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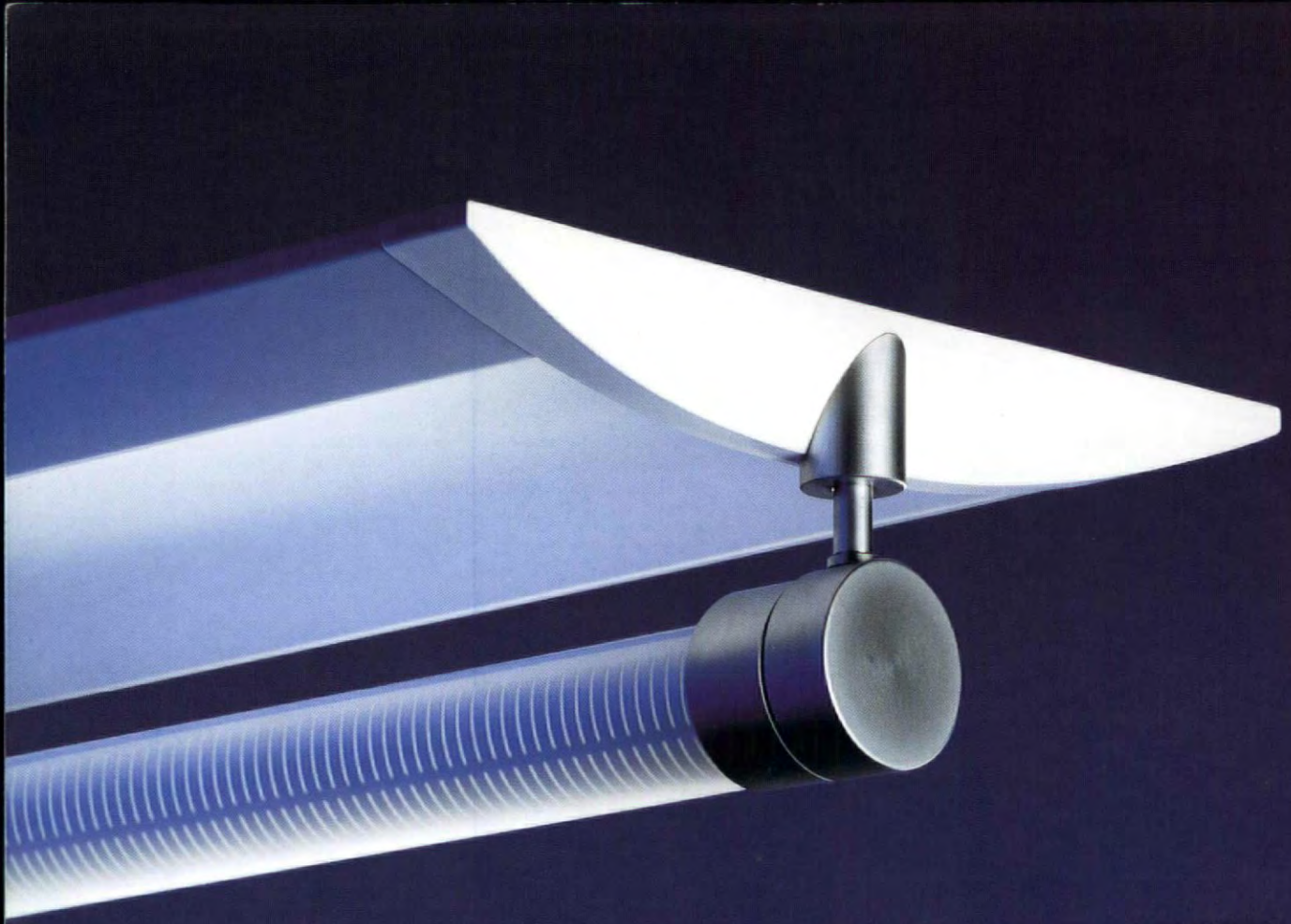

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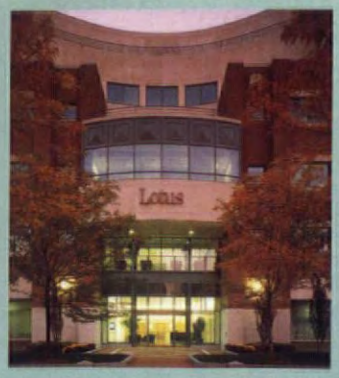

Cover
Lotus Building, Cambridge, Massachusetts, at dusk. Architects: Arrowstreet Inc. Photograph by Warren Jagger

Architects: Lifschutz Davidson, London; Lighting design: Equation Lighting Design, London

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Renovation of the Haiger Municipal Hall

2250m² of stainless steel strip provides impermeability that lasts

Klaus B. Maier

On the A45 autobahn, south of Siegen, is the exit to Haiger-Burbach. Less than 60 minutes drive from the big cities of the Rhine-Main and Rhine-Ruhr areas, located in the geographical centre of the old Federal Republic of Germany, is the old town of Haiger, which is typical for its framework construction.

The 1,200 year-old town has a colourful history. One of its principal attractions is the Church of Haiger. Built in 1408, the church is notable for the magnificent paintings in its choir hall. Next to the church is a three-storey building, a lovingly restored framework construction. Today it houses the museum of local history (above).

The seventies-style town hall and municipal hall, as well as the activities of the 19,000 inhabitants demonstrate the cultural diversity of Haiger.

The renovation work

The municipal hall of Haiger was inaugurated on 10 January, 1974. The exterior (picture 1) is a strictly delineated construction, broken up by glass windows and faced with natural stone. The building has a flat roof, which is poorly insulated. When exposed to extreme conditions over a number of years - such as the presence of 600 people - the concentrations of vapour produced, as opposed to the periods in-between functions when humidity remains normal, causes the roof to leak. The NIROSTA® Metal Roof System by ASSC - based in nearby Siegen - was chosen as the most appropriate solution to the problem given that the existing roof could be conserved and used as the substructure. The only requirement was the removal of the old gravel layer.

Once cleared the roof was ready for the laying of a sloping insulation covering - the slope was achieved by laying insulation slabs of different thicknesses. Walk-on type rock wool insulating slabs were overlaid (picture 2). Contractors, Kentzler made the decision to utilise this slope solution in order to enable swift rain removal via round drains of 100 millimetre in diameter (picture 3). Due to the existing parapet walls, the use of gutters was superfluous (picture 4). The roll seam welding of the stainless steel ensures that the stainless steel roofing system is absolutely water-tight, even on 0-degree roofs.

The handling

Stainless steel strips are usually supplied with a width of 625 millimetres x 0.4 millimetres in thickness, on coils of approximately 200kg. For Haiger municipal hall renovation 1,200 millimetre wide coils were used (pictures 5/6). The roll-seam welded sheets has to be loaded with gravel, which counteract wind suction loads, thus bypassing the need to use cleats. In order to protect the roof cover from wind-action, prior to the application of the gravel, barrels of water were distributed at premeditated intervals on the roof (picture 7).

On site, the coils were cut to the required sheet lengths and the long seam edges were folded vertically to a depth of 28 millimetres. In the folds, approximately 18 millimetres from the surface, the two sheets were joined using special roll seam welding machines. By the subsequent unilateral folding down of the welded seem through 180° minor welding distortions are compensated and a heavy duty lock seam is created - this procedure does not contribute to the water tightness of the roof cover.

Testing

ASSC is the owner of the quality seal for the NIROSTA® Metal Roof System. The seal comes with a 10-year guarantee - to a maximum of DM2,000,000. If between the eleventh and thirtieth year, after installation, damage is caused by the corrosion of material, re-installation is provided free of charge. This warranty extends beyond the existence of the original installing company. Membership of the Association of Quality Seal is obligatory for all installation companies, in the interests of the client.

On completion of the renovation work at Haiger Municipal Hall a water-tightness check was carried out by the TW (Technical Checking Organisation), Nordrheim-Westfalen. This test involved flushing-out the stainless steel roof installation, from below, with helium (pictures 8 - 11). The helium will pass through any unsealed joint due to its low density. For this procedure the TW have developed a U-shaped plexiglas probe, which fits over the joint. In this instance the tests proved satisfactory, despite the numerous complicated claddings of air shafts, water drains and light domes (pictures 12 and 13).

Conclusion

The highly corrosion-resistant stainless steel, combined with roll seam welding, provides a roof of almost unlimited life expectancy. Even entirely flat roofs can become entirely waterproof using this system. The NIROSTA® metal roof system requires no modification to the existing structure. The existing roof construction, with the exception of the gravel, can be preserved in its entirety, thereby avoiding the problem of waste disposal.

Both ASSC and Kentzler believe that the renovated roof of Haiger Municipal Hall is now watertight and will survive the ravages of time.

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General Manager
ASSC GmbH,
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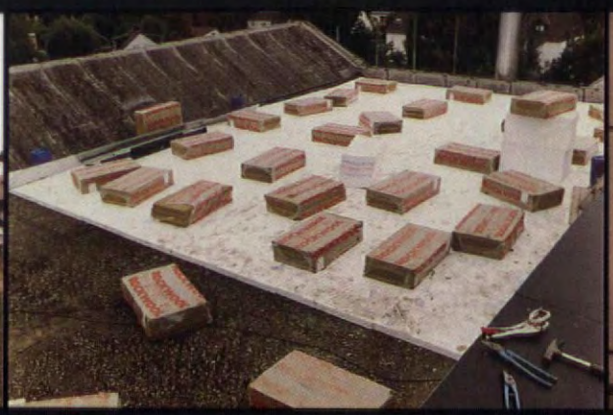
d-57250 Netphen, Germany
Tel: +49 2738 6943 - 0
Fax: +49 2738 6943 - 26

Project data:	
Client	The town of Haiger
Constructor	Kentzler, D - 44145, Dortmund, Germany
Roof surface to be redeveloped	2250 square metres
Sub-structure	Single sheet flat roof with heat insulation

1



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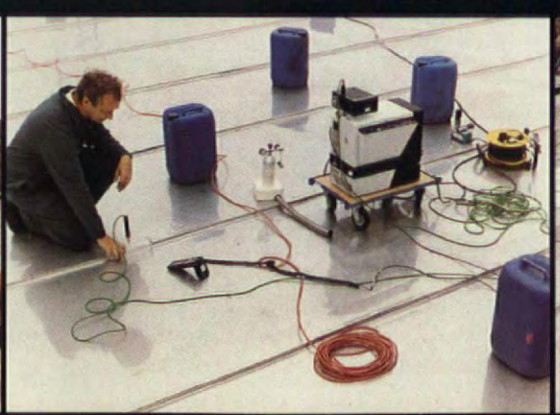


11

12

Opposite page

Haiger Church, built 1408. The town museum can be seen in the foreground

This page

1 *The Municipal Hall, built 1973*

2 *For the swift drainage of water polystyrene sheets were applied to the faulty flat roof. Walk-on rock-wool insulation sheets were overlaid*

3 *Rainwater is quickly drained by circular drainage pipes, 100 mm in diameter*

4 *The parapet walls limit the roof surface,meaning that gutters cannot be installed. Also shown are the stainless steel strips that replaced the gravel*

5 *Partial view of the municipal hall with hoist*

6 *1200mm wide coils supplied to the site. Pictured in the foreground are folded cleats for the cladding of the parapet walls*

7 *The stainless steel sheets are held down by 50 litre water barrels. A layer of gravel will provide storm protection at a later date*

8 *Preparations for the Nordrheim-Westfalischen test*

9 *The stainless steel roof surface flushed from below with helium*

10 *The TUV test equipment with its sniffing probe*

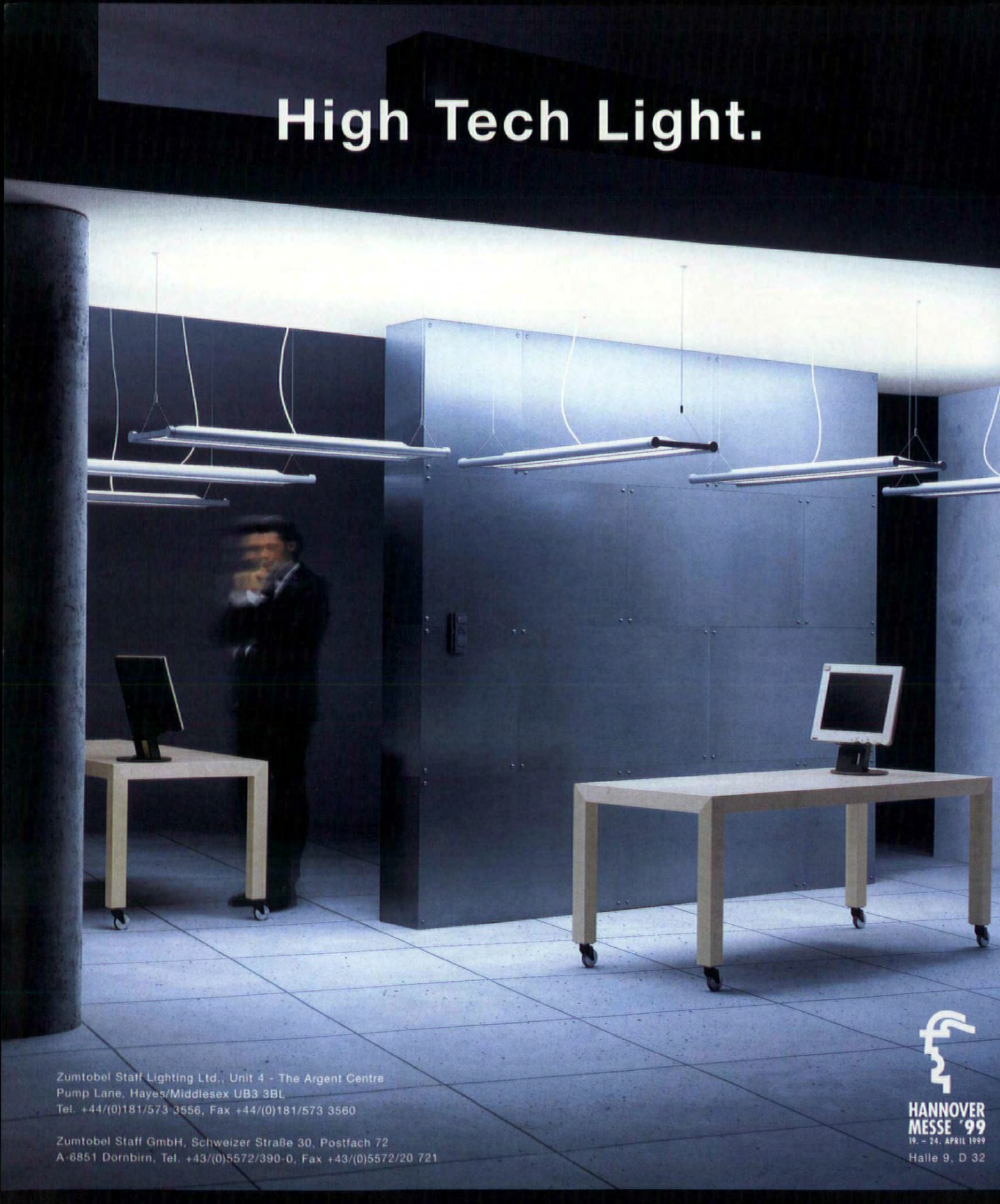
11 *The true tightness of the folds can be established with the aid of special devices*

12 *Special care was necessary to realise the expert cladding of the elements that penetrated the roof*

13 *Light domes, air shafts and water inlets projecting from the existing roof structure*

13

High Tech Light.



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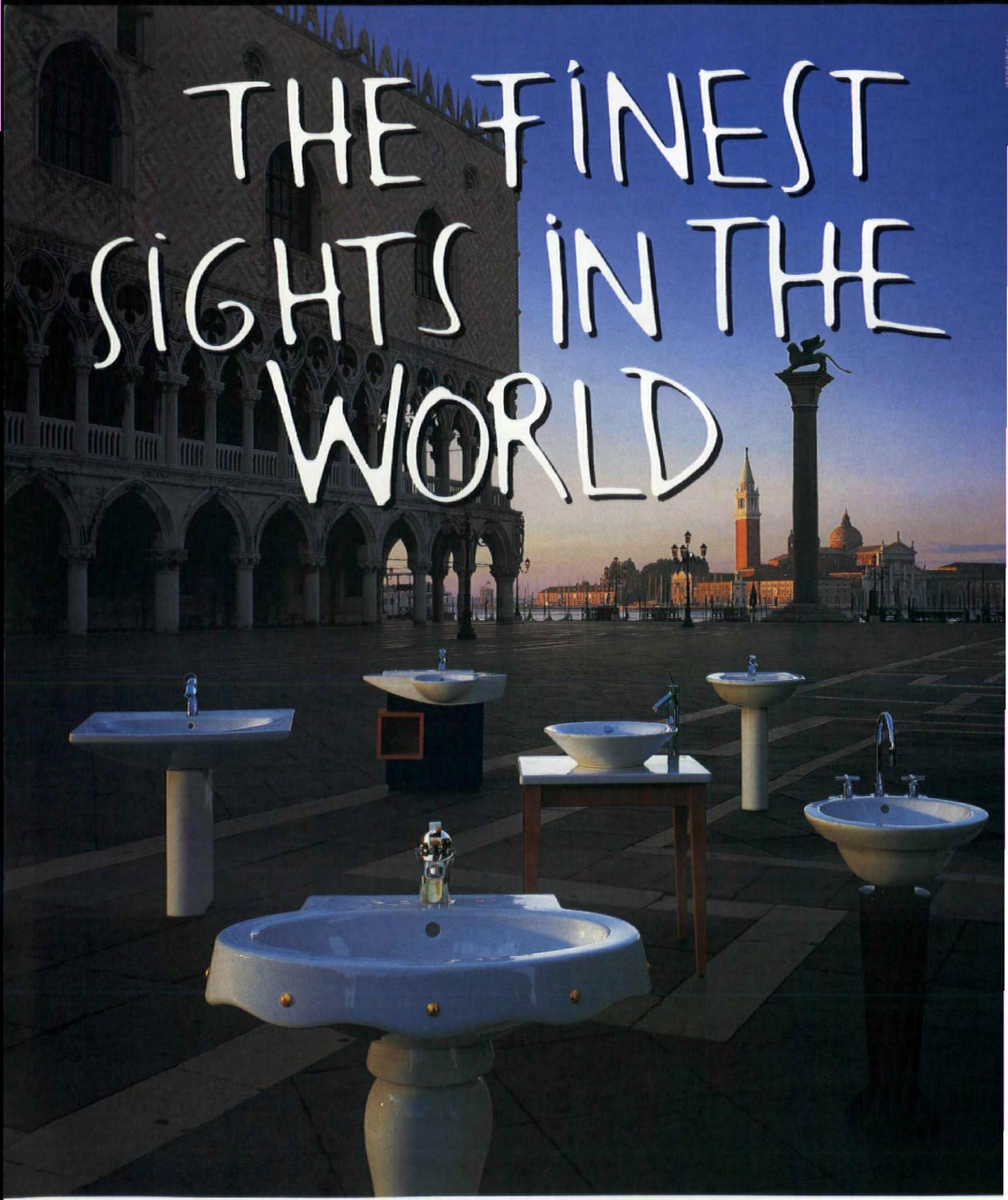

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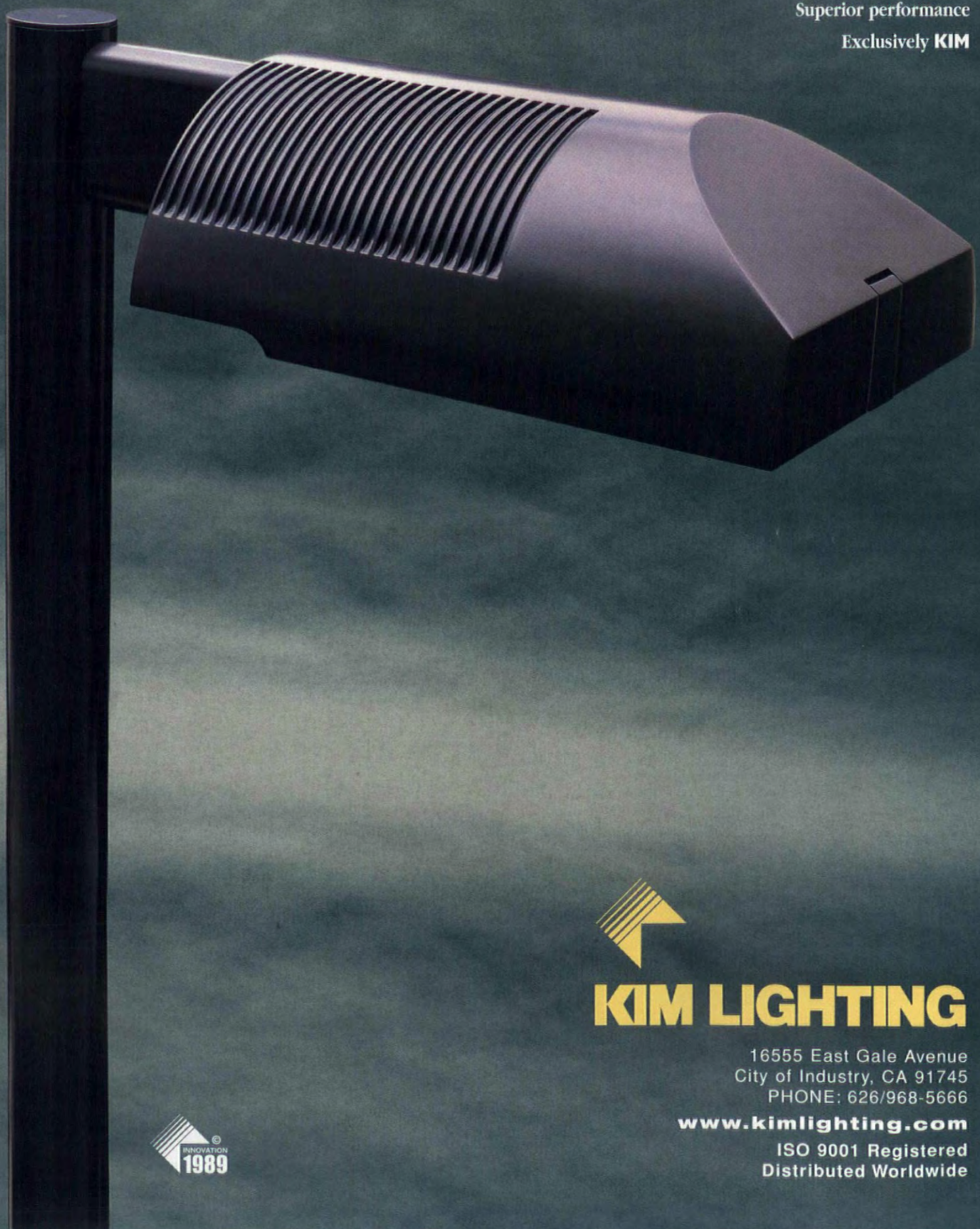

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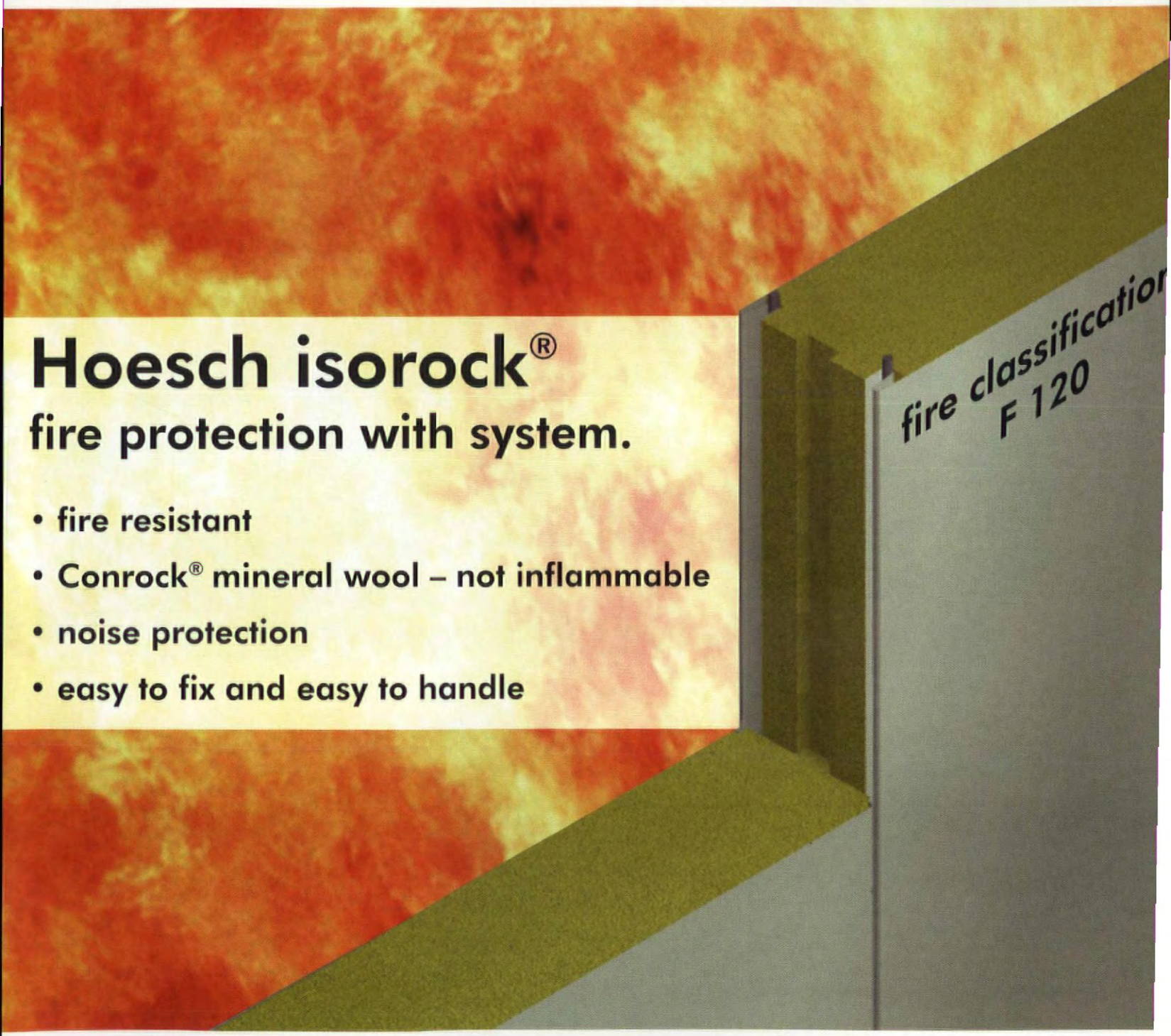

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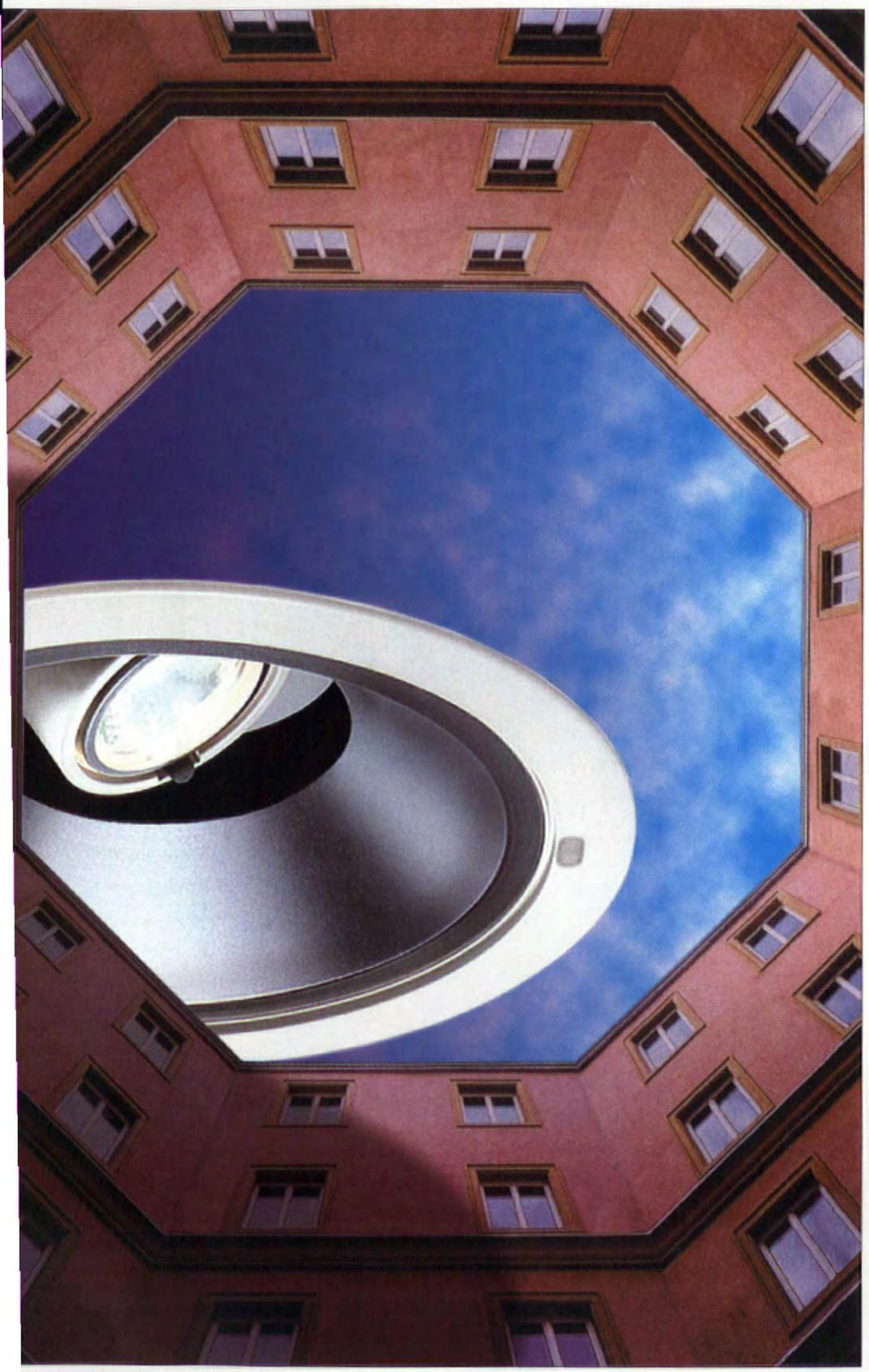

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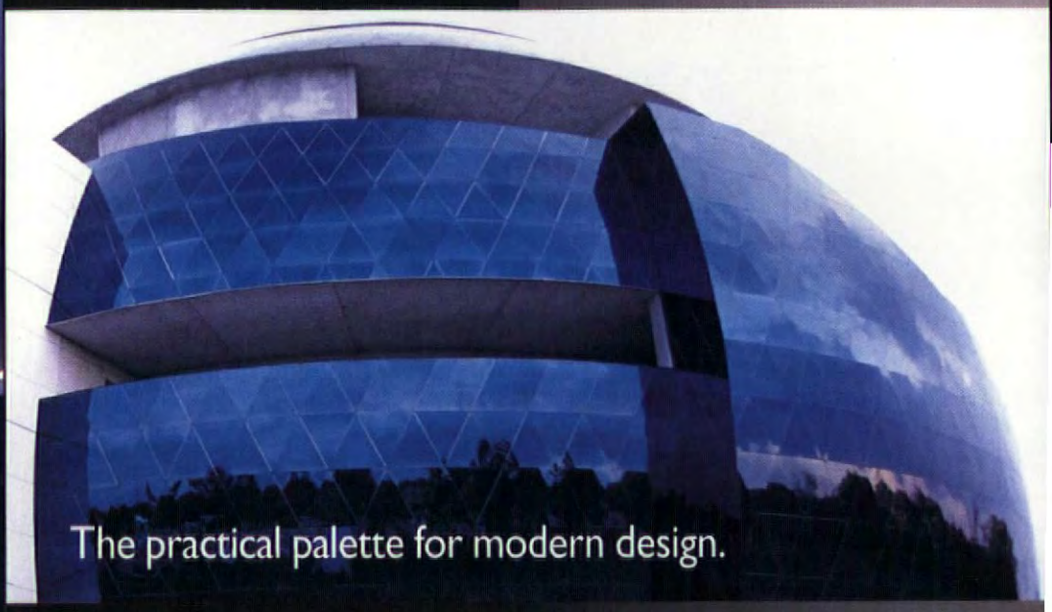

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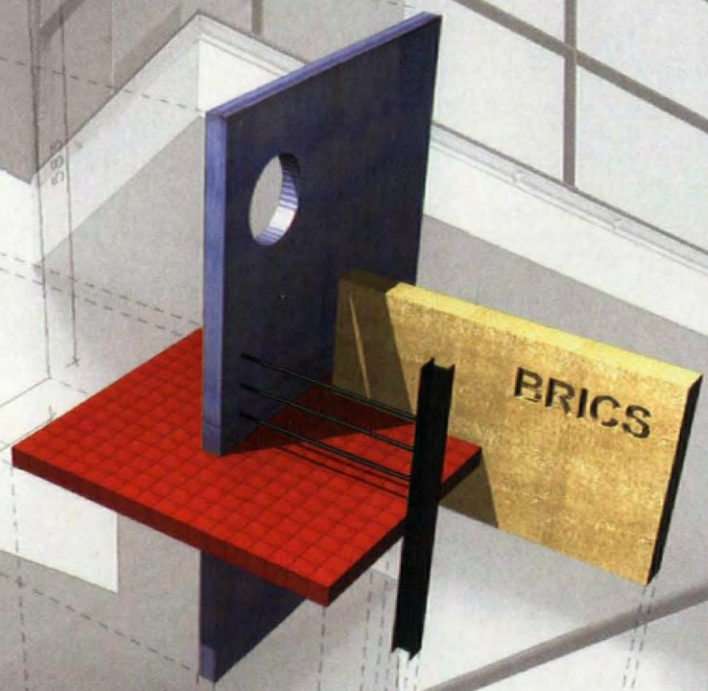

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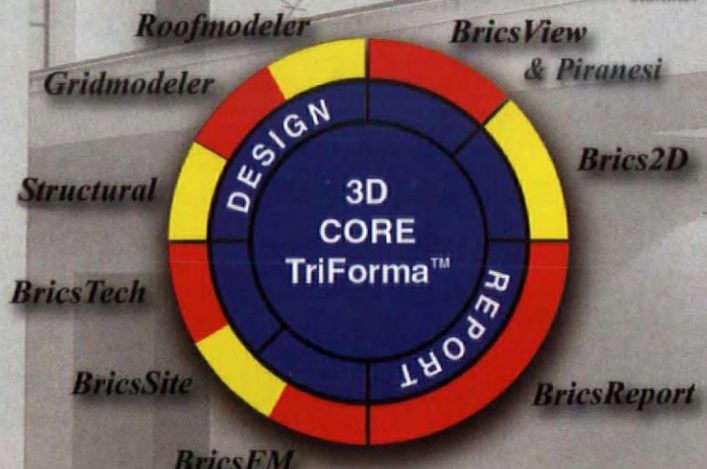

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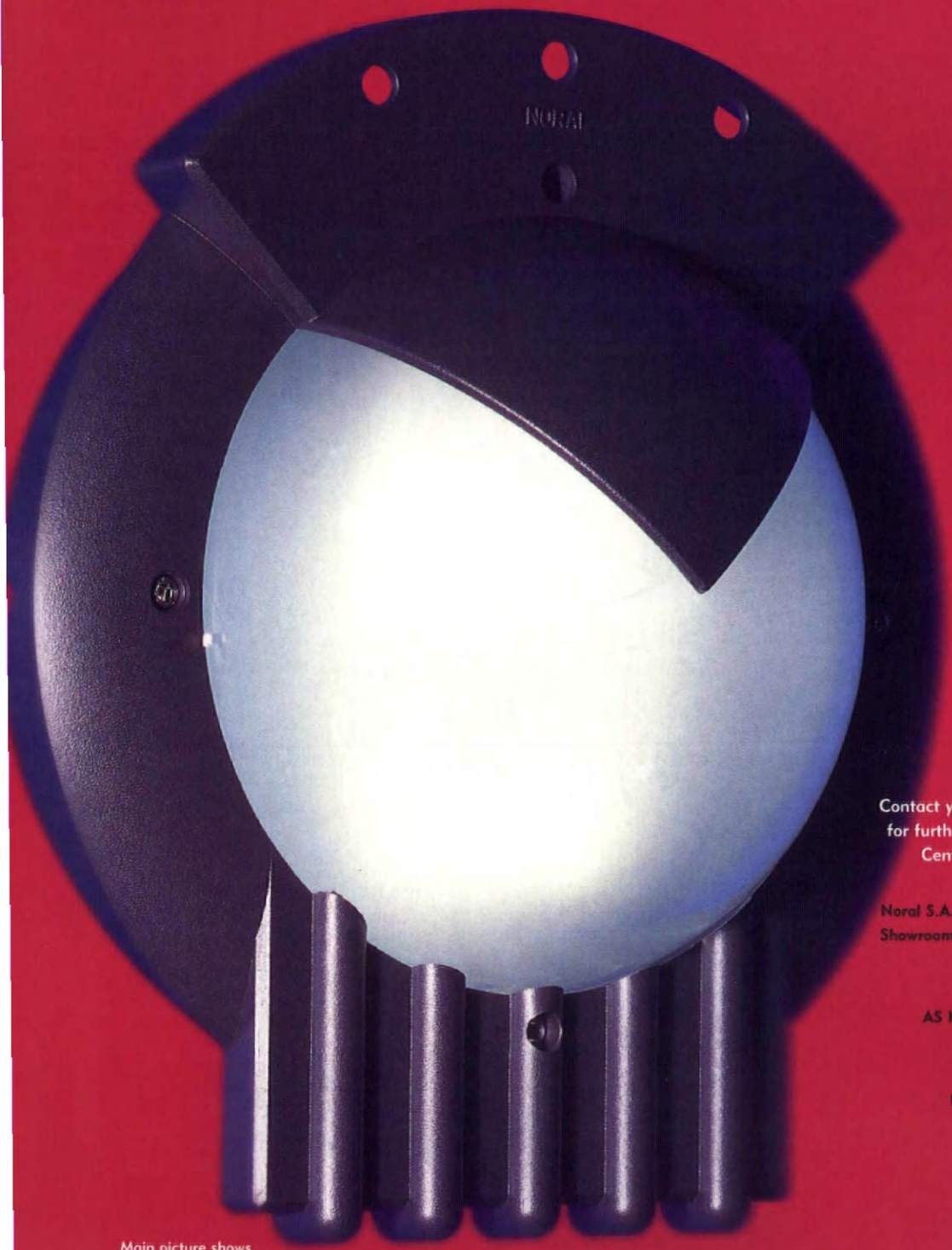

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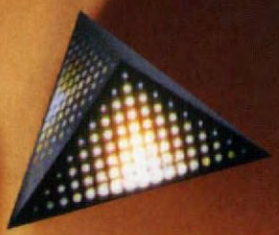

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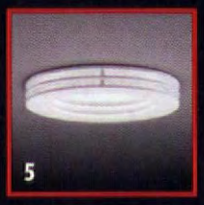
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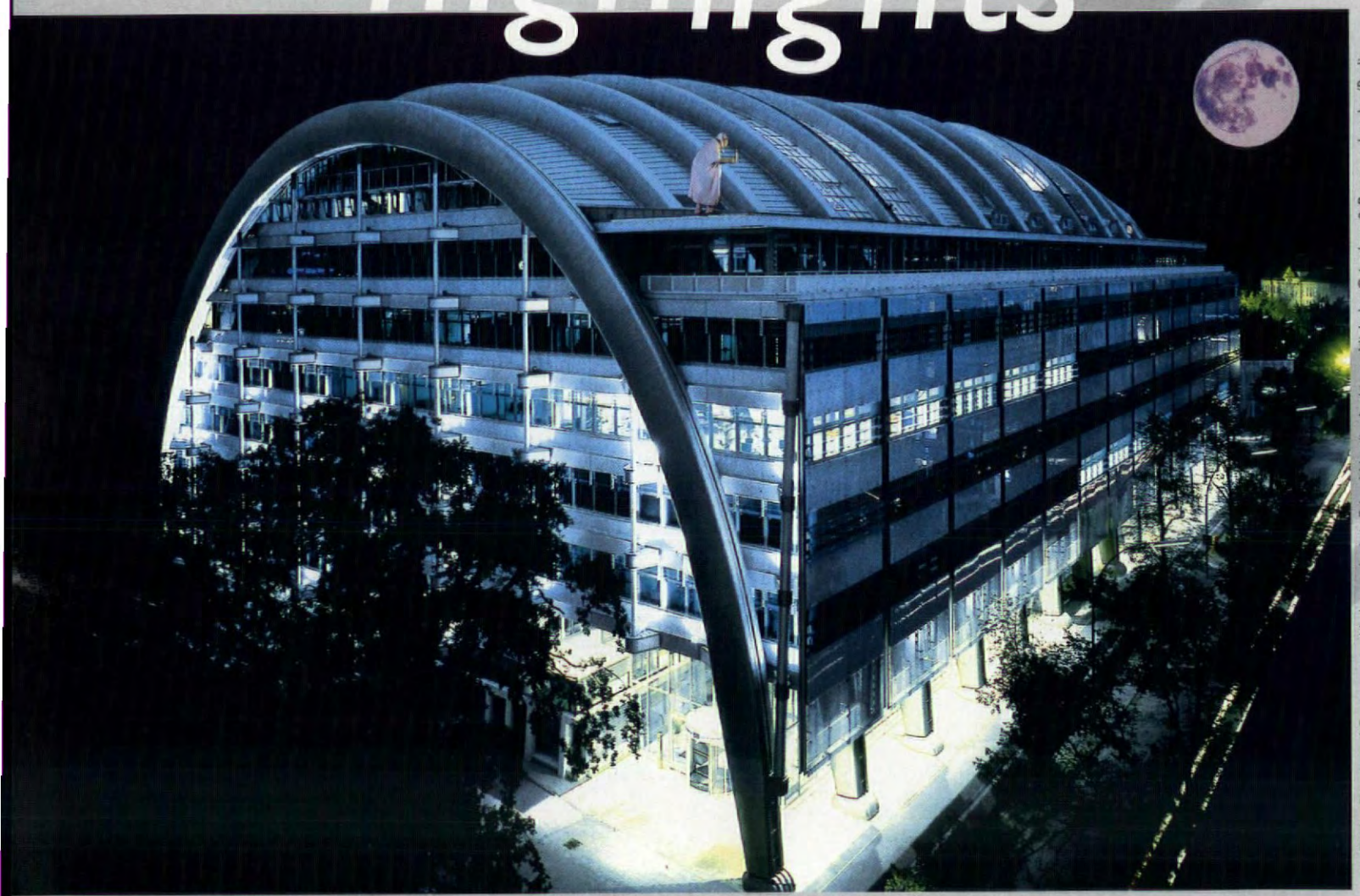
The economy needs a few highlights



Berlin Chamber of Commerce and Industry „Ludwig-Erhard-Haus" · Architect: Nicholas Grimshaw & Partners, London/Berlin

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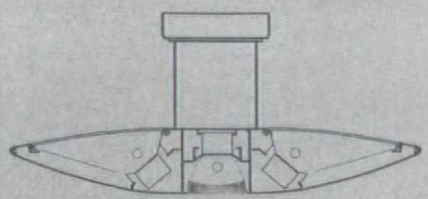

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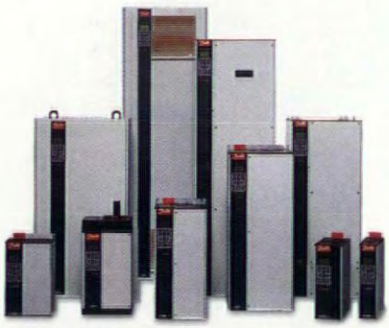

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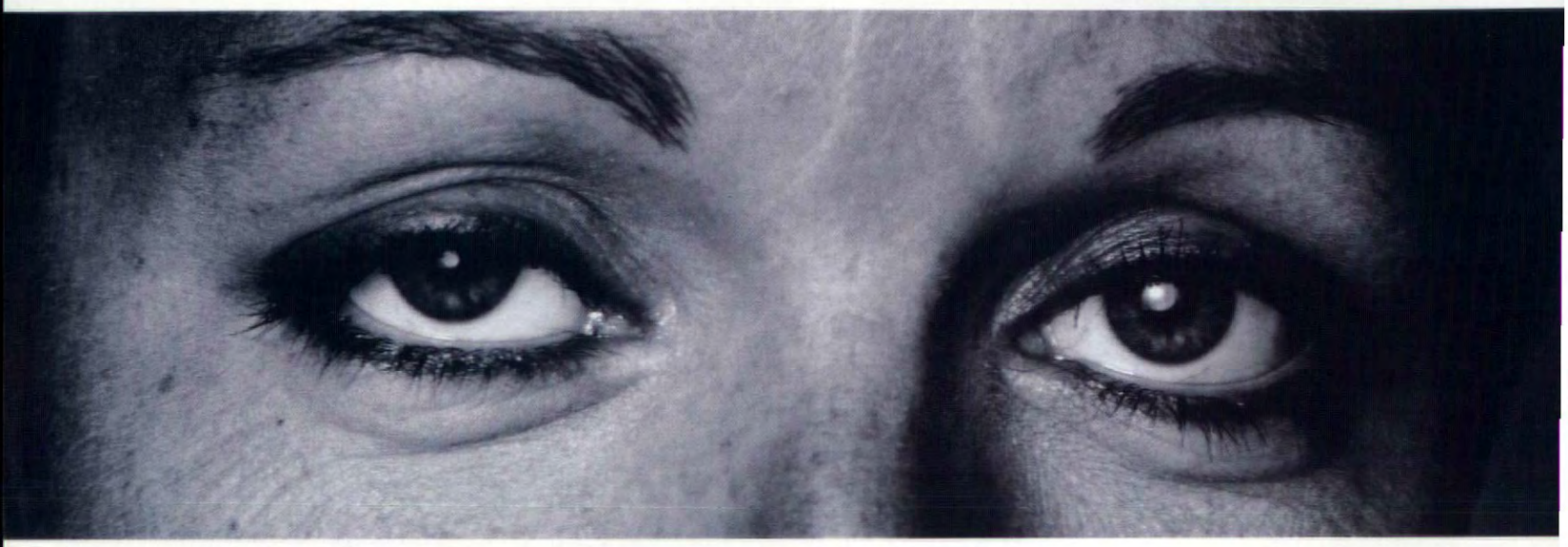

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MULTI-FUNCTIONAL GLASS IN THE BERLIN-MARZAHN HOSPITAL AND EMERGENCY TREATMENT CENTRE

Architects: Karl Schmucker + Partner, Mannheim
Steel Construction/Engineering and design: Sartorius Metallbau GmbH, Bensheim; Josef Gartner & Co., Gundelfingen
Glass Supplier: Glas Mayer GmbH & Co. KG, Ludwigshafen
Functional Glass: low-emissivity THERMOPLUS glass (approx. 8,000 m²) and INFRASTOP Type 51/37 solar-control glass (approx. 4,000 m²) for the facade; THERMOPLUS/ALLSTOP safety-glass combination in the gymnasium; completely colour-coated DELOGCOLOR 68/31 spandrel glass (approx. 3,000 m²); PYRODUR (approx. 100 m²) and PYROSTOP fire-protection glazing in compliance with fire-resistance ratings G 30 and F 90 respectively.
Completion: Fall of 1997.

1

1. Magistral (large view): The glazed "magistral" constitutes the light-flooded "pedestrian thoroughfare" of the Marzahn Hospital. Low-emissivity THERMOPLUS Neutral glass is combined with the Gartner Integrated Facade featuring structural members that carry water for cooling in the summer and heating in the winter.

2. The Marzahn Complex by Night: The striking lighting dramatically highlights the extensive glazing of the new hospital. The various lines of functional glass produced by Pilkington FLACHGLAS AG permit efficient solar control, insulation, fire protection and security

3. The Facades of the Connecting Structures: INFRASTOP Neutral 51/37 solar-control glass was used for the all-glass connecting structures in combination with DELOGCOLOR 68/71 spandrel panels. PYRODUR fire-protection glass to is used for horizontal fire-spread paths.

