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IN SEARCH OF LOST TIME

EGYPT REBUILDS THE GREAT LIBRARY OF ALEXANDRIA



October 2001

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DESIGN
SPECIAL ISSUE

SNØHETTA'S ALEXANDRIA LIBRARY

WITH CONTRIBUTIONS BY
RICHARD BARNES, RICHARD INGERSOLL,
CHRISTIAN RICHTERS, AND
MAX RODENBECK

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The spherical planetarium at the Library of Alexandria. Photograph by Richard Barnes.

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The harbor of Alexandria, with the new library in the distance (at left). Photograph by Richard Barnes.

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IN SEARCH OF LOST TIME SNØHETTA'S ALEXANDRIA LIBRARY

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INTRODUCTION

Somewhere beneath the bloated and bedraggled modern city of Alexandria lie the ruins of its Great Library, that vast and fabled repository of classical knowledge. Edward Gibbon, the peerless 18th-century narrator of the Roman Empire's decline and fall, summed up the dismay of generations of scholars when he described the loss of the library's contents as an "irreparable shipwreck of the learning, the arts, and the genius, of antiquity." In those texts that have survived the ages, fragments mostly, long hoarded in the monasteries of Europe and the libraries of the Eastern Caliphs, Alexandria plays a fabled role as the rich and sophisticated Greco-Roman capital of Egypt. Founded by Alexander the Great at the mouth of the River Nile, it was seized and held for three centuries by the Macedonian Ptolemies, and lost to the Emperor Augustus by Cleopatra, last of her proud, debauched line, lover of Julius Caesar and Mark Antony. History has left fewer traces of the library's form, location, or fate, an occlusion of fact that has not deterred the Egyptian government from constructing a new Library of Alexandria in emulation of the old one. Hubris? Perhaps. But the mythic romance of the ancient metropolis, of the decadent colonial outpost that it became in the 19th century, and of the Great Library itself provide impetus enough.

The Great Library was established during the 305–283 B.C. reign of Ptolemy Soter, one of Alexander's generals and his self-appointed heir in Egypt, most likely as part of the Museion, an archive, art gallery, and academy attached to the waterfront royal compound. For over half a millennium, Ptolemy's descendents and their Roman successors hosted a remarkable assembly of thinkers there, from the geometer Euclid, a contemporary of the first Ptolemy, to the last great philosopher of antiquity, Plotinus, the founder of Neoplatonism, who died in 270 A.D. The library's holdings were eventually numbered as high as 900,000 scrolls, thanks in part to an innovative, if inhospitable, method of acquisition: Pharaonic decree suffered every ship passing through the busy harbor to be searched for new texts, which were then seized, taken to the library, and transcribed. The library kept the originals; the rightful owners got the copies. Even the most conservative scholarly estimate of a 50,000-scroll collection seems impressive when one considers that the U.S. Library of Congress got its start with the 1815 purchase of Thomas Jefferson's private library—then the largest in the country, with 6,487 volumes.

Gibbon relates no fewer than three different tales of the Great Library's destruction: most famously, in 48 B.C., as a charred civilian casualty of Julius Caesar's Alexandrian

War in defense of Cleopatra against a coalition of her rebellious siblings; in 389 A.D., at the hands of a Christian mob incited by the archbishop Theophilus to erase all signs of paganism; and lastly during the 639 A.D. Arab conquest of Egypt, when the Caliph Omar reportedly sent the following instructions regarding the library's fate: "If the writings of these Greeks agree with the book of God [the Koran], they are useless and need not be preserved: If they disagree, they are pernicious and ought to be destroyed."

Though uncertain as to the real culprit, Gibbon clearly suspects Theophilus, who he vilifies as "the perpetual enemy of peace and virtue." The author of the most comprehensive recent study of the ancient library, Luciano Canfora, has his own theory—the Roman Emperor Aurelian's sack of Alexandria during a 270–275 A.D. war with Queen Zenobia of Palmyra—but never mind. No amount of dueling scholarship can upstage Elizabeth Taylor in her overblown 1960s vehicle *Cleopatra*, assaulting Rex Harrison, a beleaguered Caesar, with the news of the disaster. Fact, where the Great Library is concerned, has a way of succumbing to fiction.

Fiction also has a way of breeding more fiction. After centuries of decline under Muslim stewardship, Napoleon Bonaparte's 1798–99 occupation brought Egypt to the self-serving attention of the industrialized West, and the 1869 completion of the Suez Canal confirmed Alexandria's cultural and economic renewal as a rich, cosmopolitan port of call between Europe and Asia, an infamously louche setting for foreign and native writers such as Lawrence Durrell, Constantine P. Cavafy, and André Aciman. President Nasser's 1962 nationalization of Egyptian industries and businesses stifled Alexandria's imperialist renaissance, but the city's inhabitants still live with the memory; dim art nouveau cafés linger amidst the concrete apartment blocks of an ostensibly democratic present.

Now Alexandrians can look to the shining metal face of the library that has lately risen alongside the harbor, like a beacon illuminating both the fantastic past and an expectant future. To have faith in renewal—of the institution and of the city—is eminently appropriate in a land regulated for millennia by the daily passage of the sun, and the seasonal cycle of Nile River flooding. So while the new library's current 250,000-volume collection may seem meager when compared to the bibliographic riches amassed by the ancients, the epic task of the modern building's creation and the magnificent scale and bearing of its architecture is a tale worth the telling.



PLUTARCH
ALEXANDER
PARALLEL LIVES 100 A.D.

Among the treasures and other booty that was taken from Darius, there was a very precious casket, which being brought to Alexander for a great rarity, he asked those about him what they thought fittest to be laid up in it; and when they had delivered their various opinions, he told them he should keep Homer's *Iliad* in it. This is attested by many credible authors, and if what those of Alexandria tell us, relying on upon the authority of Heraclides, be true, Homer was neither an idle nor an unprofitable companion to him in his expedition. For when he was master of Egypt, designing to settle a colony of Grecians there, he resolved to build a large and populous city, and give it his own name. In order to which, after he had measured and staked out the ground with the advice of the best architects, he chanced one night in his sleep to see a wonderful vision; a grey-headed old man, of a venerable aspect, appeared to stand by him, and pronounce these verses—

“An island lies, where loud the billows roar,
 Pharos they call it, on the Egyptian shore.”

Alexander upon this immediately rose up and went to Pharos, which, at that time, was an island lying a little above the Canobic mouth of the river Nile, though it has now been joined to the mainland by a mole. As soon as he saw the commodious situation of the place, it being a long neck of land, stretching like an isthmus between large lagoons and shallow waters on one side and the sea on the other, the latter at the end of it making a spacious harbor, he said, Homer, besides his other excellences, was a very good architect, and ordered the plan of a city to be drawn out answerable to the place. To do which, for want of chalk, the soil being black, they laid out their lines with flour, taking in a pretty large compass of ground in a semi-circular figure, and drawing into the inside of the circumference equal straight lines from each end, thus giving it something of the form of a cloak or cape; while he was pleasing himself with his design, on a sudden an infinite number of great birds of several kinds, rising like a black cloud out of the river and the lake, devoured every morsel of the flour that had been used in setting out the lines; at which omen even Alexander himself was troubled, till the augurs restored his confidence again by telling him it was a sign the city he was about to build would not only abound in all things within itself, but also be the nurse and feeder of many nations.

TRANSLATED BY JOHN DRYDEN / PUBLISHED BY THE MODERN LIBRARY—RANDOM HOUSE

THIS DETAIL OF THE ALEXANDER MOSAIC (PAGE 73), UNCOVERED AT THE HOUSE OF THE FAUN IN POMPEII AND NOW IN THE NATIONAL ARCHAEOLOGICAL MUSEUM IN NAPLES, ITALY, IS A CIRCA 100 B.C. COPY OF A LOST HELLENISTIC PAINTING. IT SHOWS ALEXANDER THE GREAT, THE FOUNDER OF ALEXANDRIA, AS MACEDONIAN WARLORD, LEADING A CAVALRY CHARGE AGAINST THE GREAT

KING DARIUS OF PERSIA DURING THE 331 B.C. BATTLE OF GAUGAMELA. ONLY FIVE ANCIENT TEXTS ABOUT ALEXANDER HAVE SURVIVED, NONE OF THEM WRITTEN BY FIRST-HAND WITNESSES. THE MOST FAMOUS CONTEMPORARY ACCOUNT, THAT OF PTOLEMY SOTER, WAS PRESUMABLY LOST WITH THE DESTRUCTION OF THE ALEXANDRIA LIBRARY, SEEN (FACING PAGE) IN A 1493 GERMAN WOODCUT.



76 AERIAL

VIEW OF THE LIBRARY FROM THE NORTHEAST

PHOTOGRAPHY BY JAMES WILLIS

BY MAX
RODENBECK

It can happen: A single great building can revive a whole surrounding district. Sometimes an inspiring monument can revive an entire city, as Frank Gehry's molten metal triumph in Bilbao has proved. Yet equally grandiose failures spring to mind. Among the presidentially decreed wonders of modern Paris, such as the delightfully garish Centre Pompidou and I. M. Pei's elegantly restrained glass pyramid at the Louvre, lurk embarrassments like the gloomy Bastille Opera House and the Bibliotheque Nationale, whose four stark towers look like nothing so much as a Lego beast in rigor mortis washed up on the banks of the Seine.

