinary discipline. As such it would represent the trend in knowledge production in professional fields that Sandström observed in Sweden. The third perspective of consideration, that of dialogue and interaction with other knowledge fields, opens for a “peer-interdisciplinary” status for architecture. Architecture as a mono- and as an interdisciplinary field of inquiry would come under the umbrella of Mode 1 of knowledge production. As such, it would have as its foremost role the provision of basic educational training and the instilling in individuals a sense of identity, both professional and disciplinary.

What Sandström described as the other trend in knowledge production in professional fields, one devoted to subjects derived from concrete situations, and being solution-oriented, is evolving towards a label of trans-disciplinary knowledge production. As this type of knowledge production has already been observed, we can talk about an emerging Mode 2 in professional fields. But this subject is being left for another occasion.
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Professional Design Education and Practice

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There are at least three obligations for a professional educational setting in design. The first is professional education per se, leading to a competency and ability, as well as a continuing ability, to practice. The second is professional leadership, meaning to be constantly in a position to evaluate where the design profession and practice are at a particular moment, where they seem to be heading, and to be able to provide a critical assessment, including acting on that assessment with regard to new ways of doing things and alternative ways of conceptualizing design in the world. The third is public education, or informing and proselytizing on behalf of good and proper design, especially among elites, such as elected public officials, real-estate developers, middle managers and the like, whose routine decision-making significantly affects the quality of built environments. This paper is about the first obligation — professional education per se — and responds to some of the issues posed in the organizing document for this colloquium concerning curricular requirements, practitioners in architectural education, and the matter of theoretical and practical knowledge in architectural education.

Actionable Knowledge

Two conceptual frameworks, specifying key aspects of professional knowledge suggest that distinctions between theory and practice are less useful than they might appear to be otherwise. The first is Gilbert Ryle’s distinction between ‘knowing that’ and ‘knowing why,’ where if we take plumbing as an example, there is a difference between knowing about the components of a piping system, the physics of fluid flow, the behavior of control mechanisms, etc., versus actually being able to create a system for a particular application or to fix it when it breaks down (Ryle, 1949). Ryle also goes on further to suggest that we often need to know ‘that’ before knowing ‘how,’ although just as often we need to know ‘how’ before going on further to know ‘that.’ In most professional situations, it is well known that some practical competency is required in order to understand the knowledge problem being confronted, and vice versa.

The second framework is Peter Drucker’s idea of ‘actionable knowledge’ and particularly actionable knowledge lying at the heart of professional decision-making and competency, in this case, during the act of designing (Drucker, 1994). It is a hybrid form of knowing with regard to Ryle’s earlier distinction and one that has the following characteristics. First it is invariably situational, meaning that problem definition leads to problem solution and, conversely, that assumed solutions, or directions towards a solution, strongly influence both problem definition and subsequent outcomes. Second, it is neither clearly analytic nor synthetic in orientation and an instance of the difficulty of having analysis without prior synthesis or syntheses without prior analysis. Third, it is in some irreducible way heuristic, meaning that knowing invokes guesswork, informed hunches, rules of thumb, well-tried practices and so forth. Moreover, thinking can and often does lead in a direction where there is no correct answer in any global sense. Fourth, experience counts in this kind of knowing, by involving judgment that comes by way of momentary insight derived from prior exercises. And, finally, it leads to logical trains of reasoning where many other discrete forms of knowing come into play episodically, much
as Donald Schön revealed in his idea of the 'reflective practitioner' (Schön, 1984). In short, 'actionable knowledge,' or knowing 'that' and 'how' intertwined, cannot be simply a matter of theory and practice, but a different kind of knowledge, although not altogether. Furthermore, professional education in design is fundamentally about providing or, more properly, conveying 'actionable knowledge.'

**Competence Minima**

Given the intellectual terrain over which actionable knowledge must be deployed in design, informed practice requires competency in different styles of thinking, the precise degree and combination of which are often difficult to prescribe − with any accuracy − although, conceptually, competence minima can and must be specified. In most curricula discussions about architectural education, for instance, the matter of content is raised immediately from different perspectives, with the result that a consensus seems to be that aspiring architects should know something about compositional and aesthetic principles; something about the physical environments in which they are likely to operate and how things might work, technically, in those environments; something about society, communities, and user groups; and so on. In short, they need to know many aspects about relatively numerous different topics and, as curricula near complete specification, within reasonable time and resource constraints, often negotiations occur along the lines of what topics are absolutely needed to be known.

One way to discern competence minima is with reference to the venerable yet robust Enlightenment three-part division of knowledge into poesis, morality, and scientia. Under the category of poesis, progress can be made from recognition and knowing what is recognized, according to some schema; through appreciation, connoisseurship, and knowing and using aesthetic principles; to broader considerations of representativeness and representation; before going on to development of active expressive capacities and original creative work. Under moral reasoning, the recognition of a social injustice can lead to social awareness or, more broadly, to ethical thinking and then on to fully fledged and original critical thinking. Likewise, under scientia, isolation of a phenomenon leads to knowledge about it and prediction of a kind 'if x in y then z,' followed by outright scientific speculation. Clearly, in this description, the degree of knowledge difficulty increases, for most, in the stepwise progression from knowing a little to knowing a lot. More important, it also involves at least three different styles of thinking in accomplishing a graduated level of competency on towards real expertise. First, there is a basic 'knowledge of' and an 'understanding of how.' Second, there is a capacity for making judgments and, finally, a capacity for going into the arena of globally original reformation, extension, or speculation. In this step-wise progression, a capacity for making informed judgments is what is required from professional education which, in the case of design, means at least connoisseurship and some knowledge about the cultural production of space, ethical thinking and some knowledge about human transactions, and technical choice within an applicable range of physical circumstances. It does not necessarily mean original work on expressive architectural languages in some thoroughly going way, nor being a fully-fledged architectural historian, nor having a capacity for original critical thinking or technical speculation.

In a related vein, there are two competing philosophies towards the acquisition of actionable knowledge across multi-disciplinary fields, both with clear advantages and disadvantages. The first is the concept of a 'core program,' with coursework developed to lay a broad cross-disciplinary background before students go on to more specific areas of study, in the Harvard case involving architecture or landscape architecture or urban planning and design. The obvious advantage of this approach is wide grounding in different disciplinary and professional perspectives, at a
time when choices can be made among them, and as an introduction to design writ large. The disadvantage can often be too much knowledge and too soon, during a difficult period of simply coming to grips with basic competencies and capacities. The second approach is the concept of ‘ground and stretch’, starting from a specific disciplinary stance and generalizing in various ways on into other fields of design inquiry. The advantage here is that students begin to know one area reasonably well before going onto a wider spectrum of fields and interests. The disadvantage is that they can by-pass those other fields altogether. In any final analysis the choice between these two alternatives can never be made definitively, especially when one realizes that students acquire knowledge in different areas at different rates and to different levels of competency.

**Middle-Ground Modalities of Instruction**

The modalities of instruction and learning in well-developed professional design education are likely to be varied, orchestrated, and requiring of continual innovation, but those modalities that span something of a middle ground are likely to be most effective. Examining how instruction in a professional curriculum takes place yields a reasonably long list of modalities, styles, or approaches.

For ‘knowing that,’ there are the classroom settings of lectures, seminars, and case-method classes. For ‘knowing how,’ there are the ‘hands-on,’ learning-by-doing settings of studios, workshops, and independent research projects. And, for field experiences involving something akin to actual ‘road testing,’ there are internships, side-by-side professional learning situations, and lending or swapping arrangements, again in real professional settings. Moreover, along a continuum between specific cases, or instances, of problem-solving and judgment, and the idea of knowing about general classes of problem-solving and judgment, some pedagogical techniques are, *ceteris paribus*, more effective than others. Lectures, for instance, can be general in scope and offer relatively complete views of a field.

Studios, by contrast, usually address a specific problem or issue, and side-by-side learning is necessarily very specific and geared to what’s ‘on the boards’ at a particular moment, although internships can also have a broader roving mandate. Taken together a 2-space can be imagined with a reasonable degree of orthogonality between the principles axes: one graded from ‘knowing that’ to ‘knowing how’ and the other between specific problems to general classes of problems. Within this space, lectures, for example, could occupy a territory high up on the ‘knowing that’ end of the scale and extending over into the general, as opposed to the specific, end of the other axis. Case methods might well be located around the center of the two axes — given the emphasis on learning from particularities to generalities and vice versa — whereas side-by-side learning would be located clearly in the zone demarcated by ‘knowing how’ in a specific instance. Arguably, it is within the broad central zone of this 2-space that actionable knowledge is most likely to be delivered effectively, because that is the domain that most often represents a blurring of distinctions between theory and practice, between ‘knowing that’ and ‘knowing how’ and between specific instances and those that are generalizable. In short, seminars, case-method forms of instruction, studios, workshops, and internships emerge as the preferred modalities. Or, put more conceptually, it is the ‘middle ground’ domain of modalities that may be the most powerful in professional education because of its well-graded combinational effects across both axes. It also probably means that lectures combined with specific studies — a common educational practice — are less effective, because of the ‘bridging problem’ involved. In addition, it probably explains why design education can be relatively expensive, due to the labor intensity involved.
Formal Education and Practitioners

The contrast between formal education and professional real-world practice and, by implication, between academics and practitioners can and should be smaller than might otherwise appear. So far, most of the discussion in this paper has proceeded in a unilateral direction between professional education, via actionable knowledge, to practice, even if the distinctions have been minimized. This direction can also be turned around by asking about the grounds on which practitioners should be included in professional education and why that might be a good idea. Immediately, three aspects become apparent. First, professional educational programs should only be interested in those practitioners who can theorize or speculate, about their own work and experience, or those of others, in a coherent and intellectually nuanced manner. Surely this is a powerful way of getting directly to the underlying principles of an expressive, critical, and substantive kind. It can also be a powerful way of identifying and assessing different working methods, heuristic reasoning processes, and the ways that complex problem spaces can be defined, redefined, and worked through. Second, an interest in engaging practitioners in professional education should dwell on exemplary practices. As in all professional fields, role models and how to comport oneself with regard to thorny problems exposed in the exercise of fiduciary duty — placing the interests of clients above those of a designer and the interests of society above all — can be demonstrated in a rich and engaging manner. Almost by definition, exemplary practitioners can also provide an immediate and sophisticated understanding of good judgment. Third, speculation should be invited from practice in professional education but beyond the immediate realm of practice itself, i.e., beyond the problems placed at the proverbial professional doorstep. This speculation should include new or different approaches to old classes of problem, as well as defining or helping to define new concepts or means and sites of application for design in society. Here the particular advantages of exemplary practitioners are a high capacity in the use of design as research and a substantial sensitivity to the ‘dead ends’ or limits of practice based on first-hand experience.

Life-Cycle Learning

Finally, professional design education must involve ‘life-cycle learning’ and opportunities for continuing professional development, within an academic setting, even if, today, it is woefully under-subscribed. Most educational programs concentrate on basic or initial professional training and education, largely for an age cohort that is relatively young and entrained in their first tertiary-level educational experience, and nothing more. An often-uttered implication is that the ‘school of hard knocks,’ or ‘practical experience’, can best fill in the often-gaping voids that remain after the initial formal educational experience. Frankly, this seems to be wrong-headed for several reasons. First, it is frequently a wasteful and unfocused approach, with often only vague, or idiosyncratic, notions of guidance towards more complete professional competence and mastery. Second, fields change even though some individuals within them do not, requiring better-articulated educational avenues to allow shifting with those changes. Third, the social usefulness and, therefore, esteem of a professional field – like design – rises and falls based on the continued relevance of the bulk of its practitioners, again requiring longer-term educational opportunities. Fourth, much can be learned by engaging seasoned practitioners as participants in their own mid-career and continuing-educational settings, alongside of neophytes in the field. If nothing else, such cross-cohort engagement provides another avenue towards the acquisition of a richer repertoire of actionable knowledge.
References


Useful Obsessions: Architecture as Cultural Critique

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"We see the world the way we do not because that is the way it is but because we have these ways of seeing." Ludwig Wittgenstein

The rise and demise of Orientalism and nineteenth-century anthropology have left us with enduring quandaries. The most complex perhaps is the sharp distinction between the Western and non-Western worlds, with all the binaries it has engendered, and the seeing of the world through the lens of 'culture.' The distinction has had a long history, but 'culture' emerged at the turn of the nineteenth century as a radically new way of seeing it. Through the lens of 'culture,' difference was to be seen for the first time as cultural difference. Over the next two centuries, and after a series of transformations, 'culture,' this radically new European invention, was to rapidly become a universal way of seeing the world. For nearly two centuries now, 'culture' has been a productive obsession in Western scholarship. Once confined to anthropology and ethnography, it is now a central theme in a widening range of disciplinary and inter-disciplinary studies, including architecture. Recently, 'culture' has assumed a new level of significance in the field of cultural studies, where it is seen to have marked a new turn in the history of the human understanding of the world. In The Cultural Turn, sociologist David Chaney considers 'culture' to "have become simultaneously both the dominant topic and most productive intellectual resource in ways that lead us to rewrite our understanding of life in the modern world."

This study examines the influence of 'culture' and the cultural ways of seeing on the teaching of architectural history and theory. In broad terms, 'culture' is understood here, with reference to Sewell, as a two-fold concept: a "theoretical category" (identifying an aspect of social life other than, for example, economy, politics, biology, history, etc.,) and a "concrete and bounded body of beliefs and practices" (such as, Arab culture, middle-class culture, etc.) Architettural discourses of history and theory, especially those concerned with 'culture', operate mainly within these two broad definitions. The main aims of this study are, first, to reveal some of the conceptual problems inherent in the cultural perspective, and, second, to propose a shift from the dominant understanding of architecture as a medium of cultural expression to architecture as a medium for cultural critique. It argues that in recent years architectural historians and theorists have revealed increasing interest in 'culture' and cultural analysis as a focus and a method for their historical inquiries and theoretical constructions. Very few, however, have attempted to problematize the relationship between 'history' and 'theory' on one side and 'culture' on the other, and to examine the epistemological and methodological implications of this relationship in general, and in the discipline of architecture in particular. This relationship involves many difficult questions, such as: What does it mean for the world to be seen through the cultural lens? What does it mean for history to be seen, interpreted, and constructed in cultural terms? What are the differences between 'history' and 'culture', their underlying realities and representations? Can we really think of such differentiation? What are the pedagogical implications of such differentiation? With these questions in the background, my focus here is on examining the agency of 'culture' in contemporary architectural thinking and teaching. I aim to discuss
what I call the cultural hinge, that is, the constructed conception that links peoples’ differences to their material productions. I also aim to discuss the new academic-intellectual sensibility that is shaping the ways in which we approach history and theory in architecture, the role ‘culture’ plays in the shaping of this sensibility, and the conceptual and ethical problems inherent in cultural representations in general and in the architectural design contexts in particular. As a conclusion, I outline the teaching strategies I have developed for the teaching of two introductory subjects – intertwining, history, theory, and culture - at Adelaide University’s Centre for Asian and Middle Eastern Architecture.

The Cultural Hinge

Since the nineteenth century, significant changes to the modes of historical inquiry and methods of history writing have taken place, as history was institutionalized into an academic discipline modeled on that of natural sciences. Along with this, ‘culture’, a new totalizing theoretical tool, was rapidly becoming a dominant frame of thinking, as the science of ‘man’ was delivering exciting results through ethnology and anthropology. ‘Culture’ was then borne within the crucible of evolution and was constructed to form a conceptual hinge between peoples’ racial make up, which included their biological, psychological and mental characteristics, and their material productions. The cultural hinge, thus conceived, appeared immanently relevant to architects and architectural historians and theorists, who uncritically integrated the findings of the science of ‘man’ into the mainstream historical and theoretical discourses of architecture.

“The one great fact, which it is essential to insist on here,” according to Furgeson, “is, that if we do not take into account its connection with ethnography, the history of architecture is a mere dry, hard recapitulation of uninteresting facts and terms…” In The Stones of Venice, John Ruskin wrote: “Those old Greeks gave the shaft; Roman gave the arch; the Arabs pointed and foliated the arch. The shaft and the arch, the framework and strength of architecture, are from the race of Japheth; the spirituality and sanctity of it from Ismael, Abraham, and Shem.” And in the lectures he delivered at Marlborough House in 1852, On the True and the False in the Decorative Arts, Owen Jones spoke of architecture as “the material expression of the wants, the faculties and sentiment of the age,” of collective and unified Oriental practices, and of style—race based architectural theory. This shows how ‘culture’ began to frame the disciplinary constructions of architectural history and theory, which in turn, contributed significantly to the articulation of the cultural hinge. Since then, judging any architectural work has became first and foremost a judgment of its maker, his or her beliefs as well as his or her psychological and intellectual constitution. This formed the foundation of a new way of seeing, and reasoning about, the built environment, and projected a new and exciting way of seeing the other and their material productions.

Since then professionals, architectural academics, and critics have embraced the notion of ‘culture’ unreservedly. They have appropriated and adopted the anthropological understanding of ‘culture’, which has proved to be a very useful and productive obsession. Rarely have they contested the proposition that architecture is essentially a cultural expression. Since its emergence and appropriation into the discipline of architecture, ‘culture’ has continued to yield new intellectual possibilities and to underpin many foundational conceptions and theoretical positions in the field. In architecture, ‘culture’ has not only been unreservedly embraced but has also remarkably survived the post-modern critique with almost no intellectual struggle.

‘Culture’ seems to have found a secure home in architecture; it has unfolded new certainties in
architectural thinking within the post-colonial and post-Orientalist discourses. Since the demise of the colonial project, many culture-centric theoretical positions concerning the local-global, East-West and traditional-modern polarities have been articulated, and numerous agencies, societies, and institutions concerned with the cultural dimensions of architecture have emerged.

While the concept of 'culture' has evolved over the past two centuries, the cultural hinge itself and the related paradigm of architecture as a cultural expression have remained rather static. The writings of Amos Rapoport and other advocates of culture exemplify this in the 70's and 80's of the twentieth century. With the discrediting of the racial theories, decolonization of the world, and gradual democratization of difference that took place in the second half of the twentieth century, however, the cultural hinge has moved from its original framework of evolution to a new framework of relativity. Relativity, supported by the urge for the popularization of 'culture', has led to recognizing the legitimacy of cultural plurality. However, this also meant the drawing and maintaining of some geo-cultural boundaries that allow cultures to be relatively valid in their own worlds. In architecture, this is reflected in the theories of regionalism and critical regionalism, developed by such eminent scholars as Alexander Tzonis, Liane Lefaivre, Kenneth Frampton, and William Curtis. Regionalism appeals to the understanding of 'culture' as a logical, coherent, bounded system that is rooted in a specific geography. Sharing this view, many cultural and architectural theorists have indirectly collaborated in establishing a mode of understanding whose ultimate aim was to keep people culturally in place. In this context, the questions of how to conceptualize and teach architectural history and theory project forth with some urgency.

A New Sensibility

Recent studies on the teaching of architectural history and theory reveal a discernible shift in focus and change in methodology influenced by a new academic-intellectual sensibility that is emerging in almost all the disciplines that engage with 'culture'. The new sensibility is informed by both the post-modern and the post-colonial critiques that have opened up new horizons of thinking of, and dealing with, culture, cultural issues, and cultural difference. For example, in a recently published essay, Sibel Bozdogan asks: "How does one make architectural history less Eurocentric and more cross-cultural without either naturalizing the cultural difference of 'others' or essentializing these differences into incommensurable categories?" This question resonates with the visions and objectives of many individual and institutional approaches that have emerged in the last decade or so. In this shift, the post-colonial debates of identity and difference, self and other, local and global, center and periphery, etc., have been brought - through the agency of culture - to the heart of architectural history and theory. As a result, chronology and the survey model of teaching history have fallen out of favor and so have the theories of typology, which had to be reinvented.

In Concept(s) of Culture, Sewell traces the transformations in the concept of 'culture' and identifies the characteristics of the new academic sensibility that underpins the new approaches. He shows how recent intellectual developments have moved away from the conventional anthropological understanding of cultures as "neatly coherent wholes," that are "logically consistent, highly integrated, consensual, extremely resistant to change, and clearly bounded." Today, it seems no longer sensible to think of cultural issues in these terms. Instead, scholars approach 'cultures' and the worlds of meanings they presuppose as "contradictory, loosely integrated, contested, mutable, and highly permeable." Within this new intellectual sensibility, the analyses of identity and difference have moved away from the essentialist typifications to more contested, ambiguous, non-definitive postulations. Cultural differences are no longer seen as transparent
sets of characteristics that can form the uncritical object of 'cultural awareness', whether through the mediation of architectural history and theory or through other topics, and be expected to directly lead to positive outcomes with any certainty. Instead, they have become modes or field of representations located in a complex discursive fabric that have no fixed boundaries.\textsuperscript{15}

The new intellectual sensibility has thus channeled academic energy towards rethinking conventional approaches and established paradigms as well as towards exploring the promising horizons of the cultural perspective. This rethinking might have prompted the articulation of new teaching strategies in architecture, but it has not altered the conventional relationship between culture and architecture that was forged in the nineteenth century. Architecture is still predominantly seen as an expression of culture.

What does it mean for architectural history to be increasingly interested in culture, to be less Eurocentric and more cross-cultural? Is this a matter of content only? Is post-colonial critique the only or most useful source on cross-cultural issues? What insights does, for example, cultural anthropology have for architectural history and theory that are revealing increasing dependence on the agency of culture? And finally, what role does culture play in closing or indeed widening the gap between architectural history and architectural design?

**Questioning Culture**

It seems equally important to examine the problematics of 'culture' and cultural representations as they unfold in other disciplines. In fact, as history draws more heavily on cultural analyses and anthropology recoils away from conventional ethnography, it is legitimate to ask what remains to distinguish history from anthropology? It is not this complex question that I want to explore here, but rather the problematics of 'culture' that both share. For architectural history, and theory for that matter, to be more interested in 'culture', it inevitably means to buy into the conceptual and methodological problems of 'culture', which are far from being marginal and easy to overlook.

To begin with, the conceptualization of 'culture' into a universal tool that is capable of capturing the irreducible difference of the Other is inherently paradoxical. To see difference as cultural difference is essentially to naturalize difference, to conceive of it in universally communicable cultural terms, or the universally exchangeable cultural 'currency'. The democratization of difference through the agency of 'culture' is the flattening of the 'topography' of difference against the one, uniform rationality of 'culture'. And it is through this flattening process that culture 'authorizes the transformation of 'difference' into 'relativity', thereby also revealing, as Bernard McGrane notes, 'a paradoxical re-domestication and annihilation of difference, for if all cultures are democratically relative, then...in this deep respect, none are different.'\textsuperscript{16}

McGrane observes that "twentieth-century 'culture' was a concept forged in the teeth of 'evolution' and the hierarchic schema implicit in it. Twentieth-century 'culture' has killed 'evolution' and mortally wounded 'historicism'."\textsuperscript{17} He further observes that culture, in its latest manifestations, is "an interiorization of 'time' (and 'History'), and of 'value'... 'History' is interiorized into 'Culture'."\textsuperscript{18} In fact, not only has history been interiorized into culture, but other legitimate criteria of difference, such as religion, biology, and knowledge as well. For example, it is commonplace now among historians of Islamic art and architecture to regard the adjective 'Islamic' as referring primarily to 'culture' and not religion.\textsuperscript{19} This has influenced the ways in which the histories of Islamic art and architecture are constructed and written, the ways in which 'appropriate' and 'relevant' sources are selected and examined, and most importantly, of course, the types of questions being asked.
In Concept(s) of Culture Sewell draws the attention to this paradox:

"As the discourse about culture becomes ever more pervasive and multifarious, anthropology, the discipline that invented the concept - or at least shaped it into something like its present form - is somewhat ambivalently backing away from its long standing identification with culture as its key word and central symbol."[20]

Ironically, by discussing the experimental and ethical nature, as well as the poetics and politics, of writing culture, anthropologists have highlighted the constructed and artificial nature of cultural descriptions, critically undermining the authority of their own cultural representations. Anthropologists are now aware that the issue of text making is no longer marginal to their activities. Informed by the post-modern critique, anthropologists have come to realize that reification is inherent in the very nature of cultural representations and is not a matter of method, attitude, or point of view. This made them aware of the paralyzing and alienating effects of fixing peoples, through cultural representations - regardless of the intention of the presenter - within their own social and cultural structures and of entrapping them within the idioms of their own beliefs. It also made them aware of the negative consequences of immobilizing people by keeping them culturally in place, that is, by tying them, through the seemingly benign notion of 'belonging', to a particular geographic locale.[21]

If we view history and theory as being the products of a subjectivity that sets itself apart from the past and sees it as history, and from worldly engagement and sees it as theory, then Bowman's argument is particularly relevant, and even more so when this subjectivity sees history and theory through a cultural lens. By dissolving the Cartesian ego, the absolute, detached subject, back into the discourses of societies from which it emerges, Bowman envisions, "the subject can thus begin to think of its subjecthood as a social fact."[22] The aim of dissolving one's autonomous subjectivity is to provide a new means of understanding the other, not as one like ourselves in the sense of sharing a common identity but as one who, like ourselves, takes up his or her identity through identifications with subject positions offered by the situations it encounters. The other then becomes like ourselves in so far as, like ourselves, it does not simply have an identity but builds up a repertoire of identities through identifications with subject positions set out in the discourses he or she encounters in negotiating its life. The other is not, then, fundamentally different from us - is not Other - but shares with us the need to construct its subjectivity out of the elements provided for it by its concourse with others in the social world; the difference between us and others lies in the specific characters and consequent configurations of the social facts we encounter.[23]

Architecture as Cultural Critique

Understanding the conceptual problems associated with 'culture' and cultural representations, as well as the new academic sensibility that is shaping the ways in which we think of, and deal with, such problems, leads us to ask: how do we make sense out of all this in educational terms? The following is a theoretical and methodological outline of my approach to dealing with the concept of 'culture' and its agency in the subjects I teach at Adelaide University's Centre for Asian and Middle Eastern Architecture (CAMEA). Although it does not in any way claim to satisfactorily address the issues I have raised, it is nevertheless still at an experimental stage.

Through a loosely structured stream of elective subjects, a series of extra curricular workshops entitled Questioning Culture, and biannual symposia, my colleagues and I have initiated and led an exploration of the architectural terrains hidden within and in between the folds of 'history', 'theory' and 'culture'. Our collective aim is to critically examine the agency of 'culture'
in current architectural discourses, in professional and educational design practices, and in modes of intellectual engagement. In what we call CAMEA's cross-cultural stream, I teach at an introductory level two elective subjects: Journey and Imaginative Geography (level one), and Design, Discourse and Discretion (combined level two and three). The first is an introduction to Arab culture and architecture; the other is an introduction to contemporary Islamic architecture and gardens. Two fundamental questions underlie my teaching approach: first, how to introduce students to, and engage them with, a world already detached by cultural and historical distances; and second, how to make the knowledge gained relevant, useful, and enabling in contemporary design situations. These questions bring into focus architectural history and theory within a framework of cultural and cross-cultural concerns. In addressing these questions, one of my key objectives is to reconfigure the cultural hinge into one that mediates - through present-minded concerns - the retrospective perspective of architectural history and the projective perspective of design theory.

My scene-setting tactics involve historicizing the concept of culture by introducing the students to the notion of the cultural hinge and allowing them to question the efficacy and universality of the view that promotes architecture as an expression of culture. They also involve prompting students to rethink the conventional approaches that promote 'cultural awareness' and 'cultural sensitivity' as a necessity in architectural education, readily invoking them as a justifiable end to the teaching of non-Western architecture. I encourage students to approach the desire for invoking culture and cultural awareness in architectural practices as something to be explained and not simply taken for granted. Thus 'culture' becomes a shared point of entry, for both the students and myself, into questioning what does it really means to become culturally aware or sensitive? What are the manifestations of such awareness or sensitivity, and how do they work in pedagogical and professional terms? What is being accomplished socially, architecturally, and discursively when the notion of culture is invoked to discuss, theorize, or explain architecture? What are the limitations of the cultural perspective? And how can architecture be conceived of and experienced outside the cultural frame of reference?

Instead of searching for what does and does not belong, for identity and difference, seeking indeterminable cultural definitions, chasing elusive boundaries, and conjuring up idiosyncratic solutions, the students are engaged in a critical interrogation of culture and its agency in the thinking, making, and experience of architecture. It is through this interrogative process that I am able to shift the focus from architecture as cultural expression to architecture as cultural critique, thereby transforming the architectural object into a tool for clarifying cultural concepts and evaluating cultural and social practices.

The preceding strategy introduces a new theoretical framework: culture can no longer be taken for granted as a transparent 'object' that everyone knows as a fact of life that is always there, and as something of value. Rather, it is seen as a discursive tool with a particular European origin and a Eurocentric history, and as a discrete, yet powerful, conceptual medium with a tendency to 'think', 'design', and 'write' its subjects. Thus framed, the ubiquity of 'culture' is projected not so much as the outcome of human sociality but rather of human choice. Students are placed in a position that enable them to see that we choose to think and act in terms of 'culture' and this choice has not always and everywhere been available. This is achieved through dwelling on pre-modern examples that challenge the cultural paradigms and show that 'culture' is a modern way of seeing the world.

Journey and Imaginative Geography enables students to view the Arab world through the lens of individual journeys, of embodied engagements and encounters, rather than detached cultural
and historical analysis. It follows Clifford's shift of cultural focus from roots to routes.\textsuperscript{26} It thus shifts the frame of reference from broad history and cultural narratives to specific travel narratives, working with a dynamic and multi-locale setting, with worlds in motion. Travel enables rich experiential encounters with places, buildings and landscape, revealing, when documented, different and often contradictory modes of visualization and representation. Travel narratives complement the inevitable totalizing tendency of history and culture by providing "a serialized space of constructed visibility."\textsuperscript{27} This helps, to some extent, to distract students from being preoccupied with cultural and geographical boundaries, and allows architecture and landscape to be seen in multiple, and sometime contrasting, frames. Also, while the focus is on the so-called 'Arab world', students are constantly reminded that the main objectives are to equip them with the ability to deal with cultural differences and enable them to skillfully negotiate seemingly rigid geographical, religious, and cultural boundaries.

The subject draws their attention to the richness and diversity of the constructed environments that can be encountered within its geographies, and the imaginative constructions of such geographies by both Arab and non-Arab travelers. It emphasizes that learning about the Arab-Islamic worlds is not just about coming to terms with difference and unfamiliarity, but is fundamentally about understanding a rapidly changing and mobile world that is becoming increasingly committed to the common core of humanity. It is the complex human conditions and rich possibilities of existence that are sought for exploration and understanding and not just the cultural and historical other.\textsuperscript{28}

The structure of the subject is thematic and the approach is comparative, involving references to both modern and pre-modern histories of the Arab world as well as to inter- and intra-cultural representations. The notion of journey is discussed both in its modern and pre-modern contexts in order to provide a comparative frame of reference to re-think modern cultural constructions. Carefully selected examples of architecture, landscape, and urbanity are located and analyzed in this comparative framing. Through the notion of journey, students are also introduced to the difference between understanding architecture through the history of its production and the ahistorical nature of spatial experience.

Design, Discourse and Discretion introduces students to contemporary Islamic architecture and landscape within a critical frame of reference, focusing on the agency of culture in designing, in the making of a discourse, and in orchestrating and playing out discretionary powers. The course uses the Aga Khan Award for Architecture as a pedagogical tool. The Award's program and its publications provide a very rich and engaging body of teaching material. It is particularly useful in addressing the questions of what happens when we become culturally aware, and how effective cultural awareness is in addressing the problems it is meant to address. The subject is divided into three parts. As a start, the students are engaged in analyzing Award-winning and non-Award-winning contemporary designs, focusing on designing culture, that is, on the agency of culture in formal compositions and manipulations. Then the focus is shifted to writing culture, that is, to the texts presented in the Award's publications in particular and other publications in general. At this stage, the students are engaged in analyzing the discourses that underpin rationalized positions (e.g., jury statements, the selection process, etc.), such as regionalism, symbolism, tradition and modernity, and so forth. Finally, the students are engaged in analyzing the politics of the Award, addressing questions such as, who is represented and who is not? What are the implicit agendas? What are the tactics of legitimization? What is the impact of the geographic and institutional presence? What is the role of academic and professional authority in defining the 'Islamic'? In the 1995 and 1998 rounds, the Award publications included excerpts of the discussion by jury members. These have proved to be very useful teaching instruments. For group discussions of
selected projects, the students are asked to identify with a jury member of their choice and to study his or her position carefully. In some cases, this has led to very passionate and animated debates, giving the students a first-hand experience of the complex, non-definitive, and political nature of the cultural interpretation of architecture.29

In order to explore the mediating function of ‘culture’, that is, the ways historical information can be appropriated for design purposes through a reinvented cultural hinge, I have attempted to give the students both research- and design-focused assignments. My aim was to see whether the present-mindedness of cultural framing could provide a bridge from the remoteness of the historical past to the immediate and relevant present, thereby providing a workable focus for design. For unlike other non-design-oriented disciplines, architectural education is faced with the dilemma of reconciling two modes of dealing with difference: a retrospective mode that deals with the past and a projective mode that deals with future. Historico-cultural analyses are always based on a retrospective view of difference, a view that is often confused with the projective focus of architectural design. To grasp the ‘history’ or ‘culture’ of a community through a retrospective construction of logical and coherent patterns of thought and action, whereby modes of living, thinking, communicating, and expressing become a unified whole, is one thing. To use this understanding in architectural design to propagate and promote historico-cultural ideas is quite another. A problematic translation takes place here, one that is not too distanced from the anthropological dilemma of writing culture. It is the problem inherent in the translation of a complex social situation into a built form, or designing culture, if I may so describe it, that architects are yet to negotiate and debate with the same rigor of their colleagues in anthropology. While being able to see architecture as a ‘text’ and advocate the necessity of cultural awareness in design education and practice, architects appear to have maintained confidence in the transparency of their architectural representations and the immediacy of their cultural experiences. They are still feeling at ease with designing culture. The non-committal stance of design as ‘exploration’ seems to offer a way out of the ethical and theoretical impasses that anthropologists have had to grapple with for over two decades.

