



1989 Technical Review Summary
by *Serge Santelli*

0563.SAU

Saudi Ministry of Foreign Affairs

Riyadh, Saudi Arabia



Architect

Henning Larsen
Copenhagen, Denmark

Client

Ministry of Foreign Affairs
Riyadh, Saudi Arabia

Completed

August 1984

I. Introduction

The building was designed to house the headquarters of the Ministry of Foreign Affairs which had been previously located in Jeddah. It includes standard offices and reception rooms for formal occasions. It is one of the rare contemporary buildings in Saudi Arabia to employ traditional Islamic design while using at the same time a simple and modern architectural vocabulary. It was completed in September 1984.

II. Context

a. Historical Background

At one time the site was located on what was the fringe of the city; it used to be occupied by the Royal Guards barracks and, more recently by a gas station.

b. Local Architectural Character

The city of Riyadh is surrounded by desert and is the traditional centre of Saudi dynastic power. Before the oil boom, it was a concentrated city made up of one to two storey high mud buildings. The traditional buildings are structured around a central courtyard. Their street façades are windowless and barely decorated with geometric patterns. The use of mud in their construction gives the city its general ochre colour. The urban and architectural characteristics of the city are Islamic.

Riyadh is now one of the fastest growing cities in the Middle East and is dominated by a very large and dense road network. The modern city is of the same size and scale as a low density American city where cars prevail.

c. Climatic Conditions

Riyadh is on a latitude of 24°40'. It is surrounded by desert.

May to September, average 30°C. Temperatures may reach 47°C and are rarely below 20°C. November to March, average 20°C. Rarely above 30°C and occasionally as low as zero, with some frost. April and October, average 25°C.

Rainfall varies yearly, averaging annually 11.5 cm. Sudden downpours may amount to 3 cm in one day. Humidity is usually less than 25% and rarely reaches 50%. However, it can go down to 5%. Prevailing winds in the hot season come from the north. Sand and dust storms are a major problem. In the cool season there are southerly winds.

d. Immediate Surroundings

The building is located in the al-Namodhajiyyah quarter. It lies at the intersection of al-Malek Saud Street and al-Nasiriyadh Street. It is situated in the southern part of the city, 8 km from the Diplomatic quarter and 2 km from Old Riyadh.

The building takes up the whole block and is surrounded by a new road.

The immediate vicinity is defined by run-of-the-mill housing blocks, the design of which is similar to that of the average built structures in Riyadh.

The surroundings of the M.O.F.A. are ugly and uninspiring, with the exception of the al-Nasiriyah gate, just in front of the block.

e. Topography

The site is urban, but lies on the edge of a low ridge known as the "Uplands", between Wadi Hanifa and Wadi Batha. Most of the development in Riyadh is taking place along this north-western corridor. The terrain is almost flat the site follows an incline of 4 m from front to back.

III. Description

The Ministry of Foreign Affairs was previously in Jeddah. In the course of the past two decades, the main centres of Monarchy, political power and military bureaucracy have been concentrated in Riyadh. In the same period, the Kingdom's relations with the outside world have expanded and become more complex. Foreign embassies have recently been built in the new Diplomatic Quarter of Riyadh. The principal function of the new building is to create more space for the Ministry.

a. Functional Requirements

The programme was formulated on the basis of a publication entitled "The Ministry of Foreign Affairs: the Organisation Development Plan" (formulated with the help of Arthur Erikson and the Idea Centre), and approved by the Cabinet in 1977.

The building was to include:

- 85'000 sq m of office and circulation space to be divided into three sections: Political Affairs, Economic and Cultural Affairs, and Administrative Affairs;
- the main offices for the Foreign Minister and the Deputy Minister of Foreign Affairs;
- a banquet hall, a mosque, a library, a conference centre, an exhibition space and training facilities for the Diplomatic Corps, Consular section;
- extensive parking space, taking into account a potential total of over 1'100 employees and many visitors.

An architectural competition was organised in June 1979 with the help of the Union Internationale des Architectes (UIA). The master jury included Mr. Hassan Fathy; the minister and the deputy minister also played active parts. Eleven designers were invited Piano and Rice (Italy); V. Dalokay (Turkey); T. Dannat and Partners (UK); P. El Khoury (Lebanon), R. Fairburn (U.S.A.); F. Otto (W. Germany); A. Isozaki (Japan); R. Taillibert (France); Taller de Arquitectura Bofill (Spain); Suter and Suter (Switzerland); Henning Larsen (Denmark).