4. Elevator Shafts: The walls of elevator shafts and fire doors to stairwells and between wards feature PYROSTOP glazing in compliance with fire-resistive ratings F 90 and F 30.

2

3

4

The Berlin-Marzahn Hospital
functional glass for light and atmosphere

The use of solar-control and heat-absorbing glass in non-residential construction permits efficient energy management and has become part of the architect's standard repertoire. In addition, modern healthcare architecture must also take into account the need for maximum life safety and property protection. However, in order to meet all of these requirements in structures featuring large expanses of glass, various functions have to be combined. In the case of the recently completed hospital in Berlin, the architects used functional glass produced by Pilkington FLACHGLAS AG to implement their vision of a light-flooded complex that fulfills all requirements in terms of solar control, safety and fire protection.

The new Berlin healthcare facility was built because of the inadequate medical infrastructure in the city's Marzahn and Hellersdorf districts. The new hospital provides not only basic and specialised medical services but also includes a modern, efficient emergency centre. With a total of 38,082 m² of floor space, the complex includes 13 operating rooms, 468 beds and a rehabilitation centre as well as a helicopter dock on the roof of the emergency centre.

Glass "Magistral" as Entryway

The hospital's glass entryway with its expansive glass-and-steel marquee introduces visitors to many of the most important architectural elements of the complex as they are guided to a long, light-flooded corridor. The examination, treatment and administrative areas go off of this "magistral", which serves as a glass-enclosed "pedestrian thoroughfare" and at the same time separates this part of the complex from the ward buildings on the far side. With its dramatic framing structure of hollow steel members, this dramatic corridor of light strikes visitors as a seemingly endless winter garden. The excellent K value of low-emissivity THERMOPLUS® glazing and the water circulating through the structural steel framework combine to create an extremely efficient buffer zone (Fig. 1). Because of its K value, THERMOPLUS® was also selected for the windows in the examination, treatment and ward areas as well as for the glass-and-steel construction of the hospital's rehabilitation centre.

The filigree steel constructions of the facades of the gymnasium are also completely glazed. The inside surface of the glass is covered with high-strength foil to prevent flying particles of glass from causing injuries in the case of breakage, which is standard practice in the public areas of sports facilities and other buildings such as, for example, schools. A practical combination of low-emissivity THERMOPLUS® glass and ALLSTOP PRIVAT® safety glass was used to achieve optimum results.

Glass for Solar Control and Fire Protection

The two halves of the Marzahn hospital complex were linked by connecting elements featuring generous expanses of glass. The glazing consists of reflective INFRASTOP® 51/37 solar-control glass to protect the adjoining offices, and glass spandrels of DELOGCOLOR® 68/31 in a matching colour to give the outer walls a uniform appearance (Figs. 2 and 3). The use of fire-resistant PYRODUR® and PYROSTOP® glazing for elevator shafts, stairwells and flame-spread paths made it possible for the architects to adhere to their concept of maximum transparency even in those areas where building regulations impose exceptionally stringent requirements in terms of life safety and property protection (Figs. 3 and 4).

Despite the variety of different ways glass was used in the construction of Berlin's new Marzahn Hospital, the structure conveys an impression of "modernness in moderation". One reason for this is the limited height of the various component parts of the complex. The glass shells, facades, bays and roofed areas interact with the warm yellow (back-ventilated) brick walls of the main building itself. Horizontal strips of red brick accent the structure and create a visual link with nearby turn-of-the-century structures. All in all, the open architecture of this hospital retains a very inviting human dimension, which explains why both patients and hospital personnel are so enthusiastic about it.

For further information, please contact:
Pilkington FLACHGLAS AG
Dept. MKO, Haydnstr. 19, 45884
Gelsenkirchen
Germany
Phone: +49 / 209 168-0
Fax: +49 / 209 168-20 53

Scotland the brave

When booking a holiday for 1999 architects should look beyond the pleasures of Renaissance Rome or adrenalin-pumping Los Angeles to an unexpected European destination. Glasgow is hosting a year of architecture and design, the breadth of which demonstrates that it is no longer Edinburgh's poor relation, but a fashionable, classless city that is both cosmopolitan and brave. Nothing of this scale has been attempted before anywhere in the world, and although the acrobatic exhibitionism of the national pavilions in Seville or Lisbon are nowhere to be seen, the Glasgow 1999 team is surpassing all others by serving up an architectural feast that involves the entire city and its residents.

Glasgow's super-hero Charles Rennie Mackintosh is celebrated with the renovation and expansion of his Glasgow Herald building into a national centre of design. Alexander "Greek" Thompson, a lesser-known Glaswegian, is given a long-overdue airing. But exclusivity has no place in this festival and the directors have brought large-scale international architecture to the public in exhibitions such as the stunning "Vertigo" – running until mid-May – which rates the ten projects which will define the 21st century. "Vertigo" is sure to prove a bigger draw than the one-man shows on Mies van der Rohe, Frank Lloyd Wright et al. Its success is due largely to the decision to ignore commonly held distinctions between "high" and "commercial" architecture; not surprising when you see that the Ontario Mills shopping mall in California sees more visitors through its revolving doors per annum than Disneyland. Here the stars share the stage with the huge firms of architects and designers that rarely receive a curator's invitation.

The funding, some US$64 million (£40 million), has rolled in because the legacy promises to be so impressive. Town planners should travel to see the earliest results of the Urban Realm Fund, with its practical solutions for street paving – and the masterplan by UK architect Piers Gough for the infamous Gorbals, where tower blocks are replaced with four-storey tenements. The Homes for the Future development, involving a mixed bag of developers and international architects, will link the derelict East End to the city centre. Phase one will soon be completed and prospects for future phases look good. Book now. Glasgow will never be the same again.

Nicola Turner

In January this year WA *was bought by The Builder Group and is now at The Builder Group, Exchange Tower, 2 Harbour Exchange Square, London E14 9GE, UK. Tel: +44 171 560 4120, fax: +44 171 560 4191. A full UK report will be carried in the June issue.*

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In next month's WORLD**ARCHITECTURE**

Right:
Egypt – The El-Gouna integrated resort, El-Gouna, Egypt, by Rami Al-Dahan & Soheir Farid

Above right:
Specialist Retail – John Greenberg & Associates' Warner Brothers store in Times Square, New York, USA

Far right: Cladding – PTFE membrane curtain wall by Canobbio at the Bologna International Exhibition, Italy

Country Focus: Egypt

As developers pour money into international tourism and the infrastructure to support it, there are more opportunities than ever before for architects working in Egypt. Whilst the country is not throwing open its doors to the world in the manner of the south-east Asian "tigers", foreign architects who are prepared embrace the Islamic approach to globalisation have reaped the rewards. Michael Graves is one such pioneer, and he explains his involvement in the design of the Sheraton Miramar complex, El-Gouna. *World Architecture* also features the region's prominent recent projects by both local and foreign architects, including SOM's Conrad Hotel; Snøhetta's Alexandria Library; Archiplan's Katameya Heights Golf Resort; Rami Al-Dahan & Soheir Farid's El-Gouna Integrated Resort; Abdelhalim Ibrahim's Quasr-Al-Funoun Art Gallery; and Ahmed Reda Abdin's MUST University buildings, whilst Dr Abdelhalim L Abdelhalim provides an overview of architecture and business in Egypt. The bigger picture is of a country happy to take its place in the global village, but more adamant than most that it's architectural heritage should not be diluted.

Sector Analysis: Specialist Retail

In specialist retail, the designer takes an unusually broad responsibility for the long-term commercial success of a building's occupants. A merchandiser will hang its entire identity on its specialist outlets, and the extent to which the stores reflect a given image will play a large part in dictating sales levels on the shop floor. Even the best designer needs a thorough understanding of selling, the psychology of shoppers, and the complexities of marketing in order to succeed. Peter Wislocki's report reveals practices across the world combining the sales strategies of the merchandising industry with distinctive design in order to provide complete retail solutions to their clients. Chile's Zoff architects use a modern take on the classic Roman style in order to reinforce the image of the designer clothes sold in the Corso Italia department store in Santiago, Chile. In Maryland, USA, Bergmeyer Associates Inc and FRCH Design cash in on sporting nostalgia in their lavishly graphic, multi-themed Dick's Clothing and Sporting Goods store, whilst in Singapore, Poole Associates' have recreated the inside of a TV set in their "sellavision" store.

Product Focus: Cladding

The cladding systems available today range from advanced bespoke "intelligent" solutions to versatile "off the peg" products, although the dividing line between the two ends of the market is becoming increasingly blurred as technology becomes simpler and cheaper to implement. *World Architecture*'s review of the latest offerings looks at Rimex Metals' titanium shell for Frank Gehry's advanced EMP building, currently under construction in Seattle, USA; Gartner's environmentally-responsive glass louvre system used on Nicholas Grimshaw's Berlin Stock Exchange in Germany; and Aristech Acrylics' pioneering solid surface exterior cladding installed at their own offices in Maryland, USA.

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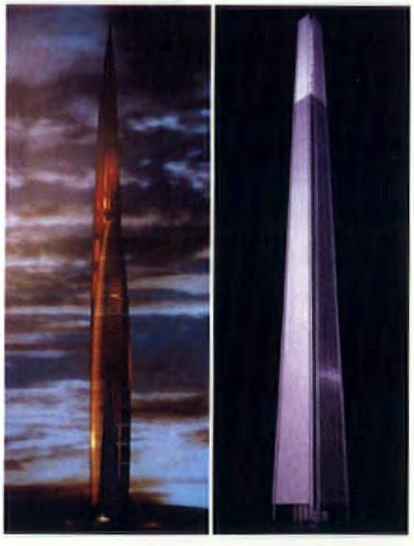
What a whopper

Tall buildings break all the records

This is the Western world's first view of the future tallest building in the world. While the eyes of tall building watchers worldwide have been trained on Shanghai and Melbourne, India has sneaked up on the ropes.

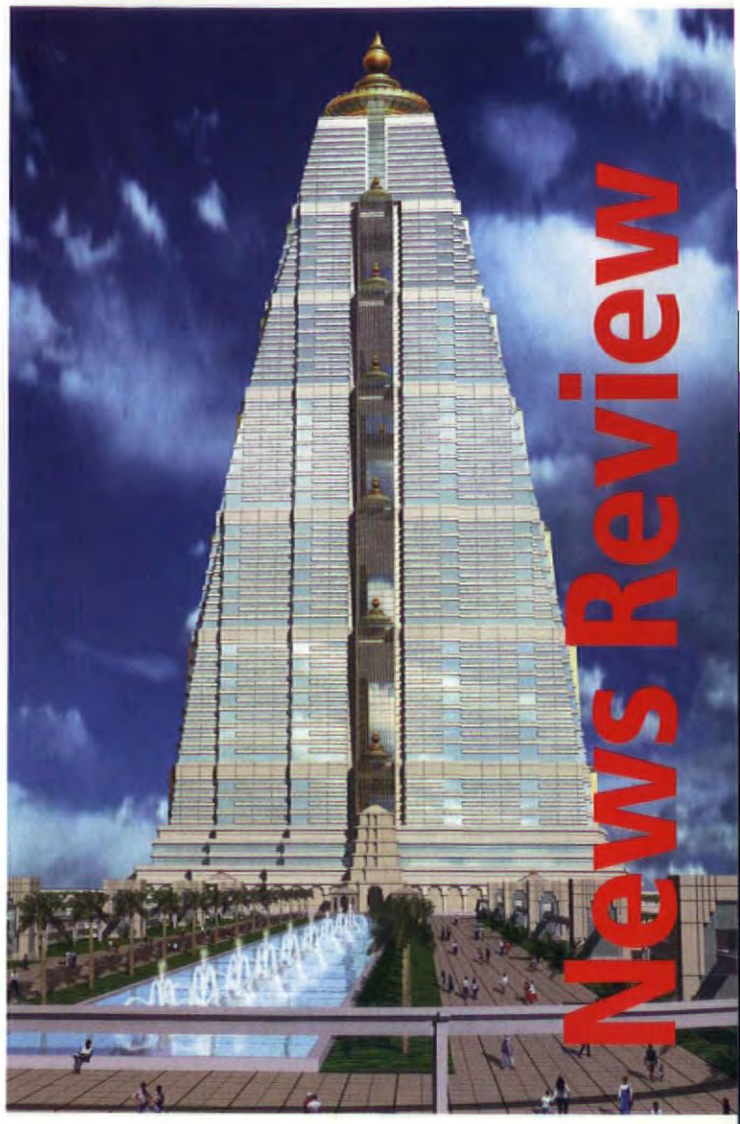
At 677 metres (2,222 feet), the Maharishi Tower of Peace will eclipse the Petronas Towers by an astonishing 228 metres. And before you ask, this is not just talk. The architect is Minoru Yamasaki Associates (MYA), of New York World Trade Center fame. Speaking to *WA*, Henry J Guthard, director of projects management said: "The Tower is not about scale, it's about providing a building in tune with the Vastu [natural law]. Of course we are aware of the world record, but it's really a side issue. There is a requirement for over 2.3 million square metres of space. In accordance with the Vastu, and using figures derived from Vedic formulas [pre-Christian form of measurement], the height had to be 2,222 feet." MYA was chosen primarily for its appreciation of the Maharishi's beliefs, not solely for its track record.



The US$2,500 million pyramid is near the town of Jabalpur, India's geographical centre-point. It will function as the global administrative centre of the Maharishi Mahesh Yogi Vedic University, and will be home to 60,000 "pundits", whose mission is to create global peace and harmony. Maharishi Tower will be funded by the Maharishi Global Development Fund. The cornerstone has already been laid, and major infrastructure work is on-going. Completion is anticipated within seven years.

In Australia, the 560-metre Denton Corker Marshall-designed Grollo Tower has received planning permission. Grollo is part of a US$980 million scheme to reinvigorate the Batman's Hill precinct of Melbourne's Docklands (see page 37).

Finally, a team of Spanish architects has launched a campaign to secure funds for the US$15 billion "Bionic Tower" in Hong Kong. Javier Pioz, María Rosa Cevera and Eloy Celaya of Madrid have designed a 300-storey, 1,128-metre high residential tower based on "bionic" principles – following natural patterns of growth and the movement of fluid in plants. Construction and occupancy is anticipated in phases over 15 years. AM



Three of the tallest buildings the world has ever seen – **Above:** Principal elevation of Minoru Yamasaki Associates' 677-metre Maharishi Tower of Peace, India. **Far left:** Model of the 1,128-metre "Bionic Tower" in Hong Kong by a team of Spanish architects. **Left:** The Denton Corker Marshall-designed Grollo Tower is going ahead at last

AHR and Holford merger a sign of the times

UK

In the first of what looks certain to become an avalanche of mergers, two of the UK's larger multi-disciplinary practices, Abbey Hanson Rowe (AHR) and Holford Associates, will join forces next month.

James Handley of AHR, the 207th largest architect in the world (World Survey WA72), said: "Following the findings of the Egan report ["Rethinking Construction"] we need to restructure ourselves if we are to fit the market."

The Egan report sent shockwaves through UK architecture at the end of last year. Amongst other things, it suggests that architects must increase productivity and embrace client involvement as means of reducing construction costs, in order to survive. It seems certain that the days of small architecture practices are numbered. The new firm will have a combined staff of over 300, making it one of the largest in the country.

For more information on the new era for British architecture see WA70 page 36 "Wiping the slate clean". AM

IN THIS ISSUE

NORTH AMERICA

CANADA

New US$100,000 architecture competition unveiled

The International Foundation for the Canadian Centre for Architecture has announced plans for the world's most expensive architecture competition. The invited event will run every three years. The competition is designed to encourage "innovative contributions to urban design". The first site up for renewal is the tangle of railyards and traffic tunnels between the Hudson River and Eighth Avenue on New York City's West Side. Frank Gehry, Arata Isozaki and Rafael Moneo are on the jury. Projects will be submitted and judged in July.

USA

Ando makes amendments

© Clinton Jones

Revered Japanese architect Tadao Ando has amended his proposal for the new Modern Art Museum of Fort Worth, his first major US commission. The facility has been reduced from 21,000 square metres to 13,900 square metres. The main design change is the removal of one of the four original "floating" galleries. Parking will now be above rather than below ground. The project goes on site in the autumn, with completion in Spring 2002.

Portzamparc's champagne moment

French architect Christian de Portzamparc, working with Hillier New York, has completed work on Moët Hennessy Louis Vuitton's (LVMH) new NYC offices on East 57th Street. The project comprises 10,000 square metres of office space over 24 storeys. LVMH moves into its North American headquarters next month.

Trump gets high

Costas Kondylis designs world's tallest residential tower

USA

Buffeted by his recent triumph with the 16-building Riverside South complex rising on Manhattan's Upper West Side, developer extraordinaire Donald Trump is backing a US$160 million residential tower – Trump World Tower.

The 90-storey structure will house 376 luxury condominiums on a site adjacent to Le Corbusier's UN Building between First and Second Avenues.

The 82,000-square-metre tower will be clad in a US$19 million light-coloured bronze and glass curtain wall system. Architect Costas Kondylis says the decision was inspired by the modernist form and proportions of Mies van der Rohe's Seagram Building which is only blocks away from the site. Trump's instruction to Kondylis was: "Create the best luxury residential units possible – no compromises are allowed". At 275 metres, Trump World Tower has been dubbed "the tallest residential tower" in the world.

Costas Kondylis & Associates has 25 years experience in the US residential market. Brennan Beer Gorman Monk/Interiors is the interior designer. Lehrer McGovern Bovis Inc will carry out construction management services.

The project is already on site. Completion is anticipated for the second quarter of 2000. BB

In the shadow of a landmark – Trump World Tower will be only blocks away from the Seagram Building in Manhattan

Swiss roles of honour in Texas

▼▲ Rick Hall

Above: Jacques Herzog pictured in front of the site of the new Jack S Blanton Museum of Art
Right: The site as it is today

USA

Swiss duo, Herzog & de Meuron Architekten AG, have won their second major US commission – after the Dominus Winery, Napa Valley, California (*WA*68 pp76-77). In collaboration with Booziotis & Company Architects of Dallas, Texas, the firm has been awarded the commission to design the Jack S Blanton Museum of Art's new building on the University of Texas campus in Austin. The new 9,300-square-metre Blanton Museum is scheduled to open in 2002. AM

Architects speak out

USA

The eight international architects shortlisted by the Forum for Contemporary Art (FCA) to design its new 1,850-square-metre museum, will speak about their proposals at Washington University School of Architecture in St Louis over the coming weeks. Swiss double-act Gigon + Guyer speak on the 18th of this month, followed by Carlos Ferrater of Spain, Elva Rubio and Philip Durham of St Louis and Oregon-based Brad Cloepfil during April. The winning architect will be chosen in June. For details e-mail: forum@inlink.com AM

NORTH AMERICA

More accolades for Gehry

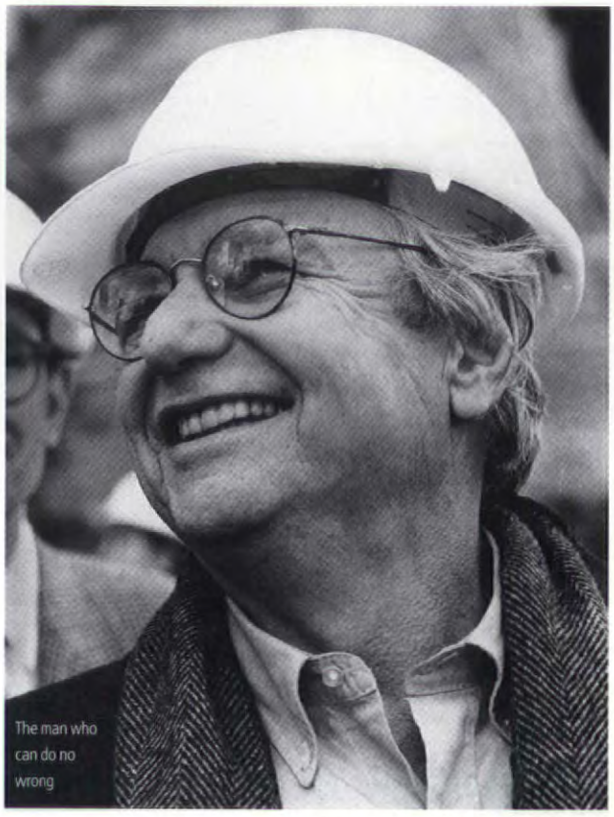
USA

Frank Gehry, the internationally acclaimed California-based architect, was awarded the American Institute of Architects' 1999 Gold Medal at last month's Accent on Architecture awards ceremony in Washington DC.

The Gold Medal recognises an individual whose body of work has had a major influence on the theory and practice of architecture. Few could question Gehry's output over the last two years.

Gehry is the Institute's 57th Gold Medalist. He joins the ranks of Thomas Jefferson, Frank Lloyd Wright, Louis Sullivan, Le Corbusier, Louis Kahn, I M Pei, Cesar Pelli and Sir Norman Foster.

At the same ceremony, Perkins & Will of Chicago, picked up the AIA's 1999 Architecture Firm Award. BB



The man who can do no wrong

Guggenheim-Gehry reprise in Manhattan?

USA

The Guggenheim Museum and the City of New York are studying a proposal to build a new branch of the museum on a city pier west of Soho, to be designed by Frank Gehry. Both Gehry and Guggenheim Director Thomas Krens declined to comment to *WA*, but a model of the proposed building has reportedly been circulating among the parties involved, as well as an economic feasibility study.

The study emphasises the potential added revenues the project could bring to the city, using the success of Gehry's Guggenheim Museum in Bilbao, Spain, opened last year, as a model. If built, the new museum would be situated in a public park to be created among the abandoned docks of the Hudson riverfront, at a roughly estimated cost of US$400 million. DC

Contracts

USA

Frank Costantino

- The king of tall building **Cesar Pelli & Associates**, is designing South Station Air Rights Development, an 84,000-square-metre, 50-storey office tower in Boston. The tower will be the second-tallest in the city. It is to be located on top of **Shepley Rutan Coolidge's** South Station Headhouse (1899). Assuming Boston Redevelopment Authority and the Commonwealth of Massachusetts grant planning consent, the tower will be complete by 2002.

- After reviewing submissions by 23 firms, the City of San Jose, California selected **Richard Meier & Partners** to design its new US$230 million City Hall. The 50,000-square-metre building will be the first of a series of new civic structures planned for the city centre. A committee chose Meier's scheme from a shortlist which included such luminaries as **Gwathmey Siegel**, **Rafael Viñoly**, **Pei Cobb Freed & Partners** and **Skidmore Owings & Merrill**.

- General Motors has awarded the US$880 million contract for the design of its new Warren Technical Center campus in south-east Michigan to a team of **Kaplan McLaughlin Diaz Architects** and **Ove Arup & Partners**. **Hargreaves Associates Landscape Architects** will undertake site design responsibilities, **Gensler** will provide interior design and **Building Conservation Associates** will contribute historic preservation expertise. The contract includes the preservation of **Eero Saarinen's** original buildings and masterplan, which set the standard for post-war corporate campus design.

- **Weihe Design Group** (WDG) of Washington DC has been selected to provide architectural services for Rockville Metro Plaza in Rockville, Maryland. The 58,000-square-metre office and retail development will go on site by the middle of the year.

- Maitland, Florida-based Farmer **Baker Barrios Architects Inc** has completed schematics and design development on the US$32 million, 24-storey, 400-room Sheraton Fresno Convention Hotel in Fresno, California. The hotel is planned to go on top of the existing convention centre.

- **Robert A M Stern** is taking his trademark "historicist" style to Manhattan. The architect's design for Chatham, a US$100 million, 34-storey condominium building, was commissioned by developer **Related Companies**. The project is slated for completion in 2000. Clad in brick and limestone with a base of two-storey arches replete with keystones, French balconies, bay windows and topped by a lantern, the building recalls Manhattan's apartment buildings of the 1920s, before modernism became the requisite style.

- Kansas City Council has approved a proposal for the US$75 million contract to overhaul Kansas City International Airport's three terminals. With the support of the Kansas City Aviation Department, local firm **HNTB Corporation** will lead a design team of seven firms: **CDFM² Architecture Inc**, **Wellner Architects**, **FSC Inc**, **Smith and Boucher Inc**, **Group One Architects Inc**, **DuBois Consultants Inc** and **KTI**.

- Construction began last month on a US$326 million masterplan for the redevelopment of Silver Spring's 10.5-hectare downtown district. **RTKL**'s Baltimore office produced the plan, which dedicates an area of 2.7-hectares to public space parks and plazas in the Maryland town. The project's development team includes **Foulger-Pratt Development Inc** of Rockville, Maryland and **The Peterson Companies** of Fairfax, Virginia.

ASIA

Have airport will develop

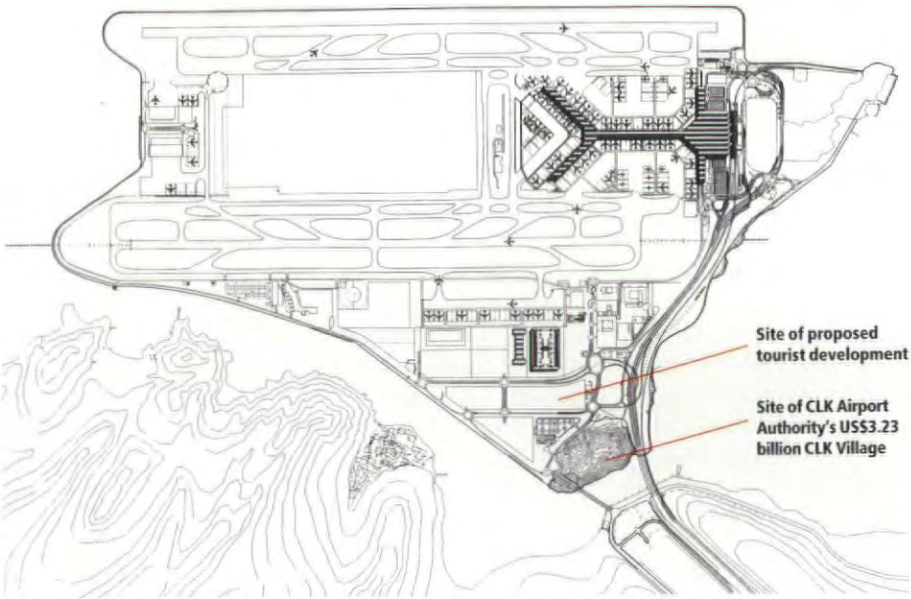
Chek Lap Kok to become tourist destination

PRC

The Chek Lap Kok Airport Authority has released 100 hectares of the airport site for private-sector tourist and recreational developments. The intention is to turn the Foster and Partners-designed airport site into a user-friendly tourist destination in its own right.

The Airport Authority's general manager for property development, Allan Yeung, refutes claims that the venture is a departure from the Authority's original property plans.

The 100 hectares will be used to promote tourist activities such as dolphin-watching cruises, go-cart racing and golf. The venture will not affect construction of the Authority's US$3.23 billion airport village – which will include its head office. None of the 100 hectares reserved for the village was included in this latest plan to turn Chek Lap Kok into a more tourist-friendly location, Yeung said. "We will proceed with commercial development when the market regains its strength," he continued. "Right now, we are keeping an open mind." EP



More than just the world's biggest building – Chek Lap Kok site plan

Contracts

JAPAN

- **Nikken Sekkei** (the world's largest architect – see *WA* World Survey, *WA*72) has been awarded the design of a seismic testing facility that will include the biggest shaking table for seismic resistance studies in the world. Commissioned by the governmental **National Research Institute for Earth Science and Disaster Prevention**, the test platform will be large enough to shake a 1,200 tonne, four-storey reinforced concrete building to destruction. It will be built on a five-hectare site in Miki, Hyogo Prefecture, near the centre of the destruction caused by the 1995 Hanshin Earthquake. The project is to be completed in 2005 to commemorate the tenth anniversary of the earthquake, which caused over 5,000 deaths.

PRC

- **NEB Design Group**, a consortium composed of **Ellerbe Becket** (US design architect), **Nixon & Nixon Inc** (US project architect), and the **Architectural Design and Research Institute of South China University of Technology** (architect of record), has been selected to construct an 80,000-seat Olympic stadium in the south-Chinese city of Guangzhou. The US$119 million Guangdong Olympic Stadium will be the centrepiece of a 93,000-square-metre mixed-use complex to include retail space, a hotel and an athletics club. It will be complete in time for the ninth National Games of the People's Republic of China in Autumn 2001. Eight firms were invited to compete.

Disney all at sea

JAPAN

Walt Disney Co and Oriental Land Co, owner of Tokyo Disneyland, began construction of the US$2.9 billion DisneySea theme park at the end of last year. Company officials predict the park, which is being built on 71 hectares of reclaimed shoreline overlooking Tokyo Bay, adjacent to Tokyo Disneyland, will draw more than ten million visitors a year, when it opens in Autumn 2001. The complex has been designed by Walt Disney Imagineering.

Tokyo Disneyland has proved to be the most lucrative of all Disney parks world-wide. The new park will consist of seven themed areas. One, dubbed "Mysterious Island", is based on the stories of Jules Verne, while the "Mermaid Lagoon" was inspired by the animated movie, *The Little Mermaid*. An "American Waterfront" section will include reproductions of the New York City waterfront at the beginning of the twentieth century. DN

© Disney Enterprises Inc

Obayashi leads Marunouchi overhaul

JAPAN

A joint venture led by general contractor Obayashi Corporation, Osaka, has won the negotiated tender to construct a 37-storey skyscraper that will replace the Marunouchi Building in the Tokyo district of the same name.

The replacement of the aged Marunouchi Building is the first step in the redevelopment of the entire Marunouchi district, one of the most prestigious commercial areas in Tokyo. The joint venture team includes Tokyo-based Taisei Corp and several smaller contractors.

The final members of the consortium and the share of the total contract held by each will be decided at a later date. The mixed office and commercial-use building will have a total floor space of 157,000 square metres.

Construction will begin in the spring, with completion slated for summer 2002. The total cost is estimated at US$540 million. DN

ASIA

Technically speaking

Construction industry cashes in on rush for Indian "techparks"

INDIA

Architects, developers, builders and State-run construction organisations are surfing on the wave of a massive boom in the information technology industry.

At least 15 mammoth technology parks – infrastructure showpieces with a combined area of over 750,000 square metres – are in various stages of construction in eight Indian cities. All projects offer captive power generation, high-speed voice and data transfer links, and satellite links.

More than half of the projects are in the southern city of Bangalore, which is referred to as India's "Silicon Valley". Neighbouring Andhra Pradesh's Hyderabad (known as "Cyberabad") inaugurated its first techpark last November. Three such projects are under construction in the southern city of Madras, while Trivandrum, already has a working facility.

The Maharashtra Industrial Development Corporation is developing "Millennium Business Park", the largest techpark in the country, in Navi Mumbai. Facilities will be spread over 185,000 square metres, and will house 1,367 modules of between 50 and 340 square metres. Fifty percent of the units have already been pre-let.

"Despite all the negative publicity about Bangalore's lack of infrastructure, it is still the most preferred city in India for major investment by multinational infotech companies," said A B Fenn, executive marketing manager of the K Raheja Group of builders. The Raheja Group is building a 56,000-square-metre park in Bangalore and two projects offering 54,000 square metres in Madras. All are expected to be functional within the next three years.

The Brigade Group, Bangalore has seven "techpark" projects in the pipeline in its home city, which will have a total area of 46,000 square metres when complete, in the next three to four years. "By the turn of the century, we will have 100 companies functioning from our facilities, up from the present 30," said K G Satheesh Kumar, chief executive officer of Trivandrum's State-run Technopark.

Data from the State-run Software Technology Parks of India (STPI) indicates that 39 approvals for investment had been granted between April and November last year for software companies to set up shop in Bangalore. It also said Hyderabad had approved 35 applications by software firms during the July-September quarter. EP

It could only happen here

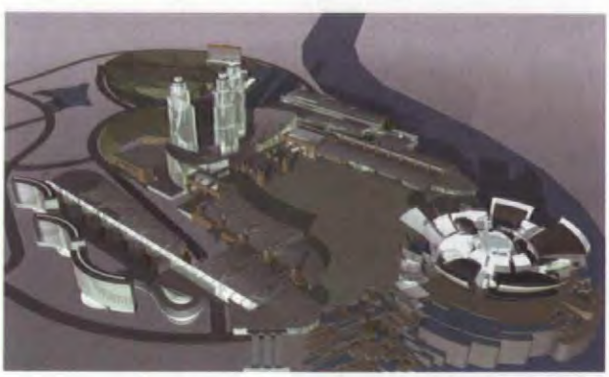
International teams to design US$4 billion city

PRC

Three consortiums from Australia, Germany and China have won equal first prize in a limited competition to design Jiangbei New Town in Chongqing City, located in Sichuan Province, Central China. The US$4 billion project will contain the new administration, cultural, finance and trade complex for Chongqing City. The development has a projected population of 35 million.

The three winners are Asian Pacific Design Group (Australia), Albert Speer und Partners (Germany) and The Shanghai Institute (PRC).

The Chinese authorities are arranging a charrette with the three consortiums to finalise the masterplan, which will determine the final development plan and how the building designs will proceed.



Proposed city centre for Jiangbei New Town. The huge "Camellia Flower" building (right) will be the cultural centre containing four theatres, an art gallery and restaurants all overlooking the Yangtze River

APDG (Chongqing) Pty Ltd, which is comprised of SJPH Design Partnership, Noel Robinson Architects, Ove Arup and Partners, landscape architect Belt Collins, Rider Hunt and Asian Estate Management, has submitted detailed plans for the entire 2.7-square-kilometre city centre. The site will include a science and technology centre, finance and trade centre, cultural centre, exhibition centre and the Museum of the Three Gorges. The principal feature is the huge cultural centre, whose "petals" represent the Camellia Japonica flower, a symbol of the Chongqing region.

Phased construction will take place over ten years. The estimated final population of Jiangbei New Town is 50 million.

The Chinese government invited six consortiums to compete. Aside from the winners, there were consortiums from the US, France and China. AM

In brief

JAPAN

Shimonoseki puts up a front

The city of Shimonoseki has launched a massive waterfront redevelopment programme, incorporating tourist and commercial facilities. The plan for the 17.5-hectare area was overseen by the local government. It calls for an aquarium, a public plaza, a passenger ship terminal and hotel. The four-storey, 11,160-square-metre aquarium designed by Nihon Sekkei is on site. Completion of the complex is due in spring 2001.

PRC

Hotel in "more than a boring box" shock

There's something unusual about the latest hotel to open in Suzhou, west of Shanghai. Designed by Palmer & Turner of Hong Kong, the low-rise, 328-room Sheraton is responsive to the site, which is adjacent to three ancient landmarks, and came up with a traditional design that makes full use of local materials. Inexpensive local labour meant that full attention could be paid to the most minor design details. The US$47,000 hotel is open and operational.

HK warehouses revamped

Three warehouses near Hunghom railway terminus in Kowloon, Hong Kong, are to be converted into hotel/commercial developments in a US$116.4 million scheme by Hing Kong Holdings and its shareholder, China Travel Service Holdings Hong Kong. The plan to develop one of the sites has received preliminary approval from the Government. The site has a combined area of 6,500 square metres.

EUROPE

New taxes may create work for architects

FRANCE

French government proposals to raise money for infrastructure improvements in the Paris region (Ile-de-France) by imposing additional taxes on retail outlets and warehouses are provoking protests from business lobbies and trade federations.

Yet, if it goes ahead, the move could lead to new commissions for architects, urban planning specialists and engineers, particularly in the priority infrastructure sectors identified by the Ile-de-France regional council. These include subsidised social housing, improved transport facilities, and "green" schemes, such as reducing air pollution, getting a grip on waste management and establishing cycle track networks.

"As currently drafted, the tax will apply to retail premises of 300 square metres or more, and to warehouses of 500 square metres or more," comments Ronald Austin, property partner with Clifford Chance, the international law firm in Paris. Rates will range from around US$3 to US$11 per square metre, according to the size and type of property concerned.

"In some cases, the tax could add as much as ten percent to rents," protests Raoul Haucqueville, President of the Conseil National des Centres Commerciaux (CNCC), France's shopping centres federation. "Moreover, many small shops in large out-of-town units will be subject to the tax, whereas similar-size premises in town centres will often be exempt," he adds.

The tax proposal is still being discussed by the French parliament. If adopted, it is expected to raise some US$250 million by the time it is fully enforced in 2004. MR

It even has a nickname

Constitutional headache as "egg" dominates Bundespräsidialamt

GERMANY

The Bundespräsidialamt in Berlin, the administrative headquarters of the German president, is posing a constitutional headache.

Whilst the Berlin Wall was still standing, President Roman Herzog's department was one of the few to have offices in both Berlin and Bonn. It was also one of the first to relocate fully from Bonn to Berlin, where it is housed in the historical Schloss Bellevue, overlooking the Tiergarten.

However, to accommodate staff from both offices a new extension was commissioned. Unfortunately, the scale and form of Martin Gruber and Helmut Kleine-Kraenburg's 82 metre by 42 metre addition are such that the venerable original is set to be completely overshadowed.

Stefan Müller

The curvaceous, 15-metre high, US$55 million extension has even earned itself a nickname – the "egg". It is clad in natural black stone and, in the style of modern parliamentary buildings, is heavily glazed – transparency having become synonymous with democratic values in the late 1990s. SE

Eyecon Design Consultants

Dublin's monument to the millennium

REPUBLIC OF IRELAND

A soaring stainless steel spire, rising to a height of 120 metres from a base of just three metres, has been chosen as a new symbol of Dublin for the third millennium. It is to be erected in the city's main thoroughfare, O'Connell Street.

The US$4.4 million structure, tapering to a light at its pinnacle, was designed by London-based architect Ian Ritchie, and selected from the three shortlisted finalists in an international design competition that attracted 205 entries.

The spire is to be erected before the end of this year on the pivotal site occupied by Nelson Pillar, which was blown up by the IRA in 1966 on the 50th anniversary of the Easter Rising in 1916 – the rebellion that led ultimately to Irish independence.

Joan O'Connor, former president of the Royal Institute of the Architects of Ireland, who chaired the panel of adjudicators, described it as "a wonderful wand ... a beautiful illuminated spire" that will "sway very gently in the wind".

The stainless steel "needle" will have a tolerance of 2.5 metres at its apex, which consists of pure optical glass above a perforated stainless steel section some 15 metres high, allowing the light to shine through as a beacon for the city.

The winning architect said he was both proud and humbled at being chosen to build this "high and elegant structure to symbolise growth, release, thrust, and Ireland's future". FMCD

EUROPE

INTREPID INVESTMENT
Major projects announced in Russia's largest cities

MOSCOW

Moscow architect Mosproekt is in design development on a 29,000-square-metre luxury office and residential project on a 1.6-hectare site in central Moscow. The complex will include residential and office areas, a sports centre and swimming pool. The client is the Moscow Investors Association, which consists of the leading Moscow financial companies and institutions, architects and designers. At the moment it is not clear whether there is still demand at the top end of the Moscow property market. The Association intends to release further details once the dust settles on the Russian economic crisis

ST PETERSBURG

SPAG, a consortium of Russian and German investors, has released plans for the 50,000-square-metre Snamenskaya shopping and business centre, at the corner of Nevsky Prospect and Vosstania Square. Western-standard retail and office space will be built behind the listed 18th century facade. "The success of the synthesis between old Russian architecture and modern highly technical construction is the main priority," commented a representative of Atlantic/Oncor Retail Europe, leasing agent on the project. The US$87 million development will be the first to provide high quality office and retail space in Russia's second city. Construction is due to begin in the spring, once the site has been prepared.

London Assembly descends into farce

UK

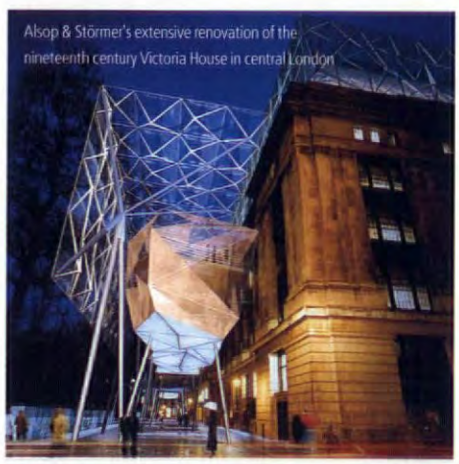
The battle to design arguably *the* British commission of the year has been a bloody and acrimonious affair. It seems clear that one of the two shortlisted firms, Alsop & Störmer and Foster and Partners, will design the new seat of the Mayor of London, but the slapstick handling of the competition to date has done little to inspire confidence in anyone associated with it.

The problems started last summer when the British Government decided to run a developer-led, rather than architectural competition – in line with the post-*Rethinking Construction* climate pervading British architecture (see News Review front page "AHR and Holford merger a sign of the times"). Emerging architects felt ostracised by the competition process, recognising that developers need "name" architects on their team in order to attract funds. But the complaints were ignored and things went ahead as planned.

By January the competition had been reduced to two proposals, involving Foster and Partners and Alsop & Störmer. Both offered striking and very different solutions. Foster's is located on the bank of the River Thames, overlooking Tower Bridge; Alsop's is a dramatic reinterpretation of Victoria House, a disused nineteenth-century behemoth in the city centre.

But at the end of January, Sir Jocelyn Stevens, chairman of English Heritage – an allegedly impartial, government-funded body – announced his unreserved support for Foster's scheme. Blackfriars Investments, the other competing developer, withdrew Victoria House, "following the untimely and unjust intervention by Sir Jocelyn, and other circumstances surrounding the decision making process". Five days later Blackfriars re-entered the race, citing the need for London to have a choice for such a crucial building as the reason.

At the time of going to press Nick Raynsford, minister for London, had yet to announce the winner. AM



Alsop & Störmer's extensive renovation of the nineteenth century Victoria House in central London

▼ Hayes Davidson

Foster's striking proposal is located on the banks of the Thames (right)

Architectural no go zone

Belgian government referred to European Court of Justice

BELGIUM

The Belgian government's refusal to comply with European Commission legislation on the mutual recognition of architectural qualifications has led to the case being referred to the European Court of Justice (ECoJ) – see *WA*71 pp34-35.

ECoJ judges have the power to force Belgium to comply with European Union (EU) regulations. Refusal to do so could lead to huge fines.

In this case the Belgian government has refused to insist on a comparative examination of the qualifications and experience of a German engineer who lives in Belgium and who wants to practice architecture there.

Under EU law, member states have to compare the knowledge gained by a foreign professional, to see how it matches that demanded by their own training programmes. Where there are similarities, the professional cannot be required to learn again what he or she already knows. In this instance, because the German is officially an engineer, the Belgian authorities have been refusing to carry out a comparative examination. KN

In brief

ITALY

Tower gets a Pisa the action

Four six-centimetre thick steel cables have been attached to the leaning Tower of Pisa in the Italian tourist attractions' latest attempt to defy the law of gravity – it leans four metres off the perpendicular. The cables are located 20 metres above ground level and anchored to concrete and steel structures in the ground to the north of the Tower. It is hoped that the temporary measure will provide security against possible movements of the Tower when more permanent attempts to stabilise it are implemented later this year. Engineer Paolo Heiniger oversaw the operation.

SPAIN

Gaudí's cathedral complete ... sort of

Antonia Gaudí is following Frank Lloyd Wright on to the silver screen (*WA*72 page 49). Gaudí's unfinished Sagrada Familia Cathedral, Barcelona will be completed in virtual reality, thanks to a US$17 million film backed by Barcelona publicist Toni Meca. The "virtual" building is made up of 20 million polyhedrons – the geometric unit used in animation – compared to the four million polyhedrons used by James Cameron to recreate the *Titanic*. Meca hopes to project the movie in the Sagrada Familia on 1 January 2001.

UK

Ove Arup profits dip

International engineering consultant Ove Arup reported a decrease in profits last year, despite a 16 percent increase in earnings. Turnover reached US$358 million, up US$48 million on the previous 12 months. Pre-tax profit fell US$124,000 to US$3.9 million. Chairman Duncan Michael said the firm's prospects for 1999 look good.

EUROPE

Land of plenty

Aerial view of the Chapman Taylor Open Project's US$330 million retail and leisure complex in Postojna, Slovenia

SLOVENIA

Slovenia, the tiny central European state sandwiched between Italy , Austria and Croatia, is often overlooked as a potential site for investment and development. But as the western-most and most Western-oriented of the ex-Yugoslav states, the country is providing rich pickings for foreign architects prepared to take a closer look.

Chapman Taylor Open Project (CTOP), a firm with offices in Bologna, Italy and London, UK, is one of the first foreign architects to make an impact. Belgian developer M&B European Investments NV (Hasselt) has commissioned the firm to work on a US$330 million retail and leisure complex in the town of Postojna, between the capital Ljubljana and the port of Trieste. The complex is due to go on site later this year. "Postojna" will be the first large-scale, Western-style retail, leisure and entertainment complex in the former Yugoslavia. CTOP is working with local architect AGA.

When the four-phase complex is complete it will consist of a 40,000-square-metre shopping centre, 30,000 square metres of free-standing retail units, a 25,000-square-metre factory retail outlet and a 25,000-square-metre entertainment centre and hotel complex.

On the complexities of working in Slovenia, Gianfranco Lizzul, CTOP project architect says: "Slovenia was never actually under the Soviet system; the influence of 1,000 years of Austro-Hungarian rule left a more lasting legacy. CTOP has been there since 1993. It is by far the easiest and safest of the ex-Yugoslav states to work in."

M&B is already looking into a second such development in the town of Brezice, near the Croatian border. "There is also a pressing need for the provision of 8,000-10,000 homes in the country," says Lizzul.

Slovenia has the highest per capita income in Central Europe, and is in the first wave of countries invited for entry to the European Union (EU) – it also has the highest GDP of any of the aspiring EU members. AM GM

Christian Richters

mecanoo builds library in the landscape

THE NETHERLANDS

Delft-based mecanoo architecten bv has completed work on this stunning new library at Delft University. Sunk into the ground, the heavily-glazed structure is as much a work of landscape sculpture as a state-of-the-art library. The roof is supported by columns between which are located climatically controlled walls which maintain the building's temperature and energy balance. The domed entrance is cut into a natural slope. Naturally-lit reading rooms are located on the second floor. SE

Contracts

GERMANY

- *This month's new embassy in Berlin*: **Orit Willemberg-Giladi** has designed the Israeli embassy in Berlin's Willsemsdorf district. To be located on a 9,000-square-metre site, next to the nineteenth-century villa which currently serves as the official residence of the Israeli ambassador, Willemberg-Giladi's design is based around stone-work interpretations of Hebrew text.

Spain

- The Fine Arts Museum of Bilbao will be enlarged by local architect **Luis Maria Uriarte**. He was selected in a competition juried by, amongst others, **Norman Foster** and **Rafael Moneo**. The addition includes galleries for temporary exhibitions and an auditorium.

- **RTKL** has started work on Centro Comercial y de Ocio Bonaire, a 150,000-square-metre retail-driven mixed-use scheme near Valencia. The US architect masterplanned and designed the development from its European headquarters in London. The developer is Grupo Riofisa. **IDOM SA** is the local architect and engineer. The first phase will be complete by spring next year.

UK

- In partnership with **Jan Brobowski & Partners** (JB&P), **Chris Wilkinson Architects** (CWA) has won a limited competition to design three road bridges in the revitalised Canary Wharf district of London. JB&P and CWA beat US architect **Skidmore Owings & Merrill** and the London-based team of **Yee Associates** and **Mott MacDonald**. **CWA** has also been shortlisted to design a US$13.2-million footbridge across the Seine in Paris.

REST OF THE WORLD

RTKL on site in Recife ...

