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Introduction

The well known economic boom that the Kingdom of Saudi Arabia experienced in the 1970s and up to early 1980s was associated with many physical as well as cultural changes. These changes are the outcome of the overall development which was pursued by means of five-year plans. The first and second five-year plans resulted in building an entire new physical infrastructure which included various community facilities to meet Western standards. The third five-year plan (1980-85) focussed on such development projects as housing, water and distribution networks, medical facilities, and schools. In 1982, the annual construction volume accounted for SR 130 billion in government construction expenditure alone as compared to the first half of 1984 of only SR 13 billion.¹

The developmental programmes faced a shortage of designers, since the only school of design in Saudi Arabia was the Department of Architecture, which was established in 1967 within the College of Engineering of Riyadh University (presently King Saud University). Naturally, an excessive temporary need for designers and engineers arose. As a result, during peak periods of construction, the Kingdom established four schools of design: the College of Architecture and Planning at King Faisal University was founded in Dammam in 1975. In 1976 in the same region, the University of Petroleum and Minerals in Dhahran — 20 km from Dammam — established an Architectural Engineering programme. In 1976 the School of Environmental Design at King Abdul Aziz University in Jeddah accepted the first group of students. Finally, in 1983 a programme of Islamic Architecture was initiated at Umm Al-Qura University in Mecca.

Until 1978, when the first group of designers graduated from King Faisal University and were all appointed as teaching assistants, King Saud University provided the main, if not the only, supply of designers, graduating fewer than twenty architects per year. The majority of them have by now become decision-makers. Due to the severe shortage of Saudi architects during the peak periods of

construction, most projects were designed, supervised and implemented by graduates from schools in other countries. Thus, to a large extent, the success or failure of architecture in the Kingdom *may not relate* to architects who have graduated from Saudi Schools, but, possibly, to decision-makers who were rarely architects.

Curricula

Certainly, establishing four schools within ten years in four different universities by different individuals or institutions should mean diversity of programmes, at least in their structure if not in their doctrines. However, although this may sound likely, since these programmes are very different in terms of length of study, distribution of courses, administration, nationality of faculty, and other factors, they are nevertheless very similar in content. To explain this statement we will first review the five schools in general with some statistical details of King Saud University, since it is the oldest, and King Faisal University, since it is the second oldest and the largest in size, and then comment on the content of the curricula of all schools.

King Saud University

The Department of Architecture was established in 1967 within the College of Engineering which was supervised by UNESCO from its foundation until it joined King Saud University in 1969. In 1975, the Department shifted to the semester system with a requirement of 211 credit hours for graduation, which was reduced later to 197 credits and even further reduced to 175 credits. From this total, 24 credits are devoted to general university requirements such as Islamic culture, Arabic and English language courses, while 27 credits are devoted to College distributional requirements such as mathematics and physics for architects, engineering economics, computer programming,

and project management. Courses taught by the Department of Architecture take 124 credit hours, of which 53 per cent are design studios (66 credit hours) while courses on history and theory add up to ninety per cent (10 credit hours), planning 7 per cent (9 credit hours) and environmental control subjects 4.8 per cent. The rest are courses primarily serving other disciplines such as civil, mechanical and electrical engineering, and elective courses.

During the current academic year (1985-86), the Department has been proposing some changes in the curriculum, including doubling the courses on environmental control from 6 to 12 credits. It can be said that as a general pattern that has emerged over time the school is decreasing the number of required credit hours and increasing the emphasis on technical subjects, while history and theory courses account for 5.7 per cent of the overall load.

King Faisal University

The School of Architecture and Planning in Dammam was established in 1975. It is the largest school in the Kingdom, with 71 faculty members and 514 students in 1984. In 1985, the school graduated 92 architects, the largest group in the Kingdom to have graduated in any one year.² In fall of 1986, the School offered 96 different courses. The curriculum was primarily developed by the first dean, Ahmed Farid Mustapha, who had been the head of the Department of Architecture at King Saud University. The first curriculum resembles to some extent the curriculum that King Saud University had at that time, but with more design emphasis. A total of 189 credits were required to graduate, of which 151 credits were offered by the Department of Architecture. Each student had to pass 10 design studios accounting for 50 credits, with 12 contact hours per week.³ An example indicating the orientation of the curriculum can be found in the manual of course descriptions from which the following passage is taken: "Most courses are taught in the context of the developed technology