The competition went through two stages, and four candidates, were shortlisted.

The rejections help to understand the client's intentions, e.g. Bofill's extravaganza with domes was turned down because it was too ostentatious and too mosque-like; Otto's tent, because the plan was incoherent; Isozaki's suave solution because its spiralling minaret was regarded as too Iraqi in character and too close to pre-Islamic types, such as Ziggurats. Khoury's design, like Larsen's made a sensible use of mud wall-and-tower precedents. Suter and Suter, and Fairburn presented "Arabian nights" pastiches.

b. *The Architect's Intentions*

The objective of this building is to carry on the historical continuity and to create complexity and variation through a deliberate architectural elaboration of the traditional Islamic elements. The architectural design concept for the Ministry of Foreign Affairs in Riyadh, Saudi Arabia, took the Islamic tradition of urban architecture as its starting point. The building reflects those traditions, at the same time referring to an international idiom. Thus, the building is intended to reflect Islamic culture in the global cultural currents.

The architect wanted to incorporate the basic principles of traditional Islamic design into a contemporary architectural language; especially:

- the idea of the courtyard as an "indispensable" element;
- the anonymity and blankness of the façades;
- a clear hierarchy between private and public spaces;
- the collective aspect of the building's structure;
- the homogeneity of a large physical mass.

c. *The Architecture of the Building*

The main features of Henning Larsen's winning project were:

- its low and compact shape, rising to 3-4 storeys, and its square plan with a "missing part" in one corner symbolising the embassies abroad;
- the massive aspect and the unique and blank appearance of the building constructed on a platform (in reference to Indian Islamic architecture) which hides the garage;
- the simple square shape contrasting with a ceremonial gate façade (in reference to the Nasiriyah gate) designed symmetrically along the diagonal axis and leading to the main lobby;
- the lobby, a central triangular space which is the chief structural element formed by a complex geometric combination of square and triangular shapes;
- the sober exterior with rich spatial elements in the interior: courtyards and indoor streets, following the model of the traditional Arab house.

The building is organised in three spatial sequences: the entrance/lobby sequence; the square/street sequence; the courtyard/offices sequence.

The Entrance/Lobby Sequence

The main entrance is of a monumental character. It is located along the diagonal axis of the square and flanked by two massive cylindrical volumes (where the banquet hall and library are located and easily accessible to the public). The central access is pedestrian.

The entrance is designed as a large and high vaulted gallery leading to the main lobby, which is an interior four-storey high space, and defines the physical centre of the building. According to the architects, "the location proclaims its official character and functions at the same time as a structural point of orientation".

The whole sequence is monumental, impressive and quite solemn. The contrast between the narrow entrance gallery and the spectacular character of the indoor lobby is striking. The lobby is lit around the edges by strips between the wall and the ceiling which let in natural light. (Originally, the lobby was designed to be an outdoor courtyard). The artificial light is created by electric bulbs hanging from the ceiling at regular intervals. The light bulbs create the illusion of a lower ceiling, thus referring to traditional lighting in mosques.

The Square/Street Sequence

The central lobby is surrounded by a triangular street covered by three-storey high barrel-vaults. At each corner of the triangle are octagonal-shaped squares with domes. These streets and squares provide access to the reception rooms, stairways, lifts and other services. They were inspired by traditional bazaar streets.

Lit by small openings in the vaults, these streets are cooled by fountains and water canals. They are paved with green and white marble tiles in an attractive chequered pattern.

The Courtyard/Offices Sequence

The three octagonal-shaped squares form the centres of the individual block units (each block is structured around three courtyards) in which flexible office space is situated. Each block houses one of the three main departments. The majority of the offices are lit by windows opening on the façade.

The courtyards are square-shaped, an explicit reference to the Islamic tradition of quadripartite gardens. "The courtyards have been designed from three main types: the cross garden, the fountain garden, the water basin garden". Each is of a different colour, with different decorative tile pavings which accentuate their specific architectural identity.

Evolution of the Design Concepts

Many ideas for the final building were discovered in the competition projects, but it should be noted that the main façade was once asymmetrical - the mosque was rectangular (to the left of the entrance) and the conference centre curved to the right. The asymmetry responded well to the Nasiriyadh gate which lies diagonally opposite the building. Originally, the building was also one-storey lower and much more spread out.

Response to Climatic Conditions

The design of the building is based on traditional practices dealing with the harsh climate: thick walls, small openings, courtyards, water gardens, double-layered outer walls to keep out the glare and for more efficient air circulation, top lighting and *mashrabiyyas*.

