

# The Aga Khan Award for Architecture

is presented to

Christoph Kapeller

for

Bibliotheca Alexandrina

An Outstanding Contribution to Architecture for Muslims

on this day

14 Shawwal 1425

27 November 2004

in Delhi, India

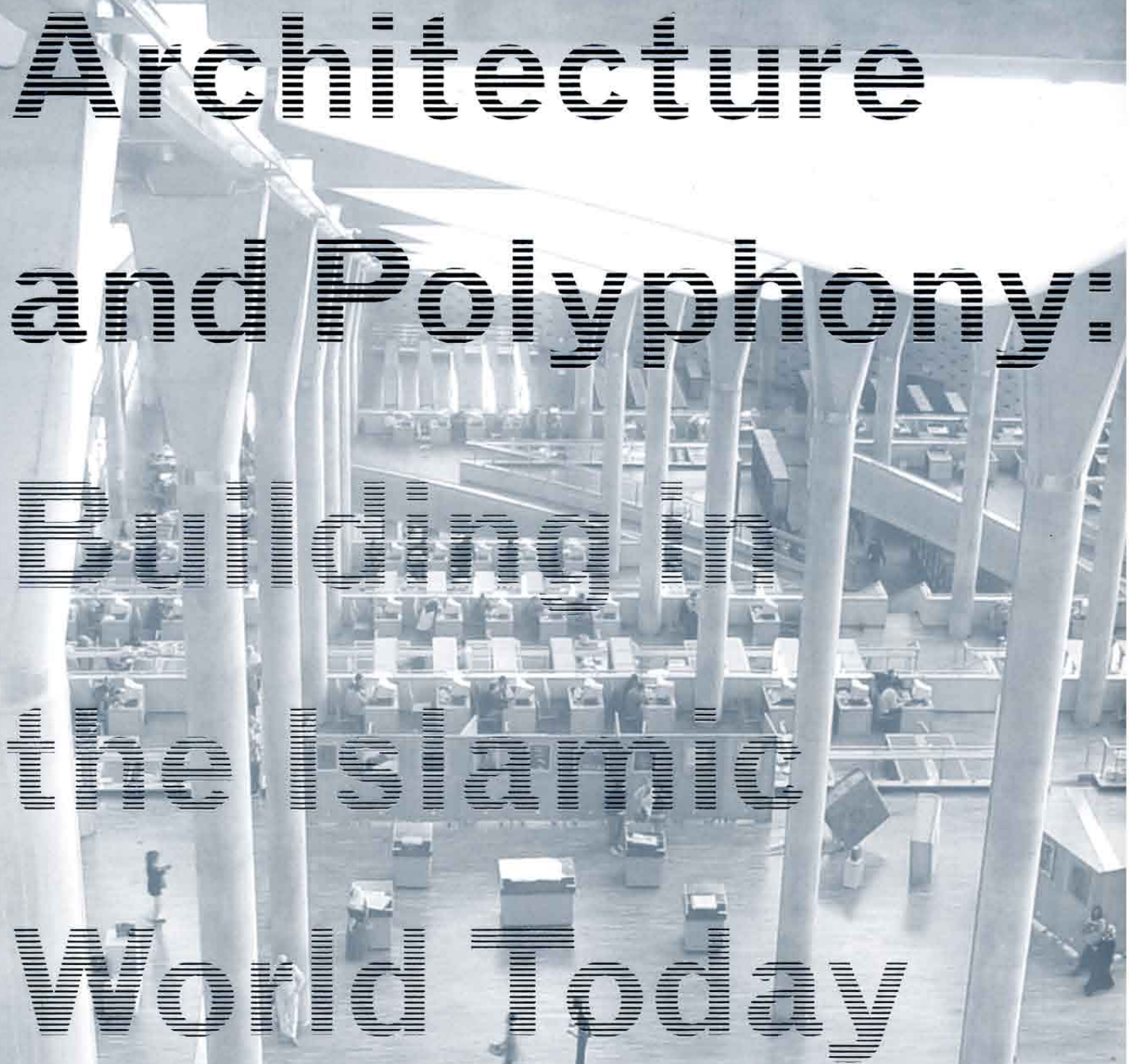
by

His Highness The Aga Khan

upon recommendation of

The Master Jury

*Aga Khan.*



# Architecture and Polyphony: Building in the Islamic World Today

The Aga Khan Award for Architecture  
The Ninth Award Cycle

**Thames & Hudson**



The Aga Khan Award for Architecture

# Architecture and Polyphony: Building in the Islamic World Today

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## Contents

- 05      The 2004 Aga Khan Award for Architecture
- 08      Introduction to the Statement of the Award Master Jury  
Farshid Moussavi
- 10      Statement of the Award Master Jury
- 12      Recipients of the 2004 Aga Khan Award for Architecture
- 14      Bibliotheca Alexandrina ●  
Alexandria, Egypt
- 32      Gando Primary School ●  
Gando, Burkina Faso
- 50      Sandbag Shelter Prototypes ●  
Various locations
- 66      Restoration of Al-Abbas Mosque ●  
Asnaf, Yemen
- 84      Old City of Jerusalem Revitalization Programme ●  
Old City, Jerusalem
- 102      B2 House ●  
Ayvacik, Turkey
- 120      Petronas Towers ●  
Kuala Lumpur, Malaysia

140	<u>The Grammar of Architecture</u> Reinhard Schulze
142	<u>Ten Thoughts During Ten Days as a Jury Member</u> Billie Tsien
144	<u>Cults of Collaboration</u> Hanif Kara
146	<u>Thoughts About Architecture and the 2004 Awards</u> Elías Torres Tur
148	<u>Wall-less Gate</u> Modjtaba Sadria
151	<u>Architecture without Building</u> Babar Khan Mumtaz
157	<u>A Breakthrough</u> Suha Özkan
168	<u>2004 Award Steering Committee</u>
170	<u>2004 Award Master Jury</u>
174	<u>2004 Award Project Reviewers</u>
176	<u>Award Secretariat</u>

This building has received an Award because it shows an innovative approach to the design and placement of a large, symbolic form on one of the most important waterfronts in the world. From its inception through an international competition to its design and construction by many international companies, and in its current financial management, the project provides a model for other such projects in bringing together the international community and encouraging cooperation and commitment from society as a whole.