BRAZIL

Construction began last month on the Riverside Office Center, a 50,000-square-metre, three-tower complex in Recife, Brazil. Designed by the Dallas office of RTKL, the project is being developed by Recife-based Lismar Ltda. RTKL is working with local architect Sandra Brandao. The first phase of the fast-track development is the tallest of the towers (25 storeys), which is slated for completion next February. Construction of the 20-storey tower in the middle of the development and the third 12-storey tower will follow. AM

US$1.5 billion Melbourne Docklands development

AUSTRALIA

Grollo Tower Pty Ltd has won the right to develop the Batman's Hill district of Melbourne's Docklands. Grollo will develop the precinct at a cost of approximately US$980 million.

As well as Grollo Tower, the tallest building in the world (see News Review front page), the proposal involves the development of a complete residential, retail and commercial district over 15-20 years.

Eric Mayer, chairman of the Docklands Authority said: "This is the culmination of an exhaustive bidding process." An earlier proposal had failed to meet the requirements of the Authority and the Government.

The vision for Batman's Hill was the brainchild of developer Bruno Grollo, who oversaw the construction of the Rialto development on nearby Collins Street – still the tallest building in the Southern hemisphere – in the 1980s. Grollo Tower Pty Ltd is headed by Daniel Grollo. Construction is due to start next January.

The proposal concerns one of five precincts in the 220-hectare US$5 billion Docklands development. EP

... and Santiago

CHILE

The US giant is also part of the team which won the international competition to masterplan Chicureo Ciudad, a new 1,200-hectare urban district in Colina, north of the Chilean capital Santiago.

RTKL has teamed up with Santiago-based architect Schmidtz & Valdés Arquitectos. The developer is Chicureo Desarrollos Inmobiliarios SA, a group of five investors and landowners who have consolidated their land holdings to a create the new satellite town. The masterplan is pending government approval. Construction is expected to begin later this year, with phased development planned over the next 15-20 years. AM

ERRATA

Hong wrong

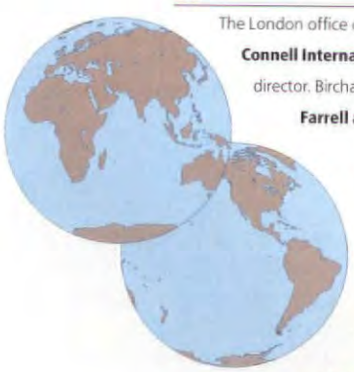
WA is grateful to Henry Kwan of the MTR Corporation in Hong Kong for pointing out that the new Hong Kong Station featured in *WA*72 (pp82-83) was incorrectly credited. The facility is the work of Arup Associates' Hong Kong office, not Rocco Design Limited (RDL). RDL masterplanned the area within which the Station is located.

WA knows where it's at ... really

Regarding BDP's contract for a new US$80 million leisure development in the Achrafieh district of Beirut (announced in page 25 of *WA*67): it was incorrectly stated that Beirut is in Israel. The city is of course the capital of Lebanon.

Hong Kong Station by Arup Associates

People and practice



UK

The London office of leading financial and corporate sector architect **Swanke Hayden Connell International Ltd** has appointed Nick Birchall as an associate and project director. Birchall comes to the firm from the office of leading British architect **Terry Farrell and Partners**, where he was project director.

UK/USA

Michael Lischer, director of sports at **HOK/Lobb Sport**, has left to run his own practice, **Sports Concepts**. **HOK Sports** and **Lobb Sports Facilities Group** merged at the end of 1998, in the process becoming the world's largest architecture practice dedicated to sports (see *WA*73 page 41).

USA

TBA² Associates and **LS3P Associates**, of Charlotte, North Carolina and Charleston, South Carolina respectively have merged. With a combined total of 160 employees, the new firm – known as **LS3P** – is one of the largest in the Carolinas.

NBBJ has announced that Timothy Johnson AIA, Richard H Clarke AIA and Richard Keating FAIA have joined the firm as design principals. Johnson will oversee architectural direction in the firm's New York office, Clarke in the San Francisco office and Keating in the Los Angeles office.

Watkins Hamilton Ross (WHR) of Bellaire, Texas has announced that Charles D Cadenhead AIA, William C Ganshirt AIA, Michael S Johnson AIA, Kirby M Keahey FAIA, Gailand J Smith and Mitchel L Wortley AIA have been made principals of the firm.

OBITUARY

Chicago architect **Harry Weese** died of a stroke at the end of last year aged 83. Weese cut his teeth at **Skidmore, Owings & Merrill** before starting his own firm in 1947. Weese is credited with the 1977 Washington DC subway system, and while an avowed modernist, championed historic preservation.

Analysis

Hellas no fury like a city scorned

The evidence that major sporting events can help regenerate cities and economies is overwhelming. Barcelona did it in 1992, Paris felt the benefits of footballing success last year, and Sydney might yet get somewhere close to it next year. With only five years to go until Athens hosts the 2004 Olympics, Stamati Giannisis finds that the Greek's preparations to date give little indication that recent standards will be maintained.

In September 1997 Juan Antonio Samaranch, president of the International Olympic Committee, announced that Athens would host the 2004 Olympics. One hundred and eight years since the Greek capital hosted the inaugural Games of the modern era (1896), Athens had finally been given a second chance. But times have changed. The Olympics is no longer defined solely by honourable sporting endeavour; it's about the organisational prowess of the host city, and maximising profits. It also represents a one-off opportunity for town planners to achieve in seven years what would otherwise require decades.

"A visit to the Greek capital makes even the most untrained eye wince. Architectural anarchy reigns supreme, and no one in Athens seriously expects the Games to change that."

Opportunity knocks

For the ten-million Greek population, winning the right to host the Olympic Games was a great morale booster. The country is still striving to make the jump from "nominal" to "full" membership of the European Union (EU). After a decade of economic setbacks, which resulted in the country missing out on the first stage of the European monetary union, the Olympics represented a much-needed opportunity to make an impact on the world stage.

Moreover, the average Athenian, tormented for decades by smog, erratic transport services and promises of a better quality of life, sees the Games as the best, and perhaps last, chance to improve the city. It was also hoped that the Games would provide the impetus to complete long-stalled tourist attractions, such as the Acropolis Museum and the Classical Athens Walkway – a pedestrian route passing through the city's major archeological sites.

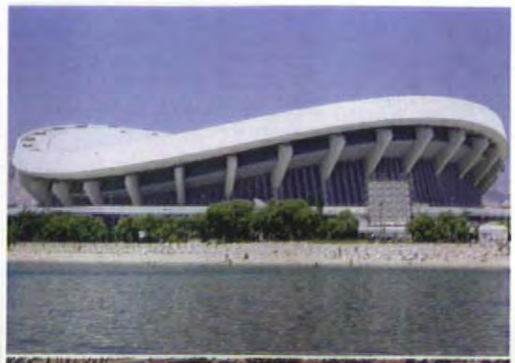
The potential to build on Athens' strategic location between the Middle East, the Balkans and the emerging markets of the former Soviet Union has also been noted as a potential boost to foreign trade.

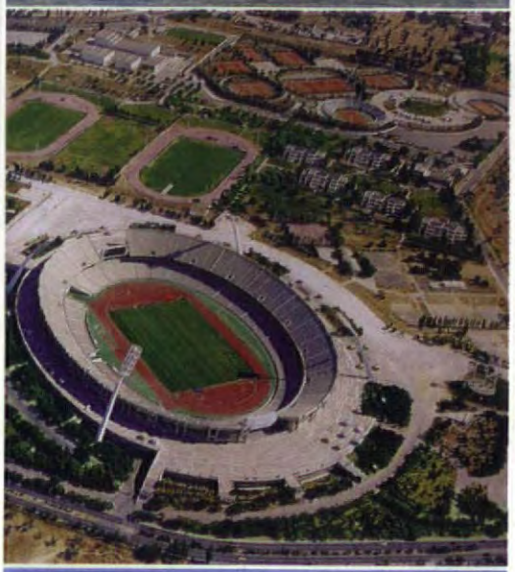
The state of play

But what made Athens (population four million), a city on the southernmost tip of the Balkan peninsula, a winner? Aside from the symbolic argument that Greece is the birth place of the Olympic Games, and the "psychological" factor that the city failed to win the bid to stage the 1996 Games, the Greeks entered the Olympic race on a proposal that contained two strong and practical points:

- Eighty percent of the sport facilities required for the Games were ready as a result of the late 1980's preparation for the unsuccessful 1996 bid.

Facing page: The Acropolis Museum by Manfredi Nicoletti and Lucio Passarelli – one of the tourist attractions that might benefit from the Games.
Right from top: The Peace and Friendship Arena by Papaghianni Associates is one of the already completed Olympic facilities; Athens Olympic Stadium by German firm WeidePlan; Digital visualisation of coastal Olympic sports zone by Peter Synadinos & Associates; Athens' new Eleftherios Venizelos airport, one of the infrastructure projects that will benefit the city in the long term





• Most of the major transport, infrastructure and communications projects for Athens and the neighbouring regions planned for the turn of the century, were already included in the Second European Community Support Framework for Greece – a European Union financial mechanism contrived to aid its southern member-States close the gap with their more advanced northern and central European counterparts.

Athens boasts a state-of-the-art Olympic Sports Complex. The stadium was completed in the early 1980s while the indoor arena, the velodrome, the swimming pools and most of the other facilities are less than ten years old. A number of other sports facilities in the Greater Athens region are being revamped for the Games. As for the opening and closing ceremonies, both are to be held in the spectacular Kalimarmaron, the ancient Athenian stadium, reconstructed in the 1890's to host the first modern era Olympics. So how is Athens using the massive urban regenerative opportunity that the Olympics represents?

Architectural anarchy

A visit to the Greek capital makes even the most untrained eye wince. Architectural anarchy reigns supreme, and no one in Athens seriously expects the Games to change that.

Downtown Athens and the adjacent suburbs are located in the Athens basin, which is surrounded on three sides by Mounts Hymetus, Penteli and Parnitha. If anything, the already rapid (and loosely regulated) eastwards expansion of the urban sprawl into the Mesogaea Plain, the site of city's new international airport, will be exacerbated by the Games.

However, the urban regenerative effect of hosting a major international event is evident in the attempts to overhaul the city's ailing transport system. Regardless of the success of the Games, the infrastructure left behind can always benefit locals. Three major public works projects, accounting for the majority of the US$40 billion budget, are well under way in the Greater Athens area:

• The new Eleftherios Venizelos international airport, 40 kilometres from the city centre. Designed and built by German construction giant Hochtief, the new "flughaven" could hardly be regarded as a shining example of contemporary airport architecture, but it will at least be capable of processing 50 million passengers per year by 2004.

• Athens' metro. Franco-Greek consortium "AtticoMetro" is overseeing the construction of two new metro lines with a total length of 27 kilometres.

• The Athens ring road and Athens-Eleftherios Venizelos motorway. Involves several Greek and European construction firms and sub-contractors for different portions of the 65-kilometre freeway, due for completion in the year 2002.

"Over US$1.65 billion-worth of construction projects are yet to get off the drawing board."

... but no "white elephants"

These public works supported the Olympic movement's crusade against projects launched in the name of the Games which become "white elephants", sinking the host cities into debt for decades.

"In getting together our proposal we rejected the Montreal, Los Angeles and Atlanta models which relied heavily on private enterprise and have had very limited positive effect on the city after the Games", says architect and town planner Peter Synadinos, technical director of the Athens 2004 bid committee.

"We are closer to the Barcelona and Seoul models, which were long-term development and investment plans with emphasis on the urban, economic and social impact the day after. For specific constructions we took account of relevant temporary and permanent large-scale projects, like the Expos in Seville and Lisbon, the London Docklands development and even EuroDisney [Paris]".

Synadinos is also confident that in terms of the participation of foreign architects, "the 2004 Games, will be the world's architectural Olympics," – although there is a conspicuous lack of evidence to support such a view.

"Co-operation between Greek and foreign architects is encouraged," he says. "After all, as a member of the EU, Greece has an obligation to announce all major competitions at European Union level, but that certainly does not mean that firms from the rest of the world are excluded." "Greece wants international participation, as she wants the Olympic projects to be associated with major international firms and architects of international acclaim."

Staring at the gift horse

However, delays are already setting back most of the works directly associated with the Olympics. Eighteen months have passed since Athens was awarded the 2004 Games, and a worrying number of major projects presented in the Greek candidacy file have yet to take off.

Answering accusations that the original plans have had to be revised due to miscalculations of factors like land use, environmental protection and property ownership, Costa Laliotis, Minister of Public Works, has assured Parliament that everything will be ready in time. But the competitions for the 1,100-hectare Olympic Village (which will become 2,500 private homes after the Games finish); the development of the five kilometre Olympic coastal zone, and another 25-30 sports projects have yet to be announced. And the findings of a convention held in Athens last summer by the International Union of Architects and the Technical Chamber of Greece are alarming – over US$1.65 billion-worth of construction projects are yet to get off the drawing board. It is clear that procedures must be speeded up if the once-in-a-lifetime opportunity of urban renewal is not to be missed, and with only five years' time is not on the Greeks side. WA

Analysis

The second in WA's occasional series looking at the prospects of cities coming to terms with political re-birth.

Budapest – a bridge to the East

As the eastern-most major central European capital, and with European Union membership only a few years away, Budapest is perfectly poised to capitalise on the region's growing appeal to Western investors. István Schneller, chief architect of Budapest, reports on how the Hungarian capital and native architects have adjusted in the first decade of post-Soviet liberation.

It is arguable that Budapest, the largest metropolis on the shores of the Danube (Europe's longest river), and home to 2.8 million of Hungary's ten million inhabitants, will be Europe's best-placed centre for economic and commercial expansion over the coming years. But for progress to be made in reasserting Budapest's urban relevance after 40 years of Socialist rule, it is necessary to understand the significance of the city, not only within Hungary, but also within Central and Eastern Europe.

After a late-nineteenth century period of expansion, during which time Budapest was the second city of the vast Austro-Hungarian Empire, the city's blend of grand boulevards and intimate public spaces was ravaged by the centralisation of industrial production. The Second World War resulted in a further concentration of population and production in Budapest, and the Socialist system forced the masses into the city. By the early 1950s over 40 percent of Hungary's industrial production was concentrated there, and huge concrete jungles of housing estates were created on the outskirts of the city. Formerly separate towns and villages became connected to the city. All were joined administratively in 1950.

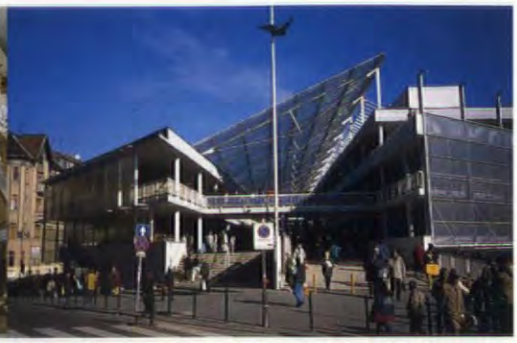
Since the changes of 1990, the entire economic, social and regional processes which define Hungary have undergone major transformations in various settlements, including Budapest. This is a summary of some of the challenges facing Hungary's architects and planners.

Private parts

In 1990 a system of regional government was re-established. Whilst the greater freedom was welcomed, it meant that state and council developments were taken over by private investors. As a result, the rate of home building slowed dramatically, and the upgrading of private property and real estate led to real estate speculation, which in turn had further implications:

- Budapest's already overcrowded downtown became even more cramped, with residential buildings





Facing page above: View over the Pest district of Budapest – home to the city's emerging CBD. **Facing page below:** The Western influence on Budapest is evident in the multitude of shopping centres and warehouse developments in and around Budapest. Pictured here is the entrance to the recently opened Pólus shopping centre. **Above left:** Graphisoft Park by Építész Studió, winner of the 1998 Council of Budapest Architecture Award – a rare inner-city brownfield development. **Above centre:** US architect The Hillier Group has designed the American School of Budapest – due to open in autumn 2000. Iparterv is the local architect. **Above right:** Market redevelopment on Budapest's Széna Square – a typical city-centre regeneration project

transformed into commercial premises. Traffic circulation and environmental pollution also became chronic in the city core.

• On the periphery, pressure was exerted on district councils to prepare the few remaining greenfield sites for development. Budapest is now beginning to reach its neighbouring agglomerations.

The majority of originally state-owned, then local government-owned flats were purchased by those residing in them in the course of privatisation. Although privatisation prices were low, it still tapped the financial resources of the residents who were no longer able to maintain them. The lack of a central support system and the underdeveloped level of the organisational framework of rehabilitation in the market economy led to the physical and social deterioration of certain areas of the city – most damagingly in the historical city core.

Don't go changing

The chief architects of Budapest got to work on the new city masterplan in 1991. Known as the "structure plan", it took seven years to be accepted by the city's municipal council. The main aim was to introduce a character-conscious, rather than a character-preserving system of regulation.

The plan is necessarily complex, given the backdrop of a nation in transition. It seeks to control Budapest's expansion, whilst compensating for the whirlwind of confusion unleashed in the drive to update and reorganise existing legislation.

A key feature is to define Budapest's future along traditional European lines. American-style unregulated urban development has been avoided. Budapest is a city where people live, and this should not be forgotten. The preservation of the remaining green field sites has become a priority. The plan promotes the reuse of deteriorated inner-city sites, offering subsidies for infrastructure supply.

Strict restrictions on traffic circulation have also been imposed. Parking management, priority treatment of public transport in the inner zones and a conscious building-up of the park-and-ride system are priorities. It is imperative that public areas do not deteriorate further, and perhaps most importantly of all, space must be provided for new public areas.

But so far, everything has not gone completely to plan. Throughout the 1990s foreign private capital has been the driving force behind development in Budapest. As a result, the defining feature of new architecture in Budapest during the 1990s has been the mass of faceless shopping centres, warehouses and business parks, not only on the urban fringes but also within the city centre.

"The best that Hungarian architects can hope for is to play an assistant's role in the construction process – they may only be there to sign the drafts."

Architects hungry for action

In living memory, no Hungarian government has paid any serious attention to national architectural policy. Even before the political "revolution", the former Ministry for Building and Town Development had been wound up. Since then the responsibility for housing and construction has been passed around the Ministry of Transport and the Ministry of the Environment. It currently resides within the remit of the Ministry for Agriculture and Country Development. This is not a climate to get the best out of native architects.

The majority of the foreign developers bring their own architects with them, usually to design but often to design and manage their projects. In the main, the best that Hungarian architects can hope for is to play an assistant's role in the construction process – they may only be there to sign the drafts. Even Jozsef Finta, managing director of Finta and Associates Architects, the closest Hungary has to a "superstar" architect, feels frozen out.

At the end of last year, the 7,400-member Hungarian Chamber of Architects (HCA) presented a 12-point document to the government requesting a greater say in issues of national design. Of prime concern was that restrictions be imposed on foreign architects working in the country. Until Hungary becomes a full European Union member, "foreign architects should be able to work here only if they are permanent residents" said Ferenc Callmeyer, president of the HCA. Nearly a third of HCA members are unemployed. The remainder are grossly underpaid.

The provision of low-cost, energy-efficient housing is another issue which the HCA would like to rescue from the governmental remit. In a country where 20-30 percent of the population still live in the steel-reinforced, concrete clad tenement blocks so beloved of the Communists, housing is a major concern. "We should be involved in all government decisions involving architecture," says Finta. HCA's request for the establishment of an independent Office for Housing and Construction was not successful.

There is work for local architects – there just isn't very much of it. But the work of Építész Studió (winner of three of last year's Council of Budapest Architecture Awards) and Finta and Associates suggests that it won't be possible for investors to ignore local talent forever.

Where there's a will ...

Nevertheless, national identity and high quality in the built form, traditionally mainstays of Hungarian architecture, have subsided. More architecture competitions and community resources are needed to redress the balance. And hopefully the millennium will be celebrated with some new built structures – although at present no one knows quite what form these might take.

Hungarian architects can make serious contributions: they can try to link up with sympathetic clients (all investors want to be on good terms with the local authorities), try to remain true to the existing urban fabric, and try to preserve the *genius loci* of the place. It remains to be seen whether Hungary's architects can ride out the storm of these transitionary times, but if they can there is no doubt that with the political and economic stability of EU membership Hungarian architecture will find its voice again. WA

OnScreen

Architekton weaves a Web of contacts

Architecture is not normally associated with pushing the boundaries of design technology. The discipline is, however, ideally placed to exploit virtual reality technologies and interactive environments, as Architekton, a Tempe, Arizona-based specialist in architecture and interactive and Internet medias, has proved.

The firm, which has an impressive client base of petroleum corporations, including Diamond Shamrock, Chevron, Texaco and Arco, is leading the way in the exploitation of the Internet's potential for communication and project management.

Generally, architects use AutoCAD technology to create 2D construction drawings, and 3D models for generating animations and realistic renderings of projects. But this is only the tip of the iceberg. The technology available currently allows for an accelerated delivery of products and services.

Arny W Bailey AIA, a founding partner of Architekton and head of the Internet division located in Bellevue, Washington, says: "For us it was a natural progression. In the beginning, CADD systems were implemented in development of 2D construction documentation. Then 3D for various client and jurisdictional presentations and then as a design tool. In 1995, we developed our own Website at a time when we were frustrated with the inadequacies of modem transfers of information. With the work that we were performing on the web, File Transfer Protocol [FTP] was the answer. The development of tools such as Adobe's Acrobat Reader and AutoDesk's WHIP! allowed users to view the information prior to executing a download. The delivery of media via the Web has now entered a new level.

"Clients can review their work on-line at their leisure. They call us and the changes are made as we speak." Arny Bailey AIA

Currently, Microsoft Explorer can view other Microsoft-created documents such as Excel and Word by simply creating a link within the Web site."

Architekton provides conventional architectural services augmented by a progressive delivery system. Architectural concepts can be generated for viewing on line by their in-house staff. Architekton hosts all sites within its facility in Washington accessible through a T-1 connection. "Clients can review their work on-line at their leisure. They call us and the changes are made as we speak. A simple click of the 'Refresh' icon will reveal the changes. This used to take at least three faxes and a couple of phone calls. Now, it only takes one call," continues Bailey.

"Our experience with administering the construction standards for Texaco and Diamond Shamrock/Ultramar, for instance, has led to us providing a similar service to other clientele on a project-by-project basis. Tricon, the development arm of PepsiCo for the construction of Taco Bell, Kentucky Fried Chicken and Pizza Hut restaurants in the US is now able to review, on-line 24 hours a day, both plans and other project information as part of their contract," says Bailey.

www.architekton.com

formoZ founder in ACADIA win

Chris Yessios, president of auto.des.sys, developer of the 3D modelling and rendering application formoZ, has been presented with the first ACADIA Award of Excellence, in recognition of his contribution to computer-aided design in architecture. Yessios picked up the award from Branco Kolarevic, president of ACADIA, in Quebec.

"Your visionary efforts in computer-aided design research introduced new paradigms, such as solid and void modelling, into the creative processes of making architecture," said Kolarevic.

ACADIA (founded in 1981) was formed for the purpose of facilitating communication and information exchange between users of computers in architecture, planning and building science.

www.acadia.org

Callison Architecture used formoZ in the design of The Grand Gateway mixed-use development in Xu Jia Hui, Shanghai, PRC – due for completion later this year

Design for all and all for design

Digital Design Studios believes that every designer should have the opportunity to present their work to a global audience. The company runs the Directory of Design and Computer Graphics – available on the Internet – a catalogue of ideas and work by a broad-based pool of international designers.

Site founder Alec Thorne is open to all creative disciplines, from interior design, architectural design, product design, computer graphics and broadcast imaging. Of particular interest is the work of Australia-based Jonathan Muller. A qualified architect and experienced graphic designer, Muller specialises in 3D computer visualisation. Using computer graphics, Muller's thoughts and ideas are quickly transposed from concept through to actual design and production. He applies this method not only to new design, but also to create "virtual reconstructions" of historical architecture.

www.Digitalstudios.co.uk

Buckminster Fuller's aluminium alloy "Dymaxion" house of 1946, brought to life through 3D computer visualisation on the Directory of Design and Computer Graphics

Polemic

Berlin breaks free of monumentality at last

Next month, when the seat of government finally moves from Bonn, Berlin is scheduled to become the capital of Germany. A capital of contradictions, simultaneously demanding a doubling of its population to reflect its new importance, while at the same time endorsing the dispersal of most of the key elements of the national economy – the banking system, the home of German justice, the headquarters of the German FBI, virtually all manufacturing and commerce – to cities scattered far and wide. For despite Berlin's glamourous history and its ten-year building binge, Germany itself vigorously defies centralisation. For years it has rejected it in every significant matter save one: the building of a Holocaust Memorial.

The project for a national memorial to the six million Jews exterminated by Hitler's Nazis between 1933 and 1945 is older than German reunification. Even before the end of the Cold War the preserved remains of the death camps and the modest memorial in Bonn were considered inadequate. When the Berlin Wall came down in 1989 and 1990 saw the country reunited, the great open spaces of Berlin, many of them untouched since the bombing ended in 1945, seemed to present the perfect opportunity to create something more appropriate. A project for a Holocaust Memorial already existed, pushed forward with determination by prominent West German television journalist Lea Rosh, and soon Federal and city authorities took up its cause by assigning a site to the project: an entire two-hectare city block just south of the Brandenburg Gate in the political centre of the city. Then, in 1995, a competition was held to design the memorial. Unexpectedly it attracted over 500 entries – as opposed to the contemporaneous competition to rebuild the Reichstag which attracted a mere 80 – but it was with the character of the entries that the problems began.

Most of the would-be memorial designers thought big. Amongst the entries were hundreds of site-filling schemes conceived with no regard for either urban context or political acceptability. One designer proposed a giant Ferris wheel with windowless goods wagons instead of viewing capsules. Another proposed a 40 metre-high gas oven, burning day and night. A third proposed a bus stop, with buses leaving regularly for such destinations as Auschwitz, Belsen, Buchenwald and other camps. Perhaps the most extreme was a proposal to grind the Brandenburg Gate to dust and scatter it over the site as a gesture of atonement. Unsurprisingly the assessors rejected these inflammatory ideas, cleaving instead to the classic tradition of monumental sculpture. Designed by a Berlin artists' collective, the winning project took the form of a seven metre thick concrete tombstone the size of a football pitch, to be set at an angle and inscribed with the names of all known Jewish Holocaust victims.

The decision was not popular. Opposition to this project came from all sides, not led by – but not least – from the Federal German government and the city authorities, worried at the effect this gloomy monster might have upon the impression created by the new capital. Nonetheless, despite all misgivings, an official date for the commencement of construction – 20 January 1999 – was assigned by former Chancellor Kohl so that the memorial should be in place by the time of the transfer of power from Bonn.

However, such was the dissatisfaction and anxiety occasioned by the winning design that a second invited competition was held, with a brief requiring more attention to the monument's urban context. At the end of 1997 four designs from this entry were shortlisted and the winner was declared to be a project by architect Peter Eisenman and artist Richard Serra. Notwithstanding the efforts of the framers of the brief this too was a monumental design. It consisted of 2,700 concrete panels arrayed as tombstones in a vast burial ground. Once again city and government were plunged into gloom, but the assessors had spoken and the clock was ticking away towards the starting date. The Kohl administration accepted that this was to be the memorial and insisted that construction would start on time.

It was then that the course of events took a hand. In the run-up to the 1998 Federal German elections the Berlin Holocaust Memorial became a political issue. Chancellor Kohl's social democrat challenger, Gerhard Schroder, appointed a German American publisher, Michael Naumann, his shadow minister of culture, and Naumann denounced the Eisenman scheme as "worthy of Albert Speer". When Schroder won the election, the fate of the second competition winner was sealed. Within a month of his appointment as Minister for Culture and the Arts, Naumann had dramatically broken away from art-historical monumentality and invited Steven Spielberg, maker of the Oscar-winning Holocaust film *Schindler's List*, to look at the problem afresh. Amazingly Spielberg came up with a solution that was barely a physical monument at all. He proposed that the Holocaust Memorial site be turned into a "forum" where his own Shoah Visual History Foundation's 47,992 videotaped interviews with concentration camp survivors could be shown to visitors for the rest of recorded time.

As can be imagined this suggestion found many supporters. By the end of 1998 the new project had advanced deep into new territory, leaving old fashioned monumental sculpture far behind. As well as being a "forum" it had also become "interactive", borrowing heavily from the Washington Holocaust Museum. It was to have a garden of contemplation, a research library, an exhibition hall and a "Genocide watch" to alert the world to potential atrocities everywhere.

"We want this to be a living memorial, not a ritualistic monument, something that provides a clear and visible link between the past, the present and the future," said Naumann recently. And he is right. The Holocaust Memorial may have missed its starting date, but in every other way it promises to be a brilliant message for the future.

Martin Pawley

"Perhaps the most extreme proposal was to grind the Brandenburg Gate to dust and scatter it over the site as a gesture of atonement."

Book Reviews

False impressions last

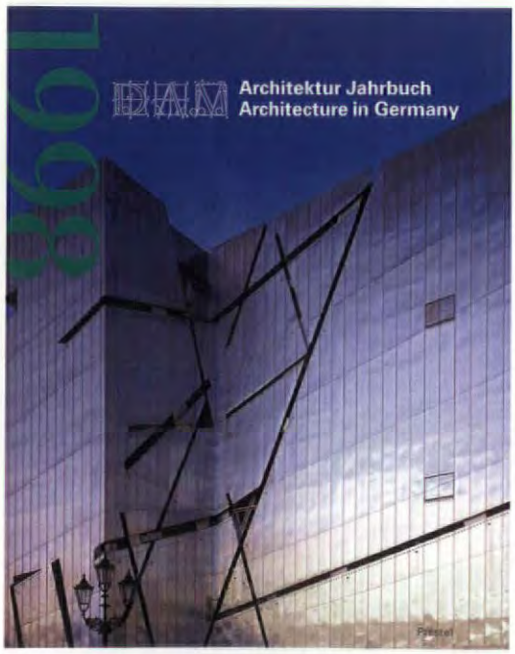
Architecture in Germany – Deutsches Architektur Museum Annual 1998. Edited by Wilfried Wang and Annette Becker. Prestel c/o Biblios Publishers, Munich, Germany. 200pp, 100 colour and 300 b&w illustrations. DM68/£25/US$45/CAN$65 (paperback)

Reviewed by Kaye Geipel

The inherent problem with asking specialist authors to comment on the "best" architecture of the previous year is the heterogeneity of the buildings produced. The only common denominator between the projects is the coincidence of timing, meaning that comparisons can only be forced and restrictive.

The publishers of *DAM Annual 1998* have handled this problem in a curious way. The introductory contribution has been entrusted to the hands of English critic, Peter Davey. Davey makes no mention of German architecture, but provides a general essay on "Craftsmanship and Architecture". This leads *DAM Annual 1998* onto issues that have dominated German architecture over recent years.

The reviews of many of the buildings and projects singled out in *DAM Annual 1998* demonstrates the fascination which has emerged in Germany in recent years concerning the constraints imposed on materials and craftsmanship in this era of progressive industrialisation. The two sides of the argument are clearly demonstrated in the reviews of Hild und Kaltwasser's conversion of an old panel-work building into a theatre using historical building materials – or a "concrete bath", as it is referred to here; and Schneider und Schuhmacher's "neo-expressive" renovation of a Leipzig office block using hand-made glazed sections.



DAM Annual 1998, co-edited by Wilfried Wang, the polyglot director of the Deutsches Architektur Museum, also illustrates the extent to which many of the better-known contemporary German architects have been forced to fall back on small-to-medium-scale contracts, which is in stark contrast to the culturally-oriented building output which marked the 1980s and early 1990s. The railway station projects destined to change the faces of the city centres of Munich, Dortmund, Essen and Stuttgart are nowhere to be found; none of the giant shopping centres which have sprung up in recent years gets a mention, and in the case of multiplex cinemas only Coop Himmelb(l)au's de-constructive Dresden Cinema (see *WA69* page 114) gets any attention.

On the subject of "craftsmanship", a review of Hans Kollhoff's latest building – a tower block on the recently opened Potsdamer Platz – would have demonstrated the extent to which the issue has filtered into the highest echelons of German architecture. Kollhoff wanted to face the tower with a facade of hand-made bricks, but was forced to give into the clients preference for a prefabricated Dutch brick facade. Times have changed – bringing buildings in on time and within budget holds greater kudos than creative expression in contemporary Germany.

DAM Annual 1998 showcases a selection of refined buildings, the only disadvantage of which is the fact that the reader might glean the impression that the only buildings completed in Germany last year were small and "one-off " – clearly a false impression to create.

In any event, it doesn't take a visionary to predict that future yearbooks about German architecture will look very different in the coming decade – more big city landscapes, more anonymous, more international.

Kaye Geipel is editor of German architecture magazine Bauwelt.

Khan you dig it?

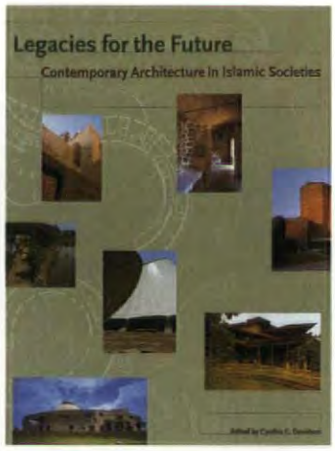
Legacies for the Future – Contemporary Architecture in Islamic Societies. Edited by Cynthia C Davidson. Thames and Hudson, London, UK. 176pp, illustrated throughout. £16.95/US$27.50 (paperback)

Reviewed by Dennis Sharp

Since 1980, 69 buildings in 26 countries have received Aga Khan Awards for Architecture (AKAA) for a truly amazing variety of projects, linked only by their Islamic origins. The money from each award (at US$500,000 the AKAA is the richest prize in architecture) is shared among users, clients and institutions, not just a single "named" architect or practice.

The scope of the Award was demonstrated in the "Architecture for a Changing World" exhibition at the Royal Institute of British Architecture (RIBA) in London towards the end of last year, at which the preliminary announcement of the 1998 Awards was made. This handsomely produced and carefully edited publication was produced to coincide with the prizes for the seventh cycle of Awards which were presented a few weeks later at the Alhambra in Spain.

The panel, chaired by the Aga Khan himself, chose seven projects, all of which are copiously illustrated in *Legacies for the Future*. They include two major planning projects; a rehabilitation scheme for Hebron Old Town and an ambitious project for the upgrading of the slum networks of Indore City, India.



Individual buildings of distinction include the remarkable Hospital for Lepers, also in India at Chopta Taluka – which was designed for a Norwegian church mission by two Norwegian architects, Per Christian Brynildson and Jan Olav Jensen – and a timber-framed modern-cum-traditional house in Selangor, Malaysia, by Jimmy Lim. A project spanning many years was also given an award this time round – the Tuwaiq Palace, Riyadh by OHO (a combination of German designer Frei Otto with local architects from Omrania, and UK practice Buro Happold).

As well as the splendid colour photographs, *Legacies for the Future* includes a series of plans and sections, and a history of the awards programme, its evolution and continuity, by the awards secretary General Dr Suha Ozkan. In it he seeks a wider recognition of the award by the Muslim world, a need to recognise a wider series of typologies – business and industry buildings as well as low-cost housing – and a need to identify the symbols and meanings of the projects created by the 20 million Muslims who live in the West. He concludes by inviting readers: "To encourage and enhance communications and real dialogue from architects all over the world through the language of architecture." Contact Dr Ozkan on akaa@atge.aoutomail.com

Professor Dennis Sharp is an architect and critic who curated the AKAA exhibition at the RIBA last year.

Dutch dynamism

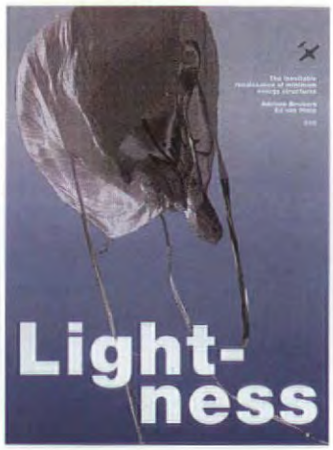
Lightness: The Inevitable Renaissance of Minimum Energy Structures. Adriaan Beukers and Ed van Hinte. 010 publishers, Rotterdam, Netherlands. 192pp, 244 colour and b&w illustrations. NGl39.50/£16.00 (paperback)

Reviewed by Martin Pawley

Do you know what a Mitchell Structure is, and what is valuable about it? Where do people steal natural gas from wells with huge plastic bags? What flying machine is structured by tension alone? What does "draping prepregs" mean? Have you ever tried sitting in a knotted chair? Are kites really derived from flying tents? In which country have many steel bridge decks been replaced with aluminium ones, and why? What stops a bridge engineer from spanning 3.3 kilometres or more with carbon fibre reinforced polymers? How long before cars cease to be made out of steel and buildings start being made out of rigid-rod polymers instead of conventional materials? Who said: "With composites the designer once more becomes the integrator of form and function"?

The answers to all these questions are to be found in *Lightness: The Inevitable Renaissance of Minimum Energy Structures*, and they all relate to lateral thinking and innovation in the modern world. But not content with breathlessly describing new inventions like a television presenter reading from an autocue, the authors of this book explore all sides of innovation. They analyse how it can be encouraged or discouraged. They discover why resistance to it is so strong. They show how this resistance has been overcome in the past in fields ranging from civil engineering to road transport, aviation, marine engineering, architecture and materials technology.

"It will be difficult not to be inspired by what you will read and see" is how the publisher's blurb for *Lightness* winds up, and in this case it states nothing more than the truth. *Lightness*, whose two authors originate from the Delft University of Technology in the Netherlands, is a cheaply produced ragbag of absolutely invaluable information.



Mistakes? It makes a few, but then again too few to mention. What it gets absolutely right is its polyvalent history of light structures and the evolutionary drive towards efficiency that ensures – as the book's subtitle confidently asserts – that they will always triumph in the end. Taking examples from nature and the vast spread of time from the ancient bow and chariot to modern composites and polymers, as well as boats, planes, cars, bridges and buildings, the authors tantalise with brief narratives and a spectacular collection of images old and new.

Clearly intended for students; untouched by glamourous architectural photography; undeterred by a layout artist who drops some captions, makes others read backwards, and sometimes offers no information at all, the book is nonetheless deeply and fundamentally comprehensible. A timely and admirable corrective to coffee table blockbusters of all persuasions.

Martin Pawley architect, critic and writer in consultant editor of WA

All change in the Lebanon

Projecting Beirut – Episodes in the Construction and Reconstruction of a Modern City. Edited by Peter Rowe and Hashim Sarkis. Prestel c/o Biblios Publishers, Munich, Germany. 302pp, b&w illustrations throughout (paperback)

Reviewed by Tariq Abdula

Peter Rowe and Hashim Sarkis approach Beirut's deeply troubled recent history from an optimistic angle. They place the Civil War and the troubles in the occupied territories ›

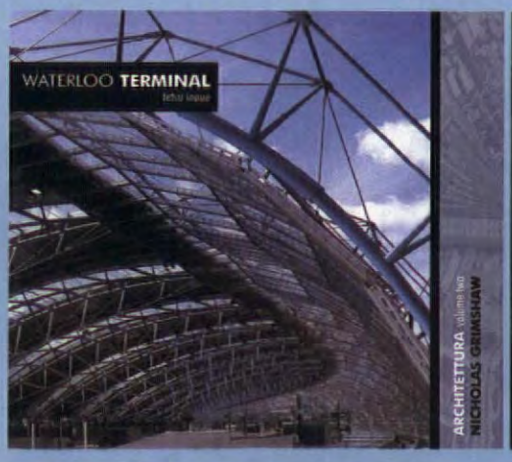
WALLS OF SOUND

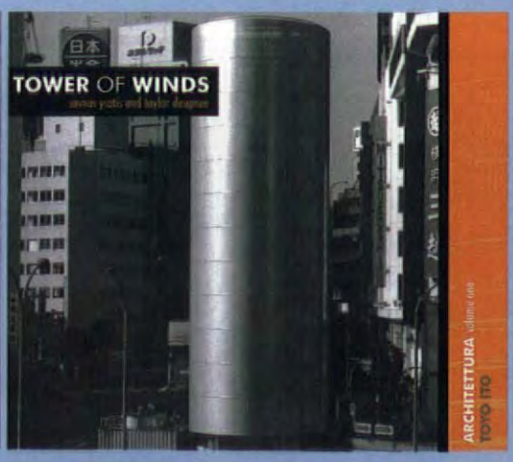
"Waterloo Terminal" by Tetsu Inoue, and "Tower of Winds" by Savvas Ysatis and Taylor Deupree. CDs published by Caipirinha Music, New York, USA. Distributed by Sire Records Group. All titles priced US$15.98

Reviewed by Stuart Pearce in Auckland, New Zealand

Caipirinha Music of New York has now released three volumes in its Architettura series. These single-artist CDs seek to explore "the synergy between the man-made worlds of architecture and electronic music". The idea is that electronic musicians from around the world interpret landmark buildings in musical form.

Tetsu Inoue's "Waterloo Terminal" (designed by Nicholas Grimshaw & Partners, London) was created by scanning over 1,000 real and digitally altered images of the structure into a computer which mathematically translated the building's features into electronic sound. The result is a bewildering mass of barely listenable crackles. Of the eight tracks "Hi-Fi Static" stands out – but only because its title is so refreshingly honest.



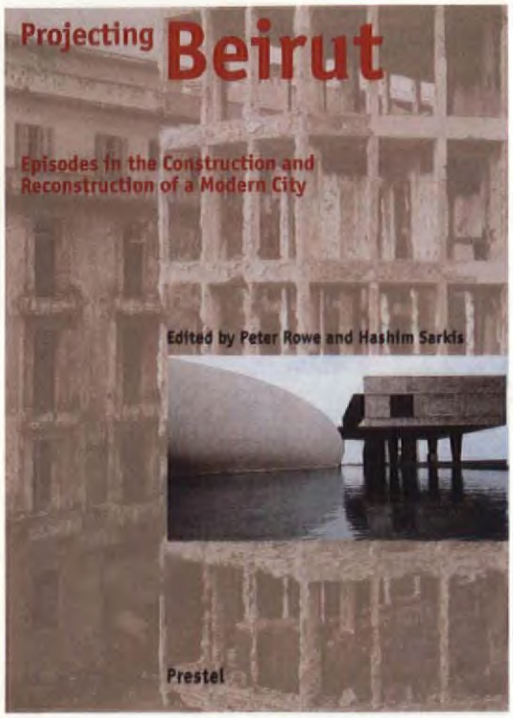


Toyo Ito's Tower of Winds in Yokohama, set to music by Savvas Ysatis and Taylor Deupree, is the aural equivalent of Chinese water torture. But it does contain some wind-chime-type noises, which makes at least some concession to the more imaginatively stunted listener.

It's all too easy to sneer at a new idea, and clearly there's nothing inherently harmful about the Architettura series. You might even argue that the series is a logical melding of two forms of rank self-indulgence: architecture and music. But the fact remains that the best thing about this series is the immaculate packaging.

Also available: Itsuko Hasegawa's "Museum of Fruit" interpreted by David Toop.

Contact Caipirinha at:
caipirinha@caipirinha.com/www.caipirinha.com



within the context of urban evolution – the sort of thing that could have happened anywhere.

Whilst it is admitted that Beirut's modern history is "far more catastrophic than most", it is also argued that this history is no different to that of many other international cities. This refreshingly contextual approach enables the reader to appreciate the reconstruction of this exceptional city-state objectively, rather than to dismiss it as an impossible goal.

Projecting Beirut is divided into two sections: the first deals with the Welfare State (roughly from late 1950s until the late 1960s); the second deals with the Civil War, bringing the reader up to the present day.

The authors' approach is bolstered by the parallel with the global transition from state initiatives to private-led enterprise. The difference in the case of Beirut is that private sector involvement is proportionally more significant and centralised. Solidere, the infamous and controversial private company, is almost single-handedly responsible for redeveloping the central business district (CBD) of downtown Beirut.

The authors have diplomatically commissioned architectural writers from both sides of the "Solidere debate" – is it best to preserve or to develop regardless of preservation? Nasser Rabbat's essay, "The Interplay of History and Archaeology in Beirut" and Jorge Silvetti's "Beirut and the Facts of Myth" make for interesting reading whether you believe that Beirut's stability depends on recreating its historic past or whether contemporary solutions are more likely to lead to a prosperous future.

From the ancients to the moderns, lively criticism and unlikely generalisations abound. For example, in order to address the problem of which ruins to retain, Lebanese law is uncharacteristically clear: "Antiquities are those human products that belong to whatever civilisation prior to the year 1700." But is there, I wonder, any substance to the rumour that inconvenient pre-1700 ruins discovered while excavating the foundations for Solidere's conservative corporate version of a *Brave New World* in the CBD, have been discreetly built over?

It is to their credit that Peter Rowe and Hashim Sarkis have taken this complicated situation, involving layer upon layer of historical, political and religious controversy, and distilled it into a comprehensible form. But to look for a plausible "projection for Beirut" is to miss the point. It is impossible to distil the development of this city into a question of building blocks and architectural styles. I look forward to reading a book that is comprised of a series of interviews with the Lebanese architectural community – preferably interviews that remain unedited for political correctness.

Tariq Abdula is a New York-based architecture critic.

BOOKS RECEIVED

The Jewish Museum in Berlin
Daniel Libeskind. Foreword by Michael Blumenthal. G + B Arts International. 160pp, 100 colour illustrations. US$38/AUS$72/£24 (hardback)

Essential Le Corbusier – L'Esprit Noveau Articles
Le Corbusier. Architectural Press, an imprint of Butterworth-Heinemann, Oxford, UK. 806pp, illustrated throughout. £29.95/US$60 (hardback)

Concrete Construction Handbook (Fourth edition)
Joseph A Dobrowski. McGraw-Hill, New York, USA. 992pp, 550 b&w illustrations. US$94.95 (hardback)

Transportable Environments
Edited by Robert Kronenbourg. E & FN Spon, UK. 224pp, illustrated b&w throughout. £35 (paperback)

The Power of Contemporary Architecture
Peter Cook & Neil Spiller. John Wiley and Sons Ltd, Chichester, UK. 112pp, colour illustrated throughout. £18.99/$32.50 (paperback)

Daylight Design of Buildings
Nick Baker & Koen Steemers. James & James, London, UK. 320pp, illustrated colour throughout.US$90/£55 (paperback)

Instrumental Form (Boss Architecture)
Wes Jones. Princeton Architectural Press, New York, USA. 400pp. 150 three-colour & 150 two-colour illustrations. US$40/£28 (paperback)

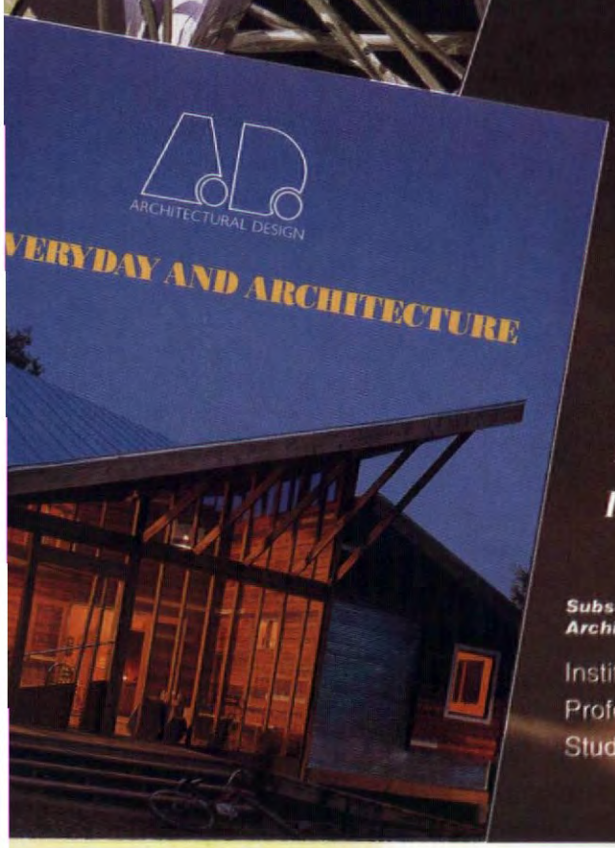
Architectural Principles in the Age of Humanism (Fifth edition)
Rudolf Wittkower. John Wiley & Sons Ltd, Chichester, UK. 160pp, illustrated b&w throughout. £24.95/US$45 (paperback)

Analysis and Design of Prototype Structures
Professor Y Bangash. Thomas Telford, London, UK. 1,248pp (two volumes). £160 (hardback)

The American Lawn – Surface of Everyday Life
Georges Teytssot. Princeton Architectural Press, New York, USA. 224pp, 115 colour & 78 b&w illustrations. US$34/£24 (paperback)

Go on, give yourself goosebumps...