Interestingly but not surprisingly, the assignments and assessment strategy I have devised revealed serious predicaments. The students encountered difficulties in moving between thinking about, and designing with reference to, culture and history-related issues. It was difficult to overcome the veiled predicaments of ‘culture’, which has continued to be understood in the conventional anthropological sense. While both students and tutors struggled with design, the students seemed to perform well in their research work, showing noticeable improvement in their ability to deal with cultural issues in a critical and sophisticated way. The dilemma of uncertainty, of the non-committal and non-prescriptive nature of criticality, the complete relativity of cultural plurality, and the lack of clear design principles seem to have been the main reasons behind the struggle in designing. In the neither-nor space there was little room for non-questionable design principles, and design decisions were hard to reach, as uncritical commitment to a particular cultural interpretation was deemed to be no longer sensible. Thus increased criticality and theoretical sophistication seem to have produced a reverse effect on design. This, is partly due to the students’ lack of design experience and partly to the nature of architecture itself. By virtue of its material and formal inertia, architecture is necessarily reductive when it comes to representing the conceptual richness involved in thinking cultural differences. Moreover, on the conceptual side, contemporary architectural theories have little to offer in this regard beyond raising cultural awareness and stimulating one’s critical self-consciousness, which - as I hope I have managed to argue - is not necessarily or inherently a good thing to do. Regionalism and critical regionalism have often been invoked in various forms only to yield spectacular failures.30
Critical regionalism's aim to counter the global trends of effacing cultural differences may be laudable, yet, its commitment to keeping people culturally in place is doomed to irrelevance by peoples' increased mobility and extended geographical reach.

In conclusion, architectural education today has become primarily concerned with questioning, exploring, and disclosing. Educators in the field no longer have a truth to stand for or an authority to speak with. They have mutated into interpreters, facilitators, explorers, and, indeed just like their students, disoriented seekers of knowledge. In this climate, 'culture' has remained a unique element of certainty. Hiding behind architecture, 'culture' has somehow managed to elude the critical sensibility dominating today's scenes of architectural education. Viewing architecture as a medium for cultural critique may further strip design from yet another, or perhaps the last, element of certainty, but this seems necessary in a world wherein the intellectual and scientific endeavors are increasingly committed to dissolving dividing boundaries and autonomous subjectivities. In today's world, the inherited Western/non-Western divide together with the conventional understanding of 'culture', the modern intellectual tool that sustains it, seem no longer productive. The cultural hinge, the discrete entity that enables 'culture' to 'think', 'design' or 'write' the entirety of its subject, needs to be reinvented. Otherwise, the divide between 'us' and 'them', however discreet or subtle, will continue to underwrite cultural awareness and the 'crossing' in cross-cultural understanding, rendering them ineffective. Yet, it is only through the current felicitous obsessions with 'culture' that one is able, or so it seems, to move beyond cultural limitations.

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Notes:

1. On the history of the different conceptions of difference, see Bernard McGrane, Beyond Anthropology: Society and the Other (New York: Columbia University Press, 1989). Peter Burke traces the early usage of the term culture to the eighteenth-century German scholars Johann Christoph Adelung and Johann Gottfried Eichhorn, see chapter on Origin of Cultural History in his Varieties of Cultural History (Ithaca, New York: Cornell University Press, 1997).


5. On the emergence and institutionalisation of history as a professional discipline, see Georg Iggers, Historiography in the Twentieth Century: from Scientific Objectivity to the Postmodern Challenge (Hanover and London: Wesleyan University Press, 1997).

6. Ibid., 37.
Ibid., 48.


Sewell, "*Concept(s) of Culture*," 52

Ibid., 53.


Ibid., 114.

ibid., 114.


Sewell, "The Concept(s) of Culture," 37.

See Glenn Bowman, "Identifying Versus Identifying with 'the Other': Reflections on the Siting of the Subject in Anthropological Discourse," in Hocky and Dawson (eds), *After Writing Culture…*, 41-2


Bowman, "Identifying Versus Identifying with 'the Other'…", 45.

Conventional approaches to architectural history that follow chronological or thematic structures may deliver a coherent and interesting body of information, however, they rarely deal directly with issues of usefulness and relevance to specific design situations. Research-based assignments are the predominant mode of assessment, which encourages a reflective rather than performative mode of understanding. What the student does with the knowledge gained and how he or she puts it to use in a various design contexts is understandably a matter of little concern to architectural historians.

Cultural awareness, often presented as a necessity rather than a point of contention or even discussion, has been widely accepted to be among the basic needs for design education that seems to be similar everywhere, regardless of the professional or geographical context. In "Design in an Increasingly Small World," for example, Peter Rowe adopts this view. "First," he writes, "there is a need
for considerable cultural awareness, for consciousness of the norms, values and design conventions shaping the context in which you are working. This pertains to both cross-cultural circumstances, if you happen to be working in another region or abroad, as well as to your own home circumstances, where special needs of different groups are becoming increasingly strongly felt.” In W. Saunders (ed.), *Reflections on Architectural Practices in the Nineties* (New York, Princeton Architectural Press, 1996), 220-30.


29 From the students’ perspective, this subject seemed quite successful and led to my nomination for a university teaching excellence award. From my perspective, however, the approach still involves some predicaments, particularly in relation to the gap between history and design that Bozlogan has alluded to. More work on the refinement of the cultural hinge is still needed.

30 Hassan Fathy’s experience, with all of its admirable achievements, is a case in point.
Architectural Education: Cultivating “Theorizing Artists” or “Deliberating Professionals”

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Practice and Theory: Making and Thinking

This paper deals with a persisting problem in architectural education, the problem of the correct balance of practical and theoretical knowledge. The aim is to reformulate this problem in the light of some humanistic notions that have informed some teaching and learning experiments conducted in the undergraduate and graduate studios at the Middle East Technical University, Department of Architecture since the early 1990s.

It is possible to address the problem of the correct balance of practical and theoretical knowledge from different stances, starting from different conceptions of the ‘practical’ and the ‘theoretical’ in the field of architecture. How these terms are conceived has been consequential for architectural education, and any questioning of their conventional meanings may lead to a questioning of conventional practices in architectural education itself. The problem would have been essentially a ‘practical’ one, a problem of designing curriculum by bringing together the main constituents of architectural knowledge in an harmonious way, if we had known precisely what practical knowledge and theoretical knowledge meant for the profession. Since this is not the case, we need to start by reflecting upon the unconventional meanings of these terms, first probing into the related ancient sources.

We find in Vitruvius’ *The Ten Books On Architecture* an early discrimination between ‘practice’ and ‘theory’ in relation to the education of the architect:

The architect should be equipped with knowledge of many branches of study and varied kinds of learning, for it is by his judgment that all work done by the other arts is put to test. This knowledge is the child of practice [*fabrîca*] and theory [*rationîcînatione*]. Practice is the continuous and regular exercise of employment where manual work is done with any necessary material according to the design of a drawing. Theory, on the other hand, is the ability to demonstrate and explain the productions of dexterity on the principles of proportion.

(Vitruvius, 1914, 6, http://www.perseus.tufts.edu/cgi-bin/ptext?lookup=Vitr.+1.1.1)

Vitruvius not only distinguishes between ‘practice’ and ‘theory,’ but also points to a third kind of knowledge that originates from the union of them, or rather from the union of ‘making’ and ‘thinking.’ This allows the architect, for Vitruvius, to make judgments about the work done by other arts. Terms translated into English as practice and theory (*fabrîco* means “to make, build, construct, erect,” and *rationîcînation* means “an exercise of the reasoning powers, calm reasoning, ratiocination”)¹ perhaps correspond to ‘making’ and ‘thinking’ respectively, or in other words, to the Aristotelian distinction between *technē* and *logismo*<sup>5</sup>. This is what the following paragraph suggests:
“It follows, therefore, that architects who have aimed at acquiring manual skill without scholarship \([\text{litteris}]\) have never been able to reach a position of authority to correspond to their pains, while those who relied only upon theories \([\text{ratiocinationibus}]\) and scholarship \([\text{litteris}]\) were obviously hunting the shadow, not the substance. But those who have a thorough knowledge of both, like men armed at all points, have the sooner attained their object and carried authority with them.”

(Vitruvius, 1914, 6, http://www.perseus.tufts.edu/cgi-bin/ptext?lookup=Vitr.+1.1.1)

In *Metaphysics*, Aristotle says that those capable of both making and thinking are master craftsmen \((\text{architectonas, singular architec\'\`on})\)^2 and are considered to be superior in wisdom:

“...we consider that the master craftsmen \((\text{architectonas})\) in every profession are more estimable and know more and are wiser than the artisans, [981b] because they know the reasons of the things which are done; but we think that the artisans, like certain inanimate objects, do things, but without knowing what they are doing (as, for instance, fire burns); only whereas objects perform all their actions in virtue of a certain natural quality, artisans perform theirs through habit \((\text{ethos})\). Thus the master craftsmen are superior in wisdom, not because they can do things, but because they possess a theory and know the causes.” [981b]


For Vitruvius “the arts are each composed of two things, the actual and the theory of it. One of these, the doing of the work, is proper to men trained in the individual subject, while the other, the theory \((\text{rati\'\`onem})\), is common to all scholars.” (Vitruvius, 1914, 12, http://www.perseus.tufts.edu/cgi-bin/ptext?lookup=Vitr.+1.1.1) It seems that by art he means actual making through habit and/or related skill or technical knowledge. Do we mean the same thing when we speak of practical knowledge? Moreover, what do we really mean when we pose the problem of the balance of practical knowledge and theoretical knowledge? Is it the balance between making and thinking? If ‘theory’ in its Vitruvian sense is not scientific or theoretical knowledge, \((\text{epist\'\`em\`e})\) \textit{per se}, as it is defined, e.g., by Aristotle in \textit{Nichomachean Ethics}, but has to do with thinking, what is thinking in architecture? (Aristotle, 1934, http://www.perseus.tufts.edu/cgi-bin/ptext?lookup=Aristot.+Nic.+Eth.+1139b+1) Is it \textit{logismos}, i.e., reasoning, “a counting, reckoning, calculation, computation” as it is transcribed into English from Aristotle’s *Metaphysics*? Does \textit{ratiocinatio} have similar connotations? Does Aristotle distinguish “practical knowledge” or praxis (phron\'\`es) decisively from “art (techn\'\`e) with reason [logos],” and therefore, from architecture, because art and architecture are concerned with making \((\text{poi\'\`esis})\), and not with “action” or “praxis”? (Aristotle, 1934, 1140a, 1140b, http://www.perseus.tufts.edu/cgi-bin/ptext?lookup=Aristot.+Nic.+Eth.+1140a+1) Does \textit{ratiocinatio}, as it is used in Vitruvius’ work, have more to do with what Aristotle calls, in \textit{Nichomachean Ethics}, “good deliberation,” which belongs to “prudence” (practical knowledge, praxis, phron\'\`es)?

Certainly, these questions are not pertinent when architectural production is concerned; but they are highly relevant for architectural education,^2 and also for education in other professions. For they are closely related to the question ‘what can be taught and how, and what cannot be taught?’ Perhaps one can best address these questions by invoking the humanistic and hermeneutical traditions, in which these unconventional meanings of the ‘practical’ and ‘theoretical’ have been worked out. It seems also reasonable to delimit the inquiry into a few concepts that would provide a reliable basis for further discussion.
This reconsideration of our conceptual tools finds a reliable basis in Erwin Panofsky's conceptions of theory as pharmakon, and of history as a "dialogical process" (Panofsky, 1968, vii), and in the "leading humanistic concepts" closely related with these conceptions. These include the concepts of "practical Bildung" and "theoretical Bildung" elucidated by Hans-George Gadamer in Truth and Method (Gadamer, 1981, 10-19.). The relevance of Gadamer's reinterpretation of the Aristotelian distinction between technē and phronēsis, in his search for a model for delineating the mode of "understanding" proper to historical/human sciences, has long been acknowledged by architectural critics and theoreticians who have inquired into the possibility of uniting "technically practical knowledge" with ethical concerns (Gadamer, 1981, 278ff.).

The Notions of Written Words and Theorizing Artists

In the "Foreword to the Second German Edition" (1959) of his inquiry into the history of the notions of idea, Erwin Panofsky states that:

"...the reader of the work reprinted here should always keep in mind that it was written more than a generation ago and has in no way been 'modernized.' If books were subject to the same laws and regulations as pharmaceutical products, the dust jacket of every copy would have to bear the label 'Use with Care'...or as it used to say on old medicine containers: CAVIVS (Panofsky, 1968, vii)."

This succinct and ironic allusion to Plato's much-discussed conception of writing as pharmakon, recipe or elixir, which is both "remedy" and "poison," is highly significant in a book that traces the story of the concept of idea. The book itself shows, with carefully selected examples, that not only the art theoretical concept idea, but also art theories as "recipes," are to be utilized with due care. By exposing "almost verbatim" borrowings from, and misrepresentation of, ancient sources in the written works of some eminent sixteenth- and seventeenth-century artists/authors, Panofsky warns that "... the utterances of theorizing artists must be used with the greatest caution" (Panofsky, 1968, 97f, 243.).

In order to elaborate further the significance of this warning, it seems essential to reflect upon it in light of the dialogue in Phaedrus between Phaedrus and Socrates on the "propriety and impropriety in writing." In doing this, we will be routing around its popular structuralist and post-structuralist readings that seem not relevant in this particular context.

Plato makes his Socrates relate the myth on writing (suggesting that it may well be Socrates' own invention) in order to find out "how it [writing] should be done and how it is improper," while questioning the common beliefs on this issue (Plato, 1966, 274ff, 275b.) Thus he sets a dialogue in a dialogue, between the divine king of all Egypt in ancient times, Thamus, or Ammon as Greeks called him, and the Egyptian god Theuth, the divine inventor of numbers, arithmetic, geometry and astronomy, and letters as well. Theuth introduces letters as "an elixir of memory and wisdom, [which] will make the Egyptians wiser and will improve their memories." Thamus replies that with this gift it is rather forgetfulness that would be imparted:

"Most ingenious Theuth, one man has the ability to beget arts, but the ability to judge of their usefulness or harmfulness to their users belongs to another [275a]; and now you, who are the father of letters, have been led by your affection to ascribe to them a power the opposite of that which they really possess. For this invention will produce forgetfulness in the minds of those who learn to use it, because they will not practice their memory. Their trust in writing, produced by external characters that are no part of themselves, will discourage the use of their own memory within them. You have invented an elixir not
of memory, but of reminding; and you offer your pupils the appearance of wisdom, not true wisdom, for they will read many things without instruction and will therefore seem [275b] to know many things, when they are for the most part ignorant and hard to get along with, since they are not wise, but only appear wise. (Plato, 1966, 275a ff)

If written words have any use, for Plato, it is merely to remind; they do not promise knowledge, because they are silent, and thus cannot be interrogated. "They always say," Socrates says, "one and the same thing. And every word, when once it is written, is bandied about, alike among those who understand and those who have no interest in it, and it knows not to whom to speak or not to speak" (Plato, 1966, 275e.). Written words, for him, are helpless, and open to misreading and misrepresentation. Socrates does not say that the spoken word is superior to the written word. He privileges a kind of speech or word, the nature of which differs from the written word: "The word which is written with intelligence in the mind of the learner, which is able to defend itself and knows to whom it should speak, and before whom to be silent" (Plato, 1966, 276a.). It is "the living and breathing word of him who knows," as Phaedrus responds, "of which the written word may justly be called the image." The living and breathing word seeks "fitting" minds where it would bear fruit (Plato, 1966, 277a.).

Socrates points to an endless process in which the living word unfolds, a dialogical process that has the character of thinking. It is not the spoken word, because the spoken word per se is like the written word, a mere image of the living and breathing word, and might well be exchanged without questioning and thus without inciting dialogue and meditation. The spoken word seems advantageous only when compared to the written word, but both share the nature of the pharmakon. It is, therefore, not the oral tradition (and obviously not the wisdom of the rhapsodes) that Plato praises against the written tradition, but the continuity of argumentation, questioning, thinking. The problem posed by Plato is rather that of maintaining the continuity of thinking, be it modulated in terms of the fleeting spoken word, or more lasting written word- a problem that became more important than ever with the advent of the digitized word after the printed word, culminating in "the deluge of information" as Hans-Georg Gadamer calls it, "which threatens to engulf our human faculty of judgment" (Gadamer, 1996, viii.).

Panofsky's re-presentation of his own book as a pharmakon, 35 years after its first publication, is in full agreement with humanistic concepts and with the nature of research disciplined by the rules of "historians' craft" that has unfolded within the humanistic tradition. Art historical inquiry, as Panofsky conceives and practices it, is characterized by an explicitly cautious handling of words and works, human signs and structures, the "records" or "documents" of the human mind, by a critical, self-critical, and self-corrective attitude that prevents their careless replication or recycling, and thus, allows the sustenance of thinking. In The History of Art as a Humanistic Discipline, he compares historians' general concepts, in light of which individual works and documents are interpreted, with general theories in the natural sciences. He reminds us that:

"[e]very discovery of an unknown historical fact, and every new interpretation of a known one, will either 'fit in' with the prevalent general conception, and thereby corroborate and enrich it, or else it will entail a subtle, or even a fundamental change in the prevalent general conception, and thereby throw new light on all that has been known before."

(Panofsky, 1972, 9f)

In the second edition of the Idea, Panofsky's invitation addressed to the anonymous reader to approach cautiously not only the words of "theorizing artists," but also his own written words, may well be understood as an invitation to participate in this essentially dialogical process that art historical research is. Perhaps this is a response to the problem once posed by Plato: it reveals
the true nature of art historical research as a remedy against the tendency to attribute authority to the words once they are written, or printed, and now digitized, and against the tendency to regard theoretical statements as timeless truths. By approaching not only the works but also the theoretical statements of artists with the tools of critical and self-critical inquiry, art history also makes a claim to rescue the written words that tend to petrify in them. Art history claims to win the words as well as the works of humans into the dialogical process.

Vitruvius and Diderot: Liberating Technical Knowledge

Vitruvius' The Ten Books on Architecture may well be compared with Diderot's Encyclopédie, that great Enlightenment enterprise, qualified by John R. Pannabecker as "one of the most ambitious attempts in early modern history to describe technological knowledge" (Pannabecker, 1994). Pannabecker reminds us that the relationship between practice and theory, or "speculation", as it is called by Diderot, occupied a significant place in Diderot's writing. For Pannabecker, Diderot was interested not only in "representing the arts in language and drawings," but also in the practice of arts, without falling into the illusion that any representation of "mechanical arts" could suffice to make people craftsmen. He wrote, as Pannabecker reminds us, that "it is handicraft which makes the artist, and it is not in Books that one can learn to manipulate" (Diderot, 1750, quoted in Pannabecker, 1994). His intention was, for J. Proust, rather to disseminate technical knowledge as part of a general system of human knowledge in order to "(a) to reach a large public; (b) to encourage research at all stages of production; and (c) to publish all the secrets of manufacturing" (Proust, 1967, quoted in Pannabecker, 1994).

Thus, "he [Diderot] established a method," in Pannabecker's words, "connecting language, concepts, and objects for the purposes of communication and dissemination" (Pannabecker, 1994). Like Vitruvius' work, the Encyclopédie aimed at liberating technical knowledge from the confines of workplaces; however, as Pannabecker observes, this giant attempt at "the melding of theory and practice" remained a written and pictorial representation of technical knowledge, and in fact, inevitably only a partial representation of the "deeper layers of intuition, perceptual discernment, manipulative skills, and heuristics" (Pannabecker, 1994). It also replaced the Vitruvian emphasis on "thinking" with the Baconian emphasis on "calculative thinking," in other words, on the "mechanical arts" or technology as it is called today, and it yielded to the pragmatist conception of "theory" as mere speculation. Thus, it led to a transformation in the conception of practice and theory. It may well be argued that we often tend to understand the Vitruvian distinction from within this modern conceptual framework.

The Bildung Concept: Theoretical vs. Practical

The concept of Bildung, the history of which was summed up by Gadamer, promises to constitute a bridge between poësis, i.e., making or production, and thinking. Its history also reveals the attempts to go beyond the confines of the conceptual framework that informed the Encyclopédie.

For Gadamer, the concept of Bildung, "the idea of self-formation or cultivation" played a significant role in the self-understanding of the historical human sciences throughout the nineteenth century (Gadamer, 1981, 10f). Johann G. von Herder re-defined Bildung as "reaching up to humanity" and associated it "with the idea of culture," specifying "the properly human way of developing one's natural talents and capacities." As Gadamer reminds us, before Herder, Immanuel Kant mentioned in Metaphysics of Morals, without employing the word Bildung, "the idea of duties towards oneself" including "not letting one's natural talents rust." The same idea
resounded in George W. F. Hegel’s work, in the words *Sichbilden*, “educating and cultivating oneself,” and *Bildung*.

Gadamer also draws attention to Wilhelm von Humboldt’s sensitive distinction between the concepts of *Bildung* and *Kultur*; this distinction highlights in the former concept “something both higher and more inward,” and evokes its meaning in the ancient mystical tradition (Gadamer, 1981, 11). According to Gadamer, the word originated in medieval mysticism. In this tradition, the word *Bild* had the ambiguity of poetic images; it meant both *Nachbild* (image or copy) and *Vorbild* (model) in German. Accordingly, *Bildung* meant the cultivation in oneself of “the image of God after whom [one was] fashioned,” the image one carries within one’s soul (Gadamer, 1981, 12). *Forma* and *formatio* in Latin, *bebek*, *shibb* and *tesbekkul* in Ottoman Turkish, form and formation in English, are equivalents of the German *Bild* and *Bildung*. For Gadamer, *Bildung* resembles Greek *physis* (nature), because “it is not be achieved in the manner of technical construction,” and also because, like nature, it does not have a goal outside of itself, whereas cultivation of a natural talent may be regarded as a means to an end:

> “In Bildung . . . that by which and through which one is formed becomes completely one’s own. To some extent everything that is received is absorbed, but in Bildung what is absorbed is not like a means that has lost its function. Rather in acquired Bildung nothing disappears, but everything is preserved. Bildung is a genuine historical idea, and because of this historical character of preservation is important for understanding in human sciences.”

(Gadamer, 1981, 12)

Gadamer maintains that it is in Hegel’s work that the word *Bildung* is associated with theoretical attitude. In Hegel’s work, *Bildung* becomes a requirement of human nature, due to humans’ capacity to go beyond the given, the immediate, to surpass nature. Promotion to the universal, sacrificing one’s particularity is a demand of humans’ intellectual, rational side.

This does not mean, however, that such a movement from one’s particularity to universality has to do only with the “theoretical Bildung,” or with the development of “a theoretical attitude in contrast to a practical one” (Gadamer, 1981, 13.). It is also a matter of self-restraint, freedom from the object of desire, and in the sphere of work, it connotes self-formation by giving form to objects, and self-awareness acquired in developing a skill. “The self-awareness of working consciousness,” Gadamer says, “contains all the elements that make up practical Bildung: the distancing from the immediacy of desire, of personal need and private interest and the unreasonable demand of a universal” (Gadamer, 1981, 14). It is possible to observe these elements still in one’s choice of a profession, and in giving oneself to the universality of a profession. Quoting from Hegel’s *Propädeutic*, Gadamer reminds us that, in acquiring a profession, in making it one’s own, one learns how to limit oneself or to liberate oneself from the dictates of one’s particularity. This process involves the development of theoretical interests, and leads to theoretical *Bildung* that allows one to go beyond what is known and experienced immediately, that is, without the mediation of concepts.

The theoretical *Bildung* finds its perfection in Hegel’s terminology, in the movement of “alienation and appropriation,” which includes learning foreign languages and conceptual frameworks, developing one’s capacity “to recognize oneself in the other being,” or “to feel oneself at home in the unfamiliar” (Gadamer, 1981, 14f). Gadamer acknowledges that the idea of perfect *Bildung* continues to be “a necessary ideal” for human sciences even when they are eclipsed in Hegel’s philosophy of history. If *Bildung* is not only the process of universalization, but also the outcome of this process, it may be said to constitute the element within which the human mind unfolds, the scientific consciousness is formed, and philosophy and the historical/human
sciences find the condition of their existence (Gadamer, 1981, 14ff). Gadamer claims that it is the same element that forms human memory, and offers "a trained receptivity towards the 'otherness' of the work of art or of the past," a readiness "to keep oneself open to what is other, to other, more universal points of view" (Gadamer, 1981, 14ff).

The Desired Balance

It is inevitable that this paper falls short of a mature conclusion. It poses more questions than it answers, and points to the need for further inquiry rather than presenting the findings of an already completed one into the question of the balance between practical knowledge and theoretical knowledge. If it is not mistaken to reformulate this question as one of the correct balance between making and thinking in architectural education, it may be argued that this balance can be achieved in Bildung. As a matter of fact, contemporary environments and media for architectural education often assume the difficult task of restoring Bildung, defining it in different terms. The Bildung unfolds in language, and obviously not within the confines of a particular language; but it may keep unfolding in all human languages. Therefore, multi-linguality and multi-vocality should be considered as requirements for contemporary environments and media for architectural education. Then, they not only can serve as bridges between diverse worlds of making and thinking, like Vitruvius' Ten Books on Architecture and the Encyclopédie, but they can also surpass them offering more than mere representations of the actual processes of making and thinking. They can encourage students of architecture to secure a place in both worlds, and to become deliberating professionals.

One further remark may be that, in restoring Bildung, contemporary environments and media can also prepare the ground for a more rigorous questioning of the pragmatist conception of 'theory' as mere speculation. Since it is a fact that not everything and anything that passes as 'theory' in this sense withstands critical scrutiny — such theory building belongs rather to the domain of poséosis or making, rather than thinking — it has often been used to legitimize the banishment of all theory from architectural education. Therefore, what is banished is not only "meditative thinking," as it was called by Martin Heidegger, or historical understanding that characterizes Bildung (Heidegger, 1966, 46ff.). It is also the kind of reasoning that cannot be separated from techné or art, including architecture, without leaving them 'artless' for all.

Notes


5 See Panofsky’s “Foreword to the first German Edition,” March 1924; Plato, Phaedrus 274b ff.

6 See “Introduction: The History of Art as a Humanistic Discipline” in Erwin Panofsky (1972), Meaning in the Visual Arts, Chicago: The University of Chicago Press, 3ff. This essay was first published in 1940.

7 “Originally sold by subscription,” Pannabecker says, “the Encyclopédie went through several editions amounting to around 25,000 copies by 1789 distributed around Europe and other continents."

Bibliography


Environmental Knowledge and Paradigm Shifts: Sustainability and Architectural Pedagogy in Africa and the Middle East

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Paradigm Change: Shifting Attitudes about the Environment

There has been a trend in the past decade to introduce a new paradigm of thinking about the manner in which architects, urban designers, and planners approach the design of built environments. This new paradigm places emphasis on the concept of sustainability, a concept that should become the focus and goal of architectural education worldwide. Accordingly, the question that this paper addresses is: have we, architectural educators, reached to reconfigure our curricula in a manner that is based on sustainability?

Sustainability, within the scope of this paper, is envisioned as a state in which all humans, now and in the future, can live at a decent level of well being within the limits of what nature can provide our species and withstand from it in continuity and at no undue harm to other forms of life. Thus, it is a concept that would entail an economic/environmental component on the one hand, and a socio/cultural component on the other. In this respect, an attempt is made to define some emerging trends in architectural education that may contribute to a more sustainable future.

In recent years, we have witnessed major changes and developments, and have reached the time of the loss of the stable state. Explaining this statement might go beyond the scope of this paper. However, three paradigm shifts or shifting attitudes about the environment can be identified (Salama, 1999). The following is a brief discussion of these shifts. They are presented in a sequential manner, where one paradigm shift leads to another.

Things versus Relations between Things

According to Capra et al. (1992), the reductionism of the old paradigm was reflected in the belief that the dynamics of the whole could be understood from the properties of the parts. But, in the new paradigm, the properties of the parts can be understood only from the dynamics of the whole. John Turner (1977) affirms this view when he argues that there are no parts at all, that what we call a part is a pattern in an inseparable web of relationships.

Tracing back the literature that has been developed in the sixties, one can find that this view has been introduced by Christopher Alexander (1966) who identified three basic abilities for investigating and understanding the physical environment. These are: a) the holistic behavior of the phenomenon which we are focusing on, b) the parts within the thing and the interaction among those parts which causes the holistic behavior we have defined; and c) the way in which this interaction among these parts causes the holistic behavior defined.

Corresponding to the preceding views, one can argue that different assumptions of value can
provide insights into the understanding of new paradigms. In the old paradigm, the value of housing, for example, is assumed to be in the quantifiable attributes of dwellings, sometimes including their immediate environments. In the new paradigm, housing values lie in the relationships between the process, the product, the users, and the social and environmental contexts. In the old paradigm, housing has been conceived in terms of what it is, rather than what it does for local populations and the way in which people interact with built and natural environments (Turner, 1997). In this respect, one can assert that by focusing on relationships, the new paradigm converts the insoluble problems into encouragingly practical tasks and promising ends.

Economy and Ecology: Isolation versus Integration

In the new paradigm, the concept of sustainability has emerged as a reaction to environmental depletion and degradation. According to Capra et al. (1992), the acceptance of the concept of sustainable development means the harmonization of the concepts of economy and ecology, which increasingly share the same meaning, i.e., the intelligent running of households with the available human and natural resources.

The old paradigm has been characterized by three basic assumptions: man is more valuable than nature; man has the right to subdue and conquer nature; and man has no responsibility for nature. On the other hand, in the new paradigm, the concept of sustainable development is conceived to value the environment alongside economic development, and to value social equity alongside material growth. In this respect, one can assert that sustainable development relies on a change in culture, supported by an adapted economic system and fed by appropriately used technology. The same technology that has been employed to conquer and subdue nature needs to be employed for the benefit of nature and, in turn, for the long-term benefit of the human race. It is believed that this characteristic of the new paradigm creates the need for mature and competent professionals. Thus, the new sustainable society will need to identify non-material means for non-material needs. In response, professional development will need to include interdisciplinary practice and the practice of non-technical and lifelong learning skills.

Fight versus Fit with Nature: Techno-development versus Eco-development

The difference between techno-development and eco-development is the difference between a mechanical contrivance or tool and a living organism. Technology does not make built environments; people make them. Techno-development is based on the modernist illusion of technological determinism. It is an assault on nature. Eco-development is a package of concepts, ethics, and programs. It provides designers and planners a criterion of social and ecological rationality that is different from market logic. It is rooted in the real need to fit human settlements within patterns of nature. Politically, eco-development is decentralized and democratic. Socially and culturally, it reflects the diverse reality of human affairs and the tapestry of life, which make every portion of the built environment work well. Economically, it adopts the premise that economy and ecology are both essentially to do with the flow of energy and materials through a system and that value is a social construct.

The preceding paradigm shifts mean that the way we think about our environments has changed, that interdisciplinary thinking is now taking place, that economy and ecology should be integrated, and that eco-development in the very near future will definitely replace techno-development. These shifts frame the need to investigate how these concepts are introduced to our students, our budding professionals.

The argument here is based on the belief that if real sustainable development is a target, then
architectural education could open a new avenue toward its achievement. Concomitantly, the paper reviews the literature on sustainability, identifies attitudes for understanding its underlying domains, and investigates the status of related architectural courses in a number of African and Middle Eastern architectural schools. The paper introduces a new architectural program in one of the new Egyptian private universities, namely Misr International University (MIU), a program that attempts to develop students’ attitudes in a manner more responsive to sustainable development demands.