While the building is groundbreaking in architectural and technological terms, it also responds sensitively to a wide spectrum of issues, including politics, religion, culture and history. The bold 'tilted disc' forms an icon while delivering a highly formal and monumental building. The technical challenges of constructing such a large development close to the water's edge and within an urban setting have been embraced and dealt with through the use of advanced technologies. The form also provides a clear organization and functions well for the rich variety of programmes it houses, while acting as a catalyst for improvements throughout the city. Finally, the project celebrates learning and brings knowledge to societies across all cultures, playing a crucial role in the progress of civilization.

The Bibliotheca Alexandrina is a revival of the legendary ancient library built in classical Greek times. The rebuilding of the library has returned Alexandria to its former status as a centre for learning and exchange and provided the city with a landmark building. The new library also serves as the world's window on Egypt, Egypt's window on the world and a library for the new digital age.

The symbolism of the library's simple tilted disc form has a strong and universally recognizable resonance, as well as allowing for the creation of an impressive space without overpowering the visitor or the city behind it. Internally the library is large in size but always human in scale, clear in organization but flexible in use, grand in conception but beautifully detailed.

The spirit of international cooperation in which the library was conceived, funded, designed and implemented has been maintained in its management to create an institution that is truly global in its outlook. At the same time, the building is technically outstanding – its substructure comprising the largest circular diaphragm wall in the world. The rich programmes that it houses, from specialist libraries to museums and various focused research centres, promise to make it a centre of scholarship for the region.



The ancient library of Alexandria was once the most famous library in the world. Built by Ptolemy I Soter ('Saviour') (ca 366–ca 283 BC), a Macedonian general in the army of Alexander the Great, it was the first universal library and at its peak is said to have held 700,000 scrolls in various languages. It was here that the Old Testament was first translated into Greek and that Euclid wrote his *Elements*.



