Harvard Graduate School of Design
Department of Urban Planning and Design

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Mr. Vigier, Mrs. Serageldin and Guests Tu., Th., 2-6pm

Arad New Town

1. Overview.

Many rapidly developing countries have had to address the complex task of programming, designing and building large scale mixed-use projects on the urban fringe. Developed either as part of a strategy to regulate and order urban growth or for prestige reasons, these "new towns," as they are commonly known, pose a range of practical problems. In limited income countries, project affordability, financing and the recovery of public investment are paramount considerations. In both rich and poor countries, the need to service large land areas and connect them efficiently to existing urban development as well as develop solutions that simultaneously address technological and cultural aspects present design professionals with a real challengen. Too often, these large satellite developments are characterized by a nondescript architecture that does not reflect the local climate or culture. They stand out amid the urban landscape as clearly imported solutions bearing no relationship to the country's urbanistic traditions.

The objective of this year's studio on planning and urban design in developing countries is to explore solutions that are responsive to the life styles of the future inhabitants of a satellite development in Bahrain, off Muharraq Island, and integrate the modern technology required to create a large-scale project with the cultural traditions of Bahrain and the Gulf area. The policy initiated several years ago to undertake land fills on the coral reefs girding the islands that make up Bahrain offers a rare opportunity to "create" the site as an integral part of the design of the new town. The land fill's location near the historic town of Muharrak allows the taking into account of the functional, economic, and social interrelationships between the new town and its older neighbor.

With an area of only 675 square kilometers and a 1981 population of 350,798 (of whom 32 percent are expatriate workers and their families), Bahrain is the smallest and most densely populated of the Gulf countries. Its gross density of 520 inhabitants per

square kilometers is about a third that of Hong Kong or Singapore. Over 50 percent of the population lives in the two principal towns of Manama and Muharraq which are separated by a short causeway. Its 1981 gross national product per capita of $9,799 is comparable to that of Austria, Belgium or the Netherlands.

Like most oil exporting countries, Bahrain enjoyed a period of unprecedented prosperity after 1973. Major government projects were undertaken to improve the country's infrastructure and build housing, schools and hospitals. Even though the depletion of its natural resources of oil, gas and underground water has curtailed government revenues, the country's economy has continued to develop albeit at a slower pace. Private sector investments in trade, off-shore banking, and tourism have placed Bahrain in the position of becoming a major regional service center, a role it is particularly suited for as its long-standing policy to invest in education has resulted in it having the most educated labor force in the Gulf. A free transit and industrial zone at the new harbor of Mina Sulman is expected to strengthen the economic base while its refineries continue to operate with imported crude. A 25-kilometer causeway, linking the country to Saudi Arabia was inaugurated in December 1986.

Its restricted land area as well as the presence of oil and natural gas fields in the central portion of the main island has forced the government to adopt an active role in planning. Over-all responsiblity for physical planning is entrusted to the Ministry of Housing (MOH), established in 1976. It prepares comprehensive development plans for the country as a whole; detailed schemes for urban expansion or to improve existing settlements; and formulates and enforces development regulations and building codes.

Given the country's small area, considerable emphasis has been put in recent years on reclaiming buildable land from the sea. The shallowness of the reef and the use of dredge and pump techniques makes land-fill economically competitive. According to MOH estimates, land can be reclaimed for about BD 3 per square meter as opposed to the BD 10-30 cost of undeveloped land in private ownership. (The Bahraini dinar was worth $2.77 in September 1986.) Land-fills have the further advantage of developing new sites in close proximity to the towns of Manama and Muharraq, thereby minimizing primary infra-structure costs and permitting the functional integration of new projects into the existing urban pattern.

In addition to physical planning, MOH is responsible for the formulation and implementation of housing policy, a key element in the government's long-standing policy to distribute the revenues from oil to its citizens. Every Bahraini household

expects the government to help it acquire a house at a nominal cost through one of three highly subsidized programs. Bahrainis who do not own their own home, or whose property is expropriated for a public project, are eligible for a government-built single-family house if the monthly salary of the head of the household is less than BD 450. Alternatively, a free plot of land can be provided as well as a low interest twenty-year construction loan. Home owners may also borrow from the government to undertake necessary repairs or improvements. Needy families are housed in MOH rental units until such time as a turnkey house becomes available. The extent of the government's commitment to housing can be ascertained from the Ministry's budget which rose from BD 28.6 million in 1976 to BD 42.7 million in 1986. Of the BD 386.8 expended by MOH since its creation, 93 percent was for capital expenditures.

2. The Site.

The twin towns of Muharraq and Manama occupy the north-eastern corner of the country and accounted for 52 percent of Bahrain's population in 1982. Manama, the largest of the two, has a current population of about 140,000 and contains the modern business district, the government center and a broad range of housing, from the older walk-up units of the Kanu district that are occupied mainly by expatriates from the Indian subcontinent, to the plush modern apartments and single-family subdivisions housing wealthier Bahrainis and foreigners. Muharraq has a population of not quite 60,000 people. Middle- and lower-income Bahrainis, as well as expatriates, live in the tightly clustered buildings that line its narrow streets. In spite of some new construction, the traditional urban pattern of Muharraq is still dominant and the atmosphere of an older Arab town stands in sharp contrast to the new high rise buildings and modern subdivisions of Manama.