Access

There are three entrances from the main road fronting the site: the gate on the main axis (used for state occasions) and two gates about 60 m equidistant from the axis which are used for daily business and have guardhouses.

One gate on the northern side is a service entrance for trucks and the one on the east is for consular services. Most daily business takes place through the main front door of the building. Visitors generally go all the way to the main triangular space at the heart before proceeding elsewhere. VIPs who have come to see the Ministers (accommodated on the top floor in the main façade) go immediately left or right beyond the entrances and then up by lift.

Structure, Materials and Technology

- The building has a double external wall - the exterior brownstone veneer itself (Crema Mora from Italy) and a concrete slab. There is a small air cavity in between.
- The construction stands on reinforced pad and strip foundations.
- Columns and beams are of prefabricated steel.
- Floors are a composite of steel decking and a 8.5 cm layer of concrete.
- The construction grid is 7.2x4.8 m.

- The roof is insulated with marble/concrete tiles.
- The interior walls are mainly made of gypsum board and painted white.
- Off-white acoustic plaster covers the interior street ceilings.
- The floors of the public spaces are tiled with green and white marble; the office floors are covered with neutral carpeting.
- The patio walls are painted in sophisticated blues, mauves and ochres.

Mechanical systems are extremely sophisticated. Security and fire monitors can isolate areas of the building and are controlled by a central computer. Air conditioning works on an "Algorithm" system, i.e. a computer regulates humidity and temperatures by constantly checking and anticipating exterior changes. To handle drastic dryness and exceptional temperatures which last late into the night, a long cooling tank of a capacity of 2'000 tons was installed. The small apertures, mash-rabiyyas, baffled light slots, thick walls and high quality insulation all help to keep the building cool.

Origin of Technology, Labour and Materials

As usual, in recent Saudi Arabian projects, nearly all the technology, labour and materials come from abroad. The brown Crema Mora of the exterior and the marble tiles of the interior were imported from Italy. The steel is from Japan. Mechanical systems have a mixed European origin (English, German, Swiss, etc.). Electric lights are from Denmark, as is the white nautical paint used on the walls. The spherical lights were handblown in Germany, and the crystal chandeliers are from Austria.

The white-collar work was largely Danish - the architect of course - and the engineer, Mr. Folmer Andersen. When possible, contractors worked with Saudi links, e.g. Haji Abdulla Ali Reza co-ordinated with Gentec on telecommunications. The project manager in the Ministry was Kamal Shukri.

The manual work was almost entirely Korean and 90% of it was unskilled. The project was let out for a two-year construction contract. Mi Ryung Construction Co. of Seoul bid lowest and had a good reputation. Work on-site went on for 24 hours a day, usually on eight hour shifts. In order to meet the contract period of 730 calendar days for the main contract, approximately 2'000 workers were employed on the site.

IV. Construction Schedule and Costs

Programme formulated in 1977-1979.
 Competition announced in June 1979.
 Submission by 11 firms in November 1979.
 Second stage (4 firms) in February 1980.
 Larsen selected in the spring of 1980.
 Preliminary scheme, October 1980.
 Refinements and reviews by client in 1980-1981.
 Contracts offered in 1982.
 Beginning of construction in 1982.
 Intended completion in July 1984.
 Actual completion in September 1984.

Total costs (including main contract, telecommunications, art works, furniture) were of 615 million Riyals (about US\$ 150 million). Including the car park, this amounts to some 6'530 Riyals per sq m (US\$ 1'600). Other state commissions of this period in Riyadh range from 1.5 to 2 times this amount per sq m. Funds came from the Saudi government. Maintenance costs are a tightly guarded secret.

V. Technical Assessment

a. Functional Aspects

The building provides office space for about 1'000 employees, the majority of which are private and located around the 9 courtyards. They are comfortable, of ample dimensions and subtly lit. They give a nice feeling of comfort and privacy.

The public and ceremonial spaces - the entrance/lobby sequence - the streets and squares, the antechambers leading to the banquet hall and library, are all noble and striking spaces. They are all monumental and evoke a delicate balance of dignity and ease.

Circulation is clearly marked and direct from the entrance to the main lobby, and from there to the streets and squares. These are wide and well-lit, cool and quiet. Fountains and water canals are elegant devices to refresh the space.

b. Climatic Performance

The insulation and fenestration solutions work well. The main services engineer described an occasion when the electrical power was turned off during Ramadan. Even a week later, the building remained a good 12°C cooler inside than the 40°-44°C temperature outside.

