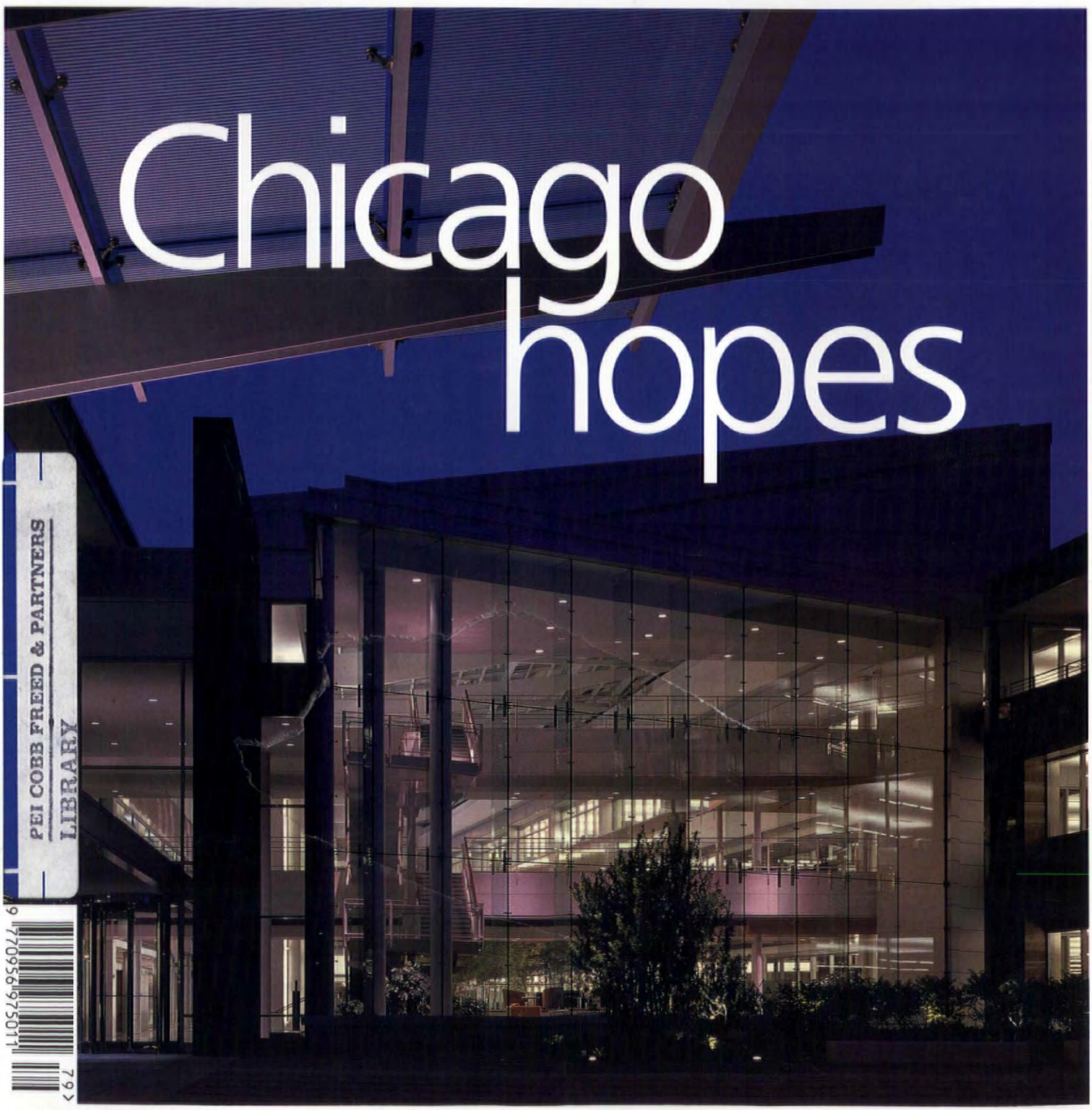
WORLD ARCHITECTURE

The business magazine for the global architect

Issue number 79 | US $18.00 | UK £12.00 | September 1999



Chicago hopes

Jin Mao – the last of the supertowers? | CAD in cyberspace | Glen Murcutt – the latest from the wizard of Oz

Our passion for lighting has always been in and for the open spaces. After illuminating the French nights for over 10 years, Extérieur Vert has now joined the Targetti Group. This union has led to the creation of a range of more than 500 products for a broad array of exterior lighting applications. Innovative technology and use of durable materials such as stainless steel and very pure anodized aluminium guarantee a unique level of quality and extraordinarily long product life. Call us at +33 04 9447 6247. You will find the solution you are looking for before it gets too dark.





Extérieur Vert

TARGETTI GROUP

Cover
WW Grainger HQ, near Chicago, by Perkins & Will.
Photograph by Steve Hall/Hedrich Blessing

WORLDARCHITECTURE

Contents **Issue number 79 | September 1999**

Regulars

16

News and features

Building study
Glen Murcutt's Arthur and Yvonne Boyd Education Centre. Photograph by John Gollings/ Esto

40

Regional Focus – Midwest USA

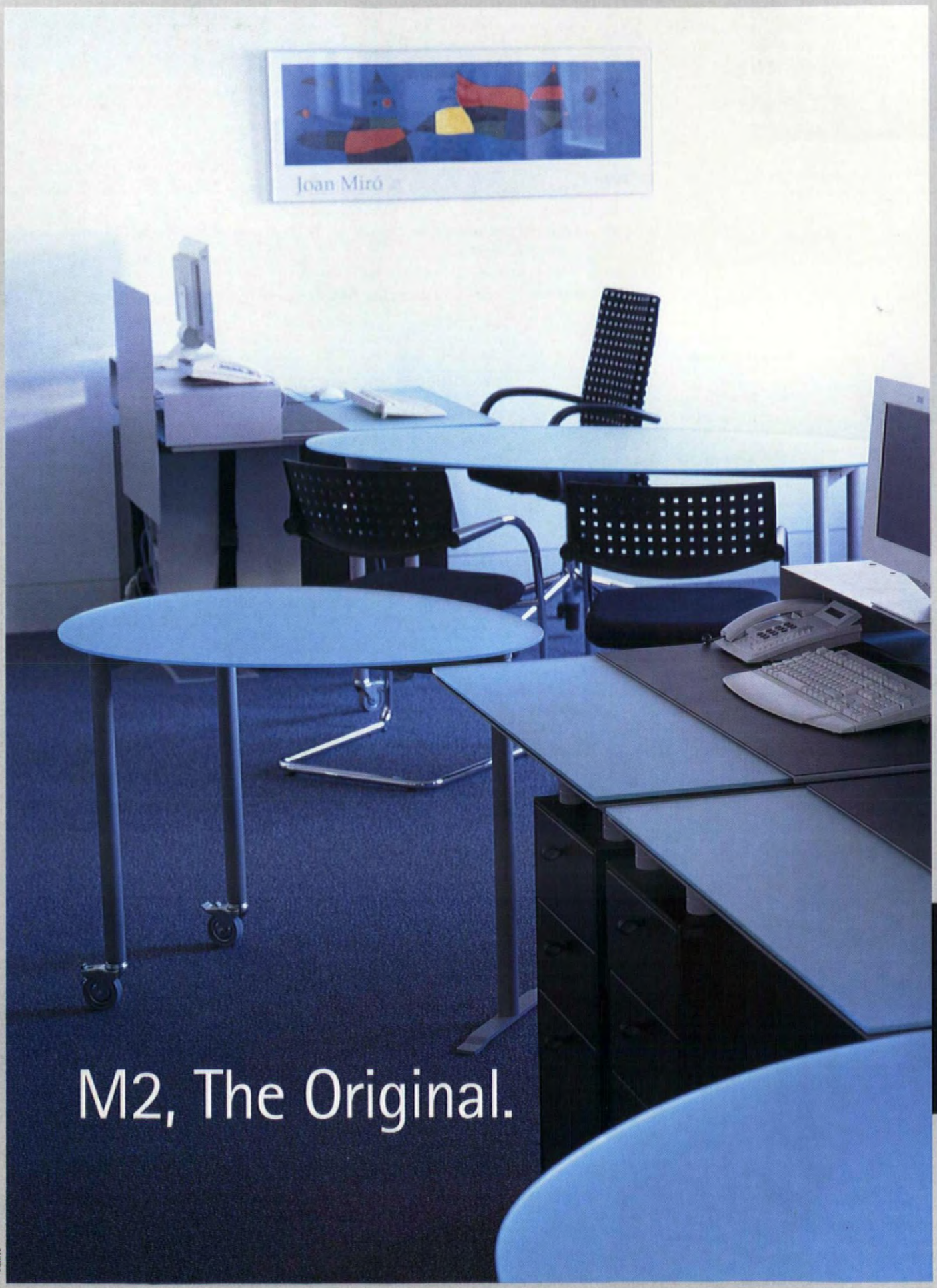
64

Sector Analysis – tall buildings

78

Technical – CAD

100 % Design • 23 - 26 September 1999 • Earls Court Two • London UK



Project: MCI Worldcom (UK) • Design and Architecture: MoreySmith

www.bulo.com

© Verne

Visit the Bulo showroom in London • open from Monday till Friday 9 a.m - 5.30 p.m.
Clove Building, Maguire Street Butler's Wharf London SE 1 2NQ • Phone: 0171 - 403 6993 • Fax: 0171 - 403 5075 • Email: info@bulo.be

Getting caught in the net

Rumour has it that quite regularly in Shanghai millions of dollars worth of building equipment is loaded on to boats and rolled overboard by contractors who cannot afford the maintenance and security costs incurred by leaving temporarily redundant materials and equipment on site on completion of a project. Once the specialist equipment has been used the contractors are finding hauling it lock stock and barrel to the next site, or maintaining it under 24-hour guard should it not be needed immediately, simply too onerous and expensive a task. Greenpeace would have a field day if it got wind of such practice, if indeed it has not already, but from the industry's point of view what this amounts to is the manufacturing of highly specialised and costly equipment for use on just one job. Step forward e-commerce entrepreneurs; the invisible "stockbrokers" of the internet.

Surfing the web reveals a number of companies that have already seized the day and set themselves up as traders and service providers. No more red faces and long lunches. These stockbrokers are middle men with a difference, streamlining the way contractors and subcontractors are doing business. E-steel and Freemarkets are already trading in specialist markets. More recently, Industry to Industry has launched on the internet, co-ordinating the buying and selling of construction materials and equipment around the world. As well as operating as a transaction platform, Industry to Industry has service partners which offer inspection, transportation, insurance, legal and financial services.

What does this mean for architecture, a profession which relies predominantly on personnel rather than equipment? Will it ever be possible to shift designers, CAD technicians and project managers from one side of the world to another via the internet? Imagine the revolution this would foster in world architecture; the time that would be saved between jobs, the contacts made which might otherwise never be established. Although Michael Fix, CEO of Industry to Industry, warns of the difficulties of dealing with a less tangible side of the market, he sees no reason why such a logical step should not be taken. Computer technology is already an integral part of the architect's world; this is only the beginning.

Nicola Turner, editor

World Architecture is published by The Builder Group. The views expressed in *World Architecture* do not necessarily reflect those of The Builder Group.
All editorial and advertising enquiries to: *World Architecture*, The Builder Group, Exchange Tower, 2 Harbour Exchange Square, London E14 9GE, UK.
Telephone: +44 (0)171 560 4120
Facsimile: +44 (0)171 560 4191

Subscription order to: Tower Publishing, Tower House, Sovereign Park, Lathkill Street, Market Harborough LE16 9EF, UK.
Telephone: +44 (0)1858 435345.
Facsimile: +44 (0)1858 434958.

World Architecture ISSN No 0956 9758 is published ten times a year for US$176 per year. Second Class postage paid at Champlain, New York and additional entries. Postmaster: send address corrections to Hyde Park Media, c/o I.M.S. Box 1518, Champlain, NY12919.
Printed in England by Grange Press, Brighton. Colour repro by JJ Typographics, Southend-on-Sea.

World Architecture, incorporating *RIBA International*, is received as part of the RIBA membership package for overseas members. Please contact the RIBA on +44 171 580 5533 for membership information.

HAVAS THE BUILDER GROUP


The Tokyo International Forum.
Illuminated by Erco.
Architect: Rafael Viñoly, New York; Lighting design: Claude and Danielle Engle, Washington D.C. and Lighting Planners Associates Inc., Tokyo.

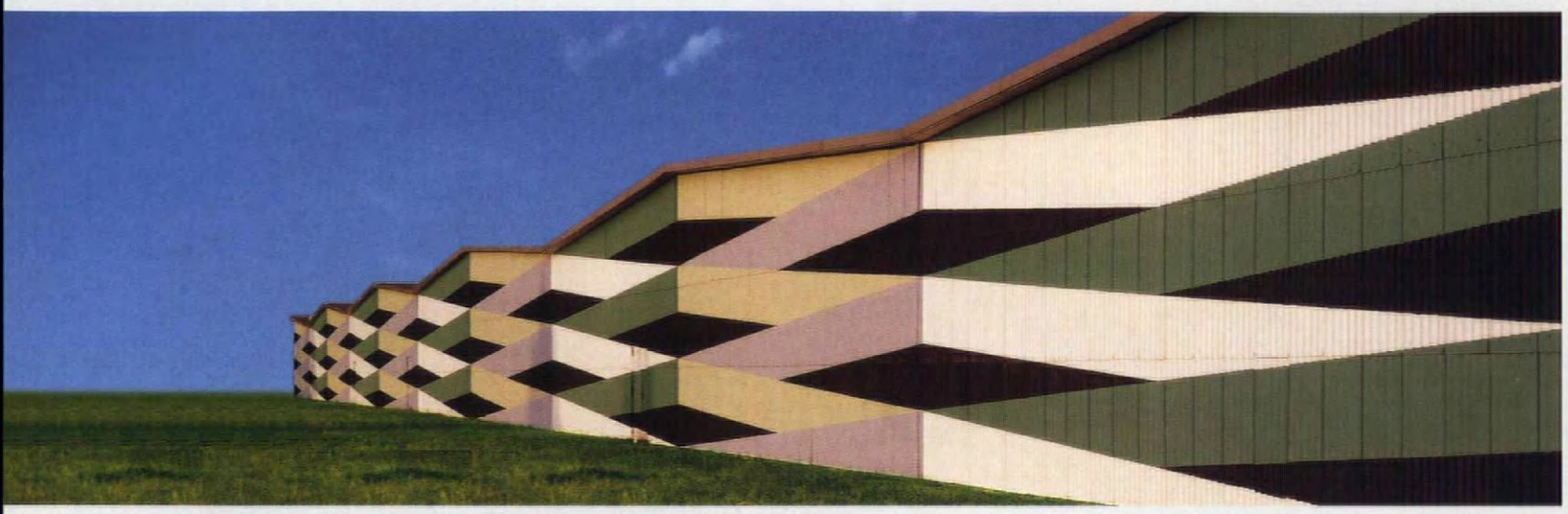
ERCO

The fourth dimension
of architecture.

www.erco.com

RAL Colour References

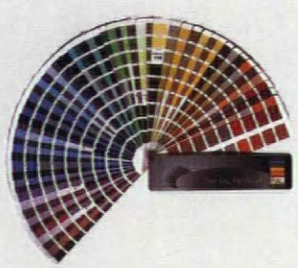
Precise Colours for every Shade



design

RAL Colour Finder

RAL Colour Finder is the comprehensive colour fan with all 1688 colours of the RAL Design System.



classic

RAL-K5

The RAL colour fan with all 210 colours of RAL classic is one of several colour reference books for the classical colour collection.

digital

RAL digital

RAL digital integrates all RAL colours into common graphic- and CAD-software.

RAL

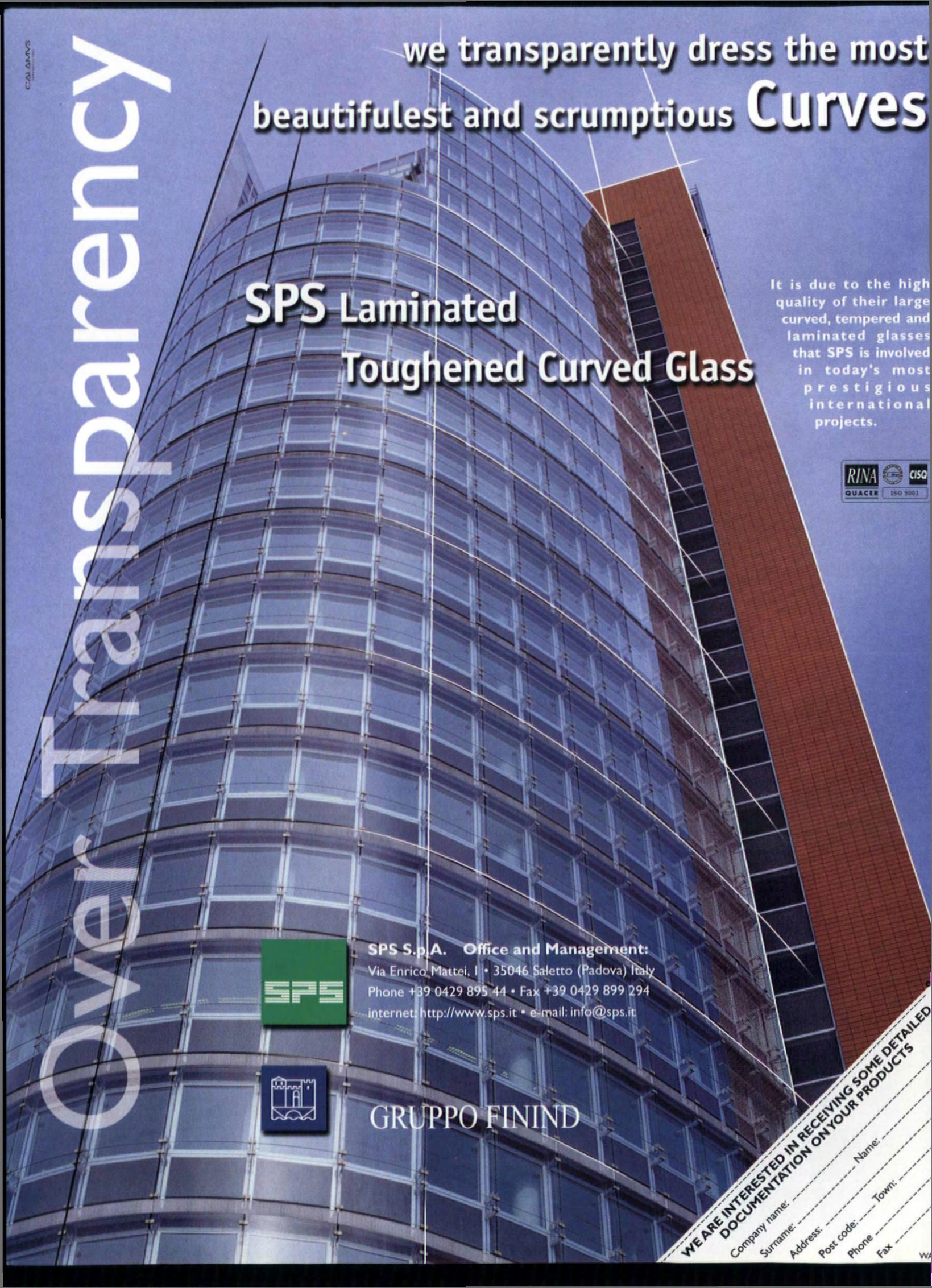
RAL German Institute for Quality Assurance and Certification e.V.
Siegburger Straße 39 · D-53757 Sankt Augustin
Telephone: +49 (0) 22 41/16 05-0 · Fax: +49 (0) 22 41/16 05-16

Summit's polished stainless and teak collection by award-winning designer Kipp Stewart

Antibes • Atlanta • Chicago • Dallas • Dubai • Fort Lauderdale • Houston • Los Angeles
New York • Paris • Philadelphia • Phoenix • San Francisco • Seattle • Toronto • Vancouver

Summit Furniture (Europe) Ltd.
198 Ebury Street, Orange Sq., London SW1W 8UN
Telephone: 207.259.9244 *Facsimile:* 207.259.9246

Summit Furniture, Inc.
5 Harris Court, Monterey, CA 93940
Telephone: 831.375.7811 *Facsimile:* 831.375.0940


Overtransparency
we transparently dress the most
beautifulest and scrumptious Curves
SPS Laminated
Toughened Curved Glass
It is due to the high quality of their large curved, tempered and laminated glasses that SPS is involved in today's most prestigious international projects.
RINA
QUACER
CISQ
ISO 9001
SPS S.p.A. Office and Management:
Via Enrico Mattei, 1 • 35046 Saletto (Padova) Italy
Phone +39 0429 895 44 • Fax +39 0429 899 294
internet: http://www.sps.it • e-mail: info@sps.it
GRUPPO FININD
WE ARE INTERESTED IN RECEIVING SOME DETAILED DOCUMENTATION ON YOUR PRODUCTS
Company name:
Name:
Surname:
Address:
Post code:
Town:
Phone
Fax

Nothing is more certain than change!?

Whether we regard that as a threat to what we are used to, or as a chance to shape the future, depends to a large extent on creativity and team-oriented cooperation in a company. A conference workshop will provide you with just the right interior for this purpose: for lectures, discussions, interactive group techniques or working group meetings. Using Confair, the innovative range for efficient forms of work.

For further information, quoting reference WA Project Office, please contact:
Wilkhahn Headquarters, Germany, Tel. ++49 5042 999-118,
Fax - 245, e-mail: info@wilkhahn.de

For people with a vision.

Wilkhahn

New release! "Interior and specifiers' handbook for communication areas". The complete guide to the planning and specification of communication processes. 156 pages, hardcover. ISBN 0 9533421 0 7. Available through all leading bookshops, or order through Wilkhahn at DEM 49 including VAT and p&p. Please send cheque made payable to Wilkhahn.

