

An Exploratory Investigation into the Impact of International Paradigmatic Trends on Arab Architectural Education

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Abstract

While the development of Arab architectural education avows that there has been continuous influence of worldwide trends on the educational process, architectural schools in the Arab world are often accused of being largely unconcerned with the debates and trends raised by the international community. Testing this hypothesis required tracing three major paradigmatic trends in Arab architectural education: environment-behavior studies, sustainability and environmental consciousness, and digital and virtual practices.



There is in fact a great deal of discussions in design and architecture circles on these trends, and widely varying opinions as to why and how they need to be introduced in architectural curricula. An investigation of 14 programs in 8 Arab countries was conducted based on literature reviews and preliminary content analysis of the online and printed prospectuses. The analysis reveals that in some programs courses addressing these trends have not reached mature levels, while other programs were able to address the balance between the trends in their curricula. The paper concludes by a prologue for the future of Arab architectural education, arguing for balancing and harmonizing these trends, adapting them to the norms defined by a particular culture or a locality, while integrating them into studio teaching practices.

Preamble

In any academic institution that offers a professional degree in architecture the question of the relationship between the knowledge content delivered to students and the international paradigmatic trends that represent current thinking about architecture is obviously of paramount importance. Consequently, it is expected to see these trends reflected on the philosophy, objectives, curricula, course contents, and teaching methods of schools of architecture in a specific region. In this context, the term paradigm is referred to as an instance or a pattern worthy of study (Olsen, 1991) and a set of beliefs, values, thoughts, and techniques shared by members of a given community (Kuhn, 1970).

Since the beginning of the 19th century architectural programs in the Arab world have been influenced dramatically by the topical debates raised by the international community. This influence can be attributed to many factors that pertain to the continuous collaboration between the international community and the Arab world. There has been continuous exchange of thoughts, ideas, and concepts in architectural education and practice either through the input of expatriate academics in the curriculum and the training of Arab architects or through the education of Arab scholars in the Western world.

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Throughout the 20th century scholars from every Arab country have been receiving their education in the Western world. They brought back with them certain doctrines, trends, and new thinking. In turn, this has paved the road for an enlightened educational process. To graduate competent professionals, Arab academics felt the need to introduce issues of concern to the international community to cope with the international standards. Thus, while considerable emphasis was placed upon the local context characterized by cultural, behavioral, and socio economic aspects in different countries, most courses were taught with the developed technology of the Western world in mind.

The lack of Arabic reference materials to be used in teaching and instruction has resulted in relying heavily on Western literature, books, academic journals, and trade magazines by students and faculty alike. The emergence of information technologies and the World Wide Web contributed vastly to this impact since it gave an easy access to recent debates on issues of interest to the international community. Although there have been many voices of Arab thinkers to limit this impact and adapt the universal knowledge to local problematic issues, it is believed that there has been a continuous influence of several trends on the schools of architecture in the Arab world and that this influence was inevitable and phenomenal.

Over the last two decades, it has become clear that new paradigms of thinking about the way we approach the design of built environments are emerging. These paradigms can be identified underlying three major headings; these are: environment-behavior studies, sustainability and environmental consciousness, and digital and virtual practices. While some scholars may believe that these trends do not relate, the position of this author is that they have some form of an impact on architectural education worldwide. They have emerged in response to several cultural and environmental concerns and as a result of the advanced telecommunication technologies. The questions that this paper addresses are: *Have we--architectural educators—reached to restructure or configure architectural curricula in a manner that responds to these paradigms? Has architectural education in the Arab world responded positively to the demands placed in the curriculum by the international community?* One should note in the context of these questions that these demands can be exemplified by the emerging global economy and the presence of professional international firms in the Arab region, they can also be seen in terms of the international interest in addressing environmental and sustainable practices, in addressing the needs of special segments of society, and in utilizing digital technology in architectural and construction practices. The objective of this paper is to answer these questions and to envision ways in which these paradigms can be adapted to satisfy societal, cultural, and environmental needs in the Arab world while meeting the technological advancements of the present era.