If any town needs a transforming monument, it is Alexandria. The Western imagination still tends to conjure the soft focus setting of Lawrence Durrell's *Alexandria Quartet*, with its "five races, five languages, a dozen creeds... and more than five sexes." The reality is different. The past half-century has not been kind to Egypt's second city.

Today's Alexandria is a lot bigger and badder than Bilbao. The city founded by Alexander the Great now sprawls raggedly along 30 miles of Mediterranean shore. Warehouses and shantytowns fray its extremities, while a constant snarl of traffic knots its middle. Its five million inhabitants are largely poor, conservative Muslims, the provincial inheritors of a town that has grown hugely in numbers but declined in glory since Egypt's 1952 revolution. Thousands of its citizens, first the cosmopolitan foreigners whose privileged place was challenged by the rise of Egyptian nationalism, then educated Egyptians, have emigrated in the turbulent interim. Alexandria has also suffered neglect, with Egypt's hypercentralized government spoiling the capital, Cairo, at the expense of its ancient rival.

Remnants of an earlier gentility endure—King Farouk's palaces, the porticoed villas of Greek cotton merchants, cavernous old cafés, a few scraggly parks studded with ancient stones—but they are increasingly swamped by modern accretions. Few of the institutions that underpinned the older Alexandria's worldliness remain. The consulates have mostly closed. Grand churches and synagogues echo emptily behind locked gates. Many an elegant façade in the old city center, that eclectic mix of Neo-Venetian, Neo-Islamic, art deco, and beaux arts that defined the city as thoroughly Mediterranean, has been wantonly remodeled to accommodate the present riot of tatty storefronts. Even the busy commercial harbor, off-limits beyond a security fence, has lost trade to other Egyptian ports.

This is the context into which the gleaming, \$200 million

Bibliotheca Alexandrina, an institution aspiring to the world fame and significance of the ancient library of Alexandria, is being inserted. The new library's erudite director, Ismail Serageldin, calls the idea a "marvelous, noble dream to devote one's life to." It certainly is. The question is whether modern Alexandria has the spirit of openness, the curiosity, the generosity, and the talent to make the dream work.

Perhaps it does. Even without the ambitious library project, change is stirring. Two years ago the government in Cairo, atoning for years of appointing greedy and incompetent governors here, brought in a squeaky clean ex-officer to run the town. Abdel Salam Mahgoub may not have performed miracles, but he has certainly shown what just a little determination can do to the look of a city—and in the process shown how disastrous his predecessors were.

Public squares have been cleared of the bazaars, food stalls, and taxi stands that used to clutter them. The winding seaside Corniche that handles half the city's traffic, until recently a wild rodeo of bucking jalopies that stalled into a fuming, honking cattle pen at rush hour, is being systematically broadened into a Mediterranean Lake Shore Drive. Ranks of concrete bungalows on stilts that used to block the view of the sea have been leveled. A French firm has been contracted to scrub the city's woefully untidy streets. Governor Mahgoub has even banned car horns, which, though spottily observed, has lessened the din.

Archaeology is also lending a hand. Oddly for a city that was the greatest on the Mediterranean for centuries before the rise of Rome, and remained rich and influential for centuries thereafter, Alexandria is relatively poor in antiquities. Some of the most fabled monuments of the ancient world were here: the giant Pharos Lighthouse; the Soma, or mausoleum of Alexander the Great; the fabled palaces of the Ptolemies; and of course the Museion, the temple of the Muses that housed the ancient library where the most illustrious scholars of the age congregated.

Though the city has long boasted a charming Greco-Roman museum and a number of intriguing archaeological sites, little of this prime stuff had ever been located, let alone dug up. The trouble is that modern Alexandria sits bang atop its ancient core. Until recently, the only archaeology possible was carried out in squeezed sites vacated by demolitions and often rushed in advance of construction crews; that is, if the pile drivers didn't get there first.

In the past decade, however, underwater archaeologists have begun to seek, and find, some spectacular treasures. The Pharos has been discovered in the great pile of stones and statuary off the Eastern Harbor where it is now known to have collapsed in a 13th-century earthquake. Across the horseshoe-shaped bay, directly in front of the new library, divers have sighted the extensive ruins of the Ptolemaic palace quarter. Last year an entire sunken city was found a few miles down the coast.

The discoveries have generated enormous excitement, and not just among scholars. They have put Alexandria back on the tourist map, and in doing so have revived the Alexandrians' own appreciation of their past.

The new library promises to revive their pride in the present, but that is not to say it has no critics. Some complain

PHOTOGRAPHY BY
CHRISTOPH GERIGK

LAST YEAR, A GROUP OF FRENCH ARCHAEOLOGISTS DISCOVERED A SUNKEN CITY 2 MILES OUTSIDE ALEXANDRIA IN THE BAY OF ABOUKIR. THE SAME TEAM WHO DISCOVERED ALEXANDRIA'S PALACE QUARTER IN THE HARBOR, THE ARCHAEOLOGISTS BELIEVE THEIR NEW DISCOVERY TO BE THE PORT OF HERACLEION, WHICH WAS DESTROYED BY AN EARTHQUAKE 1,200 YEARS AGO. THE UNDERWATER SITE HAS BEGUN TO YIELD ARTIFACTS DATING FROM THE LATE PHARAONIC PERIOD TO THE EARLY ISLAMIC. THIS STATUE DEPICTS HAPI, THE EGYPTIAN GOD WHO CONTROLLED THE FLOODING OF THE NILE.



that its stark shape is ugly, or that its roundness clashes with the nearly uniform sweep of staid, five-story Italianate buildings that fringe the Eastern Harbor. "Personally, I'm not thrilled by the architecture," comments Muhammad Awad, a dapper and typically polyglot Alexandrian architect, who is also a passionate conservationist. "But the fact is that we haven't seen a decent modern building here in 50 years. In that sense I'm definitely glad to have it."

Archaeologists, for their part, decry the fact that the library's site was never properly excavated. Indeed, they note, it was only when an infuriated historian who happens to live nearby threatened scandal—after videotaping mechanical diggers lifting chunks of ancient debris and dumping them in the sea—that any archaeological work was allowed at all. Even on a skimpy budget of \$20,000 in the limited time of six months and in the limited space that had not already been razed, archaeologists found some extraordinary traces. Among them was a superb mosaic of a sitting dog with a cocked ear, the uncanny spitting image of the His Master's Voice label. Whatever else was there will never be known. The library's deep foundations may even obscure the site of its own ancient forebear.

Of course, most Egyptians these days are too absorbed in the elemental struggle of getting by to care much for scholarly or aesthetic quibbles. The more common complaint, expressed to me with a snort by a taxi driver, with a shrug by a lady at a fruit stand, and with anger by a group of students milling across the street from the construction site outside Alexandria University's overcrowded, underfunded Faculty of Arts, is that so much money should be spent on an institution that they will probably never use.

It is true that the chosen design was expensive to build and will be expensive to maintain. Virtually all the building's ingredients, from pinewood floors to custom-made aluminum roof panels, had to be imported. Waterproofing alone, which required suspending the entire structure on pylons over a 4-foot-high dry chamber, and extensive use of special sealants, cost over \$20 million. And because the canted roof slopes down into an underground well, electric pumps rather than plain old gutters will be needed to eject runoff from Alexandria's abundant winter rainstorms.

On the money question, at least, there are straightfor-

ward answers. For one thing, the construction cost was mostly borne by foreign donors, not Egyptian taxpayers. (Among the benefactors was Saddam Hussein, whose \$21 million check mercifully cleared just before his 1990 invasion of Kuwait.) The running costs, estimated at \$25 million a year, will initially be covered by Egypt, but since the library has been given unique status under a special law, its budget will not be added to any existing agency's.

Besides, it has a savvy salesman in charge. Ismail Serageldin did wonders raising funds for international agricultural research during his eight years as a vice president of the World Bank. In the tradition of the ancient library, he sees research as a primary function of the new institution. Rather than rushing to build a huge general collection of books, he intends to start by focusing on subjects where the library can both compete and stimulate debate, such as the ethical dimensions of scientific invention, the ancient history of the Mediterranean, and water management, which is an increasingly crucial issue here in the driest corner of the globe. Once these programs are under way, he is confident of winning generous outside support.