Lightvault®

KIM LIGHTING

16555 East Gale Avenue
City of Industry, CA 91745
626/968-5666

www.kimlighting.com

HIGH PERFORMANCE BUILDING MATERIALS FROM THE U.S. TO YOU

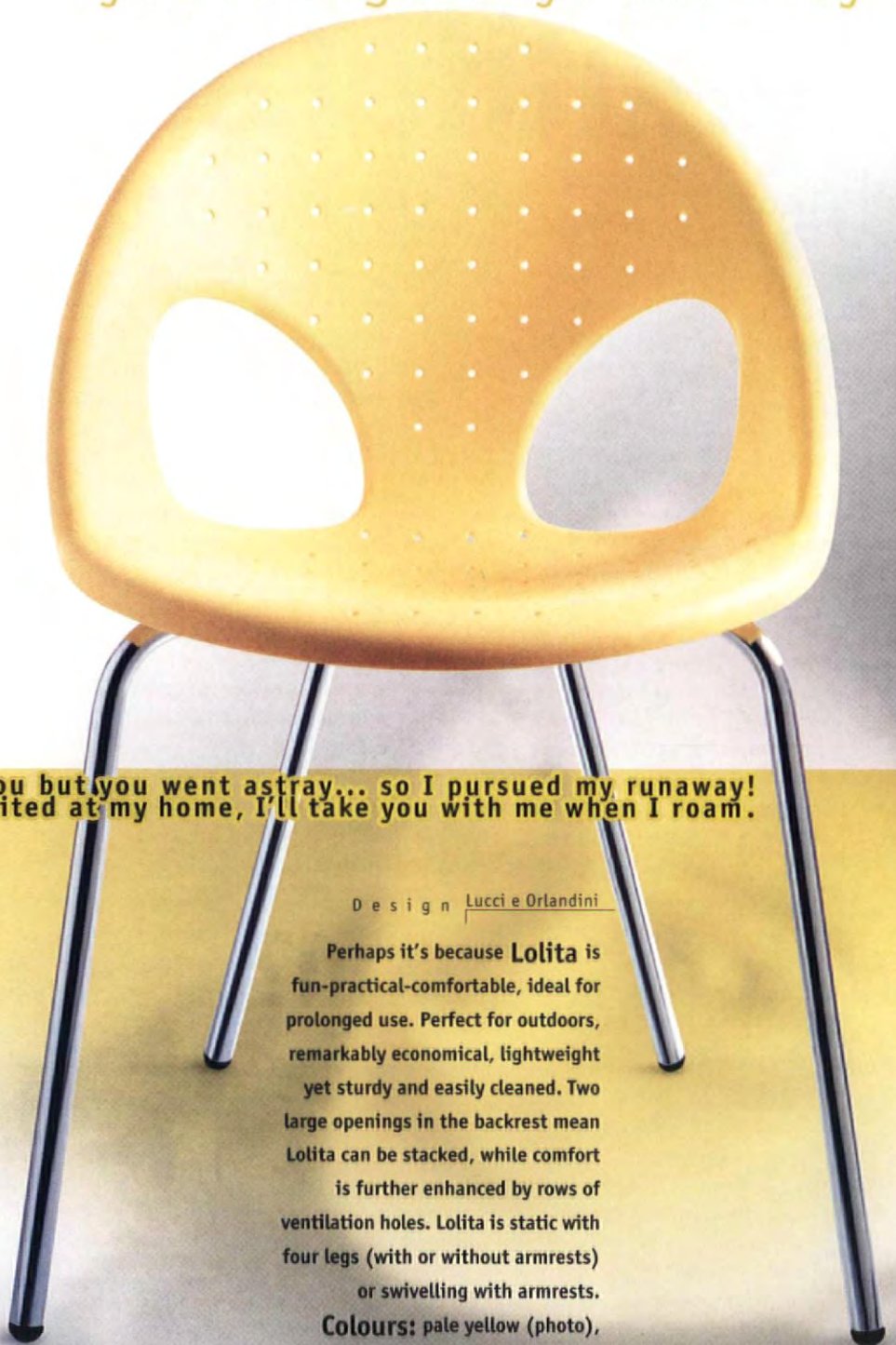
Left: The World Trade Center in Santiago, Chile; **Middle:** Cairo, Egypt's amusement park, Dreamland; **Bottom:** The United Arab Emirates, The Lamcy Plaza

Celotex Corporation, the first name in high performance residential and commercial building materials throughout the United States, is expanding its markets. Now you can find Celotex products in every corner of the world including Asia, South America, Europe and the Middle East. Currently, Celotex has over 300 international accounts in over 60 countries. A 78-year old company headquartered in Tampa, Florida, Celotex and its subsidiary operate 22 manufacturing facilities, 10 sales offices and an international marketing and sales group.

Celotex products have been included in some exciting projects throughout the world. For example, Celotex® Standard Strip/20 asphalt shingles were installed on roofs in Cairo, Egypt's amusement park, Dreamland. In the United Arab Emirates, Celotex® Baroque™ and Fine Fissured acoustical ceiling panels were selected for the Lamcy Plaza's 200,000 square foot project. For the World Trade Center in Santiago, Chile Celotex® Baroque™ and Sand Narrow Reveal Edge acoustical ceiling panels covering 220,000 square feet were selected. These panels contain beautiful designs and fine fissuring. Celotex provides options for ceiling enhancement including a wide variety of colors and patterns for ceiling diversity and applications.

For information on Celotex high performance building products, call (813) 873-4212 (International), 1-800-CELOTEX (within the U.S.), or visit our web site at www.celotex.com

Lolita yellow,
you said goodbye but I say hello!



I found you but you went astray... so I pursued my runaway!
Now reunited at my home, I'll take you with me when I roam.

Design Lucci e Orlandini

Perhaps it's because **Lolita** is fun-practical-comfortable, ideal for prolonged use. Perfect for outdoors, remarkably economical, lightweight yet sturdy and easily cleaned. Two large openings in the backrest mean Lolita can be stacked, while comfort is further enhanced by rows of ventilation holes. Lolita is static with four legs (with or without armrests) or swivelling with armrests.

Colours: pale yellow (photo), orange, pale green, ice blue, frost white, china blue, lead grey, fluo red.

Umbrella

Via Verdi, 19/21 43017 San Secondo Parma (Italy)
Tel. 0521.873547 Fax 0521.872668
Internet: www.lamm.it E-mail: info@lamm.it

Lamm Spa

Lamm
UNA BELLA COMODITÀ

News

A beautiful alliance

Could new contract spell end for litigation?

AUSTRALIA

The new National Museum of Australia, by Ashton Raggatt MacDougall (ARM), will act as the test case for a new form of contract – the "alliance" system – which has only ever been used in the North Sea oil industry. The Australian government is the first in the world to use the system.

If "alliancing" is successful, litigation between members of the construction and design team could be a thing of the past.

Alliancing brings architects, engineers, developers, builders and contractors into an arrangement whereby all share in the profits and risks. If there is an over-run, the partners share the responsibility; if costs are below budget, they divide the amount saved. All members sign agreements prohibiting litigation between them.

Project manager of the Acton Peninsula, Peter Wright, says: "In essence [alliancing] is the establishment of a virtual company. Although not a legal entity, the members come together as single team with the same objectives. No decisions can be made by that team unless they are unanimous, so in a sense there is no disagreement, and if there is we have to sit through and nut it out."

Speaking from the architect's perspective, Stephen Ashton, of ARM says: "It's a terrific thing. It enables you to work more closely with the people doing the building, the contractors, subcontractors and so on, and in the right relationship with them. It eliminates a lot of the non-productive behaviour that is created by adversarial contracts."

The Australian government requested external monitoring of the alliancing exercise– "to be sure we don't turn a wonderful design into concrete box," says Wright. A design integrity panel will monitor the design throughout, while a design quality panel will monitor the quality of the result.

If the result is "outstanding", Alliance members will share in an additional bonus, a substantial amount of money set aside in a "quality pool". If it is "business as usual", that money would not be forthcoming, and if it is "50 per cent above business as usual, 50 per cent of the fee would be shared."

Alliancing was used on this project because of the National Museum's fixed budget, fixed opening date – 12 March 2001 – and susceptibility to public scrutiny.

Reaction

The global significance of the system is enormous. John Wright, vice president of the Royal Institute of British Architects' practice department says: "In the UK alliancing is known as 'partnering', and has recently been strongly recommended by the

How Kool are you?

Is Rem Koolhaas the world's most fashionable architect?

USA/PORTUGAL

Three events in recent months provide ample evidence that Rem Koolhaas has inherited Herzog & de Meuron's mantle as the architect of the moment.

One None other than Frank Gehry heaped praise on the man: "If I were 30 years younger I would want to be Rem Koolhaas." (*WA*78 page 103).

Two He won the contract for Porto's Casa da Musica latest building in the preparations for the town's 2001 tenure as European Cultural Capital. Koolhaas's practice, Office for Metropolitan Architecture (OMA), won the job ahead of Dominique Perrault and Rafael Viñoly.

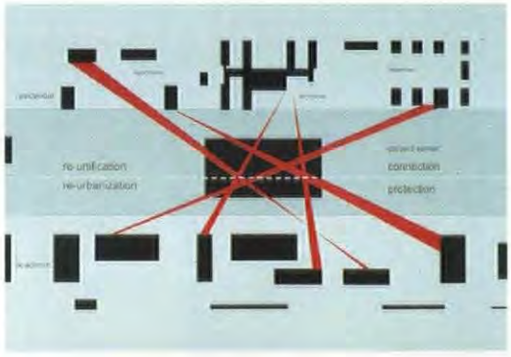
Porto and Rotterdam – OMA's home town – are co-hosting Europe's cultural festivities in 2001. The Casa da Musica is regarded as a joint-venture between the two cities. Ove Arup & Partners/Cecil Balmond are the structural engineers. TNO/Renz van Luxemburg are the acousticians.

Also in Porto, the Serralves Museum of Contemporary Art, designed by Álvaro Siza, was opened to the public in June. The state-funded US$25 million building was the first of the government's cultural investments in Porto.

Three Now even the Americans, who respect Koolhaas as a theorist but had thought of him as a paper architect, are throwing work at him.

Koolhaas' is designing a US$156 million public library in Seattle, Washington, a student centre at the Mies van der Rohe-masterplanned Illinois Institute of Technology, Chicago and an unspecified building for Universal Studios in Los Angeles. AM

"Living", an exhibition of Rem Koolhaas's work, continues at London's ICA until 19 September. Tel: +44 171 930 3647



From top: the Office for Metropolitan Architecture is designing a student centre at the Mies van der Rohe-masterplanned Illinois Institute of Technology; OMA's design for the Porto Casa da Musica beat entries by Dominique Perrault and Rafael Viñoly

Construction Task Force, under the chairmanship of Sir John Egan. Partnering stands by far the best chance of providing a win-win result, but to achieve this all the participants, including the client, must be fully committed."

"Partnering" is also taking off in the US. Dale R Ellickson, spokesperson for the AIA, says: "It has been applied to a formal process of communication involving the owner, architect, contractor and other major participants in the process. The participants establish the mutually acceptable protocols for encouraging good working relationships." But the partnership is "in no way" intended to produce a new legal relationship.

The position is the US has been clouded by "teaming". Unlike partnering, teaming is a contractual relationship between the architect and contractor. Ellickson warns of, "serious legal consequences for architects who fail to recognise the differences between the two". AS

Knot landing in Canberra

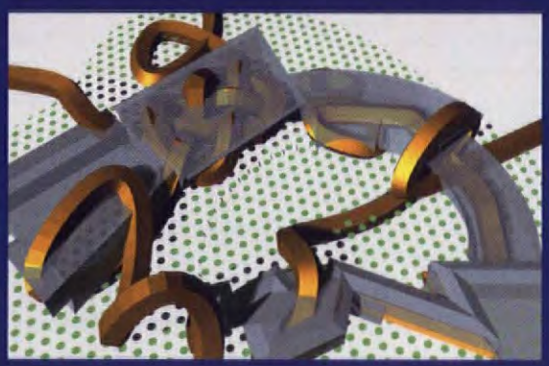
Melbourne practice Ashton Raggatt MacDougall (ARM), in association with Robert Peck von Hartel Trethowan, last month won the competition to design the US$100 million National Museum of Australia.

The museum forms the symbolic heart of the massive government-funded Acton Peninsula Development (APD). When complete, the APD will also incorporate facilities for the Australian Institute of Aboriginal and Torres Strait Islander Studies, and the ACT Aboriginal and Torres Strait Islander Cultural Centre.

The design for the museum has at its centre a "knot" or "tangle". "Our culture is a work in progress. The knot and tangling of threads is a metaphor for Australian culture, a weaving together of many strands," says architect Stephen Ashton, of ARM.

The site is at the junction of several of the axes that underpin Walter Burley Griffin's overall design of Canberra. ARM's design seeks to draw these axes into a "knot".

Seen from the air, the museum will comprise stylised ribbons of steel and concrete pushing toward the precinct's centre, and twisting into some of the site's buildings, with the main hall at its core. The whole is an anti-monumental low-level structure. AS



Ashton Raggatt MacDougall's Museum of Australia is based on the form of a "knot" or "tangle

"The Chinese are not shiny"

Matt finish for PRC's millennium monument

PRC

China's monument to the millennium is rising in Beijing, designed by architects from Beijing's Municipal Government.

The 35,000-square-metre edifice is the PRC capital's tribute to both the 5,000th anniversary of Chinese civilisation, and the 2,000th anniversary of Christianity. At 80,000 square metres it is also rumoured to be the world's second largest millennium-inspired monument, after London's Millennium Dome.

In contrast to the majority of new buildings in Beijing, stone was chosen in preference to glass or metal, to try and make the public feel more comfortable walking through the project's 300-metre central concourse.

"We did not want the monument to be shiny – that does not characterise the Chinese people," says project director Zhao Meng. He added that the yellow stone and marble plaques which make up the facade represent the yellow skin of the Chinese people, the yellow earth of China, and the Yellow River. The only other colour officially endorsed by the project is green.

More than 200 specialists in history, art, architecture and philosophy contributed ideas to the design. Among the ideas discarded were a boat-shaped building (representing forward motion) and 21 gates (representing the 21 centuries).

The interior will feature two waterfalls denoting the two "veins" of China – the Yangtze and Yellow Rivers. (See *WA*78 pages 60-61 for a round-up of millennium monuments worldwide.) EP

WA'S INTERNATIONAL CORRESPONDENTS

Berlin
Susanne Ehrlinger
susanne.ehrlinger@berlin.de

Hong Kong
Ed Peters
edpeters@netvigator.com

London
Adam Mornement (News Editor)
adam_mornement@tbg.focusnet.co.uk

New York
Bay Brown
baybrown@compuserve.com

Rio de Janeiro
Ricardo Antonio
ricantonio@mandic.com.br

Sydney
Anne Susskind
susskind@fl.au

Tokyo
Dennis Normile
dnormile@twics.com

Tokyo
Dana Buntrock
dana@uic.edu

Toronto
Albert Warson
awarson@interlog.com

THIS MONTH

page 19
Find out who won the inaugural IFCCA Prize. Clue: the modest winner describes the scheme as: "the first urban icon of the new millennium".

page 21
After ten years of "U"-turns and political in-fighting, the German government has chosen Peter Eisenman to design the Berlin Holocaust Memorial.

page 22
WA brings you up to date with what two of Japan's international superstars, Tadao Ando and Fumihiko Maki, are working on.

THE AMERICAS

New contracts

MOST ISOLATED
ARGENTINA

Swiss practice **Matti Ragaz Hitz Architekten** (MHR), Bern, has won the UIA-organised competition for a five-star hotel in the Nahuel Huapi National Park, Patagonia. MHR's 7,000-square-metre design beat over 300 entries in the open and anonymous competition. The low-rise scheme will be complete by mid-2001. **Edward Mills & Associates**, New York, and **Guido van Oyen, Christophe van Oyen, Dominique Dufait**, St Kruis Brugge, Belgium, were placed second and third respectively.

MOST WELCOME
USA

The Hilton New York has chosen the local office of **Brennan Beer Gorman/Architects** to design a US$100 million masterplan to create a "grand sense of arrival" as NYC's largest hotel prepares itself for the new millennium. **Hirsch Bedner Associates**, Santa Monica, is carrying out interior design services on the 15,700-square-metre refurbishment and extension. **Tishman Construction Corporation** (New York) is project manager on the fast-track project. All work is expected to be complete by the end of January 2000.

MOST VOLUPTUOUS
USA

The Corcoran Gallery of Art, Washington DC, has chosen **Frank Gehry** to design a US$40 million addition to its turn-of-the century headquarters. Gehry was selected ahead of **Daniel Libeskind** and **Santiago Calatrava**. Reports suggest that the design shares the same voluptuous metalicism of its Bilbao predecessor, a marked contrast to the Corcoran's current sobre edifice. Construction of the 13,000-square-metre project will begin in spring 2001.

Rebuilding Kosovo

USA/KOSOVO

You have until the end of the month to enter the hastily arranged competition to rehouse refugees uprooted by the recent conflict in Kosovo, South-East Europe.

"Architecture for Humanity" is a joint venture between relief organisation War Child (USA) and Christidis Lauster Radu Architects of New York.

The competition calls for transitional dwellings that will house refugees until they are able to rebuild their own homes.

The United Nations High Commission for Refugees (UNHCR) reports that more than half of all houses in Kosovo have been reduced to rubble. "Refugees should not have to return home only to have to live in tents for months. We hope this competition inspires the creation of innovative, multi-purpose housing options for the refugees before the onset of winter," says Heather Harding LaGarde, programme director of War Child (USA).

War Child (USA) will work with corporate sponsors and government agencies to secure support for the construction of the shelters once a winning design is selected.

The jury includes architects Alexandru Beldiman UAR (president of the Union of Architects of Romania), Steven Holl, Tod Williams and Billie Tsien.

The winning designs will form an exhibition, which will open in New York in the first week of November, before travelling to the Royal Institute of British Architects, London; Bucharest, Romania; and Washington DC (venues to be announced). AM

For registration forms go to: http://www.archforhumanity.com
or, Christidis Lauster Radu Architects:
Tel: +1 212-691-1711 e-mail: cs@archforhumanity.com
War Child on the Web:
http://www.warchildusa.org e-mail: warchildny@earthlink.net

USS Embassy docks in

CANADA

When employees start work in the SOM-designed US embassy in Ottawa later this month, it will cap over 30 years of site changes, design revisions and local resistance. Nicknamed the "USS Embassy," its path has been far from plain sailing.

The embassy is an architecturally schizophrenic building. One of the two longer facades, facing the parliament buildings, is clad in glass curtain-wall, creating a monumental, ceremonial approach to the 2,777-square-metre building. The other facade is clad in granite and limestone, with punched windows that make reference to nearby heritage buildings. A tower at one end picks up on the Gothic spires of the National Gallery of Art (by Moshe Safdie) across the canal.

Above: US embassy, Ottowa, by SOM, finally finished after 30 years of wrangling

In the late 1960s, the US State Department selected a plot in a quiet residential district. The local community made such a spirited fuss that a city centre site, between various parliament buildings, was found. So the site was chosen, which left only the design to haggle over. One municipal councillor described the first draft as "a 19th-century railway station" during a committee hearing to decide whether to allow the developer/owner, the US State Department, a special exemption from a height restriction on new buildings in the core.

Construction (by AXOR Group, Montreal) began in late January, 1997. David Childs, the design architect, heads up SOM's New York office. AM

Kansas City's Holl of fame

USA

Steven Holl, architect of the Kiasma Museum in Helsinki, has won the contract to design an addition to the Nelson-Atkins Museum in Kansas City, Missouri.

New York-based Holl was selected from six finalists, including Tadao Ando and Christian de Portzamparc.

Holl was the only architect to leave the existing classical facade untouched. His addition is located on the Nelson-Atkins' eastern flank. The designs presented by all six architects are on display at the museum until the end of October.

Construction for the US$80 million extension will begin in early 2001 and be complete by the summer of 2004. AM

Steven Holl's winning design features, "great quartz crystals spilling on the side lawn"

THE AMERICAS

The Eisenman cometh

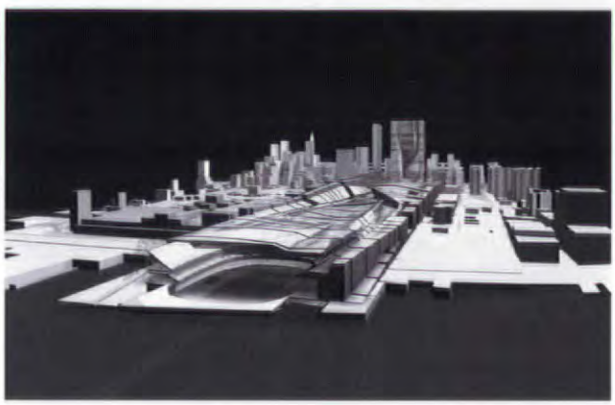
Local architect wins inaugural IFCCA Prize

USA

Peter Eisenman has won the first IFCCA Prize. The instantly prestigious "Competition for the Design of Cities" carries a purse of US$100,000, making it the second most lucrative competition in world architecture – after the Praemium Imperiale.

The International Foundation for the Canadian Centre for Architecture invited five architects to propose means of reintegrating the tangle of railyards and depots between New York's Hudson River and Eighth Avenue into Midtown Manhattan's urban fabric.

Eisenman's plan, which he has dubbed, "the first urban icon of the new millennium", proposes an east-west park across the 280,000-square-metre site, which would create what Eisenman describes as a "fold" in the urban fabric. The eastern portion of the site will include a large-scale office development to be constructed on the current site of Madison Square Gardens. The scheme also calls for a stadium to extend in to the Hudson River, suitable for the 2012 Olympic Games.



Eisenman's winning scheme – a "fold" in the urban fabric

The jury included Philip Johnson, Arata Isozaki, Rafael Moneo and Frank Gehry. Johnson told the *New York Times* that it was, "the most important [competition] in America since the *Chicago Tribune* competition of 1922".

Another jury member, Joseph B Rose, chairman of New York's City Planning Commission, said: "This is not just an intellectual exercise". All five competition entrants have been invited to attend further discussions with city officials.

UN Studio van Berkel & Bos (Amsterdam), Thom Mayne (of Santa Monica-based Morphosis), Cedric Price (London) and Reiser + Umemoto Architecture (New York), were the architects which lost out.

All five designs will be on display in the Vanderbilt Hall of Grand Central Terminal, New York, from 5-17 October (Tel: +1 212 808 0388). BB AM

The IFCCA Prize runs every three years. It is dedicated to the revitalisation of brownfield sites.Contact the Canadian Centre for Architecture. Tel: +1 514 939 7000. Fax: +1 514 939 7020.

First Lady announces DC museum

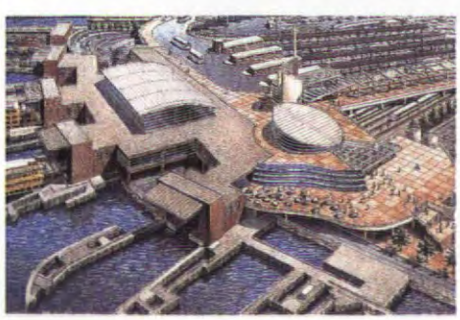
USA

As part of the "Save America's Treasures" programme, spearheaded by Hillary Rodham Clinton, Washington DC, the North American city with the highest number of museums per capita, is about to gain another.