WILEY



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Events

Lectures, congresses and conferences

Canada

Festival of Architecture 1999

Organised jointly by The Royal Architectural Institute of Canada and the Architectural Institute of British Columbia, the festival will feature a number of keynote speakers, including American architect Billie Tsien. Runs from 27-29 May in Vancouver. For more information contact the Architectural Institute of British Columbia, Suite 103, 131 Water Street, Vancouver, BC, V6B 4M3.
Tel: +1 604 683 8588
Fax: +1 604 683 8568
e-mail: aibc@aibc.bc.ca

Italy

BIBM 99

The 16th international congress of the Bureau International de Beton Manufacturé (International Council for Pre-Cast Concrete). The event is based around six themes chosen by the scientific committee – precasting for the environment, materials, technology, applications, standards and economics. The congress takes place from 25-28 May in Venice. For information contact the Organising Secretariat, MGR Congressi, Via Servio Tullio 4, 1-20123 Milan.
Tel: +39 2 430071
Fax: +39 2 48008471
e-mail: info@mgr.ir

Malaysia

The Tall Building and the City – The State of the Art for the Millennium

Conference from 3-5 May 1999 in Kuala Lumpur. The main attractions will be the Petronas Twin Towers, currently the tallest buildings in the world, and Kuala Lumpur's many other large-scale projects. Sponsored by the Council on Tall Buildings and Urban Habitat and the Sultan Iskandar of Urban Habitat and Highrise. For information contact The Secretariat, ICTBUH '99, Institute Sultan Iskandar, University of Teknologi Malaysia, Jalan Semarak, 54100 Kuala Lumpur.
Fax: +60 3 294 0293
e-mail: isikl@klred.utm.my

People's Republic of China

XX UIA Congress: Beijing 1999

The 20th congress of the International Union of Architects, to be held in Beijing from 23-26 June. The programme will include discussions, lectures and exhibitions based around the theme: "Architecture of the 21st century", and an international confrontation of projects by students of architecture. For registration information contact the International Union of Architects, 51 rue Raynouard, 75016 Paris, France.
Tel: +33 1 45 24 36 88
Fax: +33 1 45 24 02 78
e-mail: uia@uia-architectes.org

South Africa

Urban Integration

The 1999 conference of the International Federation for Urban Planning looks at "Planning and Housing in the New South Africa". The objectives are to place planning and housing in South Africa in a wider context for the benefit of local delegates, and to introduce foreign delegates to local issues. From 14-17 March at the Cape Sun Hotel in Cape Town. For information contact Joke Bierhuys, IFHP Conference co-ordinator, IFHP Secretariat, 43 Wassenaarseweg, 2596 CG, The Hague, The Netherlands.
Tel: +31 70 328 1504
Fax: +31 70 328 2085
e-mail: IFNP.NL@inter.NL.net

UK

Glasgow 1999 RIAS Architecture and Design Conference

Major conference entitled "From the City to the Spoon", organised by the Royal Incorporation of Architects in Scotland as part of Glasgow's tenure as *UK City of Architecture and Design*. Speakers will include Richard Rogers, Javier Mariscal, Richard Seymour and David Page. The programme will incorporate discussion forums, workshops and tours. Takes place at the Norman Foster and Partners-designed Scottish Exhibition and Conference Centre from 27-29 May. For details contact the RAIS Public Affairs Department, 15 Rutland Square, Edinburgh, EH1 2BE.
Tel: +44 131 229 7545
Fax: +44 131 228 2188

Architecture and design competitions

UK

Akzo Nobel Student Ideas Competition

Competition open to students who have not yet completed the RIBA Part 3 examination or equivalent. Calls for designs for a multi-purpose centre for watersports, with facilities for swimming, diving, baths and spa, and sailing. The emphasis is on successfully combining traditional materials with contemporary technology. The deadline is 15 July and the top prize is US$4,100 (£2,500). Information from the RIBA Competitions Office, 6 Melbourne Street, Leeds, LS2 7PS.
Tel: +44 113 234 1335
Fax: +44 113 246 0744

USA

Dinkeloo "Green Portfolio" Competition

Organised by the Van Alen Institute, the competition invites designs which demonstrate that contemporary architecture and technology can be environmentally conscious. It is open to recent or prospective graduates of US architecture and related degree programmes. The submissions deadline is 7 May and the top award is the US$7,000 Dinkeloo Fellowship, consisting of a two-month stay in Rome and another month of travel. Contact the Van Alen Institute, 30 West 22 Street, New York, NY 10010.
Tel: +1 212 924 7000
Fax: +1 212 366 5836
Web: http://www.vanalen.org

Masques of Stone: Public Spaces in Verona

USA Institute-organised competition calling for the redesign of public

Germany: Mies van der Rohe – Architecture and Design in Stuttgart, Barcelona and Brno

The first time that all of Mies van der Rohe's furniture designs have been exhibited together. They are contrasted with the three buildings for which most of the pieces were designed; the Weissenhof estate residential project in Stuttgart, the German pavilion in Barcelona, and the Villa Tugendhat in Brno. At the Vitra Design Museum until 25 April. Information from the Museum at Charles-Eames Straße 1, D-79576 Weil am Rhein. Tel: +49 76 21 702 33 51 Fax: +49 76 21 702 35 8

Denmark: Cities on the Move 4 – The Asian City of the Nineties

Through its presentation of the work of 100 different architects and artists, the fourth incarnation of this exhibition seeks to highlight the dynamism and creativity of life and culture in Asian cities today. It will look closely at the exchange of architectural and urban planning ideas between Asian and Western professionals. Until 21 April at the Louisiana Museum of Modern Art, DK-3050 Humlebaek.
Tel: +45 4919 0719 Fax: +45 4919 3505

spaces in Verona, Italy, between Piazza delle Erbe, the town's historic square, and Porta dei Leoni, the city gates. The projects will be juried publicly at the Veronafiere International Exhibition of Marble, Granite, Stone and Machinery in September. The first prize is US$3,000 plus US$12,000 in study grants for the USA Institute. The registration deadline is 10 May 1999 and the entries are due in by 15 August 1999. For details contact the USA Institute, 10 West 15th Street, Suite 1126, New York City, New York 10011-6826.
Tel: +1 212 727 2157
Fax: +1 212 727 2159

Exhibitions

Canada

Photography and Transformations of the Contemporary City: Venezia-Marghera
Exhibition looking at the worldwide phenomenon of the abandonment of heavy industrial zones on the edges of cities, focusing on Porto Marghera in Venice, Italy, which is soon to be extensively re-developed. Until 25 April at the Canadian Centre for Architecture, 1920 rue Baille, Montreal, Quebec H3H 2S6.
Tel: +1 514 939 7026
Fax: +1 514 939 7020

Sweden

Alexandr Rodchenko
The whole range of the Scandanavian modernist's work, including architecture, design and photography. At the Modern Museum, Stockholm.
Tel: +46 8 5195 5200
Fax: +46 8 5195 5210

UK

Frank Lloyd Wright and the Living City
The second exhibition staged as part of the *Glasgow 1999: UK City of Architecture and Design* programme of events, looking at Wright's broad artistic vision through models and photographs as well as original drawings, furniture and book designs. This is the only British venue on the exhibition's international tour. For information contact the office of Glasgow 1999 at Charlotte House, Queen Street, Glasgow, G1 3DN.
Tel: +44 141 287 7346
Fax: +44 141 248 8754
Web: www.glasgow1999.co.uk

Vertigo: The Strange New World of the Contemporary City
Principle exhibition for *Glasgow 1999*. It looks at ten of the most significant current building projects in the world and examines their impact on the changing way we live in cities. The aim is to avoid distinction between "high" and "commercial" architecture. Takes place between 26 February and 16 May at the Old Fruitmarket, Albion Street, Glasgow. For details see contact information for *Frank Lloyd Wright and the Living City*.

USA

Landscapes of Hope: Rebuilding New York City Neighbourhoods
A photographic account of the work of the New York City Department of Housing Preservation and Development in renovating and rebuilding the city's abandoned and dilapidated housing stock, with both for-profit and non-profit partners. Until June 27 at the Museum of the City of New York, Fifth Avenue and 103rd Street, New York City.
Tel: +1 212 534 1672
e-mail: mcny@mcny.org

The Pritzker Prize: 1979-1999
A selection of original works by past winners of this prestigious award, celebrating its twentieth year. Projects by Phillip Johnson, James Stirling, Hans Hollein, Richard Meier, Frank Gehry, Robert Venturi and others will be on show. From 28 May to 26 September at the Art Institute of Chicago, 111 South Michigan Avenue, Chicago, Illinois 60603-6110.
Tel: +1 312 443 3600
Fax: +1 312 443 0849

Trade shows

Mexico

A/E/C Systems Mexico 99
The third Mexican A/E/C Systems show; last year's attracted 5,000 delegates. Focuses on all aspects of design and construction technology. From 21-23 September at the World Trade Center, Mexico City. For information contact Show Management, A/E/C Systems International, 415 Eagleview Boulevard, Suite 106, Exton, PA 19341.
Tel: +1 800 451 1196
Fax: +1 610 4587171
Web: www.aecsystems.com

Russia

Volgabuild 99
International trade show covering building, construction, interior design, heating, ventilation, sanitaryware, municipal requirements and glazing. In Nizhny Novgoro at the Yarmaka International Exhibition Centre from 11-14 May. For details contact the ITE Group, Byron House, 112a Shirland Road, London, W9 2EQ, UK.
Tel: +44 171 286 9720
Fax: +44 171 286 0177

USA

A/E/C Systems 99
Major trade show and conference expecting an attendance of 20,000 architects, engineers and contractors. Shares the floor with several other related trade shows, notably Construction Los Angeles, Build USA, M/Tech West and GeoExpo. At the Los Angeles Convention Center from 24-27 May. For information see contact details for *A/E/C Systems Mexico '99*.

ICFF 1999
The International Contemporary Furniture Fair takes place at the Jacob K Javits Convention Centre, New York City from 15-18 May. For details contact George Little Management, Ten Bank Street, White Plains, NY 10606, USA.
Tel: +1 914 421 3206
Fax: +1 914 948 6194

Poland


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Linia godna zaufania

Warsaw town centre, which is being rebuilt almost from scratch

Country Focus

The Polish economy has shown resilience in the face of global recession and the political turmoil of neighbouring Russia. Marek Wielgo, economics correspondent of Polish newspaper *Gazeta Wyborcza*, reports on the country's booming construction sector, a result of sustained inward investment and healthy domestic demand. Architecture critic Jeremi Krolikowski reflects on Poland's 1998 proposal for a "law on architecture" and the local architects' contribution to the increasingly international market.

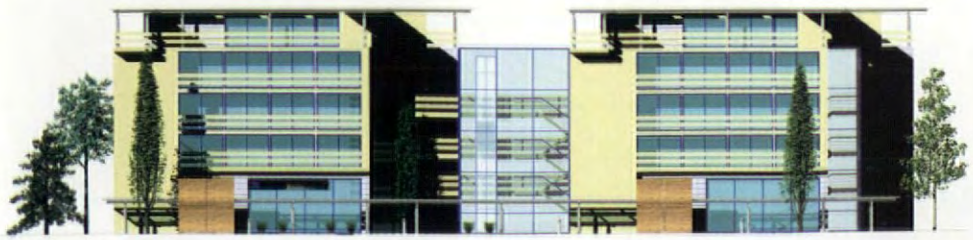
Wojciech Krynski

"While Russia is sinking," reported the *New York Times* last October, "the Polish economy moves forward dynamically". The European Commission, likewise, offered a positive assessment of the Polish economy in its report on the 12 countries applying for membership of the European Union. And no wonder, since last year Poland achieved an almost record-breaking economic growth rate of 6.9 percent, just below the all-time high of seven percent reached in 1995. This year economic growth will probably still reach 5.7 percent, driven by domestic demand, despite the Russian crisis. Investment has increased three times faster than the GDP; individual consumption has been fuelled by a rapid rise in salaries and pensions in real terms, and the popularity of bank loans; unemployment is falling and Poland continues to fight inflation.

The land of plenty

"Within the next several years architects in Poland will not be threatened by unemployment," says Stefan Kurylowicz, a prin-

Above: Arcon Headquarters Building, Warsaw, by Stefan Kurylowicz, Pawel Grodzicki and Jacek Syropolski
Right: HOK's masterplan for the 20-hectare EKO Park business development, Warsaw



cipal of one of the country's largest practices, and campaigner for architects' rights within the Association of Polish Architects (SARP). According to Kurylowicz, leading firms are able to pick and choose clients from a wealth of commissions. Furthermore, fees paid to architects in Poland tend to be increasingly comparable to those of their counterparts in Western Europe. As a result, foreign companies are trying to set up permanent bases in Poland. Only a handful of firms have made the necessary commitment so far, however, the pioneers including Ilbau from Austria, the Swedish firm Skanska (which has formed an association with Polish consultants Kazimierski and Ryba) and the Korean Daewoo conglomerate, which has established an in-house building design team in Poland. Of the other foreign architects with a permanent presence in the country, most have longstanding Polish connections, as in the case of the Vienese-based but Poland-born Tadeusz Spychala. Belgian practice E & L, US giant HOK International and Denton Corker Marshall from Australia have all set up Warsaw offices in recent years. Kurylowicz admits that these offices benefit from their established contacts with multinational clients, but is confident that in terms of professional skills, as well as access to state-of-the-art information technology, Polish offices are equal to their foreign rivals.

Work permit requirements and the system of local registration which necessitates Polish experience and qualifications pose serious obstacles for foreign architects planning to operate in the country. Therefore, foreign firms frequently employ Polish experts or associate with local firms which are able to apply the signature of a Polish architect possessing a relevant authorisation to the design. Kurylowicz says that such co-operation is beneficial for both parties. Clearly, without a Polish partner, a foreigner would have difficulties in wading through the jungle of agreement procedures related to construction permits – just as a Polish architect's chances of working on a Western-funded project are much improved through collaboration.

It is estimated that there are around 10,000 architects in Poland, which means that for each 100,000 citizens there are only 25 architects – half as many as in the United States, and only a quarter of the Western European average. But Poland's nine schools of architecture have a total of 6,500 students now, and every year several hundred students graduate.

"Competition between Polish and foreign designers is already fierce at the top end of the office sector, with the locals winning the battle – numerically at least."

The *SARP Bulletin* states that at present there are 269 architecture firms registered in Poland, 136 of which are based in the city of Warsaw and the surrounding district. These firms employ 10 to 20 people on average, half of whom are architects. The majority of Polish architects practice individually.

Krzysztof Chwalibog, the SARP's current chairman, sounds a note of caution. In his view, the current trickle of Western designers entering the Polish market is set to accelerate, as a result of the downturn in other markets. Whilst opportunities in Poland still exist for natives and foreigners alike, what goes up can quickly come down. Competition between Polish and foreign designers is already fierce at the top end of the office sector, with the locals winning the battle – numerically at least.

The heart of Central European business

Analysts of the real estate market unanimously believe that Warsaw will emerge as the premier Central European business ›

COUNTRY FACTFILE – POLAND provided by Hanscomb

The land: Poland is in Central Europe with an area of 312,683 square kilometres. The distance between the northern and southern borders is roughly the same as that between the eastern and western borders - about 650 kilometres. It borders Germany to the west, Belarus and Ukraine to the east, the Czech Republic and Slovakia to the south and Lithuania, Russia and the Baltic Sea to the north. There are five geographic regions from north to south: the Baltic coastal region; the northern lake region; the central lowlands; Lesser Poland uplands; the Sudeten mountains in the south-west and the Carpathian mountains in the south-east.

Climate: Poland has a continental climate influenced by maritime, arctic and sub-tropical air masses. Arctic air dominates much of the year, but it is moderated by the other air masses. There is considerable snow and fog in the winter from the maritime air currents. The summers are less humid.

Population: Approximately 38.6 million, 57% urban, 43% rural.

Number of registered architects: 10,000 (25 architects per 100,000 citizens, half as many as in the USA and a quarter of the Western European average.

Language: The official language is Polish.

Ethnic composition: Polish (97%), German (1%), other (2%).

Capital: Warsaw.

Time difference: Local time is one hour ahead of Greenwich Mean Time (GMT) and six hours ahead of Eastern Standard time (EST).

Airport information: Okecie international airport serves Warsaw. It is 6.7 kilometres from the city. Other major airports are in the cities of Gdansk, Krakow and Poznan.

Telephone: Dialling in: 48; dialling out: 00.

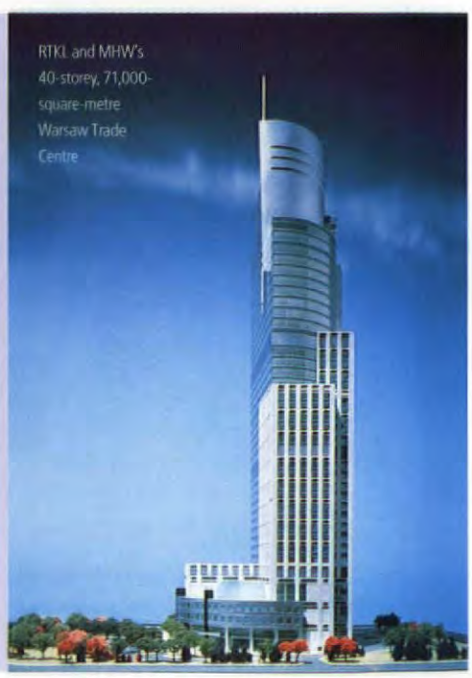
ECONOMIC DATA

Consumer Price Index: 1990=100

1992	243.5
1993	329.5
1994	435.6
1995	556.7
1996	667.5
1997	767.0

Average Exchange Rates: Zloty per US$

1992	1.577
1993	2.134
1994	2.437
1995	2.468
1996	2.875
1997	3.504
1998 (Dec)	3.446



RTKL and MHW's 40-storey, 71,000-square-metre Warsaw Trade Centre

Photographs Stefan Roman Sadowski

›centre, overtaking Budapest, a city whose earlier success was founded on the similarity between Hungarian and Western systems. Property agent Healey & Baker believes that other Polish cities, notably Poznan, Krakow and Gdansk, are also attracting increasing attention. Analysts from European Construction Research claim that the office construction business will only develop on a large scale from 2002 onwards – with a gradual increase in the importance placed on internationally competitive standards of design.

All foreign clients – not just the Americans, British, Germans and Japanese – understandably tend to stick with their favoured consultants when entering the Polish market. The Reform Centre, for example, a 206,000-square-metre office and commercial complex in Warsaw, has been designed by Turkish architect Vahapa Toy of Epit Co Ltd, commissioned by Turkish developers.

What is beyond doubt is that Warsaw, boasting 77 recently completed or on going hotel and office projects within its small central district, attracts well over 70 percent of property investment in Poland. Foreign architects and other construction professionals have invariably used the capital as their base. Experts from the Development and Economic Policy Department of the Warsaw City Centre Authority estimate the value of pending investments in offices, commercial facilities and services at approximately US$2 billion. The total area of office space in Warsaw is estimated at over three million square

Russian fall-out: fact or fiction?

Will the political and economic earthquake in Russia discourage foreign investors from committing their capital in Poland? Experts from the State Agency for Foreign Investments (PAIZ) think not. Investors already committed to this region and previously focusing on Russia are likely to redirect their funds to Poland. Last September, the world's largest investment bank, Merrill Lynch, opened its office in Warsaw. Krzysztof Krowacki, CEO of Merrill Lynch Polska, stated that his bank does not consider Poland to be an emerging market any longer, but one that is close to others in Western Europe. According to PAIZ, foreign investors coming to Poland are particularly interested in telecommunications, the power industry, metallurgy and the armaments industry.

Facing page: KPF's soaring Warsaw Financial Centre – a significant new landmark

metres, much of which is of a poor standard, located in office buildings of the Communist era, seats of the former foreign trade centres or in apartment buildings. For leading Polish architects and their relatively scant foreign rivals, this represents a potentially huge – if only gradually increasing – workload.

According to Jones Lang Wootton, only 300,000 square metres of the office space in Warsaw conforms to Western standards, with rents for such space being amongst the highest in Europe (reaching US$42 per square metre per month). In response, around 600,000 square metres of office space will be constructed within the next two years, including buildings constructed by banks and other large corporations for their own use.

KPF's high profile in central Warsaw

Between 2000 and 2002, around 250,000 square metres of office space will come onto the market each year. Paradoxically, the presently untidy state of Warsaw is a great advantage, as even in the very centre there are opportunities for new construction. One of the most high-profile buildings (to be unveiled officially later this spring) is Kohn Pedersen Fox's Warsaw Financial Centre (opposite), which promises to be a significant landmark. The 32-storey office tower, owned by Chicago firm Golub & Company, incorporates banking facilities and investment offices as well as public amenities. The design links in with Warsaw's existing urban fabric by marking three specific scales of buildings in the district. The base, rising to around 30 metres, relates to the height of neighbouring buildings. Above this is a significant setback along ulica Panska and ulica Marianska at around 68 metres acknowledging the intermediate post-war height of much of Warsaw.

Several skyscrapers of 100 to 180-metre height are planned in the city centre, although few clients or architects have revealed any details yet. The Warsaw Trade Centre, containing 54,000 square metres of floorspace and rising to 208 metres, is set to become the country's tallest building, designed by Baltimore-based RTKL in association with Warsaw architects Majewski-Wyszynski-Hermanowicz. Daewoo has a 97 percent stake in the project.

Shopping around

Apart from office buildings, the inflow of foreign investments has brought chains of supermarkets, hypermarkets, and huge shopping centres. While office development is centred on Warsaw, shopping centres are being erected in most large Polish cities, including Poznan, Wroclaw, Szczecin, Katowice and Krakow. Metro AG, a German chain, is one of the leaders among foreign investors in Poland. This company has already invested over US$537 million in the construction of new Praktiker stores, designed by the firm's in-house architects, and using local executive architects to manage construction contracts. Centrum Bielany Wrocawskie, located in Kobierzyce near Wroclaw, is set to become the biggest shopping centre in Poland. Its construction will cost US$40 million, and its area will be 70,000 square metres. Centrum has been designed by the Krakow- ›

"The total area of office space in Warsaw is estimated at over three million square metres... only 300,000 square metres conforms to Western standards."

Wojciech Krynski

Office and technical facility in Warsaw, by Piotr Wicha and Janusz Szymanski, in association with Bozena Goralska and Piotr Kalbarczyk

Foreign architects who have made the break

Ilbau
Austria
Skanska
Sweden (in association with Polish consultants Kazimierski and Ryba)
Daewoo in-house building team
Korea
Tadeusz Spychala
Vienese-based but Polish-born
E&L*
Belgium
HOK International*
USA
Denton Corker Marshall*
Australia

* have all set up Warsaw offices in the last few years.

›based architects DDJM Biuro Architektoniczne, led by Marek Dunikowski, and will be developed by IKEA, a company active in the Polish market for some time.

Hospitality on the up ...

Current demand for four and five-star hotels in Warsaw and other major Polish cities has been satisfied, although proposals for more hotels in the capital are in the pipeline, with Hyatt shortly to commence construction at the crossroads of Belwederska and Spacerowa streets. Skanska has also incorporated a luxury hotel in its plans for the Atrium complex. Other developers' plans are still confidential. According to European Construction Research, investment in hotels will gain momentum from 1999 onwards, due to the growing number of foreign and Polish tourists and business travellers. Those travelling will compel the market to create new mid-price lodgings, of which there is a shortage. The increasing popularity of private cars and road building will also contribute to the construction of motels. Several multinational hotel chains are already attempting to enter the Polish market. For example, Sphere International is constructing two-star hotels in Warsaw, and part-French-owned Hekon has obtained permits for the construction of five one-star and two-star hotels in various Polish cities. Meanwhile, Orbis, the biggest indigenous hotel operator, is investing heavily in motels and improving its existing hotels.

... but can they look after their own?

Since the beginning of the 1990s housing in Poland has sunk into a deep crisis. Output has plummeted, and apartments have become a luxurious commodity, inaccessible for the majority of Poles, owing to their excessively high price. According to current estimates, at least 1.5 million housing units should be built in order to satisfy demand. However, there have been recent improvements with almost 74,000 housing units – almost half of which were single-family houses – built in 1997, up 19 percent on the previous year.

The recovery of the housing sector was sustained in the first half of 1998 with 30,300 new housing units built, almost one percent more than in the preceding year. Polish architects believe that housing – alongside various kinds of public commissions – will offer them the best opportunities over the coming decade. The rivalry between Polish and multinational practices is fuelled by such Warsaw projects as HOK International's Globe Trade Centre, which incorporates a significant amount of up market housing.

The Government Housing Office believes that after 2000, a

Wojciech Krynski

Warsaw apartment development, by Wojciech Szymborski & Jacek Zielonka, in association with Izabella Galicka and Jacek Morawski


Computer generated image of HOK's Wielcka Housing project, currently under construction

significant growth will take place in the housing sector due to falling inflation and affordable mortgages.

Should you follow the leaders?

Many traps await investors who decide to commit their funds in Poland. Rapidly enacted legislation, changing regulations, complicated procedures and unclear interdependencies of officials constitute some of these pitfalls. Nevertheless, with Poland striving to join the European Union, the process of adjusting Polish laws to European standards has already commenced. Experts say that the most serious peril of the Polish real estate market is unclear property ownership status. Unfortunately, Poland and Croatia remain the only countries in Eastern and Central Europe not to have solved the problem of land re-privatisation. The Government is, however, introducing a draft law to address this matter, though it is unclear when the legislation will be enacted. Meanwhile, potential purchasers of real estate in Poland (especially in Warsaw) are recommended to check the ownership status of property before they close a transaction.

Limitations in granting foreigners access to real estate in Poland have presented problems. The European Union expects the country to lift these restrictions, although the Poles would like to maintain them for at least a few more years because of differences in land prices across borders. Nevertheless, since 1996, the Polish Government and parliament have accepted that certain concessions in favour of the European Union will be necessary. Liberalisation of regulations was one of the main conditions for accepting Poland's candidature for membership of the OECD. As a result, rules for determining fees for permits for the purchase of real estate were changed radically, to the benefit of foreign investors and their architects. Foreigners are not now required to obtain a permit if they want to purchase an apartment in Poland. A foreign company with an office in Poland may purchase undeveloped land without a permit unless its total area in the whole country already exceeds 0.4 hectares.

Foreign property consultants agree that investors conducting reputable business in Poland do not have problems with obtaining permits for the purchase of land. In 1997 foreign investors bought 1,774 properties in the country, 80 percent more than in 1996.

Proposing a "law on architecture"

After the penetration of state control in architecture the free market was supposed to be an opportunity for investors and designers to develop cities. The developments of the last decade have been so numerous that now nobody can remember the state design offices and the factories of the so-called "big board".

But with the free market have come inevitable problems. The director of the Managing Board of the Association of Polish Architects (SARP), Krzysztof Chwalibog, mentions the threat to spatial order and the national identity. In order to deal with these problems the first "Congress of Polish Architecture" took place in Gdansk in the autumn of 1998. Many different solutions were put forward, including a proposal for a "law on architecture" (the guidelines of which are unclear), but which is currently going through Parliament. The absence of recognised architectural values has led to excessive freedom and substandard solutions. The previous system set very low technological and architectural standards, although some architects have since been attempting to produce "European" architecture, while shaping their individual styles.

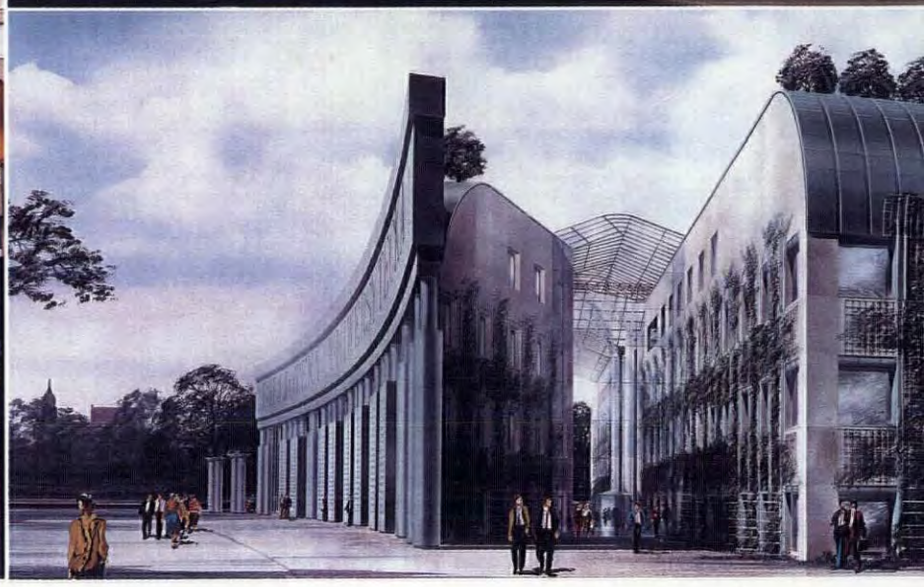
While the process is still so under-developed the temptation is for investors and civil servants to see the name of a particular foreign architect as a "label" of authority. Warsaw has hosted Renzo Piano and Ricardo Bofil – although they haven't built – as well as Sir Norman Foster, who is designing an office in Warsaw's most exclusive quarter, Pilsudski's Square.

"The absence of recognised architectural values has led to excessive freedom and substandard solutions... but some architects have since been attempting to produce 'European' architecture while shaping their individual styles."

Looking behind as well as in front

The building of Sad Najwyzszy (the Supreme High Court) goes back to the architecture of the pre-war period. The execution of this building is a result of a competition won by Marek Budzynski, who also designed the University Library. Its form draws both on the symbols conjured up by the book and is sensitive to ecological concerns, with gardens on the roof. The quality of Warsaw's interwar architecture has already gained international recognition and has been inspirational for ›

APA Zdzisaw Jonca



Above left: Norway House by Scan Invent (Tom Granlund and Krzysztof Stapf). **Top right:** The new library of the University of Warsaw under construction, by Marek Budzynski and team. **Above right:** Concept drawing for the library above

many architects. The best example of this is the building (providing office space as well as flats for ordinary citizens) designed by Krzysztof Ozimek close to Aleje Sobieskiego. The same architect is currently working on a big complex in the centre of the Warsaw's Right-Bank, which will be a dominant building in this part of the city (on the corner of Kijowska and Targowa Streets).

New tendencies in office building trends are exemplified by Norway House which is characterised by elegant divisions of its stone elevation. The architectural team is Scan Invent – led by Tom Oranlund and Krzysztof Stapf (from Norway) and APA – represented by Zdzislaw Jonca, Michal Sondij and Ryszard Trzaska. An example of a different and developing style is the recent Top 2000 office development by Stefan Kurylowicz in Nowogrodzka Street (reviewed in this issue). It shows the inventiveness of one of the most eminent Warsaw architects, dealing with a difficult site. Another distinguished Warsaw architect, Czeslaw Bielecki, has made his impact upon the "blurred" space of a sociomodernist estate with a very expressive design for the headquarters of Polish State TV.

"Architecture's profile has been raised although the civil servants of the self-governing organisations are still not demanding enough."

The needs of national and international investors, and consequently the architects' market, are so huge that the appeal for foreign architects coming to Poland with fellow colleagues and investors is enormous. Architecture's profile has been raised although the civil servants of the self-governing organisations are still not demanding enough, as a result of an excessively liberal legislative system. The criticism levelled at overseas investors and architects has been perceived as hysterical xenophobia, but this masks the truth of Poland as a country which is open-minded. The architectural community is keen to collaborate with international designers. There is still a long way to go to raise the standard of the built environment at the heart of Europe. Attention must be turned to the trivial approach to detailing, the banality of some solutions and unimpressive spatial planning. But there should also be greater international recognition of the Polish architects, not only mentioned here, but those from Krakow, Wroclaw, Katowice, Gdansk and Lublin who are paving the way for a new generation. WA

CONSTRUCTION FACTFILE provided by Hanscomb

Construction outlook: The Polish construction industry has experienced steady growth during the past four years. This should continue in 1999 with real growth in output possibly reaching 8%. The main focus of construction activity is the commercial sector, in particular office space and shopping centres in the larger cities. Poland's growth is helping to generate a high demand from foreign companies for office space. Sustained growth in private consumption and the largest market in central Europe continue to attract retailers to Poland. Industrial development is expected to continue growing in 1999, but the growth rate is continuing to decline from the average of about 20% per annum experienced in the mid 1990s.

Public sector construction, heavy civil projects and institutional projects will continue contributing to growth, principally transportation projects, roads, railroads and schools.

The housing sector is also set to expand after bottoming-out in 1996. However, the limited resources of individuals in Eastern European countries reduce the strength of the housing compared with Western European countries. Interest rates of around 25% make it very difficult for most Poles to finance a home. In addition, high construction costs for housing are limiting the market.

Rates of inflation: The 1998 annual rate of inflation for the construction industry is estimated at 9%. This may be the first year since economic reform that the inflation rate has dropped below double figures. This rate is expected to be about 8% in 1999.

Procurement of construction: The Construction Law of 1995 regulates many of the planning, approvals and technical requirements for building design and construction. There is no standard agreement between the architect and the owner, although versions of the AIA and RIBA, modified to suit Polish law, are used. Traditionally, the owner contracts with the architect, who holds and manages the engineering contracts. The design team prepares the preliminary design, which is required to obtain the necessary approvals. At this stage the architect prepares a site plan (1:500) and building layout plans (1:100 or 1:200). Approvals (from six agencies) and assurances of utilities availability are necessary before proceeding to final design.

Final design is sufficiently detailed to secure tenders, but does not comprise full construction documents. Actual design is closer to design development when a project is tendered. However, the designers may complete drawings and then bid the project. Final approvals by the six agencies are required to obtain a building permit before tendering.

Besides the drawings, the tender package generally includes specifications, form of tender and bill of quantities (BQ). The BQ is prepared by a consultant working for the architect. It becomes a contract document, but it is not guaranteed by the owner.

Design professions: There is a large and generally well-trained group of designers in Poland. There are no established professional fee scales, although local professional organisations do make recommendations. Professionals involved in the supervision and execution of projects must be licensed. At present, only licences issued by Polish authorities are valid.

Contractors: General contracting is preferred over separate trade contracting in Poland. General contractors perform about 45% to 50% of the work subcontract the rest. Specialist trades such as building management systems, fire protection and high-tech systems are usually subcontracted.

Governing codes and standards: There is a gradual process of unifying codes to align with EUROCODE (EC) by 1999. Normally, EEC standards and codes are used, unless Polish standards have higher criteria.

Construction materials and methods

Material availability: General building materials are normally available in Poland. Basic materials are manufactured locally. Special materials are imported from Western Europe, especially Germany and Austria, and the USA.

Labour availability: Skilled and unskilled labour is available. The construction labour force is unionised and considered influential.

Equipment availability: Equipment and plant are generally available. They may be of local, Western European or USA manufacture.

Favoured construction techniques: For commercial structures and for residential construction in multiple stories, a reinforced concrete structural frame is typical. However, structural steel frames are common. The exterior walls are often brick and stone and roofing may be either built-up or single ply membrane. Interior partitions are usually masonry and plaster, but gypsum board and metal studs are available and used.

Construction cost guides

Approximate construction costs: The following square-metre unit rates, typical for the Warsaw area, are provided for rough comparison purposes. The costs exclude land, site work, infrastructure, professional fees and value-added tax (22%).

Building type	PLZ/m^2
Warehouse	1,400-2,000
Industrial building	1,800-2,300
Office building, shell & core only	1,700-2,150
Office building, tenant fit-out	1,100-1,500
Parking deck, above grade	1,000-1,700
Apartment building	2,200-2,500

World Architecture *and* Hanscomb *wish to thank Niall Budimex-Projekt of Poland for assisting in the presentation of the information in this Country Focus.*

Face to face

Return of the native

Mark Kubaczka's decision to join a Haymills Holdings delegation to Poland as "architectural assessor, translator and God knows what else" was crucial and fortuitous. The Polish-born, UK-educated head of Australian firm Denton Corker Marshall's Warsaw operation talks to Peter Wislocki about the rewards of working in the thriving Polish market which, he claims, is free of the corruption so often attributed to it.

Having worked with Fitch, Mark Kubaczka set up his own practice in the 1980s, before joining Denton Corker Marshall's embryonic London office in 1990. These were difficult times to launch any venture, and DCM's British workload consisted mainly of interiors and fit-outs, with only occasional building commissions.

Born in London of Polish parents, Kubaczka was able to apply his language skills and local knowledge, introducing DCM to a number of private and public sector Polish clients. "But that was when there was still a lot of paper architecture," Kubaczka recalls. "Many people were interested in countless sites... but nobody would provide finance." The "few little jobs" which did proceed were sufficient to sustain his nomadic existence, commuting weekly between London and Warsaw, and making occasional exploratory forays into Hungary and Romania. The "big break" was not until 1992, when DCM designed CocaCola's bottling and distribution plant near Kraków – a project which went on to win Poland's "building of the year" award, putting the Australian-based practice firmly on the Polish map.

More prestigious commissions followed. There was a fit-out for the British Embassy; and a temporary visa processing facility. "Poles had to stand in the rain – there was a desperate need to get people under cover. We designed a tent structure, with some prefabricated cabins. Only days later the visa requirement was abolished, making the scheme redundant."

In the early 1990s Kubaczka visited Poland on a regular – generally weekly – basis, meeting clients and seeing sites, but returning to the London office to coordinate the production of drawings and other documents. In 1992 the decision was made to open a Warsaw base, initially with a "tentative" contingent of three staff. "About three years ago," Kubaczka recounts, "there was a turnaround in world thinking about Poland". DCM's workload increased dramatically, and the office quickly grew, from five architects in 1995 to a total of over 25 technical staff today. "Now people are falling over each other to invest – but there's a shortage of available sites."

"The 'big break' was not until 1992, when DCM designed CocaCola's bottling and distribution plant near Kraków – a project which went on to win Poland's 'building of the year' award."

Polish identity

Like most newcomers, DCM began by networking with other multinationals, notably including Jones Lang Wooton, which was amongst the first foreign firms to set up in Poland. These contacts have become less crucial, "now that we've got a local reputation".

"First and foremost we're a Polish company," Kubaczka insists, pointing out that of his staff, only four are expatriots. "Then we're an international company... held together by the bonds of friendship between the directors." John Denton, Bill Corker and Barrie Marshall, DCM's Australian founders, as well as London-based Steve Quinlan, are regular visitors to Warsaw; as are the multinational's more specialist directors, such as the Indonesian-based hotel designer Budiman Hendropurnomo. But British-trained Kubaczka emphasises the core competence of his locally recruited team. "Working with Polish architects is wonderful. It's only because of the boom, and the consequent staff shortages, that we've been recruiting internationally."

"Now people are falling over themselves to invest, but there's a shortage of available sites."

Until recently multinational clients tended to employ foreign concept designers, commissioning local practices to produce working drawings, obtain approvals, and administer construction contracts. But Kubaczka believes the trend has been established towards more integrated services, favouring firms such as his own and its leading competitor Hellmuth, Obata + Kassabaum, which relate international concerns to local issues.

DCM's role as co-architects on ING's Warsaw headquarters building (reviewed in this issue) involved making significant design changes to comply with Polish fire regulations. "The requirements are strict but very sensible," Kubaczka argues. "Almost all of the corridors, service cores and entrances had to be modified; and many doors were added." ING required that even a fully air conditioned building should have a high proportion of opening windows – which, in turn, necessitated the addition of external balustrades on all of the bank's stone-clad facades.

The design of a new headquarters building for Bank Âlàski, ING's Polish subsidiary, is well advanced, with construction set to commence shortly on the central Katowice site.

Poland in practice

"The procedures for getting things done here are different to those in the UK," Kubaczka acknowledges, "but the principles are the same". Approvals are obtained in distinct stages, the first involving the "site development conditions" (*"warunki zagospodarowania i zabudowy terenu"*), which define plot ratios, use-classes and the range of specialist authorities (ranging from the fire brigade to the city conservation officers) which would need to be consulted. By the time an architect applies for a building permit, the next stage in the process, "one will have had a dialogue, and any conditions will reflect what has already been informally agreed".

"There are Polish norms for every aspect of building permit documentation," Kubaczka explains. "Drawings have to be to specific scales, usually 1:100, and everything has to be dimensioned. You could build from building permit drawings." Polish regulations also require a full energy audit of every project, as well as structural details and calculations. All this information is produced before the contract is tendered, which means that tender packages are "typically 70 percent complete".

Most architects working in Poland acknowledge that corruption persists, at least in isolated instances where clients are tempted to accelerate what can sometimes be a painfully slow approvals process. Kubaczka, however, challenges this view. "Things are quite transparent and straightforward," he insists. DCM deny any knowledge of malpractice, let alone active involvement. "Warsaw is like any other capital city. Poland is not a Third World country."

The forms of contract used to deliver DCM's projects reflect the expectations of their multinational clients. "All sorts of procurement routes are used here, including management contracts and design-build. We also work to more traditional Polish systems – but we tend to detail more than the old Polish conventions require."

Now 39 years old, Kubaczka has no intention of returning to the UK, seeing himself as a Polish architect in every sense. "The old view that Polish architects are good designers, but ignorant of western technical and business needs is no longer valid. The needs of the Polish market are now very similar to those of international clients, and local firms are responding very well to new challenges." Kubaczka sees no merit in resting on DCM's international laurels – "you can't just import architecture". WA

Peter Wislocki

A flagship to follow

The Dutch banking and real estate group ING has been so successful in Poland that it has chosen to occupy its first Warsaw speculative building as its national headquarters. As Peter Wislocki explains, the project provides an example for others to follow, bringing together architects, engineers and project managers from Poland, The Netherlands, Australia and the UK, and setting new standards of technical performance and construction detail in this fast-moving market.

Peter Wislocki

Facing page: The building's corner entrance connects the two public facades
Above left: The crisp execution of a porthole window within an irregularly curved, stone-clad elevation is typical of the building's careful detailing
Above right: An entirely contemporary stripped classicism respects the symbolically loaded site, dominated by the church of St Alexander

ING was amongst the first European financial groups to enter the post-Communist Polish market. ING's banking and financial services divisions (which now have a controlling stake in Bank Slaski, one of Poland's largest banks) led the way in 1991, with ING Real Estate establishing its Warsaw base in 1994. Looking to invest their own funds in a speculative development, ING expressed interest in a site on the eastern flank of Plac Trzech Krzyzy, a central Warsaw square forming part of the ancient processional route linking various royal palaces and state institutions. In less favourable circumstances, various proposals for developing the site had been put forward (including a competition-winning design for a hotel), but only by the mid- 1990s had economic confidence grown to the point where ING found themselves as one of three serious bidders (alongside French and Canadian competitors) in a developer competition to secure a 99-year lease.

The client – ING

Eager to ensure that their commercial acumen should be reinforced by a sensitive architectural approach, ING commissioned Marek Swierczynski to work alongside Dutch-based Atelier Pro. Swierczynski previously advised the Warsaw city authorities with respect to the disposal of the site and its urban planning significance, having won the 1991 competition for a hotel in the same location.

The Dutch-Polish conceptual design provided the basis for ING's winning bid. Denton Corker Marshall (DCM) – an international practice with a Warsaw office which was well established by this time – was hired to act as executive architect, coordinating the work of Dutch consultants (responsible for the conceptual design of the structure and services) with their Polish counterparts (who developed the construction details in response to local technical and regulatory requirements).

"The project took four years from inception to completion," ›

›enthuses ING's Jan van Hensbergen. "For a DM 60 million [US$40 million] project, that's fast track – even by Dutch standards." The success of ING in Poland has been such that 80 percent of what was originally a speculative development will now be occupied by the group's various divisions, making this a flagship project in several senses.

The architects – Atelier Pro with Marek Swierczynski and Denton Corker Marshall

The almost total destruction of Warsaw during the Second World War, and the erratic process of its reconstruction, make the issues of context and continuity unusually poignant in the Polish capital. "In Warsaw, contemporary or modern is synonymous with prefabricated buildings, and therefore not loved," acknowledges Hans van Beek of Atelier Pro. The architects sought to create a "polite" building; "respectful" yet "modern".

ING's site extends from the frontage to Plac Trzech Krzyzy down the Warsaw escarpment towards extensive parkland. The planning strategy demanded a formal, elongated and essentially reticent commercial development to complete the symmetry of the square, facing the neoclassical domed church of St Alexander and the stripped-classical 1950s Finance Ministry building beyond. Towards the park, the office building is far less formal, its mass breaking down in curtain-walled, stepped tiers, facing a loose cluster of apartment blocks which ING are in the process of developing as part of the competition-winning masterplan. The regularity of the office building's sandstone-clad elevations contrasts with striking, but pragmatically conceived, details at each of its corners. By threading a public route linking the square to the park through their site, the architects were able to detach the main office block from the adjoining institute for the deaf and blind, respecting the latter's more domestic scale in their design of an entirely separate, pitched roofed block. The bank's corner entrance is dramatically articulated, with a clean break between the two facades, opening up a diagonal slot into the triangular, inwardly-stepping atrium.

The frontage to the square is set back from the notional building line, with an arcade of shops animating the pavement. Within the building, much of the ground floor is given over to a restaurant, enjoying direct access to an ornamental pool within the generous gardens. From the entrance, a

Wojciech Krynski

Wojciech Krynski

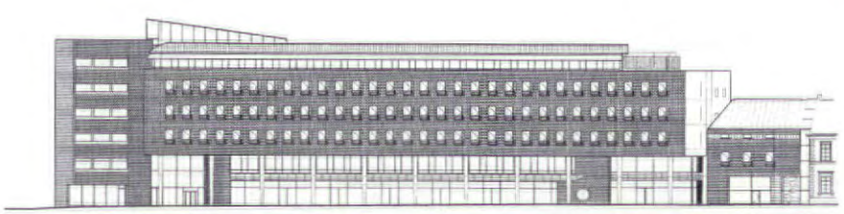
curving stair ascends directly to the "throbbing heart" of the building: the atrium, from which – very much in the manner of a Hyatt Regency hotel – open galleries provide access to cellular accommodation at every upper level.