Light is superbly handled throughout. The small slots in the exterior walls let light in so that it bounces off another double wall before diffusing into the rooms. (This device was inspired by the vernacular architecture of Bahrain.) Top lighting in courts and *suqs* is calming and beautiful. Electric lighting is also handled with great poetry.

Luminosity is the main feature of Henning Larsen's design - the light reflected in the interior by water canals, and the rays of light which illuminate the streets and contrast with the relative darkness of the walls.

c. Materials, Technology and Maintenance

External materials and fittings appear to weather well in the rigorous temperatures, wind and dust. The interiors require constant repainting to maintain their pristine effect. During heavy rain, there have been some small internal leaks; the patio walls have insufficient mouldings to handle exposure to water. Dust is a perpetual problem in Riyadh and it remains to be seen how much the gardens and fountains will be affected by it.

d. *Design Features*

The design is inspired by Islamic tradition (see III.b.), and every part of the building refers to Islamic principles of geometry and composition.

The decorative panels, produced by Moroccan craftsmen, were a decision of the client. The same is true of the door designs which are not Larsen's. These rather banal "Islamic ornaments" are treated in a hackneyed and inappropriate manner, as if they were pictures on a wall, and contrast sharply with the pure and abstract conception of the architect. They were introduced against the architect's will.

VI. **Users**

Most of the users are highly educated, cosmopolitan and unusually reflective on cultural questions - Ministers, Ambassadors, First Secretaries, etc. There is also an army of clerks, secretaries, consultants, security people, etc. A small area in the lower part of the building has been designed for the use of women. It should be pointed out that the building is not only designed for Saudi government officials but also for the representatives of many other states who do business in Riyadh.

VII. **Persons Involved**

a. *Client*

Foreign Minister
Deputy Foreign Minister
Project overseer
Project manager

Prince Saud Al Faisal.
Sheikh Abdul Aziz Al Thonayan.
Nabeel Ashour.
Kamal Shukri.

b. *Architect*

Chief architect
Business partner
Korean contractor plus the sub-contractors.

Henning Larsen.
Regitze Johnsen.

Serge Santelli
Paris, 29 May 1989

1986 TECHNICAL REVIEW SUMMARY

The Ministry of Foreign Affairs
Riyadh , Saudi Arabia

563.
SAU.

The building combines bureaucracy and ceremony: as well as being the hub of Saudi Foreign Affairs, it is a national symbol and an urban monument. The design seeks to reconcile the modernizing aspirations of the Saudi elite with deep echoes from the regional past. Ideas from many Islamic sources are synthesized into a convincing contemporary expression.

Date of Completion : August 1984

I. OBJECTIVES

- To provide an efficient, secure and up-to-date administrative center for all the main activities of the Saudi Ministry of Foreign Affairs.
- To act as bridge between the Kingdom and its Embassies abroad.
- To function as a symbolic "front door" to Saudi Arabia for its visiting foreign dignitaries.
- To be "a contemporary symbol of Islamic ideals which acknowledges the architectural traditions of Riyadh". (quotation from original Programme).

II. DESCRIPTION OF THE SITE

Riyadh is surrounded by desert and is the traditional center of Saudi dynastic power. Before the oil boom, it was a small, concentrated city

with fortified mud buildings at its heart. Now it is one of the fastest growing cities in the Middle East and its prevalent scale is defined by wide autoroutes and giant ministries, palaces and state monuments.

The Ministry of Foreign Affairs' site abuts the government area (which lies to the northeast of it) and an area containing numerous Royal establishments (which lie to the northwest). It is at the intersection of Nasriyah and Al As' simah streets opposite the Nasriyad Gate and the Royal Conference Center. The new Diplomatic Quarter (8 kms. northwest of Riyadh) is easily reached by freeway; so is the international airport which lies farther out to the north.

Topography

The site is urban but it lies on the low ridge known as the "Uplands" which is between Wadi Hanifa and Wadi Batha. Most of Riyadh's development is occurring along this north westerly corridor. The land is almost flat. The site slopes only 4 meters from front to back.

Climate

Hot/dry. Riyadh is at latitude 24°40' and is surrounded by desert. May to September temperatures may reach 47°C and are rarely below 20°C (mean average 30°C). November to March, rarely above 30°C and occasionally as low as zero, with some frost (mean 20°C). April and October, average 25°C.

Rainfall varies yearly, annual average 11.5 cms; sudden downpours may bring up to 3 cms in one day.