The City Museum of Washington will be in the former Carnegie Library across the road from the new convention centre on K Street. The museum is planned to open in 2003. No architect has been selected yet. BB

Staten of the art

HOK leads waterfront redevelopment



HOK's proposal for St George terminal, Staten Island, New York City

USA

The New York office of HOK is project architect for a US$81 million refurbishment of St George terminal, Staten Island.

The scheme is part of New York mayor Rudolph W Giuliani's scheme to rebuild the ferry terminal as a multi-use transportation hub and catalyst for the declining waterfront.

HOK has designed a visually light and technologically advanced waiting room to lie beneath the structure's most dramatic architectural element, an arched ceiling resting on huge panels of glass.

Construction of the new terminal should begin by the end of the year, and be completed sometime in 2002.

As well as the ferry terminal, which will include a retail concourse, the Giuliani administration has thrown its political weight and financial support behind several proposals on adjoining Staten Island waterfront parcels. They include a minor league baseball stadium for a New York Yankees farm team, more retail development and two museums. BB

In brief

BRASIL

Maracana make-over

Brazilian architect, Armando Mendes, has been charged with the job of modernising the world's largest football stadium, as it prepares to celebrate its 50th anniversary next year. The Maracana, which hosted the 1950 soccer World Cup final, was designed by Rafael Galvao, Pedro Paulo Bernardes Bastos, Orlando Azevedo and Antônio Dias Carneiro. Mendes will seek to retain the Maracana's distinctive sculpted concrete identity, while reducing its capacity by 30,000, to 90,000. The US$35 million overhaul will be complete by July 2000. The Brazilian Football Association is hoping that the investment will contribute to Brazil's bid to host the 2006 World Cup.

USA

Smithsonian gets go-ahead for Museum of American Indian

The US Commission of Fine Arts has given the Smithsonian Institution planning consent to build the National Museum of the American Indian. In 1998 the Smithsonian dismissed the project's original architect, Douglas Cardinal, because of delays and contractual disagreements. The Smithsonian then hired the Polshek Partnership and Tobey & David to complete the project. In April the commission rejected the Smithsonian's completion of the design because it did not follow the concept developed by Cardinal. The Smithsonian again revised the plans, and that revision was the approved design. Michael Heyman, CEO of the Smithsonian, says that it is "clearly going to cost somewhat more" than the original budget of US$110 million. The museum is scheduled to open in 2002. (See also *WA*67 page 21 and *WA*77 pages 18-19.)

EUROPE

New contracts

MOST APPEASING
GERMANY

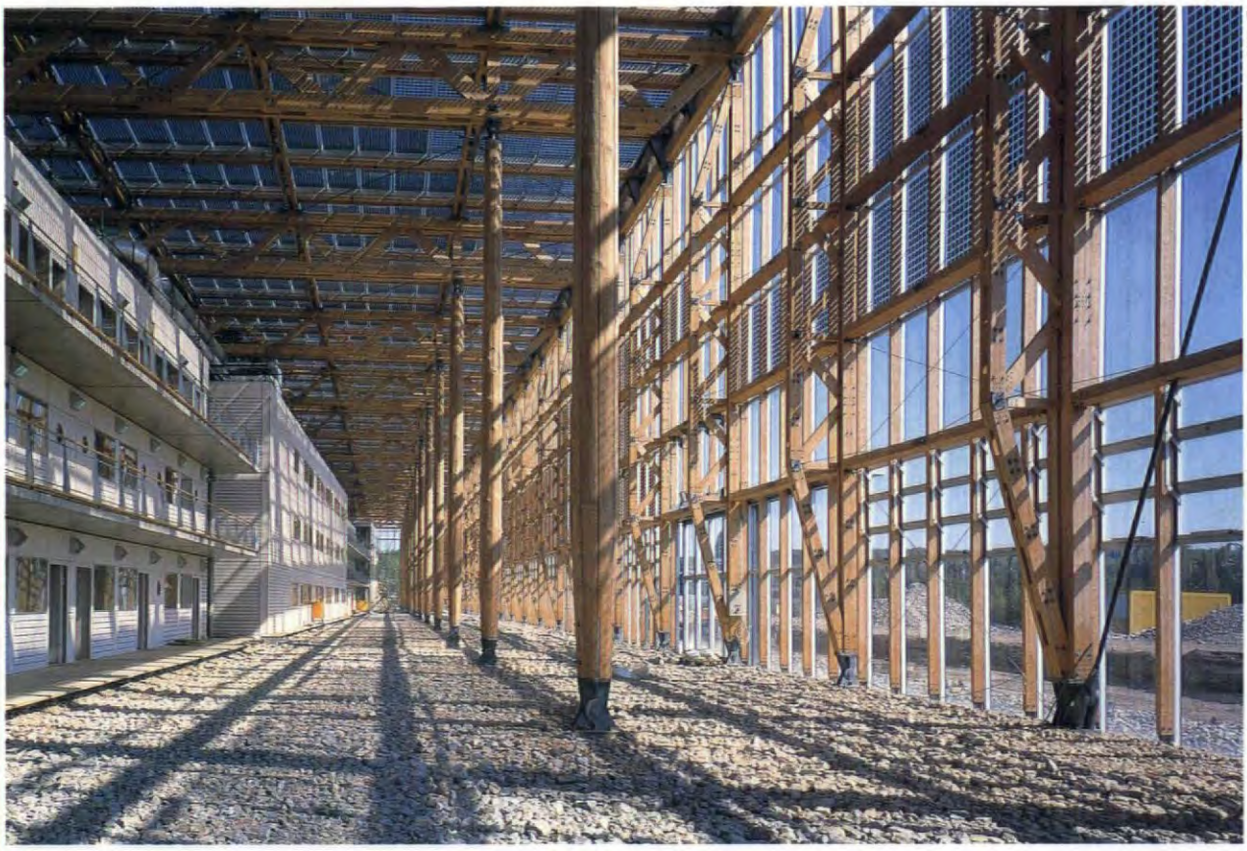
Bachmann Marx Brechensbauer + Partner of Munich has won the contract to design a major public research and education centre on the banks of the Rhine. The three-phase complex – comprising a library, laboratories, offices and lecture rooms – is the largest project so far given to Bonn in compensation for the city's loss of capital status to Berlin. Central government has contributed US$400 million and the local authority of Land Nordrhein-Westfalen will add US$40 million. Completion is expected by 2002.

MOST COMPLEX
ITALY

British practice **David Chipperfield Architects** has won the competition to design the US$75 million Palace of Justice in Salerno, southern Italy. The project comprises a complex of eight buildings, including law courts, public prosecutors offices, office space and administration blocks, to be linked by colonnades, with gardens between to serve as public spaces. The site is a 39,000-square-metre former railway goods yard.

MOST NECESSARY
ROMANIA

A joint-venture of **Sarl Galmard** (Paris) and **Popovici Consultants** (Bucharest) has been granted planning consent for the 18-storey, 35,000-square-metre Place Victoria office complex in Bucharest, housing over 20,000 square metres of class "A" office space. The city desperately needs such developments – only four or five are planned in the next two or three years. "This situation can be explained by the bureaucracy of the architectural planning commission, a poor judicial and the unstable economic situation regarding Romania as a whole," concludes a report on Bucharest's office market.



S Demailly

Herne-Sodingen Academy, near Dortmund, by Perraudin Architectes and Jourda Architectes

Mine over matter

French-designed greenhouse completes IBA Emscher Park

GERMANY

The final piece in the Ruhr district eco-jigsaw was inaugurated on 20 August.

Designed by Perraudin Architectes (Vauvert) and Jourda Architectes (Paris), the Herne-Sodingen Academy, near Dortmund, is a "new heart" for the region. Since the closure of the last coal mine (1978), Germany's once mighty industrial heart has become a polluted wasteland, plagued by ecological and social problems.

Perraudin and Jourda were asked to develop an environmentally sensitive home for government administrative and research facilities – with public library, accommodation and civic amenities – to try and restore local pride in the community. A housing estate and supermarket are under construction nearby.

The academy, which produces more energy than it uses (the surplus is being sold back to the German electricity board), is the final element in the government- and regional authority-funded IBA (Internationale Bau-Ausstellung) Emscher Park. Unlike its predecessor in Berlin (concluded 1987), oriented around the construction of new buildings, IBA Emscher Park centres around the revitalisation of the Ruhr landscape.

Perraudin and Jourda worked with German practice Hegger Hegger Schlieff, Ove Arup and Agibat MTI. Until last year, the recently divorced lead architects had practiced together for 19 years. The academy is the last project on which the pair will work together. AM

Finta's West End Center tops out

HUNGARY

Finta Studio has topped-out Budapest's West End Center, the largest inner-city development in Europe.

The 200,000-square-metre retail, entertainment, office and hotel development is next to the Gustav-Eiffel-designed Nyugati railway station, close to central Pest.

West End Center – due to open in November

Finta, Hungary's largest practice, is probably the only native architect that the TriGranit Corporation – a joint-venture between TrizecHahn Corporation and Hungarian entrepreneur, Sandor Demjan – would have trusted for such a huge development. With a total workforce of over 50, Finta is over twice the size of the second largest native firm

The first phase of West End Center will be opened on 12 November, after a fast-tracked construction schedule of 499 days.

The complex is now almost 75 percent prelet, with the majority of the anchor tenancies going to international chains. The 18,000-square-metre office development is scheduled for completion in June 2000. (Hungary is the focus of *WA*'s Country Report next month). GM

EUROPE

Berlin decides

Eisenman wins Holocaust Memorial

GERMANY

Ten years after the competition was announced, Peter Eisenman has been chosen as the architect of Berlin's Holocaust Memorial.

Eisenman's win comes as no surprise to anybody versed in the recent history of the competition. In June *WA* highlighted the alleged political bias towards Eisenman throughout the process (see *WA*77 "Never Ending Story" pages 26-27).

Last year two of the four shortlisted architects (Jochen Gerz and Gesine Weinmiller) threatened to walk out after it emerged that German Minister for Culture, Michael Naumann, had invited Eisenman to submit a new design – an invitation not extended to anybody else. In all, he produced three designs. "Eiseman II" was the winner.

"Eisenman II" was itself the cause of controversy last year. Rumours were rife that Daniel Libeskind, the fourth shortlisted architect, was threatening to sue Eisenman over the resemblance between "Eisenman II" and the Hoffman Garden – the external element of the nearby Jewish Museum, by Libeskind, which opened to unanimous acclaim earlier in the year.

"Eisenman II" – is this the least surprising competition win of the year?

"Mr Eisenman's memorial proposal is referential to the Hoffman Garden of the Jewish Museum. I find the displacement of symbolism a problem for the memorial's future," said Libeskind to *WA* in May. The litigation never happened.

The site is within view of the Brandenberg Gate in the centre of Berlin. Construction is due to begin early next year, by which time the government hopes to have compensated all the victims of the Jewish victims of the Third Reich. AM

Richard Davies

That's unusual

UK

Foster and Partners has unveiled its design for the London office of Swiss reinsurer, Swiss Re. The 178-metre office tower, already nicknamed "the Gherkin", is on the former site of the Baltic Exchange, for which Foster's Millennium Tower (1996) was refused planning permission because of its height. The tower is Foster's second major design for the UK capital this year – the first being the equally distinctive GLA headquarters (see *WA*77 page 48). AM

The Louvre treatment

Paris landmark sets the benchmark

GERMANY

London's National Gallery has become the third European tourist and arts venue to be threatened with "the Louvre treatment" in recent months.

Dixon Jones, architect of the controversial redevelopment of the nearby Royal Opera House, has been asked to prepare a blueprint for the project, including a possible new underground entrance.

The trustees of the 170-year-old edifice have become "ashamed" of the National Gallery's "disgraceful" facilities – including the entrance, public conveniences and catering facilities.

At the Tower of London, six architects – Itsuko Hasegawa Atelier (Japan), MacCormac Jamieson Prichard (UK), Mecanoo Architecten (Netherlands), Stanton Williams (UK), Libeskind (Germany) and Perrault (France) – were shortlisted in June to design a "Louvre Pyramid-style" visitor centre. The Tower Environs Scheme (TTES) is hoped to emulate the effect that I M Pei's glass pyramid has had on the Paris museum – visitor numbers and revenue levels are estimated to have trebled.

The US$13.2 million project will involve overhauling the Tower Hill vaults. A winner will be chosen at the end of this month.

The news follows the decision of Paris city officials to invite an undisclosed group of architects to propose a solution to the Eiffel Tower's access problems. AM

I M Pei's Louvre Pyramid – the international prototype to maximise tourist revenue?

In brief

FRANCE

Built up aria

Opera Bastille in Paris, the most notorious of Francois Mitterrand's Grands Projets, has celebrated its tenth anniversary this week by declaring that it is the most popular theatre in Europe. The US$400 million edifice is perhaps best known as the project for which Mitterrand mistook the entry by the then untried Canadian/ Uruguayan architect, Carlos Ott, for the work of Richard Meier. Ott, has since gone from strength to strength, but the mistake caused consternation in French architectural circles about the long-term merits of anonymous competitions. The furore even threatened to derail the progress of the Arche de la Defense and the Louvre Pyramid (see below).

POLAND

Warsaw packed

Ground has broken on the 56,000-square-metre Zeran Distribution Center warehouse complex in Warsaw. The development is an all-American venture – a sign of the times in investor-friendly Poland. Burke, Bales, Mills and Associates of Orlando is working with the Warsaw office of US giant HOK International. The developer is Apollo-Rida, also of the US.

UK

Behnisch threatens to sue

German architect Stefan Behnisch, of Stuttgart-based Behnisch, Behnisch und Partner, has threatened to sue the UK Arts Council over its handling of the Harbourside Centre, Bristol. The Arts Council, the body in charge of handing out Lottery funds to arts developments, owes US$4.1 million to the architect, engineer and consultant employed on the US$153 million scheme. Harbourside was one of 77 projects which fell victim to the Arts Council's July 1998 cost-cutting drive.

ASIA PACIFIC

In brief

AUSTRALIA

Healing the Utzon wound

Jorn Utzon (81), the Spain-based Dane of Sydney Opera House fame, has signed a contract with the New South Wales government to "set guidelines" for an upgrade of the Australian landmark. The contract brings to a conclusion 30 years of bad feeling between Utzon and Sydney local authority, whose behaviour during construction of the Opera House made Utzon swear never to set foot in Australia again. Utzon's will not need to go back on his word – the upgrade will be carried out by Denton Corker Marshall.

INDIA

Indian hotel boom

At least six international hotel chains are looking to invest in India, further evidence that the country is being seen, along with China, as Asia's major tourist destination of the third millennium. A survey by Jones Lang LaSalle says that government policies, including those for foreign investment, are making the difference. International tourism expenditure in India has doubled during the 1990s, from US$1.5 billion in 1991 to US$3.1 billion in 1997.

JAPAN

Sweet smell of success

The city of Osaka hopes to bring a touch of class to a US$65 million sewage sludge digesting facility with a facade and landscaping by Austrian artist Friedensreich Hundertwasser. The unusual approach to the design of such a utilitarian structure is a part of Osaka's plans to turn eyesores into urban landmarks. To soften the straight lines of the cuboid building, and to introduce as much greenery as possible, Hundertwasser's exterior recalls a hanging garden, lined with trees and shrubbery. Construction will start later this month.

Ando's record breaker

US$410 million invested in 21-hectare mega-development

Probably the world's largest construction site – Tadao Ando's Westin Hotel, Awaji Island

JAPAN

Tadao Ando is nearing completion on the first phase of his largest project to date. With an area of 214,000 square metres, the development is also estimated to be the largest active architectural site anywhere in the world.

The US$410 million Westin Hotel and Conference Centre complex is set on Awaji Island in Osaka Bay, overlooking Kobe and Osaka on the mainland. The immense development is set in a 21-hectare quarry, which produced the landfill for the island beneath Renzo Piano's Kansai Airport.

Site work started nearly ten years ago. Unusually, landscaping preceded construction by over four years, to allow plants to achieve a reasonable size before completion of the buildings. Construction had not started by the time the Hanshin earthquake struck nearby Kobe in January 1995.

The earthquake revealed an active fault line running through the proposed site of the hotel. The resulting redesign set the project back two years.

When complete the extensive landscaping and 201-room hotel will be complemented by a 13,000-square-metre conference centre, an amphitheatre and a 6,500-square-metre greenhouse. Ando has also designed a chapel for the site, recalling his earlier work in Hokkaido and Kobe.

"You enjoy Disneyland and Universal Studios because they offer various attractions, but here the architectural space provides the entertainment," Ando told *WA*.

The Westin Hotel is scheduled for completion in December, in anticipation of the "Japan Flora 2000" exhibition to be held on the site from March- September next year. DB

Architecture of intimidation

AUSTRALIA

Designing a US$7.3 million annex to the Australian War Memorial in Canberra is a job almost as intimidating as making alterations to the Sydney Opera House – the two buildings do more than any others to define Australian identity. But one firm, Denton Corker Marshall (DCM), has got both (*see Healing the Utzon wound, this page*).

While some architects would prefer an open international competition for the 3,000-square-metre Anzac Hall, DCM's record for projects such as this cannot be faulted, which has produced several museums, extensions to museums, and exhibition spaces.

So how do you make a national monument better? "[The Australian War Memorial] is a fabulous building, a complete piece, so the trick is not to be too literal. If you are too literal in the extension, you'll muddy or obliterate the importance of the heritage item, until it just becomes confusing to people what's new and what's old," says DCM partner Richard Johnson. AS

Maki-ng it up

Niigata's Praemium return

JAPAN

Niigata officials are hoping to raise the region's profile with a convention centre, hotel and office complex by Fumihiko Maki – winner of the 1999 Praemium Imperiale award.

The US$242 million project is the centrepiece of redevelopment of the Mandaishima waterfront area of Niigata City, a port on the Japan Sea side of Honshu Island.

The four-storey conference centre will house a 7,800-square-metre exhibition hall, 2,200 square metres of outdoor exhibition space, smaller conference rooms and supporting facilities, and will be joined at the base, by a 3,500-square-metre atrium, to a 31-storey 49,980 square metres hotel/office building with prefectural museum and offices on the lower floors.

The project is a public/private venture: the prefecture is developing the convention centre; a private consortium, headed by Tokyo-based contractor Kajima Corp, is developing the hotel/office building.

Fumihiko Maki's proposed redevelopment of Niigata City's Mandaishima waterfront – the conference centre is in front of the 31-storey hotel/office building

Work will start in 2000 with the convention centre due for completion in spring of 2002 and the hotel-office tower a year later. DN

Letters

Choice cuts

Thomas Findley, Alexander Ward, Michael Winstanley, at Leo A Daly, Omaha/LA/ Washington DC, USA

While we applaud the selection of projects that the jury picked for the "top ten" buildings of the decade (*WA*78 10th Anniversary issue), we offer the observation that the "winner's circle" was unnecessarily limited.

It is important that our best buildings anticipate and define the social, as well as formal and technical, directions of the new millennium. Great buildings must engage the larger issues facing our increasingly global, yet fragmented society.

We suggest three projects that add to this discourse, and are powerful reminders of our opportunities and obligations:

Moshe Safdie's Vancouver Public Library offers a rich example of a public space that encourages personal interaction at a time when information exchange occurs with greater physical isolation.

Steven Holl's "Void Space/Hinged Space" housing in Fukuoka, Japan, which invests a key building type with a whole new language of form, rich in spatial and material invention.

James Freed's Holocaust Museum in Washington DC, which reminds us of architecture's power to capture and invoke emotion and act as witness to memory of past events.

Compare and contrast

Alan Phillips, APA, Brighton, UK

Nominating five buildings of the 1990s requires re-establishment of the criteria of a masterwork by referring to five architects with reputations firmly cemented by history.

Corbusier, Mies, Frank Lloyd Wright, Rietveld and Gropius all had intellectual originality in the construction of ideas, technical innovation in structure and materials, and spirituality in the crafting of light and space.

There were few masterworks in your contributors' choices, although Libeskind, Koolhaas, Hujduk, Tschumi and Herzog & de Meuron meet many of the criteria.

Gehry's Bilbao work is too emotional to be taken seriously, office buildings are rarely more than the mere utility of construction, and Foster's Reichstag, although superbly crafted, was better under Christo's wraps. Renzo Piano is a fine architect, but never seems to fully express qualities of the abstract or iconoclastic.

Tall building panda-monium

From Jeffrey K Herzer, editor of tall buildings magazine, Kansas City, USA

For those of us fascinated by that rarest of structure, the very tall building, the last ten years have been quite a spectacle. Reassuringly, your coverage (*WA*78 pages 50-51) suggests that the next ten will be just as good.

However, for all their power, tall buildings are as fragile as giant pandas: they are conceived with great effort, and only a fraction ever see the light of day.

The skyscraper will have to evolve to survive into the 21st century. Will these plodding creations – with an average gestation time of four years – thrive in a lightning-quick global economy? Will they continue to find their most fertile ground in protected economies and developing nations?

(See Tall Buildings Sector Analysis in this issue – pages 64-77).

Erratum

Ushida Findlay's Trusswall House (*WA*78 page 88) should have been printed as below. Apologies.

WA welcomes letters from readers. Please send them to the editor via email: Nicola_Turner@tbg.focusnet.co.uk or fax: +44 171 560 4191.

Next issue

Country Focus – Hungary

In October 1989 the Hungarian government allowed East Germans through its borders to visit relatives in West Germany. It was the first step in a chain of events that brought down the Berlin Wall. Back then, all Hungarian architects worked in one of the state's five Design Institutes, and foreign investment was an ideological no-no. Ten years later there are 8,500 architects practising privately, and Hungary has received more foreign investment per capita than any other former Soviet satellite. Adam Mornement reports on how a decade of transition has affected the practice of architecture, and explores the complexities of practising as a foreigner. Also, *WA* goes face to face with Imre Makovecz, and introduces the next generation of Hungarian architects.

Sector Analysis – stadiums

What better way to demonstrate your country's cultural and financial health than to stage an international festival of sport, inviting the cream of the world's athletes to perform in front of millions of TV viewers worldwide in brand new, state-of-the-art facilities? The money generated from media coverage of modern sports events makes it worthwhile for countries to build new stadiums, roads, railways, even airports, in order to ensure that they host them.