**Sustainability and Sustainable Development**

The linguistic definition of sustainability is to endure without giving way or yielding (Webster Dictionary, 1991). When looking at recent debates on sustainability one can observe that, implicit within these debates, is a criticism of the values, attitudes, and tools by which most of the built environment has been produced over the years, which have led to social alienation and environmental depletion. Several definitions of sustainability correspond with this criticism; where some definitions focus on environmental criteria, others integrate socio-cultural aspects into environmental concerns.

On the one hand, the statements made by Lyle (1985) and Davies (1994) exemplify the definitions that focus on environmental criteria. Lyle reports that the objective of sustainability is to provide intentionally designed and managed ecosystems that represent a symbiosis of urban and natural processes. Davies places emphasis on the same criteria. He argues that the aim is to avoid the shortcomings in our culture in terms of the way we presently build and live, and re-introduce building as a process which is concerned with the impact it has on the people and the environment involved.

On the other hand, the integration of environmental and socio-cultural aspects can be envisaged within the declarations made by the international community. In the Rio declaration, sustainability is seen as staying within the capacity of the natural environment while improving the quality of life and offering our children opportunities at least as good as those available to us. The declaration of the World Congress of Architects, 1993, confirms this view when it mentions that we are socially, culturally, and economically interdependent. Sustainability in the context of this interdependence requires partnership, equity, and balance among all parties.

The preceding discussion suggests that the main idea behind sustainability is to create an effective system of resource distribution and utilization with a long-term perspective in mind. A sustainable society in this domain is one that can persist over generations, one that is far-sighted enough, flexible enough, and wise enough not to undermine either its physical or its social systems of support.

Sustainable development is defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (ECE, 1996). As this is a very general statement, it is necessary to elaborate the definition further, based on the literature that has grown over the last decade (Lyle, 1993; Stern et al., 1992; Rees, 1990). The concept of sustainable development, with emphasis on environmental sensitivity, has presented a great challenge to both developed and developing countries. It has an essentially relative and normative character, which makes it difficult to put into practice. In this kind of development, socio-economic objectives are balanced with the constraints that nature sets. Thus, it is based on the principles of self-reliance, fulfillment of basic needs, and an emphasis on the quality of life. Based on the above definition, one can conceive two objectives to be achieved by implementing the sustainable development concept. These are: a) achieving explicit ecological and socio-economic
objectives and b) imposing ecological limits on material consumption while fostering qualitative development at the community and individual levels. The implications of these objectives in ecological, social, and economic terms for design, planning, and management of human settlements are to be envisioned as appropriate technology and ecologically based designs, low energy consumption, selective and efficient use of resources, and ecological principles to guide land-use planning, participatory design and planning, waste and urban recycling.

In sum, sustainability involves two domains that should not be ignored or oversimplified: economic/environmental on one hand, and socio/cultural on the other. The question that should be raised at this point is: are architectural programs structured in a manner that is based on the above objectives of sustainability and sustainable development? The following section is devoted to this question.

**Sustainability and Architectural Pedagogy in Africa and the Middle East**

The objective of architectural education could be thought of as educating architects capable of creating meaningful environments. This is evident, since the primary concern of architects is to create three-dimensional structures of space and form to accommodate related human activities. Thus, architectural education should be regarded as the manifestation of the ability to conceptualize, coordinate, and execute the idea of building rooted in the tradition of humanism (Salama, 1995). Architectural education prepares budding professionals for professional practice, research, education, industry, and government agencies as these relate to the design of the built environment. The needs of people, the context for building, the dialectical relationship between the built environment and the natural environment, and the impact of natural forces must all be addressed in architectural education. In essence, these should be regarded as major factors influencing the creation of built environments and the development of attitudes of future architects and planning professionals (Salama, 1998).

In order to investigate the status of architectural courses that introduce the components of sustainability, eight schools/departments of architecture have been identified to examine their undergraduate programs leading to the first professional degree in architecture (Bachelor degree). There have been no specific criteria for selecting the schools. Thus, the investigation is not intended to provide a comprehensive generalization on the status of architectural education in Africa and the Middle East. However, the intention is to have a closer look at the issues addressed within the sample surveyed.

The survey of the undergraduate programs of the eight schools involves the search for subjects that go beyond the traditional courses in skill development, basic design courses, building construction courses, civil engineering courses, history and theory courses, and architectural and urban design studios. The objective is to identify courses that reflect the interest of the school in issues pertaining to the two domains underlying sustainability. Concomitantly, the methodology employs the following procedures:

- Classifying the non-traditional subjects/courses in terms of the two domains underlying sustainability: economic/environmental and socio/cultural.
- Analyzing the weight of courses underlying each domain in terms of number of courses. (The assumption is that the total number of courses underlying a domain reflects the number of contact hours or credit hours).
- Employing a content analysis procedure in order to draw generic conclusions about the status of each domain in each school and then the whole sample. This involves analysis
of course descriptions as written in the prospectuses of each school.

- Linking the results with the overall argument.

Another empirical approach has been employed through the examination of the philosophy statements written in the prospectuses of the schools surveyed. A major problem with this approach is due to the limited description of the objectives of each school and what is actually taught and the general lack of confidence in the accuracy of these statements. However, it provides insights into the understanding of the major concerns of a school, the interest of its faculty members, and the overall attitude about sustainability. The schools/departments are: Cairo University and Al Azhar University (Egypt), Addis Ababa University (Ethiopia), University of Nigeria and Ahmadu Bello University (Nigeria), University of Damascus (Syria), and Middle East Technical University and Gazi University (Turkey).

**Discussion of Major Findings**

Based on the survey of the eight African and Middle Eastern schools of architecture, there were several striking findings. These can be framed as follows:

The philosophy and objective statements outlined in the introduction of the prospectus of each school/department place emphasis on the importance of relating design artifacts to the physical environment and available human and natural resources. However, this is not reflected in most of the programs, course contents, and even electives and courses leading to minor or specialization studies.

The words sustainability, sustainable development, green design, ecological design, sustainable design practices did not appear at all in any of the course titles or course descriptions of any school.

The weight of the two domains underlying sustainability and sustainable development varies in each school. However, it is striking to notice that in Addis Ababa University and University of Damascus, the socio-cultural domain is not considered at all. It is also interesting to notice that the total number of courses that pertain to the economic/environmental domain is 36 courses, while the number of courses that pertain to socio-cultural domain is only 21 courses.

The number of courses that pertain to the economic/environmental domain is high, compared to the socio-cultural domain. However, it presents a very low percentage (less than 8%) compared to the overall program in each school. In addition, content analysis reveals that the content of these courses rarely refers to the environmental context within the region. It usually refers only to the advanced technology of the Western world.

The content analysis avows that the program of the University of Nigeria emphasizes the importance of environmental issues, and this is evident in the number of courses and their descriptions. Middle East Technical University and University of Damascus address issues related to the environment and climate and their relation to architecture. Other schools introduce the technical and technological aspects without significant reference to environmental concerns and protection of natural resources.

The content analysis reveals that the socio-cultural domain is highly considered in Ahmadu Bello University through the courses offered: indigenous architecture, man-environment relations, rural geography, and rural sociology. Also, the University of Nigeria addresses this domain through the courses offered on traditional architecture in Nigeria, and the sociology of housing. Middle East Technical University places emphasis on courses that pertain to restoration and conservation as processes of building/urban recycling and adaptive re-use of the built heritage. It should be noted
that in Cairo University and Al-Azhar University, although the number of courses underlying the socio-cultural domain is average compared to the whole sample, a considerable emphasis is placed on environment-behavior studies and the way in which people interact with the built environment.

The preceding findings correspond with the literature, where Franz (1998) argues that the understanding of sustainability is confined to its physical dimensions, exemplified by aspects such as greening, wilderness preservation, energy efficiency, and recycling. Very few professionals regard sustainability from a broader social equity perspective. In his survey, Franz confirms that many architects admit that they are poorly informed about issues that pertain to deep sustainability and environmental concerns.

The literature review (Pirage, 1994 and Hallin, 1995) and the survey of the eight African and Middle Eastern schools are corroboration that the professional community of architects and urban designers does not realize the essence of sustainable practice and development to the extent that is either technologically possible or socially warranted. In this respect, the findings assert that the academic community must become more involved in teaching and research about sustainability and sustainable development.

**Reconfiguring Architectural Education: A Case from Egypt. Misr International University Undergraduate Program of Architecture**

The Undergraduate Architectural Program of Misr International University (MIU) was developed in June/July 1996 by a committee led by the author. The structure of the program is constituted with the aim of providing students with a broad base of knowledge and understanding of inter-relationships of humans and their environments. It offers a base for developing the fundamental design methodology and technique required to respond to those needs of society that demand some form of design product. This statement is clearly reflected in many aspects of the program, since it offers courses that address current and future realities and challenges including sustainability and sustainable development.

The statements of the program’s educational philosophy, goals, and objectives mirror an interest in the economic/environmental and socio-cultural domains underlying sustainability and sustainable development:

"The program investigates social, technological, and historical paradigms relevant to the making of architecture and urbanism. Course work focuses on the synthesis of culture, history, environmental conditions, and social aspirations."

In these statements, sustainability is a major concern:

"The program offers an excellent opportunity for exploring issues of sustainability and urban renewal and rehabilitation, placing emphasis on basic human needs and assuring relevance with local, regional, and global contexts."

The design of the program is based on grouping the courses underlying nine major categories, each of which reflects a unique area of specialization required for graduation. The weight of each varies according to the number of courses and their credit or contact hours. Most of the categories include one or more courses that are devoted to the notion of sustainability with its underlying domains.

When analyzing the non-traditional subjects/courses of the MIU undergraduate program using the same methodology that has been employed in the analysis of African and Middle Eastern
schools, one finds that a considerable emphasis is placed on achieving the principles of sustainability. The economic/environmental and socio/cultural domains are balanced. The interesting feature of the program is that the content of specific courses is devoted to bridging the gap and linking the two domains (Fig. 1).

The content analysis confirms that some courses are still taught within the scope of the advanced technology of the Western culture. However, it is noteworthy to assert that there are course contents (Appropriate Building Technology/Energy Conservation and Architecture) that develop new visions and take into account the local and regional dimensions of the environment. The socio/cultural domain appears to be of interest, where there are courses that deal with issues of human, social, and cultural nature (Human Factors in Design/Socio-behavioral Studies in Architecture), delineating cultural and behavioral responses to the environment. Yet, only a small group has graduated, so the impact of the program on the attitudes and capabilities of future graduates remains to be seen.

Conclusion: Architectural Pedagogy for Sustainable Future

Essentially, this paper has argued that there should be a new manner in which we approach the design of built environments. This, in turn, necessitates revision of architectural programs, curricula, and their implementation. A literature review has been employed in order to define the attitudes for understanding sustainability and sustainable development and their underlying domains, economic/environmental and socio/cultural. A survey of undergraduate architectural
programs leading to first professional degrees in architecture in eight African and Middle Eastern schools has been conducted. Its results confirm that the concepts of sustainability and sustainable development are in their birth phase within architectural education processes. This is evident, since most of the courses in the economic/environmental domain are taught based on the principles and practices of the developed world, and rarely refer to the environmental context within the region. Architectural courses within the socio/cultural domain are not of concern in some schools, in terms of the number of courses, and their academic content.

Despite the fact that the survey exhibits several shortcomings in the sample surveyed, a number of positive attitudes have been observed, where the content analysis of courses attests that the program of the University of Nigeria emphasizes strongly the importance of environmental issues, while Middle East Technical University and the University of Damascus address issues related to the environment and climate and their relation to architecture. It also shows that the socio/cultural domain is considered important at Ahmadu Bello University and the University of Nigeria. Middle East Technical University places emphasis on courses that pertain to restoration and conservation as processes of building/urban recycling and adaptive re-use of the built heritage. In Cairo University and Al-Azhar University, special attention is given to environmental behavior studies and the way in which people interact with the built environment. Based on the survey and the literature, I would assert that the process of architectural education in the developing world has been slow to respond to the demands placed on the profession by the international community.

The analysis of the MIU undergraduate program confirms that economic/environmental and socio/cultural domains are treated equally, and are balanced within the overall program. They are integrated through a set of courses that aim at incorporating the knowledge of one domain into the other. Based on this analysis, I would argue that this program attempts to reconfigure and restructure the educational process in a manner that is based on sustainability.

Architectural education should be more responsive to sustainability and sustainable development fields. The academic community should be involved in providing opportunities for future architects and urban designers to develop more socially and culturally responsible, and environmentally responsive architecture. It is recommended that architectural educators should strive to balance the way in which students view relationships with the physical and social worlds. Architecture students should be made aware of alternative viewpoints including the view of the material world as something to be respected rather than to be conquered and controlled.

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Profession and Architectural Education
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Introduction
The last century saw the establishment of various institutions that organized building construction in Lebanon as well as the formation of academic programs in architecture. The number of architects has grown from the handful who came from abroad in the first quarter of the twentieth century. With a skill known only to few, and forming a sophisticated class of professionals they, together with structural engineers, maintained exclusive legal access to the making of buildings. Architects have been involved in all matters of physical design, developing broad planning regulations as well as micro-scale spatial regulations that covered all Lebanese territory. On the whole, Lebanese architects have been ‘successful’ in establishing for themselves a profession that has secured positions on state committees concerned with the built environment. They have also been successful in distinguishing themselves from other engineers and contractors, legitimizing a specific role for themselves in the building market. These achievements were always triggered by a concern for the betterment of the built environment, best exemplified by Assem Salam’s plea in 1966 to save Beirut from its chaotic development, caused by buildings that are not designed by architects.¹

Along with this visibility on state boards and committees, architects have consistently had a lesser voice in matters of actual building and the built environment vis-à-vis other actors such as politicians, contractors, and state bureaucrats. While architects are dismayed by their shrinking effectiveness in building, exclusive control over the building process on their part is assumed in academic institutions, an assumption that structures the development of academic courses and curricula. Architectural academic discourse is often critical of the practice of architecture from the passive observer’s position. It regards the field of practice as others encroaching on the process and rarely assumes the role of self-assessment. The unacceptable environment is thus considered the product of the degeneration of ‘others’ while architects, in their proper definition, are set apart from this ‘degenerating’ social condition. Facing a hopeless state produced by others, the architect’s discourse within academic institutions rarely attempts to present alternatives to its present social condition, but rather discards and replaces it by another discourse judged ‘better’.

In this paper I try to look back swiftly at the evolution of architecture as an educational and a professional discipline in Lebanon in order to work towards a re-assessment of the architect’s role in relationship to others in the process of making buildings. The profession thus stops being a self-reflective process between the architect and the building and starts to operate within a social setting, in a specific space-time context and with concerned actors. In the following two sections, I work on a critical analysis of the making of the institutions that came to shape architectural practice and discipline in Lebanon. This analysis intends to link the phenomenon of making buildings to a larger social context: a context where the building is considered to be the space around which communication and interaction among different social bodies is performed.
Instituting Building-Making Architecture

Let me first focus on the institutions that were created to regulate the profession and building in accordance with the ‘modern’ way of practice. I will move, in the following section, to a discussion of the academic institutions and their ideological framework, which I believe constructed a particular Lebanese architect type. Building permits, since the establishment of the building law in 1940 (article 61/LE), were mandatory and issued by the municipality. In order to better guide the growth of the built environment in Lebanon, the Directorate of Town Planning (DGU), which is directly attached to the Ministry of Public Works, was established in 1959. The DGU is responsible for preparing master plans and ensuring their application. Another institutional body, which had already been created in 1954, is the Order of Engineers and Architects, which certifies engineering and architecture graduates and ‘monitors’ their professional performance, in addition to providing retirement and health benefits for this prestigious body of professionals.

These institutional bodies institute themselves through publications, enrolment fees, and established procedures, which are embodied within a legal text: the Building [and Planning] Law of Lebanon. Judging from the current situation of practice in Lebanon, this multi-layered system of supervision, which requires additional signatures for the building permit, still did not ensure greater involvement of architects in matters of the built environment. Physical planning in Lebanon has been continuously dominated and controlled by heads of the state, seeking personal and political benefits. Furthermore, the Building Law, which dictates building envelopes, heights, and land exploitation factors, is trapped within conditions that were introduced in 1940 by the French mandate law. Any change in its clauses, especially the one that affects exploitation factors, would start a whole debate over which land (in what area) gets to have more square meters to trade with. The potential added revenue of these extra square meters has to be equally repartitioned among the different confessional communities, as they inhabit the Lebanese landscape. It is in this context that I discuss the example of the Murr law 6/80, decreed for a two-year period by the then-minister in charge, Michel Murr. The law allowed, through increasing the exploitation factor, an additional floor of an area equal to the largest horizontal projection. It is interesting to note here that the DGU High Council at the time did not approve this law, but the state chose to issue it anyway. The law thus proposed a two-fold ‘solution’ for the housing problem in Lebanon: first, the construction of the additional floor and second the hypothetic use of revenue to fund 20,000 residential units. While those residential units were never realized, the law enlarged the possible built-up area and thus changed the skyline of many Lebanese cities and villages. Since then, attempts at revising the Murr law have always been webbed within a political debate and it is still in force to date.

It is important at this point to discuss the social dynamic of architects within the context of early twentieth-century Lebanon to better assess their urge to collaborate in the making of these institutions. One could read the development of these professional institutions that legitimate the role of the architect in building matters as an extension of the academic institutions that produced those architects. Pierre Bourdieu argues, in his article “Rite of Institution,” that credentials, academic or otherwise, affect the way people perceive the accredited person and what is expected from him. Furthermore, he asserts that those credentials also change the way the accredited person perceives himself where he adopts certain obligations that conform to people’s expectations. These pioneering architects, graduates of architecture schools in the United Kingdom and France, strove to establish a framework of operation that went in line with their education, that is a framework that could make use of their potential role and recognize what their degree stands for. Needless to say, Western education in architecture is the result of a long history of development of the architect’s active role in Western societies. Lebanese Modern architects thus
had the aim to create those institutions in order to legitimate and define their role within the Lebanese society, i.e., a framework that recognized their ‘credentials.’

“The act of institution is thus an act of communication, but of a particular kind: it signifies to someone what his identity is, but in a way that both expresses it to him and imposes it on him by expressing it in front of everyone... and thus informing him in an authoritative manner of what he is and what he must be.”

Unlike in the West, the absence of a sophisticated institutional state set-up that lets others recognize the particularities of those credentials made architects battle mainly with structural engineers who were more numerous, better-established academically, and shared the same professional title: *mubandes*, or engineer. Furthermore, working within an institutional frame of reference reduces the possibility of alternative procedures and concentrates the architects’ struggle against other engineers and professionals, who are produced and recognized by similar institutions. The legitimate institutional bodies, therefore, define the boundaries within which professionals act, resist, or battle; a fact that conceals the possibility of other modes of operation, which could include other ‘non-institutionalized’ actors who are neither university-degreed nor engineers. Nevertheless, architects, in a relatively short period of time, were able to create spaces and procedures that necessitated their existence, a fact that was probably facilitated due to their familial connections to people in positions of state power.

As a result of the institutionalization of the profession, the following three conditions contribute to silencing the architect:

First, working from within state institutions and agencies, which implied legitimizing the profession by aligning it with power positions or the state, created a social mark for the profession as a whole. Architects as designers or planners are always looked upon as state agents who are used to consecrate large planning schemes to the disadvantage of other social factions. As such, the whole ‘class of professionals’ is considered to be affiliated with state institutions by outsiders to the state and its agencies. This is specifically important as architects, as a ‘class’, aspired to but never got to control the decision-making of the urban-planning boards and committees. Architects at best are looked on with suspicion both by the empowered and the powerless.

Second, achieving the centrality of decision-making concerning the whole built environment, the DGU further alienated the decision-makers from the population affected by their decisions. Such a mechanism of operation depends on developing master plans within executive meeting rooms, using various modes of representations, personal, figurative, political, or statistical, eliminating any actors other than politicians and their professional agents. It is a mechanism that serves authorities in providing them with better control and the further marginalization of social involvement in developing the built environment. The failures of these master plans are numerous. One example is the concentric zoning law of Beirut that assigned higher exploitation factors to the center, thus encouraging development in the historical center and creating less incentive for development on the empty periphery. SOLIDERE and Elissar are more recent master plans for downtown Beirut and a Beirut southern suburb respectively. While the first subdued all historical, symbolic, and social meanings to major business fantasies, resulting in a colossal project of gentrification, the latter secured a balanced share of all current political factions while displacing large communities into subdivided enclaves. All these projects follow purely the whims of political leaders of the time with virtually no mechanisms or space for others to contribute or to resist, including the community of architects themselves.
Third, the establishing of the profession along institutional processes embodied in objective structures, such as the law, has contributed to handing over control of building matters to bureaucrats, state agents, and politicians. The text, figures, and numbers that constitute building law empower bureaucrats with objective criteria according to which they can assess the legality and the value of an architectural project. Through institutional processes, the space of the building escapes any discussion, as the objective of these processes is to confirm meeting the legal requirements regardless of their constituency. According to the preceding discussion on the Murr law, legal architectural requirements are entangled with larger politics that resist change and thus remain outdated and at some instances pointless. 12 Any resistance to this state of affairs cannot come from within the state institutions themselves but from the outside, in order to alter the mechanisms of these institutions, that is, resisting the objective structures (laws and procedures) that sustain such a social dynamic.

**Building Exclusiveness-Making Architects**

In this section I want to discuss the goals that architects attribute to their profession and the role they draw for themselves to play within those goals. These goals, in many ways, guided the development of the curricula of the academic professional programs that were instituted in the 1950s and 1960s. The pioneers of modernism in Lebanon, mostly graduates of Europe such as Antoine Tabet and Fareed Trad, were keen on introducing modernity, its aesthetics, as well as its 'way of life' into Lebanon. Buildings designed by these architects were trying to catch up with the rest of the developed world, however, altering their design methods to accommodate local conditions, such as limited availability of materials, technical know-how, etc. While the concerns of these architects were behind the struggle to establish the Order of Engineers and Architects, it is the second generation that mostly forged what the personality of the Lebanese architect would be. Architects such as Henry Ede, Raymond Ghosn, and Assem Salam belong to this generation and their concern is probably best expressed in Salam's lecture on May 20, 1957 at al-Nadwa al-Lebanannah, in which he says:

"...the architect has missionary responsibilities to create a correct Lebanese architectural heritage, he has to preserve what we inherited and to direct in order to create a better understanding of architectural values, and differentiate between what is authentic and what is ugly imitation." 13

At that point it was not only architecture as a profession that needed to be established, but it was also a threatened heritage that needed to be saved and incorporated into the architect's agenda. This exercise, made once more into a sublime goal, had no social foundation, a goal that was purely the concern of the intellectual architect, who was trained to visually assess the built form. Creating a new Lebanese architecture stemming from earlier Lebanese architectural heritage is definitely an obscure goal since such a category is historically and stylistically unfounded. Such a move meant the start of an eclectic project in which Lebanese architecture would be reduced to certain buildings in Lebanon. This is definitely an ideological/political proposal, which aims at creating a visible identity for a new nation, looking for any form of unitary representation, by sons and nephews of the creators of the state. 14 It is also ideological as it separates the elite architects from their social context by adopting a paternalistic relationship to the rest of society. The project is created among intellectual architects and voiced as a national concern, a process that echoes the master plan schemes of operation which have been discussed earlier. 15 I believe that this dissociation between the architect's goals and the concerns of all other social groups has eventually confined architects socially and professionally.
On the professional level, if the architects’ role is already confined within their society, if their profession does not have a strong base locally, they became also excluded from European architectural discourse as their agenda is exclusive of mainstream Western architectural concerns. This professional situation, that adopted a separatist modern-heritage agenda, has had major negative effects on the development of the profession, as it would be deterred from being included in modern architectural discourse. However, the newly instated procedures and laws that dictate modernist modes of operation have dissociated the body of the modern Lebanese building (that has to follow modern law) from its looks (that has to follow the identity discourse). However, the discourse on heritage in architectural practice is superficial and mainly happening around building façades.¹⁶

On the social level, linking the production of any building in Lebanon to a national cause accessible only to few architects seems not only utopian but also insensitive to all other social groups. On the one hand, architects are expecting all building activity, irrespective of its class or system of production, to pursue this cultural/intellectual agenda, a condition that is not paralleled anywhere in the developed world in which stylistic diversity differs according to the different conditions of production and the different players in the project. On the other hand, delivering all building activity into the hands of the architect can also be seen from the viewpoint of engineers and contractors to be a big monopoly over large amount of business that happens in the built environment.

If we make some hypothetical calculations to see what it means if all building activity had to be done by architects, we would see that in 1962 each individual architect out of the 123 registered will have a volume of work of around 21000m². Such an average amounts to more than double the average of 1972, a year of relative financial prosperity demarcated with a building boom in Lebanon.¹⁷ From outside the architects’ circle, the request to subject all building activity to the architect’s judgment, voiced by Assem Salam in his 1957 lecture, would have seemed absurd, since it not only marginalizes all other players in building projects but also reflects a desire to confiscate and monopolize a big investment market. Eventually this paternalistic relationship has resulted in alienating the architect, while the building market continued along its previous way. When the architect’s signature on building permit documents became obligatory, in most of the mass-produced building market, the price of the signature was added to the construction cost! This lack of regard from mid-century architects to their social context, I believe, has largely contributed to their current seclusion and ineffectiveness in matters of the built environment. It is because of the fact that within the context of Salam’s talk, new programs of architecture were created which established the typology of the detached architect who produces models of practice that are dissociated from the building market. It is interesting to note here that this track of development of the modern architect in Lebanon has resulted in architects nowadays imitating the building work of contractors and construction workers rather than elevating the market standards to meet the academic ones, but this point remains to be elaborated on in another context.

Conclusion

The preceding analysis suggests that architects, in establishing their profession, aligned themselves strictly with representations of political power such as the law, the institutional order and state agencies, and thus dissociated themselves from other social structures. They overlooked the fact that their allied control agencies generate structures that are independent of them and the building (the target of their profession), thus subduing themselves to the mechanisms they established. Any re-evaluation or assessment of the condition has to look at the larger framework
and to understand building as a social phenomenon that has a past from which it evolves, a present that interacts with its production (involving mechanisms, people, economies, representations), and a future as an inhabited object but also as an ‘object’ for possible repetition and regeneration. Focusing on the visual, on the understanding of architectural form and its representations, while paying lip service to ‘others’ in the process, has confined architectural discourse within the community of its authors. By reducing the understanding of society to that of built form, the discipline of architecture dissociated itself from social practice. The visual focus is definitely the designer’s expertise but this expertise is not sufficient to communicate with ‘others’. This paternalistic relationship to others in matters of building has done nothing but marginalize architects as a group of professionals. In order for architectural education to relocate the process of making buildings into a social discourse, academic bodies need to approach social conditions without the possibility of absence or lack, but as a daily practice worth learning from, investigating, and developing.

Notes:

2. The Directorate of Town Planning of 1959 is the earlier form of the current General Directorate of Town Planning (DGU), which was established in 1965.
3. “To institute . . . is to consecrate, that is, to sanction and sanctify a particular state of things, an established order, in exactly the same way that a constitution does in the legal and political sense of the term.” In Bourdieu, P., Language and Symbolic Form, Cambridge MA: Harvard University Press, 1991, 119.
4. “the process of investiture . . . exercises a symbolic efficacy that is quite real in that it really transforms the person consecrated: first, because it transforms the representations others have of him and above all the behaviour they adopt towards him . . . and second, because it simultaneously transforms the representation that the invested person has of himself, and the behaviour he falls obliged to adopt in order to conform to that representation.” Ibid., 119.
5. Ibid., 121.
6. If engineering has already been known as an academic field since 1913 in Lebanon (at École Supérieure Libanaise d'Ingénieurs de Beyrouth-ESIB and American University of Beirut- AUB), architecture is only to differentiate itself in the fifties with the establishment of separate architecture degrees at AUB and Académie Libanaise des Beaux-Arts-ALBA. See Beyhum, N. and Tabet, J., “Le rôle social des ingénieure au Liban, idéologies de formation et stratégies sociales” in Bâtisseurs et Bureaucrates: Ingénieurs et Société au Maghreb et au Moyen-Orient, E. Longuensse, Ed., Lyon: Maison de l’Orient Méditerranéen, 1990.
7. to speak of rite of institution is to suggest that all rites tend to consecrate or legitimate an arbitrary boundary, by fostering a misrecognition of the arbitrary nature of the limit and encouraging a recognition of it as legitimate…” Ibid. Bourdieu p118
8. Pierre Khoury, Assem Salam, and Henri Edde are all closely related to State figures active during independence period in Lebanon.
9. Salam argues, in 1957, that the post-WW2 Building Renaissance . . . was missing the “broad thinking that include a master plan that can preserve for the capital Beirut its beauty and its natural situation; that can situate its growth in an accurate professional direction that the coming generations can follow.” He later calls for a central planning authority affiliated with the ministry. In Salam, A., al-l'mar wa al-Maslaha al-'Amma: fi l-'Amara wa l-Madina, Beirut: Dar al Jisid, 1995, 16.
10. I owe this realization to Assem Salam who mentioned it to Rania Ghosn, my research assistant, in a talk in August 2001.
11. SOLIDERE is the real estate company that was created to plan and execute the reconstruction of
downtown Beirut.


As I mentioned earlier, reference here is to the familial bonds between state officials and the modern group of architects in Lebanon.

It is interesting to note that calling for a local style already shows inability to resist Western thinking indoctrinated through education where buildings are reduced to their stylistic categorization mainly documented and taught in architecture history courses. This could further be seen in Salam’s discussion of traditional Lebanese architecture in the same lecture where he does not consider it stylistically "strong" enough and not as “palatial as other Arab and European Palatial Architecture”… etc. Salam, A. (1995), p. 27-28.


Original figures to make these calculations are taken from the Order of Engineers and architects Council Report 1995-1996, Beirut: Order of Engineers and Architects, 18-19.
"I Want a Colonial House"
The Architect versus The Other

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"I want a colonial house," said my client confidently as he drank my coffee and smiled. "I hate clients..." I thought, as I watched him and smiled back. "But not as much as I hate contractors", I reminded myself. "As for those engineers... If only I had paid better attention to my technical courses maybe I could do without them".

We are trained and we train architects as individualistic creative people to develop their senses and design ability to create a better world. However, as any practicing architect would argue, the act of architecture in the real world is all about teamwork, starting with a client, and working with other professionals, including officials, colleagues, and builders. It is this dichotomy between the ethos of architectural education and the reality of an architect in practice that is one of the main issues of architectural education. The implication of this educational ethos is the attitude that the architect develops towards others which creates barriers, and the waste of opportunities of enrichment. In real life, an architect never works alone. The size and nature of a project determines the size of the team and the members of it.¹

Teamwork is about sharing control and negotiations. Negotiations are about mutual respect and understanding, acceptance of limitation, flexibility, feasibility, as well as communication. Communication does not mean just clear drawings that make sense, although those too are a rare commodity in departments of architecture, but listening to and understanding the other.

In Lebanon, there are nine departments of architecture that teach a course that leads to a professional degree. They follow either a French or an American model. In the year 2000, the architects registered in the Order of Architects and Engineers numbered approximately 5000 and was increasing at a rate of about 200 architects per year.² That does not include architects who graduate abroad. For a country of three million this yields one of the highest ratios of architects per population in the world. Yet the development taking place since the end of the civil war has produced a very poor environment both in cities and in rural areas. Today not more than 20% of architects are actually working as architects ³. Engineers submit about 60% to 65% of the building permits. Thus, the disassociation of the architect from his profession, society, and environment is bewildering.

Although the different universities have different approaches to architectural education, teaching methodology in all the schools is through studio and lecture courses. In studio, architectural projects increase in size and complexity as the student progresses through the years. In the French system, students are given a project a month with a quick sketch design every six weeks to develop "quick thinking". In the American system, upper-year studios tend to be thematic, and the number of projects per year varies between two and four to develop "some" thinking. However, in both systems the problem is getting communication in the studio environment to work. Students, lucky enough to be given a place to work in the studio, complain that the studio is too noisy and messy and therefore work isolated at home. ⁴ In the American system, the
students take some electives outside the department, whereas in the French system they follow a set program that isolates them further in their own world.