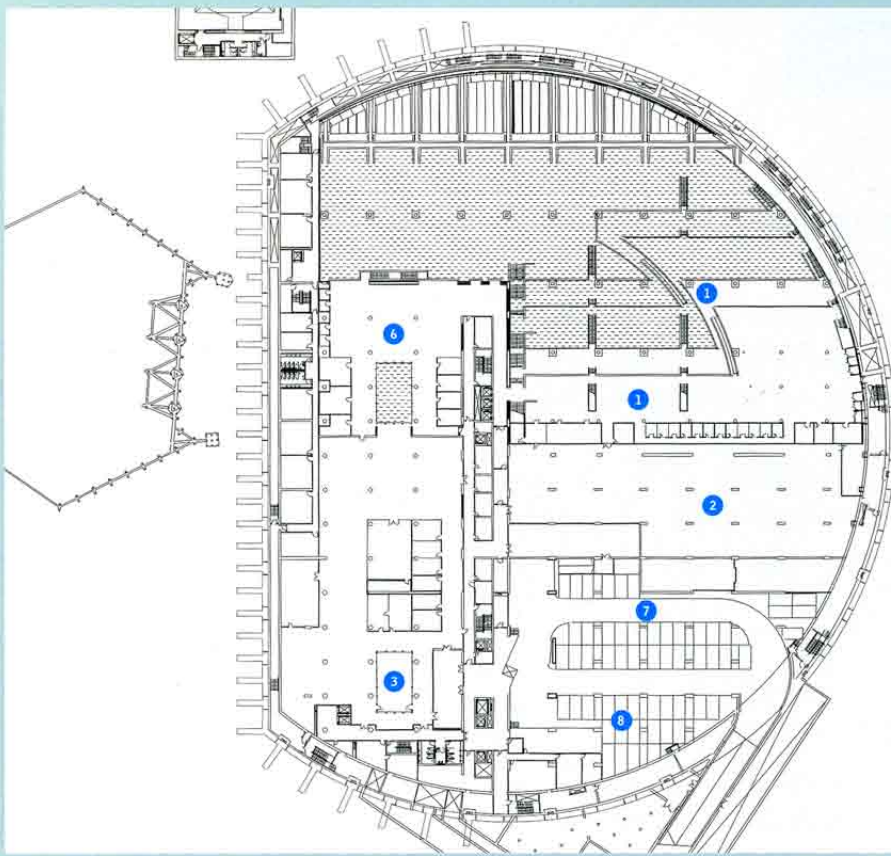
Looking at home already in his barely furnished office on the library's top floor with its splendid sea view, Serageldin makes no pretense at apologetics. Even in the United States, he notes, just 50 select institutions attract half of all funding for research: "Centers of excellence are to a country what the 2 percent of DNA is that distinguishes between apes and man. Why shouldn't Egypt, too, have an institution that strives for excellence?"

The director grins, switching mental track with the same facility with which he jumps between French, English, and Arabic. "And you know, even though the ancient library laid the foundations of geometry, astronomy, physics, and half a dozen other sciences, people at the time complained of the same thing," Serageldin's eyes twinkle, and he paraphrases the 2nd century B.C. philosopher Timon of Phlius: "They said, Why should the king pay money for a bunch of scholars to twitter about in the birdcage of the Muses?" ■

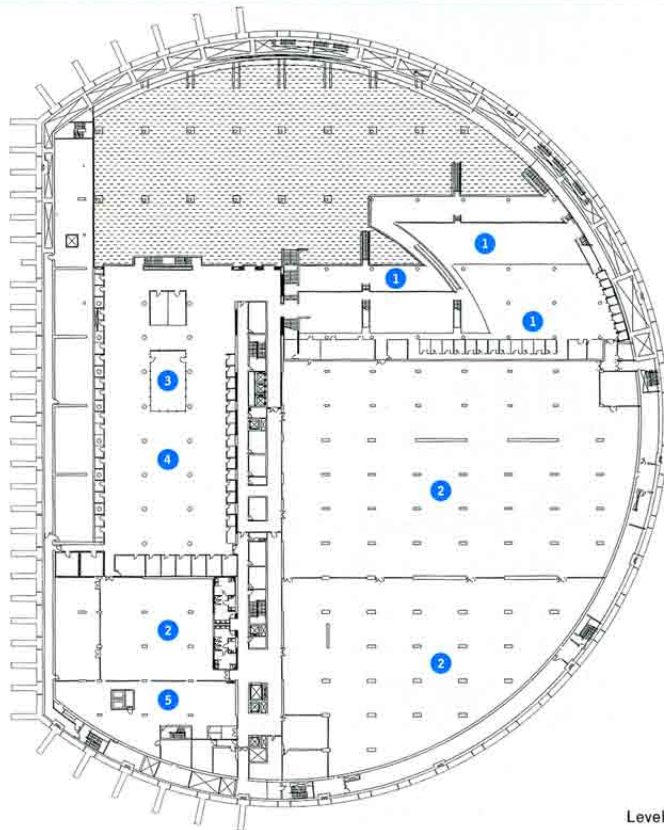
Max Rodenbeck is a correspondent for The Economist. He is the author of Cairo: The City Victorious, and a longtime resident of that city.