Today Alexandria, stretching 70 kilometres along the Mediterranean coast, is Egypt's main port, forming a large industrial and commercial centre and an important summer resort. In 1974, the University of Alexandria began a campaign for the rebuilding of the ancient library, choosing the current site, which is believed to be close to the original location. Egypt's President Mubarak took up the project at a national level in 1988, and an international competition, organized by the Egyptian government and the International Union of Architects, was won by the Norwegian company Snøhetta in 1989. Detailed archaeological excavations of the site were carried out before construction began in 1995, and the building opened in October 2002.

In rebuilding the library, the main aim was to return Alexandria to the glory it had enjoyed in ancient times, creating an institution that would become famous throughout the region for the quality of its services and the wealth of its resources. The scheme was required to provide a main reading room for 2,000 readers, six specialist libraries, three museums, seven research centres, three permanent galleries, space for temporary exhibitions, a planetarium, a public plaza, offices, a cafeteria and all the necessary facilities and services required for such a complex.



The project is located in the ancient royal quarter of the original Greek city, now part of the town centre. To the north is the coast road and to the south a street where some of the university's faculty buildings are located, with further buildings to the east and west. It was important that the building should respond to the scale of the surrounding fabric and, to this end, the library was designed as a tilting disc rising from the ground, with four levels below ground and seven above. The scale of the building is thus minimized at close quarters, so it does not overwhelm the visitor.

The form also has strong symbolic significance: the circle is found in all cultures, relating to the heavenly bodies through which humans first understood the passage of time in relation to the movement of the sun, moon and stars. As it passes into the ground, the building suggests the past and, as it rises from the earth, it looks towards the future, while the ground itself represents the present. The tilted disc also creates an iconic presence on the otherwise homogenous skyline of the coastal road and the structure is easily visible from across the bay. Its exterior wall is clad with four thousand granite blocks carved with letters from the alphabets of the world. The panels were quarried by splitting the rock to create a wavy texture and the designs were traced by computer but carved by hand.



The project comprises two main parts: the library and the planetarium. These are linked at basement level, beneath a public plaza, to an existing conference centre, while a pedestrian bridge spans the plaza between the university and the coastal road. The library building is clearly organized, with the eastern sector of the disc housing the main reading area, and the western segment comprising the entrance, administrative area, specialized libraries and museums, as well as other facilities and services. A segment cut out of one edge of the circle, facing the plaza, is glazed to allow light into the building.



The main reading area is a single open space with eight terraces, each accommodating a different subject section, starting from the roots of knowledge (philosophy, history, religion, geography) and ending with the latest technologies. Because the new structure crosses so many ages and cultures, the architects aimed to make its form universal. However, in reference to Egypt's Islamic heritage, they also sought to create a space that, like religious Islamic architecture, is conducive to meditative thinking while accommodating large groups of people. The terraces break down the scale of the reading area for the individuals working in their own spaces, but also overlook the whole expanse of the room.



The project acknowledges the presence of the sea by setting the public square along the coastal road. The planetarium, with seating for ninety-nine people, consists of a suspended sphere that forms the main focus of the plaza. The plaza is also planted with twelve olive trees, symbolizing peace, while a pool surrounding the library on three sides connects ground and sky in its reflection and serves to further delineate the building's form.



The substructure of the library is the most innovative part of the project. The half submersion of the building 18 metres below ground on a site close to the sea raised serious structural problems. Its circular diaphragm wall is considered the largest in the world, with a diameter of 160 metres and a height of 35 metres. The varying temperature differentials along the wall's length presented further complications, and the design was analyzed using computer modelling to resolve this issue. The wall has horizontal reinforcements but no expansion joints, minimizing the risk of water penetration. The uplift forces from the groundwater and the eccentric loading on the foundations – the north side of the library bears only one floor whereas the south side carries the load of all eleven floors and the books – meant that the risk of the building tilting was great. Hence the foundations are unique in that they were designed as tension piles with a heavy raft foundation on the south side and as compression piles to take the weight on the north side. The superstructure, however, is a fairly standard system of a concrete frame and infill panels, with columns cast in situ and pre-cast capitals and beams. The structures of the planetarium and bridge are of steel.



Computer technology was used in designing a number of elements of the building, including its form, which is toroidal rather than cylindrical. One of the most successful features of the building is its use of natural light, drawn in through glazed roof panels. The orientation of the roof panels was carefully studied on computer at the design stage to introduce maximum levels of natural light without direct sunlight. Glare is reduced through glass shades over the windows.