Humidity is usually less than 25% and rarely reaches 50%. Can go down to 5%.

Prevailing winds in hot season from northerly direction. Sand and dust storms are a major consideration. Cool season winds are southerly.

Local context

The site lies about 2 kms. northwest of what remains of Old Riyadh, the area which contained the historic Mizmak fortress with its typical Nejd features: thick mud walls, courtyards, rounded and battered towers.

But the modern town has the scale of downtown Los Angeles and the car is king. Nasriyah street is a dual carriageway and a new road now rings the Ministry completely. In the middle distance (1-2 kms), there are large structures such as the television tower (about 90 meters) and the Royal Conference Center (bulky and about 50 meters high). But in the immediate vicinity, the scale is defined by structures of no distinction about 4 storeys high: housing in the nearby barracks, some non-descript apartment buildings and the Nasriyad Gate. The new Ministry Building keeps a low profile and responds sensitively to the bend in the road. It is also well back on the site with palm groves on each side: thus one does not perceive it and its neighbours in immediate juxtaposition.

Historical Background

Not long ago, the site was still on the fringes of the city and contained barracks of the Royal Guard. More recently, there was a gas station on the corner.

Access

Three entrances from the main road fronting the site: the gate on the main axis (used for state occasions) and two gates about 60 meters equidistant from the axis which are used for daily business and have guard houses.

One gate on the north flank (trucks, services) and one on the east (consular services). Most daily business takes place through the main front door of the building. Visitors generally go all the way to the main triangular space at the heart before being distributed elsewhere. VIP's who have come to see the Ministers (situated on the top floor in the main façade) go immediately left or right beyond the entrance and then up by lift.

III. DESIGN AND CONSTRUCTION

The Ministry of Foreign Affairs was previously in Jeddah. But in the past two decades, the main nerve centers of Monarchy, political power and military bureaucracy have concentrated in Riyadh. In the same period, the Kingdom's relationships to the outside world have grown ever more complex and extended.

The foreign Embassies are also all moving to Riyadh (in the new Diplomatic Quarter). The main function of the new building is to house the enlarged offices of the Ministry of Foreign Affairs, and to make a two-way link with foreign states-putting it simply, the objective is the creation, articulation, maintenance and administration of foreign policy.

The Architect's Brief

The program was formulated on the basis of a fat volume entitled "The Ministry of Foreign Affairs: The Organization Development Plan" (formulated with the help of Arthur Erickson and the Idea Center) and approved by the Cabinet in 1977.

The new building needed to include:

- 85,000 square meters of space including circulation, most of it offices. (The site is a total of 83,000 square meters).
- This office space broke down into three main divisions each with its own respective Deputy Minister, namely:
 1. Political Affairs
 2. Economic and Cultural Affairs
 3. Administrative Affairs
- The building also had to contain the main offices of the Foreign Minister (Prince Saud Al Faisal) and the Deputy Minister of Foreign Affairs (Sheikh Abdul Aziz Al Thonoyan).
- Provision too for a banquetting hall, a Mosque, a library, a conference center, an exhibition space, and teaching area for the Diplomatic Corps, Consular section.
- Extensive parking taking into account a probable total of over 1,000 employees and many visitors.

Beyond pragmatic definitions, there were other strong "hints" for the designer:

- The suggestion of a low, compact design without too many entrances, responding sensibly to local climate.
- The notion of the building as "A 'front door' to the Kingdom imparting to the visitor a positive impression of Saudi Arabia" (quoted from Program).
- The idea of the Ministry as a link to the country's delegations and Embassies abroad.
- The building to be a "contemporary symbol of Islamic Ideals", "acknowledging the architectural traditions of Riyadh".
- The covert implication that vulgar displays of wealth would be inappropriate. The Foreign Minister himself seems to have envisaged a building expressing the stern moral values of the heartlands in a prestige building of international standing. Symbolic stance needed to be subordinate to King's more grandiose displays, and distinguishable from religious architecture.

An architectural competition was organised for June 1979, with the help of Union Internationale des Architectes (UIA). The Master Jury included Mr. Hassan Fathy; both the Minister and the Deputy Minister also played active parts. Eleven designers were invited: Piano and Rice (Italy); V.Dalokay (Turkey); T.Dannat and Partners (U.K.); P. El Khoury (Lebanon); R. Fairbum (USA); F. Otto (W.Germany); A. Isozaki (Japan); R. Taillibert (France); Taller de Arquitectura Bofill (Spain); Suter and Suter (Switzerland); Henning Larsen (Denmark).