ABOVE THE LIBRARY ROOF DURING CONSTRUCTION
FACING PAGE A COLONIAL-ERA APARTMENT HOUSE

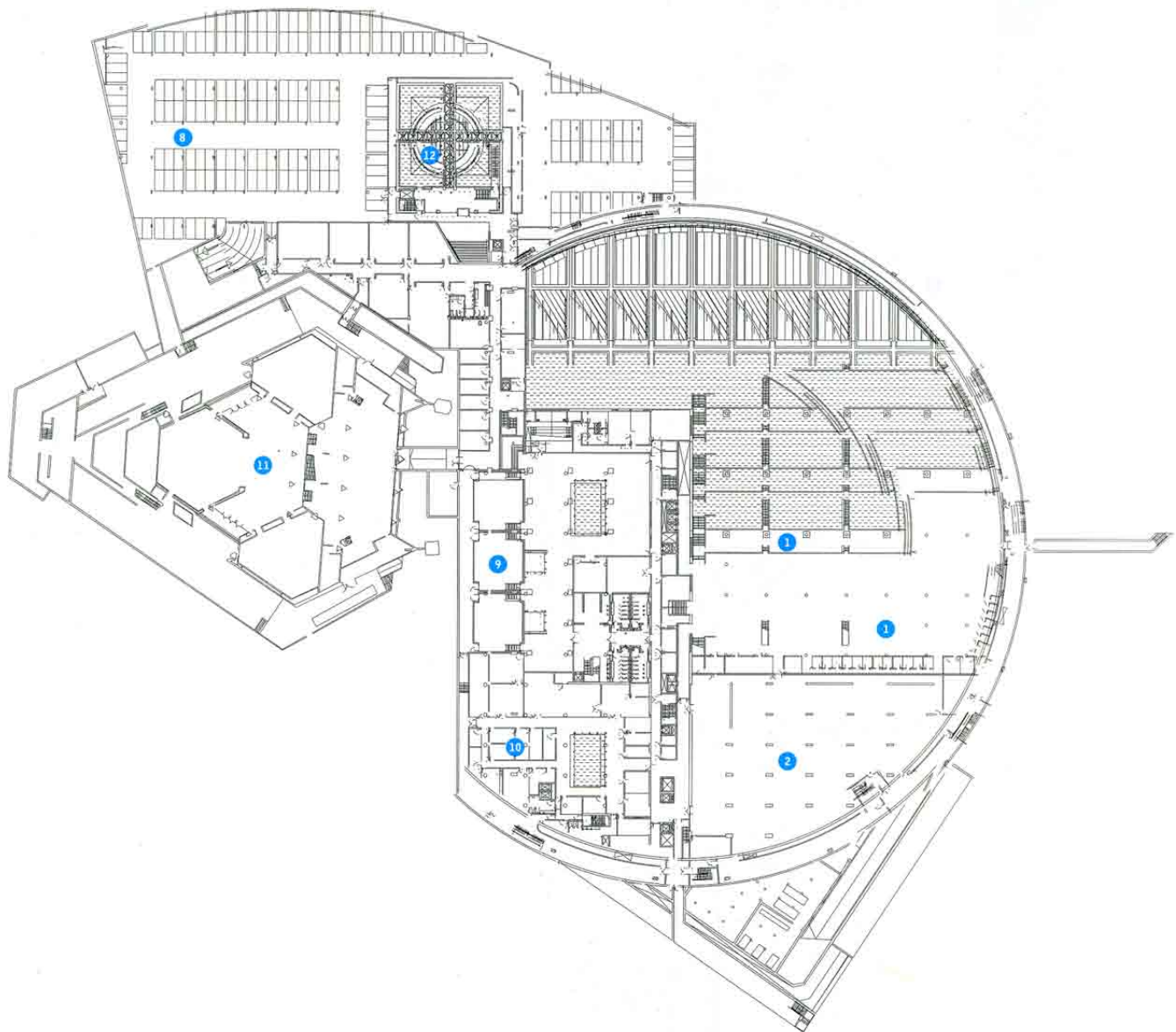


Level three, basement

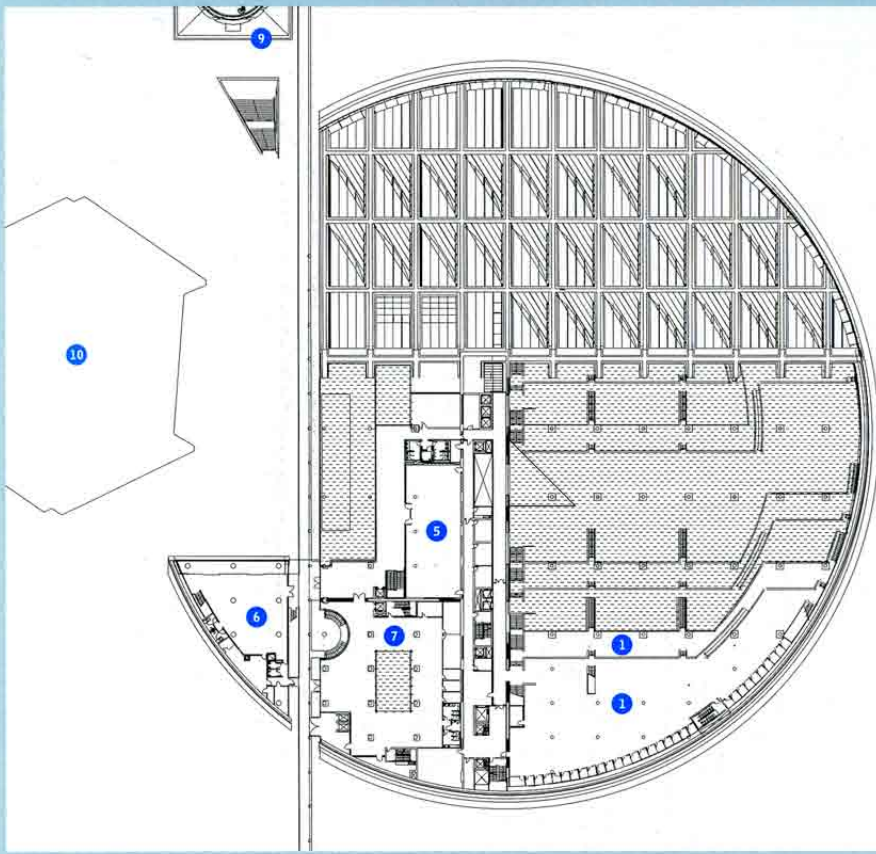


Level two, basement | 163' 7"

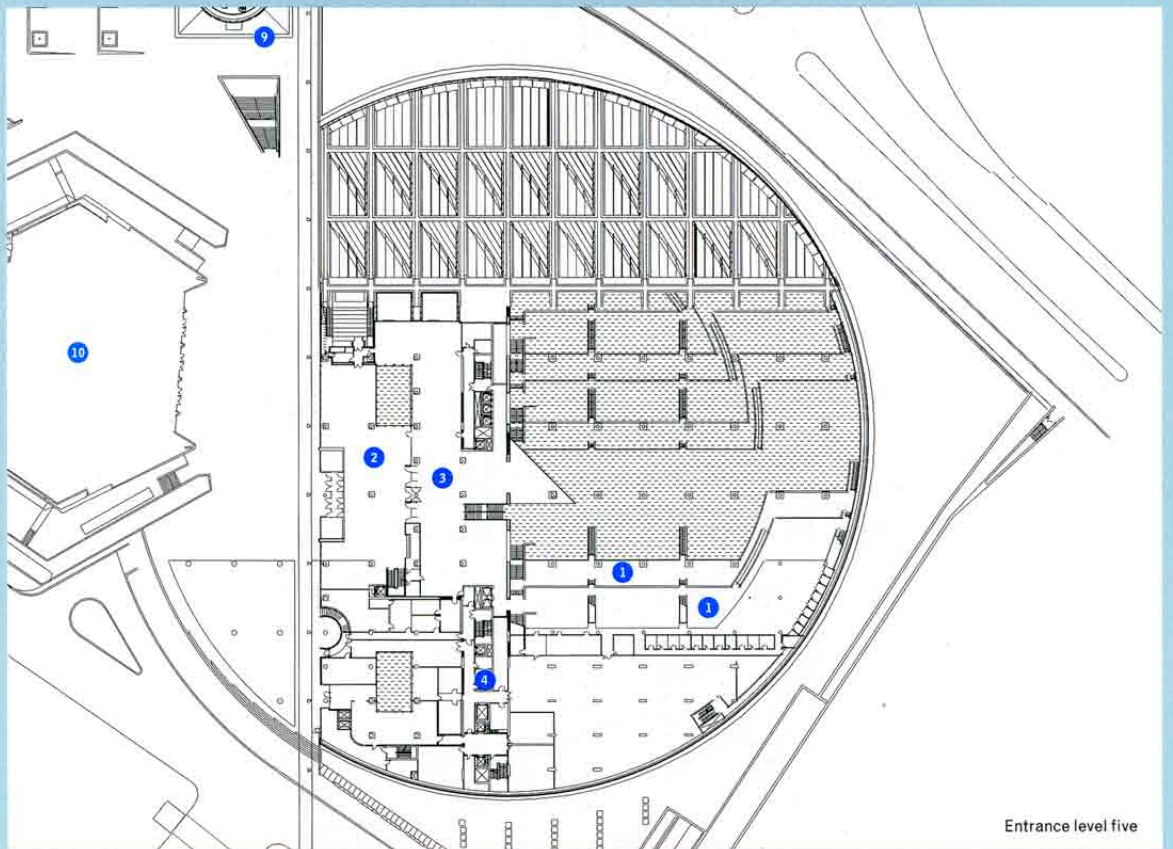
- 1 reading room
- 2 book storage
- 3 light court
- 4 audio visual department
- 5 computer room
- 6 music department
- 7 loading dock
- 8 parking
- 9 meeting rooms
- 10 offices
- 11 existing conference center
- 12 planetarium