Another key innovation in the project is the universality of its conception. An international competition was organized to secure the best design. In 1990, the Declaration of Aswan called for international support for the project and it was funded by donations from the Arab world and twenty-seven other countries. After an initial design phase, architects Snøhetta formed a consortium with the Egyptian engineering specialists Hamza Associates, with whom they developed the project and supervised the work. Throughout construction, foreign and local consultants worked closely together, a commitment that is reflected in the quality of detailing in the building and that has raised standards in Egypt's construction industry. Finally, the library is organized as an independent entity, with a council of patrons headed by the president of Egypt and including various heads of state and eminent international figures. Under this arrangement, the library is financially independent and has a high international profile.

The library has also prompted improvements throughout the city, such as renovating roads, building bridges and upgrading hotels. The legal infrastructure and high profile of the project, its emphasis on employing and training young people, and its sound financial footing all ensure the future standing of the Bibliotheca Alexandrina and hence its long-term influence and impact on the social and cultural life of the city.



Most of the library's users are students from the University of Alexandria and local schools. They are proud of their library, seeing it as a modern, up-to-the-minute project that connects them to the contemporary world. The building is admired for its simplicity and strength of form, for its main reading area, for the quality of light and high standard of construction, and for the coordination of the complex work and the high standards of detailing. Various conferences held in the complex have received regional and international attention, raising the profile of the whole city. The library is seen as a progressive landmark for the country as a whole, reinstating Egypt's position as an open, modern centre of cultural exchange.

**Bibliotheca Alexandrina**  
Port Said Street, El-Shatby,  
Alexandria, Egypt

Client

Bibliotheca Alexandrina, Egypt (H.E. President Hosni Mubarak, Chair, Council of Patrons; H.E. Mrs Suzanne Mubarak, Chair, Board of Trustees; Ismail Serageldin, Director; Mohsen Zahran, Project Director, General Organization for the Alexandria Library, 1995–2001).

Sponsors

Government of Egypt; Ministry of Education, Egypt; University of Alexandria, Egypt; United Nations Educational, Scientific, and Cultural Organization, France.

Architects

Snøhetta Hamza Consortium, Egypt: Craig Dykers, Christoph Kapeller and Kjetil Trædal Thorsen, Principal Architects, Snøhetta AS, Norway; Mohamed Sharkass, Head of Architecture, Hamza Associates, Egypt.

Engineers

Hamza Associates, Egypt: Mamdouh Hamza, Chairman and geotechnical engineer; Mashhour Ghunaim and Ahmed Rashed, structural engineers; Ibrahim Helal, electrical engineer; Ali Omar, mechanical engineer; Mohsen Abdou, plumbing and fire-fighting engineer; Tarek Yassine, site engineer.

Consultants

Jorunn Sannes, Norway, fine arts for stone wall; Schumann Smith, UK, management cost and specifications; Lichtdesign, Germany, custom lighting design; Multiconsult, Norway, acoustics; Warrington Fire Research, UK, fire and life safety; Stewart Helms, UK, security.

Contractors

Radio Trevi, Italy; Arab Contractors, Egypt; Balfour Beatty, UK.

Competition September 1989

Commission February 1994

Design May 1994–February 1996

Construction May 1995–July 2001

Official Inauguration October 2002

Site Area 45,000m<sup>2</sup>

Built area 85,405m<sup>2</sup>

Cost US\$218,000,000

Snøhetta Hamza Consortium is a joint venture of Snøhetta AS, a Norwegian firm, and Hamza Associates, an Egyptian firm, specially established for the Bibliotheca Alexandrina. Snøhetta AS, is an architectural, landscaping and interior architecture agency, founded in 1989. Snøhetta co-founders Craig Dykers (b. 1961, Germany), Christoph Kapeller (b. 1956, Austria) and Kjetil Trædal Thorsen (b. 1958, Norway) won the international competition for the Library of Alexandria in 1989 and saw the project through to completion. Since then, they have realized a number of major public buildings in Norway and throughout the world, including the Lillehammer Olympic Museum (1993), Karmøy Fishing Museum (1998) and Sandvika Culture Centre (2003), all in Norway, and the Institute for Neurobiology for the Mediterranean (INMED) in Marseilles (2003). Hamza Associates is one of Egypt's leading consultancies, a multi-disciplinary engineering firm established in 1979 by Mamdouh Hamza, with over 460 major projects in Egypt, Africa and the Middle East, including ports and marine facilities, energy and power plants, irrigation and hydraulic structures, transportation facilities, public buildings, tourist and sports facilities, urban, regional and rural planning projects, water-supply and sanitation facilities, and numerous rehabilitation, upgrading and environmental schemes.