Methodology

The methodology adopted in this paper involves a critical analysis of the available theoretical literature that introduces cases about schools of architecture in the region, and a literature review of the results of schools of architecture surveys (AKTC, 1986, 1995 & 1999; Fethi et al, 1993; Khan, 1987; Ozkan, 1986 & 1989; Salama, 1991, 1995 & 1998; Salama and Abdou, 1999; Sey, 1993). Employing a preliminary content analysis procedure, the paper investigates the status of these paradigmatic trends in 14 schools of architecture in 8 Arab countries by examining their philosophy statements, curriculum objectives, and courses. The methodology could be outlined in the following procedures:

- Analyze philosophy statements to investigate a number of key terms as they relate to the three paradigmatic trends.

- Examine curriculum objectives in order to explore whether these trends are integral components of the objectives.
- Identify courses that introduce different forms of knowledge components as they relate to the three paradigmatic trends and analyze those contents.
- Investigate the outlines of studio courses to see if knowledge components offered in theory and lecture based courses are integrated in studio teaching practices.
- Explore discrepancies and contradictions between the stated philosophical introductory statements, curriculum objectives, and course and studio contents.
- Verify the findings of the preceding analyses by relating those findings to the literature that pertains to architectural education in the Arab region.

It should be noted that this investigation took place early in the year 2004 and that several departments and schools are in the process of updating and massaging their curricula to reflect the current interest of the faculty members while addressing issues related to the built environment in the Arab region. Therefore, it might not reflect the latest developments that took place after the investigation was conducted. Thus, the results of this investigation are not intended to offer a comprehensive generalization on the status of Arab architectural education, but to have a closer look at the three paradigmatic trends within the selected schools. Based on these analyses, the paper concludes by a number of recommendations that advocates the need for adapting the trends to the Arabian context while developing positive attitudes that the budding professionals take to practice.

A Brief Tale of Three Paradigmatic Trends

Over the past few decades there appears to be a growing interest in three major paradigmatic trends. They are: 1) Environment-behavior Studies, 2) Sustainability and environmental consciousness, and 3) Digital and virtual practices. There has been a surge in the development of new knowledge underlying these trends considering the amount of books and academic journals addressing them. In the context of the developed world, a brief critical analysis is needed to envisage why these trends have emerged while highlighting their main concerns.

Paradigmatic Trend # 1: Environment-Behavior Studies

The field of environment-behavior studies (EBS) has emerged in the late 1960s and flourished in the 1970s onward (Altman, 1975; Bechtel, 1997; Moore, 1979; Sanoff, 1992; Sommer, 1969). Recent literature indicates that it was a reaction to the failure of modernists in addressing contemporary crises such as housing problems, squatter settlements, and the deterioration of historic cities. Many critics called for the reconsideration of the social and behavioral aspects of architecture (Proshansky, 1974). The disastrous consequences of the Pruitt Igoe project in St. Louis, Missouri in the United States dynamited by city authorities in 1972 after being a social ghetto are often cited in the environment-behavior literature as a prime example that led to the emergence of the field.

Environment-behavior paradigm can be defined as the systematic examination of relationships between human behavior, cultural values, and the physical environment (Moore, 1979). The primary reason of why an explicit emphasis on this field has become an essential part of architecture is simply because the common sense of the architect is not the common sense of the user (Prak, 1977). Considerable research corroborates this view and indicates that the attitudes and values of professionals differ dramatically from those users they are to serve (Groat, 1982; Nasar, 1988; Sanoff 1991; Seidel, 1981 & 1994). This difference was addressed by the international academic community of architecture by implementing several underlying

concepts that include pre-design research, architectural and project programming, post occupancy evaluation, user participation, and community design. Recent literature on education shows that these areas became integral components of architectural curricula world wide (Boyer & Mitgang, 1996; Salama, 1995 & 1998; Sanoff, 2003).