Project managers and cost consultants – Euromost

"Building in Warsaw is not as cheap as people think," says Maggie Coles, head of Anglo-Polish project managers and cost consultants Euromost. The high proportion of imported components in the ING project (Schüco windows; Kone lifts) along with escalating local labour costs, places Warsaw construction costs "slightly lower than Central London", but (as ING has noted) somewhat higher than the Dutch average. The statutory requirement to use only materials and components accredited by the Polish authorities imposed some commercial constraints (though as DCM's Mark Kubaczka emphasises, the range of accredited and readily available ›

Facing page: The rear elevation, facing the extensive gardens and future residential development, is more fragmented and transparent
Left: The atrium is animated by open walkways, in the manner of a Hyatt Regency hotel

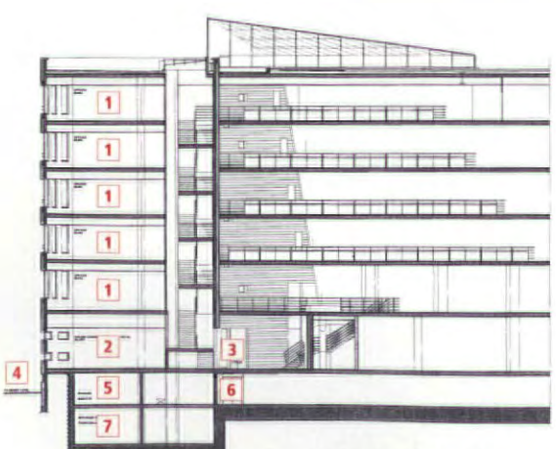
Park elevation



Elevation to Plac Trzech Krzyzy

Key to sections

1. Office
2. Future designated area for retail
3. Atrium
4. Pavement level
5. Storage
6. Parking
7. Sprinkler pump room
8. Entrance



Cross section looking east

Cross section looking north

Wojciech Kryński

Left: A "Zen garden" connects the atrium to the parkland to the east of the building
Below: The principal elevations are abstract and disciplined, with external handrails adding a human scale to window openings within the sandstone cladding

Structural engineers – Prochem

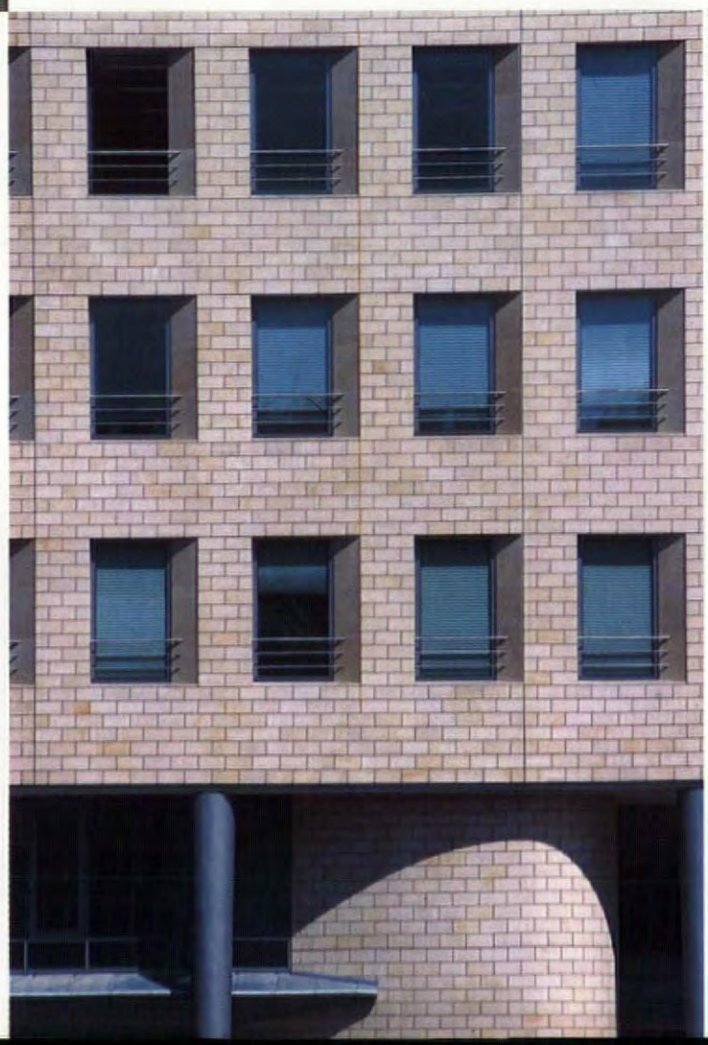
Structurally, explains Barbara Magierska of Warsaw consultants Prochem, the ING building uses the in situ concrete structure generally favoured in Poland, but incorporates several exceptional elements. The entire west elevation, for instance, acts as a shear wall, but is raised on pilotti above the arcade of shops at ground level. Several other shear walls support the floor slabs around the atrium, each of which projects by 1.8 metres beyond the level below. The overall geometry of the building made it difficult to provide wind bracing; and enormous movement joints at the northern face of the atrium, and substantial transfer beams over the car park, added challenges for the Polish executive structural design team. Magierska feels, however, that the approach of the Dutch concept designers differed little from normal Polish practice, making collaboration relatively straightforward.

The specification of the building services, by contrast, was unusually complex, with four-pipe fancoil air conditioning controlled by an advanced building management system. The original Dutch outline specification was translated into tender

› building products in Poland has vastly increased in the last few years).

Euromost's responsibilities, in its role as "*inwestor zastepczy*" ("deputy investor"), included cost control and overall management of the lengthy approval and tendering process. "Our role is much broader in Poland than it would be in the UK – largely because of the approvals, which are perceived to be more complex here. But the benefit is that you end up with much more detailed tender information." Coles acknowledges that corruption, though much diminished, survives in Polish local government and industry, but insists that no multinational client of ING's status would tolerate any malpractice at any stage of a project. "It was perfectly straightforward. If you establish your position from the outset you avoid any improper advances." Coles emphasises, however, that Polish regulations, though extremely comprehensive, are also open to interpretation, making personal relationships with building control officials invaluable.

The historic significance of ING's site made early consultation with the Warsaw conservation authorities mandatory. The approvals process was nevertheless handled diligently by all parties, many of the project's challenges being imposed not by the Polish bureaucracy, but by the client, who insisted on adopting the most onerous technical standards – whether Polish or Dutch – with respect to every detail. From the project manager's perspective the project has been a success, being delivered under a traditional, competitively-tendered lump sum contract on time and within budget.



Peter Wisłocki

drawings and specifications by Prochem, and let competitively as a contractor-designed package to a Dutch firm, working in collaboration with a local subcontractor.

Appraisal

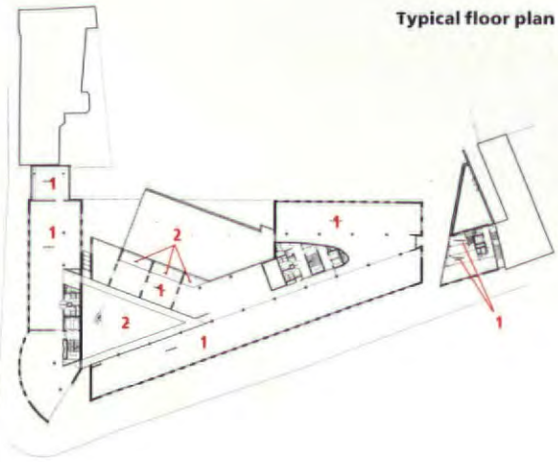
As some of the other buildings featured in this issue of WA illustrate, whilst Polish architects are amongst the most cosmopolitan and professionally competent in the world, even the most conceptually interesting buildings are sometimes compromised by detailing which appears heavy handed by the highest international standards, often due to the deficiencies of indiginous contractors, and the reliance on a relatively restricted range of industrially produced components. There simply aren't as many brands of curtain walling available in Poland as in the USA, UK or Holland; and, due to a degree of isolation in the 1980s and early 1990s (the leading Polish monthly *Architektura-Murator* only began publishing in October 1994, after some years during which most Polish architects, and their clients, had limited opportunities to see good quality illustrations of the best of foreign buildings), the selection of industrially manufactured building elements does not always follow the dictates of international fashions, making even the most recent buildings appear dated.

The ING building is therefore immediately striking, in its Polish context, both due to the elegance of its concept, and the precision of its execution. Despite having to modify the scheme design to comply with strict Polish fire safety regulations (see interview with DCM's Mark Kubaczka), the completed building retains a balance of transparency and pragmatic cellularisation. The sequence of spaces, from the entrance, through the restaurant and its outdoor terrace, and up into the heart of the atrium, is exhilarating yet – subject to the acid test of occupation – entirely practical. Contextually, the building has presence, yet does not dominate unduly. Local critics have commented favourably on the building's scale and use of materials. Within a potentially laconic grid, numerous details (some achieved with great effort on the part of the executive architects and specialist contractors, such as the port-hole window set within an irregularly curving stone-clad wall) provide points of exceptional interest. If anything, the building, in terms of its planning and structural system, if not its principal elevation, could be criticised for excessive complexity. The concept design exhibits a shade of youthful exuberance – simply too many ideas – alongside praiseworthy skill and ambition.

Beyond its architecture, the project provides a sound benchmark of professional, commercial and organisational achievement, which other multinational coalitions of funders, developers, architects, specialist consultants and project managers would do well to follow. WA

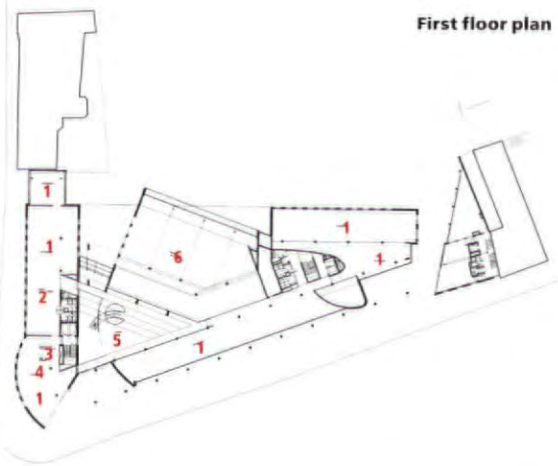
Client
ING Real Estate (Warsaw)
Architects
Atelier Pro with Marek Swierczynski and Denton Corker Marshall
Engineers
Wichers + Dreef, EFPC, Cosmit
Executive engineers
Prochem
Project managers
Euromost

Typical floor plan



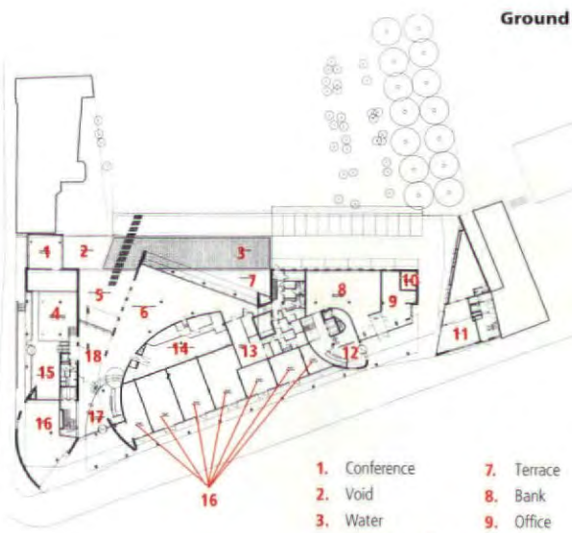
1. Office
2. Void above atrium

First floor plan



1. Office
2. Pantry
3. Staircase
4. Void
5. Atrium
6. Dealing room

Ground floor plan



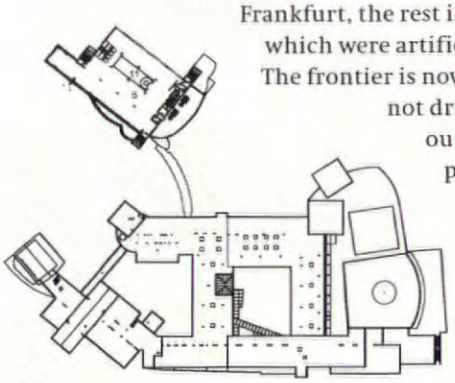
1. Conference
2. Void
3. Water
4. Mezzanine office
5. Zen garden
6. Restaurant
7. Terrace
8. Bank
9. Office
10. Refuse
11. Retail
12. Entrance
13. Kitchen
14. Computer room
15. Toilets
16. Shop
17. Main entrance
18. Atrium

Architect
Tomasz Durniewicz
Reviewed by
Peter Wislocki

Cross-border culture

Collegium Polonicum International University Campus, Slubice

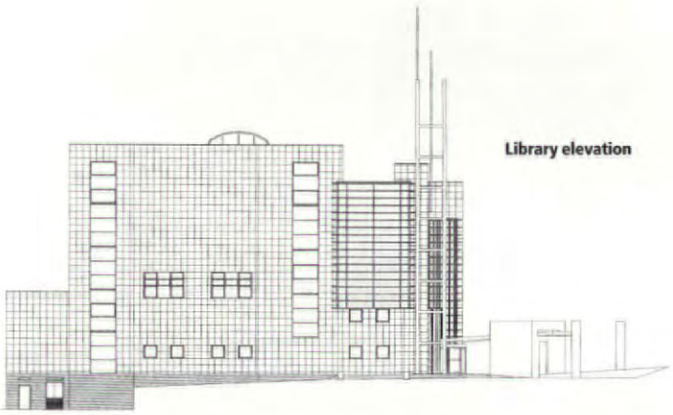
The Collegium Polonicum constitutes the Polish half of a unique, international university, founded as a partnership between the University of Poznan and the Universitat Viadrnia. Funded by the two national governments, in conjunction with the European Union's PHARE project and the support of a private foundation for Polish-German relations, the university's teaching facilities are located on either side of the River Oder, half in Frankfurt, the rest in Slubice, reuniting settlements which were artificially divided in post-War decades. The frontier is now easily crossed by pedestrians (if not drivers) using the bridge just outside the Collegium Polonicum's principal entrance.



Roof plan

Tomasz Durniewicz won a two-stage architectural competition in 1994, and completed scheme design work in 1996, enabling the first phase of the Collegium to admit students for the 1998-99 academic year. A further phase will accommodate a major auditorium and additional teaching rooms to the suite of classrooms, laboratories and administrative offices contained in the already finished buildings. A library and halls of residence are being constructed on adjoining sites.

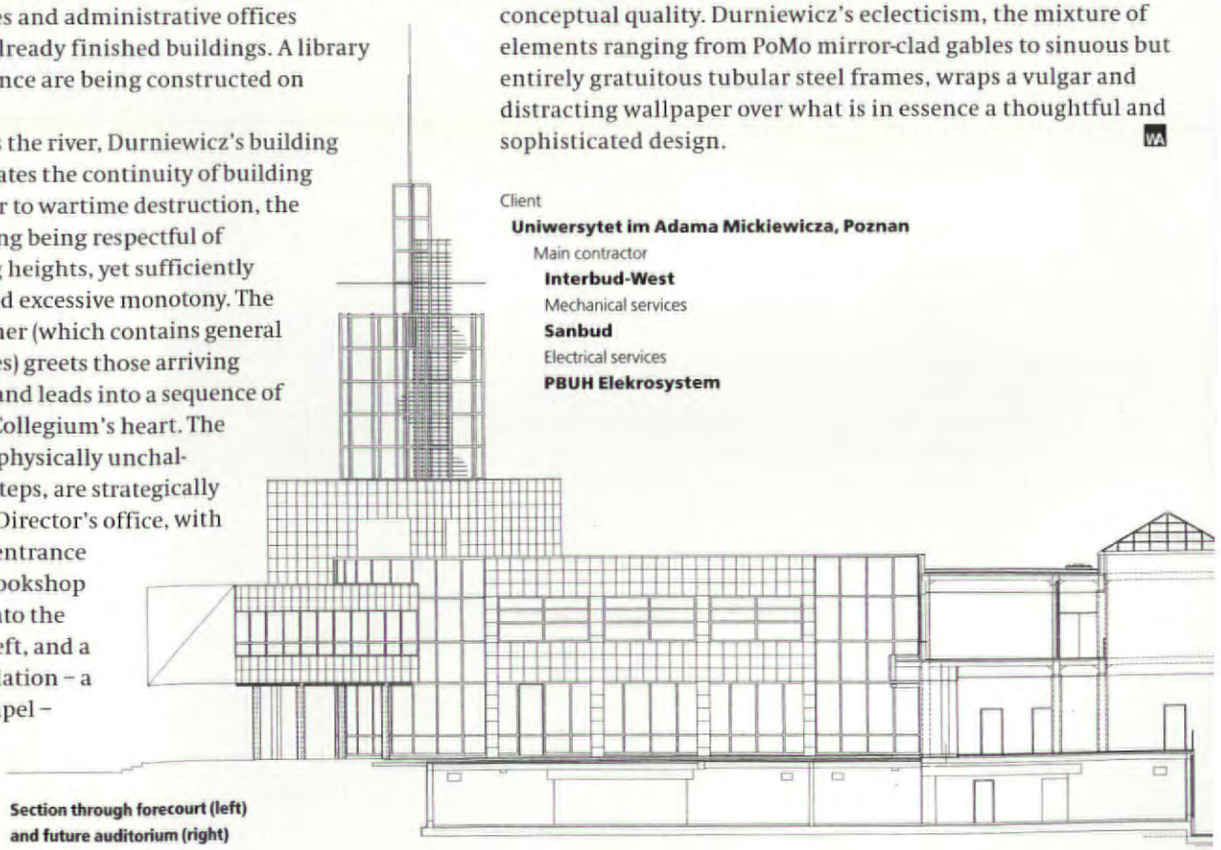
Seen from across the river, Durniewicz's building successfully reinstates the continuity of building which existed prior to wartime destruction, the Collegium's massing being respectful of adjoining building heights, yet sufficiently fragmented to avoid excessive monotony. The barrel-vaulted corner (which contains general science laboratories) greets those arriving across the bridge, and leads into a sequence of courtyards at the Collegium's heart. The monumental (but physically unchallenging) external steps, are strategically overlooked by the Director's office, with the planar-glazed entrance directly ahead, a bookshop and cafe spilling into the courtyard on the left, and a space for contemplation – a kind of secular chapel – in an opaque, cubic volume on the right. Through generous glazing visitors can look into the stairs and corridors and see students and staff on their way to teaching rooms throughout the little complex.



Library elevation

If the planning strategy is both skilful and appropriate, the detailing and tectonic quality of the building is far less convincing. Despite, or rather because of a plethora of materials – polychromatic ceramic tile rainscreen cladding, brickwork, curtain walling, mechanically fixed glazing and mirrored windows and cladding – there is a sense of thinness and lack of substance which undermines the building's conceptual quality. Durniewicz's eclecticism, the mixture of elements ranging from PoMo mirror-clad gables to sinuous but entirely gratuitous tubular steel frames, wraps a vulgar and distracting wallpaper over what is in essence a thoughtful and sophisticated design. WA

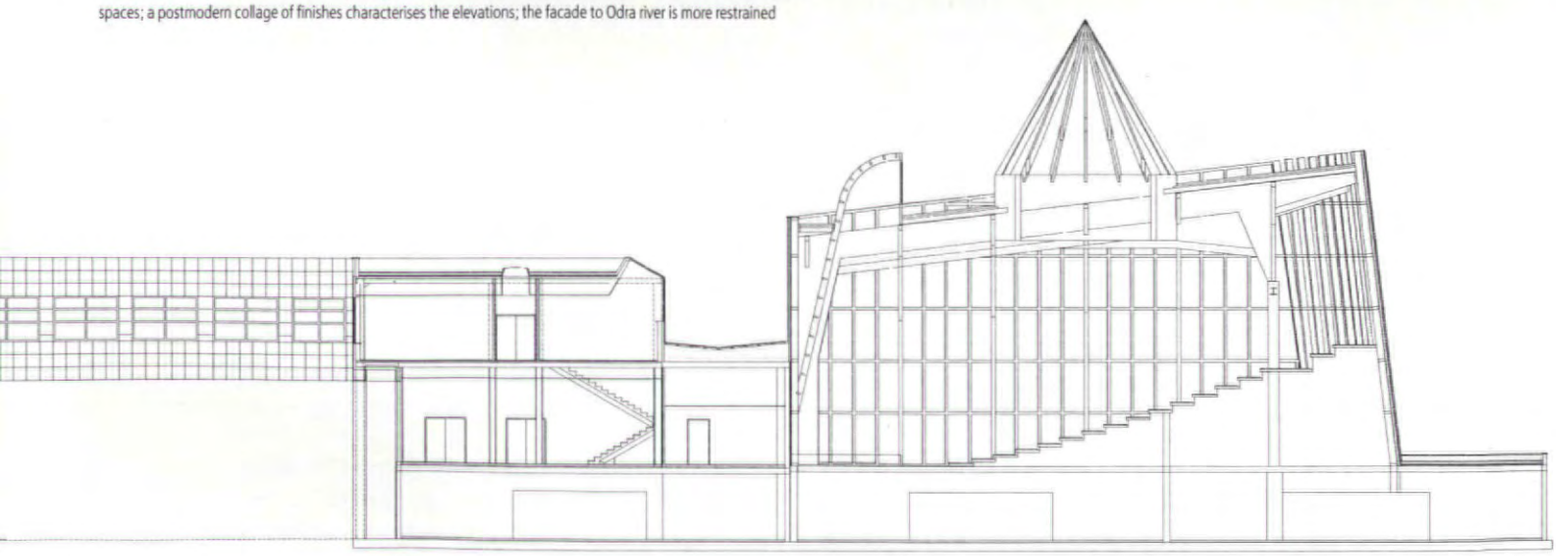
Client
Uniwersytet im Adama Mickiewicza, Poznan
Main contractor
Interbud-West
Mechanical services
Sanbud
Electrical services
PBUH Elekrosystem



Section through forecourt (left) and future auditorium (right)

All photographs: Peter Wolocki

Clockwise from top left: Structural glazing to main entrance hall; entrance forecourt is overlooked by circulation spaces; a postmodern collage of finishes characterises the elevations; the facade to Odra river is more restrained



Architect
Grzegorz Stiasny and Jakub Waclawek
Reviewed by
Ewa Przestaszewka-Porebska, Editor of *Architektura – Murator*

Symbolic structure

Bialoleka Town Hall, Warsaw

All photographs by Wojciech Krynski

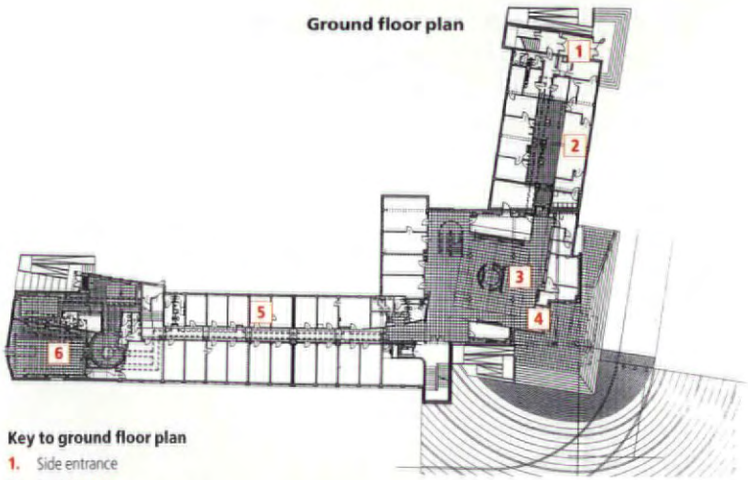
Above:
General view of the town hall, which unlike most prestigious buildings in Warsaw, has been designed by architects from the younger generation

Facing page:
View north-west facing the park. The tectonics and materials refer to the inter-war modernist tradition, and to Dutch architecture of the 1930s

After the political transformations at the beginning of the 1990s, the administrative structure of Warsaw was changed considerably; Bialoleka is an independent commune in the northernmost district of the capital. Warsaw is witnessing a building boom, shaped mostly by large commercial enterprises. Alongside these projects – and of greater importance for the new image of the city – are the relatively few buildings commissioned by the government or local communities for their own use. Bialoleka's new Town Hall was to be a symbol of the new political structure and secondly, it was to become a nucleus of the city's still developing fabric. Above all, it was to serve multiple purposes and contain premises of various self-government bodies, a registry office, a bank and retail spaces as well as rooms for private meetings and social activities of the district's citizens. Unlike most prestigious buildings in the capital, the Town Hall was designed by architects from the less well-known younger generation.

The architectural concept of the building is based on a contrast of simple volumes and materials used on the elevations: dark red clinker brick and white plaster. The Town Hall is built on an L-shaped plan; its wings meet at a nodal main lobby containing a grand staircase and a passage to the Council Chamber. On the outside, this point is emphasised by a balcony jutted out over the main entrance, and a dynamic glazed staircase which is a vertical element, stuck into ›

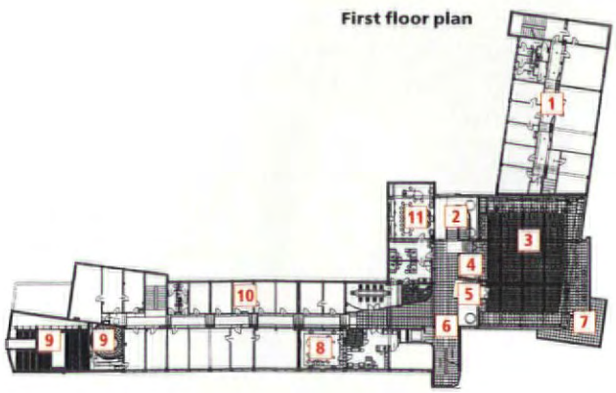
Ground floor plan



Key to ground floor plan

1. Side entrance
2. Bank branch
3. Entry hall
4. Main entrance
5. Office
6. Marriage ceremony rooms

First floor plan

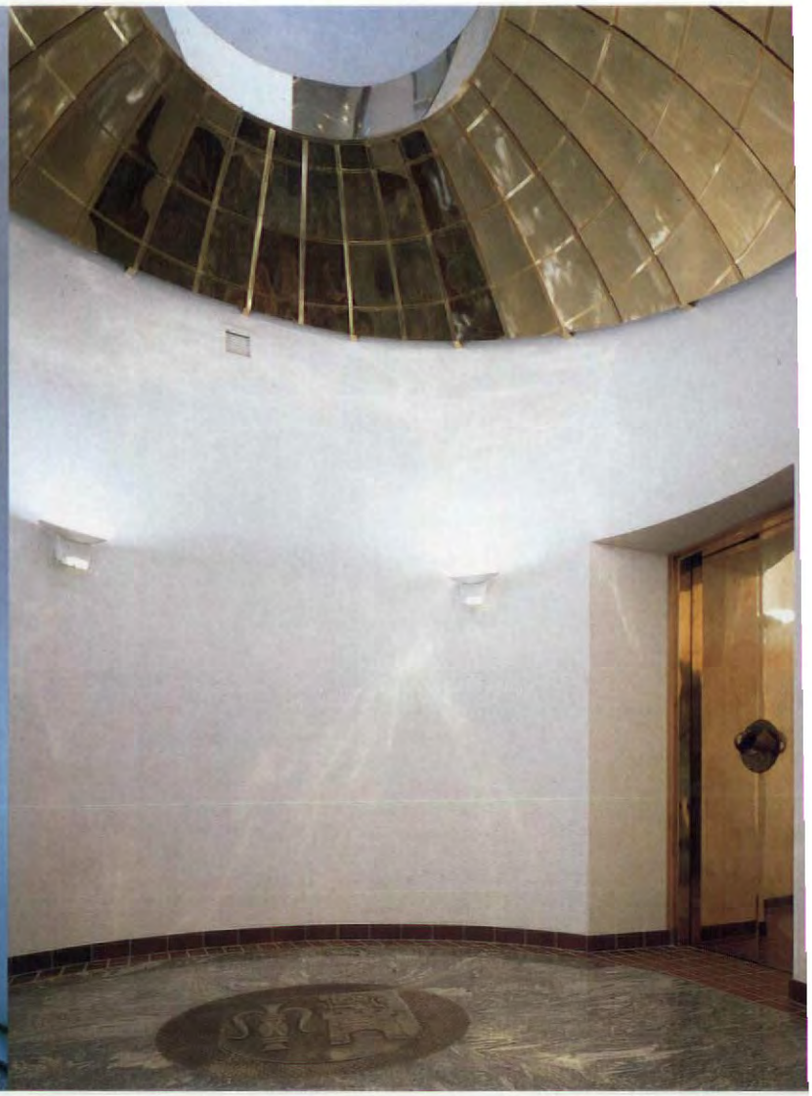


Key to first floor plan

1. Borough social centre
2. Stairs from hall below
3. Council room
4. Void above hall
5. Stair to council room
6. Council room foyer
7. Balcony
8. Mayor's office
9. Void over marriage ceremony rooms
10. Office
11. Chief counsellor's office

Above right:
Stairs to council room

Below right:
Lobby in front of the registry office



›horizontally proportioned elevations.

The tectonics and materials used in the building refer to the inter-war modernist architectural tradition, and to Dutch architecture of the 1930s. This trend in Warsaw's architecture was eagerly accepted by the Polish architectural fraternity. In some measure it results from a universal popularity of this style, but also from a wish to find links with pre-war Polish architecture. It is an expression of longing for historical continuity, interrupted in the communist times, creating if only a symbolic bridge between the Second (pre-war) and Third (present) Polish Republic.

The spatial design of the Town Hall is based on an interplay of the main axes and displacement of individual elements in relation to these axes. The main entrance is located at the intersection of the main directions, yet the door opens toward an outwardly leaning fragment of a wall; stairs leading to the Council Chamber run along one of the axes, yet they rest on binding joists turned in the opposite direction. The superimposition of directions is most noticeable in the main lobby, and is visualised on the floor by stone slab arrangements following two orders. Order and axiality is connected with the government, while asymmetry and multiple directions symbolise freedom and diversification.

The Registry Office provides a great surprise. It has an oval waiting room with a concentrically laid floor and a spherical ceiling; a heavy brass "golden" door leads to the main marriage hall with a large oriel window. This part of the building has a separate entrance and service area; suited to the Polish taste for opulent ceremonies, it is the grandest part of the Town Hall.

Both severe and monumental, the Bialoleka Town Hall is a nucleus and a landmark in this part of the city, setting a high architectural standard for its future neighbours, and surprisingly winning Best Warsaw Building Award 1996-97. WA

Client
Warszawa-Bialoleka District Office
Associate architect
Pawel Marczak
Architectural collaborator
Malgorzata Benedek, Jolanta Galka, Marcin Grabarczyk, Agnieszka Kacprzak, Grzegorz Pietrzak and Janina Rygiel
Structural engineer
Wojciech Slabosz

Architect
Leszek Szostak and Krzysztof Wrzos
Reviewed by
Peter Wislocki

Fear of flying

Wroclaw Airport Terminal

All photographs by Wojciech Jarzabek

The airport terminal has become an established building type, like all new species evolving an increasingly normative typology, based on accumulated experience and international discourse. With the exception of such eccentric experiments as Terminal 1 at Roissy (a bunker-like exercise in mass disorientation), most celebrated designs of recent years, from Stansted to Kansai and Chek Lap Kok, have focused on clear lines of sight and movement, recapturing the excitement of aviation, sometimes using lightweight, aircraft-like structural elements, and making the aircraft themselves the focus of attention (competing only with the increasingly dominant retailing facilities).

When the Polish state airport authority invited six Wroclaw-based practices to enter a limited competition to design the city's new Strachowice international air terminal, previous experience of airport design was not at issue – yet the degree to which the winning scheme by Leszek Szostak and Krzysztof Wrzos ignores the conventional wisdom of the building type is initially shocking. Whilst the practical planning requirements have clearly been met with a conventional progression from the public entrance hall to check-in desks, leading through frontier and security checks to an airside departure lounge – the architectural and spatial generators of the building derive from local context rather than global transportation. The dominant, vaulted mass of the building is a direct reference to Wroclaw's famous nineteenth-century railway station. The small, double-height rotunda at the centre of the departure lounge is another apparently incongruous element, indicative of a design approach which is both naive and entirely pragmatic.

Every element of Wroclaw's little airport works more or less as its designers intended, unlike the more accepted paradigm at the UK's Stansted which is compromised by the pressures of security and retail. Working from first principles, and being rooted in one's context, has much to recommend it. WA

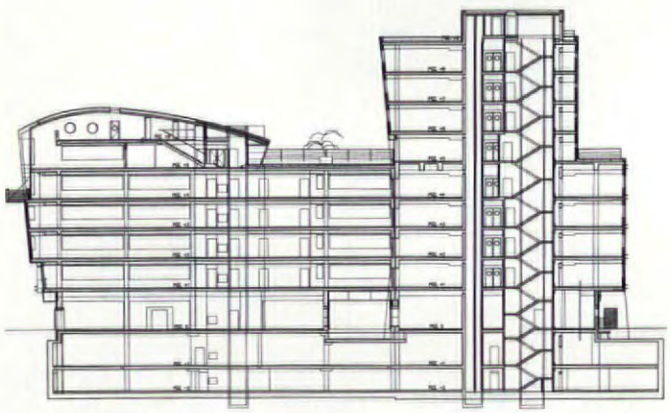
Clockwise from top left: Landside entrance, protected by rhythmic canopies; inside the main landside concourse, modelled on Wroclaw railway station's trainshed; airside the building is less idiosyncratic; double-height rotunda linking the departure lounge to spectators above

Client
Port Lotniczy Wroclaw SA
Project manager
Dyrekcja Miejskich Inwestycji Komunalnych, Wroclaw
Design
Atut

Architect
Stefan Kurylowicz & Associates
Reviewed by
Peter Wislocki

Japanese slant

Top 2000 office development, Warsaw



Section looking east

East elevation

Stefan Kurylowicz is amongst the still small but growing number of Polish architects whose work has already been widely published internationally, and whose clients include both domestic and foreign corporations and public sector institutions. Whilst most of his 30 staff are employed on very large commercial projects, Kurylowicz has also recently completed a residence for the Korean ambassador. Oriental connections recur in this Polish architect's work – his first significant commission having been a headquarters building for Japanese photographic manufacturer Fuji.

By coincidence or otherwise, Kurylowicz's office building in Warsaw's ulica Nowogrodzka would not look out of place in Tokyo or Osaka, its slick Alcobond skin wrapping around a daring, canted projection in apparent violation of the otherwise universally observed building line (Warsaw's characteristic typology being one of dense, orthogonal blocks with private gardens and regular street frontages). Originally commissioned by the Buchner Foundation, the building has been completed by the Polish developer Top 2000. Minor idiosyncrasies aside, the building's specification, detailing and quality of finishes are equal to good quality commercial buildings in any European capital – this being achieved, the architects emphasise with some pride, using a Polish contractor.

Whilst one might take issue with the gratuitous glitz of

All photographs: Kurylowicz & Associates

Right: The building is detached from its neighbours in ulica Nowogrodzka

Far right: The front elevation projects well beyond the established building line

Facing page, above: The sweeping roof encloses a mezzanine office space fit for a meeting room or directors' suite

Facing page, below: Detailing is generally thoughtful, though sometimes too elaborate

parts of Kurylowicz's interior design (the entrance hall is awash with stainless steel beneath a heaven filled with low voltage twinkle), and question the adequacy of reduced ceiling voids in isolated corners of the open plan floorplates, the building's shortcomings are compensated for by some unique amenities, including a spectacular timber-decked roof terrace, and a striking mezzanine within the double-height volume under the sweeping, curved roof. One can only hope that a tenant will find an appropriate use for such atypical spaces – a lavish director's suite, perhaps; a boardroom; or a dining facility. This is an all-Polish project which surpasses the Polish norm, and should meet the expectations of any multinational occupier. WA

Client
Top 2000
Project manager
Inwestmed with Kubis Construction
Main contractor
Warbud SA

Corporate America's dream team

The architecture and business of Arrowstreet Inc

Arrowstreet, the Boston firm which has thrived on its expertise in retail and entertainment in America's north-east, is now moving into Latin America and the Middle East, and into sectors as varied as urban planning and graphic design. Nicola Turner visits the "architects of choice for commercial development" and discovers a firm which has doubled its workload in the last three years, whilst redefining the role of the architect as advisor with an emphasis on clients' needs and aspirations in unison with aesthetic form making.

The CambridgeSide Galleria in Cambridge, Massachusetts, marked a turning point in Arrowstreet's architecture. It has been called "far and away the best shopping centre ever built in the Boston area"

Robert E Mikrut

Principals (from left to right): Bob Slattery (President and CEO), Brad Edgerly, Richard Krauss, Jim Flajnik, Linos Dounias, John Cole, Jim Batchelor

It is significant that the Boston firm of Arrowstreet is named after the street on which it was originally sited, rather than after a group of partners. The principals often repeat that they are not in the "ego" business, but instead aim to have "design as investment" at the heart of their work. Arrowstreet is also known for its investment in people. The emphasis is on a congenial and creative environment which encourages long-term employment.

An alternative approach

"A lot of clients perceive the architect as a prima donna to be controlled. They have to be held in check or they'll screw up the budget or go off at a tangent that's not related to the basic business interest of the client. We're perceived as client's advisors and allies, who understand their business issues first, and then translate them into a three dimensional world that makes sense for their strategic objectives. Good design in that context is not about the subtleties of aesthetic form-making, but about whether it's the best mousetrap for their business. Of course we also take pride in the aesthetic side of it, but our egos aren't so tied to it that we can't adapt when something is added to the mix."

John Cole's statement reveals a lot about Arrowstreet's current approach to work, and is also a reflection of the tight ship run by the architects themselves. Bob Slattery gave up a teaching position at MIT to become CEO/President in 1986 when the firm reorganised management to a corporate model.

The firm's pedigree is impressive; fellow partner Richard Krauss was formerly Director of Urban Design at the Graduate School of Design at Harvard University. Students from these and other top schools have been attracted to the firm's energy as well as its environment.

Slattery has turned Arrowstreet into a byword for quality commercial development. He has never lost his interest in design, and still builds with his own hands on his farm in Vermont, but his astute awareness for the needs and concerns of his clients, coupled with his intense client loyalty, has injected new life and success into the firm.

"To bring good design to commercial architecture is one of the hardest things you can do as an architect, and we choose to practice it. Our aim is to do commercial architecture really well. To succeed you need to find out who you are, and then be the best."

"Good design in that context is not about the subtleties of aesthetic form-making, but about whether it's the best mousetrap for their business."

Partner Jim Batchelor, who has been heavily involved in public projects, corroborates this statement, adding that "needing both a good business head and design sensibility is like needing to be bilingual. You can talk design and do it, but can you relate it to the surrounding issues? There has to be a more interesting relationship between form and culture".

Stella Johnson

Associate Principals (from left to right): Fred Warren, Scott Pollack, Rob Holt, Bob Lowe, Mary Hickie, John Shortall, George Tremblay

ARROWSTREET COMPANY DATA

Scope:
Architecture; Planning; Urban Design; Graphics; Interiors

Established:
1961

Office:
212 Elm Street, Somerville, MA 02144, USA
Tel +1 617 623 5555. Fax +1 617 625 4646
web: www.arrowstreet.com
e-mail: info@arrowstreet.com

Chief Executive Officer:
Robert Slattery

Principals:
James Batchelor; John Cole; Linos Dounias; Brad Edgerly; James Flajnik; Richard Krauss

Associate Principals:
Mary Hickie; Robert Holt; Bob Lowe; Scott Pollack; John Shortall; George Tremblay; Fred Warren

Mary Hickie – Director of Human Resources
Bob Lowe – Director of Graphic Design
Westley Spruill – Director of Interior Design
Gwendolyn McKenzie – Director of Corporate Marketing
Nancy Neville – Director of Finance
Kathie Chainey – Director of Office Services
Robert Fortin - Director of Information Technology

Major commercial projects in the public domain

One of Arrowstreet's most noteworthy aspects is its ability to enable private sector clients to succeed in prominent public locations. Arrowstreet has a long history of public projects and is admired for the skill with which its architects handle the public and political process surrounding sensitive planning issues. In its work for commercial clients it has been able to generate design solutions for demanding urban locations. This is based on hard-earned experience with what works in the public and private sectors. Especially in cities, with their overlapping jurisdictions and complex financial structures, Arrowstreet has demonstrated its ability to work with diverse interests and anticipate solutions that will benefit all. The three-pronged approach to a project, including political, financial and design solutions is balanced in-house.

"A typical Arrowstreet presentation focuses on the problem which has been presented to us by the client, not on our formal design solution. Our clients assume that we're going to bring a certain level of design quality to their projects," explains Slattery.

Embracing technology and seeing results

Every project at Arrowstreet shares an approach to design rather than a formulaic method for producing a preferred aesthetic. To this extent, the person in charge of a project is given free reign to develop their own work, and has the full back up from support staff and the comprehensive technical team, graphics, and interiors groups. Cole comments that, in line with many of the larger firms, technology has "significantly decreased the amount of time it takes to turn things around. Time and distance have been diminished. All this is ›

Anton Grassl

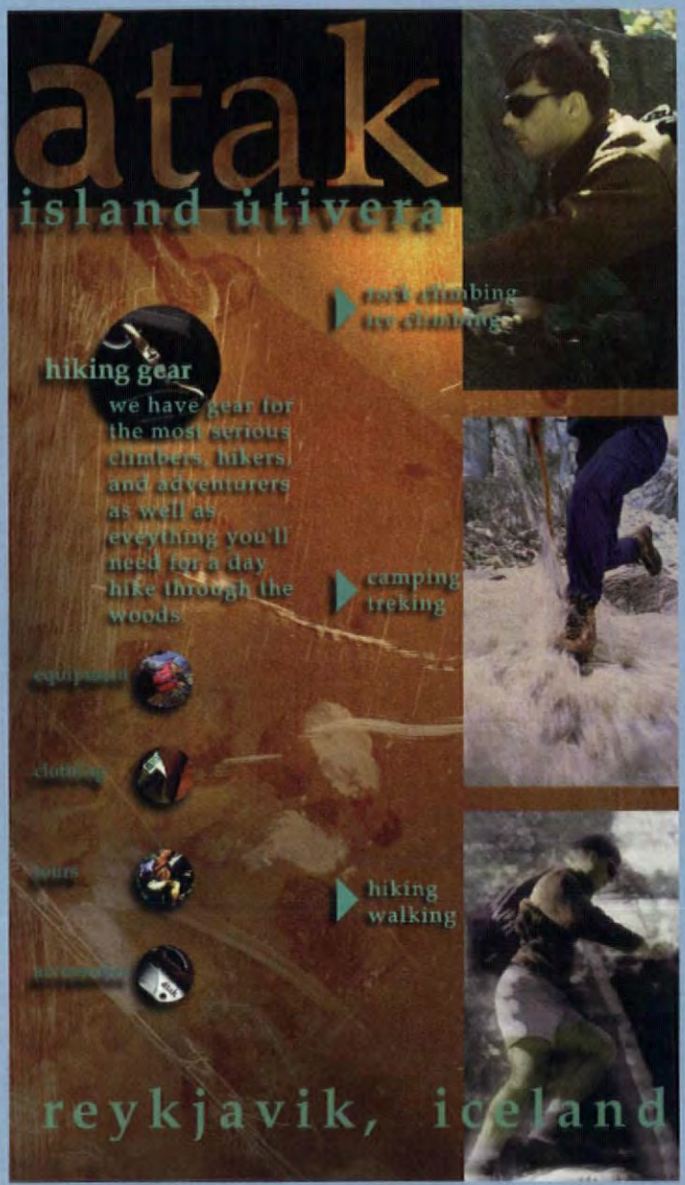
Graphic expansion

Further proof of Arrowstreet's mission for expansion and increased efficiency comes in the shape of a 14-person graphics department under the leadership of Associate Principal Bob Lowe, who had done consultancy work for Arrowstreet before joining the firm.

The graphics group started up as an experiment but now occupies a sizeable portion of the reception floor in the two-storey office. Work includes environmental graphics and wayfinding systems, logo designs, renderings, animated computer walk-throughs of projects, marketing materials, and traditional presentation boards. Lowe has the authority to run his department independently. He says his instructions are simply to, "do what we think is right".

Perhaps the most prominent work completed by Lowe's department for Arrowstreet is the meticulous digitised image for Providence Place created from drawings from the three participating architects, all in a different format and style.

Internal entrepreneurial initiatives are supported at Arrowstreet. The firm recently launched an Interiors Group led by Director of Interior Design, Westley Spruill.



Above left: Farnsworth Art Museum identification; banners reflected in windows
Above: Atak website design for hiking gear by Arrowstreet's graphics department

›vital to our way of working, and we invest between a half and one million dollars a year on technology. There are some dangers of course. We can get the situation where we get ahead of the client's understanding of the problem very quickly and put ourselves out on a limb. We're spending design dollars basically at risk, because the client hasn't made a decision, but it increases the pressure on us to be better communicators."

Jim Flajnik agrees with Cole's statement adding that, "technology is not so much the issue – it's how the client benefits from our information management developed from new technologies that concerns us. Does it help the client make more informed decisions? Does the client better understand schedule and cost?"

Technology in the form of the Internet is already reaping rewards for the firm. Cole relates a familiar story which illustrates Arrowstreet's growing international reputation as consultants, as much as designers. "I got a call yesterday from a developer in Bombay, and he was basically asking us for business consulting – not form making, but what kind of programme I thought would be appropriate for their project. He found us over the Internet. Similarly, our work in Iceland came out of consultancy. They wanted to know what would make a good shopping centre. We're only a piece of that project [Kringlan Mall], but we're helping to turn the whole thing into a viable business proposition. All this US experience we have in the retail and entertainment sectors is very exportable."

Choosing the right clients

"We build our business quietly," explains Slattery, stating his preference for frequenting trade shows of his clients, rather than the architects' "cocktail circuit". He continues: "We develop clients. We have to choose them, just like they choose us. We have to think, are they going to be in the market after this? Will they still be around? This is a service business, and architects often confuse their uniqueness as an individual with their uniqueness as a service. In the commercial world the money competes with the stock market. It's volatile money, and we make it our business to understand what clients really need to do in their sector."

Key partnerships

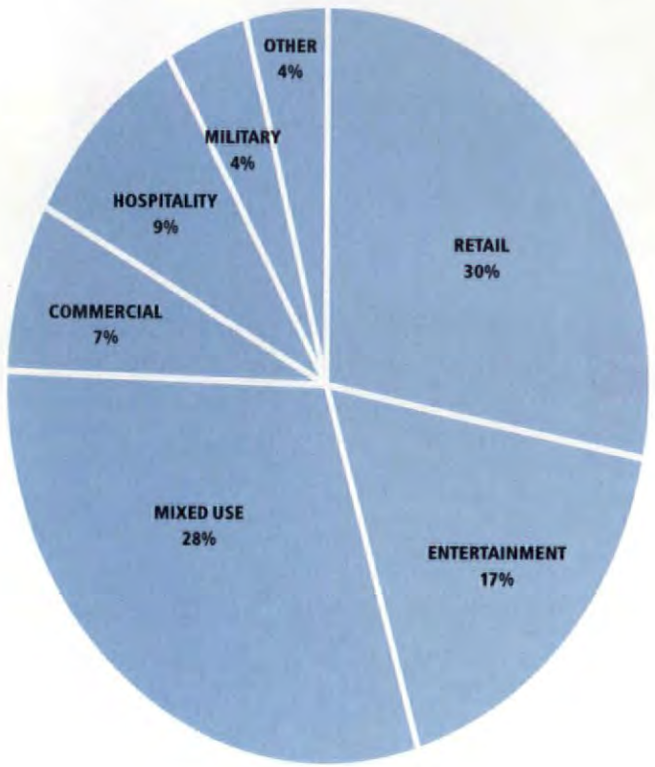
All the principals exude confidence and enthusiasm about their work, but particularly about their clients. One of Boston's most prolific developers has played a significant role in the expansion and success of Arrowstreet, in parallel with his own meteoric rise. In conversation with *World Architecture* Steve Karp of the New England Development Company voices the belief of discerning clients the world over, that "architects are only as good as their clients". In line with their views on client-relationships, the principals of Arrowstreet chuckle, then agree with this statement, while stressing that Karp's retail malls and resorts are aided in healthy return by the appropriate nature of the design.

When discussing their alliance, both Slattery and Karp talk first about each other's personalities. "Bob has an easy-going personality," says Karp, "the kind of architect you can enjoy having a beer with. In addition he sees the big picture and thinks ahead. He doesn't get you bogged down with every detail. If I'm thinking about a project I'll go to Arrowstreet for consultancy almost every time because of their sound intuition".

Slattery speaks of the importance of trust in both private and public sector work. "That is why clients are going to like you, because they look you in the eye and they know they can trust you ..."

Other clients corroborate Karp's assessment. Dave Forsberg has worked with Arrowstreet before on a retail scheme with New England Development. He now works for the Massachusetts Port Authority (MASSPORT) which was responsible for the renovation of the Exchange Conference Center on Boston's Fish Pier. Kathy Scannell of MASSPORT commends Arrowstreet's "great sensitivity, reflecting the maritime and historic references in the choice of materials and finishes, and coming up with the inventive solution of a conference centre". Forsberg, having worked with Arrowstreet on public and private ventures describes it as a firm, "strong on context and urban design dimensions. The seaport district [where Arrowstreet is still developing schemes with MASSPORT] has to respect both history and future possibilities, and they manage this well".

ARROWSTREET 1998 REVENUE BY TYPE



"We develop clients. We have to choose them, just like they choose us ... This is a service business, and architects often confuse their uniqueness as an individual with their uniqueness as a service."

Quest for diversification

The profile of Arrowstreet has changed since the 1980s and has changed again more recently, from a firm which was becoming primarily known for its high-profile retail work, including the renowned CambridgeSide Galleria, to one which now embraces, "the same commercial rules across different building types". As Batchelor explains: "The core skills are transferable, and the infrastructure of the firm is built to support that."