Hellmuth, Obata, Kassabaum, King Sand University, mall

Photo. HOK/AKAA

of the Western world. However, considerable emphasis is placed upon the special characteristics of life in the Arab world.⁴ A quick review of the design courses syllabus indicates the westernisation of the studio in all aspects.⁵

The school used to offer also a bachelor's degree in architecture with emphasis on either planning or landscaping, in which the student had to take some studios and courses. Fortunately, the school decided to ban these two programs, as they trained neither architects nor planners properly.⁶

The major change in the curriculum took place in the fall of 1985 with the co-operation and advice of Rice University. Through observation, the College found that prerequisites were only satisfied in a vertical fashion. That is, for example, students were allowed to take advanced design or graduation projects so long as they had passed the previous prerequisite design course, even if they had not taken or passed structure or history courses that they were supposed to have passed during their second year. In other words, the enforcement of the requirements did not take into account the complementary aspect of courses. On the other hand, each studio of the previous curricula emphasised some aspect of design such as structure, mechanical organisation or landscaping. These problems, coupled with the language difficulty of the students, resulted in a new curriculum.

The new curriculum, which consists of 162 credits, was mainly structured with a view to resolving the problems mentioned. In general, 48 credits, or 30 per cent of the course work, are devoted to design studios with 14 contact hours per week in each studio, while 12 credits, or 7 per cent, are history and theory courses.

The major characteristics of the new curriculum are:

- 1) Prior to entry into the programme, the student should be prepared in the basic sciences and in English, which is the language of instruction.
- 2) "The design sequence is the central organisational core of the curriculum and,

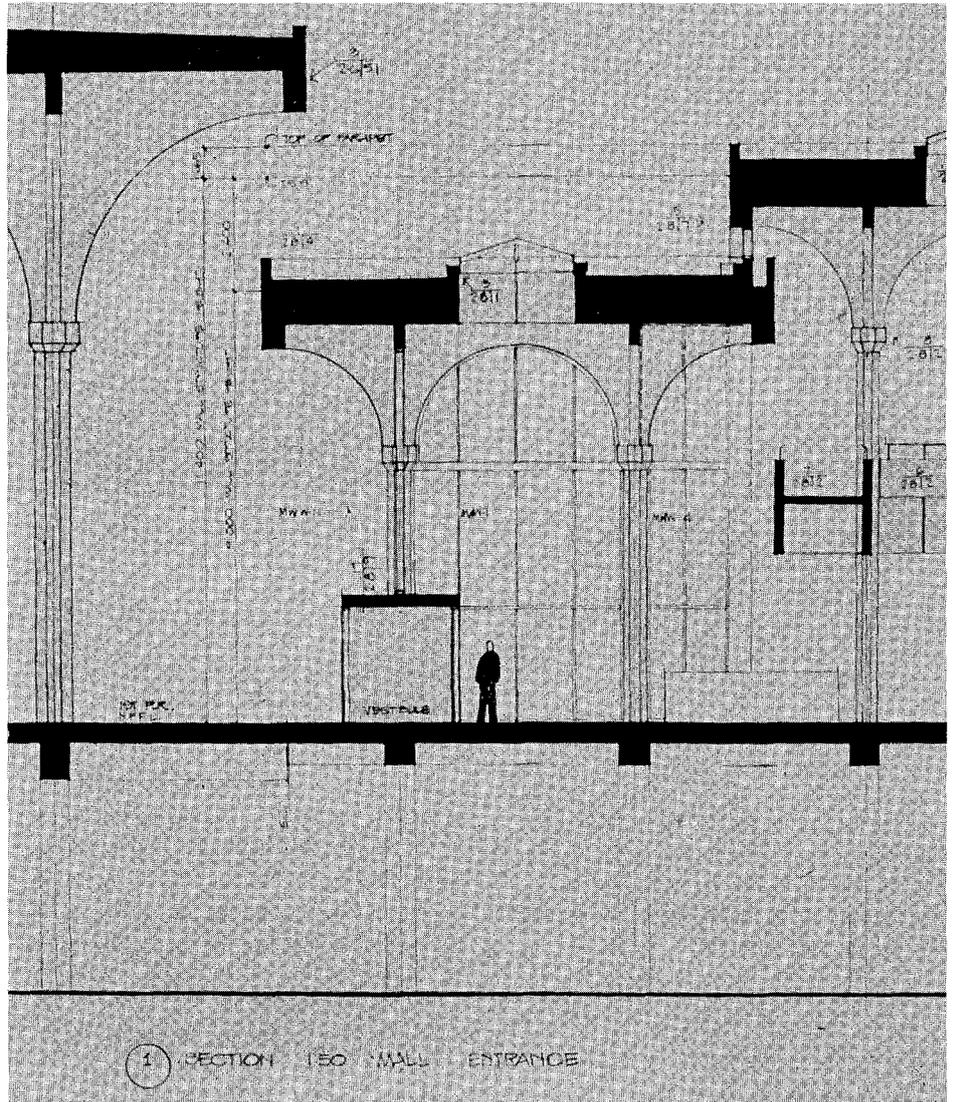
therefore, must be fully integrated with all technical and theoretical course work”⁷