Paradigmatic Trend # 2: Sustainability and Environmental Consciousness

In the last two decades, the concept of sustainability has emerged in response to several environmental problems. Ecological consciousness was raised as a reaction to the overall overwhelming global environmental degradation. Many conferences, symposia, and colloquia have addressed the environmental issues on the policy-making levels. Law, policy, and decision makers have tailored lengthy regulations and guidelines in order to maintain a sense of responsibility toward the environment (Duggan and Mitchell, 1997; Mokhtar, 1999; Salama et al. 2002). While 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, the new paradigm is conceived to value environment alongside economic development, and to value social equity alongside material growth.

Eco-development, ecosystem planning, bioregional planning, and green and sustainable design are all new concepts that place emphasis on resolving environmental problems caused by human activities. They address the kind of development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (ECE, 1996). Within the realm of sustainability, the authors assert that it 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 subdue and conquer nature needs to be employed for the benefits 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. Accordingly, the new sustainable society will need to identify non material means for non material needs. In response, professional development will need to include the practice of interdisciplinary and of developing lifelong learning skills. However, it remains to be seen if this trend has been an integral component of architectural curricula in the developing world.

Paradigmatic Trend # 3: Digital and Virtual Practices

Recent years have witnessed advances in the development of telecommunication technologies. Digital technologies and design in virtual environments are re-shaping architectural education and practice (Beamish, 2002; Maher et al 2000; Schon et al, 1998; Yee et al 1998). Advances in electronic design and communication are reconfiguring the primary educational setting; the design studio- the backbone of architectural education. Early experiments that represent this paradigmatic trend have been conducted in the early 1990s by prominent academics; William Mitchell at MIT, John Gero and Mary Lou Maher at the University of Sidney. Their attempts went beyond the introduction of computer aided design-CAD courses in architectural curricula and incorporated virtual design practices in studio teaching.

Developments in CAD, visualization, and digital modeling coupled with the advanced technology to communicate data, images, and life action design experiences, have enabled virtual dimensions in studio instruction. Students no longer need to gather at the same physical space and at the same time to solve the same design problem. In virtual

environments, critics can comment over the World Wide Web or by electronic mail, and jury members can make virtual visits to architectural students without being in the same room. Thus, the traditional studio setting is changing by utilizing computers and telecommunication technologies with participants reaching across geography, cultures, and regions. Although this paradigmatic trend has started in mid 1990s, it is believed that its impact on architectural education would be more than expected in the near future.

The preceding discussion of these paradigmatic trends corroborates that a new way of thinking about architecture and its education is taking place in the developed world. They pose themselves on the map of interests of both academics and practitioners, and thus are contributing to the restructuring of architectural education. The question that can be raised at this point is *Have these trends influenced architectural education in the Arab world?* The following section is devoted to offer an answer.

Major Findings and Discussion: Trends Impact on Arab Architectural Education

The major objective of architectural education could be thought of as educating architects capable of creating meaningful environments. This involves the development of values, attitudes, cultural and philosophical positions. Recently, the architectural academic community voiced the opinion that the educational process should place emphasis on three dialectical relationships as they relate to the paradigmatic trends; human behavior and the physical environment, the natural and the man-made environment, and the real and the virtual environment.

In order to investigate the status of the three trends in Arab architectural education, 14 schools/ departments of architecture have been identified to examine their undergraduate programs while analyzing their philosophy statements, missions, objectives, and curriculum structure and course content. Based on the investigation of architectural programs in the Arab world several striking findings are noticed. These can be exemplified as follows:

Generic Observations

Evidently, all programs are essentially design oriented. The number of hours allocated to design studios ranges between 42% and 58% of the total program. It should be noted that the actual hours exceed significantly these figures where students work many hours on design projects to meet submission deadlines. In this respect, it was expected that differences do exist between the programs located within engineering colleges where engineers have a stronger voice, and other programs located within architecture and planning colleges where engineering influence is less.

It would appear that the underlying philosophy behind offering design as a separate discipline is that in most schools the main goal is to graduate “architectural designers.” However, this is not explicitly stated in the introductory statements of the programs. In fact, it points out that there is a hidden belief advocating that practicalities of architecture are attained after graduation and in the real world of practice. Strikingly, most philosophy statements emphasize that students are entitled to practice immediately after they graduate.