This month's inauguration of HOK/Lobb's Stadium Australia, built for Sydney's Olympic Games next summer, highlights the role stadiums have acquired as architectural standard-bearers in sport-led national and civic PR drives. Reaction has centred exclusively on Stadium Australia as a demonstration of national ambition – the functionality of perhaps the most historically function-driven building type appears have been forgotten. *WA* looks in depth at Sydney's controversial new stadium, as well as NBBJ's high-budget Safeco Stadium in Seattle, USA, and Alina's high-tech Gelredome in Arnhem, The Netherlands. Simon Inglis explains how stadium designers have reacted to changing agendas, numbering urban regeneration, retail, multi-use and aesthetic sensibility among the prime considerations.

Right: Stadium Australia, Sydney, by HOK/Lobb and Bligh Voller **Below right:** Graphisoft headquarters, Budapest, Hungary, by Ferena Cságoly and Ferenc Keller of Építész Studio

Technical – bathrooms/ ceramics

The design of the bathroom and its interior elements are taken disproportionately seriously by architects – few markets boast as many big-name-designed lines as the bathroom furniture sector. Ceramics in particular are enjoying a renaissance as sophisticated production techniques broaden the scope of their application. *WA* taps into the high-quality design available to specifiers and flushes out the products and innovations which are making waves.

Analysis

Chinese take-away

Architect and critic Paul Hyett reports on some of the key speakers at the 20th UIA Congress, on Architecture in the 21st Century, which took place in Beijing in June. The pride of the Chinese government in hosting the first congress in the Asia Pacific Region was evident both in the use of the Great Hall of the People, and the flawless organisation, in contrast to the Barcelona bun-fight in 1996. Perhaps surprisingly, given the negative popular opinion on the state of China's built environment, the core of the congress concentrated on the issue of sustainability.

The central message of this year's UIA Congress in Beijing was that of sustainability, which looks certain to become a predominant preoccupation of architecture in the next millennium. Issues of sustainability are now the subject of formal education in Chinese primary and secondary schools, and the strength of the collective will of the people is extraordinary, contrasting sharply with the social irresponsibility of the West. China is increasingly concerned with the problems of ecological and environmental damage, and when this issue finally hits centre stage the population of over one billion will address sustainability in all its aspects – from land-use and transport through to individual building design and performance – absolutely head-on. Then this industrious nation will surely show the so called "developed" world – whose capacity to temper its reckless lifestyle is so limited by short-term economic policies and instinctive resistance to change – what sustainable city design and living is all about.

The first two contrasting speakers were Wu Liangyong (vice-president of the Architectural Society of China and Professor of Tsinghau University) and Kenneth Frampton. They both gave independent perspectives of the problems and opportunities that face architects, the former warning of the constructive and destructive powers of technology. Wu expressed the need to revitalise the "soul of culture" in our traffic- and commerce-dominated cities, and warned that we cannot allow the divergence of the taste of public and modern architectural styles to continue into another century.

Nature's revenge

On a particularly sobering note – referring to the opening address of Li Ruihuan, chair of the National Committee of the Chinese People's Political Consultative Conference, warning that while nature is generous she is severe in her retaliation to uncontrolled exploitation – Wu insisted that consumer democracy will not be a feasible method of regulating the future development patterns of our cities. This intellectual, who attended the very first UIA Congress in The Hague, went on to offer an optimistic "route map" for the future, insisting, altruistically, that architects share a common objective in pursuing the human mission of self-improvement.

The obviously intentional programming of following Wu Liangyong with Frampton threw their two contrasting pedagogies, born of diametrically opposed socio-political systems, into relief. Frampton's talk ranged effortlessly over time and place, as he explained the impacts of technology and the evolving socio-economic conditions as forces on architecture and the city.

Concluding with thoughts on rationality and power – acknowledging that it was with some "temerity" that he "talked of these issues in the Great Hall" – Frampton acclaimed the need for interplay between reason and power in all decisions, large and small. But it was ironic that this messenger from the "free world" should conclude his enlightening talk with the advice that we need to rethink both modernity and democracy, and that power, in particular, should be redirected rather than further dissolved.

"Although Frampton was able to claim that the collapse of 'socialism with a human face' leaves the US as the sole paradigm of progress, it was a claim undermined by pessimism."

And although Frampton was able to claim that the collapse of "socialism with a human face" leaves the US as the sole paradigm of progress, it was a claim undermined by pessimism. This contrasted markedly with Wu's upbeat manifesto, and notwithstanding the optimism of the Chinese camp after so many years of isolation, it is disturbing to hear one of our own heroes adopt such tones of despondency. Where is architecture and architectural teaching without hope?

The power of reason

Thus these two outstanding speakers set the theme for the congress – both wrestling with the need to temper power with reason in the context of preserving our cultures and developing sustainable forms of urban living. Further distinguished contributions were made by Jean Nouvel, Charles Correa and Moshe Safdie. And then came Ken Yeang's thoroughly polished performance.

Talking of theory, experiments, and practice in the context of his self-acclaimed "ecological design agenda", Yeang offered a lesson on method and a robust vision of a new "scientifically" generated architecture; an architecture that achieves true harmony with nature without compromise of either progress or comfort. Perhaps it is the coming together of Asian culture with Western experience, as a Malaysian who trained at the AA, that enables Yeang to achieve such integration at both an aesthetic and a functional level between architecture and ecology.

As well as insisting that a full energy audit is essential to every project, and that design should progressively narrow the input/output equations, Yeang also displayed his impressive capacity for lateral thinking

"The West will inevitably suffer the supreme indignity of a Chinese demand for change from their irresponsible and ecologically unsociable neighbours."

Pictor International

and innovative solutions – for example incorporating beautifully shaped and detailed "wing" walls and "roof wings" to produce negative external pressure which enables completely passive large-scale ventilation and extract systems.

Yin and Yeang

Establishing the target overall output of energy in "year kilowatts per cubic metre", Yeang calculates the achievable passive energy performance for each of his buildings at early design stage, all within holistic environmental parameters of each site.

Long enjoying enormous influence with students, Yeang's work looks set to become influential on a generation of young Chinese who face the challenge of delivering 50 major new cities in the coming decade. Such a challenge will, of course, also be seen as a tremendous opportunity for commercial exploitation by international practices.

A word of warning to those who seek to work in China: the frequently irresponsible and often narrow vision that limits the ambition and agenda of the typical Western office will be increasingly redundant in the new China. That, more than the 75 per cent collapse in office rentals that has greeted recent oversupply in Shanghai, will be the biggest threat to Western success, for while the first wave of development has largely imported Western problems of urbanism lock, stock and "smoking" barrel into China, that will not be the case in the future.

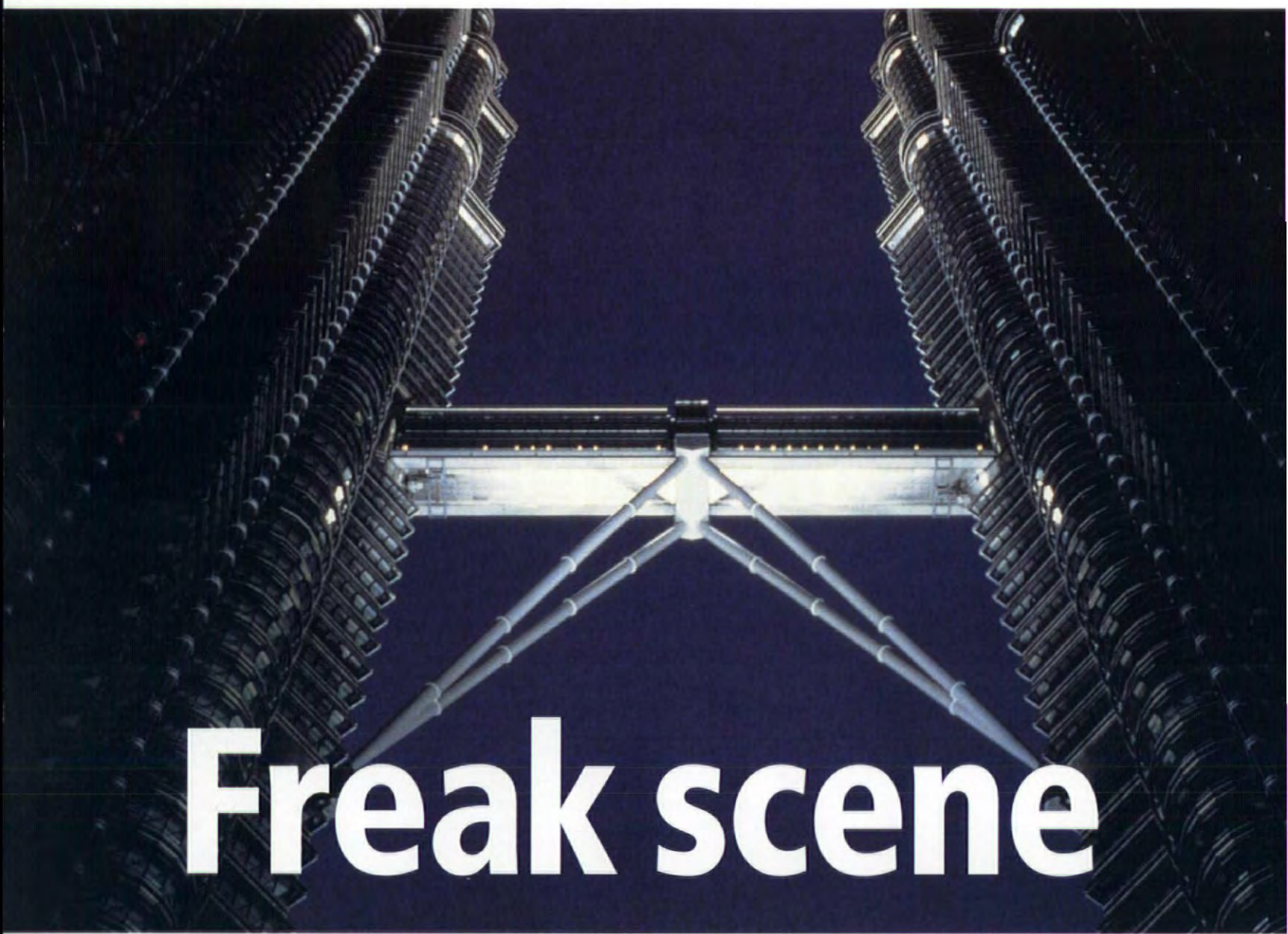
How the West was lost

Those Western architects who seek to deliver into China their wasteful buildings with their filthy emissions, reminiscent of the enormous gas-guzzling American cars of the 1950s and 60s, will get short shrift. And with them will also be dispatched the new, surely short-lived generation of Asian developers and agents who are currently wielding such commercial power through irresponsible commissioning of that type of work.

The Chinese will surely embrace the urgent agenda that professors Wu and Frampton so ably described, with purpose. And when that happens, the West will inevitably suffer the supreme indignity of a Chinese demand for change from their irresponsible and ecologically unsociable neighbours.

Paul Hyett is a director of Hyett Salisbury Whiteley of London, Oxford and Shanghai. He is also vice president of the Royal Institute of British Architects and vice president of the Architectural Association, both in London. WA

Above: The Great Hall of the People, Beijing, China, where the congress took place



Freak scene

From Metropolis to Gotham City, movie history is littered with futuristic fantasies. But as the new Bond film "The World is Not Enough" shows, cinematic landscapes no longer need to be created in the studio – the battle to design the world's most sculptural building means that they already exist. Adam Mornement asks how far the mass media has perpetrated the cult of the architectural icon.

"Word of mouth is dead. The mass media is the way to get noticed," said Andy Warhol before going on to explain something about fame and 15 minutes.

Of course, if fame is what you're after, getting noticed by global media networks is the key. There are various ways of achieving this: say something outrageous, sleep with someone outrageous or look outrageous.

We live in a world where one-off buildings have replaced architectural "isms" as the barometers of the avant-garde. Global market forces have created an increasingly fertile breeding ground for combinations of architect, location and client to produce never-been-done-before architectural icons. And don't call it signature architecture – in 1999 you're out of date if you sign the same signature twice.

Just as in the mid-1980s pop musicians began to explore all forms of stylistic fusion to survive in the public consciousness, so architects have learned to develop hybrid styles for landmark buildings which will guarantee them instant "international icon" status upon completion.

From Sydney to Helsinki, city authorities are doing whatever it takes to get the biggest or weirdest building built in their city. Even before it's finished, the building becomes the premiere promotional device for its location.

Trademarks

The opening sequence of the new Bond flick *The World is Not Enough* features Pierce Brosnan escaping from the roof of the MI6 building – designed by Terry Farrell & Partners – from where he speeds down the River Thames to the still-incomplete Millennium Dome, designed by the Richard Rogers Partnership. Of the two, it's the Dome that will get all the attention – a white tent with 12 yellow pylons has become the international symbol of the millennium.

Like every good landmark, it's a world record holder – in this case, the world's largest tensile structure. But what is it really about? Who will benefit from the Dome? Even its architect, Mike Davies, says: "It isn't an architectural project at all. It's a lightweight, loose-fit cover."

The timing of the release of *The World is Not Enough* is no accident: the film premieres in November; the Dome opens two months later. In effect, this is the ultimate in product

placement – the Dome organisers are guaranteed unprecedented world-wide exposure for their event. "We are absolutely delighted [the Dome's in the film] .We hope it's a great success," says Sholto Douglas-Home, the Dome's marketing director.

In a later scene, Brosnan also gets to strut his stuff on the king of sculptural buildings, Frank Gehry's Bilbao Guggenheim. "It's a privilege to film at the Guggenheim," says Nerea Abasolo, press officer for the Bilbao Guggenheim."The building is a trademark, the venture has to be something that fits with our image," which makes Cerruti perfume OK, but, presumably, Dr Scholl a non-starter.

The massive global exposure from being used in a film like *The World is Not Enough* is also a consideration, admits Abasolo.

If you're building an instant icon, and money's not an issue, commissioning a very tall tower and making it available to international film crews is another guaranteed way of ensuring mass-media coverage.

If ever there were a structure which looked like it was designed as a set for a dramatic gun-fight, it's the mid-air bridge linking the Petronas Towers, featured in summer blockbuster *Entrapment*. Just imagine prime minister Mahathir Mohamad's glee at being given the opportunity to ram down the throats of the US masses that the world's tallest buildings are in Malaysia – after all, it was for just such moments that the Petronas Towers were built.

"If ever there was a structure which looked like it was designed as a set for a dramatic gun-fight, it's the mid-air bridge linking the Petronas Towers."

Urban icons

The sculptural building phenomenon could happen anywhere but it works most dramatically in cities with no reputation to speak of. So Lyons and Liverpool, those hot-beds of cultural expression, are making all the right noises in a bid to become the host for the third Guggenheim.

And although cities such as Paris and Sydney, are already synonymous with architectural icons the Eiffel Tower and Sydney Opera House, there's always room for more. It just requires more innovation from your architect.

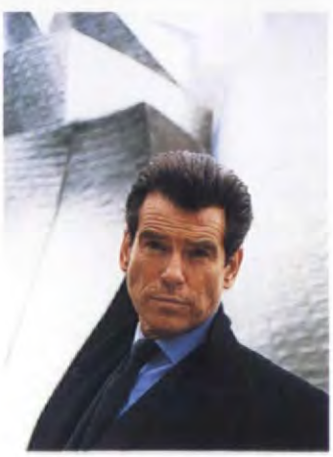
I M Pei's glass pyramid at the Louvre has been so successful that the Eiffel Tower – formerly the city's most-popular tourist attraction – is to get the "Louvre treatment" early in 2000 (see News page 21) in an attempt to claim back its mantle. In Sydney, filming for *Mission Impossible 2* is underway, just in time to capitalise on the city's Olympic-inspired backdrop.

Sculptural buildings aren't always successful. You'd have thought that the Brazilian government would have been desperate to market Oscar Niemeyer's Brasilia – in fact, anything designed by Niemeyer. But Brasilia was hardly an unqualified success, and when looked at in the context of Niemeyer's period in political exile, the decision begins to make sense. Nobody's going to advertise a failure.

So which buildings will be next on the media hit-list? Expect to see Foster and Partners' Greater London Assembly in a cinema near you by the middle of the next decade. The modified design makes its search-light-like form look even more sculpted (see *WA*77 page 48) and the fact that it's opposite the Tower of London, and within eye-shot of London Bridge, will have location managers and the London Tourist Board salivating.

Elsewhere, don't be surprised to see Portugal and Ireland – the EU's two most dynamic economies of the moment – opening their doors to film crews. The remnants of the Lisbon Expo '98 site are just crying out for a soap opera. And the queue starts here for camera access to the Steven Holl-designed Kiasma Museum in Helsinki.

China, however, has yet to capitalise on its vast array of new buildings and dramatic scenery. To date, this has been due largely to fears of the West portraying the country in an unflattering light. But it shouldn't be long before things change and if the developing skylines of Shenzhen, Shanghai and Guangzhou live up to expectation, it won't be long before Gotham City really does come to life. WA



On the Web

The World is Not Enough: *http://www.jamesbond.com/bond19.sweepstakes/index.html*
Entrapment: *http://www.foxmovies.com/entrapment/*

Left, clockwise from top: The Dome is already the international symbol of the millennium; Cerruti chose Gehry's Guggenheim to promote its perfume; Brosnan or Bilbao – who's the real star? **Facing page**: High drama at the Petronas Towers in *Entrapment*.

Book reviews

Survival of the fittest

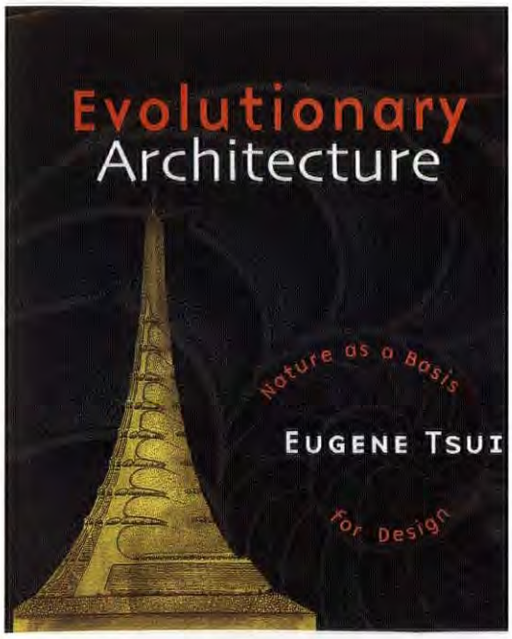
Evolutionary Architecture. Eugene Tsui. John Wiley and Sons. 360pp, Illustrated b&w throughout. £35.50 US$45

By Brian Mark

This thought-provoking work examines the benefits to be gained from the synthesis of architecture with the study of the structural and performance efficiency of living organisms and their created environments.

The central thesis is indeed exciting and visionary – Tsui contends that the technology used in construction has remained significantly unchanged for the past 100 years, being based on inefficient rectilinear design with post and beam construction. This conventional thinking is enshrined in urban planning expectations, thus limiting the advances that new materials and new design techniques could present.

The tenets of a new form of architecture can be framed by leaving conventional design solutions to one side and replacing them with solutions gathered from the study of the deeply optimised efficient designs of nature. These have been honed by hundreds of millions of years of dealing with design failures by the simple expedient of early death, leaving only the most specialised and efficient designs to carry forward. These preworked examples of ultimate adaptability frame Tsui's concept of evolutionary architecture.



As a biologist turned engineer I have a deep sympathy with this view. However, I found several mutually incompatible statements, and I also take deep issue with some of the design directives and solutions. The main built volume of buildings is shown elevated to reduce the built footprint and the resultant loss of ecosystems. For optimised design only lightweight construction techniques are considered, in other words no advantages are taken from the lovely cheap themal mass that exists beneath a building.

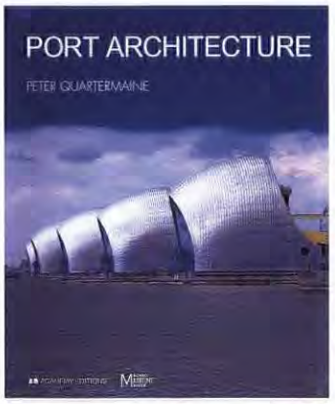
Several of the examples are recognisably animal or "plantomorphic" but a building is not an animal or a plant and "lives" in an entirely different environment, has different functions and requirements and is of an entirely different massing. A bird scaled up to the size of a building will never optimise building usage, but clues do lie in the study of why a particular natural form may best serve a natural function.

On the positive side, the text is extremely accessible and a delightful read. The photos are black and white but the drawings are brilliantly executed. The middle section provides absorbing studied examples of natural construction techniques which could inform materials and design development.

I still recommend this book – it gives original indications as to where architectural designs could be improved through a true understanding of the superlative "form is function" approach of natural selection. It examines this area with excitement and passion and is always thought-provoking even though sometimes the reader's thought is "why is he trying to baffle me like this?"

Brian Mark is an engineer and partner with UK firm Fulcrum Consulting.

This review was previously published in the RIBA Journal, *July 1999.*



Sea here now

Port Architecture. Peter Quartermaine. Academy Editions, London, UK. 128pp, illustrated b&w and colour throughout. US$62.50 £34.95 (hardback)

By Sarah-Anne Towerym, AIA

Peter Quartermaine's new book seeks to explore the changes in the function and design of working ports since the heyday of maritime commerce, and their effect on the popular image of the sea terminal. *Port Architecture* covers all the built elements of a modern seaport which have a functional connection to shipping, giving a broad introduction to this contemporary and frequently ignored niche. The story begins in the early 1960s, when the use of trans-oceanic liners declined and containerisation expanded.

Since then the perception of ports as sites sheltering many different types of human culture has diminished – passengers travel by air, except when pleasure cruising, and and are always kept separate from cargo. Only people with port-related work see the highly mechanised architecture of container terminals. Since port architecture is rarely visited or published, most architects and critics neglect it.

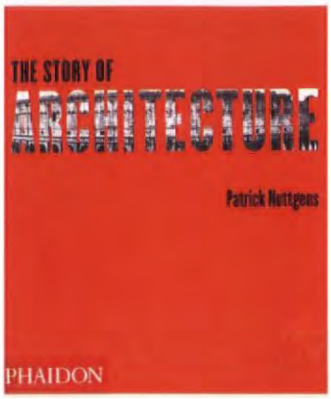
Quartermaine shows a rare appreciation of the technical elements of port architecture, illustrating and reviewing older facilities and recently built bulk and (occasionally) cruise passenger terminal structures. Recent container terminals, however, are portrayed with less sensitivity, through overall site views and control room interiors. He claims: "Apart from the occasional passenger terminal, as at Miami or Port Canaveral, port architecture's total commitment to efficiency leaves little or no scope even for modest 'architectural' gestures . . . Modern port architecture is too functionally severe for architects to quote from it."