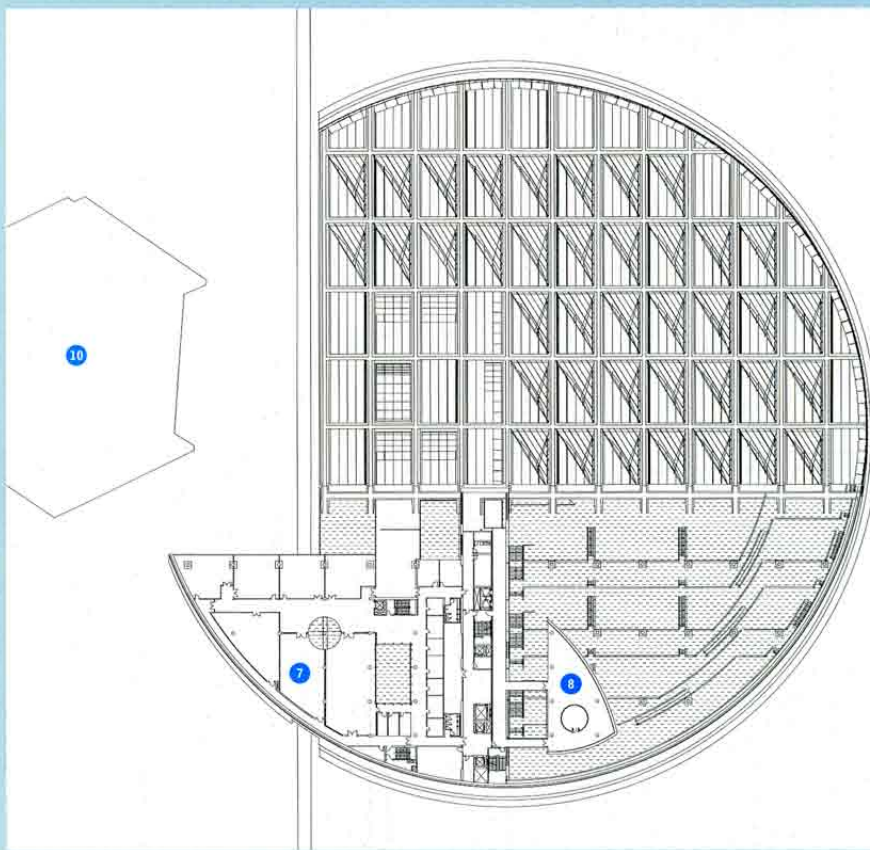
Level four, basement



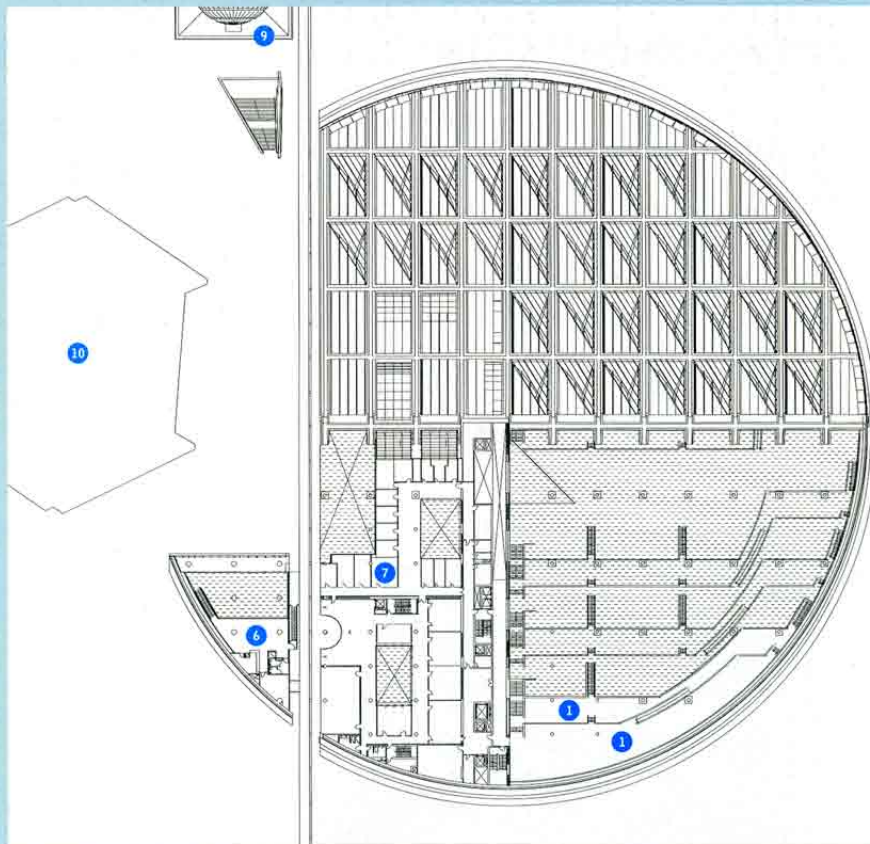
Level six



Entrance level five



Level eight

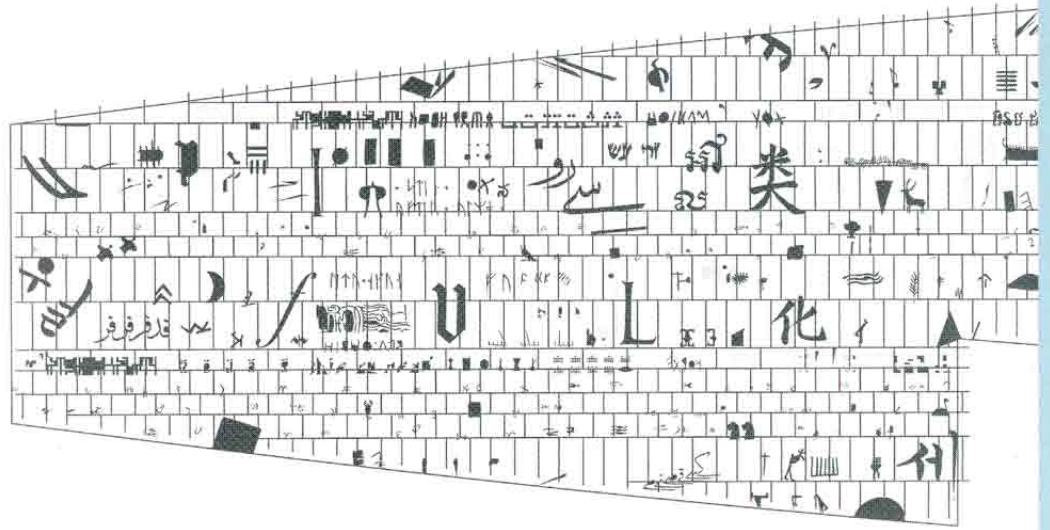


Level seven

- 1 reading room
- 2 lobby
- 3 registration
- 4 offices
- 5 children's library
- 6 cafeteria
- 7 International School for Information Studies
- 8 group study room
- 9 planetarium
- 10 existing conference center

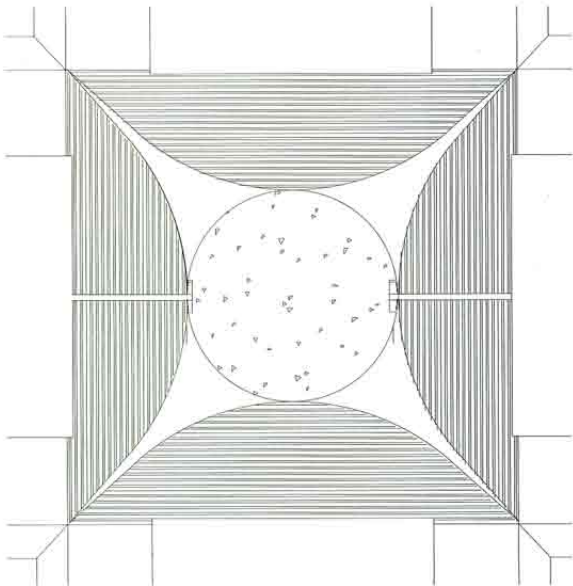


Detail section through exterior stone wall | 10'

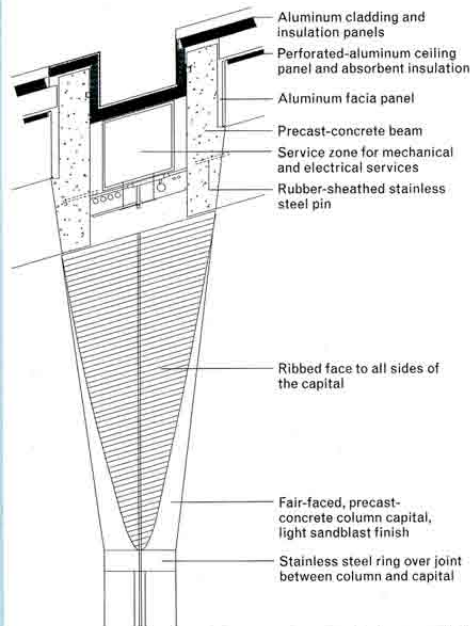


Elevation detail showing patterning of stone wall

THE LIBRARY'S GRANITE CLADDING IS SECURED TO THE CIRCULAR CONCRETE DIAPHRAGM WALL (ABOVE LEFT) VIA STAINLESS STEEL CLIPS. EACH OF THE WALL'S 3,750 PIECES—WHICH RANGE FROM 6 TO 12 INCHES THICK—WAS HAND-CARVED WITH LETTERS AND GLYPHS (ABOVE RIGHT) ON THE GROUND AND THEN INSTALLED, PUZZLE-LIKE, WITH A CUSTOM-BUILT GANTRY FRAME. EACH OF THE LIBRARY'S 88 CAST-IN-PLACE CONCRETE COLUMNS TERMINATE IN A CAPITAL ON WHOSE CORNERS EIGHT ROOF BEAMS MEET. TWO BEAMS REST ON EACH OF THE FOUR CORNERS (BELOW LEFT), LEAVING A CENTRAL VOID THAT HOLDS MECHANICAL AND ELECTRICAL SYSTEMS (BELOW RIGHT). BECAUSE EACH BEAM WEIGHS 20 TONS, WEIGHT ALONE IS ALMOST ENOUGH TO SECURE THEM IN PLACE, WITH RUBBER-WRAPPED STAINLESS STEEL PINS ADDING EXTRA SECURITY.



Column plan at capital (viewed from below) | 1'



Column section detail | 3'

SNØHETTA OSLO NORWAY

PHOTOGRAPHY BY PÅL LAUKLI



Craig Dykers



Christoph Kapeller



Kjetil Thorsen

In 1989, 28-year-old Craig Dykers was winding down a two-year stint in the Los Angeles office of Barton Myers, and wanted to think big. He and a friend named Christoph Kapeller, a Norwegian architect also living in L.A., decided to enter what was the biggest competition of the moment, that of the Alexandria Library in Alexandria, Egypt. Kjetil Thorsen, a friend of Kapeller's from architecture school who had set up a small practice in Oslo called Snøhetta a few years before, was also planning to enter, and the two decided to throw their lot in together. Rounding out the team were three other architects, an artist, and an art historian. They convened in Los Angeles, rented an apartment in a retirement home (the cheapest place they could find) and got to work. After two intense months and several research trips to the desert outside L.A., they sent off their submission under the name Snøhetta.

Once the euphoria of beating out Paolo Portoghesi, Hans Asplund, and 521 other competitors had worn off, the magnitude of the job ahead set in. Not only would they have to work out the details of their 1.25 million-cubic-foot reading room, but they would have to work with two national governments and two different arms of the United Nations, which oversaw the early parts of the competition. In 1989, the collaborative moved to Oslo, and began the long and complicated task of shepherding their proposal through a process that was as much about politics as design or finances: At the time, Norway was playing an increased role in the brokering of the Middle East Peace Process and was also hoping to raise its profile as a design powerhouse among

the Nordic countries, and therefore was eager to provide Snøhetta with financial and political backing. The Egyptian government was also helpful, according to Dykers, and in particular, Suzanne Mubarak, the wife of Egyptian president Hosni Mubarak: Dykers speaks with gratitude about her ability to cut through the red tape and confusion inevitable in a project this size, and commitment to the proposal of a group of very young architects (they ranged from 28 to 33) with no track record or ties to Egypt.

Twelve years later, librarians are putting books on the shelves of a building that many doubted would ever be built. It wasn't easy, and the task of seeing the library through while also running a regular practice undoubtedly took its toll. Two of the initial team members left Snøhetta early on, and Dykers, Kapeller, and Thorsen have spent a lot of the intervening time on airplanes. As the building is readied for its opening in April of next year, Dykers speaks of the process as one that has been both pleasurable and odd: "About a year ago, when construction was nearing completion, there was a funny feeling in the office," he explains. "It was as if we'd taken a trip to the moon and just returned; what would we do next?" That question has been answered for the moment, however. Last year, Snøhetta, which is now a practice of 39, won another major international competition for the National Opera House in Oslo (September 2000, page 50). It is a project of similar scale and complexity to the Alexandria Library, though the site is a lot more convenient to the firm's offices.

