

*Raif Nijem***Introduction**

In order to accommodate the growing number of qualified students seeking higher education, a Royal Decree issued on June 1, 1975 established Yarmouk University as Jordan's second university. It is located in the Governorate of Irbid in the northern part of the country. The Decree came about as a result of the desire of the Jordanian people to increase higher education opportunities for the growing number of students who receive General Secondary Education Certificates every year. Yarmouk University, together with Jordan University in Amman and other institutions of higher education in Jordan, should be able to accommodate the majority of those students.

Objectives

Yarmouk University was established with the following four objectives: 1) Increasing opportunities for higher and university education for the growing number of eligible students; 2) Providing Jordan with the specialized and well-trained manpower needed for its economic and social development; 3) Creating a modern scientific, technological and cultural nucleus capable of conducting research and making new discoveries needed for progress and development; and 4) Providing Jordan and the Arab World with technical, scientific, vocational and administrative expertise and personnel.

The establishment of a new university with such major objectives is no easy task. It requires careful and enlightened planning, unstinting effort and a constructive scientific outlook. It also requires the benefit of experience gained from past efforts, such as the establishment of Jordan University, as well as recourse to the objectives, principles and philosophies which have guided university education in the last quarter of the twentieth century.

The objectives of Yarmouk University are the comprehensive development of the country, the elevation of both individuals

and society, the preparation of future leaders and the fulfillment of the aspirations of the Arab people. Yarmouk hopes it will succeed in spreading education, science and decent human values by means of its persistent search for truth with freedom, dignity and responsibility.

Implementation

A Royal Commission was appointed to implement the Decree establishing Yarmouk University. The Commission in turn appointed a General Technical Committee to help assess the faculties and fields of specialization which Jordan requires for the process of modernization and development. The Committee attempted to determine future needs through consultation with appropriate specialists in the National Planning Council, the Ministry of Education, the University of Jordan and the Royal Scientific Society. Their report consisted of general guidelines related to the stages of establishment of the University. It was hoped that these guidelines would serve as a basis for more detailed studies and for the architectural designs of the Master Plan.

The guidelines were as follows:

- 1) The University should concentrate on areas of science and technology as a means of achieving its basic objectives.
- 2) The general planning and design of the University must reflect and portray Arabic and Islamic culture; be characterized by originality and creativity; serve the functional needs of each unit of the University; serve the relational needs among the various units and facilities of the University; and provide the possibility of future vertical and horizontal expansion.
- 3) The University should adopt a policy of centralized legislation and decentralized implementation. This will give the academic departments sufficient freedom at the decision making and executive levels. An atmosphere like this will undoubtedly deepen commitment and encourage positive attitudes toward creativity and university improvement.

4) There should be as few faculties as possible, since the academic department is the basic unit in the administrative structure of the University.

5) The optimal eventual student enrollment at the University should be approximately 20,000.

6) The number of students in each class unit (section) must not exceed forty, thereby ensuring an effective teaching situation.

7) The ratio of students to faculty should be 20:1; of faculty members to technical staff, 2:1; of administrative staff to faculty members, 1:1.

8) Faculty, administrative staff and students should be provided with adequate housing, with the provision that student boarding facilities should accommodate no fewer than fifty percent of the total number of students.

9) A central library should serve all facilities, with a total number of 500,000 volumes expandable to one million volumes. There should be specialized reading rooms established in the various faculties; these would house reference works, periodicals and books on loan from the central library.

10) The University would be open to all sectors of society and would adopt the policy of education-for-life, enabling people from different walks of life to enroll in courses, develop their skills and improve their qualifications.

11) Opportunities must be provided for athletic and social activities.

12) Technical sub-committees must be formed to determine educational specifications for each faculty and department. Five faculties are suggested: the Faculty of Science and Arts, Faculty of Engineering, Faculty of Medical Sciences, Faculty of Agriculture and Veterinary Medicine and Deanship of Research and Graduate Studies.