I disagree. Container terminals and their buildings work as systems and have bustling, mechanical environments with good references for designers. Functionality creates the need to view the operations of vessel, quay, gate and yard, and its influence on building design does produce a valid architectural idiom. Shipping lines increasingly profit by using their terminals as sales tools, demonstrating to customers how their containerised cargo will be poured from ship to truck, train or barge in the shortest possible time. Clients expect facilities that enhance the company's image and work as part of their grand plan. Many architects deserve recognition for their elegant responses to this complex function-led agenda.

The author also fails to acknowledge the generation of super container ships currently under construction in the far East, which will require a new generation of deep-water terminals built to handle vast cargoes. They will be of a scale and sophistication previously unseen, and will bring the skills of the architects in the sector to the fore.

Quartermaine regrets the restrictions of his small research budget, which seemingly limited his knowledge of the international body of work in port architecture to readily available photographs and regional visitations. He says container terminals are all similar. A wider source of pictures and selective international terminal visits probably would have changed his perception of the terminals and their buildings. However, architects and critics should become more aware of the complexities and innovation of modern port architecture, and this book will help.

Sarah-Anne Towery is a vice-president of US quayside architecture specialist Jordan Woodman Dobson



Story time

The Story of Architecture (revised and updated). Patrick Nuttgens. Phaidon Press, London, UK. 352pp, 199 colour and 204 b&w illustrations. £15.95 US$24.95 (paperback) £24.95 US$39.95 (hardcover)

By James Krohe Jr

Patrick Nuttgens' *The Story of Architecture* has taken honours among introductory architecture texts since its publication. The author – today an honorary professor at the University of York – maintains his trademark focus on great buildings rather than the vernacular, but widens it to draw on the recent work of archeologists as much as art historians. The concluding chapters are expansive, bringing forward the descriptions of modern and contemporary works and movements to include the likes of Renzo Piano's Tjibaou Cultural Centre (1991) and other marvels of the day.

Along with an excellent bibliography, the book boasts all the appurtenances desirable in such a work – time lines, maps, and thumbnail biographies of 125 historic and contemporary architects. *The Story of Architecture*'s glossary is brief but not (as is usually the case these days) too brief, and Nuttgens avoids the jargon of the trade, proving – again – that plain English is perfectly capable of describing complex creations, evolutions, architects and buildings. The design incorporates more than 400 well-chosen and expertly reproduced illustrations, and while one wishes many were larger, few would be able to afford or carry the resultant book.

In such an encyclopedia, the best buildings must be described in only a paragraph, often less, and while Nuttgens says what needs to be said in that space he cannot begin to say all that one wishes he might say. Consequently, it has been described in the US, not unfairly, as "more a page flipper than a page turner". This is not to say that Nuttgens is not capable of a vivid phrase. About the English Gothic Revivalist, architect A W N Pugin, we read: "He exhausted three wives, countless contractors, finally himself, and died insane at the age of 40".

In an era when so much writing on architecture is either diatribe or gibberish, Nuttgens' approach is a relief. His account is comprehensive, cosmopolitan, judicious, and generous. His tone is authoritative without being authoritarian, his views on disputed matters politely conventional. This is essential in such a text; the antennae of instructors are especially alert to *ex-cathedra* pronouncements in such a text, preferring to deliver those themselves. *The Story of Architecture* remains, in short, a book one could let your children play with, with no fear that they might hurt themselves on the sharp edges.

James Krohe Jr is a US-based writer on architecture and urban planning and contributing editor for New York business journal Across the Board

Can you digit?

Digital Architecture. By Mohammed Saleh Uddin. McGraw-Hill, Maidenhead, UK. 192pp. Illustrated colour throughout. £42.99 DM109

By Richard Spöhrer

The field of architectural visualisation is well covered by books, videos and CD-ROMs, all of which have tended to focus too much on one area or application. Mohammed Saleh Uddin's book takes a refreshingly broad approach by examining the world's top architects' and designers' use of digital technologies throughout a project's development and presentation. The featured work includes that of Kohn Pederson Fox Perkins & Will, Murphy Jahn, NBBJ and Bernard Tschumi Architects.

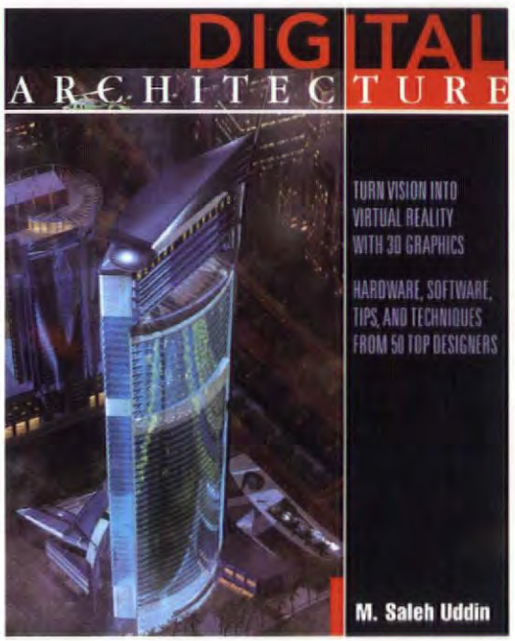
The book opens with a layman's introduction to digital design as practiced by large firms, taking in digital presentation techniques, essential to those new to the field, and an explanation of both screen and paper-based presentations. DTP is an unusual but welcome inclusion, recognising the reality that although many pursue totally electronic means of presentation with an evangelical zeal much of the work carried out still ends up being printed out.

While the applications featured are specific, the techniques described are general in nature and so apply the entire discipline. This is essential and unusual in a book of this type – so many are effectively third-party user manuals for a particular application. The production of virtual reality models is also examined with a topical focus on internet distribution (see pages 78-85) and the eloquent section on digital analysis shows the strength of 3D modelling for spatial and massing studies.

The 50 selected case studies contain a range of material from the bland to the incredible. Work from companies like Morphsis and Polshek and Partners show how digital technology can be exploited to the full, but other projects show flat, mundane renderings which do firms no favours, particularly in terms of publicity.

This book is a clearly structured professional resource, successfully pitched both at those already involved with digital design and those about to dip a toe into the water. My only complaint is the lack of a CD-ROM, inclusion of which would have allowed readers to explore some of the VR and interactive work shown.

Richard Spöhrer is editor of Computer Generated Imaging *magazine*



BOOKS RECEIVED

The Monumental Impulse – Architecture's Biological Roots

George Hershey. The MIT Press, Massachusetts, USA. 254pp, illustrated b&w throughout. US$40.95 £24.95 (hardcover)

Ten Houses – Wheeler Kears Architects

Edited by Oscar Riera Ojeda. Rockport Publishers, Gloucester, USA. 160pp, 100 colour images. US$21.99 £14.99

Danish Chairs

Noritsugu Oda. Chronicle Books, San Francisco, USA. 224pp, 20 colour and 600 b&w photos. £16.99 US$22.99

La Ultima Casa/The Last House

Edited by Monica Gili. Editorial Gustavo Gili, Barcelona, Spain. 160 pp, illustrated b&w throughout. Pta 3,900 US$24.99

Type/Variant House

Edited by Oscar Riera Ojeda. Rockport Publishers, Gloucester, USA. 120 pp, 200 colour images, 100 b&w drawings. US$25 £17

Events

Lectures, congresses and conferences

Austria

Metropolis Now! The Future of Global Cites/ Global Cities of the Future

This seventh Viennese architecture congress will discuss architecture and culture in Asian cities, and assess them as a model for progress. From 5-7 November at the Architektur Zentrum Wien, Museumplatz 1, A-1070 Vienna.
Tel: +43 1 522 3115
Fax: +43 1 522 3117
e-mail: azw@t0.or.at
Web: http://azw.t0or.at

Denmark

Second Conference on the Changing Roofs of Europe

An energy-efficiency-conscious investigation of the latest roofing technology. From 30 September to 2 October in Copenhagen. Organised by the Energy Centre Denmark, Dansk Teknologisk Institut, Postboks 141, DK-2630 Taastrup.
Tel : +45 43 50 70 80
Fax: +45 43 50 70 88
e-mail: ecd@dti.dk

Germany

Strategic Space – Urbanity in the 21st Century

Organised by the IFG (International Design Forum) Ulm, the conference will tackle the re-establishment of cities as unitary bodies and carriers of cultural identity. From 24-26 September at the Ulm School of Design. Contact the IFG at Am Hochstrach 8, D 89081 Ulm.
Tel: +49 731 381001
Fax: +49 731 381003
e-mail: com@IFG.ulm.de
Web: http://www.IFG.ulm.de

Congress of the International Society of City and Regional Planners

Themed "The Future of Industrial Regions", the congress takes place at the IBA Emscher Park, Gelsinkirchen, from 17 to 20 September. Contact Judy van Hemert at the International Society of City and Regional Planners (ISOCARP) in the Netherlands.
Tel: +31 70 346 26 54
Fax: +31 70 361 79 09
e-mail: isocarp@bart.nl

The Netherlands

9 + 1 Young Dutch Landscape Architects

This symposium on 2 November at the Netherlands Architecture Institute – accompanying its exhibition (until 2 January 2000) on the work of young Dutch landscape practices – will examine how new generations can contribute to future Netherlands landscapes. Contact the Institute at Museumpark 25, 3015 CB Rotterdam.
Tel: +31 10 440 1200
Fax: +31 10 436 6875
e-mail: info@nai.ni

UK: COMPETITION

TIA Sustainable Building Competition

Competition for European architecture students to propose high-quality energy-efficient buildings. The prize fund is US$25,000, and applications must be received by 30 September. Contact the secretary of the TIA Sustainable Building Competition for 2000, School of Architecture, Oxford Brookes University, Oxford OX3 0BP.
Tel: +44 1865 741111
e-mail: tia@brookes.ac.uk
Web: http://www.unif.it/project/ tia/ competition

Above: Cutting-edge sustainable design – Center for Environmental Science & Technology, Cannon Architects, New York, US

Singapore

Second International Conference on Construction Industry Development & First International Conference on Construction in Developing Countries

Organised by the National University of Singapore and International Council for Building Research Studies, for 27-29 October. Contact Dr Go Bee Hua at the National University of Singapore, 10 Kent Ridge Crescent, Singapore 119260.
Tel: +65 874 35 49
Fax: +65 775 55 02
e-mail: bemv@nus.edu.dg

Architecture and design competitions

Finland

Paroc Fire-Proof Panels Award 2000

International award with a US$10,000 prize fund inviting designs for buildings incorporating innovative installations of fire-proof panelling. Entries can be submitted until 1 December. Contact John Brauer Lynderup, Paroc Finland , FIN-21600 Parainen, Finland.
Tel: +358 204 55 6219
Fax: +358 204 55 6523
e-mail: john.lynderup@partek.fi

France

Europandom: Constructing the town in the French tropics

International ideas competition asking architects under 45 for responses to the urban problems of four sites in the French overseas *departements* of Guadeloupe, Martinique, Reunion and French Guiana. Entrants must address the social, political and logistical problems of building in these areas. Organisers include the French Secretariat d'Etat a l'Outre-Mer, and Direction de l'Architecture et du Patrimoine. Contact Europandom, 53 Rue des Deux Commes, 93100 Montreuil.
Tel: +33 1 55 86 95 55
Fax: +33 1 42 87 59 95
e-mail: e_pandom@club-internet.fr
Web: http://www-europan.gam-sau.archi.fr

Italy

A Handle for the Third Millennium

Entrants are invited to design a door or window handle and accessories. There are two separate categories for professional designers and architects, and students and institutes. Prizes of up to US$1,000 are on offer, and the deadline is 29 October. Contact Gruppo Editoriale Faenza Editrice SpA, Via Pier De Crescenzi, 44-48018 Faenza (RA).
Tel: +39 05 4666 3488
Fax: +39 05 4666 0440
e-mail: info@faenza.com
Web: www.faenza.com

USA

King Memorial Competition

International invitation to design the new Martin Luther King Memorial in Washington. Registration is due by 15 October and submissions by 1 December. Contact Dr E Jackson Jr, Martin Luther King Memorial Project Foundation, Department 211, Washington DC 20055-0211.
Tel: +1 410 554 0040
Web: www.mlkmemorial.org

Graphisoft Prize – International Design Competition

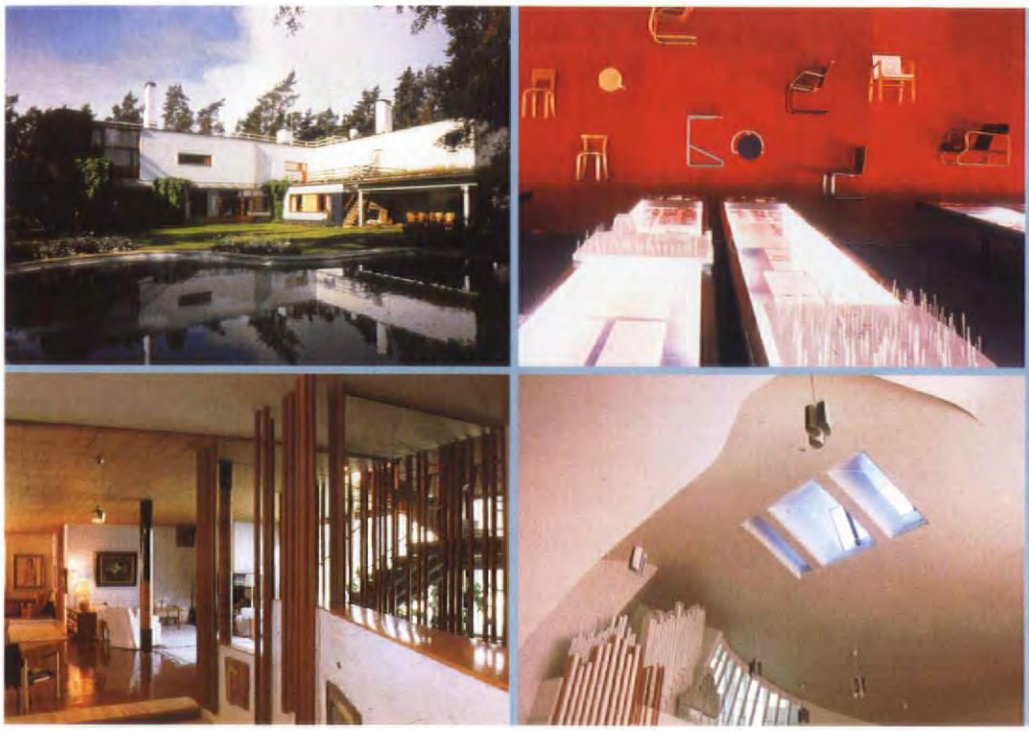
Open competition calling for ArchiCAD designs which interpret one of a selected list of historical or fictional buildings. The registration and submission deadlines are 10 and 22 September respectively. Contact Graphisoft at 235 Kansas Street, Suite 200, San Francisco, CA 94103.
Tel: +1 415 703 9777
Fax: +1 415 703 9770
e-mail: gsprize@graphisoft.com
Web: www.gsprize.comv

Exhibitions

Canada

Carlo Scarpa, architect: Intervening with History

An examination of Scarpa's approach to contending with the layers of history that mark the fabric of a city, and his ability to weave new work into an urban context. Until 31 October at the Canadian



Juss Tiainen

DENMARK: EXHIBITION

Alvar Aalto in Seven Buildings

The life and work of the Finnish master of modernism is explored through seven key buildings, via photos, models, fabric samples and texts. From 20 November until 2 February 2000, at the Nordjyllands Kunstmuseum, Kong Christians Alle 50, DK-9000 Aalborg.
Tel: +45 98 13 80 88
e-mail: nord-kunst@aalbkom.dk

Clockwise from top left: Villa Mairea, Noormarkku, 1937-39; the exhibition; church, Vuoksenniska, 1956-58; Villa Mairea

Centre for Architecture, 1920 rue Baille, Montreal, Quebec, Canada H3H 2S6.
Tel: +1 514 939 7000
Fax: +1 514 939 7020
e-mail: mmeilleur@cca.qc.ca

Cuba

The Havana Project – Architecture Again

This exhibition of architectural solutions to Havana's social problems, by internationally renowned architects including Coop Himmelb(l)au, and Thom Mayne, has travelled the world for the last three years (see *WA*76 page 57). It will be in Havana from 27 October to 9 January 2000, at the Centro Nacional de Conservacion, Restauracion y Museologica, Convento de Santa Clara, La Habana.
Tel: +537 612 877
Fax: +537 335 797

France

singulier/pluriel – Architecture en Aquitaine 1995-1998

A selection of 57 recent innovative buildings in Aquitaine which respond to the region's changing social and cultural identity. The exhibition runs from 10 June to 31 October at the arc en rêve Centre d'Architecture in Bordeaux. A round-table discussion session takes place on the opening night. Contact the arc en rêve Centre d'Architecture, Entrepot, 7 rue Ferrere, F-33000 Bordeaux.
Tel: +33 5 56 52 78 36
Fax: +33 5 56 48 45 20

The Netherlands

Kisho Kurokawa, Architect

This retrospective of Kurokawa's work – presented through models, drawings and photographs of his best-known projects – takes place in the new Kurokawa-designed wing of Amsterdam's Van Gogh Museum (see *WA*76 pages 46-53) until 14 November. The Van Gogh Museum can be contacted at Postbus 75366, 1070 AJ Amsterdam.
Tel: +31 20 570 52 00
Fax: +31 20 673 50 53
e-mail: info@vangoghmuseum.ne

UK

The Shape of Colour: Red

Analysis of the cultural meaning and effect of colour in our designed environment, asking how today's designers use colour to convey meaning. Contact the organiser of Glasgow 1999: UK City of Architecture and Design.
Tel: +44 141 287 7346
Fax: +44 141 248 8754
e-mail: info@glasgow 1999.co.uk
Web: www.glasgow1999.co.uk

USA

P.S.1 Contemporary Art Centre – Philip Johnson DJ Booth

Throughout the summer music will accompany events at the P.S.1 played from new a DJ booth designed by Philip Johnson. Exhibitions featuring Phillippe Starck, Claude Leveque and David Reed will run until 11 September. For details and a full programme contact the P.S.1 Contemporary Art Centre, 22-25 Jackson Avenue at 46th Ave, Long Island City, New York 11101.
Tel: +1 718 784 2084
Fax: +1 718 482 9454

Trade shows

Azerbaijan

BakuBuild

Covers the whole spectrum of building products, from construction to interior decoration. At the Baku Sports and Exhibition Complex from 29 September to 2 October. Contact the regional office of the International Trade and Exhibitions Group, 157 Abay Pr, Almaty 480091, Kazakhstan.
Tel: +7 3272 50 93 91
Fax: +7 3272 50 93 90

Russia

Batimat St Petersburg 99

Runs alongside the St Petersburg Heating, Ventilation, Air Conditioning and Refrigeration Exhibition and Interiors St Petersburg 99. From 27-30 October at the Lenexpo Centre. For details contact L&A Exibitions and Conferences, Dolgorukovska St 18, Building 3, Moscow 103006.
Tel: +7 095 935 7350
Fax: +7 095 935 7351
Web: www.ite-exhibitions.com

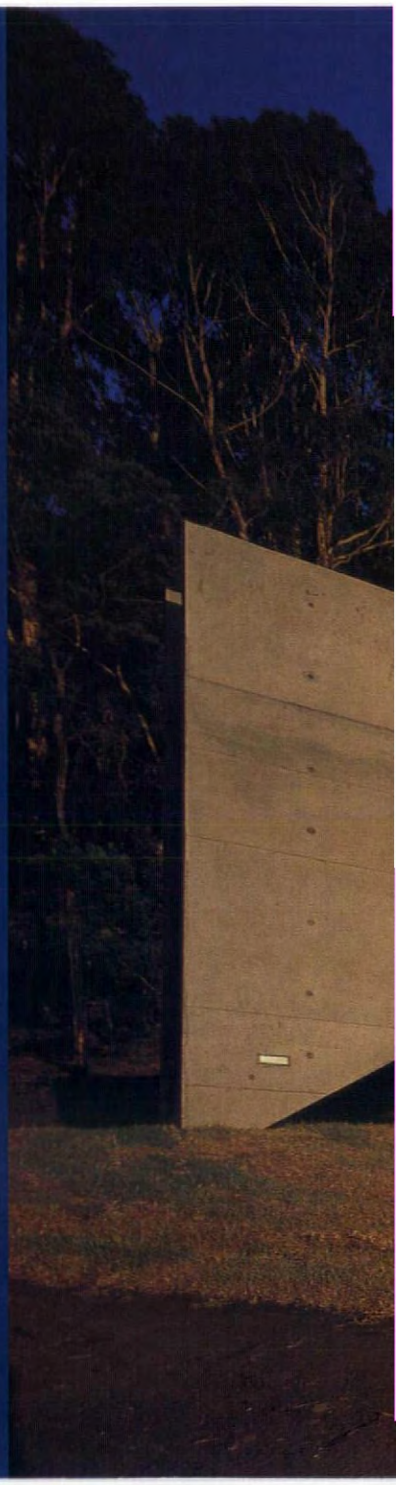
Singapore

Luminaire Asia 99

Trade show and conference catering for the Asian lighting market, in which Singapore supports the most business. From 20-23 October at the Singapore International Convention and Exhibition Centre. Contact Mr Chow Wai Kuen, Luminaire Asia 99, SICEC, 1 Raffles Boulevard, Suntec City, Singapore 039593.
Tel: +65 431 2293
Fax: +65 431 2268
e-mail: ep@sicec.com

Building study

Temple of learning



Australia's most eccentric and successful architect, Glen Murcutt, teaches some valuable lessons in the architecture of dignity and restraint in his award-winning Arthur and Yvonne Boyd education centre on the Shoalhaven River, three hours from Sydney. Anne Susskind reports.

John Gollings/Esto

Above: Projecting sun shields and bed alcoves of the southern end of the dormitory wing, with the concrete-walled staircase on the left

"To visit this building on the Shoalhaven River is to experience an architectural work of dignity and restraint, capturing the spirit of the Australian landscape..." So said the Royal Australian Institute of Architects awards jury for New South Wales in awarding the Arthur and Yvonne Boyd education centre its highest accolade for public architecture this year.

The Arthur and Yvonne Boyd education centre is in a bushland setting about three hours drive from Sydney, Australia, at the end of a winding dirt road. Its site is a 1,000 hectare parcel of land given to the Australian people in 1993 by the late Arthur Boyd and his wife. Boyd, one of Australia's most famous painters, died earlier this year.