In the world of practice, the key is getting projects. Clients tend to be either individuals, developers or institutions in the private sector, or the various bodies of the public sector. In Lebanon, back in the nineteen fifties and sixties, government projects were awarded through architectural competitions, giving chances to many young architects and opening the floor for debate. After the war in Lebanon, however, all major public works were controlled and distributed by the Council of Development and Reconstruction. This body was set up by the government to cut through bureaucracy to speed the reconstruction process. This authority distributed work to "classified" offices and the classification depended on the number and level of the personnel of the office and the range of experience. Subsequent to fee bids being called for, all the main projects in the country, including the airport and the city sports stadium, were all awarded to offices in this manner. Moreover, after the end of the war, 80% of projects were for the private sector. Getting work therefore is not about what you know but whom you know. What this leads to is an increasing demand for "originality" by both the client as well as the architect, for whom the buildings become advertising boards to attract other clients. Furthermore, the reliance on the private sector also means that there is no architectural discourse in our society where issues are debated and discussed to determine what we, as a society, want for our built environment. In commercial developments in Lebanon, quick profit is the key.

Once a client approaches an architect, the first phase begins by the architect understanding the givens of the situation and formulating the project. Generally, most clients will not have a very clear idea of what is involved. Apart from the client's brief, the site, with its allowable development and regulations, the legal restrictions, and the financial implications, etc., all affect the architect's task to help the client formulate a clear idea of the project and advise him/her. Even with simple projects like a house, the client will discuss the number of bedrooms required but will not always consider how the house will be used in the future, in different seasons, by adults and children and so on. The client will normally have some sort of idea about the 'style' of the building. A careful examination of what is meant by terms like 'Colonial, Islamic Lebanese, and Modern' reveals the huge gap between an architect's understanding and that of the client. Even if the client brings in magazines and points to pictures, discussions of the details of the pictures is vital to reveal what is the essence of what the client wants. Here though, architects often resist asking questions about what the client wants, believing that they know better. However, if the client is not heard and is not happy with what he gets... he just simply leaves.

FEAR IS THAT LITTLE DARKROOM WHERE NEGATIVES ARE DEVELOPED (Michael Pritchard)

"What I fear most is that I may be forced to do something I don't like."6

Negotiating with clients is an art in itself and teaching environments make serious errors in this regard. In most teaching settings, it is the teacher who tends to play the role of the client. However, whereas the teacher knows more about architecture than the student, in real life the situation is reversed, and the client, in general, needs to be informed. This requires time and patience on the part of the architect. In university, the student is the client in that he/she is paying for the education. In real life, the client is paying the architect. Whereas the teacher's main concern is with the architectural and spatial qualities of design, the client is concerned with cost, image, time and finance, maintenance and, if the architect is lucky, the architectural quality of the design. Whereas the teacher can see the potential of the most minimalist of drawings, clients see
lines on paper. Added to which, most clients will not admit that they do not understand. They will just look dazed and nod silently. However, should they see something they don’t like, even if it is already “cast in stone”, they will pull it down and ask for it to be dealt with on site.

Being open is vital and yet the formal mode of communication in schools of architecture is called a ‘jury’. I never heard a word that was said to me at my juries. I was too busy trying to make an impression and defend myself. I actually learnt from listening to other students’ juries and even now as I try to explain my work to clients, I take their comments very personally. 7

THE HAND IS THE CUTTING EDGE OF THE MIND (Jacob Bronowski)

At the avant-project stage, the architect formulates his/her ideas in an architectural proposal. Drawings start being the main communication tool of the architect to all concerned in the realization of the project. Clients understand drawings least. They can see elevations and perspectives while floor plans for them are circulation diagrams. They do not understand conceptual drawings: “Clients want drawings with cars and trees.” 8

The danger of the ever-increasing reliance on CAD in the schools of architecture is the reduction of the student’s ability to sketch. In any meetings with clients and others, if you cannot explain your self on the spot by drawing, you will not be able to convince the client and may lose control of the project. At the end of the day, with all the impressive abilities of computer technology, there is no substitute for the sketch drawing as a tool in the dialogue between the architect and the other. 9 Depending on the complexity of the project, and the attitude of the architect, the other professionals get involved at this stage of avant-project or, if not, then in the following design development stage.

ANY ACTIVITY BECOMES CREATIVE WHEN THE DOER CARES ABOUT DOING IT RIGHT OR BETTER (John Updike)

In today’s world, with the exciting possibilities of engineering, manufacturing, computers, and the demands for energy efficiency, more and more complex skills are required, skills that our young architects cannot master. Hence we need to teach them another skill, the skill of teamwork. It is important that we learn to ask questions, become less defensive about our work, and have engineers working with us from the early stages to capitalize on the great potential of the new technologies. Good teamwork requires knowledge and respect of the other.

Other professionals such as engineers and landscape architects come into the educational process of studio in the upper years. Moreover, they tend to come in to the design process at the middle stage when they are then asked to “solve” the architect’s technical problem. The engineering faculty tends to tell students of architecture that they can build anything, because they depend on architects for projects and want to make sure they do not upset their ‘future’ clients. Somehow, our students start thinking of themselves as ‘gods’ and the engineers as just technicians. 10 The good engineer, therefore, is the technician who does his work with the least disruption to the architect’s project.

On the other hand, in Lebanon, 60% to 65% of the building permits in the country are signed by engineers. This means that engineers compete with the architects professionally for two reasons: a) because they have no appreciation of the value of the input of the architect and b) because the law allows them. Only for projects over 500 square meters in area are the signatures of two consultants, an architect and an engineer, required.

After the avant-project, we get to the planning permission stage. Here documents are submitted
for approval by the authorities. Having spent a total five years including summers in university, architects are very expensive professionals for our society and yet isolated in their role as ‘Architects’, allowing their environments to be ruined by laws, regulations, and the overall system. Planning laws are accepted without debate although it is a fact that the law is what is producing the poor quality of our environment: *I feel very guilty when I argue with a student about the finer points of design and I look and see what is being built.* Students graduate and all they are asked to do is design the maximum-allowed development area on the plot of land designated. Today, clients, aware that the government reconciles building violations through the payment of a fine, are asking for illegal extra areas to be designed in from the start. Unequipped with any negotiating tools, our young artists feel overwhelmed with the reality of the market, lose confidence, and dismiss their university education as too idealistic.¹¹

The following stage after planning is the preparation of construction drawings. Construction in Lebanon in general is taught in lectures where the principles are explained and then through having students produce construction drawings for some of their projects. In most of the schools of architecture in Lebanon, the majority of the faculty are practitioners. This is simply because no one can afford to live on a teacher’s wage alone. So what does the practitioner contribute to the architect’s education? I asked one of the students. The reply was: “Practicing architects helped us understand the notion of layering in design and the use of construction details as a design tool.”¹²

Construction drawings however, tend to remain a mystery that scares most students as their use is not clear. During my own education, we were asked to design a brick sculpture and then do the working drawings for it. Once submitted, each student was then given the drawings of another student and asked to build that sculpture. Being on the ‘other side’ of working drawings was a very informative experience as one struggled to make sense of his/her colleagues’ documents that managed to avoid drawing all the awkward vital junctions.

In fact, these documents are simply tools for getting one’s intentions built. They are as much a design document as any sketch or perspective. I will never forget the sheer panic I felt the first time I saw a construction worker referring to one of my drawings during the building process. “My God, he is taking my drawing seriously and building from it,” I whispered to my boss. “So?...you should panic when you see him building without it,” was his answer.

The important thing in education is to remove fear through knowledge of the subject matter and acceptance of our limitations. No matter how long you practice, you will never know as much about construction as the builder himself. That is what he does all his life. As an architect, you need to know what you want to achieve, consider it logically and communicate it well, and then listen. After all it is a partnership between the architect and the builder with one common goal, the quality of the project that will produce the best work.

*LOTS OF FOLK CONFUSE BAD MANAGEMENT WITH DESTINY (Kim Hubbard)*

“And what do you want to do when you graduate?” asked the developer of our students. Nine out of ten students said they wanted to open their own practice and design small to medium projects. Once a student graduates, it is enough that he/she takes their diploma to the Ministry of Works with the required official documents and then registers with the Order of Architects and Engineers for them to open an office and start working. In the early nineteen seventies, there was an attempt made by the Order to introduce a mandatory training period, but it failed. In the nineteen nineties, another attempt was made and this time it was stopped directly by the President of the House of Parliament, who accused the instigator of being elitist and working to suppress the emerging
class. What this means is that, because it is so easy to open one's own office and since every family has an architect to whom it can give a project, young graduates miss out on the rigors of professional training received working in firms in Europe or in the United States.

Good management is essential for the survival of any office. In the office, the architect once again finds him/herself part of a team of designers. However, during their five-year study period at the American University of Beirut, for example, students rarely find themselves working on one design team. Design is regarded as personal property. In most practices, we find that being promoted to managerial positions, the reward of good designers, means losing contact with design work. If the notion of teamwork is nurtured in an office, and all the members of the team are involved in the various stages of work, then, while it may take longer to communicate, the creativity of all individuals is tapped by sharing control of the project and investing in what is being done.

**OPPORTUNITY IS MISSED BY MOST PEOPLE BECAUSE IT IS DRESSED IN OVERALLS AND LOOKS LIKE WORK (Thomas Edison)**

But what do our young graduates end up doing? Curious, I checked the whereabouts of the class that graduated from AUB in 1997. I found that 7 were working locally in architecture, 6 changed their careers, and 5 were abroad either studying in the West or working in other countries in the region. In the age of globalization, architects are finding themselves working further and further away from their homes and familiar context. To quote Angus Gavin, planning advisor to the chairman of Solidere: “We believe that you cannot renew the heart of a capital city without applying world class international design talents.” And here once more our ‘Architect’ descends amongst us with his/her sword held high to defend his/her masterwork. Hence, to focus architects’ education on the local situation is limiting, but emphasizing the global could also detach them from their surroundings and society. Therefore, a re-examination of what is meant by context is crucial. Context as issues rather than just formal traditions will help young architects deal with new surroundings. However, to understand a project with all the complex issues of its context, be they environmental, social, economic, etc., requires time and effort to become informed and to work closely with local partners and involve them in the project from its early phases.

A very important aspect of globalization should be in the openness of the universities to expose students to the rest of the world. A student must see and experience as much as possible and therefore believe that change and improvement can happen. We need to give them the capacity to dream and develop a vision of architecture as something not about personal preferences but about the issues that we are dealing with in our societies. These issues can then become the framework and the boundaries of negotiations. Actually, I am only advocating skills in negotiations and the acknowledgment of the other to ensure that our architect is able to achieve his vision in the real world. It is not obedient architects we need, but architects who are realistically well informed and who have the confidence to share and the skill to open up and engage in dialogue, breaking out of isolation to engage with the larger team we all exist in, the team of our societies.

**NOTES**

Interview with Mr. Andre Bekhazi, President of the Association of Architectural Consultants at the Order of Architects and Engineers, Lebanon, Feb.2001

Interview with Mr. Pierre Neema, Member of the Council of the Order of Architects and Engineer, Lebanon and Dean of the Académie Libanaise des Beaux Arts, Lebanon, Feb.2001

Of the nine departments of architecture, five are in private universities that provide the student with a working space and four are part of the national Lebanese university where space and facilities are scarce and students come in only to have their projects "corrected."

Interview with Mr. Assem Salam, President of the Order of Architects and Engineers 1996-1999, Feb.2001

Interview with Tarek Sinnou, American University of Beirut, Class of 2001, March 2001

Interview with Ms. Zeina Bdeir American University of Beirut, Class of 2000, March 2001

Interview with Ms. Zeina Bdeir American University of Beirut, Class of 2000, March 2001


Interview with Mr. Andre Bekhazi: Prof. At the Académie Libanaise des Beaux Arts. Feb.2001

Interview with Mr. Andre Bekhazi: Prof. At the Académie Libanaise des Beaux Arts. Feb.2001

Interview with Tarek Sinnou. AUB Class of 2001, Feb. 2001

Interview with Mr. Assem Salam. President of the Order of Architects and Engineers (1996-1999), March 2001
Reviving the Role of the Master Builder, or *Moalem*, in Architectural Education.

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**Architectural Education as a Pragmatic and Intellectual Discourse**

"Why have practical men not acquired credit? For reason that architecture is born of discourse. Why not the men of letters? For the reason that architecture is born of construction. To be an architect one must seek discourse and construction together." Vitruvius. (Cf. Pearce & Toy, 1995).

Reflecting on Vitruvius' words, this paper introduces architecture as an intellectual and pragmatic discourse responding to the question: How are buildings conceived and produced? The production of the built environment remains the product of two basic processes. First is a design process that deals with the intangibles of rationale, creativity, revelation, and other conceptual tools. However, it requires pragmatism and mastery of skills such as the handling of the pencil, ruler, the compass, computers, and other physical tools. Second is the building process, which, on the other hand, is concerned with the technicalities of things done through the act of building. Yet, it also involves intellectual issues such as organizational and operational management, and checks and controls.

Both processes utilize varying degrees of intellect and practice, and their outcomes vary accordingly. One can therefore assume that different buildings reflect varying levels of intellect and complexity of building systems, depending on the synthesis of design and building processes that shape them. While representing the synthesis of those two processes as being responsible for the production of the built environment through a model of actors - 'the building world, actors, and actions' - it would be absurd to disregard the socio-economic, political, and environmental context within which they are shaped, produced and managed, and conclude that intellect or practice alone could shape our building world today. These two processes are inter-linked, but are constrained by other prevailing conditions in society (such as culture, levels of industrialization, the economics of demand, etc.) and their respective changes that influence the production of our built environments.

**Practice and Intellect: Historical Evolution**

The role of practice is a well-established tradition in architectural education. Central to this tradition is the relationship of master builder, or *moalem*, and apprentice. Historically and in the pre-modern world, the diffusion of knowledge and learning within the profession was attributed to the established role of the *moalem* in a well-integrated building guild system, responsible for the production of most of the built environment.

Ancient civilizations developed closed cultures and therefore had a particular manner of thinking about things and going about doing them. One can distinguish Ancient Egyptian civilization from others, such as those of Greece or China. In Ancient Egypt, temples were the depositories of knowledge and science, and priests were the guardians of their secrets. The first university,
Oorn, near Heliopolis, whose graduates included the great architects, Imhotep and HM—Ayoub, respectively the builders of the pyramids of Zoser and that of Giza, represented possibly the very earliest rupture in history between intellect and practice. However, for the majority of building, master builders lived on site, conducting their business in a manner in which the building and learning processes were integrated. Another manifestation is that ancient closed cultures produced simple, primitive vernacular built environments that have continued to exist within a few isolated societies in today’s world. Here again the processes of learning and building are passed on as inherited traditions from one generation to the next.

The introduction of building activity in religious societies provided the framework for the medieval guild system to emerge, especially with the growth of mercantile towns and the development of their civil societies. It was the master builder who worked within the framework of respected codes and inherited traditions regulated by the Sharia courts and its learned Olama. The processes of learning and building were also integrated and strongly implanted in the fabric of society. There are even studies referring to the beginnings of the guild system as strong family businesses, with strong family ties developing in the same professions (Haridi, 1988).

Guilds were also grouped around certain quarters or lanes, or barat. Such concentrations are not uncommon even now, where get-togethers in the café, or abwa, allow for price and wage discussions, work and business arrangements. Socially, the medieval building guilds were linked to religious Sufi practices and headed by Mimar Pacha. They contributed to public festivals such as the Journey of the Holy Carpet, El Mahmal, and the Sacrifice of the Nile, Wafaa el-Nil. There were even celebrations within the guilds, such as accepting new candidates or promoting members in the hierarchy of the system.

Building design and actual building practice have evolved around a few, mostly repetitive, models, with little room for variation or innovation. The master builder had to deal with site conditions and adjustments according to clients’ needs. He also took upon himself other roles, such as inspecting and controlling the supply of material, organizing the actual building process, and fulfilling the managerial tasks of intervening between the different professions, controlling quality and performance, while dealing with the tax collectors, mohtaseb, and sometimes reporting to the courts’ experts, el khobarbar.

The system was technically divided where each professional group such as bricklayers, tilers, plumbers, etc., had its own sheikh, with Mimar Pacha heading all. No one outside the system was allowed to practice. Its members acquired their knowledge through a long period of experience and apprenticeship; their degrees of specialization were indicated by their position in the hierarchy of the system. Under the guild system the process of learning and building remained integrated, with the master builder/apprentice relationship at the core of the education process.

**In Pursuit of Modernization: Continuity or Break?**

Societies of the developing world, with Egypt no exception, hoping to enjoy the benefit of modernity, imitated and tried to adapt models developed within the industrialized and capitalist modes of production of the developed world. While the building industry remained to a great extent backward, the resultant dichotomy in the built environments was the product of basically two distinctive processes. On the one hand, there was a traditional process identifiable with the functions of the still existing guild system, which later functioned as a weak contracting system, responsible for the development in the greater part of the built environment of the so-called “indigenous quarters”. On the other hand, there also existed a parallel modern production system integral to Western penetration, with a pro-European culture and the economics of a free capitalist
mode of production, and responsible for the development of the major infrastructure projects and the newly introduced so-called “European quarters”. In both, the processes of learning and practice were quite integrated, at least in so far as the guild system was concerned. This state of affairs persisted even in the modern building system, since most of the professionals were trained in the field and had not received any formal education.

The modern history of Egypt begins with Mohamed Ali (1805-1849) who, along with his successors, started the process of modernizing Egypt according to European models. A new order, Nizam el Guedid, was launched. Modernization and reform touched all aspects of Egyptian society and cities, especially Cairo and Alexandria, which began a process of perpetual transformation and growth.

Intensive construction, especially on grand projects, such as the building of the Mahmoudieh Canal, the port and arsenal and the vice-regal palaces, necessitated the introduction of a new system of military organization. Using conscription and forced labor with the technical management of foreign experts, state enterprises operated adjacent to the existing guilds. This came after the failure of the guild system to respond to the demands created by new Viceroy’s grand schemes. Foreign consultants, suppliers, and contractors were invited to participate in developing such projects.

Foreign experts and administrators occupied key posts in the new Egyptian administration. The Ministry of Public Works was presided over by the French engineer, Linant de Bellefonds. In Alexandria, the Ornato, the first planning commission in Egypt (1834), was confined to the technical dictates of the Italian architect Francesco Mancini. It introduced new reforms, tanzim, and was modeled on the similar Commissione d’Ornato already functioning in Italian cities such as Milan and Venice.

Mohamed Ali’s educational reforms involved such measures as the establishment of new schools with new curricula and foreign instructors. The first school of engineering, el mobandes khana, in Beau-Lac in Cairo, was modeled on the system of the Ecole Centrale des Arts et Manufactures de Paris. The Egyptian government went as far as setting up a school in Paris, organized by the French Ministry of War. It was extended to provide a scientific education, and introduce order, discipline, and obedience in an attempt to construct a modern disciplinary power in Egypt.

Missions were sent to Europe, which included members of the vice-royal family and prominent cadets who were influenced by their education in Europe and were acting as leading reformers. Ali Mobarak, a leading reformer among many others educated in Paris and influenced by their observations there, was critical of the state of planning and architecture in Egypt, and did not hide his desire to copy French models, adopting European ideas. Following his return from Paris (1867-68), where he visited the universal exposition, Mobarak was appointed Minister of Public Works, and greatly encouraged Khedive Ismail’s Hausmannisation plans for Cairo.

“Nous sommes concernés, neither with the morals nor the habits of the Parisians be they good or bad. However what we have seen of their circumstances, nature, organization, buildings and so on, are things of value which we have recorded and preserved and brought back to our people emphasizing their benefits to convince them with their worth” - Ali Mobarak (Emmaara, 1984)

“Mon pays n’est plus en Afrique. Nous faisons une partie de l’Europe” — Khedive Ismail. (De Guerville, 1905)

Mobarak took a step further, introducing a reform program by imposing tanzim in his ministerial decree of 1868 (Dossier no. 17, Quanoun Taifat el Mimar). His reforms dealt with issues such as
construction permits, violations in building activity, poor building quality, aesthetics, registration of property, ineffective jurisdiction, and malfunctions in the administration. Mobarak preferred taxation at the source, delegating the responsibility of monitoring control and the setting of legislation and standards to the new civil administration. Separating the building system from its direct legal and religious affiliations was no doubt a turning point.

Besides reforming the Ministry of Public Works, his influence extended to the new departments of surveying, drafting and design, as well as to the education at the mohandes khanne. His two books were part of the curriculum: Tarkeeb El Handasa in 1872 and Tazkaret El Mohandesen wi Tabseer El Raghebeen in 1873, and they included guide plans, modeled on Western architectural concepts.

In spite of the control measures imposed on the guilds, beginning with Mobarak's law of 1868 and its successive amendments in 1875, 1884, 1888 until they were abolished in 1889 (Alleaume, 1988), the state remained heavily dependent on them in its projects, to identify prices of materials and work. Changes toward the liberalization of the profession and building practice occurred following the British occupation of 1882. A ministerial commission of inquiry, formed in 1888 to investigate the state of building corporations and related industries, allowed for the liberty of employment outside the guild system. It also denied the issue of certificates of qualifications to the mohandrsh of the guilds.

Although these measures were serious successive blows undermining the operation of the guilds, it is still disputed among contemporary historians whether the guild system was abolished by law, as a direct consequence of the British occupation, as a consequence of the change of the judicial reforms (1883), and the abolition of the Sharia courts or as Baer (1969) sees it: "as a result of the gradual transfer of state functions and reform in the state and its civil administration." Change took place by a process of reorganization and reform towards modernization. It still remained a fact that the guilds continued to function well after World War I, transformed into a petty contracting system responsible for the production of the most of the built environment.

The introduction of a modern education system in Egypt followed and fostered the desired trends towards Occidentalization. The French engineer, Charles Lambert, founded the first polytechnic school in Beau-Lac in 1834. The aim was to prepare a corps of engineers to serve military installations and perform duties for public works such as digging of irrigation canals and surveying duties for city planning commissions.

The Cairo school was reorganized by a commission of Swiss experts in 1925, headed by Potterat, who had resigned from his post as dean of the Polytechnic of Zurich and assumed responsibility for heading the school, working with his compatriots Schweizer, Miche, and Geering. Charles Andraea succeeded him and remained in office until replaced by an Egyptian dean in 1937. Not surprisingly, the school was strongly oriented toward a completely Western curriculum. This was also true of the Ecole des Beaux-Arts, founded by Prince Youssef Kamal in 1908 and presided over by the French sculptor Guillaume La Plagne. Its system and curriculum were inspired by the French system and architectural studies were under the responsibility of Henri Pieron.

Europeans controlled the building industry together with the profession that was under strong Italian influence. Still, practice without formal education was not uncommon. Some of the leading practitioners in Alexandria, such as Antoine Lasciac (1881-1927) and Giacomo Alexandro Loria (1890-1949), or the more modernist Henri Bernau (1920s-1960s), did not have academic degrees but were trained as architect-engineers.

The participation of Egyptian professionals is noted after the First World War, yet in 1948, the
Annuaire du Batiment listed only 49 Egyptian architects among 198 practicing in Alexandria. The same source lists 193 contractors practicing, of whom only 73 were accounted as Egyptians. On returning from their missions, young Westernized Egyptian architects realized that the chances of employment were not great in free practice, an area already dominated by expatriate professionals. Instead, they found places in the understaffed technical offices of government institutions, or in the nascent universities of Cairo’s Fouad El Awal in 1908/1925-35, and later Alexandria’s Farouk University in 1941. These two universities became the leading institutions and all other educational systems of architecture followed their curricula and teaching methods.

**Modernity: The Incomplete Mandate**

Unlike the pre-revolutionary era (before 1952), when cultural values were symbolic of the prevailing capitalist, elitist, and pluralist values of its society, the post-revolutionary era was representative of the egalitarian collectivism of its socialist society, whose cultural identity seems to have been overshadowed by other prevailing socio-economic and political determinants.

**What Went Wrong with Practice?**

The Modern international experience remained influential from the Officer’s Coup of 1952 until late fifties, when the Egyptian cosmopolitan experience came to its end, after which the radical socio-economic and political changes in Egypt left their effect on the urban environment. The nationalization of land and building companies was part of the capital restructuring process. Large-scale and foreign capital was transferred into national capital, meaning a state controlled public sector. Only middle capital was allowed to be invested in development. In the absence of effective planning, the state control of organizing building activities has had the gravest consequences on the process of urbanization and the development of Egyptian cities.

Deficit state financing, post-1967, led to the centrality of external borrowing in the country’s economy. And while its effect on urbanization is not easily detectable from internal source analysis, it can be fairly concluded that financing in the forms of aid from donor countries and international organizations was mostly directed to the improvements and the restructuring of urban services such as water, electricity, sewage, road and communication systems. Other financial resources of this dependency model came from the remittance of expatriate nationals, the nouveaux riches working in the oil-rich Arab states, whose demands and purchasing power created a speculative housing market that did not necessarily produce quality results. Poor workmanship, the lack of technical supervision, and the use of defective materials went so far as to result in structural failures, and the collapse of the high-rise apartment buildings, burying their unfortunate tenants under rubble - an uncommon but not unknown phenomenon in both Alexandria and Cairo.

In addition to the depletion of the historic cities’ stock of old buildings, the new dynamics of urban change were experienced in two major phenomena: first, came the densification of the built environment produced by extreme land speculation, where villas and gardens were sacrificed for high-rise apartment buildings. The new residential quarters of owners and professional unions reflected more of an egalitarian ideology. The creation of a modern local or conventional style was expressed in a mutated form of early modern architecture, sometimes with incomplete external finishes, especially in the case of lower-income groups where the architecture of bricks and concrete became the most expressive urban character. Second, came the growth and expansion of informal and squatter settlements. The urban poor, unable to gain access to affordable accommodation, have relied on informal access to agricultural or public land located at the
fringes of the cities. Urban squatters have occupied roofs of cities in what is known as ‘the second city'. Over half a million found security of tenure in cemeteries, ‘the city of the dead'.

The new urban migrant culture of informal settlements represents the highest share of building activity - over 80% since 1973 - and accommodates over 32% of the total population, a dilemma that characterizes growth patterns of most Egyptian cities where environmental degradation and ecological pressures have become an integral pattern of life in the new urban metropolis. The open-door policy of the 1970s was a mixed blessing for the quality of the built environment. It promoted conspicuous consumption, expressed in the condominiums and vacation resorts around golf courses, in most cases demonstrating poor management of resources and a lack of safeguard for the natural environment. However, it opened Egypt to new markets, especially with the expansion of tourism.

The international language is experienced in a few isolated examples. The office block of the Cotton Palace in Alexandria by Volani Architectura, 1984, is a good indicator of the lack of planning and sensitivity to the local context. The Postmodern regionalism of Michael Graves on the Red Sea resort of el Gouna is certainly tailored to suit the tastes of an international clientele unmatched anywhere else in Egypt. The Biblioteca Alexandrina competition in 1989 is also worth mentioning, since out of the 524 entries only 21 were Egyptians and, while first place went to the Norwegian team, Snohetta, none of the Egyptian competitors received any prize or special mention. The construction also was the left to joint-venture contracting.

At the moment, contemporary Egyptian architecture seems to be in deep crisis. The prevailing ‘anti-architecture' trend, expressed in the vernacular character of both urban and rural built-environments, is a symptom of the extent of its inability to contain modernity in its technology or artistic expression. Furthermore, it appears incapable of exhibiting regionalism. Undoubtedly, the mediocre production of the built environment is so deeply rooted that it has become a tradition in itself. The building industry, dispossessed of the qualitative aspects of its traditional values and crafts, has also been isolated from progress and advanced technology.

What Went Wrong with Education?

The departments of architecture in both faculties of engineering, Cairo and Alexandria, and all other universities that were established later did not follow one specific complete European model. In fact, they were born as an integral part of the total educational system of engineers, with engineering curricula influencing not only the preparatory and first years but also extending into the second and third years, with other technical courses in structural engineering, sound and acoustics, air conditioning, lighting, etc. The intention was and continued to be to provide a basic architectural engineering education, contributing to the graduation of an architect-engineer, mobilandes mimary. This education was intended as a license for immediate practice after graduation, since there was, and still is, no licensing system for internship, training, or pre-qualification exams.

Certainly, there were ateliers similar to those of Beaux-Arts but there were neither its patrons nor its concours for that matter. Moreover, the studios were separate, with little integration or possibility of interaction between different generations of students in the learning process. Few staff members were practitioners with experience in the field. The curricula, as well, were totally dismissive of the local context. The educational discourse did not orient prospective architects towards the expression of their own culture or local environments. It is therefore not surprising that ideas such as those of Hassan Fathy to regenerate traditional forms using traditional building materials and techniques received little enthusiasm or recognition in the academic milieu.
Under the spell of Modern International or Rational architecture, the motto in the design studio was 'form follows function,' while there was little trace of aesthetics in the curricula. History and theory of architecture were taught within the dogma of chronology and stereotypes. Design studio assignments and working drawings were conducted much in the practice of 'cut and paste.' The comprehensive American Sweets catalogue and the antiquated British volumes of Working Details served for many years as the basis for copying details. There were early attempts to incorporate model making and photography in the courses, but they were never taken seriously.

The increased numbers of students seriously affected the status of public higher education. Government policy, geared towards mass education, most certainly has had an effect on the quality of education being offered. Moreover, poor salaries contributed to the brain drain, and many qualified staff left Egyptian universities seeking better pay and work conditions in the Western world, institutions of the rich Arab states, and more recently in the new private Egyptian universities, where their salaries reach as much as seven times that of their peers in the public institutions.

Research in education again is taken only for the sake of research, with the intention of obtaining a degree or for the sake of promotion within the hierarchy of the system, and serves little purpose in promoting the development of society or contributing to solving its problems. Moreover, during the course of my personal five-year experience as a student, there was hardly any public lecture or debate, and in my twenty-five year teaching experience, about one or two seminars were organized by our department in Alexandria. Weak public funding in a deficit economy is most certainly a contributing factor towards the lack of the indispensable resources of education such as libraries, labs, workshops, computer equipment, etc.

All these conditions contribute to the unfulfilled myth of 'free education for all,' and beg the more important question: What quality of education for all? In spite of the more recent attempts to expand and upgrade the curricula by introducing social and environmental design, the economics of management, and computer-aided design courses, architectural education remains quite isolated and in a relatively weak position to confront the challenges facing our societies. Its professionals, dissociated from the realities of their society, are to a great extent left out of its development.

**Conclusion**

While the historical discourse emphasizes the centrality of the master builder's, or *moalem's*, role to education and practice, it is evident that, in our contemporary building world, this role has been lost. Yet, many Western experiences acknowledge its importance and continuity. For example, Le Corbusier attended classes at the Ecole, especially in construction, learning the concrete technology of the time directly from a master in the subject. Walter Gropius outlined in the manifesto and his program for the Bauhaus in 1919 that crafts should be well established before the beginning of the architectural courses. He then brought some of the best German artists of his time, the likes of Wassily Kandinsky and Paul Klee, to his art studios. Moreover, he established workshops in 1920 for crafts and industrial design, and then went as far as actual experimental buildings in the Amhorn house at Dassau, not to mention his own designs for the new Bauhaus building in 1925. Mies Van der Rohe's experiences at Illinois Institute of Technology reflect similar tendencies in its concepts of means, purposes, planning and creating, laid out practically to the students in the actual building of the campus.

But, architecture, since the time of Le Corbusier and Gropius has taken on a more pluralistic discourse. Frank Gehry and Daniel Liebeskind pay a lot of attention to elements like acoustics,
light, and, certainly construction, while Bernard Tschumi and Zaha Hadid lead the profession in creative design. Naturally, within today's modern education there are also specific schools of thought; some with a humanistic approach, other applying a scientific, creative, or business discourse in architectural education. Therefore, it seems to me that such plurality in architectural education is bound to bring forth new fields of expertise, thereby promoting the evolution of the traditional role of the *modaems*. Such a new role should transcend the historic prejudices of intellect versus practice that still reside in our educational institutions, in favor of a more responsive ethos that links studios, workshops, and site together in an educational process that is more attuned to the realities and needs of our developing world.

References:

Teaching between Architects and Engineers
The Challenge of Humanity’s Decent Survival

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Introduction
At the beginning of the twentieth century, society’s major issues were of a social nature (human dignity, work conditions, health care, standard of living, etc.). Towards mid-century, it was the rise of generalized individual mobility to which most of our energies were directed. Today the major issue is to learn how to manage our territory and our resources in order to survive decently in the long run.

In this new context, architecture as well as engineering, and their underlying ethics, have to be based on principles that differ dramatically from what we have adopted in the past. Problems are no longer awaiting a purely ‘technical’ or a mere ‘architectural’ solution. They require a trans-disciplinary approach which takes into account issues such as landscaping, and social as well as political parameters. The argument for a more holistic, instead of the fragmented and disciplinary approach is nothing new, but its progress in transforming universities, policies, and practice is too tortuous in spite of time running out.