Examining philosophy statements, missions and objectives of the programs reveals that the majority attempt to address the multifaceted nature of architecture. However, they tend to lack orientation since they are project oriented rather than be based on a goal driven pedagogy.

Within the sample investigated curriculum structures are based on Western models. Thus, less attention is given to contextual problematic issues of urban and rural development within the local environment. Emphasis in most programs is placed upon aesthetics and history-theory courses rather than social needs, cultural issues, or socio-economic development. It would appear that these are rarely perceived as valid issues within the programs.

Environment-Behavior Studies

In 14 architectural programs in 8 Arab countries 29 environment-behavior related courses are offered under different titles; of these there are 24 offerings within the core curriculum while 5 are offered as elective courses. Philosophy statements and objectives refer to human environment interactions. Most programs offer at least one course that covers the dialectic relationship between culture, human behavior, and the built environment. The highest number of courses is noticed in the curriculum of King Faisal University and Misr International University where each offers five mandatory courses as shown in Table (1).

Table 1: Environment-behavior related courses in the sample investigated.

Country	University	Environment-Behavior Related Courses
Bahrain	University of Bahrain	Visual Perception (elective) Behavioral Factors in Architecture (elective) Research Methods in Architecture (elective)
Egypt	Al Azhar University	Human Sciences and Architecture Design Methods and Theories
	Cairo University	Human Sciences and Architecture Scientific Methods and Decision Making Design Methods
Kingdom of Saudi Arabia	King Fahd University of Petroleum & Minerals- KFUPM	Man and Built Environment Senior Project Programming Socio-Cultural Factors in Design (elective)
	King Faisal University- KFU	Design Methods I Design Methods II Design Methods III Research Methods Research and Programming
	King Saud University- KSU	Man and Built Environment Programming of Architectural Projects
Kuwait	Kuwait University	Human Environmental Factors Professional Practice I: Pre-design & Programming
Lebanon	American University of Beirut- AUB	Architectural Programming Sociology of Cultural Production (elective)
	Beirut Arab University	-----
Oman	Sultan Qaboos University	-----
Syria	Aleppo University	Architectural Programming
	Damascus University	-----
United Arab Emirates	United Arab Emirates University- UAEU	Design and Research Methods

While environment-behavior paradigm appears to be well articulated in some programs, it appears that it did not reach a mature level in others. The architectural program at the University of Bahrain offers three elective courses but does not introduce any in the core curriculum. Environment-behavior issues appear not to be of concern at Beirut Arab University, Damascus University, and Sultan Qaboos University where no offerings exist either as core or elective courses.

Architectural programming is addressed explicitly in the titles and course contents in the curriculum of Aleppo University, American University of Beirut, Kuwait University, and the three Saudi universities. On the other hand, post occupancy and facility performance evaluation are heavily emphasized in the curriculum of King Faisal University, United Arab Emirates University, and the three Egyptian universities. In some cases, these issues are introduced under research and design methods course titles. One striking observation is that some programs realize the value of design research to undergraduate architecture students as in the cases of King Faisal University, Misr International University, and United Arab Emirates University where Research Methods is offered as a mandatory course.

While the contents of environment-behavior courses seem to address the balance between theories as abstract knowledge and the contextual particularities of the local context, it is evident that studio description in all the programs does not indicate whether knowledge delivered in a lecture format is integrated into design assignments in the studio. Thus, it can be argued that knowledge contents are offered in a fragmented fashion. This finding corresponds with the latest debates on architectural education (Woyseth and Noschis, 1998, O'rielly, 1999, and Salama et al, 2002).

Sustainability and Environmental Consciousness

Within the sample investigated, there are only 17 courses that address sustainability and environmental consciousness paradigm in their content; of these there are 12 courses offered within the core curriculum while 5 courses are offered as electives as shown in Table (2).

Philosophy statements and objectives of programs refer to relating design artifacts to the natural environment. However, it is noticed that this is not reflected in most of the programs, course contents, or even in elective offerings. Although it was expected that the more technical oriented programs under engineering colleges would have more offerings addressing ecological principles of sustainable design than other programs, the analysis reveals the opposite.