BIBLIOTHECA ALEXANDRINA, CORNICHE, EL GUIESH, EL SHATTBY, ALEXANDRIA, EGYPT

CLIENT: ISMAIL SERAGELDIN (DIRECTOR, BIBLIOTHECA ALEXANDRINA); MOSHEN ZAHKAN (PROJECT MANAGER, BIBLIOTHECA ALEXANDRINA)

ARCHITECT: SNØHETTA HAMZA CONSORTIUM; SNØHETTA, NORWAY—CRAIG DYKERS, CHRISTOPH KAPELLER, KJETIL TRÆDAL THORSEN; HAMZA ASSOCIATES, CAIRO—MAMDOUH HAMZA, ACHMED RASCHID; SCHUMANN SMITH, HERTFORDSHIRE, ENGLAND—NICK SCHUMANN, DAVID SMITH

ENGINEER: HAMZA ASSOCIATES

CONSULTANTS: GIG FASSADENBAU, AMERAYA METAL COMPANY (ROOF, GLAZING); GRANITA, HAZ (STONWORK); LAUBEUF (PRECAST CONCRETE PANELS);

MOBICA, BOSVIK (FURNISHINGS AND INTERIOR PARTITIONS) GENERAL CONTRACTORS: BALFOUR BEATTY; THE ARAB CONTRACTORS; RODIO TREVI

COST: WITHHELD AT OWNER'S REQUEST



100 AERIAL

VIEW OF THE LIBRARY FROM THE WEST

PHOTOGRAPHY BY JAMES WILLIS

PHOTOGRAPHY BY
PAUL M^CMULLIN



ALEXANDRIA'S NEW LIBRARY WAS A COMPLEX SIX-YEAR CONSTRUCTION PROJECT. THE TORUS-SHAPED BUILDING IS SUPPORTED BY THE WORLD'S LARGEST CONTINUOUSLY REINFORCED CIRCULAR MEMBRANE WALL (525 FEET IN DIAMETER AND 131 FEET DEEP) AND A FOREST OF 600 DOUBLE-BELLED PILING DRIVEN

INTO SANDSTONE SOME 90 FEET BELOW GRADE. THE BUILDING'S FOREST OF SLENDER (2 1/3 FEET THICK), CAST-IN-PLACE COLUMNS SITS IN A 47-FOOT-BY-31 1/2-FOOT GRID, AND RISES TO A HEIGHT OF 53 FEET. THERE, PRECAST LOTUS LEAF-INSPIRED CAPITALS (CRANED INTO PLACE, THEN WELDED TO THE COLUMNS)

Camp David Accords inspired the first serious discussions within the University of Alexandria of reviving the Library of Alexandria. The president confidently asked to tour the pyramids at Giza and the nonexistent library. From this egregious gaffe, the idea for a new library to serve the University's 75,000 students slowly snowballed into a more ambitious project of international scope, led by an independent Egyptian agency, the General Organization of the Alexandria Library (GOAL), which during the 1980s joined forces with UNESCO and the United Nations Development Program in promoting the concept. After the early planning stages, the project was taken over by the Egyptian Ministry of Education, which eliminated UNESCO's role and retained GOAL as managers. Suzanne Mubarak, wife of the current Egyptian president, has been among the most diligent players in the process, attracting an international support group that included the late French president François Mitterand, Italian cultural magnate Susanna Agnelli, former Greek minister of culture Melina Mercuri, and the sultan of Oman—not to mention \$21 million from Saddam Hussein.

In 1989, at the request of GOAL, the International Union of Architects organized an international competition, which attracted 700 entries from 52 countries. The jury, which included among others architects John Carl Warneke of the United States and Fumihiko Maki of Japan, selected the winning project because of its clarity of form and satisfaction of a complex program, which aside from an enormous library now included three museums, a planetarium, a school of library science, and convention facilities. Such a program was meant to generate international response, because from its initial collection of 500,000 books, the library hopes to gather as many as eight million volumes within its 915,000-square-foot interior to become the major research institution in the Middle East and one of the largest libraries in the world. During the intervening 12 years, most people abroad assumed that like so many competitions of this sort, the Library of Alexandria was a well-intended pipe dream that would come to naught. How surprising, then, to learn that not only has it been built faithfully to Snøhetta's original competition-winning design, but also that it has been possible in Egypt, a country that is more famous for perceived problems of underdevelop-

ment than for its modern architecture, to produce a wonderful modern building with generous spaces, ingenious technical solutions, and luxurious details, putting to shame a more famous library built recently in Mitterand's France.

Both on representational and practical levels, the new Library of Alexandria will soon be recognized as one of the most significant architectural achievements of our times. In early 2001, a national law decreed that the Library of Alexandria be converted into a public juridical entity, independent of other bureaucracies and answerable only to the president of Egypt. The director, Ismail Serageldin, responds to an elected board of directors—including Umberto Eco and Daniel Boorstin, former Librarian of Congress—who serve short terms to guarantee a dynamic and open administration.

The relatively unknown designers, Snøhetta, located in Oslo, until now have been distinguished for a small fishing museum in a remote Norwegian village (November 1998, page 136) and for the Norwegian component of the Nordic embassy complex in Berlin (March 2000, page 122). They designed the competition project in Los Angeles as a casual group of five friends, three from Norway, one from Austria, and one from the United States—all in their early 30s or younger—assisted by five other friends from the United States, Egypt, Germany, and Norway. Since two members of the team already had a small practice in Norway, named Snøhetta after a Norwegian mountain, they expediently located their office there. This proved to be a wise political choice, since the Norwegian government was quite intent on shepherding the project, and aside from absolving Egypt of some of its foreign debts during the negotiating phase, it participated actively in cultural and professional exchanges. Of the original team, three principals have seen the building through: the American Craig Dykers, the Austrian Christoph Kapeller, and the Norwegian Kjetil Thorsen. The associated architect in Egypt, Dr. Mamdouh Hamza of Cairo, provided engineering and architectural assistance. During the intervening decade, Snøhetta has grown into a substantial practice with 39 members, and while the Library of Alexandria has been their bread-and-butter commission, they have also produced a considerable number of smaller-scaled projects



SUPPORT MORE THAN 400 PRECAST 46-FOOT-BY-6-FOOT-BY-1-FOOT ROOF BEAMS, WEIGHING AS MUCH AS 18 TONS. THE ROOF, ANGLED AT 16.08 DEGREES FOR OPTIMUM SOLAR SHADING, COMPRISES BAYS FILLED WITH ALUMINUM PANELS SANDWICHING AN ALUMINUM HONEYCOMB. ALUMINUM-WRAPPED, STEEL-

FRAMED MONITORS IN MANY OF THE BAYS ELIMINATE THE NEED FOR ARTIFICIAL DAYLIGHTING IN THE READING ROOM. THE PLANETARIUM IS CONSTRUCTED OF SIX PREFABRICATED STEEL TUBE TRUSSES WELDED TOGETHER, LIFTED INTO PLACE ON SITE, AND LATER WRAPPED IN GRP PANELS.

for public buildings and landscapes. They recently won the competition for the Oslo Opera House (September 2000, page 50), a project that will be almost as large as the Library of Alexandria.

Since the Snøhetta office operates as a collaborative, there is no particular style that unifies their projects, except in the case of the large-scale works, when they tend to revert to the design strategy that succeeded in Alexandria: the big roof. The idea of pitching an autonomous roof under which multifarious functions and scales can be arbitrarily tucked is traceable to vernacular solutions for covered markets, but remains a peculiarly modern approach to architecture, enabled by the new structural capacity to achieve ever greater spans. Both Le Corbusier's unbuilt project for the Strasbourg Convention Center (1964) and Mies van der Rohe's project for the Chicago Convention Center (1953) can be cited as canonical precedents, while the early poets of the big roof remain Oscar Niemeyer of Brazil and Arthur Erickson of Canada. At the Alexandria Library, the slanted disk roof provides a strong iconic presence, suggestive of the sun god Ra's disk or Euclidian geometry. At the same time, it admirably serves to mediate the light and climate of the terraced reading room, suspended seminar rooms, and stacks of offices below with the same ingenuity of the wooden window lattices, or *mashrafiyya*, of Mamluk-era houses. Statically, the roof behaves as a single plane without moment joints, supported by the compression of the cylindrical perimeter walls and a forest of nearly 90 columns set on a 31 1/2-by-47 1/4-foot modular grid (a measure derived from standard compact library storage systems).