After the submission of the Committee's report to the Royal Commission, an Engineering Office was established, a University President appointed and some administrative directors and employees named. The Engineering Office is considered a major administrative department

in the organizational skeleton of the University. Its Director reports to the President, and the President reports to the Royal Commission.

Academic Stages

The Master Plan for Yarmouk University will be implemented in phases parallel to the school's financial capabilities. Very few universities in the world had heretofore been constructed in accordance with a plan prepared specifically to fulfill a country's real academic needs, and to meet its technological, statistical and environmental conditions in harmony with the cultural heritage of the community and the region.

To ensure appropriate implementation of the scheme and to organize the work of the Engineering Office without jeopardizing the academic plan, the following academic stages were adopted:

Primary Stage, 1976–1977

The intake was 420 students, distributed in six departments in the Faculty of Science and Arts.

Intermediate Stage, 1977–1984

The total capacity during this stage shall not exceed 6,000 students, distributed in eighteen departments in the Faculty of Science and Arts and the Faculty of Engineering.

Advanced Stage, Commencing 1984

The total capacity will be 20,000 students, distributed in all departments upon completion of all faculties.

The Primary and Intermediate stages are located on a temporary site with an area of 110 acres. The Advanced stage will be at the permanent campus, which has an area of 2600 acres, making it one of the largest university campuses in the world. After the completion of construction at the permanent campus, the temporary site will be used as a community college associated with the University.

The Master Plan for the University

Master planning is a relatively new innovation in the field of initiating and implementing ambitious enterprises, including universities. The Master Plan serves as a guideline; it shows the relationships between different premises, facilities and buildings; it helps in phasing the construction of the project. Not many universities follow a Master Plan. Most live by improvisation, working without a general framework to guide their steps. Yarmouk University is proud of the fact that it is one of the few universities in the Middle East, if not the world, to possess such a comprehensive plan. Yarmouk's insistence on a Master Plan for its building is an offshoot of its deep-held conviction that all programmes and activities should be well formulated. Such a plan is also a helpful tool for evaluation and control of activities.

Systematic steps were undertaken by Yarmouk University authorities and the Engineering Office in the preparation of the Master Plan. First was a complete topographical survey for the entire campus and surrounding roads, showing contour lines for each one metre elevation. This was prepared to a scale of 1/200 by a local surveying firm. The site dimensions are 7.50 kms. in length by 1.50 km. in width; the total area is about 2600 acres.

A number of bore holes were drilled in different locations inside the campus, and proper laboratory soil tests performed by a specialized local firm. Soil profiles were prepared, showing detailed lithologic description, gradation tests, moisture content and atterberg limits, and the soil bearing capacity was determined. In addition, meteorological data for the past ten years were collected from the official local authorities. These data included wind pressure, temperature, relative humidity and rainfall.

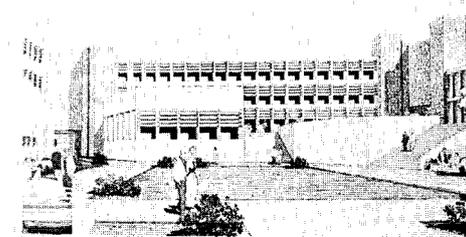
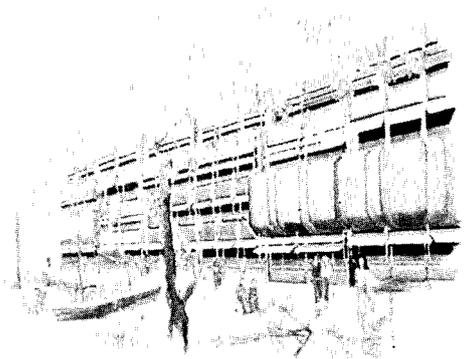
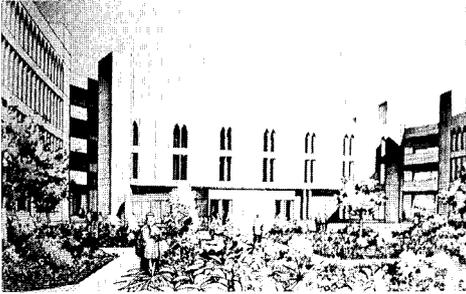
Finally, an architect's brief for the Master Plan was prepared. It comprised 237 pages, and required ten months of specialized committee interaction and