The competition went through two stages with a reduction to four entrants for further development. Larsen was chosen in early 1980 after having nearly failed to make the cut. The Minister himself was very taken with the scheme and reportedly recognized the evocations of old Nejd architecture.

The rejections help to understand the client's intentions, e.g., Bofill's extravaganza with domes was turned down because too ostentatious and too like a mosque; Otto's tent, because incoherent in plan; Isozaki's suave solution, because its spiralling minaret was regarded as too Iraqi in character and too close to pre-Islamic types like Ziggurats. Khoury's

design, like Larsen's made sensible use of mud wall and tower precedents. Suter and Suter, and Fairburn did slick "Arabian nights" pastiches.

Evolution of Design Concepts

The main, guiding ideas of Henning Larsen's winning project were:

- A sober exterior with rich spatial experiences on the inside, following the archetype of the Arab courtyard house.
- A citadel on a plinth with a ceremonial gate façade and a sequence of top lit spaces within, modelled on the character of a traditional city of streets, squares, souks, etc.
- A bisected square implying the link between the Ministry and its "missing half", the Embassies abroad. The triangular plan of the finished building loosely recalls the Saudi emblem of crossed swords with a central axis between.
- A synthesis of Riyadh regional and pan-Islamic sources at a level allowing deep reinterpretations.
- A building based on traditional wisdom for dealing with the harsh climate, i.e., thick walls, small apertures, courtyards, water-gardens, double layer outer wall for circulation of air and baffling of glare, top lighting, mashrabiyyas, etc.
- A rational response to circulation, the divisions of the program (especially the three main Departments), and security. The solution dealt cleverly with lateral and vertical movement and worked out a basic hierarchy with the most important people on top, the lesser ranks lower down.

Many ideas of the final building were discovered in the competition projects, but it should be noted that the main façade was once asymmetrical-the mosque was rectangular (to left of entrance) and the conference center curved (to right). This asymmetry responded well to

the Nasriyad Gate diagonally opposite. Originally, the building was also a storey lower and much more spread out. The triangular space at the center was an open courtyard.

The richness of Larsen's solution arose from his control of compact, sculptural mass; a clear sense of hierarchy and procession; interlocking of interior and patio spaces in a collage; articulation of guiding geometries such as square, triangle and circle in smaller spaces and details; sensitive control of light, water, color.

Structure, Materials, Technology

To build the structure in double quick time, Larsen had to sacrifice some of the environmental subtleties of his double skin wall; besides, the client insisted on covering over the triangular court. The finished building has 35 cm. thick external walls. These are clad in an insulating "Mineral wall". Between this and the external brown stone veneer (Pietra Mora from Italy) is a slight cavity. The building stands on reinforced pad and strip foundations. Columns and beams are of pre-fabricated steel. Floors are composite: steel decking and a 8.5 cm. layer of concrete. Construction grid of 7.2 x 4.8 meters. Roof: high density insulation with marble/concrete tiles. Interior walls: gypsum board usually painted white. Interior street ceilings: off-white acoustic plaster. Floors: green and white marble tiles in public spaces, neutral carpeting in offices. Patio walls: painted subtle blues, mauves, ochres. Wood lattices: natural finish.

Mechanical systems are extremely sophisticated. Security and fire monitors can isolate areas of the building and are controlled by central computer. Air conditioning is on an "Algorithm" system, i.e., a computer regulates humidity and temperature by constantly checking and anticipating exterior changes. To handle drastic dryness and exceptional temperatures which last late into the night, a long cooling tank of 2,000 tons capacity was installed. The small apertures, mashrabriyas, baffled light slots, thick walls and high quality insulation all help to keep the building cool, but the patio gardens - now dislocated from Larsen's original idea of a vertical circulatory system for air- actually trap the heat. However, their gurgling fountains do add a sort of "psychological" coolness!

Origin of Technology, Labour, and Materials

As usual in recent Saudi Arabian projects, nearly all technology, labour and materials come from abroad. The brown Pietra Mora of the exterior and the marble tiles of the interior are from Italy. The steel is from Japan. The concrete mixes are from outside though the sand is possibly Saudi. Mechanical systems have a mixed European pedigree (English, German, Swiss, etc.). Electric lights are from Denmark, as also is the white nautical paint used on the walls.

The white-collar work was largely Danish - the architect of course - but also M. Folmer Andersen, the engineer. When possible, contractors worked with Saudi Links, e.g., Haji Abdulla Ali Reza coordinated with Gentec on telecommunications. The project manager at the Ministry end was Kamal Shukri.