Like other breakthrough projects won in competition, such as Jørn Utzon's Sydney Opera House (1956) or Renzo Piano and Richard Rogers' Centre Pompidou (1971), the design for the Alexandria Library was infused with formal and technical idealism for which supporting solutions had to be found retroactively. The geometry of the library is much more mannered than what first meets the eye: It is not a true cylinder but a fragment of a torus, a doughnutlike figure, and it is not resting on the ground plane but is actually sunken 40 feet below grade, like a Leaning Tower of Pisa that has yielded to the earth on one side. The 16.08-degree

inclination of the roof allows for optimal natural light to filter into the immense reading room, and the eye-shaped clerestories provide a variety of views to the sea and the sky from the internal terraces. The foundations for such a structure—with its tendency to push down on the southern side and push up on the north, and which because of its subterranean component is constantly tempting the water table—required an abnormally heavy substructure extending 108 feet below sea level. Supposedly resting on the heaviest foundation cage ever prepared, the 620 piles on the foundation raft work both in tension and compression to compensate for the changing behavior of the vertical members during construction. Among the structure's important innovations is a system of cathodic, fiber-optic cabling set with reinforcing rods to electronically monitor structural flaws over time.

In a joint venture with an Egyptian company called Arab Contractors, Italian contractors Rodio/Trevi oversaw the foundations, and British contractors Balfour/Beatty the rest of the construction. Technical elements were imported from France, Norway, Britain, Austria, and the United States, but what is truly remarkable is the high quality of construction. About 50 percent of the materials were locally produced. Polished raw concrete surfaces of slender columns and perforated interior walls match the elegance of those made for Tadao Ando in Japan. Luxurious acid-stained bronze panels that grace the lobbies were locally fabricated, as were the many of the interior partitions. The black Zimbabwe marble revetment adds another layer of opulence, and all of the hardware, bathroom fittings, and railings have a coherent, modern verve. At a total cost of \$223 million—the foundations alone cost \$65 million—this was an undeniably expensive building, but one for which, after the initial bureaucratic snags were concluded, never encountered financing controversies or needless waste.

One approaches the new library either from the northern waterfront, where the planetarium (an enigmatic sphere scored with illuminated meridians) is suspended in a glass-lined, light-emitting socket, or from the university campus, where a slender steel-and-glass bridge pierces through the solid mass of the granite elevations on the south. The main lobby, a triple-height *continued on page 122*

BY RICHARD INGERSOLL

Alexandria, since its founding in 331 BC by the eponymous conqueror of the ancient world, has represented as much an idea in history as a place on earth. This perhaps explains the extraordinary cultural expectations behind one of the truly great architectural projects of the last decade, the new Library of Alexandria. Designed by Snøhetta, an international group of architects based in Norway, as an enormous glowing disk on the shore of the city's densely built Corniche, it conveys a modern effort parallel to that of antiquity to harbor a center for world enlightenment.

Alexander the Great's prodigious efforts to Hellenize the rest of humanity left a mandate for his new capital in Egypt to serve as the universal Greek metropolis of the Mediterranean, a goal that was more or less realized by his successors during the 250-year reign of the Ptolemaic dynasty. With its Greek-speaking ruling class, Syrian and Jewish merchant class, and indigenous Egyptian working class, Alexandria developed into a multiethnic society of over a million residents, surpassed only by ancient Rome in wealth, size, and power. The two most noteworthy Ptolemaic acts of patronage—the Pharos Lighthouse, one of the seven wonders of the ancient world, and the Museion, the progenitor of all museums, an academy which assembled antiquity's preeminent library—eventually became synonymous with the city. Although both the lighthouse and the library have long vanished, their memory is deeply ingrained in world history. The mythic dimension of these lost glories of Alexandria has been astutely synthesized in Snøhetta's new building, which reads as a lighthouse/library: a diagonally cut cylinder 525 feet in diameter that catches the daylight in its reflective aluminum-clad roof while at night projecting vertical light through its porous surfaces.

Alexandria's current population of five million is about a quarter the size of Cairo and slightly larger than the state of Israel. After nearly disappearing—the number of inhabitants had shrunk to 4,000 by the time of Napoleon's advent in 1798—Alexandria underwent a phenomenal urban revival during the colonial period of French and British hegemony, and was stocked with lavishly decorated, seven-story apartment buildings that aspired to Haussmann's Paris. Since the nationalist coup in 1952, it has ceased to be the cosmopolitan port described in Lawrence Durrell's *Alexandria Quartet*, slowly converting from a multilingual European outpost dominated by prosperous Greek, Armenian, Italian, Jewish, and French communities, into a predominantly Arab one with a few foreign inflections.

Charming European cafés that line the Corniche survive as a legacy of the high life of a previous age.

The new library, which is a uniquely progressive intervention in this postcolonial setting, offers a clear secular strategy for urban regeneration amid the strong currents of fundamentalist reaction that are everywhere apparent. Alexandria's central train station, for instance, undergoes a dramatic conversion into a place of prayer, with carpets systematically strewn over the platforms and main hall. While the ephemeral effect of Islamic ritual softening the industrial shed and bringing the frenzy of the busy station to a standstill remains an incredibly moving sight, the significance of requisitioning the most explicitly secular space in the city for religious functions seems an obvious assault on the idea of the liberal, nonsectarian state. That the interior of the new library, a magnificent hypostyle hall, evokes immediate associations with mosque architecture inevitably appeals to the contradictions between secularism and fundamentalism that have recently acquired such importance. Egypt is an Arab country, but a nonsectarian state with very strong contrasts during the past 50 years due to the resurgence of the Islamic brotherhood, which periodically threatens the secular status of the government.

The new library rises dramatically in the city's fabric at the terminus of the crescent-shaped, 1-mile-long Corniche. It stands directly opposite the fortress of Qayt-Bey, which was built by Egypt's overlords from the 14th to the 18th centuries, the Mamluks, on the site of the ancient lighthouse. Although few archaeological remains were found on the library's site (two fragments of Roman floor mosaics may be featured in the internal courtyards of the new building), it is almost certain that the area belonged to the immense royal palace compound, which is believed to have been adjacent to the ancient library. The southern side of the new library is a curved, clifflike elevation of carved granite blocks designed by the artist Jorunn Sannes. In it graffiti-like signs and symbols from the major living and dead languages of the world have been incised as nonsensical hieroglyphs. A footbridge joins the building to the University of Alexandria's campus, which stretches inland for several blocks.

One of the problematic invariants of the site remains a large, extremely awkward auditorium, built from 1982–91 and used frequently as a convention hall by the Arab League. The new building deftly defers to this modern relic of angled concrete surfaces and mirror-glass panels by slicing an orthogonal notch out of the library's circular roofscape, thus creating a mitigating frame. In the residual space a generous gap has been left for the major points of circulation to converge. The existing auditorium has been connected below grade to new auxiliary meeting rooms and parking to improve its capacity as a convention hall. Looking east from the papyrus-filled pools that surround the new library, Alexandria sprawls interminably as a thin band of coastal development for nearly 19 miles. The sharply canted cylinder of the library's masonry profile establishes a new threshold between the city center and its linear beachfront suburbs.

Allegedly, Richard Nixon's 1974 visit to Egypt after the

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Critique

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space lined with aluminum panels, allows one to filter through to the north-south circulation spine of the library and reading room, or proceed to auxiliary functions, such as the calligraphy, antiquities, and science museums; the children's library; the conservation institute; the convention rooms on the lower level; the information science school; and the 108,000 square feet of administrative offices. These latter two areas are gathered around two internal light courts whose glazed shafts obliquely penetrate four levels.

The major interior destination of the library is the 215,000-square-foot reading room, which embraces one with its grandly curved perimeter walls. The scale of this hypostyle hall is exhilarating, at once comprehensible as a whole, yet with varying degrees of intimacy on its seven levels. Le Corbusier's General Assembly Building at Chandigarh or Frank Lloyd Wright's workshop for Johnson Wax in Racine come to mind as quickly as the Mosque of Cordoba, but rarely has a such magical interior atmosphere been achieved: the constantly changing perspectives as one moves through the space, the enchanted and variable behavior of natural light, punctuated by ethereal rays of green and blue cast through the glass bricks embedded in the ceiling's structural grid, the comfortable work spaces, oak floors, and natural materials that greet the body when it comes to rest.

Exceedingly positive feelings transmitted by the quality of details compete with a transcendent sense of doubt that tweaks one's consciousness, because despite the rationality of the grid of columns and the constant awareness of the sky through the roof, it is never quite clear where one stands in relation to the earth. Nor is it clear if the room is not slowly sinking underground to join some lost layer of Alexandria's checkered past. Such a saturnine contrast is worthy of the city's greatest modern poet, English-educated, Greek-speaking, Constantine P. Cavafy (1863–1933), whose verses capture the melancholy evanescence of Alexandria's fleeting grandeur.

The magnificent columns, topped by a stylized variation of a lotus capital, vary in height from 13 feet at the lowest level to 20 at the highest. The hollow of their capitals has been

designed to compensate for the different tolerances of the intersecting beams, similar to interlocking Chinese roofing systems. As in Louis I. Kahn's structures, these structural members have been hollowed out to carry the services such as air returns, lighting, and wiring. A similar spirit of exploiting hollows governs the parallel sets of stairs that connect the interior terraces, with service closets tucked between them. They have been pulled away from where they meet the terrace to permit a lateral passage underneath. The ramps connecting all seven levels reinforce the curvature of the perimeter walls and represent for Egypt the first case of a completely handicap-accessible public building.