review for completion. The brief detailed the scope of work and space schedule for every element inside the campus. It is a testimony to the oft-cited statement that man is the prime mover in development, creativity and innovation. Jordanian minds were behind the planning and implementation of Yarmouk University at every stage. However, we did not ignore the expertise of many distinguished guests and visitors to our campus. Many sources were tapped and many made themselves available for suggestions and advice. Thus Yarmouk is a result of aggressive interaction between the University and many other universities, institutions and organizations. Such intellectual interdependence among academic institutions is inescapable and essential in the last quarter of this century.

Master Plan Competition

In June 1976, an advertisement in international and local magazines and newspapers alerted consulting firms to the upcoming competition for a Yarmouk University Master Plan. The firms were allowed a two-month period to submit their applications, and a total of 175 applications were received. A Technical Committee, composed of representatives from European and Arabic universities and the World Bank, in addition to the President of Yarmouk University and the Director of the Engineering Office, was charged with evaluation of the applications. Factors taken into consideration in the evaluations were compiled in tables by the Engineering Office, and contained information taken from the applications; the staff, categorization and financial status of a firm, and qualifications of its key personnel; and the experience of the firm in similar projects in Arab countries, in the Middle East and internationally. A firm might be eliminated due to a lack of information or for legal reasons, such as boycott.

After concentrated scrutiny and evaluation, fifteen of the applicant consulting



Yarmouk University, Jordan: drawings of University proposals by various international consultants. These entries were not selected by the Technical Committee

Photos: R Nijem

firms were invited to attend a seminar at the Engineering Office. There they were provided with the following documents: a topographical plan for the University campus to a scale of 1/200; a geographical plan for the University site and the surrounding towns and villages; meteorological data for the last ten years; the soil investigation report; the architect's brief; and general conditions of contract which were suggested by University officials and consultants.

The documents were explained and questions answered. The fifteen competing consultants were taken on a tour to acquaint them with Yarmouk University's site conditions. It was agreed that they would submit their technical and financial proposals, together with a tentative planning concept in harmony with the local environment and the Islamic heritage, within ten weeks.

Technical and financial proposals and preliminary planning concepts were eventually submitted by fourteen of the consulting firms, one being unable to meet the deadline for submission due to prior engagement with other clients. Late in 1976 the applicants were judged by the Technical Committee on the following criteria:

Criteria for Architectural Concepts

- Adherence to the Terms of Reference
- Architectural expression, including human scale, variety and visual interest
- Regional expression and identity
- Response to environmental conditions
- Use of local materials and feasibility of their application
- Landscaping concept
- Harmony with Islamic principles

Criteria for Structural Concepts

- Study of infrastructure requirements
- Definition of the structural design principles
- Method, speed and economy of execution
- Study of electro-mechanical services, including energy conservation
- Flexibility of design and potential for expansion

Other Criteria

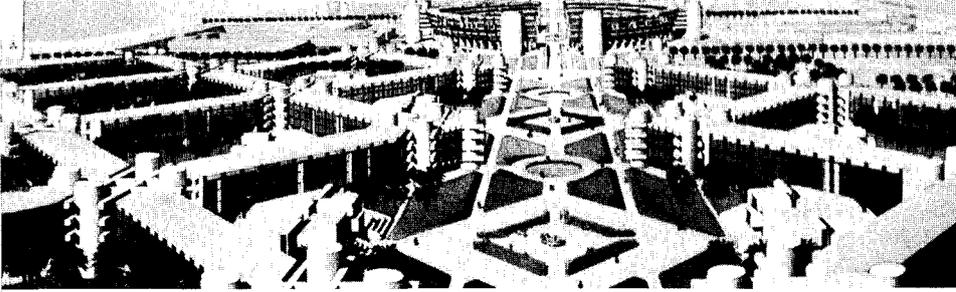
- Organization chart
- Design period
- Design team
- Financial status of the firm
- Proposed remunerations