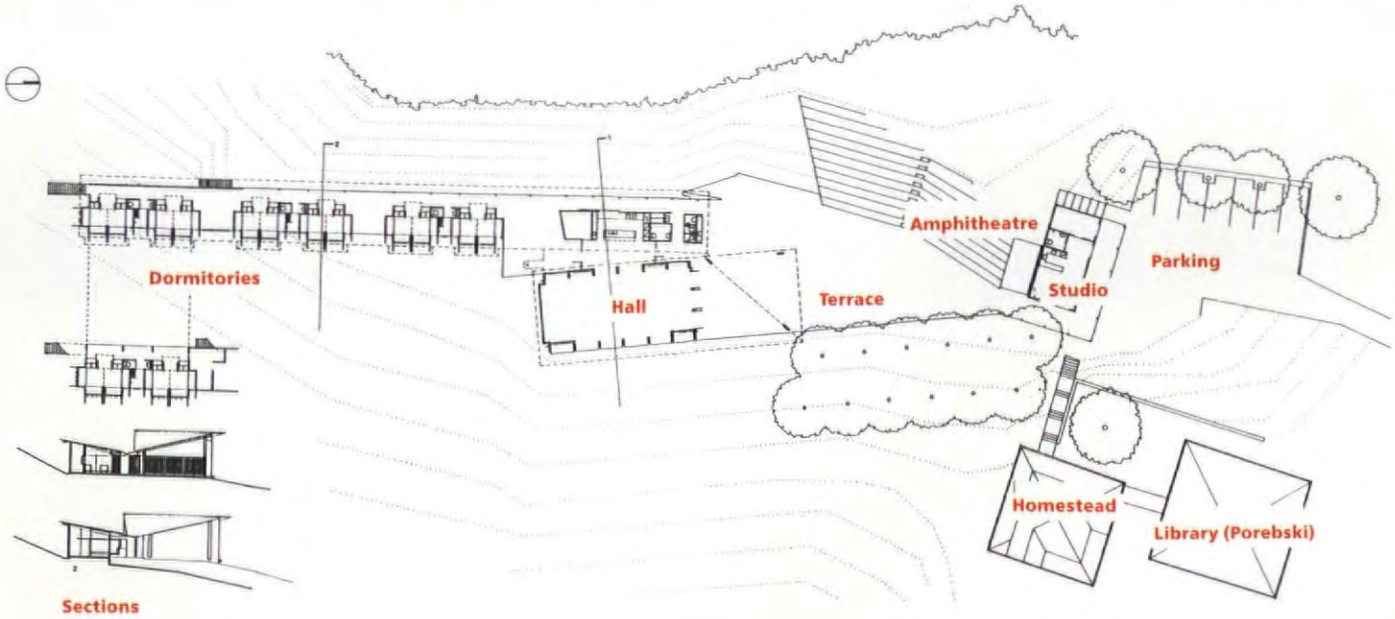
The aim of the centre is to provide a "living arts centre" for young people to complement an existing artists-in-residence program on an adjacent site. It houses accommodation for 32 students, a hall for 100 people, and an outdoor amphitheatre for 350, big enough for a full orchestra.

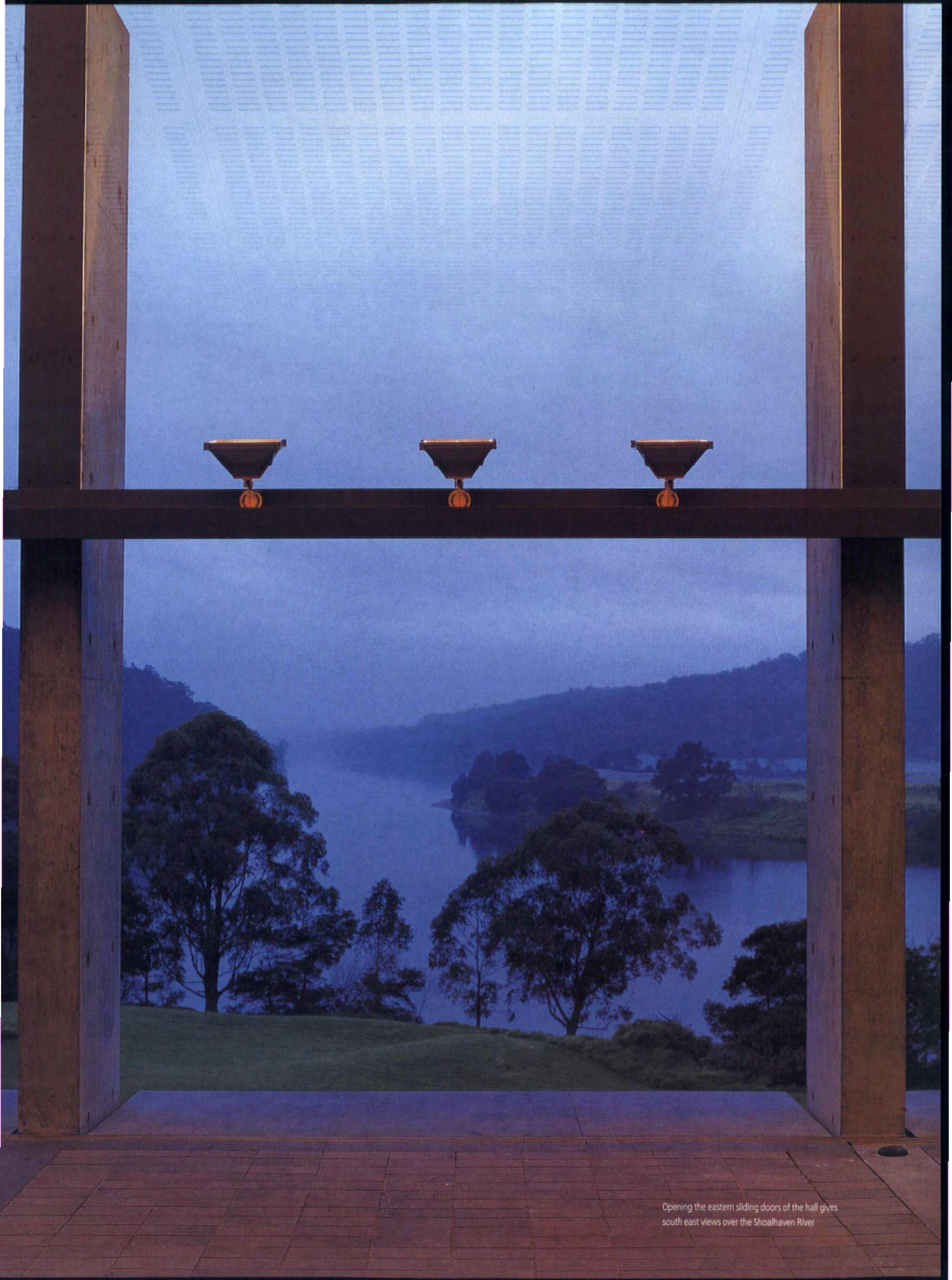
It was designed by Sydney architect Glenn Murcutt, in association with his wife and partner Wendy Lewin and Reg Lark. Murcutt, although one of Australia's most celebrated architects (he is seen as having defined a unique vernacular architecture), has to date designed mostly houses because he so dislikes the compromises involved with commercial projects. He often works alone, so he can keep control, making perfectly crafted houses for hand-picked clients he is comfortable with.

He and Lewin work from the front bedroom of a terrace house, while Lark works in a converted garage. They don't use computers at all – their drawings are all done by hand, in pencil and ink only, until they are handed over to the engineer.

The new work is sited on the mid rise of a hill, overlooking the wide Shoalhaven River which Boyd made famous in his paintings. The rise to the west, according to the architects, "offers protection from inclement weather along the open access verandah, providing a sense of refuge for young students not ▸

Anthony Browell





Opening the eastern sliding doors of the hall gives south east views over the Shoalhaven River

► accustomed to the insecurity often generated by the native landscape."

The site – which already contained three stone and timber cottages, one of which was Boyd' s studio – is, Murcutt says, "a very complex context" encompassing the houses, farmland, a river and native bush. In effect, says Murcutt, it is two landscapes, a "cultivated picturesque European landscape, and native bush". The new structure straddles both – the cultivated to the front, between the centre and the river, and the native bush behind – and both are legible from all areas.

The education centre is full of surprises. It is a building discovered, uncovered, by degrees. On arrival, visitors are greeted first by the old houses, and are virtually unaware of the centre's presence. They traverse a wide open paved terrace of brickwork and bluestone – which doubles as a performance space for a not-yet-completed open amphitheatre rising up a concave hill on the right – an area likened to a "hinge" between old and new.

Most striking on approaching the new building is its angled corrugated iron verandah roof (corrugated iron is a Murcutt trademark, a material he rescued from backyard obscurity to make extremely fashionable), described by Lewin as "light, almost like a kite. It looks as if it has been held there by a string almost". She says the immediate reason for "folding the roof back" was to bring in the northern light. But it also "happily addressed" the more distant elements of the typography, the ridges and saddles of the hills, as well as the existing buildings and the amphitheatre to the west. Its angle captures and frames a perfect view. Says Murcutt: "The roof lifts

Anthony Browell

and catches the entire top of the mountain... See how it captures the hills."

The interior always focuses on landscape outside. Huge glass doors to the north and east (which frame the views Boyd loved to paint in his Shoalhaven River series) slide away, when the climate allows, to form a completely open room. Slatted sliding screens of recycled oregon can slide into place to filter or veil the river view. These panels also have an acoustic function, and together with the perforated ceiling allow indoor performance.

The other two walls, used to hang Boyd's paintings, are made from "off-form concrete, the better end of class three concrete, with its imperfections. We weren't wanting it so perfect that it had no character". Outside, the ground drops away sharply, with the effect of the river coming right up to, and into, the verandah and hall. Says Murcutt: "It's a Greek island temple quality, a typical thing, a platform and then there is the sea... it's a pretty romantic statement."

An accommodation wing is made up of a row of bedrooms stretching out along the landscape, following its contours, in four units or pods, three above and one tucked below at the southern end. The pods, which each accommodate eight students, are linked by a roofed verandah providing covered outdoor studio/workshop areas for students to meet. The accommodation takes advantage of the prospect east to the longreach of the Shoalhaven River with its massive rock outcrops. "Not only does this ensure young students wake up early, more importantly it offers each student an unforgettable introduction the subject matter of Arthur Boyd's work in his Shoalhaven series." ►

Facing page: Looking north-west uphill to the hall **Above:** Eastern elevation of the education centre, with the dormitory wing on the left and the hall on the right

Above: The projecting roof at the northern end of the complex **Below left:** The dining room – the interior of the centre always focuses on the external views **Below right:** The fins and blades, reminiscent of Le Corbusier, on the exterior of the dormitory block break up its monumental aspect

▲▲ Anthony Browell

▶ The bed alcoves are set half a metre above floor level, and cantilevered to one metre beyond the external wall. With lots of recycled wood, and views of the bush and river, their interiors are like tree houses, cosy, and also perhaps a little monastic, like cells, each looking to the hillside and each framing a different tree, beloved of the architect (spotted gum behind, turpentine and acacia trees at the water). Murcutt and his team describe the rooms as "related to camping bunkrooms".

Their exterior forms a sharp contrast. The living spaces, with their recessed windows, projected bays and white painted plywood timber framed fins, make a strong geometric Corbusier-like statement. These fins, or blades, break down the scale of the exterior mass, provide privacy between bed bays, and house sliding doors which can divide the rooms into two smaller spaces. They also increase the reflected light levels, and frame the views from each bed to the river.

Tucked in, right through the complex, are outdoor studios, little courtyards, steps to perch on, places to sit, paint, write, act, think and congregate. The buildings are naturally ventilated throughout, with autonomous water supply and waste management.

The centre has a monumental quality, yet sits well with the small domestic scale buildings around it. It is one of those all too rare structures that adds to and enhances a natural landscape, accentuating the site's raw beauty and transforming and binding its elements into more than the sum of their parts.

Murcutt, in the past, has been about "touching the earth lightly", about minimal impact. Here, he and his team are confidently asserting a right to be there, and engaging fully with the landscape. WA

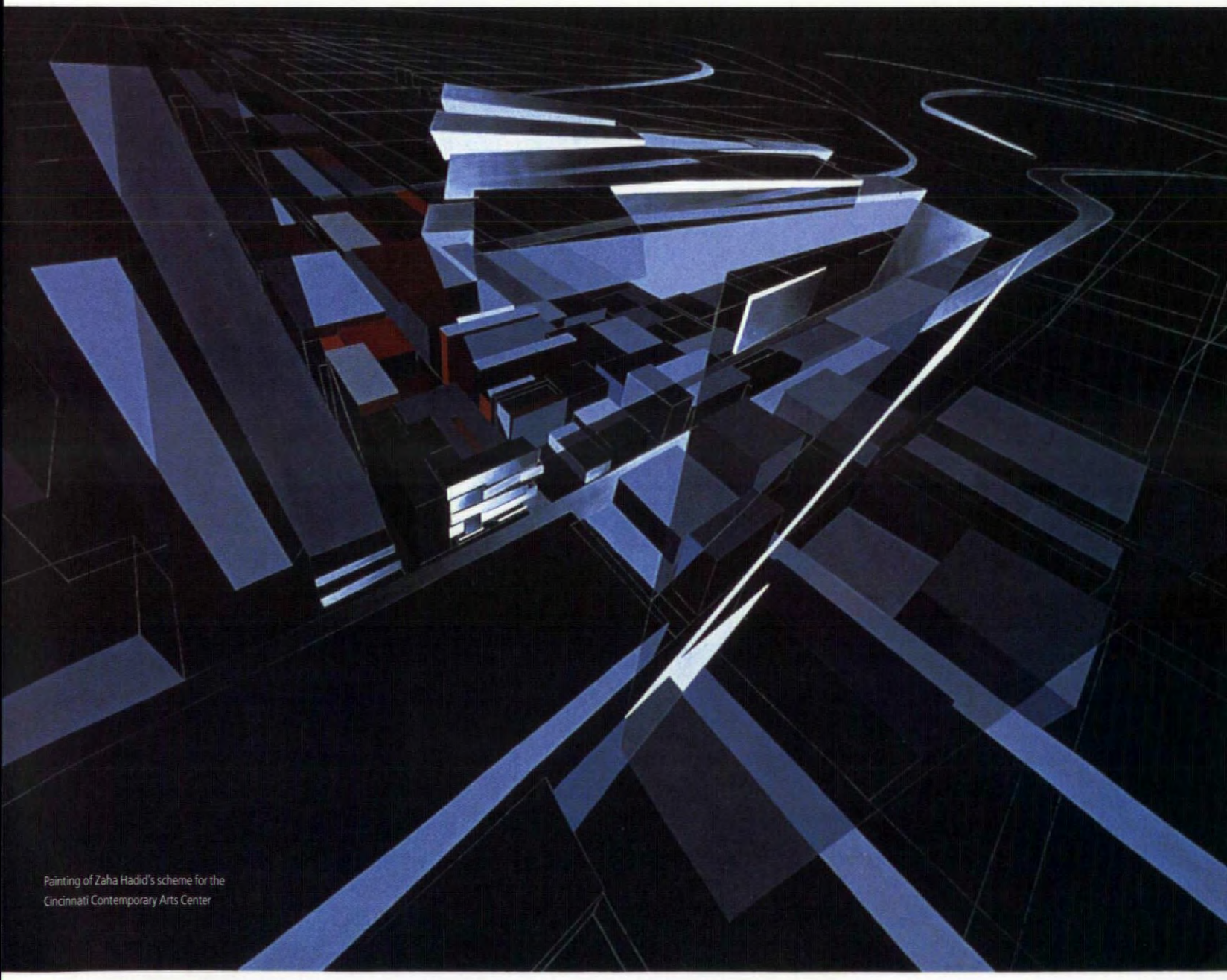
Architects
Glenn Murcutt with Wendy Lewin and Reg Lark
Client
The Bundanon Trust
Contractor
Berg Brothers
Civil and structural engineer
James Taylor & Associates
Electrical engineer
E Shelmerdine & Partners
Hydraulic engineer
Harris Page
Water management and sewerage
Dr Peter Bacon, Woodlots & Wetlands
Landscape architect
Schaffer Barnsley
Quantity surveyor
David Wallace, Northcroft (Australia)
Ordinance consultant
Derek Hendry Group
Heritage consultant
The Bundanon Trust

Below left: Folding back the roof of the canopy both brings northern light into the building and perfectly frames the mountains **Below right:** Each tree-house-like dormitory "pod", designed to sleep eight students, can be divided, by moving screen, into two-bed niches

▲▲ Anthony Browell

Regional focus – Midwest USA

Winds of change



Painting of Zaha Hadid's scheme for the Cincinnati Contemporary Arts Center

In the last decade the architecture of the Midwest has lost its pioneering spirit. However, an influx of private-sector projects and government-backed regeneration, helped by the global economy, is attracting big-name architects to challenge this conservatism. Barbara Hower reports.

The Midwest of the US, geographically and ideologically, is the heart of the nation. Unlike the east and west coasts, the Midwest doesn't seem to fall victim to stylistic gyrations or the passing fancies that interest the rest of the country. Fuelled in large part by a growth economy, the region has seen an influx of private-sector projects that are contributing to the revitalisation of many of the region's cities. Local governments and public entities which value the architectural heritage of the region have been actively working to give their constitutencies an improved quality of life by bringing reinvestment, new development, and regeneration to many Midwestern cities.

The growth economy has also resulted in a more global architectural community: internationally known architects are building in the region in great numbers, and Midwest firms are working both nationally and globally. Midwest architects are busier than ever. But to what end? According to many Midwesterners, the area's architecture is mired in a conservatism attributable to architects, clients, and the national business climate, and encouraged by the large number of service industries located in the region. One architect commented that heads of banks or insurance companies are more conservative than their coastal counterparts in creative industries such as film or fashion. "Chicago is in the shadows now," says Benjamin Weese of Chicago's Weese Langly Weese Architects. "It seems like we're talking more about the East Coast, West Coast, or international movers and shakers these days."

This cry of conservatism is heard with particular resonance in Chicago, long considered the centre of US architecture. Among many other claims to fame, the city played a functional role in the development of the tall office building, with the treatment of curtainwalls by the Chicago School, and a stylistic role in the cultivation and dissemination of both Wright's Prairie style and the International styles of architecture of Gropius and Mies van der Rohe. Throughout its history, Chicago's building designs have been based on rational thought, with engineering as the basis for its development. "It hasn't strayed a lot to embrace new stylistic tendencies, but this doesn't take away from the city," comments Adrian Smith partner at Skidmore, Owings & Merrill (SOM) in Chicago.

The Midwest is inherently conservative, politically and economically. "Until recently, Midwesterners were less likely to dish out unreasonable sums to have radically new buildings built than were their coastal counterparts," says Randall Deutsch, a partner in Chicago's Lucien Lagrange and Associates. "American business has become extremely bottom-line oriented and are rarely willing to take any aesthetic risks or use their buildings as expressions of the corporate image or culture," says Dirk Lohan, president of Chicago's Lohan Associates.

Clients' wishes also seem to be driving what architects are producing, and right now, they want buildings that are "safe" and prefer styles and skin treatments that are "tried and true". "We've had to turn away about 80 per cent of the clients that approach us, so I wish the economy would slow down some," said Daniel Wheeler of Chicago's Wheeler Kearns. "Everyone now wants to build quickly, and contractors are shying away from what they're uncomfortable building."

Said another architect: "We don't have clients coming to us ▶

REGIONAL FACTFILE – MIDWEST USA

The land: The Midwest comprises 12 states in north central US – Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota and Wisconsin, with a total area of 1,982,723 square kilometres, about 21% of the total US area.

Climate: Continental, with full summers and cold, sometimes severe, winters.

Population: About 58.5 million, nearly 22% of the total US population, 72% urban (US average is 76%). Chicago, the largest city in the Midwest, is the third largest in the US. Six of the 25 largest cities are in the Midwest. Population density is about the same as the total US, 29 people per square kilometre.

Language: Predominately English.

TRAVEL INFORMATION

Time difference: Most of the Midwest is in the Central Standard Time (CST) zone, which is six hours behind Greenwich Mean Time (GMT). However, Indiana and Ohio are on Eastern Standard Time, five hours behind GMT.

Currency: US dollar ($) divided into 100 cents.

Rates of inflation: The region expects the building industry rate of inflation for 1999 to be between 5 and 6%.

Airport information: Major cities have an international airport. Local air travel is readily accessible with a vast number of domestic flights.

Dialling code: The inward dialling code for the US is 1. Dialling out code is 011.

ECONOMIC DATA

Consumer price index: 1990=100

1994	113.4
1995	116.6
1996	120.1
1997	122.8
1998	124.7

Exchange Rates: US$ = 1.00

	UK £	Germany DM	Japan Y
1994	0.640	1.55	100
1995	0.645	1.43	103
1996	0.595	1.55	115
1997	0.599	1.77	129
1998	0.603	1.68	114
1999 (May)	0.611	1.82	120

► and saying 'we want to examine this or that'; rather, they want what's been done before. They've got the money and the control." Another theory as to why local architects aren't pushing the envelope much these days is the legacy of post-modernism. Many of those running architecture firms today were young – either still in architecture school or just starting out in a firm – when post-modernism first came on the scene.