My visit to the Library of Alexandria coincided with a two-day shutdown of the mechanical systems. Instead of the anticipated suffocation, the sort that one feels even with the systems working at the new library in France, the room's agreeable climate and natural lighting genuinely startled me. This possibility of optional mechanicals was a supreme joy in such a large building in one of the world's hottest climates. Similar to the double-height salons in Mamluk-era houses, the reading room's height—138 feet from its lowest to its highest points—allows for excellent diffusion of hot air to the upper ranges, leaving a pleasant temperature below. A great stone-clad wall on the south side shields the building from direct exposure to the sun and works as a natural heat sink. The shallow pool surrounding the eastern half of the building also contributes to this beneficial climate control. East-west diagonals cut the grid of the roof, from which the eye-shaped clerestory windows droop below the roof's surface. Daylight thus filters indirectly from the north, providing sufficient natural light to work without incandescent support.

Two ship-shaped volumes for isolated seminar rooms have been perched in the upper ranges of the reading room. They contribute a further note of fantasy to the grand space and bring to mind Timon of Phlius's famous, albeit sarcastic, description: "In the populous land of Egypt many are they who get fed, cloistered bookworms, endlessly arguing in the birdcage of the Muses." In defense of the Library of Alexandria's secular mandate, one could ask for no better analogy. But considering the material beauty of the reading room, its exceptional quality of light, and its appeal to metaphysical reflections, will anyone be surprised if people come here to pray? ■

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THE LIBRARY

PHOTOGRAPHY BY CHRISTIAN RICHTERS

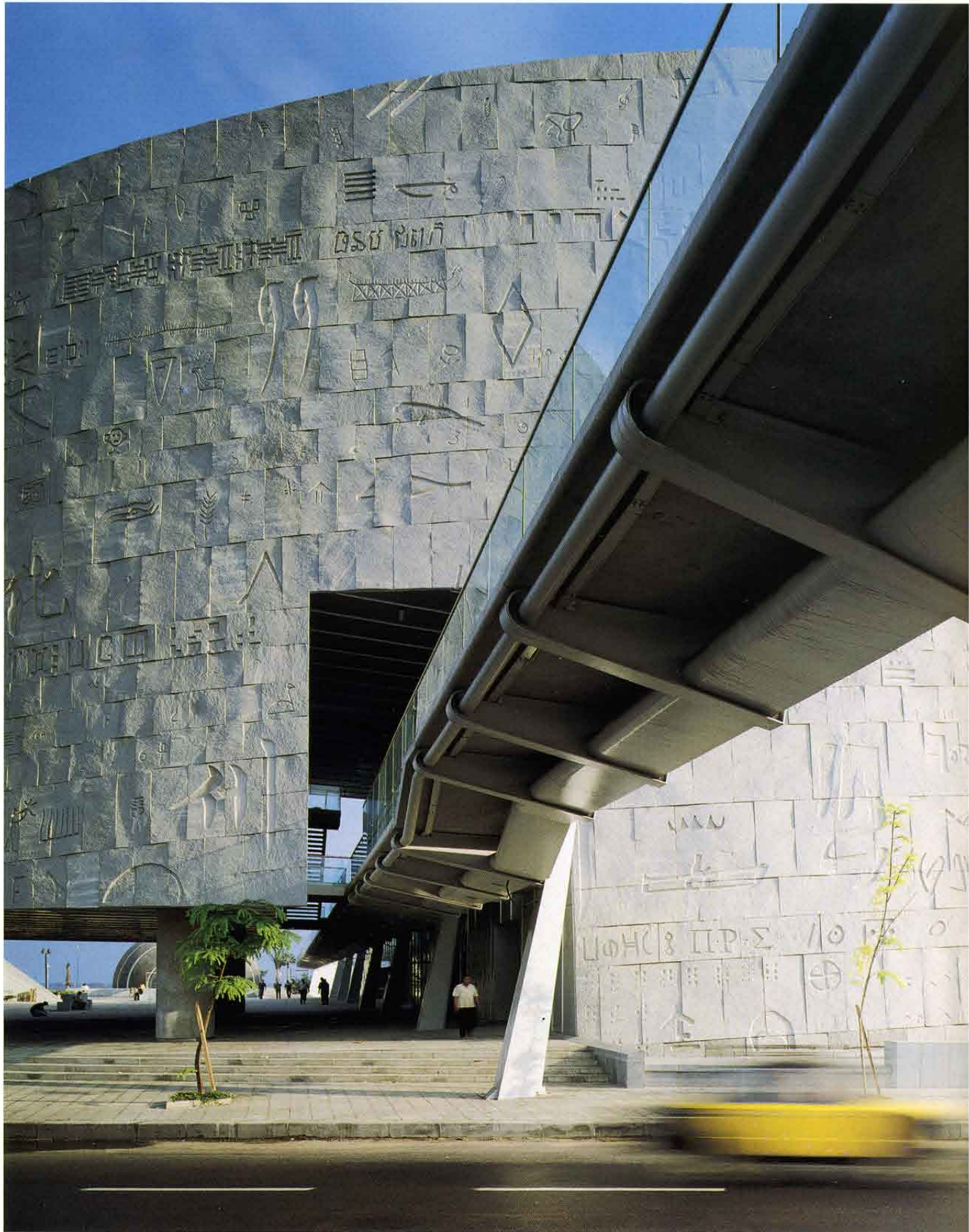


THE TILTED ROOF OF THE LIBRARY (LEFT) IS FACED IN ALUMINUM HONEYCOMB SANDWICH PANELS AND STAINLESS STEEL COVERINGS OVER INTERNAL CONCRETE BEAMS. IT LOOKS ACROSS A REFLECTING POOL TO THE HARBOR OF ALEXANDRIA.



AN OPEN-AIR SKY-BRIDGE (BELOW) CONNECTS THE LIBRARY TO THE UNIVERSITY OF ALEXANDRIA CAMPUS. IT PASSES THROUGH A SLOT IN THE LIBRARY (FACING PAGE) AND DOUBLES AS A CANOPY OVER THE BUILDING'S MAIN ENTRANCE (LEFT). JUST BEYOND THE SKY-BRIDGE'S TERMINUS, AN INDENTATION IN THE PAVEMENT LEADS TO THE BELOW-GRADE ENTRANCE OF THE LIBRARY'S SPHERICAL PLANETARIUM (FAR LEFT).





THE ARCHITECTS DESIGNED THE LIBRARY AS A TILTED TORUS WITH A SLANTED ROOF (BOTTOM), AND REMOVED A WEDGE OF IT ON THE WEST (LEFT) TO CREATE AN ENTRANCE COURT FACING AN EXISTING ASSEMBLY HALL. THE RECTANGULAR CURTAIN WALL ON THE SOUTHEAST SIDE OF THE COURT (BELOW, AT RIGHT) IS THE FAÇADE OF AN INFORMATION SCIENCES SCHOOL INCORPORATED INTO THE LIBRARY PROGRAM.





THE TRIANGULAR, SOUTHWEST-FACING CURTAIN WALL (LEFT), WITH ITS INTERIOR CABLE TRUSSES PROVIDING LATERAL STABILIZATION, OPENS ONTO THE TRIPLE-HEIGHT LOBBY OF THE LIBRARY (BELOW). JUST BEYOND THE LOBBY IS THE LIBRARY REGISTRATION AREA (FACING PAGE, TOP RIGHT) AND A STAIRCASE LEADING DOWN INTO THE MAIN READING ROOM (FACING PAGE, TOP FAR RIGHT). THE LIBRARY IS 10 STORIES AT ITS HIGHEST POINT, WITH FOUR LEVELS BELOW GRADE; IN ORDER TO BRING LIGHT INTO THE BUILDING'S LOWER REACHES, THE ARCHITECTS INCORPORATED SEVERAL LIGHT WELLS WITH CANTED WALLS (FACING PAGE, BOTTOM).







WITH ITS FOREST OF COLUMNS (RIGHT), THE MAIN READING ROOM RECALLS THE GREAT HYPOSTYLE HALLS OF ANCIENT EGYPTIAN TEMPLES. FURTHERING THE COMPARISON, THE GRID OF EYEBROW-SHAPED SKYLIGHTS IN THE CEILING FILLED WITH GREEN AND BLUE GLASS BLOCKS (BELOW) RECALLS THE TEMPLES' ROWS OF CLERESTORY WINDOWS, AND THE TOPS OF THE CONCRETE COLUMNS (BOTTOM) RESEMBLE THE LOTUS-BUD COLUMN CAPS OF PHARAONIC TIMES.





ETCHED INTO THE STONE FACE OF THE LIBRARY (LEFT AND BOTTOM) ARE SIGNS, LETTERS, AND SYMBOLS FROM MANY OF THE WORLD'S LANGUAGES, LIVING AND DEAD. AT NIGHT, THE METAL FACE OF THE LIBRARY SHINES ACROSS THE ALEXANDRIA HARBOR (FACING PAGE) MUCH LIKE THAT OTHER GREAT BEACON OF ANTIQUITY, ALEXANDRIA'S PHAROS LIGHTHOUSE.