For Batchelor the quest for diversification has been like, "getting the olive out of the bottle. It is easier once the first one is out" – and so it has been for the branching out into hotels and hospitality. The Swissôtel project has led to the renovation of Boston's Copley Plaza Hotel and the Harvard Square Hotel, the award-winning renovation to the Exchange Conference Center, the University Park Hotel at MIT, and plans for new hotels on Boston's waterfront.

Principal Jim Flajnik points out that the diversification, "relates to business and the economy across the board. Entertainment and hotels are big right now. We've been involved over a long time, but in different ways, with the activity of urban regeneration". Arrowstreet's work across sectors is expanding, as are the opportunities to spread its wings internationally.

Explains Cole: "We have been largely regional to date, but now we're travelling with Hoyts [cinemas] to Buenos Aires, for example. There is enough critical mass in our core markets to compete nationally and internationally. Distance is no longer the impediment." But as with the national work Arrowstreet is cautious in sizing up the quality and staying power of its clientele. And international work is also sourced independently; from a conference in Buenos Aires, further retail work was procured in Ecuador.

›

Below left: Interior view of the main street of CambridgeSide Galleria
Below: The glazed facade of the CambridgeSide "festival" marketplace

Robert E Mikrut

Brad Edgerly

›Complex sites and complicated programmes

CambridgeSide Galleria, Cambridge, Massachusetts

Much of the work undertaken by Arrowstreet is complicated, in terms of urban context and public and political involvement. The principals appear to relish the problem solving inevitably involved in this work. "Anything that's difficult is what we thrive on", says Slattery proudly.

"We have become known for our ability to handle large and complex projects, particularly at CambridgeSide and Providence Place. What drives us is not fame and fortune, but the desire to make our clients successful. Make your clients famous and successful and you will have all the success you need, as well as loyal clients. Design should solve problems for the client, not make them."

Eight years after the completion of New England Development's CambridgeSide Galleria, the residents of Cambridge, Somerville, and Boston are still enthused about their smart and efficient "new" shopping centre. Arrowstreet describes CambridgeSide as a, "win-win project, satisfying Cambridge's need for a dynamic and open pedestrian area while working as a profitable retail centre for the developer". The three-storey complex merges private and public realms, the north side facing a large circular basin and public esplanade, and the south side facing a landscaped park. As a key landmark along the Charles River, the centre has also attracted and retained the interest of the valuable tourist market. At a cost of US$135 million, CambridgeSide was ten times bigger than anything Arrowstreet had previously undertaken.

The opening of the complex was celebrated by the building press and local newspapers for having successfully spawned a retail hybrid of regional shopping mall and festival marketplace through innovation and intelligent compromise. Architecture critic Robert Campbell described it as, "a brilliant demonstration of what can be accomplished through the partnership of a demanding city government and a developer willing to listen and try something new ... far and away the best shopping centre ever built in the Boston area".

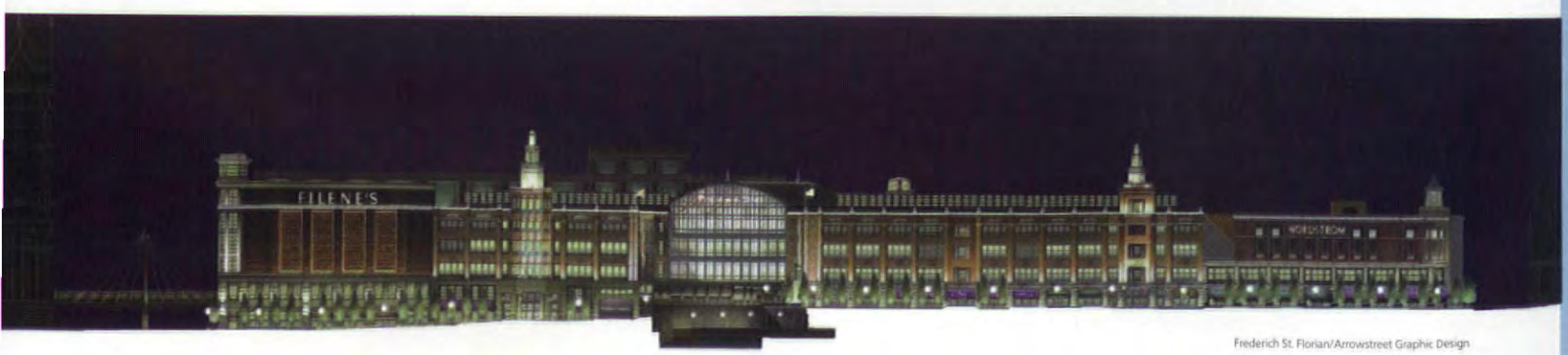
Advanced Media Design

Providence Place, Providence, Rhode Island

Eight years after CambridgeSide Arrowstreet is working on another large-scale retail project, the US$430 million Providence Place. This time the brief is very different, Arrowstreet having been brought in at the later stages of design by Commonwealth Development Group, LLC, as master architect to work with Frederich St Florian Architects, Callison Architecture and Hellmuth, Obata + Kassabaum. Located along the redeveloped River Walk, between Providence's new convention centre complex and the historic nineteenth-century state house, the mall spans the Woonasquatucket River and local rail lines. Arrowstreet is providing complete design, documentation and construction administration, and is the design architect of the interior. The firm was brought in to play a diplomatic and enforcing role, as much as for design skills. The size and site of the project have contributed to the complex urban design and construction challenges at the river and rail crossing. ›

Above: Computer rendering of Providence Place foodcourt

Below: Exterior nightime rendering of 315, 860-square-metre Providence Place, by Arrowstreet Graphic Design



Frederich St. Florian/Arrowstreet Graphic Design


Massachusetts Avenue

Facing page: The mixed use development at University Park showing the hotel and complementary office building

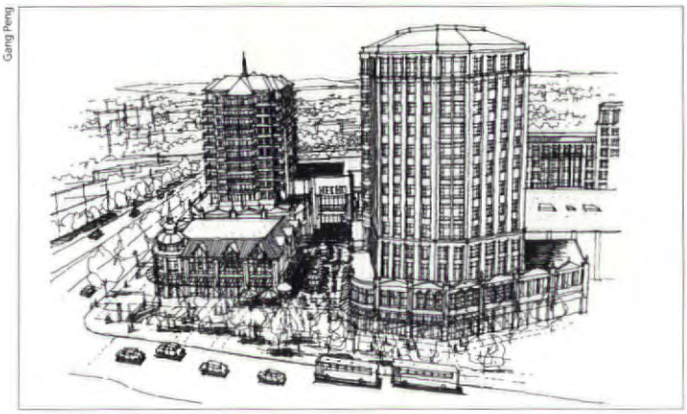
This page, left: Design study for Friendship Place

Below left: Rendering of Friendship Place

Below: Model of Park Square West, a major housing and urban revitalisation project

Gang Peng

Gang Peng



University Park at Massachusetts Institute of Technology, Cambridge, Massachusetts

A quite different project, but of a similar scale and complexity to CambridgeSide and Providence Place, is the mixed use development of offices, hotel, supermarket, and carpark at MIT's University Park. Increasingly, Arrowstreet is being sought out by institutional clients who require commercial expertise and an efficient delivery of their real estate projects. In this case, Arrowstreet had to coordinate and satisfy the demands of Forest City Development, the civic-conscious City of Cambridge and the property-owner MIT, as well as local community groups.

A major task for the architects was to design two related buildings in a way that down-played the office building and drew attention to the hotel behind it. Circulation adaptations went some way to solving this issue, but in terms of design the hotel had to announce itself as the predominant building. The corners of the office building has had notches cut out of it in order to allow visibility of the hotel from Massachusetts Avenue and to create an active corner at the hotel's entrance. A tower has been added to this corner, with a steel element placed on top in order to act as a beacon for the hotel. While working with the traditional brick of Cambridge, the hotel incorporates a rigorous use of hi-tech, sleek elements and components. This hi-tech manipulation of old and new is an appropriate acknowledgement of MIT's presence and the growing importance of technology firms in the University Park area.

▲ Robert E Mikrut

Friendship Place, Friendship Heights, Maryland

On the boards is a mixed use project in Maryland for The May Company and New England Development, to include a shopping centre, office, hotel, residential and community function space. The complexity here is that the site is currently occupied by a successful Hecht's department store which must remain fully functioning throughout the construction process. After the May Company had been working with various architects over the last ten years, it asked New England Development to come on board; with them came Arrowstreet. The gross building area of the site will be 98,660 square metres.

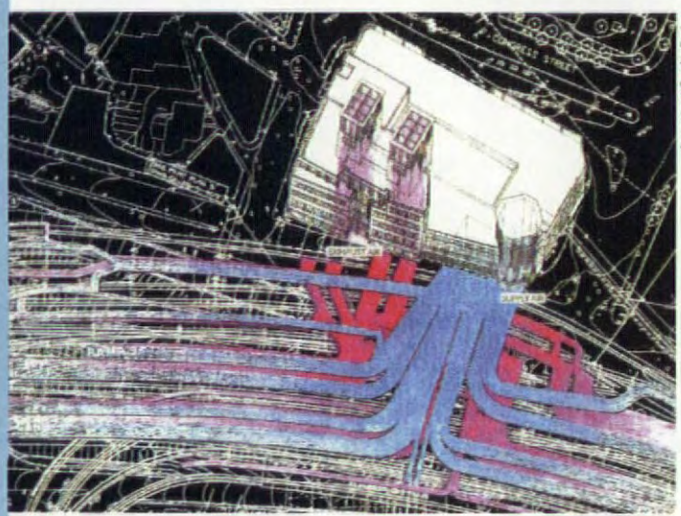
One of the key challenges for Arrowstreet has been the diplomatic balancing of interests of the key players. The major issue of contention is from the tenants of the hotel and anchor stores for prime sites and visibility, whilst accommodating the housing and twin office towers. The solution is the creation of an internal pedestrian street and courtyard which provides the necessary sight lines for the anchor stores as well as the intimate street quality necessary to make the retail shops attractive.

Park Square West, Stamford, Connecticut

Arrowstreet has become well known for its ability to tackle wide-ranging urban planning and mixed-use projects. Park Square West is a major housing and urban revitalisation project in downtown Stamford. Arrowstreet is working in association with Corcoran Jennison Companies' development team and ICON architects. The aim of the competition-winning proposal is to restore Stamford's downtown by reviving and filling several empty blocks in the centre. "Inherent in Arrowstreet's approach to city building is both the keen desire to produce, and an understanding of the market forces which shape successful urban neighbourhoods," says Associate Principal George Tremblay. An enclosed retail arcade links a public park with the residential hub, 20 percent of which is reserved for affordable housing. The glass and steel facade to the retail pavilion projects light and life out into the street. The team has produced an implementation strategy to allow each phase to be financed and constructed separately, as market conditions dictate.

Dave Desroches

Robert E Mikrut



Arrowstreet Graphic Design

Advanced Media Design

›Parcel 7, Central Boston, Massachusetts

The Parcel 7 project was won through a competition for the Massachusetts State Highway Department and the Massachusetts Bay Transportation Authority (MBTA). Central Boston is undergoing a monumental "Big Dig" for the relocation of Interstate 93 underground where it passes through the city, leaving space for the development of parks and buildings and restoring the urban fabric of the walkable city. It is the largest and most expensive public works project in the history of the US, and Arrowstreet's mixed-use project is at its heart, close to Kallman McKinnell and Wood's City Hall. The offices, retail, parking, and subway station incorporates distinctive exhaust vent chimneys; twin 50-metre towers will disperse exhaust from the tunnels and a smaller tower will draw in the fresh air. The office building and garage are intended to wrap around the towers in order to break down their bulk. Arrowstreet has used brick to refer to the historic five-storey buildings surrounding the complex, but added zinc and stainless steel metal rainscreen systems for an appropriately visionary building for the twenty-first century. Arrowstreet led the schematic design; final design was shared with Childs, Bertman, Tseckares, Inc.

Top left: Site of Parcel 7 at the centre of Boston's "Big Dig"

Above left: The mixed use project incorporates distinctive exhaust vent chimneys for the subway station

Above right: The tiered profile of New England Financial

The corporate clients

Arrowstreet's work with corporate clients has often enabled them to develop new facilities within the urban context, keeping jobs in cities, and creating buildings which are landmarks of civic as well as corporate success.

The New England Financial Building, Boston, Massachusetts

Arrowstreet's design work has just helped New England Financial, a long-standing Boston insurance institution, win approvals in a multi-faceted review by community, historic, and civic groups. The site is at a critical transition from downtown high-rise commercial uses to a historic residential district. To the south, the residential district of Boston's South End is characterised by the red-brick bowfronts built during the nineteenth century. To the north is the Back Bay Station and an urban mix of historic churches, libraries, and high-rises including the 60-storey Hancock Tower. Massing, materials and detailing have brought acclaim for a building that wants a strong presence but one that is respectful of its location – providing 35,000 square metres of office space, ground floor retail, plus parking for 730 cars.

66 Long Wharf, Boston, Massachusetts

Arrowstreet was responsible for updating the interior lobby spaces at 66 Long Wharf, an historic granite structure on Boston's waterfront. The firm inserted a long curved wall, detailed like a ship's hull, to lead the visitor from the front

Warren Jagger

Left: Somerset Savings Bank with the Arrowstreet offices on the top two floors

Below left: Inside 66 Long Wharf

Below: The curved facade of One Charles Park, Lotus building

Robert E Mikiut

Warren Jagger

door to the elevator lobby with minimum confusion and maximum interest. The colours, laminates, lighting, and wood feature-walls were selected to add warmth to the existing brick structure. All the materials and furnishings were selected to reinforce the building's functional and commercial use and infuse it with a sense of Boston's waterfront history.

Somerset Savings Bank Headquarters and office building, Somerville, Massachusetts

Arrowstreet's spacious offices sit atop the Somerset Savings Bank headquarters in the trendy Davis Square area of Somerville, a densely populated small city on Boston's north side. The four-storey building, with its entry tower, is a noble addition to the local streetscape, reinterpreting elements of the bank's original art deco headquarters across the street. The bank's lobby is lit by ample arched fenestration punched into the brick facade. A spiral staircase in the lobby provides access to the executive offices on the second floor, with Arrowstreet's open studio offices on the top two floors.

Lotus Building, Cambridge, Massachusetts

Traditional brick is also used for the impressive Lotus/IBM building, situated close to the CambridgeSide Galleria. On this building the brick is accented with limestone detailing. Above ›

Robert E Mikrut

› the executive marketing centre on the ground floor are five floors of flexible research and development office space. In addition to exterior architecture, Arrowstreet was responsible for the accommodation of advanced telecommunication and data capabilities, extensive audio-visual systems, and security systems; the interior design was by The Stubbins Associates. The building was delivered within 15 months.

The hospitality ticket

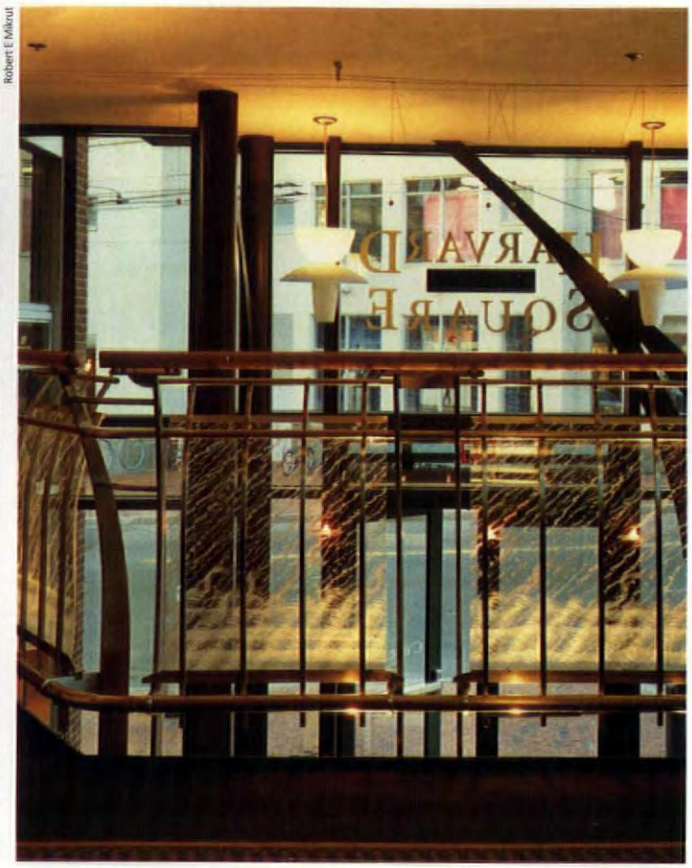
Exchange Conference Centre, Boston, Massachusetts

One of the most beautiful historic buildings in Boston is the 1915 Exchange Building on the Fish Pier, for many years home of the world's largest fish auction. Arrowstreet was asked by the Massachusetts Port Authority (MASSPORT) to renovate the building to create the Exchange Conference Centre. The award-winning intervention was primarily on the interior. The exterior was cleaned up and illuminated. The imposing two-storey central space was increased to three storeys by raising an existing laylight and rebuilding it close to the skylight. The grand hall can now be transformed from a naturally lit space overlooking the active harbour to a controlled black box theatre, by the flick of a switch. The design retains the proportions of the original. Ocular windows on the third level have been added, in harmony with original arches and windows. Arrowstreet's transformation from auction house to hi-tech marketing centre has meant that the Exchange Building has retained its position at the heart of the Boston waterfront's economy.

Robert E Mikrut

Robert E Mikrut

Robert E Mikrut



Facing page, above: Arrowstreet's award-winning renovation of one of Boston's most important classically-proportioned buildings on the Fish Pier

Facing page, below: The Fish Pier's Grand Hall, which subtly integrates state-of-the-art presentation technologies

Far left: Entrance to the Harvard Square Hotel

Left: Railing detail

Below: Inside the Swissôtel/Boston, the latest in a series of projects for the Swissair Companies

Russ Schleipman

Swissôtel, Boston, Massachusetts

Arrowstreet is also becoming increasingly involved in hotel design. One of the most successful client partnerships has been with AviReal, the real estate arm of the Swissair conglomerate. In 1995 Arrowstreet completed the renovation of Swissôtel's four-star property in the heart of Boston's downtown, in association with Alexandra Champalimaud & Associates of Montreal, Canada. The phased renovation has included 500 redecorated guest rooms, the upgrading of four penthouse floors, and the refitting of function facilities alongside a new business centre. A new entrance and refurbished lobby, by Westley Spruill – Arrowstreet's Director of Interior Design – has made the four-star status of the hotel apparent from the point of arrival.

Hotel General Manager David Gibbons is enthusiastic about his work with Arrowstreet. "I met them across the table and immediately felt an affinity with their creativity and methodology, which was in line with the Swiss ownership of the hotel. They seem to have a good rapport with Europeans, a nice global mannerism. The Swiss have longer capital horizons, a different concept of the design and discipline of a job than Americans. Arrowstreet worked easily with this."

Harvard Square Hotel, Cambridge, Massachusetts

On a smaller scale was the refit of a boutique hotel, owned by Harvard University at Harvard Square. One of the key changes has been the redefinition of the building and its site. Previously the hotel was dominated by a 1950s automobile ramp, preventing pedestrian access from the street. The renovated hotel features a lobby that is accessible both from the street and the parking deck. A glazed addition reveals the two-level lobby, with beautifully detailed railings around the stairs leading to a small café downstairs at street level. Arrowstreet Graphic Design was employed on this project too, and has helped contribute to the hotel's new identity in the increasingly competitive hospitality environment around the famous square. ›

Below: Artist's rendering of Boston's new Seaport district
Bottom: Parcel F Hotel rendering
Facing page: Inside the award-winning Natick Mall showing high quality detail cut with laser or water jets

Jim Piatt

› Parcel F, Boston Seaport District, Boston, Massachusetts

Probably the most exciting and challenging urban design and hospitality project for Arrowstreet comes in the shape of the Boston Seaport development which will incorporate a major hotel, marina and park. Here, as in other city building projects, Arrowstreet is taking a lead role in proposing a masterplan vision with specific civic and private sector projects to be built independently as market forces evolve.

The heart of this development is a waterfront park and marketplace overlooking Boston's Fish Pier and the Exchange Conference Centre. The client is Corcoran Jennison which in partnership with Massport, the landowner, seeks to create a transition point where the south Boston neighbourhood, the industrial waterfront, and downtown development merge in the vibrant new Seaport District.

Gang Peng

Hi-tech renovation and tight budgets

Natick Mall, Natick, Massachusetts

The award-winning Natick Mall is a different retail project, in that it is Homart Development Company's redevelopment of a much smaller suburban single-level centre into a two-storey complex with around 39,500 square metres of retail.

Here the complexity was not to fit a shopping centre into a tight urban context, but rather how to give a fading lady a successful facelift on a fairly tight budget, and within a strict time frame of 15 months in order to reduce lost revenue during construction. The anchor stores Sears and Filene's remained operational throughout.

Much was made in the local press about the "feminising" of the mall in line with the statistic that some 70 percent of the shoppers are female. Arrowstreet has given the interior of the mall a "Victorian conservatory" atmosphere, without taking away the overtly commercial nature of the project. An added benefit to the "English" approach to the design was the attraction of UK retailers which had not hitherto ventured to the US. Arbours, lattice work and plant motifs in subtle colours draw shoppers' eyes to the asymmetrical barrel roof with a skylight running down one side. The asymmetrical design throughout has helped with customer orientation and breaks down the scale of the shopping centre.

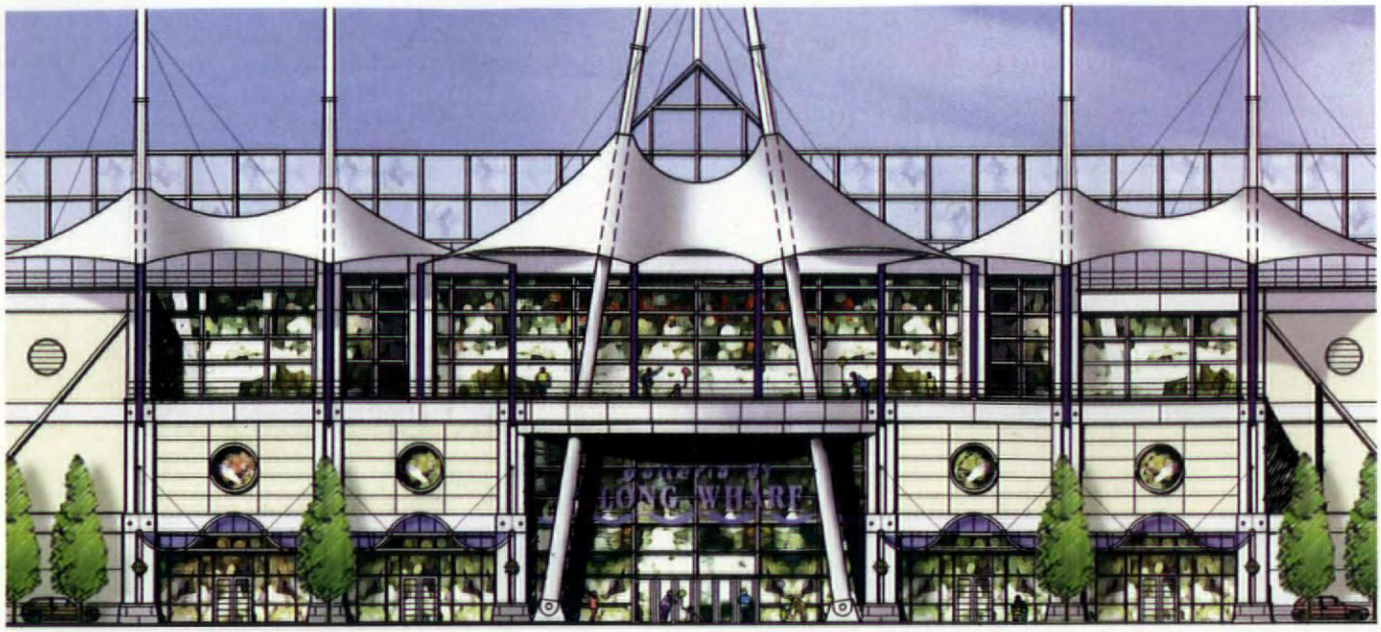
Tiles and steel balustrade details, as well as elevator cages and brass ventilation grilles, were cut with laser or water jets, providing high quality detail at reduced cost and time. Sales exceed expectations, at over US$371 per square metre (US$400 per square foot), for current owner General Growth Properties. ›

▼ Robert E Mikrut


KAY JEWELERS

Right: Rendering for the Galleria at Long Wharf

Below: Hoyts prototype multiplex theatre in Linthicum, Maryland



›The Galleria at Long Wharf, New Haven, Connecticut

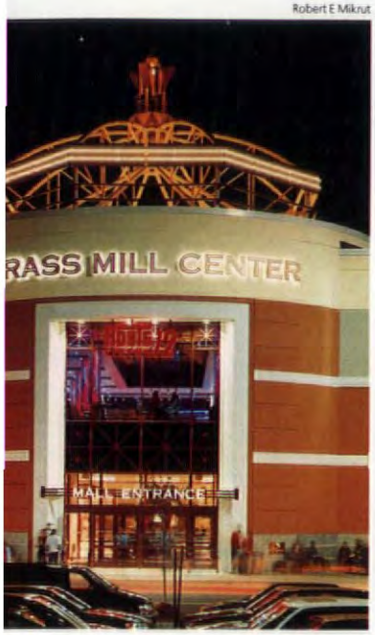
Arrowstreet is currently at work with New England Development in an effort to revitalise New Haven's waterfront. Set on an 18-hectare (45-acre) site and capitalising on its views of the harbour, this 111,480-square-metre (1.2 million-square-foot) project will help reconnect the city to its waterfront. The three-level Long Wharf mall uses a design vocabulary inspired by nautical forms from the sailing and steam vessels which once called on New Haven harbour. Designers have integrated fabric sails, cable stays, steel railings, and portholes into the mall's design. One of the signature elements of the Galleria will be a series of 36-metre (120-foot) steel masts with tension cables projecting out of the building and supporting the continuous vaulted skylight of the arcade below.

Entertainment and the big screen

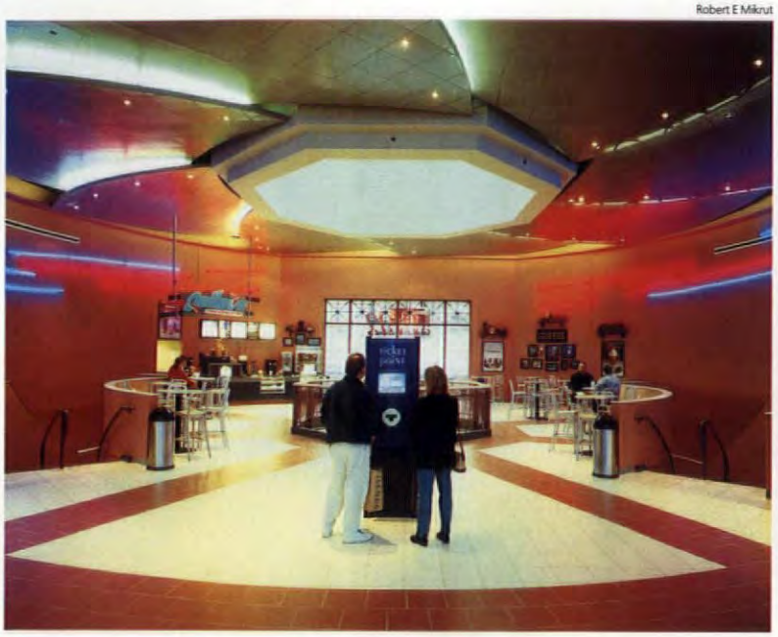
Working with both exhibitors and developers, Arrowstreet has capitalised on the synergy between cinemas, retail, and restaurants to create entertainment destinations that increase sales and reduce infrastucture costs. In the past two years, the firm has designed and delivered over 350 screens in freestanding locations, shopping malls,and urban entertainment centres.

Robert E Mikrut

Robert E Mikrut



Robert E Mikrut



Robert E Mikrut

› Hoyts Cinema prototypes, locations throughout New England and the Mid-Atlantic

Arrowstreet has designed multiplex prototypes for the Australian cinema exhibitor Hoyts, all of which include strong lines, intersecting planes, and layering of spaces. Hi-tech and industrial materials such as glass and metal are used throughout, along with a bold use of colour and lighting. The cinema lobbies are not boxed-in, but have external glazing to project the cinema out into its environment. The collaboration has only been running for about two years, and already 13 prototypes have been completed (from design to full production in six weeks) as well as five one-off cinemas. The design team developed cinema design standards from theatre proportions right down to the popcorn machines. Avoiding the need to repeat general research enables architects to focus on the design issues of each new project and has allowed them to generate more than 400 feasibility studies for possible sites.

As John Cole stresses it is vital, "to be very precise in schematics the first time. Ten percent fewer seats is not good enough. Your client can't change the economics. It is just like with retail and lettable space". Due to Arrowstreet's efficiency most of the prototype projects run themselves with local contractors. Arrowstreet is involved more on the one-off sites.

Hoyts Cinemas and Brass Mill Centre, Waterbury, Connecticut

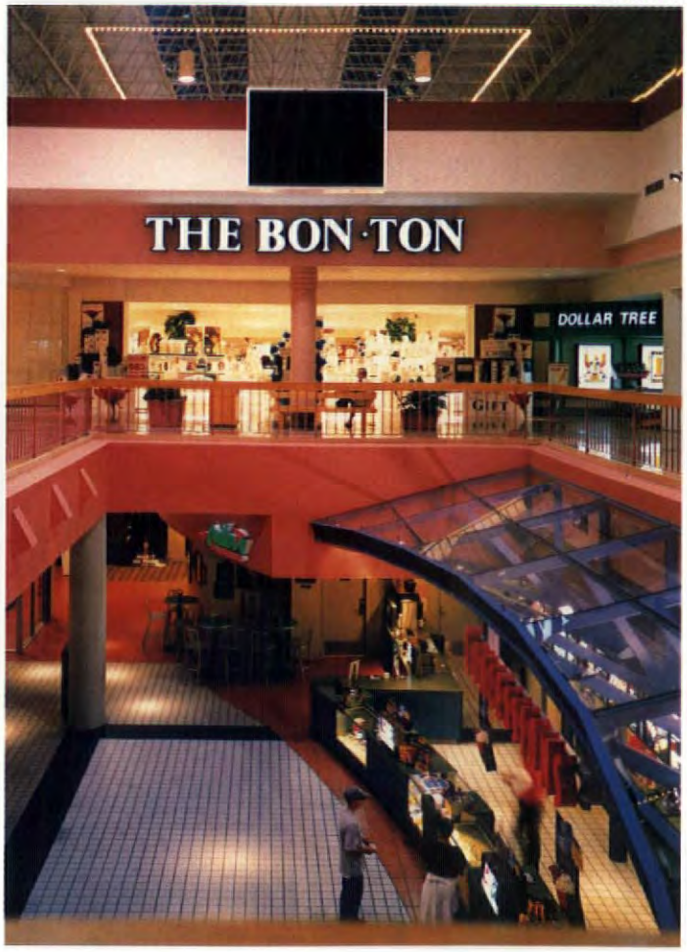
Arrowstreet has created an entertainment destination at the Brass Mill Centre that has been hailed as a model for mall/cinema integration. The Hoyts multiplex is located on the third level, creating a focal point and acting as a beacon from the nearby highway. The cinema's evocative lighting draws patrons to the third level and a well thought-out circulation system delivers them back to the restaurants and retailers below.

The regional mall, also designed by Arrowstreet, rests on the site of the former Scovill Brass Works. This environmentally contaminated site was cleaned up by a coalition of national and state agencies and preservation groups for around US$36 million. The history of the site and Waterbury is depicted through the use of a design theme of mechanical forms in the facade, railings, skylight and environmental graphics and signage. The shopping centre was designed and constructed to a strict budget of US$3.7 per square metre (US$40 per square foot) for the owner General Growth Properties, Inc.

Hoyts Cinemas, DeWitt, New York

This 10-screen cinema at the Shoppingtown Mall was carved out from underneath an existing building. Arrowsteet worked with Hoyts and Wilmorite, the mall owner, to revitalise an underused basement as a new entertainment zone. The complex construction sequence involved transferring structural loads, lowering footings, and extending columns while the mall above was open for business. The multiplex now anchors this zone, pulling customers for adjacent venues including a restaurant, comedy club, and game area. ›

Robert E Mikrut



Above left: Exterior of Brass Mill at dusk

Centre: Ticket point inside the Brass Mill Hoyts cinema

Right: Central arcade escalator at Brass Mill with Hoyts on the top floor

Left: Things are looking up at Shoppingtown Mall with a Hoyts Cinema to anchor the new entertainment zone.

Robert E Mikrut

Indigenous connections

Much of Arrowstreet's work is inspired by traditional architectural forms and materials. This is true for its work close at hand and for its emerging projects around the globe. Arrowstreet continues work in New England's wood frame vernacular; Bob Slattery, whose home is in Vermont, has hand-built several heavy-timber barns. The firm is also involved in land planning in New England which preserves agricultural land through an inventive partnership between residential development and local farm owners.

Nantucket Island Resorts, Nantucket, Massachusetts
Over the past ten years, Arrowstreet has overseen the restoration and refinement of a number of resort properties on the windswept island of Nantucket. One of these properties, The Wauwinet, is a unique historic property on the island. Arrowstreet extended the set of small-scaled buildings true to the island's traditional ways of building to create a series of intimate spaces for guests to explore.

Terry Cracknell

Above left: The Pricilla Bullit Collins Field Station, which won the firm an Award for Excellence from the National Commercial Builder's Council in 1996

Above right: Heavy timber framing for a barn in Vermont

Right: Rendering of The Wauwinet, Nantucket

Facing page: The Lebanon Co-op Food Store with cupola detail

Pricilla Bullit Collins Field Station, Poughkeepsie, New York
This science and nature centre provides classroom and laboratory space for Vassar's environmental science programme and showcases ecological design concepts. Designed to recall an Adirondack lodge, the building uses natural low-maintenance materials and passive solar heating and cooling. Arrowstreet, as part of a design-build team, produced the project for 40 percent less than Vassar's original budget.

Environmental concerns

From Hawaii to Riyadh, Arrowstreet has explored the potential for architectural solutions which reduce ecological impact, conserve energy and benefit occupant health.

Lebanon Co-op Food Store, Lebanon, New Hampshire
The Centerra Marketplace, developed by Dartmouth College Real Estate, is smaller than most of Arrowstreet's retail work and remarkable in a different way. Here it is not the scale of the venture or its complexity that is exceptional, but rather its attention to detail and the gem-like quality of development. One tenant, the Food Cooperative, was committed to building a store which would have a minimum impact on the environment, conserve energy and prove financially successful. Arrowstreet had to convince the client that selected environmentally-friendly materials and systems would be both durable and low-maintenance. Energy-efficiency and recycling were top priorities in design. The top-lighting through skylights in the central cupola in conjunction with simpler domed skylights throughout the store allows for minimal artificial lighting during summer days. Light level sensors measure the natural light and supplement with artificial lighting as necessary. This, coupled with super-efficient electronically controlled lighting, is expected to reduce the lighting energy use by one third and the operating costs by nearly US$12,000 a year. Recycled Queen's Post trusses have been used for structural support and there is further recycled content in the concrete, steel stud framing, insulation and carpeting.

›

Robert E Mikrut


OCTOBER FEST
OCTOBER FEST
OCTOBER FEST

Augie Salbosa

Above: Arrowstreet has worked extensively for the US military. Shown here the community swimming pool at Aliamanu on Oahu, Hawaii
Below: Aerial photograph of the Aliamanu Military Reservation

› Aliamanu Military Reservation on Oahu, Hawaii

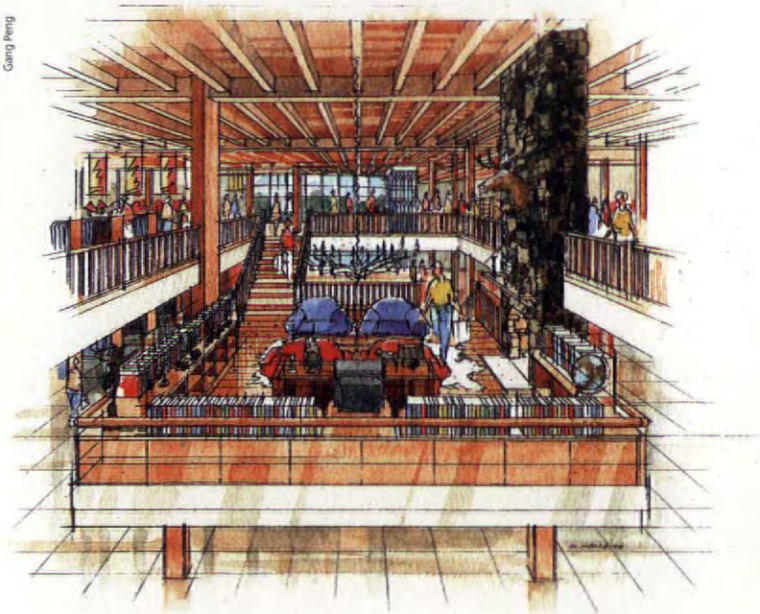
A substantial proportion of Arrowstreet's work historically has been done for public agencies. Richard Krauss has been the key player in expanding this portfolio, and had particular success with military community projects, such as the Aliamanu recreation centre which earned Arrowstreet a design award from the Army Corps of Engineers. The architects work with the military from the front end, using market research techniques, producing guidelines for buildings for the US Army, Air Force, and Navy, and even modernised the military's procurement process. Arrowstreet has worked with the US military internationally in South Korea, Japan, Turkey, Germany and Spain.

The Consolidated Community Centre at Aliamanu was designed to provide a focus for the Aliamanu Military Reservation on Oahu, Hawaii. The centre – designed as a joint venture with Chapman, Desai, Sakata Inc of Honolulu – provides recreation facilities that promote a sense of community amongst the island's youth. It was one of the first army projects to implement Arrowstreet's concept of facility consolidation.

Arrowstreet linked disparate buildings to increase synergy and efficiency of operations. The connected pavilions overlook

playing fields and courts and include an auditorium/chapel/gymnasium, a library and child care centre. Traditional Hawaiian references include large sheltering roofs with louvre monitors at the ridges for the release of warm air, and ample open perimeters oriented to the trade winds. Timber is used throughout. The need for air conditioning was virtually eliminated, and the building incorporates the highest standards of energy efficiency.

Gang Peng



Patricia Cornelison

Robert E Miknut

Robert E Miknut

Top left: Rendering of the resource centre of the átak Outdoor Store

Top right: Sketch of tree-inspired column for the Icelandic torg

Above left: The exterior facelift of Plaza Rio Hondo, Puerto Rico

Above: Central arcade of Plaza Rio Hondo showing the river theme reflected in the ceiling

International aspirations

Arrowstreet's international work is noteworthy for two aspects: the firm has brought with it a sense of sound business with an appreciation of indigenous culture and design. From France to South America and from Iceland to the Middle East, the firm is blending its commercial design expertise into the local context.

Kringlan Mall Food Court and átak outdoor store, Reykjavik, Iceland

Arrowstreet was brought on board by client Hof Holdings as retail consultant and designer for the shopping centre's food court and átak outdoor store. The food court is a solution used to link two shopping centres and generate activity between them. The design reflects the Icelandic *torg* (outdoor public plaza) by using abstracted elements of nature and traditional local materials, as well as reproductions of Icelandic poems and proverbs around the perimeter. For the outdoor store, Arrowstreet furthered the use of environmental principles set out at the Lebanon Co-op Food Store. The materials used to fit out the various sections of the sports store are largely recycled, including a biofibre series made from wheat chaff for the walls, counter tops of a product created from recycled milk cartons, and floors and walls covered in a material constituted of car tyres. Arrowstreet has been responsible for the branding of this store, as well as the interior design. A small café, aptly named the Aurora Borealis Café, is positioned close to the giant climbing rocks between the escalators so that shoppers can watch others try out the climbing equipment and enjoy the whole outdoor experience.

Plaza Rio Hondo, Puerto Rico

Another example of adapting design to local context is the Plaza Rio Hondo in Puerto Rico for Manley Berenson Associates, Inc. The entrances and ceiling plan were revamped with vivid tropical colours and bold signage incorporating a river theme. A free-standing portico built around the original entrance serves as a billboard. After Arrowstreet's facelift, Plaza Rio Hondo's sales increased by 25 percent.

Because of the heat and brightness of the sun, Puerto Rican shopping centres traditionally have little natural lighting and tend to be dark. Arrowstreet has lightened up the centre with sinuous baffled skylights, focused attention on signature entrances, and updated the lighting and floor finishes. ›

Below: Aerial rendering of Port d'Albret, France
Bottom: Rendering of the festival market in the Arriyadh Historic City Centre, Riyadh, Saudi Arabia, currently under construction

›Port d'Albret, France

In partnership with a French developer, Arrowstreet has also worked on Port d'Albret, a new town on the French Atlantic coast. The brief includes the recasting of the government plan for the town and schematic drawings for 5,000 new residences. Arrowstreet's design makes the new town an expansion of the existing town centre, preserves the delicate ecology of the dunes and pine forest, while creating a major recreational resource for the region. The architectural characteristics of the region are referred to within the use of modern building technology.

Arriyadh Historic City Centre, Riyadh, Saudi Arabia

In association with Rasem Badran and Abdul Halim (Das Al Mimar Architects and Arriyadh Development Co)

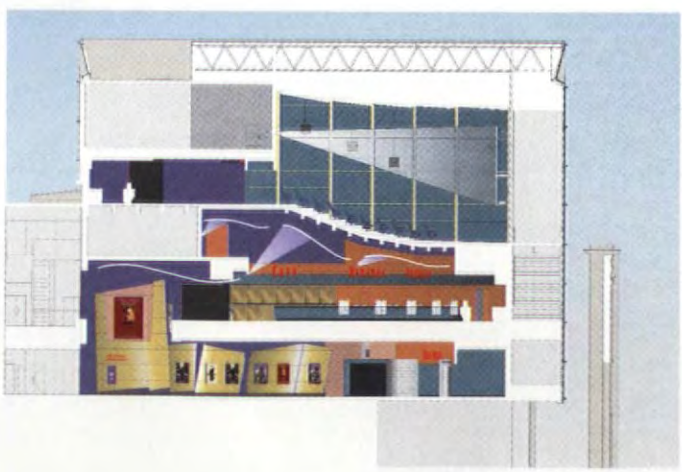
Arrowstreet has enough critical mass in its core markets to

Rassem Badran

Juan Hitters

Left: Behind a stunning turn of the century facade in Abasto, Argentina, Arrowstreet has inserted a Hoyts cinema

Below: Section through Abasto cinema



Arrowstreet Graphic Design

compete nationally and internationally. Jim Batchelor has been particularly involved with the Port d'Albret and Riyadh projects and has enjoyed "exporting expertise and linking with local clients and architects". One of the reasons the firm is succeeding abroad might be because it is "good at solving problems which might only in part be a building problem".

Arrowstreet's involvement in Riyadh stems from its expertise in retail design. But this time it was not for a shopping centre, but rather a festival market that incorporated traditional vending with a more international approach to retail. One of the key objectives was to incorporate sustainable design elements. Passive cooling towers will temper outdoor as well as indoor spaces. The project includes housing and office space. Construction is nearing completion for approximately three city blocks.

Hoyts Cinemas 12 at Abasto, Buenos Aires, Argentina

In addition to working with Manley-Berenson in the Caribbean, Arrowstreet is also moving into South America, starting with an adaptive reuse project for an entertainment centre covering two city blocks at Abasto in Buenos Aires, Argentina.

Behind a stunning turn of the century facade, Arrowstreet has designed a unique multiplex cinema. Due to severe space restriction the cinema project has stacked stadium theatres on top of stacked parking levels underground. Twelve theatres are connected by a dramatic five-storey lobby featuring a full height glass curtain wall. The interior includes folded wood panelled walls and serpentine metal ceilings.

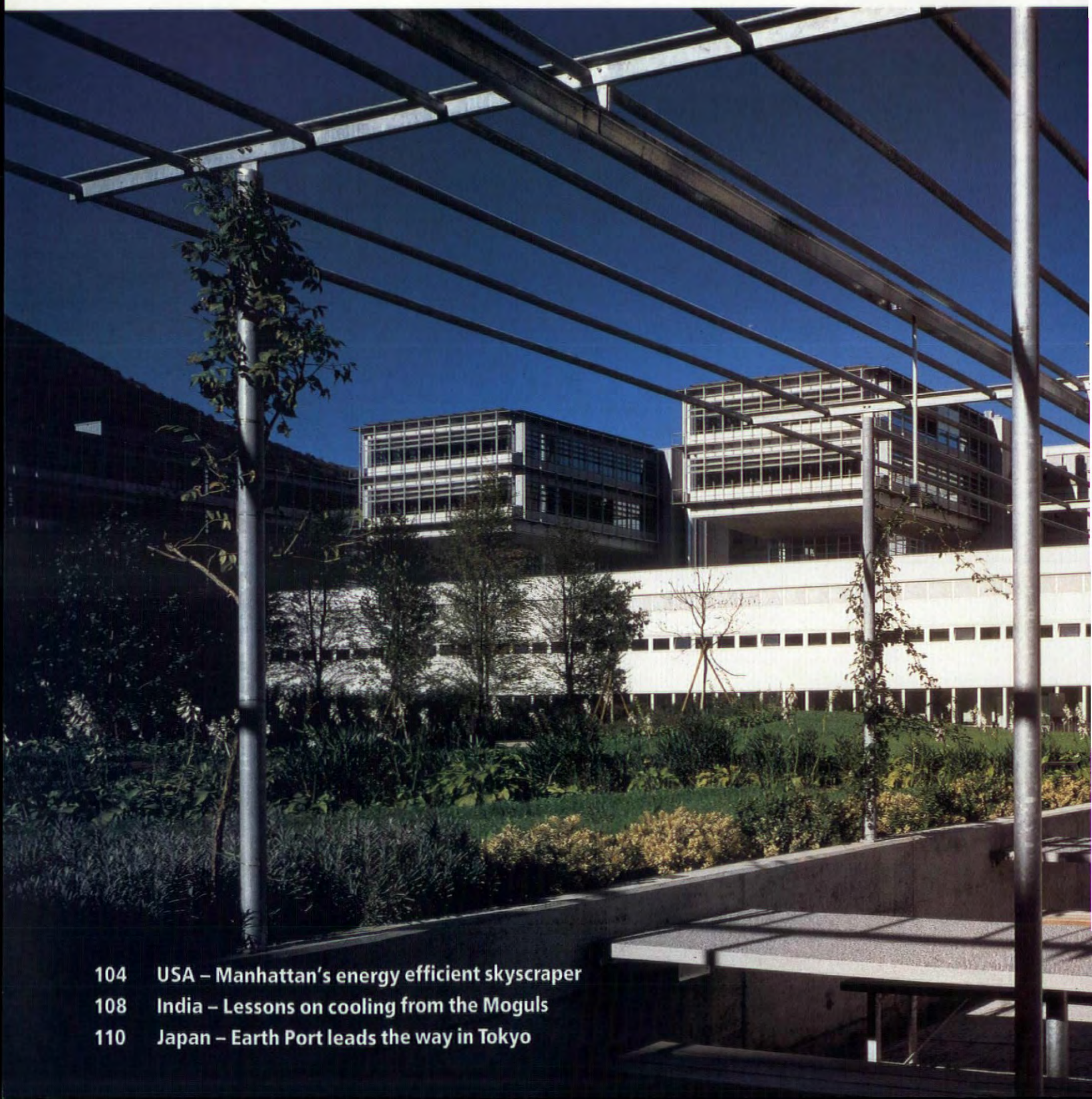
The rewards of a commercial approach

Arrowstreet has blossomed into a firm which has contributed to redefining the role of the architect, as advisors and collaborators with an emphasis on clients' needs, creating buildings which embody business plans. The firm has become known as an enabler of successful public-private partnerships, and the architects make themselves more involved with their clients' culture than with architectural fads. As such it has become the blueprint for commercial architectural firms at the turn of the millennium, unafraid to advertise its strengths, however untraditional they might be.