This paper investigates obstacles and reasons for resisting the trans-disciplinary approach and then analytically discusses some cases of large-scale discipline-specific designs while setting out these cases against trans-disciplinary achievements of similar scope. A conceptual vision is developed based on the trans-disciplinary approach in which the teaching of and research on architecture and engineering can be integrated.

Obstacles to Trans-Disciplinarity

- Professional Territories

While Borromini was both an architect and an engineer, whose knowledge and know-how were based on experience and capacity to synthesize, the nineteenth century gradually substituted experience with predictability. Methods for calculating structural behavior, including unprecedented designs, account for a quiet revolution. They led to the birth of a new profession, the structural - or civil - engineer, whose ultimate secret has become perhaps less that of conceiving structures than that of predicting the flow and magnitude of forces in order to optimize dimensioning with given materials.

With the development of computer calculations, this faculty could again be included within the architect’s services. But, as it stands now, architects have not yet taken any notice of this field to be reinte...
within the profession. Furthermore, professional territories are now deeply imbedded in practice whereby each discipline is claiming exclusive competence for certain domains. In addition, a complex system of laws, regulations and standards, as well as the client's preconceptions on who should be doing what, tend to work in favor of maintaining separation rather than encouraging integration. Let us take a concrete example to illustrate the case by examining a recent office building in central Lausanne.

In central cities, more and more spaces below ground are no longer 'dead' storage spaces, but they are actually used by people. Now, underground spaces are used as garages, shopping malls, workplaces, or as underground metro stations. Yet, most architects continue to restrict their concerns to inhabited space built above ground, while engineers control structural design, roads, tunnels, bridges, and everything below the ground. In the case of the cylindrical office building on top of a 5-storey underground parking in central Lausanne, it was the client who decided that anything below the ground was to be resolved by the engineer alone. The latter decided to stop the circular pattern of columns at ground level, to build a meter-thick slab and then to introduce a rectangular structure below. Thus the building below has no common feature with the building above, depriving the users of any possible comprehension, understanding, or orientation.

Was this dichotomy necessary? There is no need to insist that there existed a more coherent solution integrating architecture and engineering at most likely lower costs.

- **Ease of Project Management**

In order to reduce complexity, clients prefer to stick to their own limited brief, even in situations where a global urban approach would be far more beneficial. A bridge will remain a bridge and not include any further program; a metro-station is to be a place of transport interface and nothing else; and anti-noise protection for highways or railways is to be a sound barrier, that's all. Any further function introduced implies further decision-makers taking part and thus more time to design and negotiate. Time is money, and for the entrepreneur the 6-months forecast is dominating, for the politician the forthcoming election represents the basic deadline for achieving remarka-
ble results. Thus, problem definition remains mono-functional as long as it can. To illustrate this state of affairs we shall take two examples.

The first example is that two major constructions were erected simultaneously side-by-side: two 30-meter-high towers for housing and two 30-meter-high pillars to support a road crossing the valley. Wouldn’t it have been a more elegant solution for the users and townscape alike if the towers were the pillars? The second example is linked to sound protection. The Swiss railway system wanted to build a third track near Geneva. Neighbors did not even accept the protecting wall. In despair, the railway company called upon the Swiss architect, Rodolphe Luscher, who restated the problem like this: instead of building expensive sound walls we could add a layer of verandas to the buildings. Inhabitants would thus not only be protected but benefit from added floor space, which would turn opponents into supporters. Unfortunately however, this clever solution has not been implemented, not merely for economic reasons, but because of the complexity of dealing with a large number of real estate owners. Ease of management and timesaving won over and suppressed the concern for quality of life.

**Successes in Trans-Disciplinarity**

In recent years, motorway construction started to evolve towards a more trans-disciplinary undertaking. The reasons for the necessary political awareness are linked to ecological, landscape, and urban and regional planning issues. As a result, environmental impact studies have become legal requirements.

As early as the 1970s, the construction of the Ticino motorway was subject to a few decisive rules regarding its adaptation to topography, which established some basic criteria for a common language of works produced by the different engineering firms: unity of material, a given typology for slopes and retaining walls, bridge-heads, tunnel entrances, etc. Today this motorway offers quiet enjoyment while traveling through the dramatic Ticino landscapes. Rino Tami, the architect and author of these rules, is now considered as a true avant-gardist.

During the last decade or so inter- and trans-disciplinary work has been substantially increasing: the London Underground Jubilee Line extension’s stations are places to be proud of being a human; working in one of Montreal’s underground shopping malls is no longer akin to ‘mining’. Transportation belts have become landscaping issues and flood control of Switzerland’s mountain creeks and rivers is now perceived as an opportunity for large-scale environmental projects with leisure and other sport activities.

Although we have been able to highlight a few encouraging examples, the bulk of our built production is still witness to the gap between architecture and engineering. As Peter McCleary
argues, and rightly so, the architect appropriates the world in all its stimuli; his product is from humans and for humans; the engineer's worlds is seen through mechanics and his product is derived from, and answers to, the natural sciences. The architect and the engineer proceed from two entirely different perspectives.

**Educating Architects and Engineers for the Future**

Society most likely attempts a harmonious synthesis between the product for humans and the product that is derived from natural sciences. This division has led to serious drawbacks for our environment. This does not mean that the remedy lies in going back to older practices. In essence, it means training a new kind of 'architect-engineer.' Attempts to integrate the two disciplines and hybridize a new educational approach are failing since they have proved to be weak and superficial. In planning an environment to be inherited by our children, what seem to work better are attempts to increase the consciousness of humans rather than merely technical/economic factors. This implies a renewed ethical concept:

- Students of architecture have to be made aware (beyond the realm of artistic creative self-expression), that they are to involve ecological, engineering, socio-political and economic considerations into their design parameters and proposals.
- Students of civil engineering have to learn that purely technical and economic optimizations are today only one aspect of the components for ensuring society's long-term expectations.

There exists no unique key to a perfect educational setting for a renewed ethical approach to teaching architects and/or engineers. Nevertheless, I believe that it is possible to create an educational framework whereby architects and engineers alike would be made perfectly aware of their specific capabilities and limitations in view of their need to subordinate to inter-disciplinarity for more significant results on the long term.

Any curriculum reform in either of these disciplines should aim at:

- Global rather than local as well as long-term rather than short-term problem definition;
- Learning how to identify and to articulate specific needs for inter-disciplinarity related to a particular problem;
- Creating project-related platforms where such inter-disciplinarity can be practiced.

Such basic innovations cannot be ensured by the mere introduction or the deletion of some course subjects. They imply a change in pedagogical attitudes. But we should never forget that inter- or trans-disciplinarity only make sense as long as there exists strong disciplinary competence. Architecture and engineering have to maintain their specific identity and place; otherwise, we run the danger of losing knowledge.

**Notes:**

1. The author has been giving a rather successful course to final-year civil engineering students on Technology and Form since 1993.
Experiences and Experiments in Architectural Education
Design and Construction in the Wake of Tradition

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L'architecte est un poète qui pense et parle en construction.
A. Perret

When the word ‘tradition’ is called into play, the world is generally divided into two camps: one distances itself in the name of progress, while the other becomes entrenched in the defense of past values. This variance arises from a vision of ‘history’, on the part of the latter, as a factor of resistance to a future which is by definition progressive; a vivid reminder of the anti-historical mysticism of the founding fathers of America, a country where progress is a religion. As J. B. Jackson has underlined in his essay, The Necessity for Ruins, the need to vindicate a culture of its own forced America, one hundred years after the Revolution, not so much to look to its recent past as to construct a mythical and improbable one. Today, the dichotomy remains unresolved: Americans are the most insouciant destroyers of their built environment, yet they are also the most fanatical preservers of all evidence of the past, without even disdaining fakes.

The true significance of ‘tradition’ lies not so much in a past Golden Age as in the ability to draw the past into the future. A living tradition sees continuity in a perpetual state of transformation. Only immature thought, such as one finds in artistic avant-gardes, could envisage, in the recently concluded century, a clear break with history, while hypothesizing a ‘revolutionary’ tradition embalmed in the present.

Continuity means growth, improvement, and it is thus not in conflict with progress, which comes about through the continual adaptation and perfection of what already exists in order to meet the demands of society. In pre-industrial societies, where the practice of maximum efficiency reduced both consumption and waste, any variation in the patrimony of knowledge which constituted a consolidated tradition only came into effect after experience had demonstrated that the initial impetus was spent.

The example of urban fabrics is paradigmatic: every passage to a superior type has come into being only after the preceding inferior type has been completely assimilated and all the synchronic variants tested. If we look at the Apartment House - the current type of building in which Europeans live - which has represented a revolution in Italy, in terms of style of habitation, since the seventeenth century, we realize that it was preceded by a long process of adaptation of the row house, a process lasting at least 350 years. This type was in turn generated over a period of two hundred years in the cities of the Roman Empire by the courtyard house with a commercial front giving onto the street. The end result has apparently no connection with the original basic type of the Roman domus. I am convinced that it is not globalization which has caused the crisis of tradition; globalization can revive just as well as destroy a lost tradition. In recent years what seems to link all cultures is what we might call ‘presentism’, the contemporary tendency to live individually in the present, without a ‘before’, without history, memory or inherited customs, like the barbarian facing a boundless horizon in Marcello Veneziani: the global idiot whose narrow mind thrives on action alone, with little or no thought.
The danger for tradition lies in the increasing divergence between culture and technology in our contemporary world. The unlimited means which science has at its disposal is in stark contrast with a mechanized and serialized society incapable of controlling the former's reactions, or of assimilating the ever faster and more specialized technical innovations within an organic critical vision.

The extraordinary virtual means at our disposal - the possibilities of software when applied to the representation of architecture and architectural projects - has opened up new and indispensable perspectives, yet it has also produced a fresh mystique of architectonic creativity, which no longer favors the appreciation of a building as an organism of bricks and mortar, but as an image to be manipulated. At one time, students had to be on site for several days in order to draw a monument, whereas the contemporary software used to adjust an image now reduces computation and measurement to a few operations. The doubt remains whether those days spent in physical contact with the building were a waste of time.

If the perspectives opened up by genetic research, with its potentially fluctuating ethical boundaries, are daunting, in our field we must deplore the disasters caused by the rupture with a classical vision based on the synthesis of design and construction, with the support of living, operative history. The Enlightenment shattered the unity of classical knowledge, while the Industrial Revolution subdivided roles and invented specializations. Thus began an endless process. The division of the Vitruvian triad has left the project architect free to emphasize one of the three components at the expense of the other two. An excessive emphasis on virtus gives rise to an over-expressive architecture aimed exclusively at an emotional and visual impact, which is presented above all as image, often degenerating into gratuitous formalism and decoration. An excessive emphasis on utilitas favors an exaggeration of the distributive characteristics of a building, while an excessive emphasis on firmitas leads to stressing technique as an expressive means, in the illusion of giving greater value to the architectonic object.

Technique assumes the status of a symbol of progress tout court and, from being a single component, seeks instead to represent the whole. In its most extreme form, the phenomenon of High-Tech, technique is reduced to decoration. The avant-garde elements in the Modern Movement, as the mouthpiece of this progressive fragmentation of knowledge, centered their research on the invention of a new language in their concern to forge a new beginning and carry out a founding act. This was really the nineteenth-century illusion of inventing a new style, an illusion which was still based on a positivist figurative culture. Yet when the artistic avant-gardes begin to stress the notion of crisis and a culture begins to dismember, negate and destroy, then the architecture which follows is faced with an insuperable difficulty, since it cannot deconstruct its own language, in that such a language is, by definition, a positive, constructive act.

The dichotomy between construction and design, timidly begun in the Renaissance and sealed by Napoleon with the founding of two schools, the Beaux Arts and the Ponts et Chaussées, only works if architecture as a discipline is ancillary to the figurative arts. In the profession today the two terms, design and construction, are no longer an indivisible unity, but rather a sequence of distinct phases: the first entrusted to the architect/artist, whose contribution is considered a financial asset to the building, the second ostensibly entrusted to the engineer/practitioner, but in reality to the various specialized cliques. Hence the loss of interest in construction goes hand in hand with a loss of interest in detail, lamented by Vittorio Gregotti as a forfeiture of the deeper, more articulated dimension of the craft. Hence the unpleasant sense of an enlarged model and of a lack of articulation of the parts on the various scales. Therefore, it is not surprising to learn that, in commissioning a project for a multifunctional complex, Ulysses, in Lausanne in
1987, the client requested that the architect, Galfetti, be only given the parts above ground to deal with, while the engineers were given all the parts of the project underground. The result is two different, non-collaborating buildings, even in terms of their load bearing structures. In the near future, the client will probably only entrust the commission of the building's external facade to the architect.

Construction is not the banal realization of architecture, the material act of building as the conclusion of some conceptual design activity, but an intellectual and creative aptitude concomitant with a formal intuition. Construction is that complex of strategic choices which leads to a project's realization, right from the initial act of conceiving architecture in terms of stone or brick, that is, of discerning building potential in the formless material. For Mies van der Rohe construction is the ability to think of real architecture through the discipline of its materials; in other words, building for living: "One field concerns building simply for living, the other instead is strictly connected to specific spiritual milieus, which we perceive as specific cultures. The former are buildings which are all linked to the terrain on which they rise; and only these buildings are really genuine. They are formed from the raw materials of the land. They were not invented, but developed, in the true sense, out of the needs of their inhabitants, and they reflect the rhythms and peculiarities of the landscape of which they are a part. These characteristics are typical of all farmhouses, everywhere in the world." (Conference Paper, 1926, in F. Neumayer, *The Arless Word*, Cambridge MA: MIT, 1991). Mies's interest in the farmhouse type has little in common with Bernard Rudofsky's idea of spontaneous architecture without architects, but focuses instead on the supra-historical dimension of architecture, that is, on the presence of recurrent or constant building solutions based on man's relation with the world, which remains, in some ways, immutable through time. Indeed, the idea of the instinctive nature of the constructive act is different from spontaneity and goes back to the theory of Viollet le Duc of a direct correspondence between architectonic form and structure.

Going against Rudofsky's hypothesis of a criterion for construction based on natural models, which thereby reduces, if not altogether removing, human responsibility, Mies turns to the tradition of anonymous architecture for exactly the opposite reason: architecture is a totally human activity. It is the technical-constructive aspects of a culture that represent a continuity of forms, especially in moments of crisis. They represent the deeper substratum, which is able to absorb surface modifications and return them to the source of transformational processes. In this sense, construction is one of the most stable and enduring components of architecture.

Despite historiography to the contrary, there is a line of research which is attentive to construction, partly in the Modern Movement itself: Giuseppe Pagano, Paul Bonatz, Mies van der Rohe, and later, Louis Sert, Dimitri Pikionis and Fernand Pouillon, the latter two somewhat isolated because of their choice of an architecture linked to the Mediterranean tradition of massive wall structures, and more recently Aris Kostantinidis.

The largely neglected Fernand Pouillon, in particular, merits attention for his instinctive ability to link design and construction in a building production which was both continuous, yet contradictory. This great French architect used to say: "I make architecture as an apple tree makes apples". In this climate, what are the solutions for a critical rediscovery of unity in architecture as a discipline, which is no longer split in terms of the non-communication between design and execution? There is no easy formula.

At the moment, various itineraries are being consolidated both in architecture faculties and in the profession at large. Their aims are the recovery of a disciplinary unity and a return to the craft. These aims must be made to coincide. In the Architecture Faculty of Rome III, Paolo
Marconi has set up a school of restoration in which the principles of continuity of types and materials and of restoration as a craft are in direct contrast with the principles of discontinuity in the Venice Charter.

The Architecture Faculty of Bari Polytechnic has based its curriculum on the theme of continuity, setting up design studios around two complementary figures, the designer and the professor of construction. The spirit is one of teaching the student that every sign made on a piece of paper must find an immediate counterpart in a given material, and that every cardboard model must find an immediate counterpart in a building technique.

In the second year workshop, where I have taught for the last three years with Dino Mongelli, the choice of an obligatory material, such as stone, and its building options, has shown students how such constraints determine a logical, consequential process from material to building type, to building agglomeration and, finally, to the more complex forms of the city. Unlike Modernist teaching, where every individual fantasy (even a house with its legs in the air) can find an engineer who makes it stand up, I believe that the coherent use of a construction technique, even if restrictive in part, would allow the architect to regain control of the city.

In the third year workshop, under the direction of Marco Mannino and Carlo Mocca, the study of skeletal and wall systems, based on a critical reading of tectonic systems linked to exemplary historical models, has led to important prototypes when applied to domestic architecture, such as the flat vault.

In the Scuola della Pietra PhD Program, 'Architectural Design in the Mediterranean', directed by Claudio D'Amato, the use of software applied to cad-cams has led to interesting innovations in traditional techniques, both in the reproduction of whole complexes for restoration and the construction of load-bearing structures in stone.

In conclusion, a revival of the leading role of construction in the design process can come about through rethinking history, not just as a repository of memory, but above all as an operative process, which contains within itself the principles of architectural know-how: in other words, a living tradition. The complexity of the evolutionary processes of architecture, building fabric, city, and territory cannot be read as the sum of individual cases, but must be seen in terms of typology as a science of types. The Modern Movement has always been averse to types as simple, repetitive, yet competing models providing designs with fixed points of reference, and thus as the proposition of a new language in a traditional vein. Type is really the search for meaning above and beyond the form in which a thing is contained.

By definition, type - the organic sum of the characteristics of a building in a limited cultural area in a given historical moment - has always represented, and must continue to represent, the catalyst of the Vitruvian triad. Nevertheless, this is not enough, since it is no longer possible to reunite these three classical components of architecture along past lines. The refined craftsmanship of Carlo Scarpa and the Nubian builders of Hassan Fathy cannot be regained. Building tradition can only be saved and revitalized by the most advanced modern technology; and this is not a paradox. Changing one's tools, however, means changing one's philosophy. Till now the computer has been used for the easy production and reproduction of images, not concepts; software has not yet become a vehicle of knowledge. In other words, electronic support systems have been used to transmit savoir, without transforming it into connaissance.

In Antiquity, the architect himself was a guarantee of unity of design and construction. Today, this role could be played, instead, by software capable of guiding both project and construction simultaneously. A utopia? I don’t think so.
Historic Architecture in Architectural Education:
Advantages and Applied Techniques

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The student, who later becomes the professional architect, has been separated from the history of architecture, because of the manner in which it has been taught in previous decades in Iran. This may have been so because the tutor relied merely on descriptive methods in teaching. In other words, the tutor paid little attention to either critical analyses of architecture, or underlying concepts, which are important in the formation of historical monuments. Today, it is clearer than ever that it is essential for the tutor to impart knowledge of at least some periods of the history of architecture in order to guide the students to grasp the ideas and the cultural context behind historic works of architecture and their elements. However, this is not enough: the benefit of the study of architectural history is fully understood only when it has an impact on practice, i.e., on architectural design. The design studio is a suitable area for the introduction of historical examples - both at elementary and advanced levels. This article draws on years of tutorial experience, especially in teaching fundamental issues, to explain the advantages and some applications of historical examples (both in architecture and the visual arts) in teaching basic skills. The exercises discussed are arranged from simple to complex: free-hand drawing; drafting; introduction to two and three-dimensional objects; physical elements; architectural criticism; and design. Perhaps, the main benefit of this article lies not in the little information that is provided, but in the concept of gathering all architectural exercises around the central theme of architectural history.

It should be noted that by reference to historic architecture, we mean any architecture of value built in the past. Thus a valuable edifice built only a few years ago is as useful as a centuries-old monument in the design process. Furthermore, for a building to be ‘valuable’ does not mean that it has to be mentioned in books on the history of architecture or in architectural journals. There are numerous buildings of which there is no mention, and yet they contain subtle points worth the attention of students in their quest for design techniques. Employing architectural and visual arts examples in the design studio as will be explained in the following exercises, not only shows the importance of courses on the history of architecture, but also facilitates the transfer of knowledge and concepts for the tutor.

Drawing and Drafting

Historical examples have often been employed in drawing classes at Iranian schools of architecture. For this purpose, the students gather in valuable buildings close to their place of study, or travel to historical sites in order to practice drawing techniques. The process of making images of façades, external volumes, internal spaces, or physical elements leads to a better understanding of a building’s properties. The key to success in this exercise is the choice of a series of appropriate buildings: simple, less ornate, and orthogonal buildings at preliminary stages leading to complicated, ornate buildings with interconnections, curved surfaces, and broken rooflines at advanced stages.
Drawings of historical sculptures - either as a building element or a freestanding object in parks or museums - are very useful. Encouraging students to make accurate drawings of building details, for example a lattice window or a sculpted column base, will increase their meticulousness.

Historical examples can be used in even more elementary exercises of drawing. For example, in exercises aiming at developing pen manipulation skills, an old motif - Iranian or not - can replace the boring horizontal, vertical, diagonal, or curvilinear lines. For instance, the students might be asked to draw a floral arabesque uninterrupted, i.e., without picking up the pen from the paper. The motif might be placed under the tracing paper or printed in dotted lines on normal paper. Likewise, the motif can be projected on the wall and then students are asked to trace the picture on a paper stuck on the wall. Such exercises not only increase pen manipulation powers, but also build up a close instinctive relationship between the student and the motifs.

What was mentioned on drawing can be applied to drafting as well. Preparing as-built drawings using manual measurement (without surveying equipment) of buildings and making three-dimensional models of them will ground the two techniques. The exercise will be of a greater benefit if the selected edifice has curved openings and intersected volumes. To develop the as-built drawing requires that the students spend a period of time at the site. To be separated from family in a journey to a remote town brings valuable experiences to the students and helps build their young characters. The time spent at the building enables the students to explore it and find out for themselves its technical or artistic intricacies and observe the behavior of the people in the building. Relationships develop during extended stays, leading to a better understanding of other cultures, traditions, and lifestyles.

**Introduction to Geometry**

Employing historical examples in exercises designed for developing competency in two- and three-dimensional geometry is also of great benefit. Two-dimensional patterns are common in all architecture throughout the world; and the most intricate can be found in Islamic art. A geometric pattern can be presented to the students, so that they can discover how the figure is developed. They can be requested to graphically depict the design procedure followed by the original maker of geometric patterns. The students can be requested to work out the aesthetic properties of the historical example and give a graphical, abstract presentation of their findings. To discover the reality of historical architecture not only familiarizes the student with history, but might also make the exercise a virtual apprenti-
cess in history. The student might equally feel that, by this
discovery, he/she is now in the
place of the old masters - a feel-
ing which brings considerable
joy and confidence.

The application of history to
exercises for two-dimensional
gometry can be further deve-
loped: the students might be
asked to design a logo or an
eblem employing elements
from a beautiful carpet; or
build a lattice window; or
design a suspended ceiling for
an atrium. Posters, stamps,
packaging papers, etc., can
also be designed, drawing on
beautiful geometric patterns in other cultures.

In the same way, history can be employed in three-dimensional geometry. This might be done by
using semi-architectural sculpture, origami, complex roofs (folded-plate, saddle, and geodesic),
vaulting systems (groin, stalactite, suspended). To observe, discover the geometry, and finally
build the example with different materials enhances the imagination in addition to developing
two-dimensional skills.

One of the most joyful moments in the studio is when students join in teams to build a three-
dimensional model. The pleasure increases when the students have already visited the actual
example. The studios and the school corridors can be decorated with what the students have
produced; the educational space will be thus enriched. The built models might also be used in
structure courses to explain the role of structures in architecture.

**Physical Elements**

The building could be analyzed in parts during the basic education of architecture. The parts
may be known as shape, material and size, which can be termed the alphabetical letters of a
building, or the roof, the wall, the floor, the openings, the stairs, and the furniture, which are
like the words of the sentence. The building may be further analyzed in phrases such as volume,
entrance, elevation, etc., which contain the fore-mentioned features. The architectural compo-
sition is ‘written’ with these parts or, as they are commonly called, the physical elements. Just as
a limited vocabulary hampers writing, a full command of physical elements is the prerequisite
to architectural design.

The history of architecture is a treasury of diverse physical elements. The student of architecture
- especially in the early years of training - can become acquainted with all these elements, the
roof, the façade, landscape treatment, stairs, etc., by referring to this treasury. In the design
studio, the student can compare: the narrow stairs of a building in Isfahan with the wide Baro-
que flight of steps in Europe; the paving of Beijing’s Forbidden City with the floor of a hotel in
California; the domes of Istanbul mosques with the shingle roofs of Kyoto temples; the Gothic
façade of a church in Cologne with the hi-tech façade of a bank in Hong Kong; the channels
and semi-open spaces in unique Indian gardens with the same elements in a modern park; and so on. Such an acquaintance can be achieved by slide presentations, the students searching in libraries, or bringing, as appropriate, books or journals to the studio. This will broaden the views of the students and guard them against the danger of a narrow dogmatic thinking. After such a survey, the students will benefit from all these forms - consciously or not.

The more important benefit of such exercises is that the students will face the 'theme' of the physical element. In other words, what is more important than the knowledge of roof types is the awareness of the fact that 'the roof is an important element of architecture.' During the survey of physical elements at the design studio, a thematic selection will systematically develop in the mind of the students and enable them to learn from physical elements whenever they face architecture.

The other benefit of the survey is the avoidance of dogmatic thinking. When students witness the colonnade entrance of a Japanese temple, where the visitor has to climb up and down a flight of steps to enter, their views will broaden to not reject such an architectural choice as illogical. In the same sense, facing other examples will enable the student to tolerate eccentric designs and avoid absolute subordination to conventional approaches. Examples could be: a mosque with a courtyard over the closed space; the juxtaposition of two different architectures in one building; or an inviting side entrance to a building, despite the strong axial arrangement in a different direction. Nevertheless, to understand the meaning of such solutions will protect the student against the pitfalls of transient fashions in contemporary architecture.

Analyses of Historical Examples

The analysis of historical architecture provides a suitable forum for discussion in which the analytical abilities of the student can be developed. The choice of the historical example is not limited to architecture; all forms of visual arts may be effectively employed. Research in this area may be either a document survey or a field research. Some non-architectural areas of research include: the paintings of Nicholas Escher; Persian miniature paintings; mobile sculptures of Alexander Calder; French caricatures; repetition or contrast in art; and so on. The research may even surpass the limits of visual arts and indulge in the world of cinema to learn from classic animated movies.

When the results of this research are gathered at the studio, the students face a diverse collection, which opens the door to the world of art and displays its necessity in human life. In such research, the student can learn how to understand the reality of a work of art by sheer scrutiny, i.e., relying only on the artifact and his/her personal powers of perception in contrast to explanations offered by teachers or books.

There are two benefits in the analysis of historical architecture: first as an exercise in critical analysis and, second, when using the skill in facility programming.

Critical analysis is a tool for understanding architecture. Students of architecture learn a lot through an examination of works of art. They learn true architectural criticism, i.e., understanding architecture with architecture. They will understand that, for learning architecture, they do not need tutors. And they find out that by scrutiny and intelligent thinking they can understand the latent meanings and underlying intentions in the work of art. Critical analysis will also show other aspects in any architecture: spatial arrangement of closed and open spaces in the entire design; the organization of closed spaces; the external appearance of the building; the arrangement of elements in the landscaping, etc. Furthermore, critical analysis will help students organize their findings in a logical order - an order not much different from the design process.
Critical analysis will not only broaden the student’s view, but will also develop a skill useful in architectural programming. When a building such as a library is the subject of design, an inspection of valuable library buildings will develop insight into the problem. This might be in either of two forms: first, considering main spaces, the ratio between the built area of different parts, the spatial composition, the dialogue between the building and its context and so on; and second, a focus on the efforts of the architect to develop the ideal space. This will provide them with a new perspective.

Experience in architectural analysis, which is the essence of criticism, will help the student to evaluate and fully understand his/her own design and consciously continue the design process. This also helps the student to explain the results of a half-conscious effort.

Architectural Design

There are other exercises for employing valuable architecture at the design studio. Students may be asked to design on a historical site or they may be asked to design a conversion plan for a valuable old or new building, an extension to a certain building, or alterations to an existing edifice. They may be also be asked to visit a valuable building and produce a design expressive of its meaning and spirit.

Such exercises have several advantages: students face a real situation in a built edifice, they pay attention to the technical points inherent in a building when designing alterations, and they have to decide according to facts - constraints and possibilities. These experiences makes the student travel from form to meaning and find out that there exists in each work of art latent meanings and intentions, which are the real principles. The student will then follow the reverse procedure: they travel from the understood meaning to a new form. This is one of the best exercises in architecture.

Studious inquiry, as such, will stimulate students and animate the studio atmosphere. The architectural design studio will enjoy a buoyant instructive environment through tasks such as: visiting a monument; talking to users; speaking with restoration officials; consulting with professional architects who might be working at the building; building scale models; designing alterations and extensions to the edifice; and, finally, presenting the work to other groups. If these tasks are accompanied by construction activity, whereby the students have a chance to become involved in building their design, the benefits of a valuable architectural example are maximized. And so the product of the school of architecture - the architect - approaches ideal standards, from which the society will ultimately benefit.

Notes:

1 The result of these activities in Shahid Beheshti School of Architecture and Urban Design is now gathered in a valuable series of books named “Ganjnameh”, Encyclopedia of Iranian Islamic Architecture. This is a collection of twenty volumes on Iranian architectural treasures. Four volumes are published up to now and the rest will be released in the near future.

2 We have employed these practices in some areas of the architectural education program at Shahid-Beheshti School of Architecture. Designing on a historical site is employed in the last (seventh) architectural design studio of the school and designing a conversion plan, an extension to a certain building, or alterations to an existing edifice are employed in the basic design section. It is worth mentioning that our plan is to employ these practices in some other main courses and studios as well.

3 Recently, I have made some agreements with the Cultural Heritage Organization of Iran to introduce some of their actual conservation projects of various kinds to our school.
Experiential Learning in Undergraduate Education: Cases from Egyptian Universities

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Introduction

Over the last decade of the twentieth century, numerous studies have described how changes in the socio-cultural and economic milieus in Egypt have negatively impacted the architectural profession in general and the architectural product in particular. This dysfunctionality and fragmentation in turn identifies a need for more effective cross-disciplinary practices between architecture and other professions. Architectural education, as undertaken in our schools of architecture, appears to be one of the reasons behind this problem. It is structured to prepare students for models of practice that no longer accord with the current professional context. It is assumed that education can bring about change, by changing conventional teaching into a teaching that aims primarily at enhancing attitudes and skills for the better understanding and perceiving of the built environment, enhancing attitudes and skills of communication and teamwork, and preparing students for a lifelong learning process. All that can be achieved through applying experiential learning. The objective of this paper is to present an understanding of experiential learning as the discipline in which the learner makes direct contact with the realities being studied either inside or outside the classroom, with a special focus on theory-lecture courses. Through an analysis of case studies from Egyptian universities, where teaching approaches reflect different philosophies, we can begin to generate guidelines that may be applied to the educational process in architecture.

What is Experiential Learning?

In Experiential learning, or learning by doing, the learner is directly in touch with the realities being studied. It encompasses several methods of learning covering are, as such as laboratory science, applied studies, clinical experiences, studio arts, and field studies. Either on or off-campus, experiential learning is the apparatus in which the learner is subjected to situations where he/she develops and assesses his/her critical thinking abilities, thus allowing for freedom of creative thought and preparing for a lifetime learning process (Keeton & Tate, 1978).

Experiential learning, in this manner, is uniquely suited to give primacy to the person. It acknowledges that the person is the primary validation source of his/her own learning, throughout a life that involves a countless number of learning experiences. It enables students to better understand and cope with their own environments, to take charge of their roles and to participate effectively in their communities (Nicol & Pilling, 2000).

Embracing numerous forms of representation, visual, tactile, and written, experiential learning is therefore rich in communication potential. Also, it involves students working in groups and so is rich in team working potential. Moreover, experiential learning provides students with regular opportunities to reflect on their own learning, and in particular to monitor and evaluate their own processes of working, as self-monitoring and self-evaluation are crucial to the development of self-responsibility (Nicol & Pilling, 2000). Doing so, the more learning becomes self-regulated, the more students assume control over their own learning, the less they are dependent on
the instructors' support. Structuring opportunities for this kind of self-regulation facilities in students, the transfer of acquired knowledge and skills to new tasks and keys to problem solving are smoothly explored.

The Collapse of the Conventional Teaching Approach

The conventional teaching approach in Egypt has long encouraged students to develop their perceptual and symbolic abilities, through emphasizing reflective observation and concept formation. Yet, it is accused of being hypothetical, tending to offer students ready-made interpretations, ignoring equally important affective and behavioral skills that can be fostered through active experimenting and concrete experience. Students in this model are confronted with preconceived conceptions and have little sense of control over their learning. The shortcomings of the conventional teaching approach leaves no choice but to change to a method that prepares students for a changing profession where the growth of knowledge is rapid and the needs of society are constantly changing. As educators, it is our duty to provide fruitful experiential opportunities. That is, we must provide a regular framework to analyze experience in order to form new concepts and theories, to help students develop all their learning abilities as fully as possible for maximum flexibility. The call for experiential learning - as conceived here - is developmental. At least three patterns of development are conceived. These are: shifting from particular skills through integrated effectiveness, from closed to open learning, and from other-directed to self-directed learning (Keeton & Tate, 1978).