To satisfy this concept of “integration”, the design sequence is organised into three major components which are the “introductory”, “intermediate” and “professional” programmes. Prior to advancement to the next component level, the student should be properly prepared in all theoretical and technical course work. According to those who established the new programme, “the direct alignment of theoretical and technical course work with the design sequence permits the integration of faculty and information in an explicit and direct manner”.⁸ Fortunately, among the many positive aspects, the concept of “integration” allowed the administration to control firmly the student’s performance through the three components: Introductory, Intermediate and Professional Programmes. However, difficulties are arising with regard to the “integration” of the course syllabi. At this stage it would be premature to assess the success of the “integration” concept as it leads to the involvement of faculties with different backgrounds.

University of Petroleum and Minerals

The School of Environmental Design was established during the 1980-1981 academic year by the College of Engineering and Sciences within this technical university. The school offers three degrees: Bachelor of Architecture, Bachelor of Architectural Engineering, and Bachelor of City Planning. The School’s philosophy is stated in the manual: “In harmony with the nature of U.P.M as a technological university, and in consideration of the present and future needs of Saudi Arabia in the environmental design professions, all the College programs introduce basic science courses and are heavily oriented towards the teaching of physical design principles and the application of advanced technology.”⁹

Out of the 144 credits needed for graduation, in the Department of Architectural En-



Hellmuth, Obata, Kassabaum, King Sand University, mall entrance

Photo HOKIAKAA

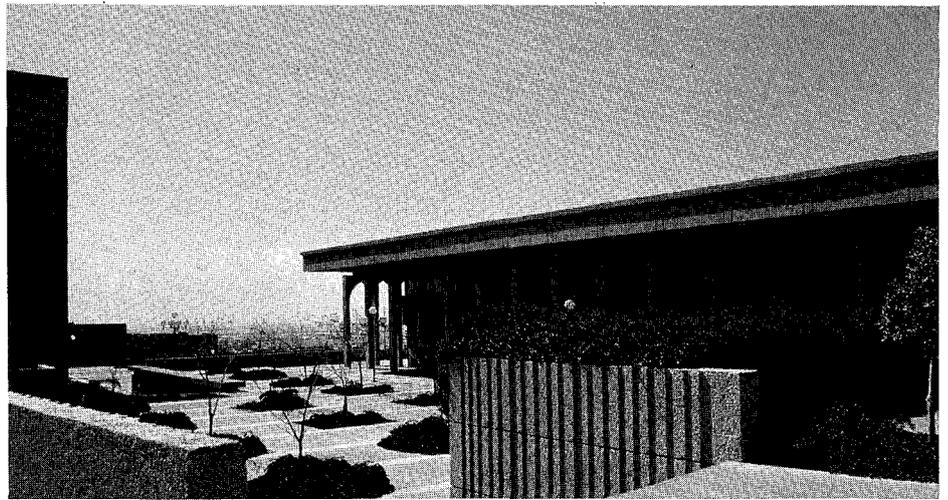
gineering, only 2 credits are for the history and theory of design, while 6 credits are devoted to two design studios and one course to socio-cultural issues. As for the Architecture Department, the major problem was that of fitting a professional programme into four years, since the first year is reserved to the University-required courses. This has resulted in offering design studios during the summer and has affected the course load distribution. For example, history and theory courses account for only 6 per cent of the total required courses.¹⁰