Bring on the big guns

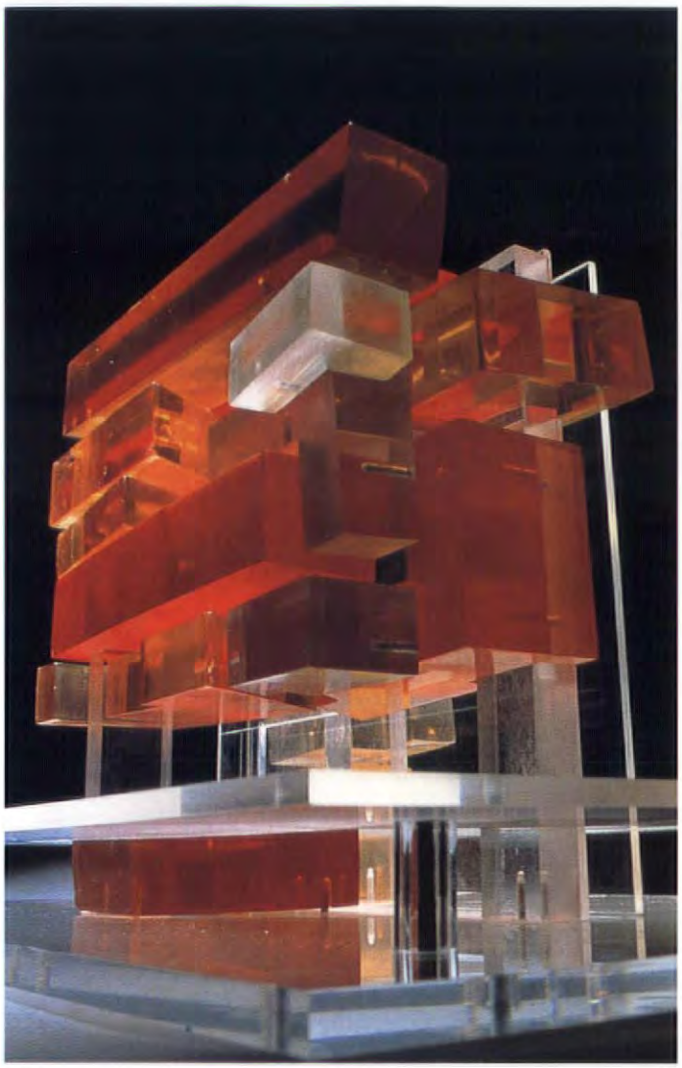
However, it is this very dislike by clients of employing unknowns, combined with the effects of the global economy, which is encouraging an influx of projects by nationally and internationally known architects into the Midwest.

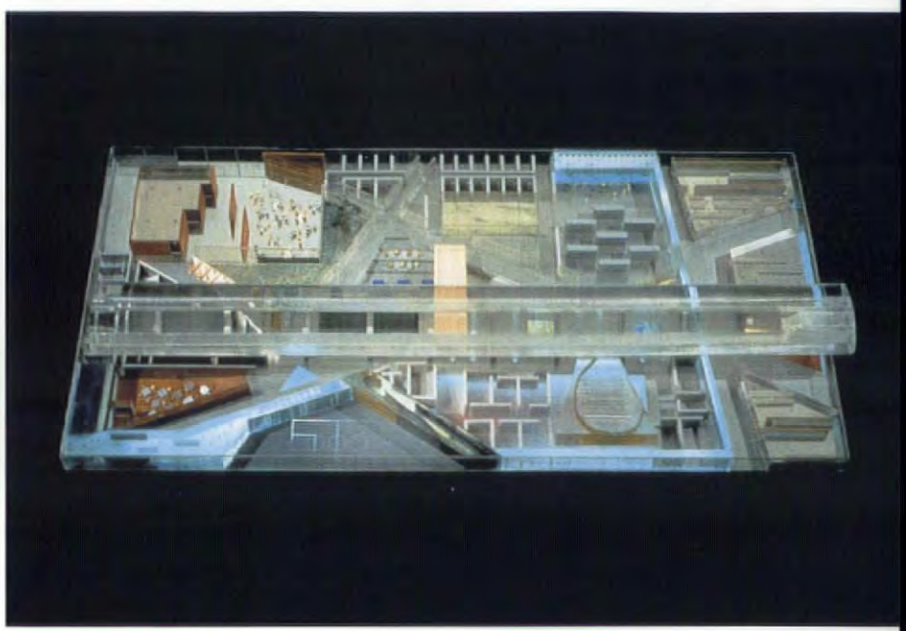
The Milwaukee Art Museum recently began construction of a US$50 million addition to its 1957 Eero Saarinen building, on the shore of Lake Michigan, by Spanish-born architect, engineer and sculptor Santiago Calatrava. The addition, scheduled for completion in 2000, will feature a grand gathering place – a transparent structure enclosed by a sculptural, light-controlling sunscreen that can be raised or lowered. A suspended pedestrian bridge with a 60-metre angled mast and cables, reflecting the architect's experience in bridge design, will link one of the city's main thoroughfares, Wisconsin Avenue, with the museum and the lakefront. The project also includes a long, single-storey structure that will add exhibition space and a lecture hall. This portion has been purposefully kept low so as not to obstruct views of Lake Michigan. In early July, the *Milwaukee Journal Sentinel* reported that the Milwaukee School of Engineering unveiled plans for a gymnasium and classroom building, also by Calatrava. The school is reported to have pledges of as much as US$11 million for land acquisition and construction. Construction could begin as early as next year, with completion by the end of 2002.

In Cincinnati, the Contemporary Arts Center (CAC) will be designed by London-based architect Zaha Hadid. The new CAC, budgeted at US$27.5 million (including land acquisition and endowment), is to be built on an 1,100-square-metre corner lot in the heart of downtown. The CAC, which has already been hailed as "a landmark rupture in architectural history", will be the first art museum in the US designed by a woman and the first project realised in the US by the acclaimed London designer. The building features what the architect calls an "urban carpet". Hadid explains: "We take the existing grid of the city – the lines that meet at the corner of Sixth and Walnut - pull it into the centre at ground level, and allow it to curve slowly upwards." As it rises and turns, the "urban carpet" will lead visitors up a suspended mezzanine ramp and into the gallery spaces.

Arata Isozaki (with NBBJ and Moody/Nolan) is stealing the limelight in Columbus with the US$125 million COSI innovative science centre. The scheme anchors US$2 billion planned economic development already under way in Columbus, including sport, residential, retail, commercial and entertainment facilities.

In Chicago, Rem Koolhaas of the Office for Metropolitan Architecture in Rotterdam was awarded the Richard H Driehaus Foundation International Design Competition for the new Campus Center at the historic Illinois Institute of Technology campus by Mies van der Rohe. The McCormick Tribune Foundation donated US$10 million towards the 10,000-square-metre building, to be named the McCormick Tribune Campus Center, which will be the first new building on the main campus in a generation. Koolhaas's vision is for a one-storey building passing beneath the elevated rapid transit train tracks with a steel tube on its roof to encircle the nearby train tracks and mitigate train noise. Stores will be placed along 33rd Street, and diagonal passages, mimicking paths students now take to cross the site, will run through the building. Completion is scheduled for spring 2000.





Left: Massing model of Zaha Hadid's Cincinnati Contemporary Arts Center which has been hailed a "landmark rupture in architectural history" **Above:** Rem Koolhaas's vision for the McCormick Tribune Campus Center at IIT is a one-storey building with a steel tube on its roof to encircle the overhead tracks and mitigate train noise

Also in Chicago, three new projects have been announced, to be designed by Renzo Piano, Ricardo Legorreta, and Cesar Pelli. Piano was selected to design an addition to the Art Institute of Chicago to house approximately 7,500 square metres of gallery space. Scheduled for completion by 2005, the addition will sit on a deck built over existing commuter railroad tracks. Ricardo Legorreta has been selected to design a student dormitory at the University of Chicago, and Cesar Pelli has been tapped to design an athletic facility, also at the University of Chicago. Of late, the University of Chicago has been redoubling its efforts to create a more attractive undergraduate life for its Hyde Park Campus on Chicago's south side, and the selection of these high-profile architects suggests the university is seeking a certain cache.

The selection of Piano, Legorreta, and Pelli has caused some controversy in Chicago, and prompted Blair Kamin, architecture critic for the *Chicago Tribune* to note: "In Chicago, the city that calls itself the cradle of modern architecture, local designers feel like snapping their drafting pencils when a plum job goes to an outsider... [The hiring of Piano] caps a recent spate of major Chicago commissions being snagged by out-of-towners who, in the view of some clients, bring a brand-name bite and pack an aesthetic punch many locals can't match." Generally though, the consensus is that Chicago architectural talent can hold its own. "I'm reluctant to say that we're retrograde simply because we don't have buildings that are held up by cable or that look like wadded up pieces of paper," said Howard Decker of DLK Architecture in Chicago. "Lately, buildings are becoming a version of designer-label clothes. It seems we need a fill-in-the-blank-designed building as a sign of status."

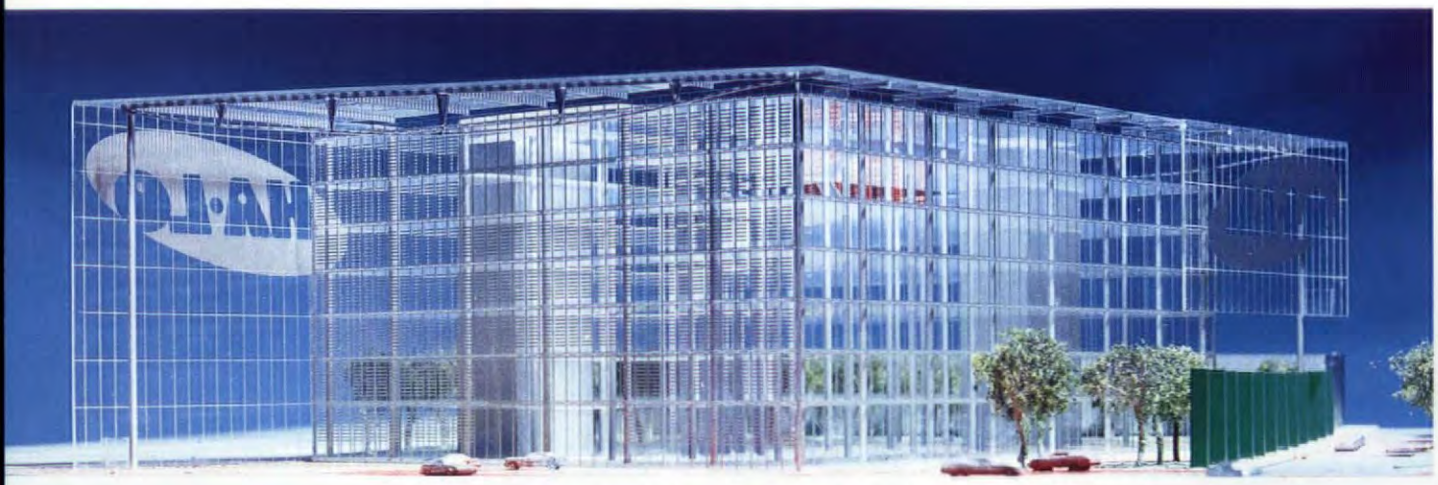
Not all agree that the appearance of out-of-town architects is a bad thing. "I'm glad that people like Piano are here," says Peter Exley, principal of Peter J Exley Architect. "Chicago shouldn't become a homogenous place." In speaking of the international architects that have been selected for important Chicago commissions, Lohan noted: "One can only hope that they will teach a lesson to our city about advancing architectural design."

Reclaiming the high ground

One area in which Chicago is certainly not conservative is that of height, and it will soon again have the bragging rights to the world's tallest building – 7 North Dearborn – at 112-storeys and 461 metres. A consortium of local television stations will use new 139-metre digital antennas that will be part of the structure. SOM's Adrian Smith is designing the building, which will feature a facade of stainless steel accented by light-green glass. Six distinct groups of floors will be visible; the lower two groupings will be separated by standard setbacks, while the upper four will be divided by distinctive notches that underscore the building's role as a transmission tower and reveal its cantilevered construction.

Going to town

To improve the quality of life for their residents, many Midwestern cities are attempting to inject new life into their city centres. The exodus of city dwellers from urban areas to the suburbs has started to abate as developments that are attracting people to move back to urban downtowns continue ►



Clockwise, from top left: Model for the HALO HQ in Niles, Illinois, to be completed next year, by Helmut Jahn – one of Chicago's most successful architects working overseas – who is at the forefront of American architects' use of high-tech materials and techniques; 7 South Dearborn – SOM's design for Chicago's new tallest building; COSI science centre in Columbus, Ohio by Isozaki; expansion model of Santiago Calatrava's Milwaukee Art Museum

► to spring up. Investment in the public realm and attempts to improve the overall quality of life is evident in the astonishing number of cultural and entertainment projects under way or recently completed.

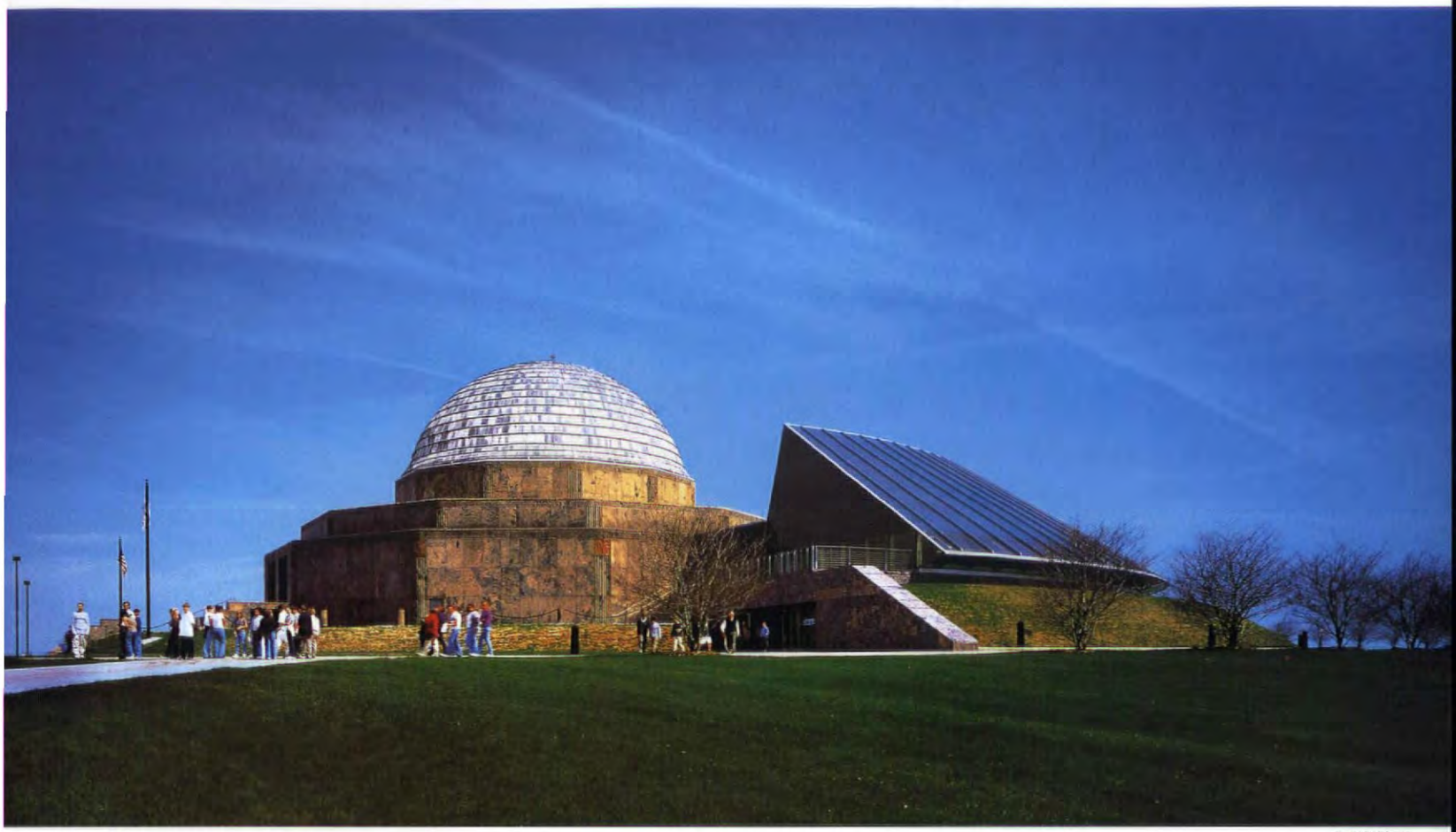
Milwaukee, Wisconsin, too, is eyeing adaptive reuse as a viable source of new housing in its Third Ward District, a historic warehouse district turned thriving arts community where home buyers are snapping up loft spaces. Along the once-neglected downtown shores of the Milwaukee River, a 3.2-kilometre-long riverwalk has drawn a mix of restaurants, businesses, and housing developments. The mayor of the city, John Norquist, is a prominent participant in national discussions of urban design and is seen as a driving force in revitalising downtown Milwaukee. Norquist's book, *The Wealth of Cities: Revitalising the Centers of American Life*, outlines a blueprint for revitalising America's urban centres. Adaptive reuse projects such as these have broad implications on how cities work. Along with the new residential projects eventually come shops, cinemas, and other venues, such as recreational and cultural facilities, that cater to the people who live in these areas. "This type of activity [renovations, etc] is a trend that is far more important to a city than style issues because it speaks to a city's quality of life," says SOM's Smith.

Also planned for Milwaukee is a 10,000-square-metre Harley Davidson Museum in the brewhouse of historic Schlitz Park, a former brewery near downtown Milwaukee. Kubalo Washatko Architects of Cedarburg, Wisconsin, is performing the feasibility study for the project.

In Indianapolis, Indiana, efforts have been made to revitalise the heart of the city, which has numerous new sporting facilities, museums, office buildings, and restored residential areas. Perhaps most important in the city's revitalisation was the opening of Circle Centre??, which provides tourists and residents with numerous shopping, dining, and entertainment options. Ehrenkrantz & Eckstut Architects of New York worked with Centre?? Venture, an Indianapolis-based joint venture of Browning Day Mullins Dierdorf and CSO Architects, on Circle Centre??'s design.

Once the archetypal example of urban disinvestment, the downtown of Detroit, Michigan, is getting a much-needed shot in the arm, thanks in large part to the efforts of Mayor Dennis Archer. Of particular note, General Motors is going to transform a 1970s landmark, the 220,000-square-metre Renaissance Center, into its world headquarters. The complex will include a 73-storey hotel and tens of thousands of square metres of retail space. Among the planned changes are removing berms that block the entrance from the rest of downtown, introducing more user-friendly architectural elements to mark the centre's front entrance, and creating a five-storey glassy wintergarden that will house restaurants, shops, and other amenities along the Detroit River side. It is hoped that GM's purchase of this building will encourage existing Renaissance Center tenants to remain downtown and attract new businesses to a revitalised central business district. Skidmore, Owings & Merrill is assisting Hines and General Motors as master architect/engineer.

Downtown Cincinnati is experiencing development activity in all areas, including office, housing, retail, and entertainment, with nearly US$4 billion allocated for public- and private-sector investment. Plans are under way for new residential



James Steinkamp

Above: Lohan Associates' addition to the Adler Planetarium, part of the new Museum Campus Chicago on the lakefront in Chicago, which includes the Shedd Aquarium and Field Museum. The campus is a 23-hectare extension of Burnham Park at Lake Shore Drive and Roosevelt Road, created by relocating Lake Shore Drive

developments, a major downtown grocery store, and federal, state, and local funding has been approved for a US$147 million reconstruction of Fort Washington Way, a major transportation artery that will reconnect downtown Cincinnati to the Ohio River and reclaim six hectares from roadway use for Cincinnati riverfront development.

In Missouri, the St Louis HQ of Hellmuth, Obata + Kassabaum (HOK) is at work on a number of projects both in St Louis and elsewhere in the Midwest, including collaborating with the Missouri Historical Society to renovate and expand the historic Jefferson Memorial Building which houses the museum. The expanded facility will provide exhibition spaces, a 350-seat auditorium, and a museum shop and restaurant.

HOK also designed the 103,763-square-metre Thomas F Eagleton United States Courthouse in St Louis. This urban landmark, with 28 occupiable floors above ground and four of parking and support space below, has a split-level stacking scheme that increases volume metric efficiency, offers all judges chambers a view of the Mississippi River, and develops dramatic public lobbies for each pair of courtrooms. HOK also designed the 4,100-square-metre Nidus Center for Scientific Enterprise, a biotechnology and life sciences incubator in St Louis, which will be one of the first certified "green" laboratory buildings in Missouri and the Midwest. The design features materials and elements that reflect agrarian architecture, such as stone, corrugated metal, natural wood, and metal storm water cisterns.

During the 1990s, Chicago has been enjoying a loft housing boom, with a plethora of old industrial, commercial, and office buildings being converted into residential spaces. One of the city's largest condominium developments, with almost 100,000 square metres of space, is Randolph Place by Chicago architect Hartshorne + Plunkard. Loft accommodation ranging in size from 77 to 200 square metres has been carved from a former warehouse building, which also served time as offices for the Chicago & North Western Railroad at Randolph and Canal streets.

Political intervention

Richard M Daley, mayor of Chicago, is never far from discussions on the strides made by Chicago in improving its built environment. His love of trees and wrought iron is legion and improvements to the cityscape continue unabated. Making the city more livable is a top priority of his administration. The new Museum Campus Chicago on the lakefront links the Shedd Aquarium, Field Museum and Adler Planetarium, and is a large-scale commitment to improving the city's quality of life. The campus is a 23-hectare extension of Burnham Park at Lake Shore Drive and Roosevelt Road, created by relocating Lake Shore Drive. The US$101-million Lake Shore Drive Improvement Project relocated the drive's northbound lanes between 23rd Street and Balbo to the west side of Soldier Field and the Field Museum. Underground concourses, the extension of the Roosevelt Road Bridge, and the return of four hectares of former roadway back to lakefront property have immensely improved pedestrian and cycle access, while the walkways and terraced gardens of the Museum Campus afford easier and more scenic route to the three museums. Teng & Associates designed the museum campus; Lohan Associates has been involved in multiple improvements to the Shedd Aquarium and▸

Barbara Karant

Above left: Carson Elementary School in Chicago, a courtyard prototype for Chicago's Capital Improvement Program for all new elementary schools and additions by DeStefano + Partners **Above right:** An alternative to the DeStefano blueprint; Ross Barney + Jankowski's Little Village Academy in the heart of Chicago's Mexican-American community showing the curved skylit sair enclosure, highlighted by a three-storey vertical sundial

► designed a 6,000-square-metre addition to the Adler Planetarium; Perkins & Will has been retained as part of a phased masterplan team to serve as the design architect for the Shedd Aquarium; and EHDD, in association with Schwartz Architects, provided architecture, planning, and interior design services for the aquarium.

SOM is masterplanner, co-ordinating architect and engineer for the 6.6-hectare Millennium Park (see page 61), which will complete Daniel Burnham's vision of Chicago's Grant Park which reserved the lakefront for public recreation.