Decision of the Technical Committee

The Committee recommended the firm of Kenzo Tange and Urtec for the preparation of the Master Plan of Yarmouk University. The recommendation was based on Tange's convincing concept and technical capability, despite the fact that the fees demanded in their proposal were not the lowest. When the Royal Commission approved the recommendation, the firm was required to develop, modify and refine the tentative concept in accordance with the client's desires. Kenzo Tange and Urtec were flexible and ingenious in their approach to the requirements and constraints of the project, and they were responsive to the ideas and desires of the University. The resultant Master Plan was refined and amended several times in accordance with the advice of presidents, Deans, and professors whom the University invited as guests. Advice offered by specialized expatriates and local planners was also respectfully considered. The President of the University and the Engineering Office worked as one team for coordination and decision making during the two years required for the Master Plan to reach its final impressive form.

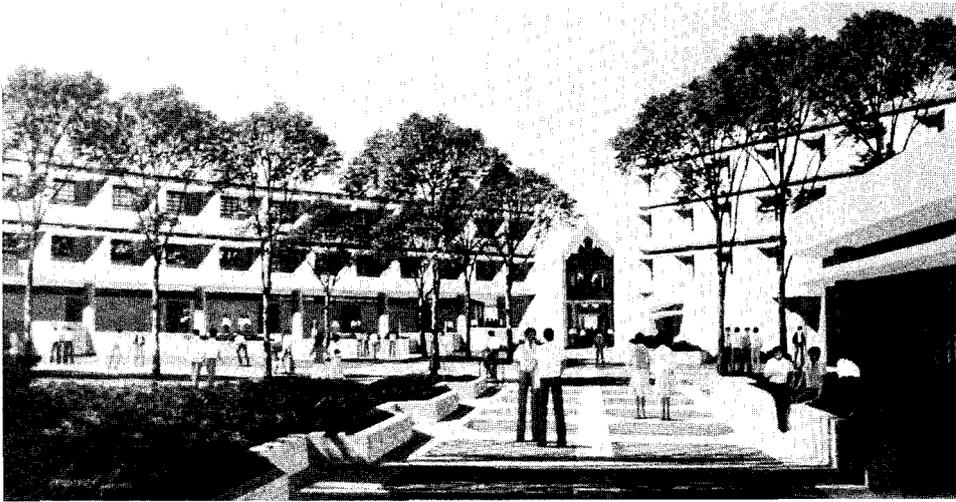
There were many reasons for the selection of the Tange Master Plan. I list them here without allowing myself the privilege of commenting.

- 1) The impressive form and organization of the scheme
- 2) The monumental character of the University
- 3) The rhythms and spaces between buildings
- 4) Easy interrelation between the different elements



Yarmouk University, Jordan: the central segment of the Tange Plan

Drawing: K Tange and Urtec; photo by R Nijem



Yarmouk University, Jordan: view of Faculty of Engineering courtyard

Drawing: K Tange and Urtec; photo by R. Nijem

- 5) The social spine connects the University with the neighbourhood community. This emphasizes its role in community development through such social facilities as the Islamic cultural centre, mosque, museum and civic centre, and also through technical services such as the computer centre. The Sports City is another aspect of integration with the community
- 6) Simplicity of the architectural system and spatial organization is based on a succession of courtyards, in keeping

- 7) Easy circulation in different directions avoids traffic jams
- 8) Easy horizontal and vertical expansion
- 9) Adopting low-rise buildings (three floors) to avoid the utilization of electrical lifts, which create complications and difficulties of energy and maintenance
- 10) Economy in time and money which will be achieved by implementation of this Master Plan. This is epitomized

by the construction of academic buildings with a modern precast system, and utilization of industrialized local materials