King Abdul Aziz University

The School of Environmental Design accepted students in the fall of 1976. It offers three degrees, Bachelor of Architecture, Bachelor of Landscape Architecture and Bachelor of City Planning. The curriculum has been primarily developed by Harvard University. It is a six-year programme of 180 credits in which students will spend three years in the general programme (84 credits) which covers the basic courses for the three departments. This programme, in which most courses are non-technical but rather artistic, historical and theoretical, diametrically opposite to that of the University of Petroleum and Minerals.¹¹

Umm Al-Qura University

The School of al-'Imara al-Islamiya was established in 1983 within a university that offers primarily programmes related to Shari'a and Islamic culture. To summarise the philosophy of the programme according to its founder, "the school of al-'Imara follows a methodology of teaching that unifies the whole curriculum into a series of 'professional units' of a semester's length within which independent subjects are integrated with each other and with the studio projects. In each unit, social structure and specific injunctions of Islam pertaining to the shaping of the built environment become the



Caudil, Rowlett, Scott, University of Petroleum and Minerals

Photo C R S IAKAA

reference points that structure that particular unit. Two remedial units lead to six professional units followed with a teaching practice, that replicates a consultant's office in full. The programme is concluded with the graduation unit at the end of which *ijaza* (a certificate of architecture) is given to the graduates."

The major dispute raised among educators and professionals is one regarding the name "School of Islamic Architecture". Are the other schools un-Islamic? Can architecture be divided into "Islamic" and "un-Islamic"?

Comments

We shall not comment on the quality of the architect's products, whether produced by graduates from Saudi universities or not, since it is a matter of value judgement as well as their appropriateness to the user or the environment. There are as many opinions as there are architects regarding any single building. On the other hand, one cannot judge any curriculum without fully investigating the course contents and the way they are taught. Two different professors, I would argue, may provide different

information under the same course syllabus, especially if they are from different cultures. However, the unavoidable circumstances through which these schools have gone through, may be resulted in an inevitable shared product and phenomena.

Politically speaking, other than infrequent advice from officials to adopt Islamic principles or to encourage Islamic architecture, the government has never intervened in curriculum contents or development. King Saud University's curriculum was established by a student of Eduardo Catalano, who is a design-oriented professor. It was then improved by an Egyptian faculty member who was primarily educated in the West. The same person, Dr Ahmed Farid Mustapha, established the curriculum of King Faisal University. One should expect, and it is indeed the case, that similarities exist between the two curricula.

As has been mentioned, the new curriculum of King Faisal University has been developed by advisors from, or through, Rice University in the United States, while that of King Abdul Aziz University has been developed by Harvard University. Given that the department at the University of Petroleum and Minerals is heavily influenced by

Western technology, the curricula bear the marks of imported Western educational ideology.

The Issue of Western Faculty

The absence of Arabic reference materials for architectural instructions in general and modern architecture in particular has led to the adoption of English as the language of instruction in all schools, with the exception of King Saud University, where both English and Arabic are used. This led to the dependence on the English-speaking faculty. As to the *quality of education*, it is definitely affected by the language problem, which results in poor communications between teachers and students. Although all curricula contain intensive English courses, Saudi society has only recently accepted English as a second language. To realise the problems created by the language gap, all that is required is to attend a design jury in which students fail to transmit their design thoughts and, therefore, suffer academically. According to most faculty, the reverse is also true, and faculty may fail in transmitting their thoughts to their students due to language difficulties.

It is true that individuals from different cultures observe many traits in a society that are not perceived by its inhabitants. Yet, one cannot expect a significant contribution towards finding a solution to the emerging problems of a society from those who are not equipped linguistically to understand the culture. For them, observing a society is just like watching a silent movie. To give an example, a foreign faculty member who once asked me about the coloured flags on the roof tops of houses said he was informed by other faculty members that the flags were hoisted advertising females available for marriage in each house. Each colour, he thought, denoted characteristics of the female such as age, stature, and so on. In fact, the flags simply represent the soccer teams supported by youngsters living in those houses. With foreign faculty coming from different countries and cultural back-

grounds unified only by their common usage of English, the best and possibly the safest way of teaching design is to go international. Furthermore, the fact that financial capability needed for impressive adaptations of Western technology is also associated with status on the governmental, institutional and individual level, courses have been laden with fascinating displays of architecture for students, regardless of their appropriateness. Yet these factors, the Western educational model, financial and technical capability, foreign faculty and references, and local admiration for Western architecture, have provided and will continue to provide the best climate for a student to create, import, experiment and implement new ideologies and designs for the society in question.