Websites

Bibliotheca Alexandrina

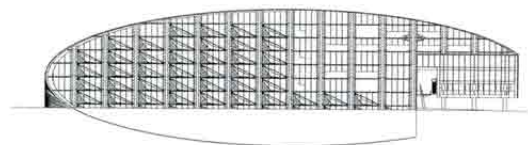
[www.bibalex.org](http://www.bibalex.org)

Snøhetta AS

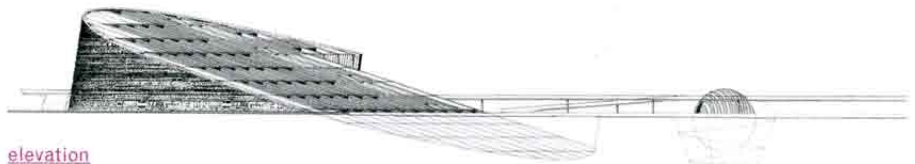
[www.snoarc.no](http://www.snoarc.no)

Hamza Associates

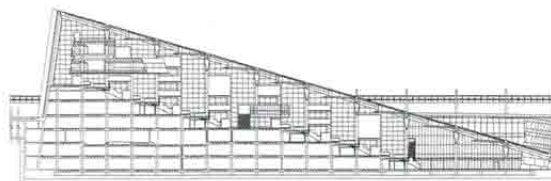
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elevation