Theories of Learning

There is a need to go beyond the standard printed literature and lectures, to comprehensively explore issues and needs that foster the sensitivity to listen, notice, observe, differentiate, consider, and be able to recognize relevant from irrelevant information. Accordingly, the philosophy of experiential learning should be generalized in university education, to better equip students with maximum flexibility in various circumstances they will encounter in professional practice. Experiential learning develops anticipation and articulation, translation and interpretation, which make the students respond to varying value needs and decision-making capacities. Moreover, this learning approach reinforces the students' ability to transform behavioral information and experiences into actions.

Kolb (1984), Piaget (1972) and Jung (1971) all contribute to philosophical models of experiential learning. In summary, Kolb places emphasis on the experience, followed by reflection, which in turn is then assimilated into a theory where these new hypotheses are tested in new situations. In his model, Piaget focuses on how knowledge can be matched with the ability to assimilate it, assuring that problems should be assimilated by the students’ cognitive schemata and then accommodated within the acquisition of new knowledge. Finally, and from another perspective, Jung asserts that although there are functions that block one another, each function should be utilized in its own particular area in which it performs more appropriately than the others.

Cases from Egyptian Universities

Arguing for more effective learning in the Egyptian undergraduate architectural education, with particular emphasis on theory-lecture courses other than studio trainings, cases are selected from three different architectural departments from different universities: Faculty of Fine Arts, Al-Azhar University, and Misr International University (MIU). The choice of those particular departments is due to their varied teaching approaches that lead to explicit differences in their
graduates' mentalities and working styles. The study is based on searching and analyzing the available literature developed in the field, in addition to reflecting on personal experience of the conventional and experiential learning approaches.

Faculty of Fine Arts

Throughout their five years of education, students are subjected to what can be described as a brainstorming process, with special attention given to the design studio. Although there are some experiential practices throughout most 'in-studio' courses, experiential learning is not embedded as a teaching discipline in this important school of architecture. As for the theory courses, they are taught in class, designed to address enormous bodies of knowledge, implemented in the conventional manner and with many take-home assignments, some of which require field walk-throughs and reporting or researching. Regrettably, students conduct their off-campus assignments - either in groups or on individual basis - without structuring or guidelines on what and how to investigate in the built environment. As for research assignments, due to the absence of technical writing courses in the undergraduate phase in all public Egyptian schools of architecture, students lack the know-how of information gathering, observing, or analyzing. They become confused about what is descriptive, explanatory, critical or analytical.

As a result, and also because theory are taught as matter-of-fact, with a tendency to ignore the real dynamics behind concept formation, graduates of the Faculty of Fine Arts become design-oriented, well-trained to express their artistic talents in regard to formal and functional considerations, highly attuned to group discussions and presentations, and, most importantly, exposed - without real involvement - to off-campus learning practices. However, the lack of a simulative atmosphere influences students in such a way that they are not really aware of users' needs or aspirations, and they are not responsive to real life variables and obstacles, or indeed key-role players, since they are not used to serious evaluation researches as the backbone of dealing with the built environment. This abandonment of live situations results somehow in subjective architects, dealing with buildings and the built environment as artifacts, isolated from their surrounding contexts.

Al-Azhar University

As with the Faculty of Fine Arts, for a few trials on individual basis, the department of architecture at Al-Azhar University has generally witnessed few applications of experiential learning where instructors try to make an association between learning by procedural action and conventional teaching practices, through encouraging experiments of evaluation researches and group discussions.

The Design Methods and Theories course is an exemplar of such trials, throughout which students experience real-life situations and thereby get to know the variables affecting visual phenomena produced by architects and urban designers. Attention is directed to evaluation studies that are intended to provide reliable information about the physical world, with results that are directed to reflect on the 'in-studio' design practices. The class group of the course is divided into sub-groups; each is required to conduct on evaluation of a building considering all aspects of the evaluation experiment. Students are required to work individually and then bring their evaluations to the class for discussions (Salama, 1995,1996).

Another assignment is the architectural evaluation of a selection of buildings, some of which became a stimulus for wide architectural debates over identity, style, building materials, etc. Aiming at increasing students' awareness of the environment by focusing on some visual aspects,
the implementation of this appraisal takes place through an impressionistic strategy that covers visual-physical as well as visual-social considerations. The visual-physical assessment, on one hand, evaluates the context, routes, interface, and grouping - if any - of the building (Bishop, 1977). Checklists are provided offering a procedure for structured walk-throughs. Numerical scores ranging from highly appropriate to totally inappropriate are assigned to each factor. Evaluation also includes the use of notes, sketching, and photographs. On the other hand, visual-social assessment studies the meanings and the non-verbal messages broadcasted by the building image to the public; interviews are conducted with the public, to gauge their perception of the building.

In the cases of Fine Arts and Al-Azhar, which generally represent the Egyptian conventional teaching approach, it is obvious that experiential learning - if introduced - is only experimented with, rather than implanted as a systematic mode of teaching. The most important reason for this is that education is not conceptualized as a part of a longer process that takes place outside university borders.

**MISR International University (MIU)**

Experiential learning is explicitly introduced in some theory-lecture courses at the department of architecture at MIU, some of which are history, theory, and building technology courses. Class lectures are designed and implemented as discussions or seminars, allowing students to participate in preparing the taught material and reflecting on it. These lectures are usually followed by site visits or take-home assignments on aspects pertaining to the related topics discussed in class. Three theory courses, Human Factors in Design, Research Methods in Architecture, and Urban Design and Applications of Socio-Behavioral Studies in Architecture and Urban Design will be discussed. These courses are taught in collaboration between Ashraf Salama - associate professor - and the author.

Aiming at simplifying the complexities of human endeavors to freshman students, a major part of the Human Factors in Design course focuses on how visual experience is regarded from place to place and from time to time. The inter-relationships between culture and the built environment and their impacts on societal needs and physical contexts are stressed.

The set of lectures is designed to include the following topics: culture, physical environment, design, creativity, architecture and the design process, building types and their spatial environments, perceptual concepts, and design fundamentals. In parallel with the lectures, a set of exercises is carried out, with a stress on how to develop students' abilities to understand the components and features of the built environment and their relationships with people. Exercises are designed in a hierarchy that shifts from observing to interpreting to understanding.

*Research Methods in Architecture and Urban Design* is another exemplar course of experiential learning, dedicated to junior students and training them in technical writing with emphasis placed on data gathering and analysis techniques relevant to the theory and practice of architecture and urban design.

The course is designed to cover the following topics: learning to gather, analyze and synthesize information, develop hypothesis and arguments, conduct systematic investigation and research as well as drawing conclusions and developing recommendations. The parallel assignments focus on differentiating between quantitative and qualitative research, gathering and analyzing information, training in procedural, empirical research technique.
Application of Socio-Behavioral Studies in Architecture and Urban Design is a third exemplar of the application of experiential learning in theory-lecture courses on and off campus. Offered to pre-senior students, the lectures introduce concepts that pertain to human/environment relationships and how these concepts vary with different cultures and subcultures and other demographic and environmental variables.

The lectures are delivered by several professors, toggling between the following topics: the significance of social and environmental-behavioral studies in designing and planning, methodological issues pertaining to evaluating and categorizing the built environments (type, pattern, and setting), housing environments, different age-groups environments, post-occupancy evaluation, environmental aesthetics and visual preferences, meanings and the physical forms, and finally, changing patterns of socio-classes and their impact on the change in land uses.

The parallel assignments are designed to enlighten the observation, analysis and critical abilities of students, through studying several cases of pertinent behavioral settings.

The design of the lectures as well as the structure of assignments in the three courses was mainly based on an attempt to employ the previously mentioned philosophical models. With Human Factors in Design, the information delivered in the lectures, meant to be assimilated by students' cognitive schemata - according to Piaget - is later accommodated through the process of its testing, adjusting, and re-testing throughout a similar situation.

The two other courses of Research Methods and Application of Socio-Behavioral Studies in Architecture are based on Kolb's cycle. The lectures provide basic experience, which is demonstrated by observation of pertinent cases, forming assimilated concepts to be tested in new situations, finally closing the cycle by the formulation of new basic experience.

All assignments, researches and field studies in each of the three courses at MIU are structured in a way that aims at: firstly, developing awareness, secondly, training observational skills, and, finally, enforcing procedural learning. Throughout the three phases, instructors appear as facilitators and advisors rather than narrators. Moreover, in class presentations and group discussions together with pre-announced evaluation criteria are indispensable.

Throughout those one-semester courses, students are periodically asked to evaluate the courses, with respect to nature and content, learning objectives and their fulfillment, in-class exercises and off-campus assignments, evaluations and grading methodologies. They are asked what they regard as most and least effective aspects, what they are gaining, and, finally, what the instructors' strengths and weaknesses are.

Analyzing students' responses at the end of each course has revealed that this teaching model has built on their own theoretical understanding of the complex issues pertaining to the built environment and its cultural, social and physical attributes, increased their systematic thinking and objectivity, as well as confirmed their creativity with respect to problem solving.

More research analysis is currently being conducted for further exploration of the impacts of applying experiential learning in theory-lecture courses at MIU.

Conclusion:

The goal of this paper was to highlight the need to integrate experiential learning into Egyptian undergraduate architectural education, in addition to introducing related methods through which it can be applied in theory-lecture courses. The goal of developing students' abilities to be self-directed, independent learners, comes up against ritual, embedded constraints that may
be exemplified in:

- The tendency to offer students science as a product of scientific inquiry - not examining the process that led up to this product.
- The tendency to introduce students to ready-made interpretations that they take for granted.
- The tendency to prohibit students from structural guidance in conducting systematic off-campus tasks, e.g., field studies, researches, etc.

The analysis of the Faculty of Fine Arts and Al-Azhar University reveals that most students come to college accustomed to learning environments in which an authority figure (the teacher) sets the standards by which learning is to be judged and does the judging, while each student works in isolation to achieve the highest possible grade on a normative scale based on the group performance. This is continued at university, with its consequences of ‘trying to please the teacher’ at the expense of others. Few instructors work on an individual basis, aiming at refining students’ learning abilities within the context of developing particular content skills.

Moving to the experiment of MIU, the explicit focus of the learning process is directed to developing the students powers of observations about their learning behavior mean (inference and theory making), and proceeding to change the array of expectations and skills they brought to the experience (modify their theory in use).

Another pattern that deserves comment here is the students’ involvement in the making of judgments - even though the standards are imposed, both in the criteria and in the concept of effectiveness as the measure. In both individual and group works, students learn how to assess individual behavior rather than to compete or to compare, getting accustomed to helping each other in assessing and modifying their work.

Likewise, the introduction of experiential learning addresses the integration between the two modes of thinking, the analytical, linear, sequential skills on the one hand and the synthetic, relationship-cognitive, intuitive and imaginative skills from the other; in other words, all essential skills required for future architects who will take the responsibility of serving their societies.

Finally, the implementation of experiential learning provides students with a better understanding of the diverse considerations in the built environment. It has made them more able to identify emerging problems and needs, and concomitantly more flexible to conceptualize ways of dealing with them within their overall contexts.

**Recommendations**

Arguing for a real shift from the current dominant teaching mode to the experiential one, the entire Egyptian educational system needs to be examined. Beginning with school education, teachers should be trained on how to move beyond textbook teaching to more interactive models of conveying ideas and encouraging students’ creative thinking abilities.

As for experiential learning in theory-lecture courses, more interactive models of teaching in which the instructors act as facilitators, and guide students on how to differentiate between learning about and learning from the built environment should be implemented. Over and above, the conventional teaching approach needs to change, with a closer look at theory-lecture courses, aiming at the realization of experiential learning as educational paradigm to shape the future of our profession for the better.
References


Exploring the Cube: Experiments in the Teaching of Architectural Design

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Preamble

This paper deals with a course on basic architectural design I taught at the University of Jordan in the fall semester of 1999. The course was for second-year students who had finished a year of general engineering classes as a prerequisite for entering the university's Department of Architecture. When starting this course, their only academic exposure to architecture consisted of a course on architectural drafting they had taken in the previous summer.

A few comments should be made about the type of student that usually enters schools of architecture in Jordan, and I expect that this characterization also applies to students in many other countries. These students come to schools of architecture with conceptions about their built environment that are both disturbing and amusing. These conceptions are the result of images and ideas that had been accumulating in their minds over the years. Not only are these students very much unaware of world architectural developments, but they also are oblivious to Jordan's rich archeological and architectural heritage, which includes the Roman city of Jerash, the Nabatean - Roman city of Petra, the Umayyad desert castles, and the vernacular village architecture of the Jordanian countryside. In fact, it is interesting that many of these students begin their architectural education without ever having visited any of these sites. Instead, the students' conception of what makes 'good' architecture is based on the contemporary buildings they see around them, and usually is based on a simple formula in which the bigger and more expensive building is the better work of architecture. Consequently, an instructor dealing with such incoming architecture students is not dealing with a tabula rasa in terms of their architectural knowledge. On the contrary, one deals with students who have relatively clear and specific ideas about architecture. It is just that these conceptions do not contribute to creating a healthy built environment, but very much go along with the sense of exhibitionism and flamboyancy characteristic of a good part of contemporary architectural production in Jordan. As a result, the challenges of teaching such a group of students not only include developing their abilities at understanding and creating architecture, but also helping and encouraging them to unlearn ideas about architecture that had been accumulating unconsciously in their minds over the years.

As a way of addressing this situation, I decided to devote this one-semester basic architectural design course I was to teach to a specific and well-defined theme, which is the exploration of the cube. The course began by exploring the cube as a set of lines and surfaces, and ended by attempting to develop what the students had learned about the cube into a simple architectural composition. On the face of it, this theme, which depends on an exploration of basic formal relationships, seems neither novel nor creative. In fact, it might seem a bit old-fashioned since many of us who had been educated in Bauhaus-influenced architectural pedagogic traditions had been subjected to similar experiences as first-or second-year architecture students. Some may view this experiment as reactionary in that it reduces the study of architecture to merely an investigation of a set of formal relationships. Accordingly, it can be argued that such an approach ignores how architecture, as an academic and professional discipline, has evolved in
complexity as a result of the development of interdisciplinary directions that are connecting it more effectively to a vast variety of disciplines including history, literature, behaviorism, and business management. Moreover, the discipline of architecture is being transformed as a result of the ongoing spectacular developments taking place in computing technologies. However, I decided to move into an opposite direction in relation to those currently widespread in schools of architecture, and took an approach I refer to as a ‘return to basics,’ an approach for which the advantages hopefully will become clear as this paper progresses.

The teaching of this course followed a number of guidelines. For one thing, I never held an individual design critique session with any of the students. We all sat around a makeshift table that resulted from putting together the individual worn-out drafting tables of the studio, and whatever comments the students or I made were directed to the whole class, rather than to one individual. Consequently, the individual student did not present his or her work only to the instructor, but shared it with the rest of the class, and the discussion that took place concerning a student’s work involved all the students and not just the individual student and the instructor. Of course, I was fortunate in that the studio only had nine students, thus allowing for a very high level of interaction.

A second guideline was to discourage students from using drawing or drafting equipment, whether pencils, pens, paper, or T-squares. Of course, this also applied to Computer-Aided Design programs, which provide an electronic substitute to traditional drawing and drafting tools. This came as a shock to the students, who arrived on the first day of class well equipped with T-squares, triangles, pens, pencils, and paper. Instead of working through the intermediacy of two-dimensional drawings, the students were expected to directly create the three-dimensional models required for the process of exploring the cube.

The reason behind this emphasis on constructing three-dimensional models, rather than drawings, was to encourage students to deal directly with tangible materials and forms, to think three-dimensionally, and to emphasize the exploration of forms and spaces that have textures and that interact with light. The drawing phase, on the other hand, forms a layer of representation, and therefore of abstraction, that separates the students from the objects they are creating. Previous experiences with students I have taught had shown me that the approach to architectural design that many of them follow (primarily as a result of the influences of their instructors) is to draw a plan and to simply project it into a three-dimensional composition. Obviously, such students did not give much thought to the forms and spaces of their designs, but looked at the design process more as one of creating a set of disconnected two-dimensional drawings that primarily consist of plans and elevations. The results of projecting their plans to create three-dimensional objects ranged from the utterly mundane to the unusually surprising.

Admittedly, this emphasis on the three-dimensional model indicates a prejudice to design approaches promoted by the Bauhaus and a critique of approaches connected to the Ecole des Beaux-Arts. Many might state that the field of architecture, on the pedagogical, academic, intellectual, and professional levels, has transcended both approaches to architecture. However, it also can be argued that even today, the two approaches continue to represent two poles of a dialectic relationship that define the teaching and practice of architecture, though often in transformed guises. The Ecole des Beaux-Arts emphasized the production of architecture through the medium of two-dimensional drawings. On the other hand, the Bauhaus, at least during its early years, sought to create not only designers, but also craftsmen who worked directly with the forms they created and the materials used for making these forms. Also, it should be kept in mind that attempts at rejecting, or at least limiting, the importance of the two-dimensional drawing
have to fight against a long established tradition that can be traced back to the Renaissance in
the fifteenth century. Here one specifically thinks of a figure such as Leon Battista Alberti (1404
-1472), who approached architecture as an intellectual discipline. Alberti consciously worked on
‘elevating’ the architect from the rank of a craftsman who worked with his hands to a designer
who produced instructions through media such as drawings for craftsmen to execute.3

In terms of design approaches, certain approaches were emphasized over others for this studio.
One of them was to concentrate on particulars rather than on what Robert Venturi referred to
as the “The Obligation Toward the Difficult Whole.”4 I do not underestimate the importance of
developing the student’s abilities to deal with the ‘difficult whole,’ but I have serious doubts as
to whether a novice student should immediately set about conquering this skill. I still remember
how when I first started teaching at the University of Jordan in the early 1990s, I was assigned
to a third year architectural design studio where the students were asked to design a high-rise
hotel in a period of less than half a semester. Obviously, the results were far from satisfactory,
especially since most of these students still had not developed the skill of providing an adequate
layout for a space as small as a bathroom. I believe that overwhelming the students with large
and complex projects at early stages of their education is counterproductive. Consequently,
I felt it would be best to begin the process of teaching architectural design by keeping most
variables constant and having the student only concentrate on a small number of variables at
a given time. In addition, the emphasis on an object that is (superficially at least) as simple as
the cube had another aspect to it. This was to encourage students to devote more attention to
details, such as the joints resulting from the meeting of different materials and surfaces, and
to find pleasure in exploring and perfecting these details in a manner that can be referred to as
‘Messian’ in character.

This brings me to another issue, which is that of encouraging the student to explore the ‘com-
monplace’ and the ‘mundane,’ and to look for the beautiful and the extraordinary in it. Beauty
is not limited to the dramatic, and one does not only encounter it in settings such as the interior
of Hagia Sophia or the Grand Canyon. In this context, I very much adhere to prescriptions
about this issue that the French author, Marcel Proust (1871-1922), provided. Proust is noted
for his ability to uncover the powerful and moving in what superficially appears to be ordinary
and uninteresting. How he transformed in his A la Recherche du temps perdu the seemingly
mundane act of drinking tea and eating a madeleine cake into a rich sensory experience that
brought about intense memories from childhood is now considered part of essential knowledge
on the development of Western literature. However, I found one experience that Proust relates to
be especially relevant to devoting a design course to the exploration of the cube. Proust relates
a narrative about a young man who complained that the relatively limited economic means of
his family did not allow him to collect expensive, beautiful works of art, but condemned him
to be surrounded by common everyday objects. Proust had a very interesting reaction to this
man’s quandary. He suggested that this young man visit the Louvre, not to view monumental
and heroic works of art, but specifically to become acquainted with the works of the painter
Jean Baptiste Simeon Chardin (1699-1779). Chardin is well known for his still-lives that depict
every-day objects such as fruits in a bowl and household utensils. Proust explains how Chardin
managed to represent these ordinary objects in an extraordinary manner that explores their
forms, textures, colors, and interaction with light. In other words, Chardin brought out the
extraordinary out of the ordinary.5

This exploration of the cube also aimed at encouraging the students to think about architecture
in an abstract rather than a representational manner, which brings me to my earlier comment
about how the students come with clear conceptions of what architecture is. As a design instruc-
tor, it always fascinated me how most students can only view architecture in a representational manner, i.e. as a collection of familiar elements such as doors, windows, or sloped roofs with shingles and dormers. Usually, the doors, windows, and roofs they design are similar to ones they are exposed to in their daily lives. Therefore, I tried to encourage the students to explore architecture in a more abstract manner, one that views architecture as lines, surfaces, forms, spaces, colors, and textures that relate to each other through relationships such as opaqueness, transparency, harmony, tension, and contrast.6

The Exercises

The course consisted of a series of relatively short exercises. Before describing these exercises, it should be stated that although the methodology for this course and most of its exercises were determined beforehand, a number of modifications were made to the structure and content of the exercise as the course progressed. This was a response to feedback that the students provided, and also aimed at better addressing the challenges and difficulties they were facing.

Exercise 1: The corner. The object of the exercise was to encourage students to explore the idea of the joint, of which the corner is an example. The corner is the result of the meeting of three lines at perpendicular angles. The students were asked to treat this meeting of lines as a visual event, one that transforms three elements (the lines) into one (the corner). Balsa wood was to be used as the material for the exercise.

Exercise 2: The transparent cube: The cube as lines. The cube can be defined as a closed shape consisting of twelve lines that are parallel or perpendicular to each other, and that form eight corners. The students were asked to carry out the exploration of the cube as lines through a series of short exercises. Numerous restrictions were placed on the students for these exercises. The restrictions were extensive for the first exercise, but gradually were removed as the students proceeded from one exercise to the next. In this emphasis on restrictions, I adhere to the opinion that good art often results from dealing with limitations. Such limitations provide students with considerable challenges that force them to explore new frontiers they had not considered earlier.

Consequently, the students were asked to build the outline of a cube out of wire and to create a composition in which they were allowed to add lines to the original cube. Initially, these lines had to be parallel (or perpendicular) to the existing original twelve lines of the cube, and could not penetrate the interior space defined by these twelve lines. Obviously, such an exercise does not provide the students with many alternatives. However, it does make them more aware of the relationships that connect lines, surfaces, and spaces. Here, some of the students addressed this challenge of being presented with a limited range of compositional arrangements by engaging in a process of lateral thinking. Consequently, rather than attempting to create new patterns through the addition of lines, they concentrated on creating interesting visual compositions through introducing lines of different colors and materials, and on developing the manner in which the lines were joined to each other.

In the following explorations of the cube as lines, the students gradually were allowed to remove the restrictions put in place for the first exercise. They were provided with the opportunity to penetrate the space of the cube, initially with lines that are parallel to the original twelve lines of the cube. Following that, they were allowed to introduce the 45-degree angle, and from there, they to work with other angles. Finally, they also could do away with the straight line, not only for the newly introduced lines, but also for the original lines of the cube.

Exercise 3: The opaque cube: The cube as surfaces. Here, the cube is treated as a closed shape consisting of six surfaces that are parallel or perpendicular to each other. The students were
asked to provide two-dimensional articulations of these surfaces through the use of two colors, black and white, and two materials, cardboard and paper. The students could either approach this exercise through creating a white cube that is articulated with black surfaces, or creating a black cube that is articulated with white surfaces.

Exercise 4: The opaque cube. The students were then asked to treat the cube as a mass from which elements could be removed. This in fact was one of the exercises that were devised as the course evolved, rather than before it began. Here, each student was asked to construct a cube out of plaster, and to remove elements from it with a chisel and hammer, in the same manner as a sculptor would work with a block of stone. The students then were asked to move from this subtractive exercise to an additive one in which they would create compositions projecting out of the mass of the cube. For this second exercise onward, they returned to working with cardboard and paper.

Exercise 5: The cube as space. This exercise emphasized exploring the cube as a space enveloped by six surfaces, or as a mass out of which spaces would be carved out. The students carried out a series of exercises in which they penetrated the space defined by the cube, placed objects inside that space, and also projected the objects beyond the boundaries of that space. Following that, they were asked to move from the particular to the whole in that they took a series of small cubes and arranged them together so that their sum evoked the image of a larger single cube.

Exercise 6: The ‘free’ cube. As the exercises progressed along, almost all restrictions were removed. The students eventually were allowed to create whichever three-dimensional composition they wished, with two conditions: that they continue working with cardboard and paper, and that the resulting composition would maintain a visual link to the cube.

Exercise 7: The cube as architecture. This process of exploring the formal qualities of the cube could have continued for the duration of the semester. However, the students in the class and my colleagues who taught other sections of the course were growing impatient with the length of this abstract exercise and kept reminding me that I am supposed to teach architectural design, rather than only basic design. I gave in to these pressures and developed an exercise in which the students were asked to design a very simple structure that housed a single function. They therefore could design a structure that functioned as a shop, a stage, an exhibition area, etc. As a continuation of the theme of the course, they were asked that the resulting form of this work of architecture be visually connected to the cube. As the students began working on this project and the results of their work began to materialize, I was quite happy that I succumbed to the pressure of moving from the realm of abstract forms to that of realistic architectural compositions. Interestingly enough, the students, who had not yet been exposed to the works of established architects ranging from Le Corbusier and Mies van der Rohe to Rem Koolhaas - let alone had heard of them - were creating compositions in the spirit of the work of these architects that expressed similar attitudes towards space, mass, and architectural details.

**Epilogue**

The exercise of teaching this course was an enjoyable and satisfactory one. Through it, the students intensely explored issues including compositions consisting of lines, surfaces, spaces, and masses. They also learned to deal directly with different materials, and learned about the visual and technical challenges and opportunities that each material presents. Even though they concentrated on an exploration of formal relationships, they also had to think about issues such as craftsmanship and details. Interestingly enough, one of the conclusions that came out of this exercise was that even the students who initially seemed to express weak design abilities came
Figure 1: The cube as lines (I).
These two designs show how the students dealt with the restriction of only being able to place lines that are parallel (or perpendicular) to the existing original twelve lines of the cube, and that could not penetrate the interior space defined by these twelve lines. The design on the left emphasized the manner in which the lines joined each other by exaggerating the knotting of the corners, and the design on the right introduced lines made of different materials (threads) and different colors than the original lines of the cube. (Designs (from left to right) by Hana Sharaf and Rania al-Askar)

Figure 2: The cube as lines (II).
These two designs indicate how the students developed dealing with the cube as transparent lines. The students built upon the experiences learned in the previous segment of the exercise. The design on the left developed the theme on introducing lines of differing colors and materials in relation to the original lines of the cube, and developed interesting three-dimensional patterns out of them. The design on the right created a simple design in which the interior space of the cube was divided into six pyramids. However, the pyramidal shapes were movable, and this allowed the designer to create a wide variety of permutations of the cube by removing one or more of these pyramidal shapes. (Designs (from left to right) by Hana Sharaf and Rania al-Askar)

Figure 3: The cube as surfaces.
This design shows a simple composition that can be experienced as a white cube with black surfaces wrapping around parts of a black cube with white composition surfaces wrapping around parts of it. (Design by Fadi Sukkari)
Figure 4: The 'free' cube. Each student reacted to this exercise differently. A number of students created compositions for which the connection with the shape of the cube was consciously and severely weakened. The student who created this design, however, chose to maintain the integrity of the cube, but once one 'opened' the cube, a new composition emerged that evoked a grouping of closely placed urban high-rise buildings. (Design by Rania al-Askar)

Figure 5: The cube as architecture. This design consists of two spaces, a dentist's office and a storage space. The project is very reminiscent of Le Corbusier's work of the 1920s. Interestingly enough, the student at that point had neither heard of Le Corbusier nor had she seen any of his works. (Design by Hana Sharaf)
up with very satisfactory results. One question that arises out of this observation is whether the accomplishments of students primarily depend on the level of their inherent abilities, or whether the majority of students do possess an acceptable level of inherent design abilities. If one accepts the latter opinion, it is then the responsibility of the instructors to help the students, through a series of patiently and sensitively carried-out efforts, identify and bring out these abilities.

Another important issue that comes forward as a result of this exercise relates to the methodological directions in architecture to which students should be exposed, and also the skills they need to master in their subsequent years of architectural education. The institution with which I was associated when teaching that course, for better or worse, did not advocate a specific long-term design methodology. Consequently, I did not get the opportunity to fully explore this issue with my colleagues there. The class on basic architectural design that I taught only formed a very small component of the students' overall design education, let alone their architectural education. Rather than looking at the course as an end in itself, it should be viewed as a first step in a lengthy and involved process. Such a process not only should provide students the opportunity to further develop their abilities to deal with the formal aspects of architecture. It also should place extensive efforts on developing their abilities to face the challenges confronting those involved in the contemporary world of architecture. These challenges include, among other things, the relation of architecture to its urban setting, issues of heritage, rapidly changing technologies, and the continuously changing social and economic contexts in which architecture exists.

Notes:

1 For an overview of developments relating to the teaching of architecture, see Ernest L. Boyer and Lee D. Mitgang (1996), Building Community: A New Future for Architecture Education and Practice, The Carnegie Foundation for the Advancement of Teaching, Princeton, New Jersey. This publication deals with schools of architecture in the United States, but the information it includes is of relevance to the teaching of architecture anywhere. A response to the work of Boyer and Mitgang is provided in Joseph Press (1998), "Soul - Searching: Reflections from the Ivory Tower, Journal of Architectural Education, vol. 51, no. 4, pp. 233 - 242. Concerning the influence of developments in computing technologies on architectural design, see the writings of William J. Mitchell, who currently is Dean of the School of Architecture and Planning at the Massachusetts Institute of Technology, and who has provided among the most eloquent writings on the subject. For a more detailed view of Mitchell's ideas, as well as for a selected bibliography of his writings, see Mohammad al-Asad and Majid Musa (2000), The Future of the Design Studio and an Introduction to the ArchNet Project: An essay on a presentation made by William J. Mitchell to Dwean al-Mimar on February 25, 2000, in the e-publications section of the web site of the Center for the Study of the Built Environment (CSBE), www.csbe.org.

2 I borrowed this method of integrating the whole class in the design critique process from Professor Yasir Sakr, my colleague at the University of Jordan's Department of Architecture. For additional information on the concept of discussion teaching, see Anne Sweet, C. Roland Christensen, and David A. Garvin, (1991), Education for Judgement: The Artistry of Discussion Leadership, Harvard Business School Press, Cambridge, Mass.


5 A lively account of Proust's narration of the experience of this young man is provided in Alain de

Admittedly, this emphasis on architecture as a collection of abstract, rather than representational, components came under attack in «postmodern» critiques of architecture. Robert Venturi provides what is among the more articulate of such critiques. He argues «against the proposition of Modern architecture that form should be the result of the application of physical or mathematical laws rather than of pervasive association or esthetic ideologies.» See Robert Venturi, Denise Scott Brown, and Steven Izenour (1977), *Learning from Las Vegas*, rev. ed., MIT Press, Cambridge, Mass., pp. 128 ff.
Post-war Recovery Studies at the University of York: Interdisciplinary Education Addressing the Challenges of Rebuilding War-torn Communities.

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Introduction

As suggested elsewhere in this volume, many architectural initiatives and endeavors are a luxury: an escape from the functionality of drab municipal buildings, an opportunity to display success, revive traditional designs, or experiment with new materials. For many though, construction is borne out of necessity. The post-Cold War era has witnessed a series of 'new wars' of enormous destructive capacity. Whole cities have been destroyed (Grozny), populations have been displaced (Kosovo), housing and land have been deliberately made uninhabitable (Bosnia), and sites of historic or religious importance have been razed (India). The result has been an urgent need for reconstruction. But reconstruction is only part of the jigsaw. Post-war scenarios are incredibly complex, involving the need to address the causes of conflict, deal with the effects of the conflict in terms of refugees, trauma or the restructuring of government, and crucially, establish sustainable development.

Professional specialization among academics, aid workers, or even architects means that it is often difficult to achieve a holistic approach to the needs of post-war communities. Based at the University of York, the Post-War Reconstruction and Development Unit (PRDU) adopted an interdisciplinary approach, positing reconstruction in the broader context of development and peace-building. Many of the students undertaking its MA in Post-war Recovery Studies are architects and use the course to augment their professional skills with other skills and perspectives needed to operate in a post-war environment. This chapter begins with a short review of the changing nature of contemporary armed conflict and the resultant need for reconstruction. It then outlines the approach taken by the PRDU, particularly in its teaching activities in which there is significant overlap in terms of research, teaching, and practical experience.