As John Cole puts it: "There's a perception amongst those architects who are perceived as more academic and arty that commercial work is somehow unwashed and simple-minded. We believe that there's great complexity in the work, and the complexity comes not from esoteric pursuits, but in understanding the client, public and users' perspective. That's a pretty rich context for design."

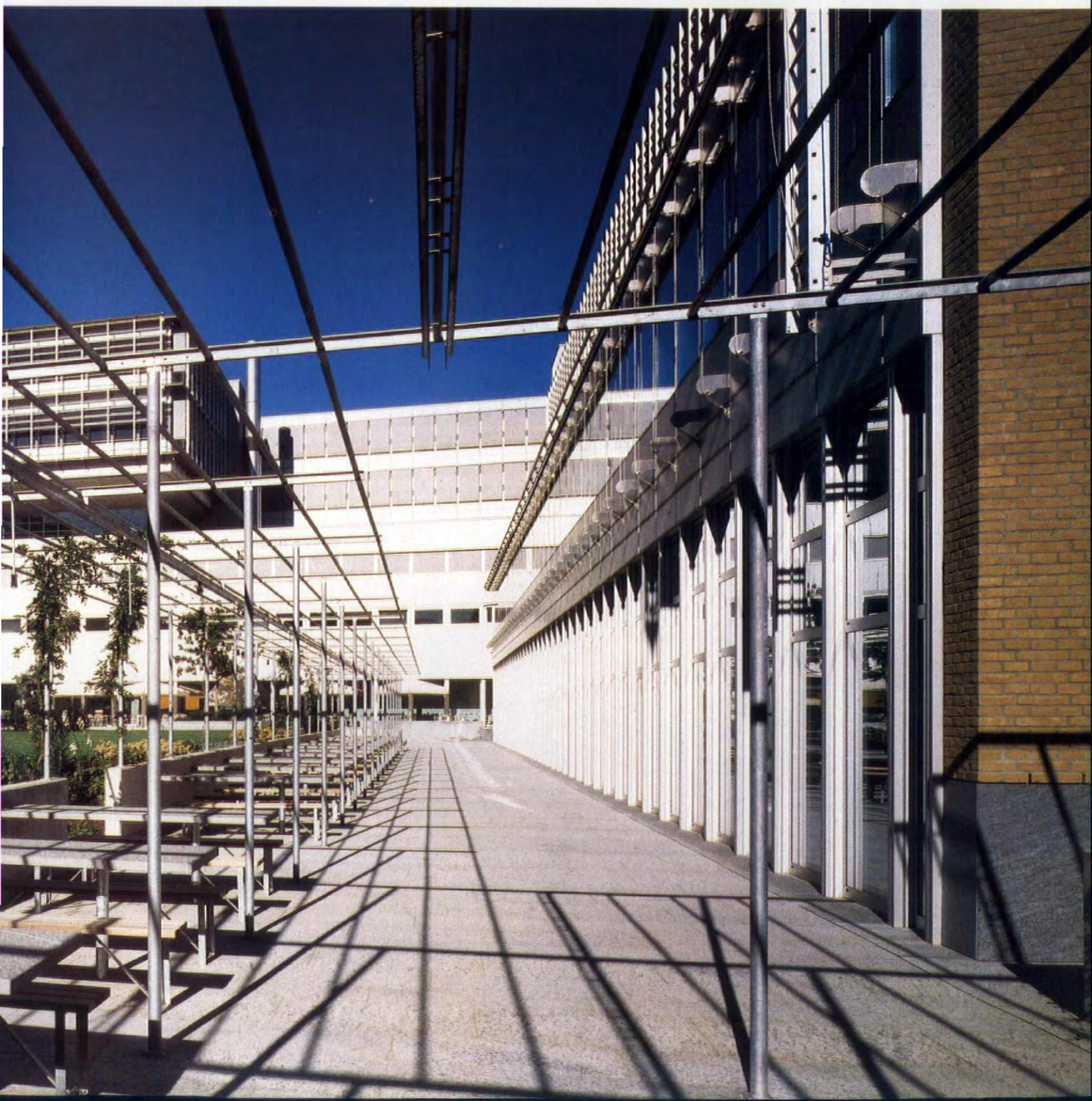
Sector Analysis – Energy efficient buildings

Sustaining an argument

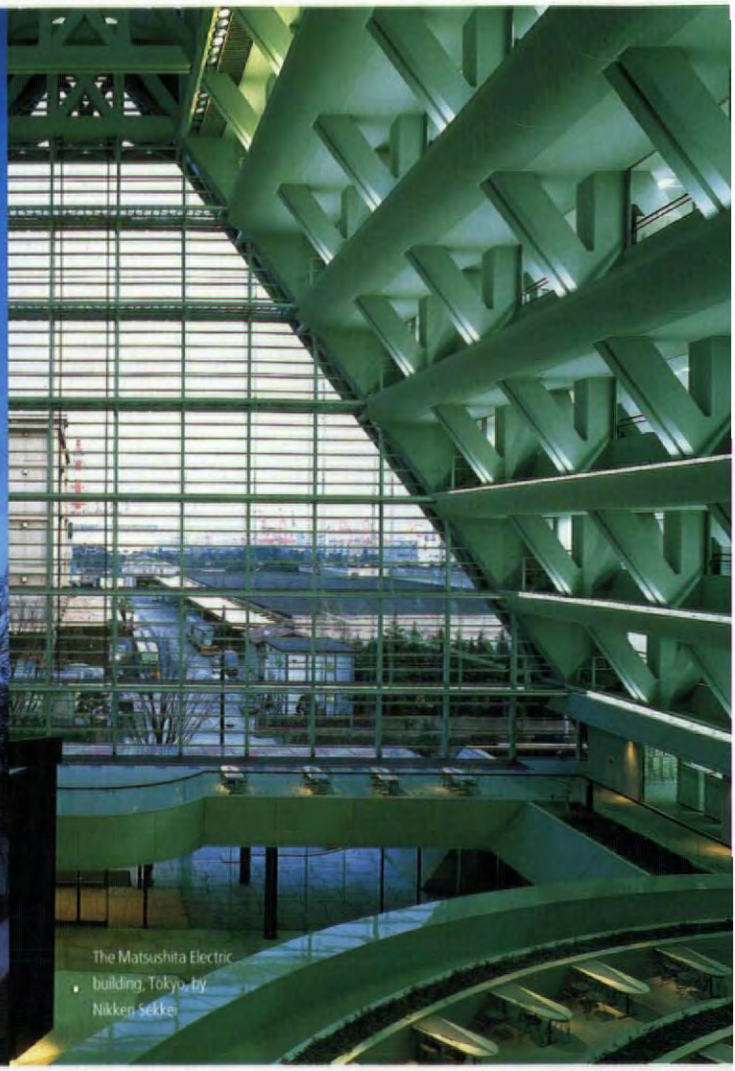


SAM Architects' Suglio building, Zurich, Switzerland, cuts down mains electricity demand by 70 percent

David Lloyd Jones reflects on the Holy Grail of energy efficient design claiming that "there is no such thing as 'green' architecture; there are only environmentally protective measures". Architects who have persistently pursued 'environmental' architecture have been accused of providing solutions that are fit only for housing, schools and community buildings. Lloyd Jones promotes the case for energy efficient commercial buildings.



The Elizabeth Fry Building at the University of East Anglia, Norwich, UK, by John Miller and Partners



The Matsushita Electric building, Tokyo, by Nikken Sekkei

Buildings that are designed to protect the environment do not pose a greater risk, should not be more costly, and are certainly no more quirky than conventional buildings. The best of them have other distinctive qualities which are usually absent in their counterparts. These qualities stem from measures taken to address environmental issues but, when interpreted with flair, acquire their own expressive and sensual attributes.

Neither is there such a thing as "green" architecture; there are only environmentally protective measures. These measures should no longer be regarded as special or supplementary, they should be an integral part of the normal design process. Architects should no more design a building without considering its impact on the environment than they should without considering how it is going to stand up.

It is fortuitous that environmental measures needed to ensure sound bioclimatic design are, in many cases, the very same measures needed to design a building that brings joy to its occupants.

Sustainable construction

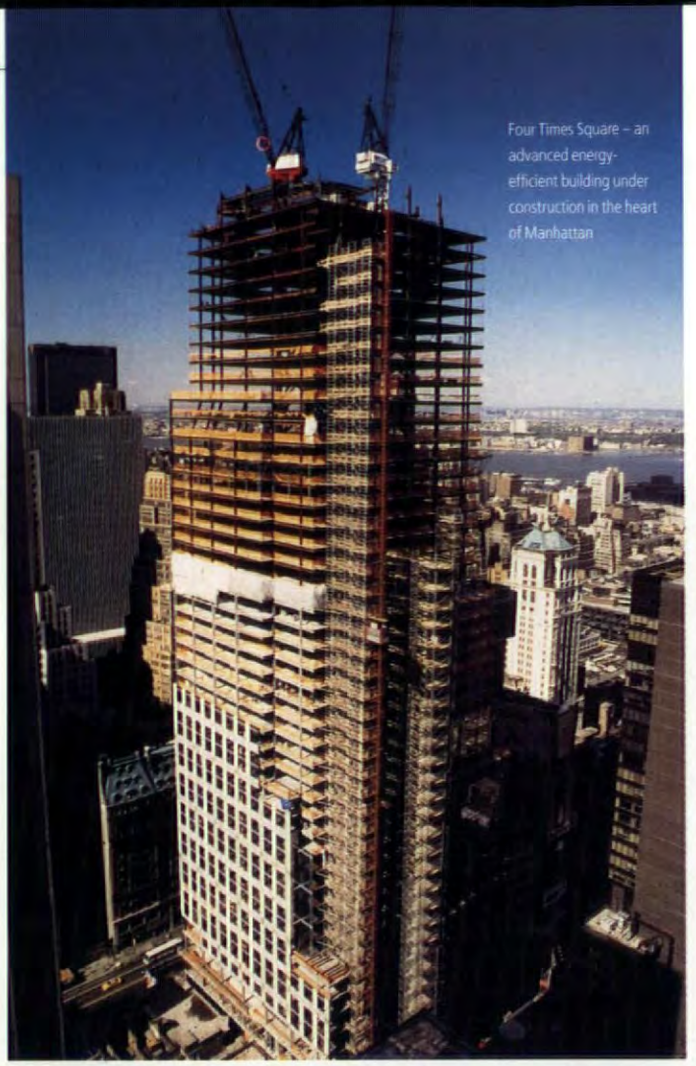
Last year Bangladesh suffered the worst floods in living memory. The combination of ferocious heat and industrial pollution made Athens almost uninhabitable, and over recent years resort development in Goa has both sidelined the local community, depriving them access to water and land, and grown so indiscriminately that it has alienated many of those whom this tropical paradise hoped to attract.

The construction industry has, in many countries, noted and acknowledged the effects that their activities have on pollution and global warming. In many of them there has been research, debate, promulgation and even legislation with the objective of alleviating or delaying predicted depredations. As one would expect the most concerted action has been in areas and sectors which are most tractable, such as solar energy generation (both thermal and electric) in housing, and energy conservation in offices.

In The Netherlands, Regional Electricity Companies supported by the state and local government have invested heavily in building-integrated solar electric power. At Amersfoort, a suburb of Amsterdam, the roofs of the houses for a whole new community have been appropriated by the electricity supplier to accommodate a multi-megawatt photovoltaic power plant. The Olympic village, currently under construction in Sydney for the Millennium Olympic Games, will incorporate a similar solar power plant.

Targets at the leading edge of energy efficient office design are increasingly ambitious. The offices currently being designed by Jestico + Whiles + Associates for Hyndburn Council in the north-west of England aim at "zero energy"; the holy grail for environmentally aware architects. This means that through a combination of energy conservation measures, effective and ›

The New Environmental Office (previously the Building Research Establishment), Watford, UK, by Feilden Clegg



Four Times Square – an advanced energy-efficient building under construction in the heart of Manhattan

The Condé Nast Building at Four Times Square, New York, USA – Fox and Fowle Architects

This text is an edited version of what first appeared in the Four Times Square brochure. The Conde Nast Building at Four Times Square is a 48-storey office tower – the centrepiece of the masterplan prepared by the 42nd Street Development Corporation, a public/private consortium created to promote the redevelopment of this traditional heart of Manhattan. The building was designed by Fox & Fowle Architects for the Durst Organization in New York. It is due to be completed in 1999. The gross area will be 150,000 square metres.

A day in the life of a building manager in the year 2005

On July 22 2005, Harry Strong caught his usual 06:36 train from Plainview to NYC and decided to check the building while on the way to work. Today was going to be a scorcher and he wanted to be doubly sure his building was ready. Back in 1997 everyone had doubted global warming was real, but the record-breaking summers of 1997-2001 had convinced all the doubters. Harry pulled out his cellphone, called the automated attendant and hit "memory nine" to send his account code and password. He knew that today was going to be a big demand day, with the temperature expected to hit 97 degrees with eight percent humidity. He wanted to make sure the building was properly programmed to minimise utility costs and avoid any unnecessary purchasing of electricity. Yesterday's e-mail had provided an electricity price alert, with late morning electricity prices on the New York Electric Exchange peaking at $0.87 per kilowatts per hour (kwh) by 17:00. He downloaded the demand levels for the past six hours and saw that the chiller had stopped charging the ice storage tanks at 05:45, right on time.

Harry was glad David Winston at the energy company had convinced him to put in that thermal storage system two years ago. Within days of the installation being completed, it had saved him a major headache when chiller Number One, a 25-year-old electric centrifugal, had failed. Even though the controls on the new system were not yet fully operational, the energy company had been able to manually deliver chilling because the ice storage tanks had been frozen during system testing the prior two days.

After electricity had been deregulated in 1999, electricity prices had become very volatile in the peak summer and peak winter periods, with electricity over $0.50 kwh on many of the hottest and coldest days of the year. The carbon tax passed in 2000 to combat global warming had pushed electricity prices up during most daytime periods because quite

› informed building management and solar power, the building makes no overall demand on imported mains energy. Jestico says: "Until recently, sustainable architecture has not been a strong enough foundation for an architectural practice. That's changing now as more enlightened developers look upon buildings as long-term investments. Local authorities are also actively requiring statements from developers on sustainable issues."

While most in construction understand the global issues at stake and acknowledge the necessity of action at the design level, there is a distinct gap in the understanding of the mechanisms that join them. This is largely due to the fact that they have not been coherently formulated, at least for the construction industry. Delineation of these mechanisms lies in the nebulous concept of sustainability.

What does it all mean?

Sustainable development was defined in the Brundtland Report of 1988 as: "Development that meets the needs of the present without compromising the abilities of future generations to meet their own needs." Pressure groups have sought to make the social dimension more explicit and governments insist that all this be carried out in the context of strong economic growth.

The tendency to expand the scope of sustainability to include the social as well as the physical implications of development, and the insistence that cherished fiscal shibboleths are included, increases the difficulty in working out effective sustainable strategies for particular development sectors. Nigel Howard, a scientist working with the UK Building Research Establishment, is one of the few who have addressed this issue from the point of view of the construction industry. His view is that the definition of sustainability must be reconsidered to reflect the conditions that prevail in the industry more specifically, citing a need for "development that meets the needs of the present and is at least as valuable to future generations as the value of the environmental exploitation that results".

He feels that this interpretation allows for the extraction and use of even very large quantities of resources provided they're renewable or demonstrably exist in sufficient quantities for all time. It permits waste and pollution levels that the planet is

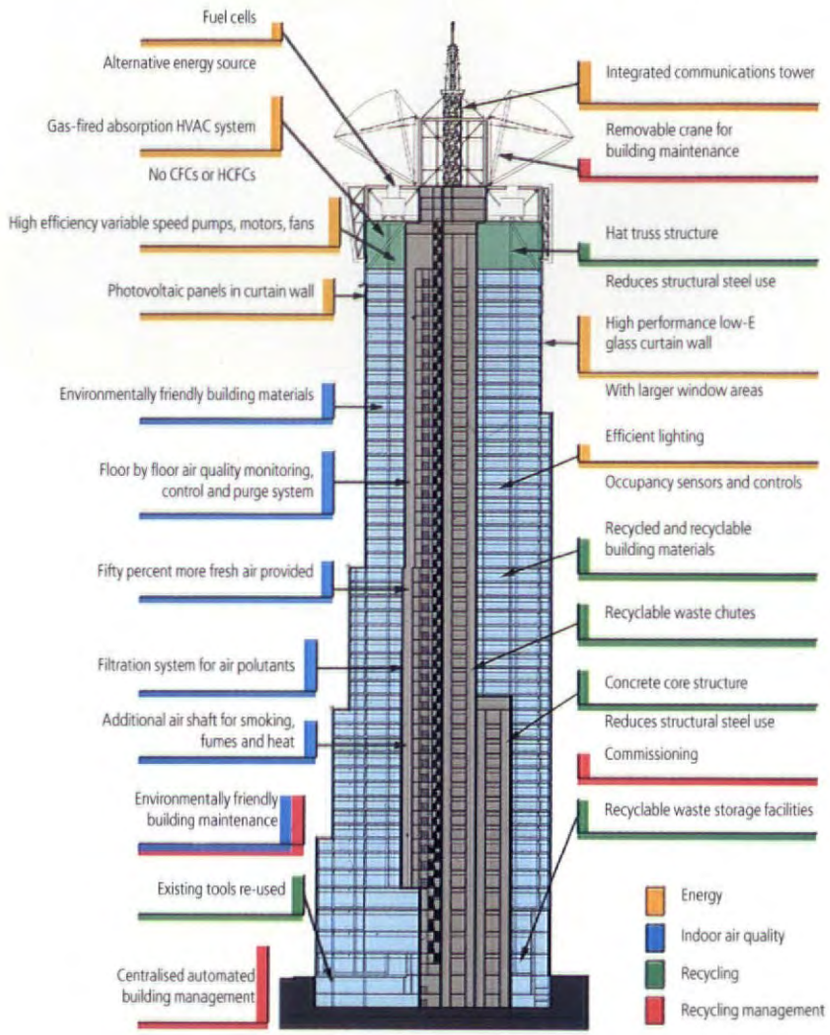
a few coal plants had stopped operating, except during peak demand periods. Seemed the capital cost of reducing their pollution emissions was so high that it didn't make it worthwhile. As it was, most coal plants had to buy emissions credits just to be able to run at all.

Late morning Harry told his computer to dial David Winston. In a few seconds his face filled the screen and David said: "How are you Harry, any problems?" Harry knew that Winston would know of any problems in the building before he did so he chuckled as always. "No problems David, just wanted to know if you had gotten me a quote on that Green power I asked you for." One of Harry's tenants had wanted him to look into getting 100kW of electric from a renewable source. Nothing was likely to be available until next year but he had to ask. All the private hydro had been contracted in the first two years after deregulation. Tax credits for renewable energy investments had been enacted on both the federal and state levels in 2001 in an effort to combat global warming, but it takes years to develop large wind farms and there was a scarcity of really good sites.

David said he had another idea and asked if Harry and the tenant would consider installing a photovoltaic system on the roof instead. Prices of solar cells had continued to decline as manufacturing of systems increased each year and Harry knew of a few buildings in NYC who already had most of their roofs covered by shiny black panels.

Harry thought to himself, it's absolutely amazing what the world of energy had come to in less than ten years. If anyone had told him back in 1996 that he would have all these new-fangled energy systems installed, and without laying out one cent up front, he would have told them they were crazy. Amazing what a big dose of competition had done for energy prices and hardware. I wonder what they'll think of next?

The author, Dennis T Wilson, is the president and founder of Enersave Inc, an energy service company responsible for developing hundreds of solar systems, 60 MW of cogeneration plants and 30 MW of energy efficiency projects.



clearly able to tolerate and accommodate. It does not require everything to stay the same, and recognises that development implies trade-offs within and outside the industry. It does not necessarily imply self-sufficiency and autonomy except within the context of the planet as a whole.

The politics and practice

The challenge for the construction industry is to quantify and evaluate these issues. To do this it needs to clarify objectives, identify and list the different types of environmental impact that construction involves and assign physical units of measurement to them. It has to understand the scientific principles governing sustainability, the characteristics of entropy, the modes, manner and extent of impacts, and the relationship between cause and effect, in order to assign monetary or other value to the effects on current and future generations, as well as interpreting the results over the life-cycles of buildings and their components.

This process is inherently complex and entails much scientific and methodological uncertainty. It is further complicated by the lobbying of interest groups and by commercial and political secrecy. It is difficult to envisage an assembly of forces that could initiate an integrated and international undertaking to embark on this massive task. The Kyoto conference in December 1997 focused more specifically on green house gas emissions and persuaded governments to set targets for their reduction, perhaps recognising the difficulties inherent in applying sustainable principals globally, or even to economic sectors. Europe, for example, has set a target of eight percent below 1990 levels by 2010. It also set out the notion of emissions trading whereby an industrialised country might buy credits from a non-industrialised one in order to meet its emissions obligations.

The US has undertaken to cut emissions by seven percent over the same period and will depend heavily on the purchase of credits, but Congress has not yet ratified the protocol and there is considerable doubt as to whether it will. If it does not, it is likely that other major players will use its failure as an excuse to remain uncommitted.

Nevertheless, developed and developing countries are now ›

An engineer's voice – the passive approach *by Gavin Thompson*

The term "intelligent building" conjures the idea of a dynamic building bristling with the latest artificial intelligence, a sophisticated world in which the vagaries of building usage and external climate are constantly anticipated and the relevant systems tuned to provide maximum comfort with minimal energy consumption. However, the most elegant solution to providing "intelligence" lies in the design of its fabric, so called passive engineering, using the static components of the building to optimum environmental effect.

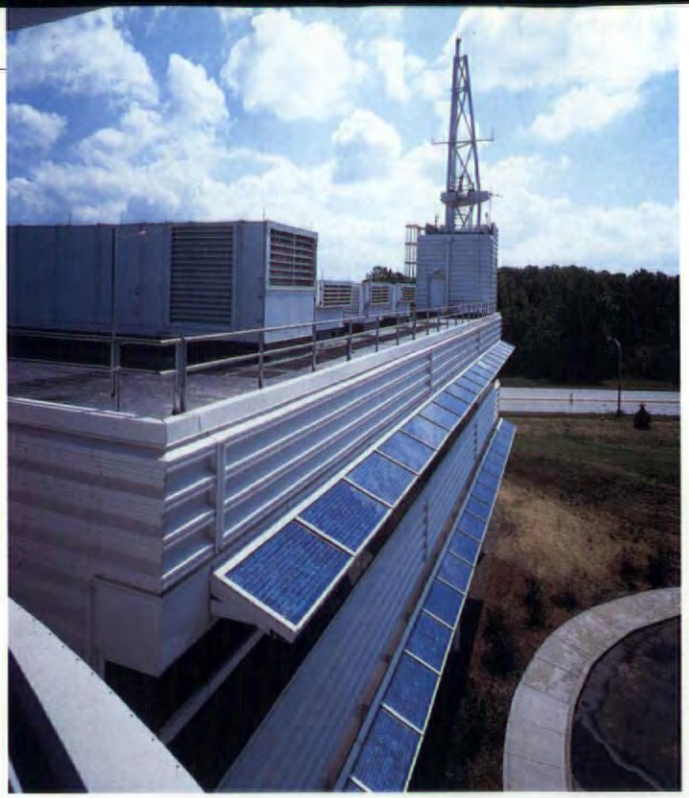
Careful selection of building orientation, window design, shading and thermal mass can have a surprising impact on the performance of a building, minimising the more traditional systems normally employed by the building services engineer. In many respects the process of passive engineering seeks to emulate what happens in the natural world. The classic example of this is the termites nest, which contains sufficient thermal mass to regulate temperature whilst being carefully shaped to promote airflow via connection to dissipate unwanted heat.

There is a fine line that must be followed when developing an intelligent building in the passive sense. Considerable effort and expense can be incurred chasing diminishing returns and often compromising other disciplines in the process. The success lies in defining realistic aspirations of the internal environment. The target conditions must be looser and more closely related to the prevailing outside conditions, yet still compliment the proposed use of the space. It is therefore vital that the occupier understands what is being provided and what is expected from the completed building. Lack of understanding can lead to, for example, 24-hour security guards suffering from cold at night and removing fuses in order to hold automated windows shut. This in turn causes all manner of automation problems during the day for the "intelligent" control systems.

Departure from the quantified environment of ventilation into the realms of passive environmental engineering, regarded by many as a black art, often turns a hardened M&E engineer to jelly. However, a variety of analysis software is now available, and when used in conjunction with feedback from completed projects the designer can make predictions with confidence.

What of intelligent buildings of the future? The inherent problem in insulating a building against the elements is that the flow of heat is reduced in both directions. Research is already underway to develop passive systems within cladding systems to enable a building facade to absorb heat radiation from winter sun whilst containing the heat already in the building, and for the building envelope to radiate heat to the night sky in the summer, to cool itself down in preparation for the day ahead.

Gavin Thompson Beng CEng MCIBSE is a Building Services Director with Buro Happold Consulting Engineers



Above: Kawneers PV system generates supplementary power (see Center for Environmental Science and Technology Management, opposite)
Right: The PV system is integrated as sunshade elements
Facing page: Cannon's team maximised energy efficiency through site, orientation and fenestration design

› trying to determine how best to comply with their undertakings without disrupting economic growth or imposing social hardship. In the UK the government is suggesting the introduction of economic instruments as a means of reducing carbon dioxide emissions within a market economy. Two types have been suggested by the Treasury; firstly the idea of emissions trading whereby limits are set but trading in credits between business is allowed, and secondly "energy taxes" whereby use of energy (or quantities of carbon dioxide, by far the main cause of the greenhouse effect) are subject to government imposed tax. The aim is to encourage investment in low-energy processes, plant and (although not specifically stated in the paper) buildings.

There is no doubt that even with the relatively modest, and most would say inadequate, measures to which governments have committed, a combination of legislation, voluntary action and economic incentives and disincentives will be introduced at the start of the next millennium.

Central to the avoidance of fines and tax, at least for non-processing businesses, is the energy efficiency of the buildings they occupy or lease. There are, however, more immediate inhibitions to pursuing sustainable practice in buildings than impending fiscal burdens. There is a view that environmentally sensitive techniques are fine for housing, schools, community buildings, but when it comes to corporately financed commercial buildings they don't pass muster.

A minute fraction of commercial buildings in any country, but particularly in advanced industrialised countries such as the United States and Japan, are designed and operated against any sort of environmentally protective strategy. Where they are, such as the Matsushita Electronic Head Office at Shuagawa, Japan, and the Yasuda Academia in Tokyo, complex energy reducing measures are applied to very high density development strategies that make any savings marginal at best.

Bioclimatic buildings are perceived to be risky in their performance, more expensive to build and operate, and quirky and unappealing in appearance. It is worth exploring these three criticism further to ascertain what evidence there is for them. Increased risk in an environmentally sensitive building is generally thought to lie in two areas: in the introduction of

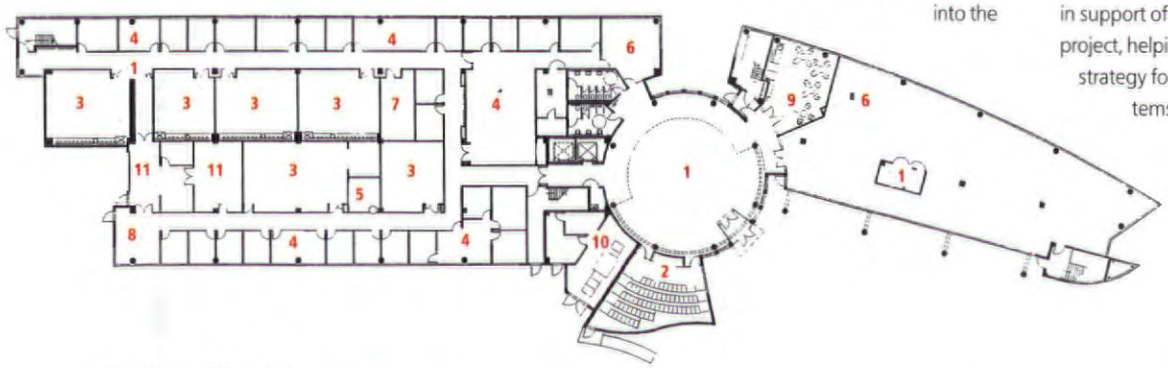
The Center for Environmental Science and Technology Management, New York, USA – Cannon Architects

by Steven Strong

The state-of-the-art facility at the State University of New York in Albany, housing the Center for Environmental Sciences and Technology Management (CESTM), was dedicated in the spring of 1997. Designed by Cannon Architects of Buffalo, New York State, as two wings connected by a three-storey rotunda, CESTM houses research laboratories, a business incubator, and the National Weather Service forecasting office for the Albany region.

Using the opportunity to build on the Center's objective of transferring research and environmental technology from the laboratory to commercial applications, the architect integrated renewable energy and energy efficiency technologies into the design. Cannon's team maximised efficiency and solar gain through site, orientation and fenestration designs. However, the most unique energy feature is the 15 kW solar photovoltaic (PV) system designed as building-integrated sunshade elements. The Kawneer Company's 1600 PowerWall™ Slope Glazed System, made up of Solarex Corporation's ac PV modules, generates electricity to power ventilator fans and emergency lighting, reducing the cooling loads of the building and the glare in the working areas. The SUNY Albany systems also include 5-kW of ac PV modules as landscape elements in a park area to the south of the building.

Solar engineering and design services for the project were provided by Solar Design Associates, Harvard, USA, in support of the architect and landscape architect on the project, helping to develop an energy-conscious design strategy for the complex and in integrating the PV systems into the project's built environment.



Key to ground floor plan

1. Main entry rotunda/display area
2. Classroom
3. Laboratories
4. Offices
5. Darkroom
6. Conference room
7. Computer room
8. Business incubator
9. Lounge
10. Mechanical area
11. Service

Structural engineers
Cannon
Interior designer
Cannon
Landscape architect
Hargreaves Associates
Solar engineers
Solar Design Associates

innovative materials, components or systems and in the maintenance of acceptable internal comfort.

Innovation is risky business

Last year, the first speculatively developed solar powered office building was completed. It was designed by Studio E Architects for the developer Akeler and is located on a business park in the north-east of England. The project is designed to low-energy standards and incorporates a 900-square-metre solar facade, currently the biggest of its kind. Trevor Silver, the director responsible for the development at Akeler, carried out a very careful assessment of the risks and how a future occupant might perceive them. He says: "If, as seems the case, half the noxious greenhouse gases come from buildings, then as an industry it's something we have to address as a matter of urgency. Occupants mustn't have their work spoilt by this stuff, you shouldn't know it's a low-energy building. It should just feel like a pleasant place to work."

In the end, the decision to proceed was as much to do with a view of the future of office development, and with the attractiveness to an occupier of a building that really tackled the issue of sustainability, as with detailed risk analysis of components and systems to be incorporated in the building, although these clearly had to be fully tried and tested. In this case not only Akeler had to be convinced, but the financial backers of the project.

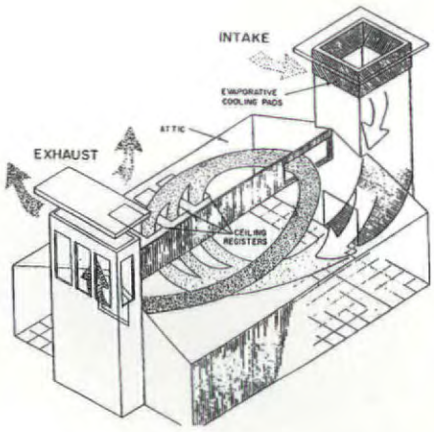
Product development in the building industry is rather different to that of others. Buildings are generally bespoke in their design. There are relatively few instances where buildings are put together on a standard modular basis using factory assembled components produced on an assembly line. Buildings, therefore, cannot be developed, tested, modified and refined in the same way as, say, a car. Each one, to a greater or lesser extent, is a unique assembly of separately developed components. While the components, themselves may have resulted from a sophisticated development programme, the manner in which they are installed and interfaced with other components in a building may not have been given so much attention. In any building, therefore, there is a degree of risk in its overall, integrated performance. In most ›

Torrent Research Centre, Ahmedabad, India – Abhikram Architects and Brian Ford & Associates

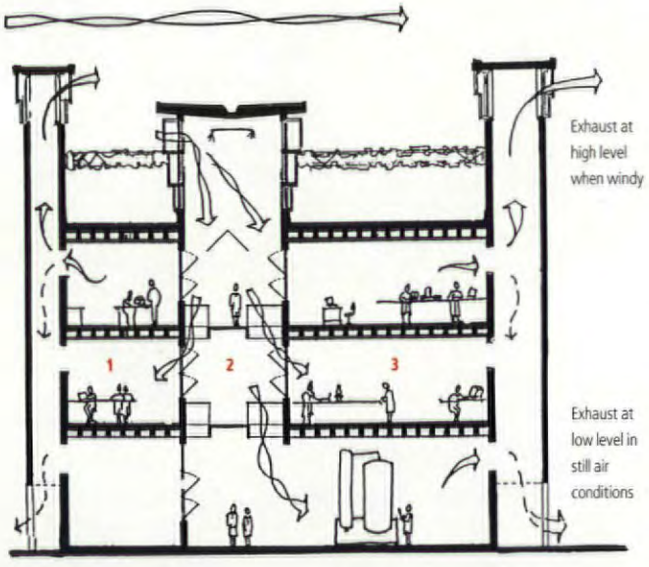
by Suzanna Hagan

The Mogul Emperor Babur complained: "Three things oppress us in Hundustan; its heat, its violent wind, and its dust." During the Mogul period, coping with a hot dry season from March to June and a daily maximum temperature above 35 degrees centigrade required very high thermal mass and evaporative cooling. Today, throughout India, air-conditioning does the cooling.

Indian firm Abhikram, together with Brian Ford Associates, sought to demonstrate that this dependence on fossil fuel-driven mechanical services is unnecessary, even in a project as demanding as a new laboratory building in the 14,000-square-metre Torrent Research Centre (TRC) Ahmedabad, in which temperature control is of the utmost importance. The project was, therefore, an experiment both for Torrent and for further sustainable development in India.



Cross section through the building



Key
1. Office
2. Concourse
3. Laboratory

The cooling strategy was one part of a larger environmental design programme that sought to maximise the use of natural light, ventilation and locally available natural materials, and to achieve excellent dust control. The architects therefore developed contemporary equivalents to the Mogul passive cooling techniques. Instead of eight-metre-thick stone walls, the concrete framed brick in-fill building was insulated with vermiculite. And instead of deep wells, a Passive Downdraft Evaporative Cooling system (PDEC) was developed. This operates through a system of inlet and outlet shafts, with the air cooled by rings of micronisers at the top of the inlets. The micronisers react automatically to temperature and relative humidity to provide a draught of cool air that moves down a central open concourse, through the three levels of laboratories and offices, and is exhausted via perimeter stacks. Mean ventilation rates of six and nine changes per hour were measured at ground and first floor levels over a two day period, which spared the users the usual laboratory "smells".

Extensive modelling during the design phase and measuring after construction produced data that indicates the success of the PDEC system under extreme conditions. In the summer of 1997, interior temperatures remained at 29-30 degrees centigrade when outside temperatures were 43-44 degrees centigrade – a 13-14 degree difference. The interior temperature did not

Jestico + Whiles' design for the zero-energy offices of Hyndburn Council

›countries there are now measures – codes of practice, building bylaws, performance certificates and health and safety procedures – which keep this risk to a minimum. In any event, the success of bioclimatic buildings does not necessarily depend on the incorporation of innovative products. Many of the low-energy measures derive from traditional techniques and the appropriate use of conventional materials. There are, however, specific areas where bioclimatic buildings, particularly if they incorporate renewable energy supply, are right up there in the vanguard of leading edge technology. This includes photosensitive glass technology, automated monitoring and controls, and solar electric power supply, such as incorporated in the Solar Office.

Development in these technologies do not pose any higher risk than other developments that have taken place in the building industry since the industrial revolution such as the steel structural frame, the passenger lift, plumbing systems and air-conditioning. And like these technologies those particularly associated with energy efficient design will in due course find their way into everyday construction. In the

Above left: Air is exhausted via perimeter stacks
Top: The interior temperature does not fluctuate more than three degrees centigrade even if the exterior temperature changes by 17 degrees centigrade
Above: Builders working on the exhaust stacks

over a 24 hour period, despite outside temperature variations of between 14 and 17 degrees centigrade.

The clients have been happy with the results so far. The total capital costs are greater than those of a conventional building but will be paid back in a little over a year by the savings on electricity consumption which in the first year represented a reduction by 64 percent of the electricity consumption of a conventionally air conditioned equivalent.

Environmental design consultant
Brian Ford Associates
Structural consultant
Yogesh Vani
Utility consultant
Datsur Consultant Pvt Ltd
Landscape consultant
Kishor Pradhan

end it is down to the client, designers and contractor to make clear-headed assessments of risk, provide the wherewithal for product development if appropriate, obtain appropriate warranties and guarantees for products and ensure that sufficient skill and time is available during construction for successful implementation.

Occupants in control

Risk in respect to comfort is a more subjective issue. People's tolerance of discomfort varies with physical, physiological and psychological conditions and contexts. The more control they have over environmental conditions the more they like it. The best human responses usually come from shallow or medium plan buildings (about 13.5 metres across from wall to wall) with openable windows, plenty of natural daylight with many control options, and single-person or small group layouts. As the development of modern building services has allowed buildings to get deeper and taller, the things people like most such as daylight, fresh air and controllability have gradually been taken from them.

The best modern buildings compensate for these losses through good design and enlightened management. Lamentably, many do not, and occupants frequently complain of ill health and lowered productivity as a result. Bill Bordass and Adrian Leaman, an ideal combination of physicist and behaviourist, have explored these topics in a series of papers. Their detailed analyses of buildings from the perspectives of both occupants and technical/energy systems have shown that natural ventilation, air-conditioning, or a mixture of the two (mixed mode) can all produce happy, comfortable, productive occupants and acceptable energy efficiency. Crucial factors are not just obvious things like design quality and attention to detail, but a total management approach which can deal with complexity effectively. Bordass and Leaman suggest two basic strategies which usually work; low technology/low management input, and advanced technology/high management input. They warn against the two other possibilities; high technology/low management input (which perpetuates the myth that technology does not need to be managed), and low technology/high management input (impractical for most ›

Designing for energy efficiency

by Brian Ford, environmental design consultant

It is vital to assess the energy implications of design options from the earliest stage because building form and construction have such a profound impact on final energy consumption. This assessment should result in the definition of an energy strategy for the building (ie diagrams of how the building may work at different times of year). This is usually developed by the environmental consultant in collaboration with the other design team members, based on the users requirements, the local climate and building technology. As the design develops, the strategy can be tested using sophisticated computer and physical modelling techniques to demonstrate the performance of the design proposals and give the client confidence that strategic goals are achievable. Such techniques are being used increasingly, particularly on innovative projects like Renzo Piano's Tjibaou Cultural Centre in New Caledonia, the Stadium Australia project in Sydney and the Torrent Research Centre in Ahmedabad. Of course it is most important that the design philosophy is carried through in detail and that when the project is completed the designers return to evaluate occupant satisfaction and actual performance.

Earth Port, Tokyo, Japan – Nikken Sekkei

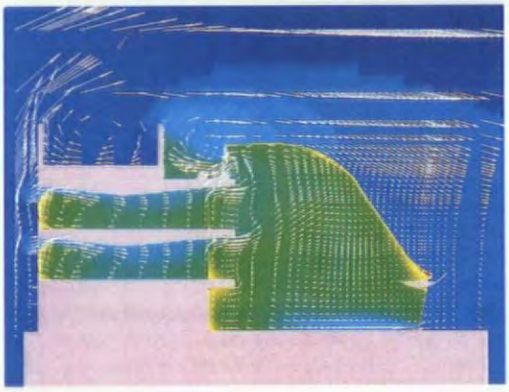
by Mark Dytham

After the oil shock of the 1970s, Japan's car industry came into its own by producing small, compact and fuel-efficient cars. The construction industry did not go down the same path. To get over the crisis, everyone was told to turn down their heaters and air-conditioning units and designers were asked to design buildings with smaller windows. This was fine until everyone ran out of patience and got used to the higher price of oil.

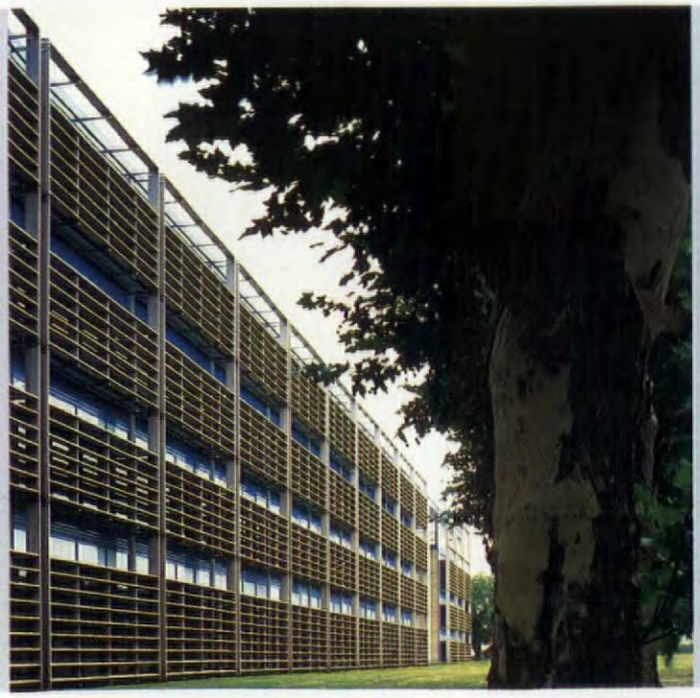
Traditionally buildings in Japan have been low-mass, low-insulation. This architecture devised clever ways to control the amount of sunlight and airflow through a building, thus controlling heat and humidity. Today new buildings in Japan still lag far behind the well-insulated architecture of Western Europe. You don't think all those Andoesque walls have insulation hidden in there, do you? With buildings being ripped down every 20 years or so, the payback on double glazing and other insulation systems is marginal, at best.

But slowly the large construction companies are beginning to examine the lifecycle and energy cycle of buildings. There is a definite move to condition buildings using unprocessed energy such as natural daylight and natural ventilation, capitalising on the ideas generated in the West as well as the traditional ideas from the East.

Earth Port Project for Tokyo is one of the first projects which puts such theory into practice. A large atrium is situated on the north side of the building covering the whole facade. This space is called an ecological or open core, with the space allowing vertical circulation. The space acts as buffer zone on the north side, ironing out external temperature fluctuations, allowing the internal northern facade of the building to be fully glazed from floor to ceiling, giving a much brighter interior, but without sacrificing heat loss or gain during the hot Japanese summers. The large atrium volume also draws air



Above left and left: The building's energy-efficiency can be controlled accurately thanks to technologically advanced temperature monitoring systems



The EDF Regional Headquarters, Bordeaux, France, by Foster and Partners

›organisations). The best buildings, they say, tend to display one of two distinct approaches. Some are kept deliberately simple, for example the Woodhouse Medical Centre, the Elizabeth Fry Building and Marston Book Services – all in the UK, others' complexity is properly anticipated and managed in the briefing and design stages as well as in operation, such as the EDF Regional Headquarters in France by Foster and Partners. Banks of control switches help occupants to give an instant response to any discomfort that may arise.

In modern cities, though, few buildings can provide these near-utopian conditions. So it is vital that designers and managers compensate for their absence, for example, by giving people as much environmental control as possible (for example over the lighting), avoiding creating very noisy open plan spaces, taking great care to avoid glare from lights and sun, making sure that the air conditioned system is stable and predictable in operation and runs within the comfort envelope, ensuring that their setting is kept fresh-looking and clean and above all, responding very quickly and effectively when people complain or things go wrong.

Left: The atrium adds to both the ecological and architectural merits of the building
Below: The atrium allows the internal facade to be fully glazed, giving a much brighter interior

through the building naturally from the south side to the north. No office partitioning runs to ceiling height, thus allowing for the free movement of air.

The southern facade of the building has less glass, but due to its orientation allows an equal amount of light compared to the north, creating a very balanced light in the office space. Light shelves have been used externally on the southern facade, and low-energy glass has been used in combination with a louvre sandwich glass to prevent heat gain.

The building uses an advanced Building Environment and Energy Management System (BEMS) where sensors monitor occupancy of the building and adjust the systems accordingly. Rainwater is collected and stored in specially lined foundation voids for toilet flushing purposes. Recycled glass has been used to make the aerated ceramic panels used on the southern facade of the building. Lake sludge, a bi-product of lake and river dredging, has been fired into the tiles used on the external facade and recycled concrete has been used as the aggregate in the external paving slabs.

The result of all these ideas has not only produced an energy efficient building but one in which the environment is conducive to work. The atrium allows the building to work environmentally, but also creates a great space in which to relax, and can also be used for exhibitions. It is this doubling of function and aesthetic which the architects see as the future of design.

Client: **Tokyo Gas**
Concept: **Tokyo Gas and Nikken Sekkei**
Curtain wall: **Yone**
Construction company: **Kumagai Gumi**

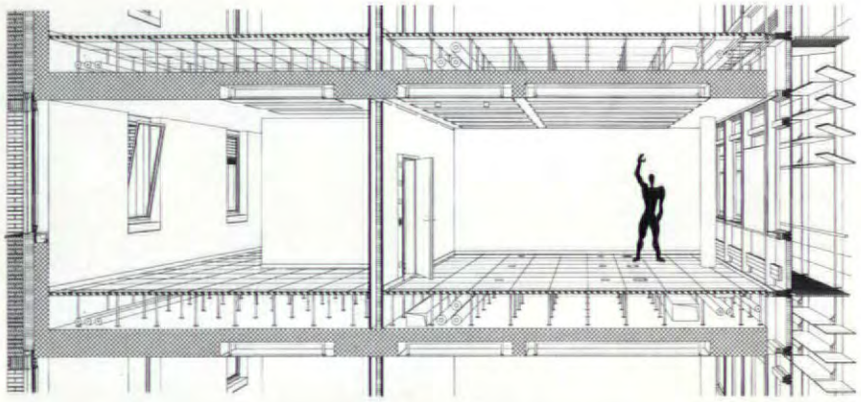
Significantly, Leaman's research shows a clear correspondence between well designed bioclimatic buildings and high productivity. The costs to business in terms of ill-health and lost productivity, as well as wider environmental damage are now clearly demonstrated and too critical to ignore.

What price environmentalism?

The low-energy laboratories designed for the Torrent Research Centre in Ahmedabad, India will pay back the additional costs of four percent over the air-conditioned equivalent in the first year through energy savings. It is further estimated that the entire capital cost of the complex will be recouped in 15 years. This is because construction costs are low, the energy measures fall within existing vernacular construction techniques and energy costs are relatively high. On the other hand, the payback period for the photovoltaic integrated Solar Office at Doxford International could be longer than the building exists. This is because PV technology is in its infancy – it is relatively sophisticated and relatively costly, and energy costs are extremely low in the business park. However, optimists are convinced that these factors will be reversed.

Low-energy buildings are thought to be more costly, particularly in terms of capital cost, but this does, of course, depend on the comparison. In a bioclimatic building without air conditioning there are clearly requirements incurring capital expenditure, which may not be normally included in a conventional building. These include higher floor to ceiling heights (the space between the floor slab or raised floor and the soffit or suspended ceiling) and narrower floor depths to ensure good cross ventilation and daylight penetration, construction of high thermal mass to allow heat to be taken up during the day and released at night when it is cooler, higher standards of impermeability of the roof and walls to prevent heat loss in winter, solar protection to prevent overheating in summer, and high performance openable windows to provide careful control of glare and ventilation.