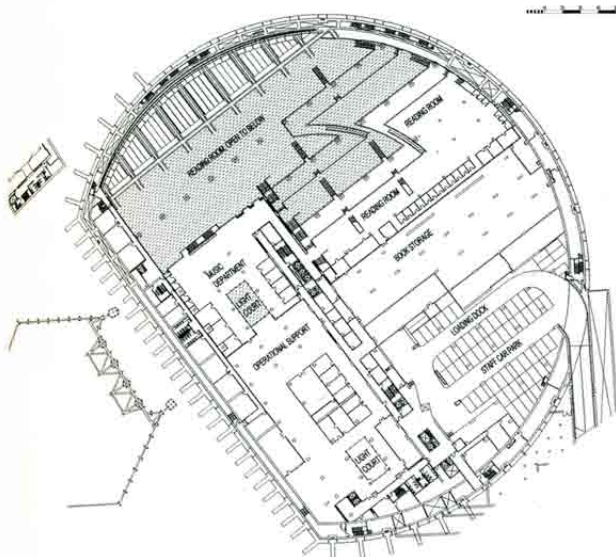
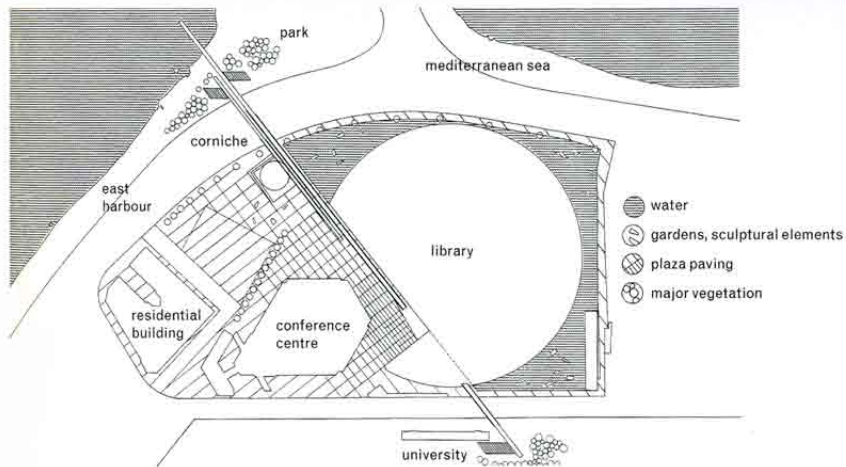
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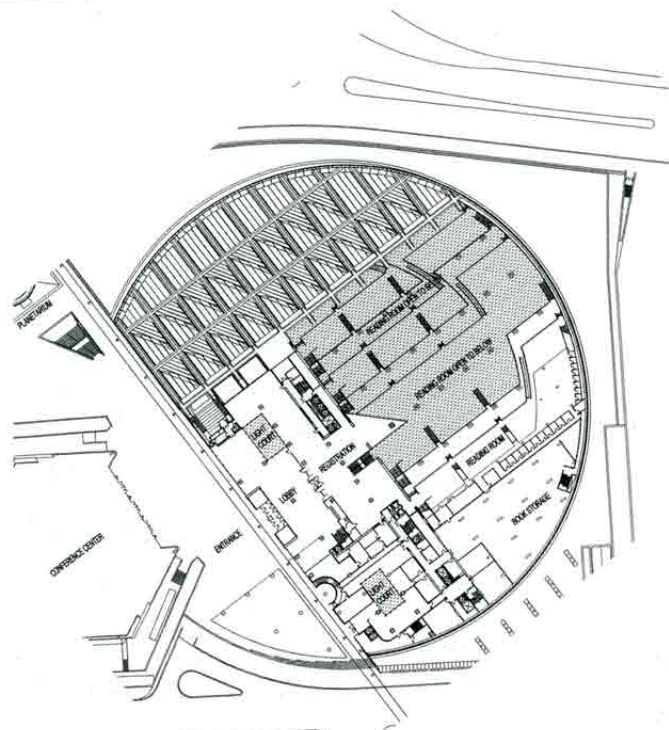
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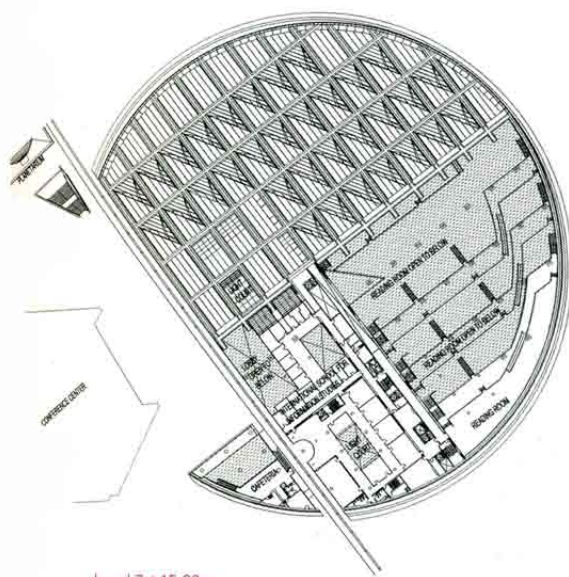
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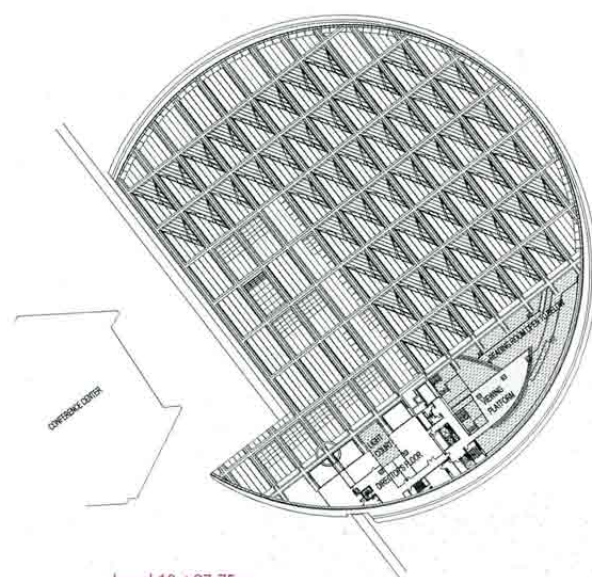
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level 7 +15.30 m



level 10 +27.75 m