Although reference is made to regional conditions in program structures, the terms sustainability, sustainable development, ecological design, eco development did not appear at all in the course titles or descriptions. It should be noted that similar terms do exist such as "energy conservation" as in the case of the University of Bahrain, Cairo University, Misr International University, and Kuwait University; "ecological analysis" as in the case of King Fahd University of Petroleum and Minerals, or "eco-system" as in the case of King Faisal University.

While programs at King Fahd University of Petroleum and Minerals and United Arab Emirates University offer one mandatory course that relates environmental concerns to the local context namely "hot-arid regions," climatic issues are addressed in very generic terms at Aleppo University, Beirut Arab University, Damascus University, King Saud University, and Sultan Qaboos University. This takes place under the heading of "climate and architecture."

Table 2: Sustainability related courses in the sample investigated.

Country	University	Sustainability and Environmental Consciousness Related Courses
Bahrain	University of Bahrain	Climatic Architecture Energy Conservation in Buildings (elective)
Egypt	Al Azhar University	-----
	Cairo University	Environmental Design, Planning and Energy Conservation (elective)
	Misr International University- MIU	Appropriate Building Technology Energy Conservation in Architecture
Kingdom of Saudi Arabia	King Fahd University of Petroleum & Minerals- KFUPM	Design Determinants in Arid Regions Ecological Analysis (elective)
	King Faisal University- KFU	Eco-system in Islamic Traditions
	King Saud University- KSU	Climate and Architecture
Kuwait	Kuwait University	Solar Energy in Buildings
Lebanon	American University of Beirut- AUB	Energy and Sustainable Architecture (elective) Intelligent Building (elective)
	Beirut Arab University	Climate and Architecture
Syria	Aleppo University	Climatic Architecture
	Damascus University	Climate Architecture
United Arab Emirates	United Arab Emirates University- UAEU	Architecture of Hot Arid Zones

The program of the American University of Beirut does not offer any mandatory courses that address sustainable design issues. However, up-to-date terms appear in the electives: “energy and sustainable architecture, and intelligent building” though offered in abstract terms without reference to the local environment. Al Azhar University did not go beyond environmental controls and human comfort issues since no offerings exist.

Digital and Virtual Practices

26 courses are offered in the 14 programs to address the changing paradigm from analogue to digital media and its application in architecture; of these courses 20 are offered in the core programs while 6 are offered as electives (Table 3).

Computer and telecommunication technologies are not addressed in most philosophy statements of most programs. Therefore, they and other related terms such as “information age and information technologies” are not reflected in the course contents or even in titles. However, digital knowledge and virtual design practices appear to be of concern in the programs of King Fahd University of Petroleum and Minerals and the American University of Beirut. This is well articulated in their programs since each offers four courses including elective offerings. While the same aspect is emphasized in the introductory statement of the program of United Arab Emirates University, it is not reflected in the curriculum since only one course is offered in the core curriculum.

It appears that this paradigm was not materialized clearly in several programs. Al Azhar University and Cairo University offer only one elective course addressing CAD technologies, while Aleppo University does not offer any courses. Other programs offer at least one mandatory course. It is evident that this is due to arguments claiming that this type of skill should be gained through extracurricular or short courses and that the students should be able to utilize these skills directly in the design studio. Thus, some programs oversimplify the validity of these courses in their curricula.

It would appear that most schools that offer courses in CAD and digital applications did not go beyond skill development in utilizing these technologies in design. Some schools appear to be unwilling to face the financial as well as the logistical burdens and the pedagogical uncertainties involved in converting from paper based educational process to paperless design practices. Their reluctance is to avoid the challenge of paradigmatic shift within a traditional design culture that continued for decades.

Table 3: Digital and virtual practices related courses in the sample investigated.