The Changing Nature of Violent Conflict and the Need for Reconstruction

Humans are particularly good at conflict. In the 1989-99 period there were 110 armed conflicts in 73 locations. In 1999, 37 of these conflicts were still active (Wallensteen & Sollenberg, 2000, 635). Significantly, the nature of conflicts has changed in the post-Cold War era. Characterized as 'new wars', many of these conflicts have features that set them apart from conflicts facing previous generations (Kaldor, 1999).

They tend to be intra-state conflicts, revolving around the disjuncture between nation and state. They tend to be longer and less decisive than wars in earlier periods. Such conflicts also tend to be labeled as 'ethnic conflict'. But this label is erroneous and implies that these conflicts are somehow 'tribal', essentially unchanged from ancient conflicts and driven by primordial instincts rather than rational motivations. Instead, it is worth stressing that contemporary 'ethnic' conflicts tend to revolve around thoroughly modern issues such as access to resources. These
resources might be political power, social provision, or the right to cultural expression. In other words, they are the violent contestation of precisely the same issues that dominate politics in all societies - including the most peaceful.

It is the human impact of the 'new wars' that sets them apart from previous conflicts. Casualties and direct participation are lower than in previous wars but civilian casualties as a proportion of total casualties are higher. Population displacement and societal disruption have become a deliberate war aim, rather than a mere by-product of war. The availability of surplus weapons, often imported from other conflict areas, has also become a major factor in the nature, intensity, and persistence of these new wars.

The visible manifestation of these conflicts comes in the form of physical destruction — hence the need for reconstruction and the relevance for architects and planners. Politics, conflict, and the physical environment are intimately linked. But, as the rest of this section outlines, the complications of a post-war environment mean that the issue is rarely straightforward.

 Territory may still be contested despite the formal end to violence. It may have changed hands as a result of 'ethnic cleansing' and a new group may claim ownership. As a result, reconstruction efforts might risk being interpreted as a political initiative, intimately linked with wider political objectives such as nation-building. For example, Jewish settlements on occupied Palestinian territory are much more than simple construction projects. Instead, they are political and symbolic statements of identity and purpose. Territory may also be 'out of bounds' to particular groups, with restrictions on tenancy and land ownership. Militarized zones and landmines may also restrict civilian use of large swathes of territory.

Another complication facing those involved in reconstruction efforts may result from the changing size and composition of the population in the post-conflict area. Refugee flows may mean that certain areas are subject to dramatic movements of population, all of which might have significant implications for infrastructure and social provision. For example, a local authority may have to accommodate a sudden influx of refugees who might differ in culture or religion from the host population. It is worth noting that an estimated eighty per cent of refugees are Muslim. Even the architectural styles of the two cultures may differ (often related to family structure and living arrangements), thus complicating the provision of housing.

A major reconstruction complication often stems from conflicting national and local reconstruction priorities. A local emphasis on housing and agriculture might conflict with national priorities such as a reorientation of the national economy to reconnect with the global economy. Economic constraints on the reconstruction process prompt tough choices, but who makes those choices? The intricacies of local politics, more than likely raw in a post-conflict environment in which embittered communities share the same territory, often complicate matters.

A fundamental dilemma facing those post-war societies is the choice between construction and reconstruction. Some might regard the effects of conflict as an opportunity for the introduction of new ideas on construction and architecture. In a sense, it is a wiping clean of the slate and an opportunity to start afresh. For others though, strict reconstruction (a recreation of the old) may be more appropriate and the rebuilding may have symbolic significance, conveying a message of the legitimacy of the pre-existing regime or political and social order. Construction and reconstruction efforts may also extend to physical memorial schemes. Commemoration activities have the potential to be controversial, particularly if they are selective in whom they commemorate.

Reconstruction activities are often aided by external third parties, in the form of overseas govern-
ments, and international and non-governmental organizations. In the main, such interventions are helpful and the multiplicity of agencies can lead to a fruitful cross-fertilization of ideas and practice. But the multiple entities and lines of communication can also lead to confusion and duplication. Another danger inherent in intervention activities is ethno-centrism, or the risk that the mores and norms of the intervening party (often Western-based) are implanted without due regard to indigenous power structures and behaviour.

A final complication relating to reconstruction activities relates to the competing needs for immediate relief or long-term and sustainable development. The immediacy of human needs may mean that it is difficult to maintain a strategic view, prioritizing needs within an overall framework for long-term development.

The Course

The Masters course in Post-war Recovery Studies at the University of York evolved from considerations like those sketched above. The course originated within an Architecture Department that contained expertise in conservation¹. These skills were much in demand as the 1990s witnessed a number of conflicts that endangered sites of cultural importance. But the scale of destruction extended far beyond cultural and architectural jewels to encompass more prosaic structures such as housing, municipal buildings, and physical infrastructure. It was apparent that mere physical reconstruction was an insufficient solution to the problems of post-war societies. Reconstruction had to be placed in a wider context of relief, development, and peace-building. To this end, the Post-war Reconstruction and Development Unit (PRDU) sought to train a multi-disciplinary body of professionals in the analytical and planning skills required to propose, design, and execute recovery programs in post-war societies².

The course is based on the idea that there are no templates for recovery and reconstruction — every situation is different and requires sensitivity. Likewise, no single profession holds the key to recovery. Cooperation is required between architects, planners, community and political leaders, and many others. This is no small feat in a developed and peaceful society. In the context of a post-war society, the difficulties are exacerbated by inflamed cultural sensitivities, the urgency of basic needs, a plethora of aid agencies/international actors in addition to the significant risk of resurgent conflict. Consequently sensitivity, understanding and humility, combined with the willingness to listen and to learn from local people, are of paramount importance.

The course provides students with the theoretical framework within which to position themselves and their actions in the field. Training includes the ability to:

Analyze and understand the nature of conflict, the impact of war and its demands upon local, national and international actors, so to develop appropriate solutions with special attention to local cultures and systems.

Understand the recovery process through exploration of the dynamics of rebuilding the social, economic, psychological, political, and physical frameworks of war-torn societies.

Impart international principles and ethics of conflict resolution and peace-building in relation to reconstruction and development so that professionals have standards by which to evaluate proposed activities.

Examine the professional’s role and provide technical, organizational and managerial training in assessing needs, designing intervention programs, working with communities, as well as project monitoring and evaluation.

Provide students with general skills required to manage and administer a working team, raise
funds, and train the trainers.

The MA course has a deliberate sequence, beginning with a module on 'Understanding Conflict', before moving onto more practical modules on 'Skills for Working in Conflict Communities', 'Strategic Planning and Project Evaluation' and 'Management and Organizational Skills'. Issues from the politics of third-party intervention to risk assessment and landmine awareness are covered. In its delivery, the course draws on an impressive array of speakers from a wide range of international organizations (UN, NGOs, relief and development agencies, the media, military personnel, etc.).

Most of the students have worked in post-war environments in a professional capacity and so their prior experiences provide the course with a foundation and lend themselves towards interactive teaching methodologies. Moreover, each year a number of students come from war-torn societies and are able to bring a unique perspective to the classroom. Occasionally, this can be problematic, with students being 'too close' to a particular conflict to maintain an objective viewpoint. The course places a heavy emphasis on comparison though, and students are encouraged to think outside the region they know best. The multi-ethnic nature of the class demands an accessibility and universality in teaching styles and related materials. Much ethno-centrism is subliminal, and an accepted part of the teaching and academic culture of the particular society, but the course attempts to counter it through regular feedback and review sessions.

Classes are taught 'conference style', with everyone around a hollow square of tables and everyone encouraged to participate in discussion. Although there is a strong emphasis on the theoretical and ethical issues linked with humanitarian intervention and related topics, the course has vocational elements in the form of group exercises, a field trip to a post-war environment, and a work placement. The aim here is to allow students to critically analyze the linkage between academic conceptualization and debate and practical activities. During a group urban regeneration exercise, for example, small teams of students will visit a deprived area of England, assess its needs, and formulate a recovery plan.

A conscious attempt is made to feed current practice and knowledge from the field into teaching. In particular, PRDU research feeds into the teaching program, with, for example, research activity in Afghanistan, Sri Lanka, Somalia, and Indonesia forming the basis of case studies. (Barakat et al, 2000). A multi-disciplinary approach encourages students to step beyond their professional cocoon and consider the reconstruction and recovery process in more holistic terms. Those of our students who are architects might bring a specific skills-set to the course, (for example, an ability to interpret an urban environment). Interaction with their fellow students from other professional backgrounds, (for example, soldiers or aid workers), forces them to critique thought-processes they may have regarded as automatic. The aim is not to de-skill architects or other professionals. Instead it is to help complement those skills with a broader appreciation of the complexities of a post-war environment.

Of course, the mere training of professionals to work in a post-war environment does not offer a long-term solution to a society’s reconstruction. Instead initiatives need to emphasize the importance of long-term and sustainable development. With this in mind, it is important that practitioners enhance and assist prior-existing local skills and practices. Just as medical doctors are taught to do no harm, we must be sensitive in our interventions. Western utopias - in architecture just as much as in constitution building or social inclusion strategies - need not necessarily offer the answer to all our woes.
While we can develop our teaching courses to impart knowledge and skills, designing a pedagogy based on ethics and values is much more difficult.

Notes

1. The Institute of Advanced Architectural Studies was established in 1946 and became the first academic department of the University of York when it was established in 1963.

2. The Post-war Reconstruction and Development Unit was founded in 1992 by Dr Sultan Barakat and Charles Cockburn, and started by offering a Continuing Professional Development programme.

3. A two-month internship with a humanitarian organization engaged in post-war recovery work forms an integral part of the course for each student. Similarly, a group field visit to a conflict/post-conflict environment takes place each year; previous field visits have included: Iran, Lebanon, Sri Lanka, Afghanistan, and Croatia.

4. Aside from its teaching and research activities, the PRDU is engaged in important consultancy and facilitation work for organizations working in a diverse range of conflict/post-conflict environments, including: Croatia, Bosnia-Herzegovina, Somalia, Indonesia (Aceh), Sri Lanka, Colombia.

5. The professional backgrounds of current students include: Medicine, Business Administration, Adult Education, Civil Engineering, Political Science, Logistics, Linguistics, Law, International Relations, Health Services Management, Relief and Development, as well as Architecture.

Bibliography


Reading the Traditional Built Environment of Oman

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"The mask of an old man is as indecipherable at first glance as a sacred stone covered with occult symbols: it is the history of various amorphous features that only take shape, slowly and vaguely, after the profoundest contemplation. Eventually these features are seen as a face, and later as a mask, a meaning, a history."

Octavio Paz, The Labyrinth of Solitude

Introduction

Traditional societies caught in the throes of a globalizing (post)modernity confront the inevitable and paradoxical situation once articulated by Paul Ricoeur: "In order to get on to the road toward modernization, is it necessary to jettison the old cultural past which has been the raison d'etre of a nation?" Our cultural critics chart a fateful dialectical equation for the survival of national and local cultures in terms of a cultural need for roots as well as wings: to be deeply rooted in its local soil while capable of soaring in the global flight. This problematic paradox embodies what is perceived as a total cultural crisis in the Arab-Muslim world today. Within this cultural crisis, contemporary architecture and the built environment lie in an unprecedented maelstrom of accelerated urban development and transformation.

This state of affairs is reflected in an urban condition characterized by a profound crisis of identity. Caught at the crossroads between tradition and modernity, the contemporary Arab-Muslim built environment has been fashioned by a curious mix of traditional and modern imported forms in a highly fragmented urban landscape. The accelerated urbanization has culminated in an urban environment void of social space where meaning has been replaced by "the kitsch appliqué of regional pastiche." This has resulted in the prevalence of an alienating urban scene where social experiences are commodified. Meanwhile, environmental, social and cultural forces, which had made the traditional built environment meaningful, coherent and sustainable, remain unengaged in the process. Driven almost entirely by market forces and processes, this situation is partially caused by the absence of a critical approach within our mainstream architectural discourse. The lack of a critical engagement of the architectural subject as an essential part of society's cultural enterprise has minimized the role of architecture in societal, collective, spatial, and cultural production.

Thus, in order to make sense of our modern condition and its restructuring process of socio-spatial order, it is imperative for our architectural education to incorporate a critical approach to the reading of the traditional built environment as an essential part of the curriculum. This needs to surpass the discourse of form and ornament by involving a cross-disciplinary approach in explaining the relationship between social and cultural factors and architecture. Further, it needs to encourage a cultural debate in (and out of) the design studio where we can reinterpret and redefine our cultural and socio-spatial paradigms.

In this light, an attempt to formulate an adequate architectural profile is underway at the Sul-
tan Qaboos University in the Sultanate of Oman. As such, the proposed program is structured around a European model, with a special emphasis on the study of indigenous and vernacular architecture and conservation. The objective is to explore the possibility of producing an architectural language within this curriculum that can incorporate concerns related to tradition, modernity, continuity, societal ethics, and aesthetics. To achieve its goal, therefore, the new curriculum should include numerous readings of the traditional built environment and from different perspectives. Importantly, it needs to go beyond conventional scholarship, which tends to over-emphasize the visible side of traditional milieus. Thus, to transcend traditional form and realize our modern social space and time in the form of contemporary architecture, it must take into account (invisible) social and cultural forces and factors to create geometric patterns and then architectonic forms. The following highlights some of the factors essential to the reading of the traditional built form. However, it is imperative at the outset to reflect on the typical form and context that represent the visible side of this particular built environment, which attest to the efforts of the traditional mason to incorporate all relevant elements including foreign influences into an architectural synthesis. This ‘visible side’ of the traditional architecture, dubbed as ‘Islamic,’ has been the dominant subject of our architectural discourse, which had historically belonged in many instances to the Orientalist imaginary.

Form and Context

In an ancient legend, King Solomon, in a miraculous flight across his vast kingdom, landed in the rugged Hajar Mountains of Oman. When he could not find water, he commanded his djinns to construct aflaj (sing. falaj, or intricate networks of irrigation systems believed to have first been built by the Sassanids before 1000 BC. Since those earliest years, aflaj have transported fresh water from an underground aquifer in these mountains and made life not only possible but also sustainable in one of the most arid regions in the world. Human settlements flourished along cultivated terraces among hills and valleys of the hinterland. As an ancient traditional structure, aflaj represented the true manifestation of life to Omani society. However, the earliest structures found are the silent beehive-like burial grounds of Hafit, Bat, and other sites thought to date back to the third millennium BC. Across the country, pre-Islamic citadels and fortifications such as Buhla (built by early Arab settlers from Yemen), Rustaq (built during the Sassanid period), and Nakhal (renovated in 815 AD.) dominate the spectacular landscape of the Hijjar. Other fortifications were built in later Islamic periods, such as Nizwa (845 AD.), Mirani (Portuguese 1590 AD.), and Jalali (Portuguese 1687 AD.). A few fortified palaces such as Jibrin (1700 AD.) and Hazm (1714 AD.) along with other smaller residences built for sheikhs dominate the labyrinthine fabric of towns and villages. Mosques (without minarets), madrasas, and suqs blend architecturally with the rest of the community, devoid of signs of grandeur, opulence, or representation of power.

Interconnected and linked by the sophisticated aflaj network and embraced and shaded by groves of palm trees, the typical traditional town appeared as an organic entity. Its architecture was strongly influenced by the contrasting dark colors of the natural terrain, which had also provided the construction materials used, including stone, mud-brick, wood, and lime plaster known as jus or saruj. Its design, form, and orientation had been shaped primarily by climatic forces: bright sunshine, extreme heat, and aridity. Moreover, the austere and minimal character exhibited in this architecture with its human scale reflects the essential religious teachings of a dominant local culture that preaches minimalism in all aspects of life. Other geo-historical factors such as foreign contact and communications through trade or invasions added to its unique character. Such influences resulted in architecture that sustained a unique sense of
continuity, consistency, and authenticity. It personified a cohesive form of community and reflected a sense of societal identity.

Today, photo-imaging and advanced surveying technology permit us, with relative ease, to draft, reconstruct, and document this traditional morphology, expose it to our analytical tools and use its findings as an educational subject. We classify its architectural elements and forms and arrive at a discourse of a traditionally authentic form that could follow a universally human function. However, this approach has led to the production of an urban anachronism where architecture has been reduced to socially meaningless non-efficient 'decorated sheds'. Since architecture is a product of such universal and non-cultural phenomena as knowledge, technology, climate, it is imperative to try to search for 'invisible' cultural attributes within the traditional setting in order to chart an architectural trajectory of difference that reflects societal uniqueness.

One way to unveil how form was generated is through the analysis of the traditional social space and time, a notion known as burmab. Hurmab, a pre-Islamic notion of the sacred and protected space and time, evolved historically to represent the central most significant ethical and symbolic value architecture has to create: a notion that transcends the simple concept of private or territorial enclosures. By applying the concept of burmab as a traditional spatio-temporal construct exhibited in a typical traditional town, we are able to see how traditional masons were guided to create such a sustainable built form. As an outcome of a complex set of day-to-day relationships among its inhabitants and according to their cultural logic, burmab was also dictated by interdependent socio-economic circumstances. Accordingly, internalized social relations become manifest, spatially and architecturally, and burmab evolves, as a consequence, from the realm of the symbolic (socio-cultural value, spatial) to the territorial (architectonic form).

Social Space and Time: Hurmab

The sense of dwelling in the traditional setting is achieved through the attributes of burmab. We 'dwell genuinely' when we attain a sense of hurmab and become enshrined by it. To establish burmab in our lived space is to reflect a pure and virtuous life where social space transcends chaos and facilitates a socially ordered domain. The spatio-temporal domain of hurmab refers, necessarily, to the domain of peace and tranquility. Ideally, creating hurmab at all social levels, both dwelling (family) and community (society), represents the organization of space in the true manner expected from man, God's "vice-regent on earth." Thus, the attribute of burmab is what characterizes Muslim architecture by its introspective space or what some refer to as batin, or "hidden architecture."

However, burmab in its symbolic state precedes and exceeds all reductive and simplistic oppositions (e.g., inside/outside, female/male, high/low). Moreover, it implies the architectonic representation of societal collective value systems and cultural sensibilities, as what sociologist Halim Barakat describes as beduim values: solidarity, chivalry (muru'ab), modesty, hospitality, generosity, giving freely, helping others, and giving protection. In addition, burmab reflects agrarian values inherent in their respect for the qualities associated with the land (love of nature, fertility), family ties (motherhood, brotherhood), and awareness of time and place.

These social values explain some aspects of the traditional urban fabric with its processes of inclusion of different social groups within its social sphere. Its urban composition is characterized by closely knit and accumulative spaces of dwellings with minimum separating distances between spaces. Its architecture manifests in abstract geomorphic forms with a minimum use of ornament on the exterior avoiding any representation of the Self in its power relation to the Other. In fact, spaces to accommodate the Other take precedence over spaces for the Self. Hence,
living spaces, or *majlis*, for guests, dominate the dwelling as well as the community. Courtyards represent neutral spaces where socio-spatial rules are lifted to cater for social interaction and inclusion and represent spaces where nature is cultivated within the dwelling. Architectural form, as such, personifies a collective existence while individual, free self-presentation and representation remain restricted to the private domain.

In such a seemingly labyrinthine setting where physical territorially is replaced by an intricate web of interpenetrated spaces, spatial and temporal thresholds create an innate spatial rationality to accommodate *burmab* and allow it to manifest. They act as essential links holding the urban fabric in a socially cohesive manner and ordering and orienting the type and use of space. Different spatial devices such as archways and twisted architectonic spaces act as spatial thresholds while daily prayers represent temporal thresholds. Within such traditional spatial settings, daily prayers act as ‘invisible’ temporal thresholds by which the experience of space by different members of the community is harmonized and coordinated. Generating a cyclical temporal structure, this most socially influential ritual divides each day (according to the position of the sun in the sky) into five time zones linked by prayers acting as sacred temporal thresholds. Here, each cycle (day) begins with the call for *magrib* prayer (twilight time). The spatio-temporal domain of each prayer constitutes a domain of social and cultural interaction and encounters and a place and time of learning. In this way, traditional social time and space complement and accommodate the shortcomings of each other by assigning different spaces for living, leisure, learning, working, rituals, and festivities. They also accommodate the community’s collective needs in a manner geared toward social equality and cultural fulfillment while preventing any undesirable social interactions.

*Burmab* should always be perceived, however, in its state of constant flux, in its dynamic flow of evolution from its symbolic, egalitarian state (as we have seen) to territorial, hierarchical - and therefore - defensive form. Its territorial embodiment is in a sense a consequence of socio-economic ‘will to power.’ In such an instance, space implicitly (invisible) and explicitly (architectonic form) is structured innately to maintain society’s social relations within the spatio-temporal setting. Like a cognitive or linguistic system of communication operating throughout the whole social network, a spatial construct is organized in a hierarchical order. In such an instance within the traditional system, social order is achieved first, by allocating a ‘center’ to its social domain. Then, by means of spatial construct, the social order allocates and classifies other members of the same social domain; it confines, excludes, or segregates different groups according to their assigned social status and roles within the social space. Therefore, a sense of potential spatial transgression vis-à-vis social destabilization is internalized by everyone, in that ‘social order’ breaks down if this familiar socio-spatial schema is subverted. In its territorial manifestation, *burmab* is reduced to a state of binary oppositions, thereby opposing social domains. Consequently, its architectural manifestation appears hierarchical and defensive and its spaces highly separated and polarized.

*Burmab* is a cultural inheritance, an invisible spatial matrix within the built environment. It provides architecture with ethical imperatives while allowing individuality to reign over the creative process of architectural production. Engaging the concept of *burmab* along with other social sensibilities as a subject of architectural design for our contemporary society could free the culture from reviving nostalgically the forms of the past while yielding new, surprising ones. Thus, we remain challenged to transform such sustaining social and cultural values into a visual language of contemporary architecture which, at the end, could restore our sense of dwelling.
CONCLUSION

The traditional built environment attests to the fact that master craftsmen and masons were able to create a sustainable and ethical built environment with the norms of *burmah*. In order for us — ‘the moderns’ — to achieve continuity and authenticity in our contemporary urban setting, it is imperative to decipher the meanings beneath the traditional form, to unmask architecture and situate it in its social space and time. To study and document traditional forms of the built environment as an educational tool within an architectural curriculum at Sultan Qaboos University, therefore, we must engage critically the study of the socio-cultural aspects of architecture. Importantly, our educational training must provide us with epistemological tools to generate critical interpretations of form and, therefore, to free our creative consciousness from the hegemony of the traditional image. Architectural discourse needs to engage critically not only “society’s visible side-institutions, monuments, works, things,” but also — and more importantly — “its submerged, invisible side: beliefs, desires, fears, repressions, dreams.” We need to involve critically this ‘invisible side’ of our civilization as long as our project of modernity remains incomplete. Perhaps architectural education needs to nurture the innovative consciousness once sublimely expressed by our eighth-century poet, Abu-Nawas:

But I say what comes to me
From my inner thoughts
Denying my eyes.
I begin to compose something
In a single phrase
With many meanings,
Standing in illusion,
So that when I go towards it
I go blindly,
As if I am pursuing the beauty of something
Before me but unclear.

Notes:

4 *The Holy Quran*, Sura 24:30
6 Paz, p. 359
Tools for Architectural Education
STRATEGIES FOR INTERNATIONAL DESIGN STUDIOS
Using Information Technologies for Collaborative Learning and Design

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Background
The design studio has long been a major component of architectural education. Traditionally, it has involved a relatively small group of students working individually under the direction of a studio master. As the world changes, however, there is a need for architects and students of architecture to learn to work and collaborate in an increasingly international, multilingual, and multicultural environment. Computer and telecommunication technologies can assist by offering the opportunity for architectural education and design studios to take place on a global scale with participants reaching across geography and cultures. One such technology and site that can be used for architectural education is ArchNet, a new web-based community that supports communication and collaboration among architectural and planning students, faculty, scholars, and practitioners throughout the world.

This paper will first give a brief overview of ArchNet and describe some of its functionality. It will then discuss the experiences and lessons learned from four long-distance collaborative design studios that took place using ArchNet’s group workspaces during 2000 and 2001 between schools of architecture in Bosnia, India, Japan, Lebanon, Turkey, and the United States.

ArchNet
ArchNet is a web-based community for architects, planners, urban designers, landscape architects, and scholars with a special, but not exclusive, focus on the Islamic world. Some of the topics covered on the site include historical and contemporary architecture, urban design, building technology, development and planning, landscape design, restoration and conservation. Membership is free and open to all.

ArchNet differs from a typical web site in that it considers its members to be builders of the community, not simply passive consumers of information. It sees itself as a two-way medium that promotes communication and the sharing of resources among an international scholarly and professional community in order to foster closer ties between individuals, institutions, scholars, and practitioners throughout the world. Like all communities, ArchNet is expected to change over time. The site has been operational during most of its two-year development period, but we expect to expand, redesign, and refine the site as we explore the technology and the needs of our members. Currently, there are eleven main areas of ArchNet: personal workspaces, group workspaces, digital calendar, digital library, discussion forum, member profiles, institutions, careers, course syllabi, help, and search (figure 1).
On ArchNet we distinguish between members and non-members. Non-members are welcome to view most parts of the site, but they cannot have a private workspace, join a group workspace, create an institutional space, or contribute to the site. ArchNet members, on the other hand, can access, use, and contribute to all parts of the site. There are also three types of membership: individuals, groups, and institutions. ArchNet automatically creates a personal workspace for each new registered member. Group memberships are self-selected groups of ArchNet members who have created an area in which they work collaboratively on a project, and they may restrict all or parts of their workspace to group members only. Institutional memberships are for schools, departments, research centers, firms, and organizations that want to have a formal presence and
identity on the site. Administrators of the institutional spaces must be ArchNet members, and all areas of the institutional spaces are accessible to both members and the public.

**Group Workspaces**

Group workspaces are rather loosely defined as areas for relatively small groups of people who are collaborating together on a project. A group's focus could range from a design studio, to a group of people who are working together on a book, to municipal officials from a certain region who gather to share and compare experiences. Each group has at least one administrator who is responsible for managing the space and its members.

The group workspaces provide a wide range of functions in order to meet the needs of a variety of groups. These functions may be "turned off" by the group administrator if not required. The group workspaces allow for real-time chatting in the meeting room, displaying and commenting on drawings on the pinup board, coordinating schedules and events in the group calendar, storing images, files, and web links in the group's collections, and storing contact information in the group address book. They also keep track of when each member visited the workspace and display any new material created since the member's last visit. Only the administrators have access to the administration page where they can edit material within the group area, create sub-groups, change the visibility controls, and so on.

**Four Long-Distance Studios**

The ArchNet group workspaces have been used to conduct four experimental studios: Miyagi-MIT 2000, Miyagi-MIT 2001, Housing Charrette with Charles Correa, and the Sarajevo Urban Design Workshop and Housing Studio (figure 2).

<table>
<thead>
<tr>
<th>Time</th>
<th>Miyagi-MIT</th>
<th>Miyagi-MIT</th>
<th>Housing Charrette with Charles Correa</th>
<th>Sarajevo Urban Design Workshop and Housing Studio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>4 weeks</td>
<td>2 weeks</td>
<td>2 weeks</td>
<td>2 semesters (14 weeks each)</td>
</tr>
<tr>
<td>Number of students</td>
<td>24</td>
<td>23</td>
<td>40</td>
<td>17</td>
</tr>
<tr>
<td>Number of faculty</td>
<td>9</td>
<td>7</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Teams</td>
<td>8</td>
<td>8</td>
<td>8 teams of 5 students each</td>
<td>0</td>
</tr>
<tr>
<td>Participating Schools</td>
<td>2 Miyagi University, Japan; MIT, USA</td>
<td>2 Miyagi University, Japan; MIT, USA</td>
<td>4 AUB, Lebanon CEPT, India METU, Turkey MIT, USA</td>
<td>3 MIT, Sarajevo Faculty of Architecture Yildiz Technical University, Istanbul</td>
</tr>
<tr>
<td>Project</td>
<td>Design of residential housing using shape grammars</td>
<td>Shape grammars; townhouses</td>
<td>4 housing projects in Beirut, Turkey, India, and Washington DC</td>
<td>Analysis of urban form; design of housing project</td>
</tr>
<tr>
<td>Technology</td>
<td>Video-conferencing, ArchNet, NetMeeting, ICQ</td>
<td>Video-conferencing, ArchNet, NetMeeting, ICQ</td>
<td>ArchNet only</td>
<td>Video-conferencing, ArchNet, NetMeeting, ICQ</td>
</tr>
</tbody>
</table>

*fig. 2. Summary of the four collaborative studios.*
The two Miyagi workshops, held with faculty and students from Massachusetts Institute of Technology (MIT), USA, and Miyagi University, Japan, were focused on learning the concepts of shape grammars and included structured design problems, exercises, and collaborative team design. The emphasis was on peer learning, cultural exchange, and teamwork. The 2000 session was four-weeks-long and involved twenty-four students, while the 2001 studio was two-weeks-long with twenty-three students. The students were divided into teams, and both studios used a mix of technologies: ArchNet, video-conferencing, NetMeeting, and ICQ.

The two-week Housing Charrette with Charles Correa took place in the fall of 2000, and involved a total of forty students from four schools: American University of Beirut, Lebanon; Centre for Environmental Planning and Technology, India; Middle East Technical University, Turkey; and MIT, USA. In addition to Charles Correa, there were thirteen other faculty from the four schools who were instrumental in running the charrette. There were eight teams of five students each, with all schools represented on each team. Each team worked on a project located in one of the four countries. ArchNet was the primary technology used - a decision made because of the lower-bandwidth and the simpler technical requirements needed.

The Sarajevo Housing Studio and Urban Design Workshop took place between MIT, Sarajevo Faculty of Architecture, and Istanbul Yildiz Technical University, with eight faculty and seventeen students. The first semester's urban design workshop was used to analyze the site and familiarize students with urban conditions in Sarajevo, and was a pre-requisite to the spring housing studio. In the second semester, the students designed a housing unit for the Sarajevo site.

Lessons Learned

All four studios were experimental in the sense that there has been limited previous experience using communication technologies for collaborative design studios and even less using ArchNet for this purpose. The process was exciting, as well as often frustrating, but all participants learned a number of lessons from the experience. What follows are some very practical suggestions and strategies for conducting long-distance collaborative design studios collected from the organizers of the studios.

Scale

Given the current state of technology and the organizational capacity within most schools of architecture, a small, modestly scaled studio is preferable. We found that running a studio with forty students and fourteen faculty members in four different countries with a ten-hour time difference was far too large and unwieldy. A studio with ten-to-twenty students and two-to-four faculty with two different schools would be a much more reasonable and realistic size. As faculty gains more experience running these types of studios, there is no reason not to experiment with larger-scale versions.

The length of time a studio should run, however, is a matter of opinion, with pros and cons to any length. A short intensive two-to-four week studio allows the participants to focus and concentrate on their project, and also limits the heavy, but necessary, workload involved. An added advantage to short studios is that if for some reason the studio is not going well, and a solution is not immediately available, a short studio makes the problem self-limiting. On the other hand, as the organizer of the Sarajevo studio pointed out, a longer period of time allows the studio to be more evenly and sensibly paced, and if things are going badly or unforeseen problems crop up, the longer time period gives enough time to fix or overcome the difficulties.
Priorities

The first priority for a collaborative long-distance studio is choosing the right set of participants. Then, and only then, should the focus be turned to technology. This may seem counter-intuitive for a technology-based studio, but it is impossible to overstate the importance of finding and choosing the right faculty to run a studio. People must take priority over the technology because only people can solve and overcome technical problems, but the reverse is not true. The technology does not reproduce a replica of the “real world,” and it cannot solve misunderstandings, clarify expectations, or build trust in a relationship.

Faculty

Our experience with long-distance studios has clearly demonstrated to us that the faculty is crucial to the success of a collaborative studio. This type of studio, however, requires a certain type of person. A faculty member who is a very successful studio professor may not automatically be the best person to run a long-distance studio. The reason for this apparent contradiction is that a long-distance studio is unlike a traditional studio and the roles are significantly different. The faculty member in a long-distance studio will have to share his or her position with other faculty. No longer will they be the sole “master” in charge of their students’ education. And because new technology is involved, the students may know more and be more competent than the faculty in this area. This change of role and loss of control by a single faculty member can unnerve or threaten some, and for those who find this change disturbing, a long-distance collaborative studio would not be the right choice. But for others, these changes can be both exciting and exhilarating.