- 11) For conservation of traditional energy, solar energy will be utilized in the most comprehensive manner possible
- 12) Incorporation of Islamic principles

Islamic Principles to be Implemented in the Yarmouk University Design

The Islamic environment and Islamic principles were considered integral components of the Master Plan. We felt strongly that the designer of the University should be familiar with such concepts and should be able to incorporate them harmoniously into the architectural plans. The essence of Islamic culture is seen in its basic principles and spiritual conception more than in the application of traditional artistic forms. The aesthetic considerations and surface decorations which have characterized most Islamic edifices over the different centuries should not be considered the major characteristics of Islamic architecture. There is no doubt that the glorious Koran is the main source of any Islamic principles. I have selected some verses from the Koran from which we can derive some Islamic principles to be adopted by Muslim architects and planners.

Al-Esra' 27

In the name of Allah, the Beneficent, the Merciful, squander not thy wealth, the squanderers were ever brothers of the devils.

The principle here is that Islamic buildings should not be luxurious. All the luxurious phenomena which govern most old Islamic edifices and many modern buildings conflict with this principle.

Ashu'ra' 128, 129

In the name of Allah, the Beneficent, the Merciful, Build ye on every high place a monument for vain delight? And seek ye out strongholds, that haply ye may last forever?

Here I recall a short story about a ruler in

Andalusia called Al-Naser, who wanted to build a palace called *al-Zahra'* using gold and expensive construction materials. He listened to the judge, Al-Munther Ben Abdul Rahman, who recited from *Al-Zukhruf* 33, 35:

In the name of Allah, the Beneficent, the Merciful, And were it not that mankind would have become one community (through love of riches), we might well have appointed, for those who disbelieve in the Beneficent, roofs of silver for their houses and stairs (of silver) whereby to mount, And for their houses doors (of silver) and couches of silver whereon to recline, And ornaments of gold. Yet all that would have been but a provision of the life of the World. And the Hereafter with your Lord would have been for those who keep from evil.

When Al-Naser heard these verses he at once gave orders to change the dome from gold to mud.

Al-Baqarah 143

In the name of Allah, the Beneficent, the Merciful, Thus we have appointed you a middle nation, that ye may be witnesses against mankind and that the messenger may be a witness against you.

Al-Furgan 67

In the name of Allah, the Beneficent, the Merciful, And those who, when they spend, are neither prodigal nor grudging, and there is ever a firm station between the two.

From these two verses we can derive the principle of modern living and moderate expenditure.

Al-Nure 27

In the name of Allah, the Beneficent, the Merciful, O ye who believe! Enter not houses other than your own without first announcing your presence and invoking peace upon the folk thereof. That is better for you, that ye may be heedful.

From this verse we see the importance of privacy.

Al-An'am 165

In the name of Allah, the Beneficent, the Merciful, He it is who hath placed

you as viceroys of the earth and hath exalted some of you in rank above others, that He may try you by (the test of) that which He hath given you. Lo! Thy Lord is swift in persecution, and Lo! He is forgiving, merciful.

This verse signifies both equity in dealing and different standards of living.

Al-Tawbah 109

In the name of Allah, the Beneficent, the Merciful, Is he who founded his building upon duty to Allah and His good pleasure better; or he who founded his building on the brink of a crumbling, overhanging precipice so that it toppled with him into the fire of hell?

Allah guideth not wrongdoing folk.

The principle extracted from this verse is that religious ceremonies should be given proper consideration when designing public buildings.

The main principles to be derived from the Koran and adopted in architectural design are simplicity, moderate social life, equity in public life, privacy, respecting religious ceremonies and proper maintenance. These Islamic principles are only examples, and many more could be extracted through concentrated research work undertaken by specialists with a knowledge of jurisprudence. The additional technical and architectural criteria applied in the preparation of the Yarmouk University Master Plan were in harmony with the local environment, culture, customs, climate and needs. These important concepts and embodiments of Islamic thought will lead to integration between the University and the community.