The manual work was nearly all Korean and 90% of it was unskilled. The project was let out for a two-year construction contract. Mi Ryung Construction Co. of Seoul bid lowest and had an assured reputation. Work on site continued 24 hours a day, usually on eight hour shifts, but there were cases of 17 hour stretches. Wages were high by Korean, low by Saudi standards. Harsh penalty clauses were inserted. The project was near completion in July 1984, but 1,000 tons of marble flooring were substandard. The Minister insisted that his Department must move in by September. The Koreans requisitioned a Boeing 707 to bring the 1,000 tons of materials in shifts from Cararra via Pisa airport to Riyadh!

Saudi employment patterns afford an interesting example of the division of labour and the importation of skills. The Korean work force is dedicated, competitive, relatively cheap, and not prone to labour disputes. Moreover, the Korean government has been known to offset company losses. The Ministry of Foreign Affairs is a truly international endeavour in terms of skills. The spherical lights were handblown in Denmark (over \$1,000 apiece , and the crystal lights were specially ground and drilled (over \$ 5,000 apiece). Plaster ornamented soffits and panels were made on site by imported Moroccan craftsmen.

IV. CONSTRUCTION SCHEDULE AND COSTS

Program formulated in 1977-1979.
 Competition announced in June 1979.
 Submission by 11 firms in November 1979.
 Second stage (4 firms) in February 1980.
 Larsen selected in spring 1980.
 Preliminary scheme (symmetrical, without mosque and minaret, with covered court, etc.), October 1980.
 Refinements and reviews by client in 1980-1981.
 Contracts let out in 1982.
 Intended completion in July 1984.
 Actual completion in September 1984.

Total Costs and Sources

Total cost (including main contract, telecommunications, art works, furniture) was 615 million Riyals (i.e., about \$150 million). Including car parking, this works out about 6,530 Riyals per square meter. Other state commissions of this period in Riyadh cost up to 1.5 to 2 times this amount per square meter. Funds came from the Saudi government. Maintenance costs are a tightly guarded secret.

V. TECHNICAL ASSESSMENT

Functional Aspects

At the mundane level of providing a large volume of decent office space, the building is remarkable success. Individual rooms are comfortable, well-scaled, subtly lit, cleverly linked to, but also protected from, the outside environment and elegantly furnished (each division of the Ministry has a different basic color, but within this no two offices are quite the same). However, the architect's idea of giving the clerks open plan office space has collided with rising Saudi expectations that everyone should have an individual space. As a result, the building may not be able to accommodate the full quota of workers.

The public, ceremonial spaces like the triangular court, the "streets" and the anti-chamber to the banquet hall have just the right balance of

dignity and ease. However, the banquetting hall is squeezed uncomfortably into one of the curved volumes in the main façade (in the architect's original plan this element was under the rectangular mosque), and the kitchen facilities are scarcely adequate. By contrast, the conference hall's interior shape and function fit neatly into the other curve.

Circulation is admirably clear from entrance up to triangular court, then on up to the "souk" streets. The main ceremonial route eventually culminates in the conference room at the top of the building above the entrance. However, the same cannot be said for the automobile approach. The turn off from the main road is awkward and tight, and the processional ramps for ambassadors' and dignitaries' cars are uncomfortably steep. It is possible that basement parking may soon prove inadequate.

Climate, Lighting, etc.

The main services engineer described an occasion when the electrical power was turned off during Ramadan. Even a full week later, the building remained a good 12°C cooler inside than the 40°-44°C outside. In other words, the insulation and fenestration solutions work well. Ironically, the small patios trap heat and, unfortunately, the ceremonial entrance allows hot air to rush in during grand events when the door has to be open.

Light is handled superbly throughout. The small slots in the exterior walls let light in so that it bounces off another, double layer of wall, before diffusing into rooms (a device inspired by the vernacular of Bahrain). Top lighting in court and souks is calming and beautiful. Electric lighting is also handled with great poetry. Luminosity is one of the keys to Larsen's "paradise" on the interior-reflecting water, rays of light, delicious translucent glass globes, reflecting steel wires, burnished railings.

The mechanical systems are reportedly behaving well except for the chilling device on the air conditioning. Due to a miscalculation by a subcontractor, the volume of pump has proved insufficient and is to be replaced.