An important negative factor in all this is the insecure position of foreign faculty. There is no tenure. Most contracts are renewed on annual basis. Furthermore, every new administration is interested in improving the quality of faculty, leading to instability and discontinuity in all schools with the exception of King Saud University, which has 13 Saudi faculty members. Since most foreign faculty members are temporary and have no clear tradition within which they can operate, their main concern is teaching their students as best they can. This means lack of interest in research. The constant turnover among the foreign faculty also leads to a failure to devote attention to the basic problems that Saudi architects must face

Problems of the Quality of Education

For various reasons, the previous administration of the School of Architecture at King Faisal University did not monitor the students' academic performance. The situation became so bad that when the new administration implemented the new curriculum in the fall of 1984, it discovered that 120 students out of 514 were on probation, while 58 students were on probation for the third time. The new administration took serious measures that resulted in dismissing 30

students and controlling the students' performance.

Government policy affected the quality of education by forbidding faculty to participate in most professional activities. Thus, the schools and both students and faculty, lost the chance of taking advantage of the opportunities offered for practical applications of architectural concepts during the periods of the construction boom. The quality of education may also be affected by a Royal Decree which allows a faculty member at the lecturer level with a masters degree to be promoted with only three years of teaching experience to the higher ranks. Among all university faculties, this exceptional standard for promotion affects architects, urban designers, landscape architects and dentists.¹²

The Architect's Mission

All curricula have the same theoretical underpinnings. As a graduate of King Saud University and a member of the Faculty of King Faisal University, and having examined the course descriptions of other schools, I would say that the doctrine is a very noble one. Basically, it tells us that we should create a very good-beautiful-functional-economic environment. We assume that people often know little about building materials, technique, organisation of spaces, economy, climate, beauty and other such factors. We architects have to balance all factors and create new designs. The people may know what they want, but they do not know how to make it. This is, as architects, our task. Thus, our role is one of creativity. In some cases, students are advised to be inspired by the traditional Muslim built environment. In the past students borrowed ideas like having facades with arches and *mashrabiyyas*. However, these days, this is considered superficial. When the traditional Muslim built environment is observed as a source of architectural inspiration, the physical or spatial environment is studied, that is, the end product of a process. The spirit or essence of Islamic architecture lies

in floor plans, building techniques which reflect cultural factors and, above all, the appropriateness of the product to the harsh climate by using local materials and techniques to fit the users' needs. In short, the doctrine is to make a decision, and, possibly, a creative one, by dealing with as many factors as possible.

Despite its importance for architects, the search for cultural identity and expression is rarely raised — and possibly never raised in a technical university. The question of the relationship between architecture and other disciplines has also not been reconceptualised, with the exception of King Saud University, where the School of Architecture is starting to establish links with other departments on the campus.¹³

Furthermore, although the schools are located in different regions, questions of the generality or particularity of a technique of technology or of social life in relation to the different regions where the schools operate is not addressed. With the exception of the University of Petroleum and Minerals, which endorses modern Western technology, and Umm al-Qura University, which emphasises the Islamic legal system and traditional mud brick techniques, all schools produce uniform products. In general, the schools' slightly different directions are accidental and not planned.

Architecture and Social Structure

Education should at least try to understand the processes of the society in order to operate within them, and, possibly, improve them rather than fight them. In this context, the example of the dead-end street is pertinent. It is a space analysed nostalgically and possibly misused. Observers view dead-end streets as semi-private spaces or outdoor spaces for the small community, spaces for children to play, spaces that are shaded, spaces that are planted, and the like, and, therefore, they are used extensively in present designs.