The balance of Muharraq Island contains a variety of contrasting uses. The international airport, handling 2.7 million passengers yearly and nearly 39 million tons of freight, is located just north of Muharraq Town on a large land-fill adjacent to a salt marsh, Dawhat al Muharraq, from which local fishermen obtain bait. A number of fishing villages are still in evidence, interspersed with newer residential clusters. A large sports stadium and leisure center in Arad is the country's main recreational facility. Two old forts, one built by the Arabs and the other by the Portugese are testimony to Bahrain's historical importance on the trade route between the Near East and India. At the southern tip of the island lies an industrial complex specializing in the construction and repair of ships and off-shore drilling platforms.

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The main shipping channel to Mina Sulman separates Muharraq island from the main island. Arad New Town is to be built on a land-fill (whose geometry has yet to be defined) to be located on a 3.7 square kilometer coral reef and tidal flat extending from the bridge linking old Muharraq and Arad to the village of Halat an Naim. The MOH envisages that some 10,000 people will live in the new town. A variety of housing types are to be provided: owner-occcupied turnkey units build by the Ministry, apartments, and individual lots. The new town's commercial and community facilities will also serve some 4,500 persons living in the two nearby fishing villages of Halat an Naim and Halat as Sultan and in the small settlement of Al Hidd. One end of a proposed second harbor crossing to improve access from Manama to the international airport will be anchored on the site; a bridge will be constructed between the site and old Muharraq over the channel that will have to be created to maintain the viability of the ecologically sensitive Dawhat al Muharraq marsh.

The new town offers a unique opportunity to simultaneously address ecological, design and implementation issues. Unlike other projects previously undertaken by MOH, which were located some distance from existing settlements, either inland or facingonto the Gulf, Arad New Town will have to be integrated within the urbanized core of Bahrain as well as respect the ecological balance of a highly sensitive and threatened portion of the coast line. Furthermore, new budgetary constraints resulting from the general economic slowdown in the Gulf region after the recent sharp drop in world petroleum prices, have prompted the Ministry to reexamine its land development standards. The MOH looks upon the Arad New Town study to demonstrate that a more efficient design can maintain the high standards of liveability that have characterized its past projects.

3. Methodology.

The selection of a new town in Bahrain as a studio topic raises a number of pedagogic issues. Its main interest lies in the opportunity to investigate an urban design problem that is being addressed by professionals in many countries, albeit not in the United States. It offers the opportunity to explore approaches that respond to the needs of a population living under somewhat different circumstances as well as develop attitudes toward the generic problem of "new towns." In addition, it allows an investigation of the impact of a new development on a sensitive ecosystem. Its major drawback is that the site is located some 6,000 miles from Cambridge and that field investigations are not practical. Yet, the education of design professionals

interested in working in different socio-cultural contexts and in developing an ability to respond sensitively to a broad range of local conditions demands that they be presented with studio problems that simulate a variety of social, economic, cultural, institutional, and urban situations. The methodology described below offers an alternative way to study a distant project. An extensive documentation on Bahrain has been prepared with the financial support of the Aga Khan Program for Islamic Art and Architecture to give each studio participant an understanding of the Bahraini situation and of the technical issues encountered in developing a new town on a land-fill. The material available to the studio consists of:

1. An illustrated monograph containing contextual information on Bahrain and its current economic situation and prospects; public policies affecting physical development; housing policies and programs; land development strategies, including land reclamation and its impact on the ecosystem; and traditional urban form and architecture.

2. Two video cassettes on the Arabian coast of the Gulf Region.

3 Detailed photographic documentation of the Muharrak area, the periphery of the future site, and of typical projects recently built.

4. Aerial photographs of Muharrak island and the site to be reclaimed.

5. Base maps at various scales and nautical charts.

6. A computer model simulation of the programmatic and financial aspects of large-scale projects.

In addition, a seminar series will be run as an adjunct to the studio to provide supplementary technical, social, cultural, and institutional aspects. This information is not readily available in published form and has been organized as a direct input to each of the studio's phases to allow more time for creative thinking and design work. Guest speakers will be available for design crits and individual and group discussions. The following topics will be addressed in the seminars:

The ecological aspects of land-fills on coastal coral reefs. Michael Binford.

Project planning and engineering aspects. Mona Serageldin.

Housing policies in Bahrain. François Vigier.

Planning large land-fill projects: New Bombay. Charles Correa.

The studio will consist of four phases, to be undertaken by either individuals or small teams:

1. Site Creation. (February 5 to 19) Investigation of the ecological aspects of land-fill on the corral reef; determination of the gross land area required, by major uses; alternative land forms. Guest critic: Michael Binford, Assistant Professor of Landscape Ecology.

PHASE ONE REVIEW: February 23.

2. Program Development and Preliminary Designs. (February 25 to March 26) Detailed programming of new town; determination of appropriate development standards; investigation of implementation strategy utilizing the simulation model; preliminary design concept for the new town. PHASE TWO REVIEW: April 7.

3. Design Development. Preparation of comprehensive urban design plan for the new town; verification of implementation strategy including financial aspects. Guest critic: Charles Correa, architect and town planner, Bombay, India.

PHASE THREE REVIEW: April 23.

4. Final Designs. Finalization of new town plan; detailing of key interventions. The head of thePhysical Planning Directorate of the Bahrain Ministry of Housing has been invited to participate in the final presentation.

FINAL REVIEW: Date to be announced.

The material to be presented at the end of each phase consists of drawings at a scale appropriate to communicate the nature of the intervention proposed and a short report (not to exceed five pages) summerizing analytical results, the objectives of the intervention, and its main components. All drawings should be prepared in a medium and format suitable for eventual incorporation in a report to be prepared for the Ministry of Housing.