Cost comparisons have been made by the cost consultants Davis, Langdon and Everest between existing conventional air-conditioned office buildings and unbuilt but otherwise fully specified client commissioned bioclimatic office buildings. These buildings included space and power provision for the ›



Top: Section
Above: Automated aluminium louvers ensure maximum use of daylight

The Suglio building, Zurich, Switzerland – SAM Architects

by Ingo Hagemann

The goal of this project was to build a model energy-saving office building, that reduces both construction as well as maintenance and running costs. The clients have the motto: "We build today what others consider as the future."

The Suglio building lies in the midst of a chaotic industrial zone, surrounded by an impressive mountain panorama. The architects succeeded not only in meeting the high ecological standards for this building, which were required by the client, but also in substantially improving the overall layout of this area.

The U-shape of the new Suglio complex provides a surrounding enclosure for a park, which serves as a link between the new building and the company's five other existing buildings on the plot.

The varied orientations and surroundings of the building resulted in different facade layouts. A punctuated brick facade on the outer east and west side of the building provides protection against heat and noise from the nearby railway line. In contrast to that are the aluminium and glass facades of the offices, which face toward the park. Their automatically controlled aluminium louvres ensure optimal use of daylight and, if needed, optimal protection against the sun in summer.

Throughout the building different active and passive solar design strategies and other ecological concepts are employed, including a large PV system (160 kW), which is installed on the flat roof and the east and west facades. All building materials passed a life-cycle analysis. The design team succeeded in cutting down the energy demand for electricity by 70 percent and for heating by 50 percent, compared to the client's other office buildings. Computer simulation tools helped to achieve this goal.

The design team reached the conclusion that a building's architectonic expression is determined primarily by location and function, not by ecology. Ultimately, form does not follow ecology.

Client: **UBS Zürich**
Building engineer: **ARGE Luigi Brenni**
Electrical engineer: **Amstein + Walthert**
Lighting specialist: **Amstein + Walthert**

› installation of air treatment should a future tenant have a particular requirement for such a need. The studies indicated broadly that the savings on air conditioning would largely offset any additional costs arising from passive solar measures.

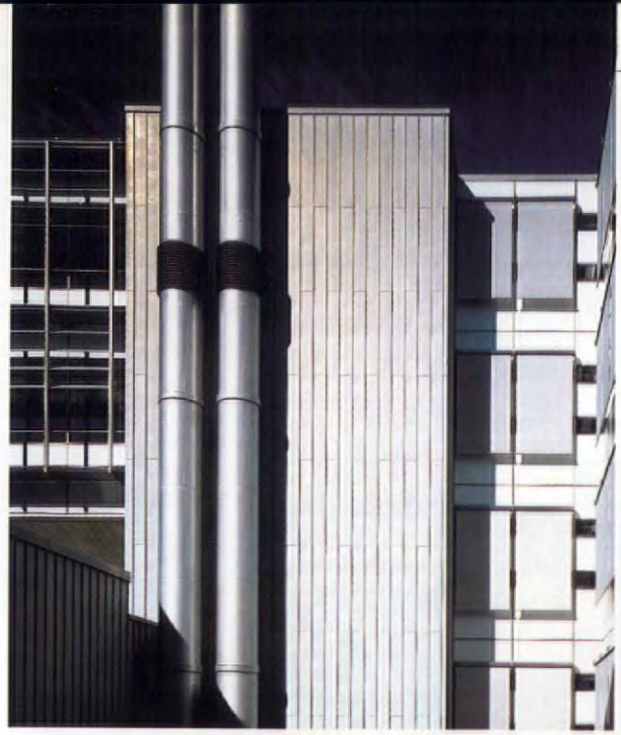
Jim Meikle of DL & E says: "A well designed passive solar building need cost no more than conventional air-conditioned equivalents. Perhaps the real additional cost in sustainable low-energy buildings is the additional design cost – more thought, more research and more attention to detail all has a price."

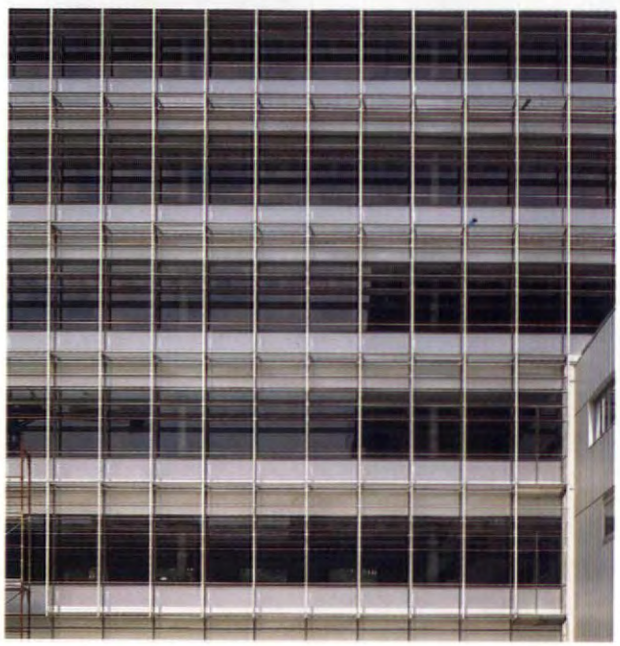
However, the proof of the pudding is in the eating. Akeler at Doxford International, using design and build procurement, are constructing relatively low-energy, shell and core buildings at US$1,200 per square metre all in. This is competitive by any standards.

It is of course, in the operating costs where the bioclimatic building holds the advantage. First of all there are the savings in energy costs: maybe 70 percent on the energy expenditure of a conventional air-conditioned building. There is the saving in plant maintenance costs and savings on the capital depreciation of plant if passive comfort measures replace the need for air-conditioning. A bioclimatic building is likely to increase the health and wellbeing of its occupants and, therefore make their output more productive. This in turn will offer real savings in staff costs.

Indications suggest that buildings will increasingly generate at least a proportion of their own power. This might be carried out on a building-by-building basis or with a local power source supplying a number of buildings. Either way it is not economically viable in most countries for a commercial company to invest in this provision as current energy prices and government support and legislation stand. The self-sufficient "zero emissions" building is probably not achievable at this time in conventional accounting terms. The few non-domestic buildings that are being built are virtually all supported by some form of grant.

Indications are that renewable energy sources, and in particular photovoltaics, will become increasingly viable. The cost per kilowatt of PV-generated power has fallen 90 percent over the last ten years and is predicted to fall even faster over the next ten. At the same time efficiency in converting irradiation





From top left, clockwise: All materials passed a life-cycle analysis; the U-shape of the complex creates a sheltered park in the space created; the PV system reduces outside energy demands

into electricity is increasing. Recently Shell, BP, Siemens and Sanyo have all substantially increased investment in PV development. What is now required is for governments to put their money where their mouth is and act on commitments to environmental protection by introducing legislation and incentives that encourage not only energy saving, but energy generation. After all, the costs at this stage to assist in minimising environmental depredation are infinitesimal compared to the costs that will be involved should governments fail to act.

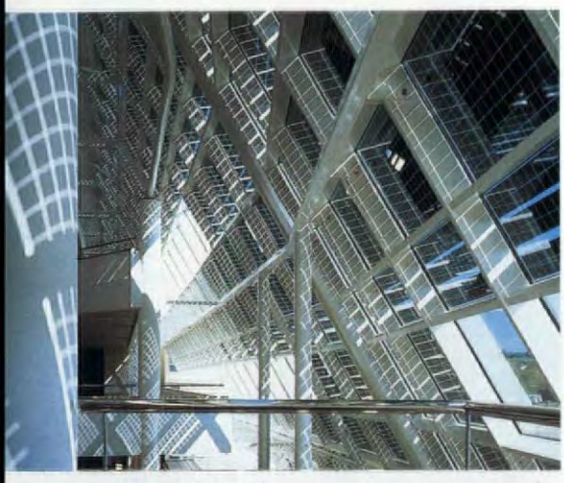
Green looks good

Captains of industry, in commissioning buildings, find discussions on how they should look and feel difficult. Here we are in the province of, at one level, aesthetics and the intellectual and polemical convolutions that they entail, and at another, the realm of the senses with the emotional and subjective responses that they will evoke. They feel these issues are the architect's business, but are also concerned about their investment and whether their peers will find the appearance of the resulting building suited to their preconceptions of image and worth. Equivocation on this issue leads to the banal or the ugly in an alarming number of cases.

The bioclimatic building introduces further uncertainties. There is no doubt that a sensitive approach to the environment in building design promotes a radical rethink of many aesthetic judgements. At one extreme it involves an evaluation of the relationship of building impacts on the environment and on the locality, and the re-evaluation of the relationship between humankind and his setting. At the other, the impedimenta of passive solar design and renewable power generation offer a potent armoury of physical elements for architectural expression or, indeed, suppression. To take three recent UK examples: The Office of the Future, commissioned by the Building Research Establishment, being a demonstration building, flaunts the physical elements that help to make it low energy, whilst the Elizabeth Fry Building at the University of East Anglia, despite proving to be one of the lowest energy use buildings of recent times, appears serenely and humanely modernist without a hint of sunbreakers, solar chimneys or other passive solar elements. The Solar Office at Doxford ›

Solar Office Doxford International, Sunderland, UK – Studio E Architects

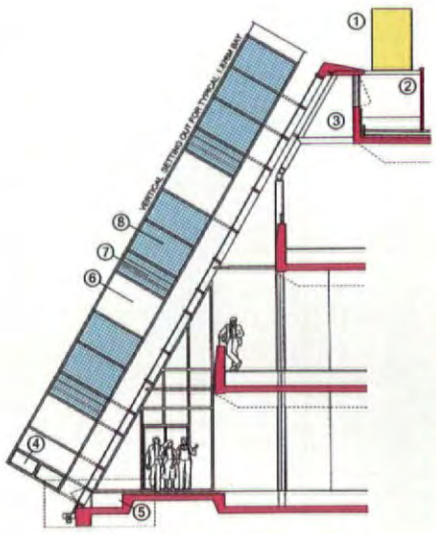
by Katherine MacInnes



Top: The PV solar array uses similar technology to that used to power satellites
Above: The windows facilitate controllable ventilation and glare free daylight

Akeler's Solar Office is located on an exposed site in the UK close to the North Sea. Garry Stewart, the project architect, explains that, "the building is in a business park with an established architectural language. We were asked to follow it, but the demands of a large photovoltaic array meant that, in certain areas, we had to break away".

Studio E's overriding objective in designing the Solar Offices was to find a symbiosis between the low energy measures and those needed for an effective photovoltaic installation. The low energy measures are now well established. They include limited depth floors (maximum 15 metres) with generous ceiling heights to encourage cross ventilation, good daylighting, provision for secure night ventilation and the exploitation of the building's structure to provide thermal mass in order to provide night-time cooling in summer. Windows which facilitate good controllable ventilation, glare free daylight and solar control are set into a well insulated, impermeable building envelope which minimises heat loss in winter.



Key to section through solar facade

1. Wind baffle
2. Wing trough
3. Top vent
4. Bottom vent
5. Service trough
6. Vision panels
7. Banded PV modules
8. "Opaque" PV panels

"It was the impermeable building envelope that was one of the hardest features to achieve. Commonly-used details had to be re-assessed to minimise air leakage. Techniques for sealing the hollow cores and joints in the per-cast plank floor where it met with the walls had to be developed. Sealing around windows to the walls was equally critical and the development of a perimeter channel fixed to the window frame proved to be an effective detail for sealing the windows to the dry lining plasterboard."

The energy consumption target for the building, occupied by a tenant with conventional power requirements, is 85 kW per square metre per year compared with a conventional air-conditioned office of over 400 kW per square metre per year. Electricity generation is provided by a photovoltaic solar array similar to those that power space satellites, integrated into the building envelope. The 70 kWp array will provide 55,110 kW of electrical power per annum, which represents up to a quarter of the electricity expected to be used by the occupants and operating the building over a year. In summer, when it will generate more than is required in the building, the surplus will be exported to the National Grid.

Developer:
Akeler Developments plc
Co-ordinating architects:
Aukett Associates
Buildings services engineers:
Rybka Battle
Structural engineers:
Whitby Bird & Partners
Main contractor:
Bowmer and Kirkland

›International, on the other hand, has no choice whether to celebrate or suppress its green credentials since up to one third of its power is delivered from a 900 square metre PV integrated solar facade, and there is no disguising that.

Since all architects must take on board the very real issues affecting the welfare of the planet and design buildings that are sensitive to these issues, and since in design terms the measures that have to be taken have the potential for explicit expression, it is clear that buildings will change in form, layout and appearance. The change, however, will be extremely varied. Response to climate, culture, technology and site will in each case be different. Those who commission buildings should look for the sense of inevitability that is conveyed from a cogent balance of these factors.

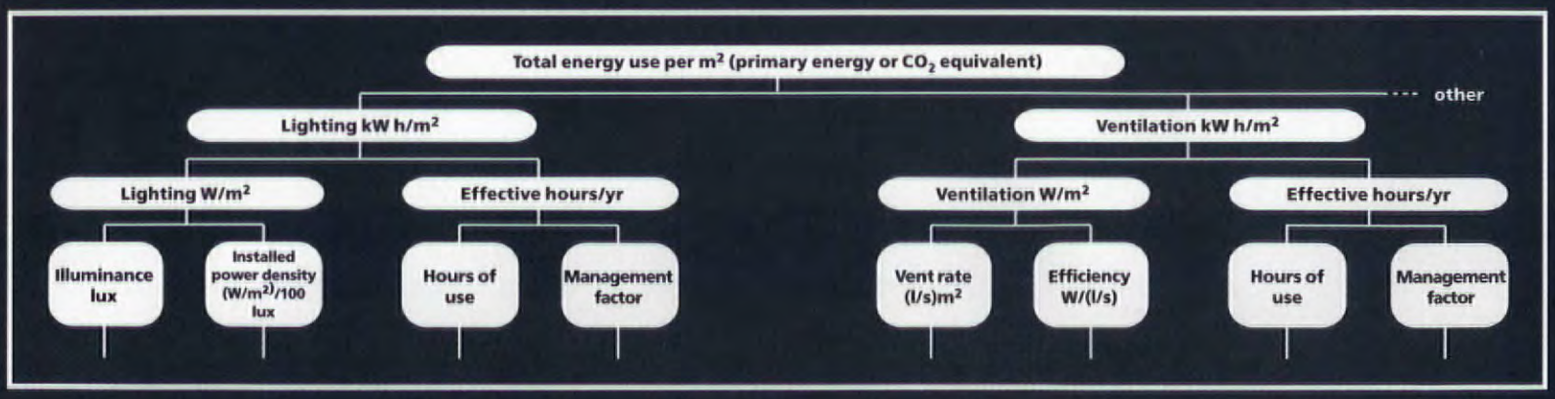
Sustainability here to stay

It is clear therefore that environmentalism in architecture is not a stylistic movement, an 'ism' in the way that, say, post modernism is considered to be. Neither is it a kit of parts from which the designer selects to remedy conventional design. It is part and parcel of good contemporary architecture.

It is now also clear that before long governments will be forced to legislate, tax and penalise profligate energy users in order to comply with commitments to reducing greenhouse gases. Energy efficient, environmentally sound buildings need pose no greater risk than conventional construction: they can be cost effective in strict accountability terms and a cost benefit when wider global considerations are taken into account, and rather than impose a specific image, they broaden the scope for architectural expression. Most tellingly from a commercial point of view, if designed imaginatively they are more pleasant, more responsive, more stimulating and more productive than their conventional counterparts. Underlying all this is the unalienable purpose of, if not reversing or halting it at least contributing to beneficial management of climate change and of fostering a more healthy and stimulating environment.

David Lloyd Jones is an architect, and author of Architecture and the Environment *published by Laurence King Publishing, London.*

The CIBSE (Chartered Institution of Building Services Engineers) Guide to energy efficiency in buildings



Ventilation and air conditioning design

Air systems generally provide a more rapid response than wet systems, so good control is essential for comfortable conditions and energy efficient operation. DEDC or VM controls are generally recommended as they provide more accurate control of temperature and volumes.

Refrigeration design

Most refrigeration plant is electrically driven and can add significantly to energy costs and CO^2 emissions. Moreover, the need for cooling is increasing, due to the greater use of computers and increasing comfort expectations. Minimising the need for cooling can reduce energy costs and in some cases the capital cost of the plant. The need for cooling can be minimised by:

- reducing cooling loads
- raising cooling supply temperatures
- using "free" cooling

Lighting design

Energy efficient lighting should:

- maximise natural daylight
- avoid unnecessarily high illuminance
- incorporate the most efficient luminaries, control gear and lamps
- include effective lighting controls.

Lighting is often the single largest electrical consumer and cost in buildings. For example, lighting can account for over 40 percent of electricity costs in naturally ventilated offices. Good lighting design can reduce these running costs and can also reduce internal heat gains, thus affecting the need for air-conditioning. Attention to fabric detail at the sketch design stage to ensure the integration of daylighting is particularly important in achieving this.

Heating and hot water design

Energy efficient heating should:

- incorporate the most efficient primary plant to generate heat/hot water
- ensure that heat/hot water is distributed effectively and efficiently
- include effective controls on primary plant and distribution systems to ensure that heat/hot water is only provided when and where it is needed and at the correct temperature
- be responsive to changes in climate, solar gains, occupancy, activity and internal gains

Motors and transportation

The motor load should always be minimised by good system design prior to motor selection. Effective system regulation and control are also essential for efficient operation.

Electric motors and drives can account for a significant part of the energy demand in buildings. A modestly sized 11 kW induction motor costing US$450 to buy can build up a running cost of US$12000 in an intermittently occupied building with seasonal system operation over ten years and up to US$45000 with continuous operation.

The following are key issues for electric motors and drives:

- Higher-efficiency motors should always be considered as they often have no additional capital cost and they offer efficiency and economic benefits in virtually all situations
- Motors should be sized correctly to avoid the greater losses when part loaded
- Use direct drives rather than belt drives where practical
- Where belt drives are used, consider modern flat synchronous or ribbed belt drives rather than traditional V-belts to reduce drive losses.
- Systems should be carefully designed to minimise pressure loss and hence reduce energy consumption.
- Efficient system regulation by matching fan and pump characteristics to the system (normally via speed change) can provide significant energy savings compared with increased system resistance. Typically, 20 percent energy saving for a 10 percent floor regulation and 40 percent saving for a 20 percent regulation are to be expected.
- Variable flow control can provide significant opportunities for energy saving. Building services are sized for peak loads and spend most of the time operating well below full output. Typically only 20 percent of full volume energy is required to meet air and water at 50 percent of maximum volume.
- The use of VSDs should always be considered efficient system regulation and variable flow control.

General electrical power

Currently office equipment accounts for more than 20 percent of the energy used in a typical office. With equipment levels doubling every few years, this is likely to become increasingly important. However, small power use is often over estimated at the design stage, and this has led to oversized or unnecessary air conditioning and consequent energy wastage.

Checking the design

Both qualitative and quantitative checks should be carried out at various stages throughout the design process to ensure than it meets the energy targets set at the briefing stage. Time for ongoing checks must be included in the plan of work and the design reviewed if it does not meet the targets. There is a range of indicators that contribute to understanding the performance of a building as shown in the diagram above.

Checks against benchmarks or yardsticks should cover:

- overall energy consumption ((kW h)/square metres) of each fuel, and overall CO2 emissions
- installed loads (W/square metres) of each major service, eg lighting pumps, fans etcetera
- end-use energy consumption ((kW h/square metres) of each major service
- efficiency indicators such as specific fan power lighting (W/square metres per 100 lux).

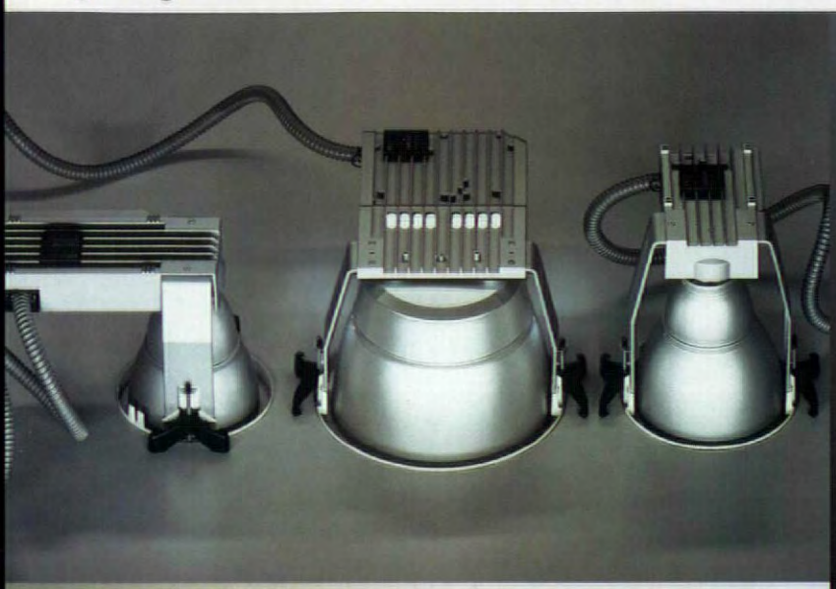
Commissioning, handover and feedback

Good installation, commissioning documentation and handover are essential in achieving energy efficiency. Lack of attention to these issues has resulted in greater requirements for pre- and post-occupancy performance checks.

The period immediately after completing construction can be a make-or-break situation for future energy efficiency. During this period that the robustness of the design is tested, the plant should be checked and set into operation and steps taken to ensure that building managers know how the building and its services work.

Often, designers and contractors are under pressure to meet deadlines and clients are preoccupied with preparations for fitting out and occupation. This situation can lead to inadequate checks and problem solving with poor handover procedures and, in consequence, high energy consumption in the future. In some cases, it can lead to a building being out of control for the remainder of its life.

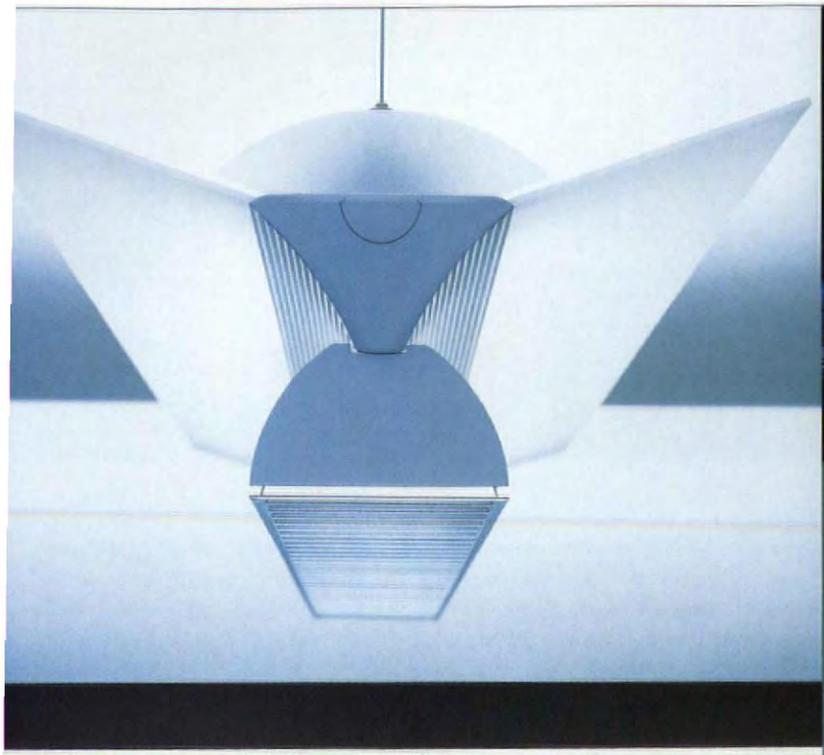
Lighting

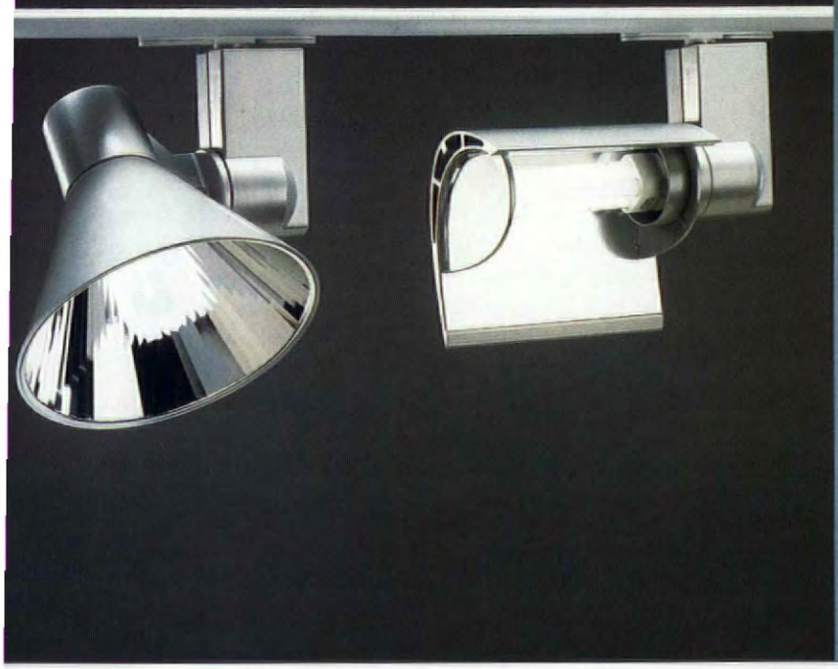


Seeing the (natural) light

Top row, left to right: Erco's Lightcast recessed luminaire programme; Louis Poulsen's Scoop in U-shaped post version; La Trave from Zumbotel Staff, incorporating a digital dimming ballast; Trilux's T-200 tubular track system has a greater lumen output than its predecessors

Bottom row, left to right: Luxo's Volaria with table mount offering soft uplighting from the top and accurate task lighting from underneath; Zumbotel Staff's Aero luminaire has a light output ratio of 55 percent; Concord Sylvania's Event in the 26W low-energy version; Artemide's "intelligent" Pan Terra fitting





Not content with relying on simple aesthetic merit, the lighting industry's bright sparks are now looking to natural daylight simulation and energy-saving measures to retain their edge over the competition. Carl Gardner sifts through the latest outstanding products available to specifiers, explaining how lighting systems can behave like real sky, and how daylight can be transported into underground spaces.

If I were asked to forecast the ultimate interior lighting system for the new millennium, it would have to have a number of essential features. First of all maximum energy-efficiency would be a *sine qua non*, so we are probably talking about the new T5 fluorescent sources, on dimmable electronic ballasts for ambient lighting, with ceramic metal halide for display and accent illumination. It would probably be modular in form, with a number of mounting options, including recessed, suspended, surface-mounted and free-standing versions.

The ideal system would also offer dual or even multi-directionality of light output (for example a direct/indirect combination or other variant). It would be "intelligent", too, so that it could sense staff occupancy and daylight presence and switch and/or dim automatically and be able to monitor its own state, so lamps could be replaced and faults rectified at the optimum time. And perhaps most importantly, it would be able to mimic the quality, intensity and cyclical nature of natural daylight, for maximum visual comfort and working efficiency.

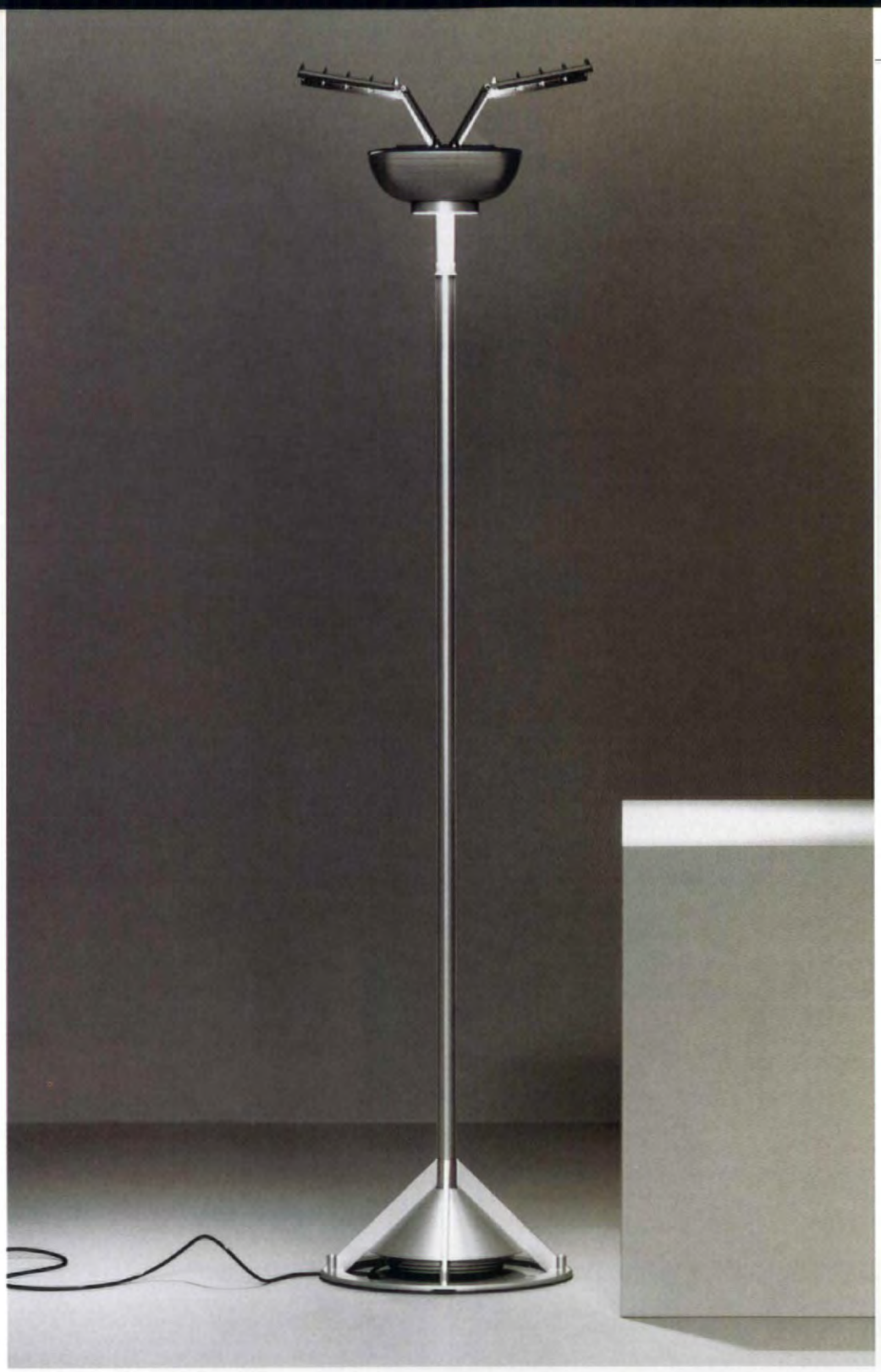
OK, it's a tall order. Although all these individual things are already possible, combining them into one lighting system that is both practical and attractive to look at may have to wait until the 21st century. However, the current market offers hopeful signs that we are moving down the right road. Take daylight simulation, for example. There is now powerful evidence that poor-quality fluorescent lighting, with a limited spectrum, can lead to all kinds of behavioural problems – reduced attention span, an increase in errors, irritability, tiredness, headaches and eye-strain. These effects can be accentuated in those who get no natural light at all, such as night-shift workers in 24-hour operations, where their natural circadian rhythms are disturbed.

Daylight mimicry

One of the most forward-looking lighting products of recent times, Sivra from **iGuzzini**, is designed to help overcome these endemic problems in 24-hour operation offices or spaces without natural light. Sivra is designed to look like a real "skylight" and behave like real sky. Behind its 600 by 600-millimetre diffuser "window" are located an array of dimmable fluorescent tubes with different colour temperatures, all individually programmable. The programme operates them according to circadian rhythms, so the light mimics the quality, colour and intensity of the natural day. Each fitting can give a maximum of 2500 lux if required – strong blasts of light in the middle of the night have been shown to help re-set shift-workers' body clocks.

Less sophisticated perhaps, but another method of giving the impression of daylight contact is a false skylight, lit from behind by fluorescent tubes. Although these are often custom-made, **Targetti** offers Excelsior, an off-the-shelf "skylight" system, in 600 by 600-millimetre modules – the luminaires come with a range of frame finishes and either plain opalised glass or various decorative colours and details. Of course, in terms of visual comfort and energy reduction, nothing beats the real thing, so in a deep-plan or basement space, one of the new "daylight transfer" systems might be an option. UK-based company **Monodraught** has created a system called SunPipe, which collects sunlight via a roof-mounted dome and diffuser lens and channels it up to 10 metres inside the building, using a super-reflective conduit. The system can also incorporate natural ventilation.

More conventional ambient lighting systems for commercial buildings have come a long way too in the last few years. The new generation now uses the smaller, more efficient T5 (or T16 in its metric designation) fluorescent tube, with electronic high frequency ballasts. These consume 25 percent less energy than older T8 (T25) lamps. However their main advantage is their smaller diameter (16 millimetres rather than 25 millimetres) which means that much shallower fittings can be designed around them. This is useful for recessing into false ceilings and reducing the visual appearance of suspended or surface-mounted models. An example of this "slimming down" in action is provided by the **Trilux** T-200 tubular track system, a development of the original T-300 series from 1994. Introduced at Hannover last year, the T-200 uses T5 lamps to give the entire ensemble a



massively reduced cross-section and profile, while giving a greater lumen output.

Twin components, please

The other strong trend is the move away from mono-directional louvred downlights, which create a harsh visual effect in interiors with dark walls and ceilings. The alternatives usually involve various types of "twin-component" system, combining both direct and indirect lighting, for a much softer, more diverse lighting effect, with increased illumination of the all-important vertical surfaces in a space.

Zumtobel Staff from Austria and Germany's **Waldmann** are undoubtedly the pioneers in this field, although their approaches are radically different. Zumtobel Staff launched the Aero luminaire in 1998 to huge acclaim. This extremely elegant creation by Italian designers Sottsass Associati is a suspended direct/indirect fitting that incorporates a sheet of micro-prismatic light conductor material, called "Waveguide" between the two enclosed T5 sources. This makes the striking, low-luminance unit "float" in the air. Zumtobel claims Aero satisfies VDT requirements perfectly, with none of a conventional luminaire's disadvantages – it also has a reputed light output ratio (LOR) of about 55 percent – transmitting 70 percent of its light upwards and 30 percent down.

The same company's La Trave, a ›

Facing page, far left: The roof collector of Monodraught's SunPipe "daylight transfer" system

Left: Waldmann's Corto suspended uplighter

Bottom: iGuzzini's Sivra system, which mimics the cycle of natural daylight

This page, left: The Erco Zenit, designed by Knud Holscher

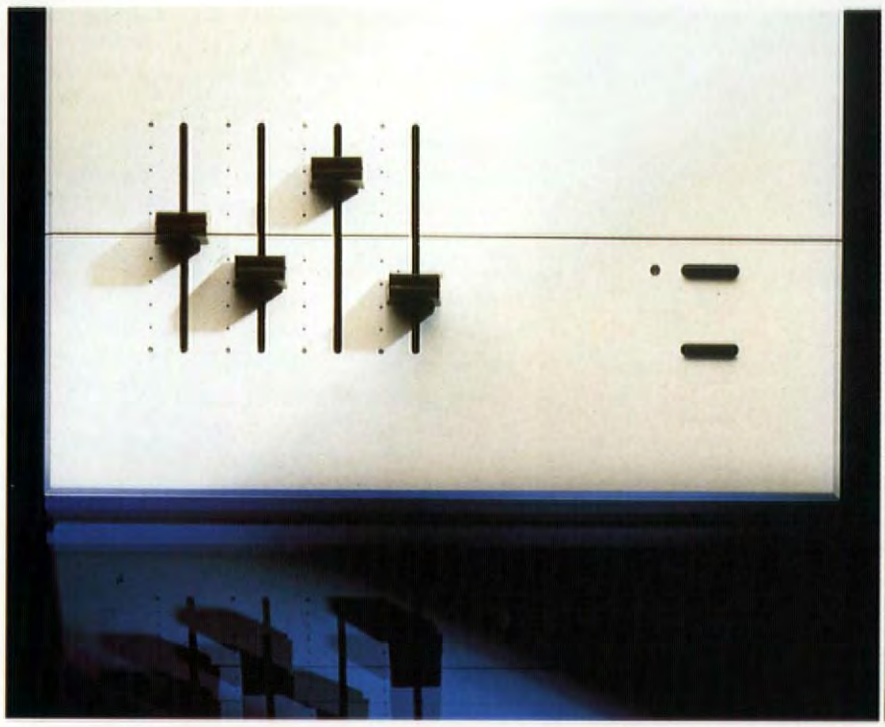
OUT-OF-DOORS

So far in this survey exterior lighting products have received scant mention, but they do constitute an important element in architectural lighting. There is a good selection of stylish and widely divergent new fittings for the exterior market, that could help enhance the image of any premises. The new Lightvault range, an inground burial fitting from US company **Kim**, combining excellent optical control in both PAR and HID versions with a seductive cast bronze finish, almost deserves to be more visible. **SPI**'s new Echo range of aluminium housings, as installed at Hong Kong airport, exhibits no such shyness with its weathered finishes specially designed for wet locations. Versaltility is the theme of **Bega**'s outdoor luminaires, the German manufacturer's range caters for almost any application an architect could imagine.

Bollard-style light fittings are hardly sexy, but one outfit that has long achieved durability with style in this area is Danish company **Louis Poulsen**. One of the latest offerings in this field is Scoop (not to be confused with the Reggiani wall-light) designed by Paul Sayers. Made in die-cast aluminium, it comes in bollard version on a U-shaped post, but can be surface-mounted or recessed into walls as well. And while **Thorn Lighting** has never been the whackiest lighting company around, its new bollard, called Zen, has a touch of eccentricity about it. In addition to the touch of colour from a tinted diffuser, its structure is based on the combination of various geometries – a circle, square and triangle – within the same form. Do I hear the sound of one hand clapping?

Finally, something on a slightly larger scale – a grown-up bollard, if you like, in the form of the Vigo light column from the **Hess** Jeol collection. This imposing fitting is four metres high – the upper frosted PMMA surface picks up the light from a 150W metal halide lamp in the base, so that it glows by night, while appearing as an interesting piece of landscape furniture by day. A perfect combination.

Below: Lutron's Grafik sliding control
Right: Luxo's Volaria fitting



› suspended "winged" fitting designed by Matteo Thun, takes the uplight/downlight principle even further, into what Zumtobel Staff call "balanced lighting". Here a digital dimming ballast can be used to vary the output from the two T5 lamps, to vary the proportions of upward and downward light. Two different colour temperature lamps can even be used, so you can create a genuinely dynamic effect throughout the day.

While not quite so futuristic, Waldmann Lighting has always been a major proponent of what it calls "Twin C" direct/indirect lighting systems. However, it achieves this using a dedicated uplighter combined with one of the company's ergonomically designed task lights, such as Cirrus, F1 or Delight. Suspended uplighters, of course, demand fairly high ceilings – La Trave requires around three metres. However Waldmann's Corto luminaire can be used with ceilings as low as 2.4 metres, because its special concave reflector spreads the light evenly across the ceiling, even with a suspension distance of only 200 millimetres.

Standing alone

Another variant on the "twin component" theme is the free-standing standard-style fitting, using compact fluorescent sources. This has the advantage of being easily relocatable in spaces that are constantly being

ALL CHANGE ON THE LIGHTING EXHIBITION FRONT

This year the crop of international lighting exhibitions is rather thinner than in 1998. Firstly, the UK's Light Exhibition has now gone into partnership with Interbuild, the country's largest architectural products exhibition, taking place in May 2000. As this is also the "off" year for Euroluce in Milan, it has left the European field open for the World Light Fair in Hanover, Germany, from April 19-24.

However, changes are afoot here too – 1999 will be the last appearance in Hanover for Europe's largest technical lighting event. Due to a dispute with the Hanover Messe over the re-building and allocation of the show's favoured halls, World Light Fair will be making its new permanent home in Frankfurt in the year 2000 – and will probably be re-named the International Light Show. Meanwhile the last Hanover event remains a "must" for the technical and architectural lighting market, with all the big names, such as Erco, Philips, Zumtobel Staff, Osram, Thorn and Sylvania launching their latest products in 50,000 square metres of space. As usual new versions of "cutting edge" lighting technologies, including fusion and induction lamps, LEDs, T5 and T2 fluorescent tubes and ceramic metal halide – plus the latest light-fittings to take them – will get an airing.

The USA's largest show, Lightfair International, now in its 10th year, has always been a movable feast. Following Las Vegas in 1998, this year it will grace the Moscone Center in San Francisco from 10-13 May. Last year's show attracted 14,000 specifiers and this time round, with around 350 companies exhibiting (most of them North American), visitor numbers are expected to be similar. The exhibition will be accompanied by a comprehensive two-day conference programme, with subject areas as diverse as Daylighting, Professional Liability, Remote Source Lighting and Urban Light Planning. The show will kick off with the annual New Product Showcase & Awards Presentation.

One show looking to fill the gap this year is Italy's Intel. The 1999 incarnation of this bi-annual electronic technology show will feature drastically increased coverage of lighting, due to demand from both exhibitors and delegates after the 1997 show. The new specialised lighting area is flamboyantly titled *I Padigilioni della Luce* (The Pavillion of Light), and will be accompanied by a programme of debates and seminars on lighting business and technology. It takes place from 18-22 May in Milan.

reconfigured, but has the downside of trailing cables. Three companies who have taken this route are **Luxo**, **Erco** and **Artemide** – the first with its Volaria luminaire, which offers soft uplighting from the top and more directional task lighting from the louvred lower face of its aluminium head. Erco's Zenit fitting, designed by Knud Holscher, is a more eccentric animal, with its twin wing-shaped reflectors poised above the bowl-like uplighter head. Finally the Pan Terra fitting from Artemide looks elegant and simple, but packs a range of additional high-tech control features – daylight sensing, a presence monitoring device, electronic dimming and an optional infra-red remote control for "hands off" operation.

All three of the above offerings are available in wall-mounted versions. However, if you are looking for wall fittings for exterior architectural lighting with a more powerful "punch", then you have to move up from compact fluorescent to discharge sources, such as CDM-T metal halide.

Reggiani is a leader in this field, with its distinctly "flying saucer" style Scoop range. This is highly versatile – as well as vertical and horizontal wall-mounted models, in direct, indirect and combination versions (all with adjustable angle heads) it can also be pole-mounted singly or in clusters.

Moving back indoors, the move to more brightly-illuminated wall surfaces, advocated by many designers, has led to the recent development of several types of asymmetric wall-washer. One of the most adaptable is the track-based Event system, developed by **Concord Sylvania**, which puts a range of compact fluorescent lamps (TC-L, TC-D and TC-T) into a series of very curvaceous aluminium reflector bodies. In addition to the wall-washers, there's even a 26W low-energy "spotlight" version.

The art of control

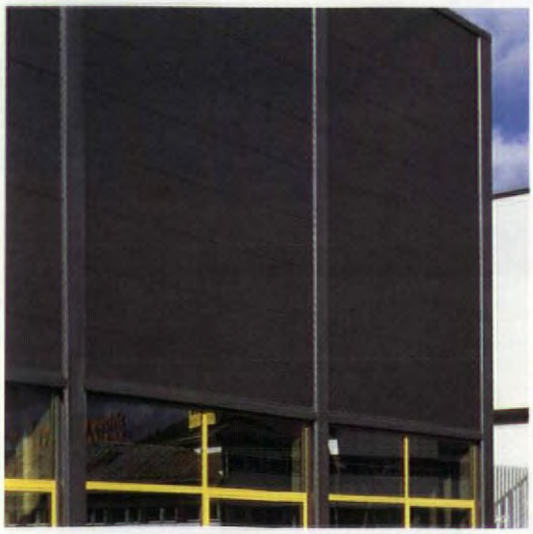
Of course, creating an attractive and energy-efficient lighting scheme isn't just about choosing the right fittings and lamps. Increasingly an adaptable, computerised control-system is vital – both to dim and switch fittings when not needed, to save energy, and also to offer the building owner a series of lighting "scenes" to enhance events and activities. This latter function is particularly important in leisure facilities, such as restaurants and hotels.

Some of the simplest, for small-scale installations, are incorporated into the wall-switch itself – for example the **Gira** E2 range offers variants such as a venetian blind control or a programmable Push Button Sensor switch, to set basic scenes for meeting rooms and so on. However larger installations require control-systems with greater capability. One of the best-known, most trusted names in the controls business is **Lutron**. Its Grafik Eye 4000 range of multi-scene, preset lighting controls, with visual graphic screen interface, has long been regarded as the easiest-to-use programmable system around, and has inspired many imitators. A recent development has been the addition of a Slider Control device, to enable users to set desired light levels of multiple zones in public spaces. WA

Carl Gardner is a lighting designer with consultants Lighting Design Partnership and editor of the UK's bi-monthly Lighting Journal.

Left: The Vigo light column from the Hess Jéol range
Above: Kim's inground burial fitting Lightvault range

THE PAROC PANEL SYSTEM



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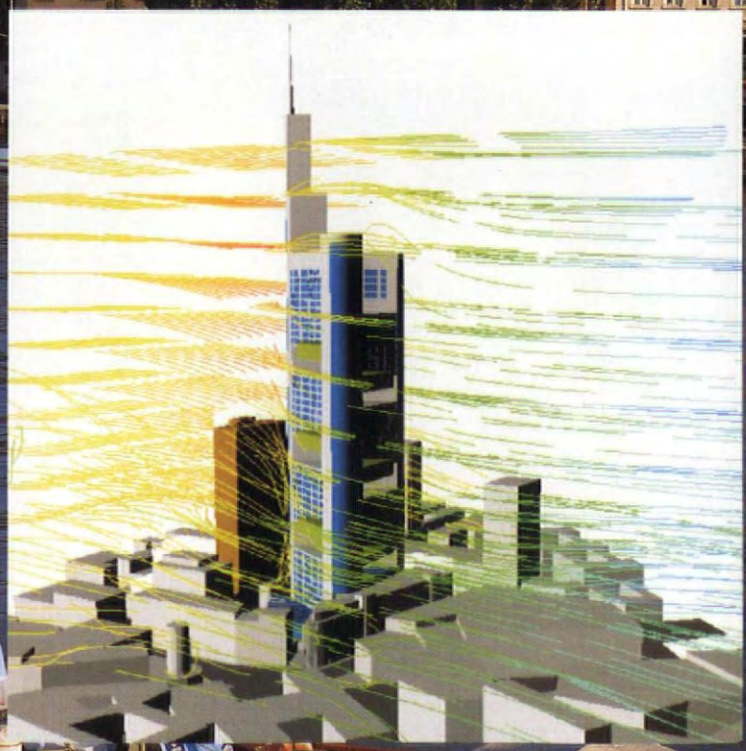

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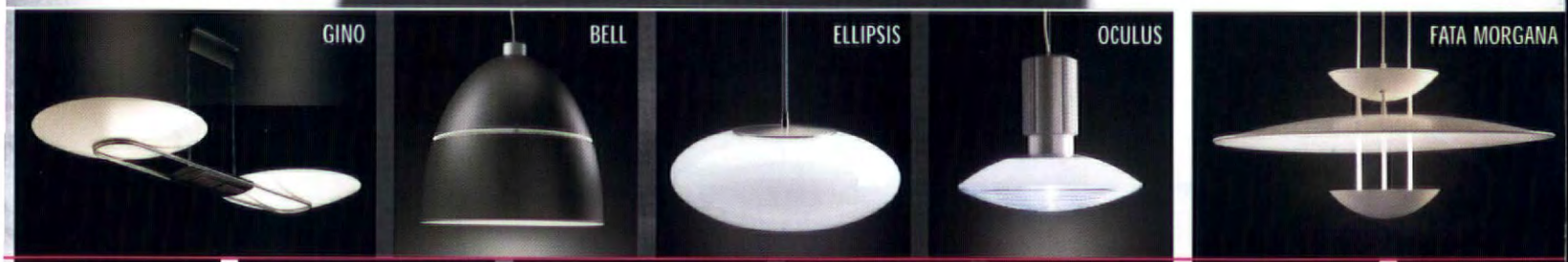

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