What is the process behind a dead-end street? It was formed by group of residents when they originally settled, or it was developed gradually as space needed for circulation. In any case, it was recognised by Islamic law as private property which is owned by the abutting property owners. They control it and use it. For example, none of the owners may construct a door without the partners' consent. There are very well developed principles that clarify the responsibilities of the owner of the space and which affect the social environment. Thus, dead-end streets are a successful urban element common in Muslim cities.¹⁴

Now, when the student is taught about this space, he is taught about its morphological success without explaining the authority enjoyed by the inhabitants. Hence, when he designs a dead-end street, his design may not function as a traditional one, since he has studied the product without the process and, consequently, he will implement the form without handing the inhabitants the needed authority.

The attitude of society in traditional Muslim environments was to control the industry of building materials through the post of the *muhtasib*, who never intervened in their assembly. This was the task of conventions. However, municipalities' attitude these days is often the reverse: they control the assembly of these materials in floor plans and facades through building permits and do not care much about their industrial quality.

Unfortunately, all curricula emphasise the product and rarely the process. No wonder we see domes and vaults of mud bricks using traditional techniques built in houses of rich people who can afford the highest technology. Those designers of such projects were brilliant in analysing the traditional environment as a product and using it in their designs, but not necessarily the process. This is what I call "Islamic renaissance".

The Need for Adaptability in Design in a Fast-changing Environment

Another important factor for architecture in all cultures is change. The design attitude in curricula is to have a static product, while observations inform us that the built environment is always changing and dynamic and, thus, may need a product that could accommodate such possible changes. We always see rooms transformed into shops, apartments into offices, walk-up apartments into schools, and the like. However, our students' products are so specific in function that it would be difficult to adapt to change. In Saudi Arabia, for example, cities are built within one decade. Logically, in such fast growing developments, we should expect most decisions to be hasty. A programme of a building that is prepared in a few weeks will after construction have to be changed. A site selected for a specific function will be discovered later not to be appropriate for it. To give one example, hotels have been transformed into clinics or even into hospitals in many Saudi cities. Yet, the curricula do not recognise the built environment as a dynamic entity. For example, our curricula lack courses on re-use and adaptability. Interestingly, a glance at a floor plan of the markets and dwellings of Tunis reveals that there is a series of connected cells, which have accommodated change. A study of the process that resulted in such physical organisation may enlighten us.

The Role of the Architect in Arab Tradition

The term *mi'mar*, or architect, was rarely used in Arabic literature. Ibn Khaldun's description of "The Craft of Building", for example, is largely a technical one. He informs us about technical connections between materials and about relationships and possible conflicts between neighbours. He uses the term *banna'* which is a builder. A builder often does not create a new design, but, rather, follows the convention in his society and, possibly, improves existing models through consultation with the own-

ers. In other words, he copies and improves rather than creates a new design. Unfortunately, when this section, "The Craft of Building", was translated by Rosenthal, it was translated as "The Craft of Architecture", but the word "architecture" in Western thought connotes creativity.¹⁵

To give another example from literature, al-Ya'qubi (d.897) in describing the rebuilding of the Grand Mosque in Makka relates that the Caliph al-Mahdi had brought the craftsmen and *muhandisin*, or engineers, according to existing translations, (*as-sunna' wa al-muhandisin*), from each town.¹⁶ He adds that the Ka'ba was at the side of the Mosque and al-Mahdi centralised it. His description suggests that al-Mahdi was the decision-maker and the craftsmen followed his orders. Although some monuments in the Muslim world stand as witnesses to architectural creativity, it seems that the people who created buildings often were simply highly qualified in the technical sense. This is with respect to monuments. However, regarding the every-day environment, and the building of residential and commercial structures and the like, the builder, who might be the user, was always a technician who operated within well-known conventions and implemented a well developed model.¹⁷

Furthermore, the term *mi'mar*, which means "architect" in current usage, is derived from the verb 'amara. 'Amr or 'umr means "life", and the inhabitant of a house is called the 'amir, while *ma'mar* means the large house facing pasture land and water. 'Imara refers to what utilises a place and 'umara is the fee for utilisation or erection. Finally, 'amara means a community which is smaller than a tribe that depends on itself (*alladhi yaqumu binafsihi*). None of the above descriptions suggests creation, but, rather, inhabiting or utilisation by the inhabitants. In short, the function of the builder or the architect was to be a follower of a convention or a model as well as utilising his high technical ability. This is evident from many other investigations. Then, the question is, how was the concept of creation incorporated in the term *mi'mar*?