Materials, Technology, and Maintenance

External materials and fittings appear to stand up well to the rigorous temperatures, wind and dust. The interiors require constant re-painting to maintain their pristine effect. In heavy rain, there have been some small internal leaks (witnessed by reviewer); the patio walls have insufficient mouldings to handle water streaking. Dust is a perpetual problem in Riyadh and it remains to be seen how the gardens and fountains will handle it. Light fixtures and fire-resistant windows above the main court are extremely hard to clean. And, as always in Saudi Arabia, the machinery needs foreign consultants for maintenance, though there is now a training program for local technicians.

Design Features

A note on detailing. Consummate care has gone into many of the smaller parts of the building to insure that major themes are expressed appropriately. For example, the gypsum board walls are made to feel thick with deep reveals and niches and this accords well with the notion of protected citadel. Given this level of care, it is disturbing to come across crude aluminium door frames juxtaposed with fine mashrabiyya screens, and very banal "Islamic ornament" handled in a hackneyed and inappropriate way as if the screens were pictures on a wall. It turns out that some of these "faults" were introduced beyond the architect's control.

VI. USERS

Most of the users are highly educated, cosmopolitan and unusually reflective on cultural questions - Minister, Ambassadors, First Secretaries, etc. But there is also an army of clerks, secretaries, consultants, security people, etc. A small area low down in the building has been designed for the use of women. It should be pointed out that the building is directed not only at Saudi members of the government, but also at the representatives of many other states who do business in Riyadh.

VII. AESTHETIC ASSESSMENT

Larsen has created a building rich in intentions with many levels of meaning. He has managed to fuse together regional, Islamic and modern sources. The noble souk streets with their chaste walls, splashing fountains, beams of light, and mysterious shaded openings are unforgettable, especially when the architecture is completed by pure white robes and red headdresses. The triangular space at the heart of the plan is also memorable, principally because of its proportions, ambiguities and controlled natural and artificial light. The ceiling hovers above - a heavenly soffit reminiscent of the floating roof at Ronchamp - while the stainless steel light struts and "minbar" stairs evoke memories of Mosques. The water and cool tiles take us to the Maghreb, the souk streets to the Medieval city. But references are not allowed to get out of hand and are never empty "signs". Messages are carried across by a direct feeling for form, for space and for tactile arrangement.

The exteriors are another matter. Here the intentions seem confused. The primary volumes and building footprint respond intelligently to the shape of the site, but the external silhouettes and apertures sometimes eat into the main forms and weaken their impact. The peppered square windows and horizontal slots along the flanking façades detract from the intended image of a Nejd fort and convey the character of a dreary state prison. These façades are neo-Rationalist clichés of circa 1982 and do not integrate well with the other regionalist sensitivities of the building. Even the frames appear to be an afterthought - they join clumsily with the masonry veneers which themselves fail to catch the shadows from the very high sun. All in all the exteriors have a slightly dull flatness at odds with the robustness of Larsen's original model, and with the sensitivity of the interiors.

The entrance itself is one of the weakest gestures. The bronze and gilded gate (insisted upon by the client) is gaudy and the aperture itself is out of scale. The big axis runs ahead into a corner of the court - a disquieting destination for a gesture of such rhetorical strength. In fact, the most important people only go about five meters along this axis before turning left or right to find elevators to the upper floors.

It should be recalled that Larsen's first design did not have completed symmetry between the protruding elements of his main façade: the Mosque and banquetting hall were rectangular (and traditional in plan), the auditorium was curved (and a clever reinterpretation of Aalto). The Mosque was done away with on security grounds (there are small prayer rooms inside the building). Then it was noticed that the main axis almost aligned with Mecca, so the building was shifted slightly and the client insisted on complete symmetry. In my opinion, this symmetry is too insistent and too Baroque, compared with the subtle shifts of movement elsewhere in the design. Inside, the visitor is exposed to unfolding vistas, unpeeled layers, mysterious screens and glimpses of gardens. Splashing fountains, cool light and rich surfaces accompany the daily routine. One of the richest moments is found in the anti-chamber to the library/conference room or the banquetting hall where stairs climb around polygonal stair towers - insides become outsides and outsides insides.

At the level of detail, the building is somewhat uneven. The Moroccan ornaments are sometimes just stuck on like pictures on a wall. The Muqarnas in the banquetting hall would not be out of place in an over-priced Moroccan restaurant in New York. In fact, Larsen fought against these tacky touches (and against those who wanted pointed arches!) all the way. He did try to evolve his own language of ornament for key places and apertures, but this was an area of mutual misunderstanding between architect and client.

Technical Reviewer : Mr. William Curtis

Date : May 7th, 1986