Country	University	Digital and Virtual Practices Related Courses
Bahrain	University of Bahrain	Computer Aided Architectural Drafting Computer Aided Architectural Design Advanced Topics in Computer Applications (elective)
Egypt	Al Azhar University	Computers in Architecture (elective)
	Cairo University	Computer Aided Design (elective)
	Misr International University- MIU	Computer Applications in Architecture Computer and Visual Simulation
Kingdom of Saudi Arabia	King Fahd University of Petroleum & Minerals- KFUPM	Computer Aided Architectural Design Virtual Reality in Architecture Virtual Design Studio Virtual Models (elective)
	King Faisal University- KFU	Computer Aided Design-I Computer Aided Design-II
	King Saud University- KSU	Introduction to CAD-1 Introduction to CAD-II
Kuwait	Kuwait University	CAD Application in Architecture
Lebanon	American University of Beirut- AUB	Computer Aided Design Training in CAD and Visualization Digital Design (elective) Virtual Modeling (elective)
	Beirut Arab University	Computer Applications I Computer Applications II
Oman	Sultan Qaboos University	Introduction to CAD CAD in Architecture
Syria	Aleppo University	-----
	Damascus University	Computer Applications
United Arab Emirates	United Arab Emirates University- UAEU	Advanced CAD Applications

Epilogue: Prologue for the Future of Arab Architectural Education

By and large, this paper called for the need for tracing specific contemporary paradigmatic trends in architectural programs in Arab schools and departments of architecture. Three paradigmatic trends that represent current thinking about architecture were identified: environment-behavior studies, sustainability and environmental consciousness, and digital and virtual practices. A closer look at 14 programs in 8 Arab countries revealed the status of these trends. While some scholars may argue that studying curricula is not sufficient to evaluate the quality of education, philosophy statements, curriculum structure, and course contents always reflect the profile of a program and point out to the major areas of interest.

Within the limits of this investigation, it can be stated that the three trends influenced most programs with varying degrees. However, while the influence of one trend appears strong, the influence of the other two seems less dramatic. This is evident in the programs of Cairo University, and King Faisal University where the influence of environment-behavior paradigmatic trend appears a lot stronger than the other two trends, or that of American University of Beirut where the influence of digital and virtual paradigmatic trend is visible than the other two.

Trends impact has not reached a mature level in some programs such as that of Al Azhar University, Aleppo University, Beirut Arab University, Damascus University, and Sultan Qaboos University. Despite this negative aspect, positive tendencies are observed at King Fahd University of Petroleum and Minerals and Misr International University where a balance of courses addressing the trends appears clearly in the curriculum structure as well as course contents. Another positive aspect is noticed at the program of the American University of Beirut where up to date knowledge bases form the backbone of some courses underlying the sustainability and environmental consciousness, though offered as electives.

Based on the review of course contents and studio description in the selected programs it can be argued that the total absence of integrating knowledge related to the three trends that is delivered in theory courses in design studio teaching is alarming. However, another positive tendency does exist in several programs; that is the inclusion of research methods and programming courses in the core curriculum of Aleppo University, American University of Beirut, Kuwait University, Misr International University, United Arab Emirates University, and the three Saudi Universities. In this sense, the authors assert that knowledge is not an end in itself, how, when, and why it is used in design makes its acquisition valuable and meaningful. Nonetheless, it can be argued that the integration of research and programming courses in these programs may invigorate the integration of knowledge and the recognition of its value in design studio assignments.

The author assert that Arab architectural education should become more responsive to the paradigmatic trends of interest to the international community, while adapting knowledge derived from these trends to the local context and the specific norms defined by the culture, environment, and technology in a country or a locality. It is suggested that the academic community in the Arab world should strive to balance the way in which students view relationships between the physical and social worlds, and the real and virtual environments. Future professionals in the Arab world should be made aware of 1) how people interact with the physical environment, 2) how the natural environment is something to be respected rather than conquered and controlled, and 3) how to engage in design practices that reflect the technology of the time. Balancing and harmonizing these issues rigorously in the curricula and course contents while integrating them into design projects is paramount. This needs to

take place in order not to lose the credibility of Arab architectural education in the eyes of the international community.

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Acknowledgement

The author would like to acknowledge the continuous support received from King Fahd University of Petroleum and Minerals- KFUPM.