Regardless of the appropriateness of the nature of the traditional role of architect for Muslims, the doctrine in our schools, as explained previously and as is evident in all curricula, is to produce a decision-maker of good judgement, who would be termed an "architect" in modern Western civilisation. Every line drawn by a student in a studio is a decision, and, possibly, a creative one. This doctrine is different from the traditional Arab one, which is "copy-and-improve". In contrast, it is evident from the curricula of modern architecture schools that the graduate gets more studio hours than technical subjects, which is contrary to his traditional role.

Modern Curricula: Problems and Prospects

With the exception of the architectural engineering curriculum of U P M, which is heavily influenced by modern Western technology, all curricula are designed to deliver as much information as possible from various disciplines, since the nature of our existing role is based on the Western model, which dictates that an architect should know about technology, art, sociology, history, interiors, and the like. The curricula have become crowded with subjects that should assure the delivery of good, well trained architects ready to serve society. However, society may reject such time-consuming training in the long run. As we have seen, the curricula of King Saud and King Faisal Universities were reduced over time. The six-year programme of King Abdul Aziz University decided not to admit any new students in the academic year 1985-86, since there were so few applicants. It seems to me that the only justification for the current distribution of courses in a curriculum is the desire to fit in as many courses as possible, according to their importance within the Western model, so as to fit a five-year period, since that is a common period of study needed to obtain a Western university degree. Wayne Drummond, who played a major role in developing the new curriculum of King Faisal University, while commenting on it, said that "the total 162 semester credit

hours recommended is comparable to the 163 semester credit hours average for a five-year Bachelor of Architecture programme in the United States".¹⁸ Two faculty members from the School of Environmental Design at U P M., speaking on the role of education in environmental design and Saudisation of the field, stated: "It is also important to recognise that Saudisation should not result in a cultural isolation of the Saudi professional, but rather equip him to engage as an equal among the international community of creative designers. In this respect, the curriculum, which was developed primarily from U S models, has been modified to meet the specific professional education needs of the Kingdom of Saudi Arabia."¹⁹

Then, the questions are: do educators or does society decide the time length that it takes to train an architect? Within this limit, how do we decide on the nature of subjects to be taught? And, who makes that decision? Do we equip our graduates with more technical subjects and hand them to society to design according to the desires of users who may make bad decisions? Or, do we try to upgrade their value judgements so that they can create better designs, which may free them from society's conventions? Do we leave them with little technical knowledge on the assumption that they can gain this in their future practice? Or, do we have to define the architect's role in society and then teach them the needed subjects regardless of time limitations? And, where do history and theory subjects fit in the whole picture to explain architecture within the environment and historical context?

The Size of the Student Body

The existing situation in the Kingdom in terms of the number of persons studying architecture seems to be similar to that in the West after World War II. The current output of 130-150 graduates a year from the five schools added to the total existing graduates will cover the basic demand of the 7 million inhabitants by 1990. This is based on the Western standard of having 2 to 5

registered architects per 10,000. According to this standard, after 1990 there will be a surplus of architects. Would this surplus serve the built environment or not, and how it will affect the architect's role?

A study has shown that 18 per cent of engineers within three years of starting practice will be holding primarily administrative posts, while 50 per cent of them after seven years of experience will hold technical and administrative posts.²⁰ The study by implication demonstrates the need for management in the course work of architects. It also demonstrates that the role of some graduates who were prepared as designers became a managerial one, which is also true in other cultures. This managerial demand has resulted in adding management courses in some curricula. When the Government needed architects with management skills in the last fifteen years, the schools did not train them appropriately. Now some graduates will need managerial training, but not necessarily all of them. This raises another question. Do we have to graduate one type of architect with different emphasis depending on society's demands? Or, do we follow other cultural models, leaving such issues to the professional organisations that are not yet established or functioning in our cultures?

The Study of History

As to the history and theory courses in curricula, all schools require less than 9 per cent of the departmental course work in these subjects.