The faculty leading a successful long-distance studio must be committed, creative, motivated, and excited at the challenge of working in an international environment. They must believe that it is important and possible for students to learn to work together with colleagues from different cultures. And they must be willing to find creative solutions to the inevitable problems that arise in an experimental situation. This undertaking is not for everyone. The professor who claims, “I won’t let collaboration ruin my studio” is clearly not the best person for this type of studio. As absurd as it may seem to have a person who dislikes collaboration and/or technology to run a long-distance collaborative studio, it is not unusual. Faculty may accept the position for many reasons. They may be assigned to the job or feel pressured to accept it. Faculty will rarely bluntly acknowledge their discomfort with collaboration, technology, or their new role, and still more may be unaware of their reluctance or ambivalence until they become involved with a collaborative studio.

Another reason for needing the participating faculty to be whole-hearted about the prospect of a long-distance studio is the influence they have on the students. Students are keenly attuned to a professor’s beliefs and attitudes, even subtle unstated ones. If a professor gives even the slightest suggestion that a collaborative studio is unimportant or somehow inferior to a “real” studio, the students will quickly adopt the same attitude and lose interest.

Not only must the faculty have certain individual qualities, they must be able to work closely with the other faculty. The faculty running the studio must know and trust each other, and be able to communicate well in order to deal with the inevitable difficulties that arise. Together they must work out expectations, roles, and educational goals of the studio well before the beginning of class. Though not imperative, it is preferable to have the faculty who co-teach the studio to know each other, to have met in person, and to have built a relationship before the planning of the studio begins.
Technology

Only when the right combination of people is chosen and the goals are clear should technology enter the discussion. Whatever technology, or combination of technologies is selected, they must be reliable, comfortable, affordable, and easy-to-use. Technology needs to be thought of as a tool to support the goals of the design studio rather than an end in itself. The most cutting-edge and expensive technologies are not necessarily the best; reliable and known technologies are preferred over untested or new ones. As attractive as experimenting with novel technologies may be, it is important to remember that running an international design studio is challenging enough without adding a layer of untested communication tools that could have the potential of undermining the studio.

Even if a studio is planning on using a familiar technology, it is wise to test it repeatedly well in advance of the first class. A technology that works well within the confines of one department or school, may not work at all at another institution. The lesson we learned is to experiment, practice, and test everything extensively, since formats, platforms, software versions, uploading and downloading speeds can all be potentially incompatible. The reason for all this testing and re-testing is to avoid discovering the evening before a deadline that your partner school cannot open the files you have sent them.

Studio Management

Next in importance to choosing the partner school, faculty, and technology wisely, is the need to consider the management and administration of the studio. Running a long-distance collaborative studio is much more intensive than “real life” and with less room for spontaneity. It requires faculty and instructors to be more organized, more prepared, and more structured than in a traditional studio. And because of the increased organizational demands, an extra person or two people may be needed to assist with the technology, the studio work itself, as well as helping to coordinate the student teams and assist collaboration.

Also important before embarking on a collaborative studio, is to ensure that the school or department also supports the studio; administrators too may worry about what it means to share teaching and administrative responsibilities with another university. There will have to be some agreement on who grades the students and a policy if the grades are disputed. It is also very important that the schools involved have equal expectations of the students and that the students from each institution invest the same amount of effort and receive the same amount of recognition for their work. For example, the studio cannot succeed if the students from one university are taking the studio as an extra-curricular activity and for no credit while those from another institution consider the studio to be the main focus for their semester’s work.

Students

The students who participated in these studios found them to be at times frustrating, but also tremendously exciting. The frustration stemmed from the less-than-flawless technology (slow connections, incompatible formats, etc.), uncoordinated or disorganized schedules and expectations, and the challenge of overcoming the sheer logistics of working with students of different cultures and in very different time zones.

The studios also made us realize that it was important to choose a studio project that does not privilege one group of students over the other. For example, it is wise not to choose a site with which one group is very familiar and the other is not. Sometimes, however, this is unavoidable and in these cases, creating teams with members from both institutions can level the uneven-
Technique can be used if there is unevenness between the students in terms of experience or knowledge of the subject matter.

We also learned from the long-distance studios that new types of skills need to be taught to the students. Though collaborative skills are crucial, design is usually taught as an individual activity, and as a result, the students had little experience working in teams, and even less working with groups of other cultures and languages. Consequently, in addition to learning design, the students had to learn how to collaborate - receiving explicit help from the
faculty was most effective - and they needed extra time to do so.

Collaborating and working in teams requires that the students are taught and encouraged to convey their ideas clearly - verbally and visually. Informal and architectural jargon that one may use to converse with fellow-students may not work well with colleagues from another country. Miscommunication and misunderstanding can easily be the result.

Some of the studios incorporated face-to-face meetings and visits between the schools, which helped enormously to build and maintain good working relationships and in many cases, friendships. Though clearly an expensive undertaking, it is highly recommended that the faculty and students have an opportunity to meet before, during, or after the studio.

In spite of the frustrations and challenges of all four of the long-distance studios, the students thoroughly enjoyed the experience of working collaboratively with students in other countries.
They found it to be an exciting and positive learning experience, and an experience that they all were anxious to repeat in the future.

Conclusion

The need for students to learn to collaborate in an international, multilingual, and multicultural environment has never been greater. Communication technology can assist faculty to teach these skills by allowing long-distance collaborative studios with other schools and universities. ArchNet is a simple low-cost means to do this, and can be supplemented with more complex and expensive technologies such as video-conferencing if required and if the resources are available.

Four studios were conducted during 2000 and 2001 with schools in Bosnia, India, Japan, Lebanon, Turkey, and the United States. The experience of running these studios taught us a number of important lessons.

First, choosing the right set of people is far more important than the technology. The faculty need to have a vision and champion the idea of collaborative design in studios. They must genuinely want the collaboration to work and be willing to exchange their traditional role of studio master for new ones. Second, the technology must meet the needs of the studio, and should not be an end in itself. Because running a long-distance studio takes more organization and planning than a traditional studio, extra staff may be needed to help with collaboration, technology, and logistics. We found that the students often needed extra help in learning how to work collaboratively and communicate in an international environment. Finally, in spite of the inevitable frustrations and challenges, it was an exhilarating and positive learning experience for both faculty and students.
NOTES

1 The ArchNet site is located at http://archnet.org.
The contact address for the project is: ArchNet, Room 10-322, MIT, 77 Massachusetts Ave., Cambridge, MA 02139, USA. Email: archnet@mit.edu.

ArchNet is a project being developed at the School of Architecture and Planning at the Massachusetts Institute of Technology (MIT) with the support of the Aga Khan Trust for Culture. Though based at MIT, the project works closely with colleagues at Harvard University and our seven partner institutions: American University of Beirut, Lebanon; Centre for Environmental Planning and Technology, India; Center for the Study of the Built Environment, Jordan; Dawood College, Pakistan; Middle East Technical University, Turkey; Mısır International University, Egypt; and Universiti Teknologi Malaysia.

2 ArchNet membership is growing rapidly. As of October 2001, there were over 2,500 members from more than 90 countries. No payment is required to join or to maintain membership. Membership is established by simply registering with the site and giving basic contact information. Each individual controls whether his or her contact information is kept private or made available to other members.

3 The policy of opening most of the site to non-members was established in order to maximize the educational value of the site. Restricting contributions was based on the belief that anonymity does not have a place in a professional community, and that all contributors must take responsibility for their opinions and contributions.

4 To create a group workspace, an ArchNet member makes a request to the ArchNet administrators. When the request is approved, a space is created and the person who applied becomes the primary administrator for the group. This person can add others as administrators and is responsible for designating which ArchNet members will be a member of the group. The administrator is also responsible for designating, which areas, if any, are open to non-group members, and generally managing the group space.

5 For more information on these workshops and a more extensive overview of using information technology for design studios, see: Yee S. (2001), Building Communities for Design Education: Using Telecommunication Technology for Remote Collaborative Learning. Ph.D Dissertation. Department of Architecture, Massachusetts Institute of Technology, Cambridge, Massachusetts.

6 NetMeeting is proprietary collaborative software made by Microsoft and available for Windows only. ICQ is free instant messaging software available for a wide range of platforms and operating systems.

7 The author is grateful to Susan Yee, Birgul Colakoglu, and Gabriela Celani who generously shared their experiences and lessons gained through their experience with the Miyagi and Sarajevo projects, as well as Marwan Ghandour, Emel Aközær, and Nitin Raje who offered their thoughts on the Correa Housing Studio from the perspective of their schools.
The Role of Magazines in Architectural Education: The Medina Experience in Egypt

Amr Abdel Kawi
Medina Magazine
Cairo, Egypt

Introduction

For this article I have decided to deviate from the academic format, and to simply tell a story, a simple story about a young magazine and its struggle for an identity, and yes, for its existence. I have also chosen for this story to stay away from theoretical discussions or conceptual arguments, not for lack of arguments, but rather, to concentrate on the action aspects of the story, leaving the themes to the reader to identify.

Our story begins just over three years ago when a small group of architects and artists began Medina magazine after two years of conceptualising. Though Medina started in its first year as a quarterly, the positive response it was met with helped it become a bi-monthly with the beginning of its second year.

In various architectural forums, complaints about the state of the profession, professional values and ethics, students’ declining standards, about frustrating public taste and market-driven priorities, are common and continue to overwhelm us. Medina is a small attempt, a proactive step, by a small group of professionals and educators, to do something to address these issues outside the classroom setting. This group includes practicing architects, architectural educators, an artist, and a publisher. Between them they also cover the spectrum of idealists, pragmatists, and realists.

Medina came to embody many dreams and visions - maybe too many. It is meant to be an international quality magazine bridging the gulf between two worlds: the so-called developed and developing worlds. Hence it is bi-lingual: English and Arabic. It also attempts to transgress the boundaries of design and art by featuring them all under one format. But the most important of all its visions is that Medina is seen as a tool for education and awareness targeting several communities: the professional, the academic, and the public. In other words, it is a non-institutional approach to education.

Today, Medina is in its eighteenth issue. It has succeeded in fulfilling some of those visions and, of course, has fallen short of others. The writing of this article coincides with its self-initiated process of evaluation and reflection. We have begun a serious process of questioning to assess where Medina is, where it is going - or should go - and how it needs to change or evolve to fulfil its role. I would like to share with the reader some of these reflections.

Problem Definition

Our starting point was influenced by a grim reading of the state of the architectural profession in Egypt. Thirty years of political instability, economic hardship, and flailing social and ethical values, left the profession in virtual disarray. Since architecture is often seen as a physical manifestation of the society at large with all its strengths and weaknesses, the Egyptian architectural
profession approached the end of the twentieth century with empty baggage and virtually no adequate mechanisms or structures needed to constitute an effective profession, at least in its modern definition.

The professional syndicates are incapacitated, transformed into virtual social service organizations:

- The laws regulating the building fields are ineffective and inapplicable;
- The academic institutions suffer from old age and internal decay; and
- The profession suffers from the vacuum it exists in: there is a critical shortage of forums for professional discourse, as well as an absence of effective tools for information dissemination.

**Objectives of Medina**

This is certainly a gloomy view of the context. But it is not very different from that portrayed in other parts of the world by several of the writers in this volume.

**What is Medina about?**

As mentioned earlier, Medina’s objectives were quite a few. They include:

- To plant a seed for the growth of a serious forum for professional discourse;
- To act as an information dissemination tool, bringing the outside in and taking the inside out;
- To provide the student community with an affordable alternative;
- To act as a referencing tool, through presenting local and international architecture under one format;
- To act as a catalyst encouraging the growth of professional activities; and
- To play a role in influencing issues of public taste in architecture, design, and the arts.

**Why all that?**

These might sound like ambitious objectives, hard to attain, particularly by an independent publication with few resources. However, Medina is perceived as a proactive step towards addressing a seemingly dismal situation. In other words, why not shoot for the moon? It is our view that for the profession of architecture to enjoy a healthy discourse, it requires certain key components (all of which are missing in Egypt). These include:

- Serious and active professional organizations setting and maintaining standards of quality and ethical behaviour;
- Healthy academic institutions;
- An active publications field of books and magazines; and
- A permanent infrastructure of professional activities such as competitions, conferences, exhibitions, etc..

**How does Medina propose to tackle that?**

Medina cannot tackle all of these areas, but it seeks to contribute in the last two domains. By
adopting the role of an active publication addressing both the professional and public communities; a publication that also attempts to bridge the gap between the developed and developing worlds. Medina thus chose to:

- Seek international standards of quality;
- Be bi-lingual to reach the audience of both worlds;
- Cover news and projects from both worlds to address the information vacuum that exists between them; and
- Cross the disciplinary boundaries of the design and art worlds to address the problem of their severed links.

By becoming an active player in the field of professional activities and discourse, Medina aims to become a catalyst promoting the growth of design-related activities in the professional community and the society at large. Towards that end Medina began a design competition program that started with a small students’ competition the first year, to be followed in the second by a larger interior design one with both an open and a student category. This year’s competition is even more ambitious covering more design disciplines and involving a distinguished international jury who are to participate in a series of public presentations as well. Medina also sponsors art exhibitions, architecture workshops, and architecture exhibitions. These activities are starting off small and limited in scope, but they are slowly growing, fuelled by the encouragement of the participants who find in them badly needed venues of self-expression.

Discussion

This has been all about what Medina is meant to be and what it is attempting to do. It is time to cover some of the reactions and responses it attracted from its varied audience.

Professional response

To a large extent the response of the professional community was positive. The magazine is appreciated and encouraged. Nevertheless, that response has fallen short of expectations. It is safe to assume that the reason is partly due to Medina’s own shortfalls; however, there are also certain existing obstacles that have been hard to overcome. ‘Getting published’ is not as established a goal of most professional organizations in Egypt as it is in the West. There are certain residual social fears that might lie behind that, and make it less attractive to share achievements and information with others. Accordingly, we encounter difficulties getting the active involvement of professionals, because they are not prepared and are too busy to prepare special work for the magazine.

Academic response

Since its inception Medina has targeted the academic community intensely. Students are seen as the hungriest audience, and the future supporters of the magazine. Accordingly, they are given special subscription deals, and the magazine participates in the majority of academic activities to solidify its presence there.

The response from the student community has been quite strong, now constituting nearly 60% of the readership. Yet they too remain unsatisfied. Most of their remarks ask for more focus on subject matters most important to them, which is not possible if the magazine is to maintain the wide audience spectrum.
Public response

The lowest level of response comes from the public. The readership numbers are not as strong as we had originally expected. We believe, however, that this is due mostly to the magazine’s weak marketing efforts, more than for any other reason. For the current non-professional readership is fairly well distributed along the spectrum of occupations.

Market response

The fourth target group is the advertising market. Initially, this group actually reacted better than expected since the magazine’s inception, which gave it a tremendous boost during the first two years. However, it was the advertisers targeting the general public who first hitched on. They saw in the magazine a “serious quality” magazine.

However, Medina sought to provide a much-needed venue for the construction-related advertisers who, currently, have no other venues in Egypt. In that area it has not reached its targets. Furthermore, during the last year, several new publications started in the interior design field targeting the general public, while other general interest ones saw a fertile field and started new design sections. We like to think that Medina had something to do with opening this door. Nevertheless, this diluted the support Medina had from that initial advertising group.

Evaluation

As we evaluate the magazine’s activities and the ensuing responses, it appears that Medina may have attempted to bite off more than it could chew! Maybe the goals were too ambitious to start with, though the challenges were too attractive to pass over.

It appears today that the priorities of the four target communities do not necessarily coincide. Initially, the vacuum that we perceived in the field made specialization an unjustified alternative. We did not believe the magazine could have survived targeting only one community. However, it is clear that the market has changed in this short period; and probably Medina had a small role to play in that. But it appears that a change of approach might be warranted now.

 Probably the widest gap and most difficult path to traverse was the balance between the public and professional priorities. To maintain both, the magazine has had to walk a fine line between professional and general interest subject matter and language. The multi-disciplinary format was part of that strategy. However, the ensuing responses from advertisers indicate some confusion regarding the targeted audience.

On the other hand, we do not see any contradictions between the professional and academic priorities, except maybe in degrees. An encouraging fact is that nearly every new professional subscription is almost always accompanied with a request for back-issues, indicating that the magazine is perceived as a worthy resource.

At this stage in its development, it certainly appears that Medina is undergoing its first identity crisis (following in the footsteps of the profession). Is it time for a changed focus? Is it time to re-orient the magazine’s focus more towards the professional and academic architecture communities? Or are these responses indicating that Medina has not been aggressive enough in pursuing its target audience?

There is another set of questions related to the educational role of the magazine, its role as a bridge: between professionals and the community at large, as well as between the inside and outside. As mentioned earlier, the clearest challenge is that of language. Using professional language would be too mystifying to the public, while the reverse would turn off the professionals. Add to that the challenge of the Arabic/English duality that presents another set of challenges. Terminology
and meanings are often too closely related to the language they originate in. Consider the case of computer-related terminology. To say the least, grappling with these challenges has been a most exciting learning experience.

Finally, I cannot end without addressing the commercial dimensions of this experiment. One of the most important challenges of this education outside the classroom process is that a lot of the rules are heavily influenced, even dictated, by market constraints and determinants. Medina is an independent magazine depending fully on the revenues it is capable of generating. This is a fact that brings up -all too often- another set of questions: Can a magazine survive being purely an architecture magazine? How does it deal with the often-conflicting academic and commercial priorities? Should its role as an active player in re-invigorating the professional infrastructure be expanded? If it wants to continue playing an educational role, should it continue to be commercial?

We do not profess to know the answers to all these questions, but we are currently in the process of making the choices.
Concluding Remarks:  
The Boundaries of Architectural Education Today

Nasser Rabbat  
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The theme of this colloquium grew out of the convergence of a number of academic interests and deeply felt concerns about the ways architecture is taught today, especially in developing and Islamic countries. In addition to their direct engagement around the world, the Aga Khan Award for Architecture (AKAA) and its mother organization the Aga Khan Trust for Culture (AKTC) have been sponsoring and organizing conferences and meetings on architecture, especially but not exclusively in the Islamic world, for well over two decades now. Dr. Kaj Noschis, through the Department of Architecture at the Polytechnic of Lausanne, has been organizing the Architecture and Behavior colloquia at Monte Verita for eight years. The Aga Khan Program for Islamic Architecture (AKPIA) has been experimenting with specialized and reformist teaching in a department of architecture with established disciplinary parameters for twenty-two years, and has itself been regarded as an experiment in architectural education that has received more than its fair share of attention, praise, and heat. And, finally, the establishment of ArchNet at MIT’s Department of Architecture and the new Aga Khan professorship at Harvard’s Graduate School of Design have renewed the involvement of both institutions in the goals His Highness the Aga Khan has set for the organizations he supports to invigorate the teaching and practice of architecture in and about the developing and Islamic worlds.

The confluence of all these constituencies and institutions defined the colloquium as the organizers tried to address the interests that they individually and/or collectively represent and advocate. To do so, they came up with the idea of dividing the colloquium into four sessions, each focusing on what they considered to be a central topic in architectural education today. The first session focused on the components or tools used in education, from the theoretical to the practical and experiential in both material and delivery, to the new technologies which are reshaping both the discipline and the practice of architecture. The second one centered on the goals, associations, and relationship of education to the practice of architecture, or what might be termed its “destination,” in an age of rapid change both in the conception, implementation, and transfer of knowledge and in the definition, redefinition, and subdivision of professions and professional expertise. The third dealt with the wider social roles and functions of architectural education and their ramifications, globally, locally, and perhaps even individually, especially in the developing world where architecture can still serve as a powerful social and environmental modifier. And finally, the fourth session considered architectural education’s present and future, or more precisely its devenir in the idiom of French critical theory, in view of the proliferation of new pedagogical methods and technological devices*. The distinctly passionate and sometimes idiosyncratic presentations provided intimations of that devenir, not only for the specific environments in which the participants work, but also at the core of what architectural knowledge is all about.

Over the two days of the colloquium, we heard some fine papers that addressed the various facets of these four topics, and some that diverged from them to remind us that no matter how one

* The structure of this publication follows a slightly different organisation (Editors’ note).
frames a theme, there are always other valid ways of treating it that ought not be ignored. I learned a lot, both from what was presented and from the ways it was presented, as well as from what I felt was left out from some if not all of the presentations, whether deliberately or not. But here I will mention only what I thought were the major issues that surfaced from the plethora of questions, concerns, and dilemmas raised by the various presentations, before I turn to what I feel are the main factors affecting architectural education today, irrespective of particular place and context.

Though never explicitly stated, most speakers, even those who focused on very specific cultural contexts, seem convinced of the universal applicability of architectural teaching methods. This came across most clearly in the presentations of Muhammad al-Asad, Ashraf Salama, Peter von Meiss. Each of them used pedagogical models that tacitly reject any distinction between settings and circumstances and assume that visual, spatial, or structural training is sufficiently abstract to be culture-free. The same conviction underlay other papers, such as those of Yasir Sakr and Heba Safey Elddeen, who expressed frustrations at the inability of certain pedagogical tools and methods to reach a target audience lacking familiarity with modern life’s accoutrements. Even the presentations which dealt with philosophical, methodological, or critical issues, such as those by Emel Aközer, Peter Rowe, and Halina Dunin-Woyseth, assume the universal validity of their educational propositions, even as they all acknowledge the contextuality of their own observations or of those of their sources. This colloquium clearly reinforced the dominant paradigm of a universal architectural education that has guided the formation of departments of architecture in recent decades all over the developing world despite the heated debates about regionalism, indigenous and vernacular architecture, and the importance of setting that raged among practitioners in these same countries during the same time.

Another notion assumed by most participants is what Stanford Anderson has termed “the semi-autonomous nature of architecture”, both as an intellectual and academic discipline and as practice. The implications of this notion are far-reaching, especially for educators. Architecture, according to this view, has its own disciplinary boundaries and its intellectual and methodological tools and discourses that have developed out of its own specificities and its own historic trajectories. These factors are what allow us to speak of an architectural inquiry and an architectural education. But architecture also overlaps enough with other domains of humanistic and scientific inquiry to share many of their questions and concerns and to borrow from their methods and frameworks for its own domain of investigation and application. This notion was most fruitfully developed by Peter Rowe, who translated the concept into a program for the education of architects that acknowledges and emphasizes both the particularities of architecture and the limits of its reliance on and intersection with other domains of inquiry. The semi-autonomy of architecture was also clearly and constructively present in the papers by Peter von Meiss and Halina Dunin-Woyseth. The latter in particular traced the changing patterns of intersection and overlap between architecture and other disciplines such as psychology, sociology, economics, history, and science in the modern period. Dunin-Woyseth’s proposal for a transdisciplinary framework for architectural education responded both to the particular nature of architecture and to the growing popularity of cross-disciplinary approaches which are fueled by mounting frustration with orthodox disciplinary focus and energized by the availability of faster tools of computation, communication, and exchange.

Many papers grappled with the polarity of international or global versus native (one is tempted to say authentic) methods of making architecture when presenting their observations about specific architectural and urban problems in specific settings. Some, such as Peter von Meiss, Attilio Petruccioli, and Hana Alamuddin, dealt with the structural, environmental, and technical
determinants of architecture and tried to find a middle ground where the global and the local can fruitfully and productively intermesh. Others, such as Marwan Ghandour and Omar Abdel Aziz Hallaj, concentrated on the economic and social determinants of architectural education and practice, which are by definition contextual. The authors’ analyses, however, showed that even these most contextually sensitive determinants are affected directly by the dominant modern international standards of market valuation, finance, and commercial competitiveness.

In all these papers, one cannot escape the realization that national preoccupations persist in architectural discourse even in this age of globalization, especially in the Islamic and developing worlds where many socioeconomic forces are competing to claim supremacy in representing the true identity of the people. This was clearly one of the main concerns of Kambiz Navai when he proposed to integrate the study of historic architecture into the design studio teaching. His model broadened the canonical repertoire by including examples from Iran and other Islamic countries along with the usual modernist and classical European examples taught to students of architecture all over the world. The same concern underlay the papers of Hana Alamuddin, Mohammad Awad, and Sultan al-Harthy, who each focused on some aspect of architecture in her/his own city or country and its recent “nationalistic” history. Although they all wisely avoided essentialization in their search for a truly representative national architecture, they all implicitly depended on the equally mystical notion of “culture” as somehow the bestower of meaning on architecture. A concise and quite sensitive critique of the agency of Culture (with a big C, that is, the all-encompassing framer of identity) in architectural signification was proposed by Samer Akkach in his truly novel study which moved effortlessly across time and theoretical formulae. More grounded in practice and observation was the critique advanced by Omar Abdel Aziz Hallaj who ultimately advocated a sensibly nuanced understanding of culture in theorizing about architecture.

Akkach’s and Hallaj’s critiques unintentionally though judiciously provided the counterpoise to the overenthusiastic application of both imported and locally extracted theory in several presentations. The imported variety included the use of Ricoeur’s storytelling in Yasir Sakr’s paper, Piaget’s experiential learning in Salama’s and Safey el-Din’s presentations, the dialectics of social practice in Ghandour’s exposé of the manipulation of building laws in Lebanon, and historiographic enframing in Navai’s and Aközer’s papers. The locally derived theory comprised al-Harthy’s notion of Harmab, that is the sanctity of private space in the Islamic sense recast locally, and Awad’s proposal to redefine the concept of mo‘a’lem, the standard historic term for any master-craftsman (master-builder in architecture) in all Arabic-speaking countries. Both groups of papers revealed a degree of impatience with the lack of appropriate theory in the practice and teaching of architecture in the Islamic and developing worlds and made audacious attempts to fill an urgent need that we all sense but few of us do anything about. But these budding and tentative efforts can be tremendously bolstered by heeding the critiques of Akkach and Hallaj and the methodology proposed by Peter Rowe for future research on architectural education.

The role of communications, including conventional media such as professional publications as well as advanced technology, formed the most cohesive session of the colloquium. Bill Mitchell presented a highly compelling description of how learning communities of the future will be supported and connected by digital telecommunication infrastructures. Extrapolating from current projects at MIT, especially ArchNet, but also StudioMIT and the Open Course Ware initiative, he argued that these new complementary technologies engender the transformation of architectural education. Anne Beamish elaborated on the development of ArchNet from its inception to its current status. ArchNet will provide a great opportunity to assess, adjust, and redefine both the role of global communication in education and our role as educators in a fast-changing global
setting. It aims to be a "community of interest" that joins the centers of study and research on and about architecture in the Islamic and developing worlds with students, researchers, and agencies who share their interests. Amr Abdel Kawi reminded us that journals and magazines still remain powerful tools in the exchange of knowledge about architecture. The valiant effort that went into the creation and support of Medina magazine, however, highlighted both the difficulties any serious publication about architecture in the Islamic and developing worlds still encounter and the possibility that these obstacles can be overcome.

I would like to end my remarks with a short historical exercise using the title of the colloquium, "Architectural Education Today," as my analytical vehicle. The title is simple yet deceptive: it leaves out more than it includes. Architectural Education Today: what does it really cover? It at least fixes one of the two principal ontological dimensions of any subject: time. It is now, our present condition. But the title leaves the other dimension, place, unspecified, though it might be deduced from its absence that the intention behind the omission is everywhere. After all, aren't the principles behind architectural knowledge universal, as most presenters seem to imply? And therefore aren't the methods for teaching them universally applicable as well? Or is place as important for architectural education as it is thought to be for architecture itself? If, indeed, place is important, then is architectural education contextual - that is, bound by the conditions of the place where it is practiced? Clearly the jury is still out on this question, but I would like to focus on one important aspect of it here because most of us, to judge by the presentations in this colloquium and by the general discourse on architectural education, seem to have an opinion on the subject. What I want briefly to treat, as the token architectural historian in this colloquium, is the historical context of architectural education.

To make my point, let me go back to the dissection of our title. In the context of architecture, what is the meaning of the term "education"? Today, education conveys the notion of a formal, structured, paced and supervised training, well balanced in terms of subject matter, methods, techniques, and aims, constantly evaluated and reevaluated, and, when completed, somehow recognized by external authorities as intrinsically sufficient to allow an individual to practice architecture. Yet, we may remember that the currently prevalent educational model of architecture was not always the dominant one. Architecture was primarily a craft in the pre-modern period. And like many crafts with immediate relevance to everyday life, architecture depended more on apprenticeship than on formal or abstract education, and I should add, it did so across cultures. No medieval culture developed a body of theoretical and historical knowledge as a prerequisite for its architects and builders to practice their craft. They only needed to learn by observing and by repeating what their masters did.

This cultural commonality, however, had ceased being common by the late-fourteenth century. The Renaissance in Italy, and immediately afterward elsewhere in Western Europe, transformed the architectural profession into a highly celebrated and intellectually intense pursuit. Architects rose in the social esteem of their contemporaries as model humanists because they deciphered and catalogued the architectural signs of the rediscovered canons of the Ancients still standing in Italian cities or lying unacknowledged in revered classical texts. As a result, architecture acquired a conceptual and organizational framework and professional architects began to reflect on their profession and its epistemological parameters. The apprenticeship model became insufficient intellectually and embarrassing socially. It had to be supplemented by other modes of education in which knowledge is passed on not only by examples to be imitated but also by abstracting observations and by debating, discussing, and criticizing the processes and the results. Architecture was on its way to becoming both a practice (in the craft sense) and a discipline. But the long apprenticeship tradition of teaching architecture did not totally disappear with the rise
of architecture as a discipline. Traces of its method remained in the studio, that quintessential
device of architectural and artistic education for many centuries in which learning by imitation
and by investigation and debate were amalgamated, and which is the subject of so much revision
today, especially with the possibilities offered by the computer and internet.

But studio-based architectural education is only the backbone of architectural training today.
Historical complexities and challenges, the desire of architects to attain the coveted position of
the "intelectual," i.e. higher social status, and most importantly the formalization of education
in nineteenth-century Europe and ultimately in the rest of the world, forced the introduction of
class-based teaching methods, which in many cases grew out of concerns and debates generated
in the studio. Some of these subjects developed into separate disciplines, such as structural engi-
neering, material science, and urban planning, and were eventually peeled off from architectural
education over the last century to form their own domains of inquiry and methods of knowledge.
These disciplinary offspring of architecture went on to chart their own trajectories with their own
tools and for their own pedagogical needs. They now orbit around different epistemological
centers, be they the humanities, social sciences, or applied sciences and engineering. Architec-
tural education has retained some memory of their past roles in its constitution, but they seem
to have forgotten it completely.

Other disciplinary orientations, like urban design and history, theory and criticism (HTC), aren't
quite in the same position as structural engineering or urban planning. They are simultaneously
independent academic disciplines and components of architectural education. As such, they
seem to live a double life with all its contradictions and identity confusion. They have their
own epistemological framework and associations, yet they are still connected to architecture in
somewhat precarious though creatively promising ways. This connection could obviously lead
to the enrichment of the mother field, architectural education, as well as to the semi-autonomous
disciplines themselves. But the flip side of the coin is that the underlying reason for the dilemma
faced by architectural education today stems from the methodological incongruities inherent in
the combination of practical knowledge, acquired through the studio or the actual work on sites,
with intellectual and class-based semi-autonomous disciplines that have their own methods and
requirements, despite their genealogical kinship.

Part of this split, it seems to me, is psychological; part is historical and economic. Architec-
tural education refuses to become a service-oriented discipline in the catalogue of disciplines by
accepting the easy way out: mono-disciplinarity. It clings to its older, semi-autonomous and
heroic model, whereby the architect was supposed to have a rounded education that will allow
him (not yet her) to be both a master builder and an artist and humanist. This was possible
when the knowledge base was small and canonical and when the value of architecture, and
other human products for that matter, was both more and less than monetary. But in this age
of services and consumerism, the inclusive and expansive method of architectural education has
become costly and difficult not only methodologically but also practically. Now that the built
environment has become dominated by a market system in which needs and desires are defined
in terms of acquisition and that commodity has become the goal and signifier of social life, it
has become impossible to keep architectural education free of economic rationalization. Thus
architectural education today finds itself more and more having to function within the confines of
commodification, relativization, and methodological complexities, if not outright contradiction,
as its defining edges. I leave it up to future debates to decide whether architectural education can
keep on developing within these boundaries or whether it should look for ways out of them.
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ARCHITECTURAL EDUCATION TODAY
CROSS-CULTURAL PERSPECTIVES

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Knowledge and Architectural Education: Halina DUNIN-WOYSETH • Peter G. ROWE • Samer AKKACH • Emel AKÖZER • Ashraf M. A. SALAMA

Profession and Architectural Education: Marwan GHANDOUR • Hana ALAMUDDIN • Mohamed AWAD • Pierre VON MEISS

Experiences and Experiments in Architectural Education: Attilio PETRUCCIOLI • Kambiz NAVAI • Heba SAFEFY ELDEEN • Mohammad AL-ASAD • Sultan BARAKAT • Roger MAC GINTY • Sultan AL-HARTHY

Tools for Architectural Education: Anne BEAMISH • Amr ABDEL KAWI

Concluding Remarks: Nasser RABBAT

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