Unfortunately, the limited share that history has is not utilised properly in all curricula. A quick review will reveal that the major task of history is to fill student's brains with names of monuments, their dates, measurements, decorations, styles, origins of forms or patterns, what is "Islamic" and what is not in a chronological order, starting from Pharaonic pyramids, passing through Hellenistic, Islamic, Gothic and so on, and landing on post-modern architecture. Furthermore, in some cases, cultural, traditional, climatic and other factors were elaborated

upon in relation to the artifacts. If the role of history is to create awareness among designers, then other issues such as conventions, customs, laws, decision-making processes, technical durability, simplicity, adaptability and such vital issues have to be investigated and taught, regardless of their chronological or geographical order.

Sexual Segregation and its Implications for Architecture

Finally, an issue that may be unique to Saudi Arabia is the life-style that separates the two sexes. One may argue that in such a society, where 50 per cent of the facilities are used exclusively or partially by women, designers may misunderstand the needs of female users and, thus, may not achieve the optimum result. Does this invite female designers to practice, or does it affect the curricula in general? The only existing Department of Design in the Kingdom for females is at King Faisal University, which will have its first group of graduates in Spring 1987

Conclusion

In this paper, the arguments that I have been made may not be unique to the Kingdom of Saudi Arabia. It was attempted to give a comprehensive picture of the architectural undergraduate education, in general, with some critical remarks on a few issues. Many vital areas relating to this subject, such as social change, were not discussed. Post-graduate programmes in planning, landscaping and the undergraduate education in interior architecture for females were also not covered. We are just beginning to ask the important questions about architectural education in Saudi Arabia.

Reference Notes

¹ For a summary of the situation in English, see D. Ackerknecht and H. Burgess, "Environmental Design

Education in Saudi Arabia: An Assessment of Manpower Needs and Program Development", *The Second Saudi Engineering Conference* (Dhahran: U P M, 1985), vol I, pp 442-439

² *Statistics of Higher Education in the Kingdom of Saudi Arabia: 1983-84* (Riyadh: Ministry of Higher Education, 1985) pp. 129, 139, 192, 296, 319

³ College of Architecture and Planning, King Faisal University, *College Manual: 1981-1982*, pp 9-23

⁴ *Ibid*, p 10

⁵ *Ibid*, pp 17-19

⁶ Hassan Bedawi and Wayne Drummond, "Curriculum Development for Environmental Design Education in Saudi Arabia, *The Second Saudi Engineering Conference* (Dhahran: U P M, 1985), vol II, p 696

⁷ *Ibid*, p 698

⁸ *Ibid*, p 700

⁹ University of Petroleum and Minerals, *Undergraduate Bulletin 1981-83*, p 95

¹⁰ *Ibid*, pp 97, 98

¹¹ King Abdul Aziz University, *College of Engineering Bulletin 1403-1405H* (Arabic version), pp 171-211

¹² Decree No 24534 dated 11/4/1401H. The reason for this decree is the rarity of faculty members with doctorate degrees in these fields

¹³ The School of Architecture at King Faisal University shares the campus with the College of Medicine, while the School of Environmental Design at U P M is within a university that has no humanities; Umm al-Qura University does not recognise art. The School of Environmental Design in Jeddah is basically related to the College of Engineering

¹⁴ See Jamel Akbar, *Responsibility and the Traditional Muslim Built Environment*, Ph D Thesis, M I T, 1984, pp. 260-274, 349-359

¹⁵ Ibn Khaldun, *The Muqaddimah*, Franz Rosenthal, tr (Princeton: Princeton University Press, 1980), vol II, pp 357-362

¹⁶ Al-Ya'qubi, *Tarikh Al-Ya'qubi*, (Beirut: Dar Sadir Press, 1960), vol II, pp 395-396

¹⁷ Cf Akbar, *op cit*, pp 319-379

¹⁸ H Bedawi and W Drummond, *op cit*, p 703

¹⁹ D Ackerknecht, *op cit*, p 430

²⁰ Although this study does not include designers, the administrators' role among architects is possibly higher than the engineers' and often architects are considered as engineers in the Kingdom. M Al-Buraey and J Ghani, "Continuing Education in Management: a Growing Need of Saudi Engineers", *The Second Saudi Engineers Conference*, Dhahran: U P M, 1985), vol II, p 1026