Schools of thought

The Chicago Public School's capital programme is one of the most aggressive construction projects in the nation. Initially, US$806 million of projects were identified in Phase I of the programme. As priorities evolved and additional projects were identified, the funding sources increased, until today, where the capital programme has grown to nearly US$2 billion. Financial assistance for the programme came from the City of Chicago. The Chicago architecture firm of DeStefano + Partners is managing architect for the Educational Design Group Enterprise, the professional management and design team responsible for implementing the Capital Improvement Program for all new elementary schools and additions. DeStefano prepares 50 per cent complete construction documents, including specifications, which are then transferred to a prequalified architect-of-record for each school. DeStefano also developed the two prototype designs – "courtyard" and "linear" prototypes – on which all new schools and additions are based. Some projects completed under this approach are the Carson Elementary School, a courtyard prototype, architect-of-record, Mann, Gin, Dubin & Frazier, and the Sawyer Elementary School, a linear prototype by architect-of-record Loebl, Schlossman & Hackl.

But there are those who argue that the local government's scheme is not the only, or the best, approach to designing schools. At Little Village Academy Ross Barney + Jankowski produced an award-winning scheme on a tight site and budget for the city's Mexican-American community. Opened just over two years ago, the school was built for US$7 million and was a project of the Public Building Commission of Chicago. The tight 120x36-metre site, demanded a very efficient plan, so the three-storey building is organised around a central stair that forms the functional and spiritual heart of the school. The curved, skylit stair enclosure is highlighted by a three-storey vertical sundial, which also marks the building's main entrance. Other special rooms receive their own facade treatments – the library has a clerestoried reading room; the science lab has a greenhouse bay window; and the cafeteria curves into the playground. Materials for the building were selected for cost effectiveness and durability: split- and ground-face concrete block, glazed brick and block, and particleboard paneling.

The rebirth of a region

The Midwest is in a transitional period, but the future looks bright as a host of new firms enter the fray. As with all rebirths, it will take time to bear fruit, but the architectural heritage of this region runs deep, and the moment when its true vitality is reborn is keenly awaited. WA

CONSTRUCTION FACTFILE provided by Hanscomb

Industry overview: The Midwest has over 138,000 construction establishments, about 24% of the US total; over 1,000,000 employees, about 23% of the US total; and over $126 billion of construction in place, about 24% of the US total.

There are three states in the top ten for value of construction put in place (Illinois 5, Ohio 7 and Michigan 9), which account for almost 12% of the US total.

Construction outlook: The Midwest is in the middle of a construction boom, even though large-scale government projects are on the downturn. Several large-scale developments are in the planning stages, including residential, entertainment and offices.

The recession of the early 1990s reduced the labour force, meaning that the region is on the verge of a serious labour shortage. Material shortages are also becoming a factor, but are expected to be short term.

As contractors have the luxury of being selective, it is difficult to get enough quality tenders.

City snapshots

Chicago. The market is busy. Government spending has been minimal, except on renovations, road rebuilding and the new terminal at Midway Airport. Construction of single-family houses, residential high-rises and loft conversions is at a peak as Chicago experiences a migration into to the inner city. Several major high-rise office buildings and hotels are either in the planning or construction stages.

Detroit. The metropolitan market is very busy. Several major projects are either in the planning stages or under way, such as the new Tiger Stadium, Compuware, Lions Stadium, GM Warren Tech Center, Renaissance Center renovation, and a new terminal at Detroit Metro Airport. There were labour shortages this summer of 2,000 to 3,000 workers.

Cleveland. This market is at the end of a construction boom of several years. Several large public sector projects are now completed, including the Rock and Roll Hall of Fame, Jacob's Arena, the Grund Arena, and the Brown's Stadium. One large project on the horizon is the new Federal Courthouse, which is still at least a year away.

Cincinnati. A booming market with several large public sector projects including two stadiums under construction and a National Underground Railroad Museum in the planning stages.

Construction procurement: There is very little regulation of processes and, as a result, many choices facing building owners. Basically, there are three 'families' of ways of putting a project together:

- Traditional. Where an owner hires a firm of architects and/or engineers to design the project to a complete level of detail, including specifications. Tenders are then sought from a range of general contractors, which submit a lump sum price to carry out the work.
- Construction management enables construction to start before designs are complete. All methods for advancing the start of construction, while introducing competition and assuming a reasonably firm price, before design is complete invariably involve an owner in retaining a construction manager – a construction company or a professional CM firm – during the design phase. There is a wide range of contractual alternatives for getting the work started.
- Design & build/turnkey. This very common approach for relatively simple industrial facilities involves negotiating from a statement of owner requirements, with a single company taking responsibility for both design and construction.

Other features: The US is very large so architects, engineers, and contractors still tend to operate regionally.

Bills of quantities are not used, although schedules of quantities are used as the preferred method of bidding for civil engineering work.

There are some 15,000 architectural design firms in the US and 35,000 consulting engineers. Over half of these are small practices with less than five employees, but there are also some very large companies, which probably take in over half of the nearly US$10 billion spent on design work annually. Larger practices usually are multi-disciplinary architects/engineers. Some architects include interior design services, but there is a strong independent profession in this area.

There is also a wide range of general management consultants for construction management, project management, cost consulting, scheduling control, etc.

Construction documents legally have to be sealed by registered architects. Registration is granted by state, not nationally.

Contractors: The construction industry is dominated by the one million general contractors, some of which are huge, some of which are one-man operations. Unlike in Europe, owners prefer the general contracting approach to dealing individually with separate contractors, and are prepared to pay the premium to eliminate co-ordination problems and centralise liabilities.

General contractors sub-contract much of the work on a project. Overhead and profit markup for general contractors is 10-15% of direct costs. Insurance and bonds may be 1-2% (of bid price) per year.

Governing codes and standards: Building codes are adopted by local governments, so there is no single national building code, but three major model codes. The model code organizations have formed the International Code Council to develop a single model building code for the US by next year.

Non-government organizations develop material standards that are adopted by local authorities. The American Society of Testing and Materials (ASTM) is a major provider of material standards.

Construction cost guides

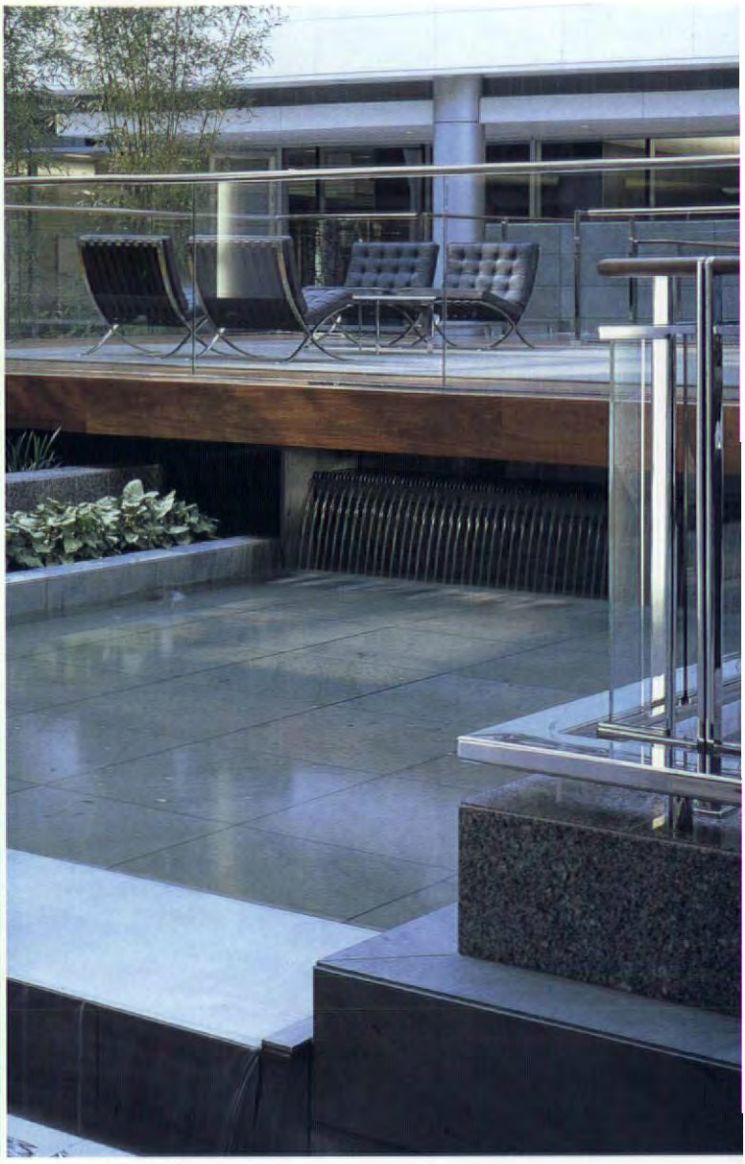
Pricing manuals: R S Means is a leading publisher of construction cost data. It publishes numerous construction cost guides annually and a quarterly index.

New buildings and projects in Midwest USA

Ground control

This year's recipient of the AIA's Architecture Firm Award, Chicago practice Perkins & Will first achieved recognition 63 years ago as an architect of educational facilities. It has since flourished in the world of institutional, public and corporate buildings, with projects in 49 states and 38 countries. With the recently completed headquarters building for WW Grainger, set in the rural Lake Forest site an hour north of Chicago, the architect is challenging accusations of conservative Midwest design solutions. Nicola Turner reports. Photographs by Steve Hall/Hedrich Blessing.

Above: The headquarters' position on the site, on a rise of land that traces the broad sweep of the woodlands, doesn't sacrifice available land or views to or from the buildings **Facing page:** View from the waiting area in the atrium which links the two buildings of phase one. The granite and stone of the exterior are continued in the interior and contrasted with the light Pilkington curtainwall



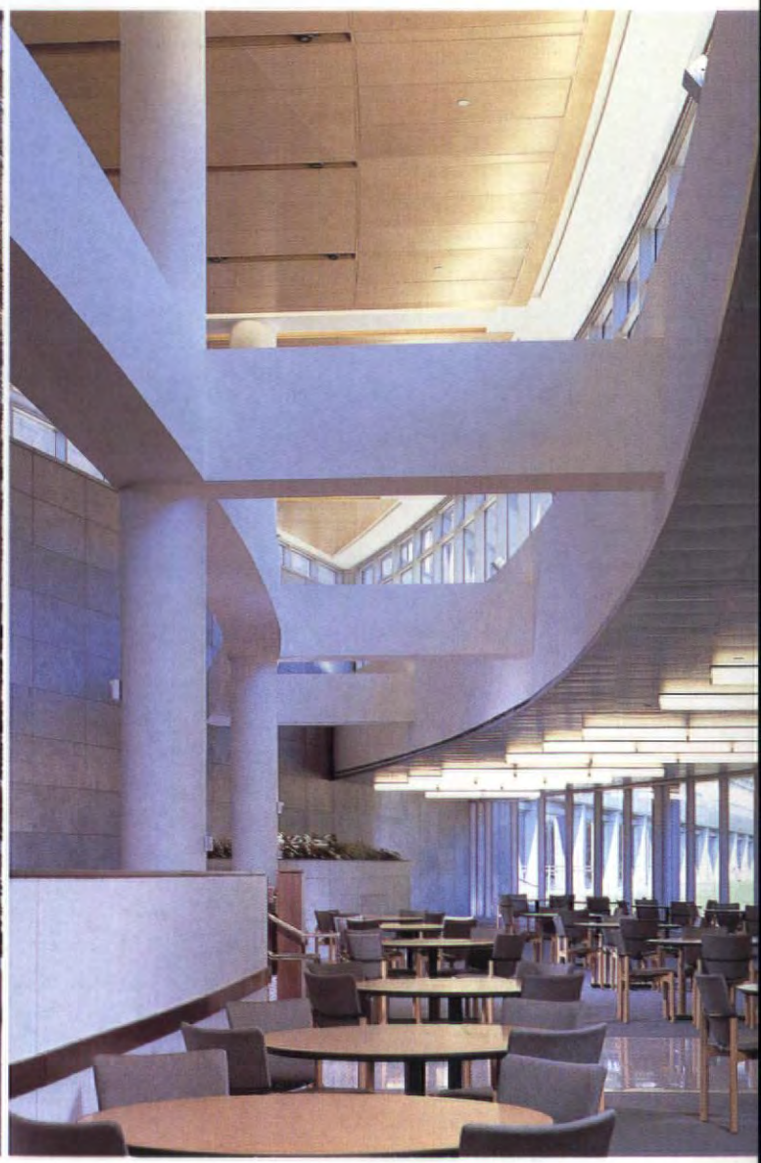
As the American Institute of Architecture's architecture firm of 1999, Perkins & Will has joined the likes of I M Pei & Partners, Cesar Pelli & Associates, and fellow Chicagoans, Skidmore Owings and Merrill – previous winners of the accolade. A morning spent touring the headquarters of distribution multinational WW Grainger confirms the architect's stature and arrival as one of the country's great "commercial" firms. Here is an office building that succeeds in spelling out the dominance and quality of WW Grainger without frightening the shareholders with inappropriate displays of opulence and overspending; a headquarters where profitability and work efficiency are top of the agenda, but which is state of the art when it comes to catering and fitness facilities and engendering a feel-good factor in all who wander through the lush landscaped interior. It's a subtle and effective ploy (employed by most highly designed office buildings at the end of the century), and one which could be faintly disturbing if thought about too deeply.

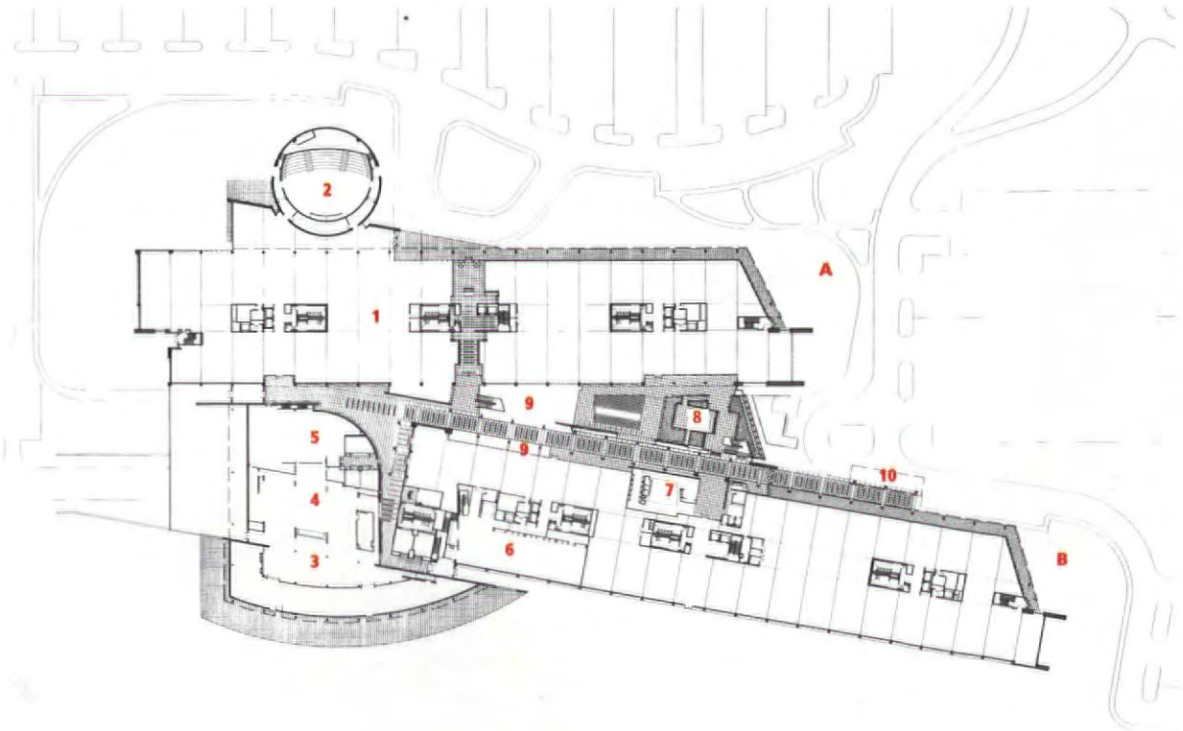
For the client this was a project which invited imagination and innovation, unlike its other buildings which are mostly distribution "sheds". As a result WW Grainger was keen to explore the organic imagery of the 65-hectare site with its woods and wetlands, and the high point on which the building is set. Design principal David Hansen explains: "The client wanted the building to feel part of the site, so we started to show palettes of stone and masonry – more natural than high-tech. But it also felt, because of what it does – distribution to industry on a huge scale – that it wanted to know that its status as the market leader would be clear."

Hansen has been responsible for several major headquarters facilities since the 1980s. "This client was able to give me a lot more latitude than some of the others," he adds, partly because the site was new and relatively unconstrained, and partly because the constraints of budget and schedule (it has been 12 years since the project's conception) were less restrictive. "At Grainger we had the luxury of time. There were no knee-jerk responses to the scheme." All the steering committee members were interviewed individually about their personal preferences for the design concept and detailing.

Because Grainger was bringing four or five rented facilities ▶

Above left: View from stairs of meeting spaces in the atrium showing linear planters and stone flooring with inset carpeting. Hash marks on the floor indicate a way-finding system **Above right:** Raised observation decks are furnished with Mies chairs and bamboo screens. Water is used for its calming effect on waiting visitors and office workers **Facing page left:** Ground floor of atrium **Facing page right:** Curved dining pavilion on south side

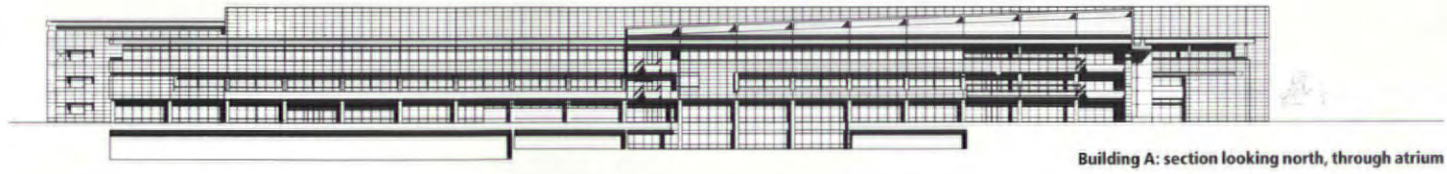




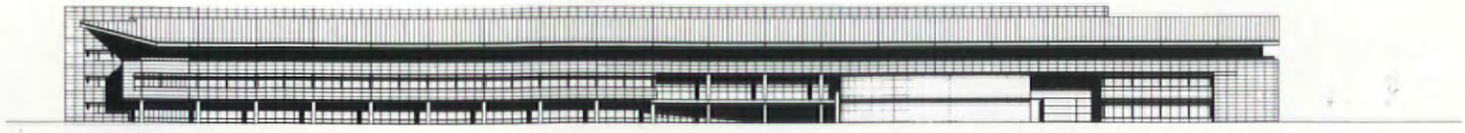
Key to ground floor

A Building A
B Building B
1 Office
2 500-seat auditorium
3 Dining
4 Servery
5 Kitchen
6 Fitness centre
7 Hospitality suite
8 Atrium
9 Open to below
10 Drop off

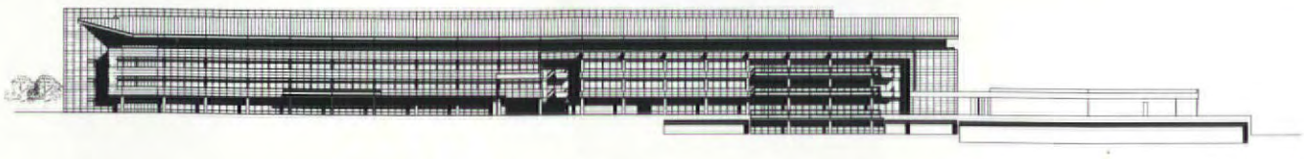
The headquarters is entered through the atrium which links the flared buildings to the north (right) and south (left). Low overhung roofs, solar shading elements and recessed base and top floors add richness and horizontal layering to the elevations



Building A: section looking north, through atrium



Building A: north elevation



Building B: section looking south

Building B: south elevation

► together in a central location, it was looking at synergy in a new way. Hansen continues: "With the growth of the internet, one question was 'Why build in the first place?' One of the main reasons is that electronic communication is no match for face-to-face communication." This concern explains the emphasis on transparency and connectivity. Interaction is encouraged in the generous public spaces and dining facilities, and the internal bridges between the two buildings of phase one.

The horizontal flaring of the scheme (a further two phases are anticipated, as indicated on the site plan) came about as a result of the elevated site, the extreme Midwest climate and the demand for large floorplates and highly flexible office configurations. "We looked at classic ways which would allow future expansion," explains Hansen. "We played with the idea of pinwheeling, but ended up by flaring. From the inside of the buildings the perspective expands unnaturally, the views outside get bigger, not smaller, and the interior is flooded with light... Site configuration, including contours, regional drainage patterns and a 44-acre [17.8 hectare] densely wooded south-eastern quadrant provided both a logical building location and the future phasing diagram for expansion.

"Two linear 630x120-foot [192.02x36.5-metre] paired floor plates were established early in the design process to provide ultimate flexibility for a variety of office planning strategies. Additionally, a 500-foot [15.24-metre] clear span structure system was implemented on either side of a 20-foot [6.09-metre] core zone, which would run the length of the building units." This zone also allows for the expansion and contraction of departments, both horizontally and vertically.

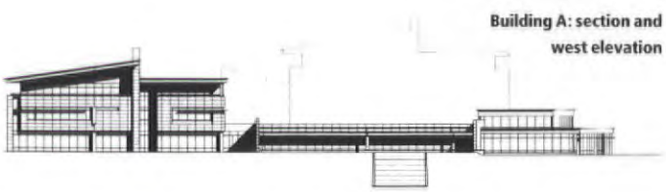
Hansen adds: "These measures established a column-free environment, based on possible planning modules, that gave unlimited freedom for present and future officing needs." The floorplates of a total area of 86,000 square feet (7,989.4 square metres) compare to downtown Chicago's average of 30,000 square feet (2,787 square metres).

The predominant cladding materials of Venetian Gold granite and Villebois limestone are a conscious reference to the surrounding landscape. The visual weight of these materials is successfully contrasted with the lightness of the expansive Pilkington curtainwall and canopy, and the light metallic coating to the aluminium mullions of the curtainwall and column enclosures.

The elevations have been designed to "create a way of scaling the buildings vertically, because of the huge glass facade – to break it down". The undercut base and set back top storey with its huge cantilever recalls Frank Lloyd Wright's Prairie School. When faced with this suggestion Hansen explains that "he is not one of my guiding lights, but I appreciate his work", and concedes that Wright's sensitivity to site and the scale of a building within that site has been an influence, as have his low overhung roofs. Both buildings have a clearly articulated base, middle and top (with additional richness provided by solar shading to the windows) to foreshorten their verticality and ensure that they lie comfortably on the site. The interventions of the north entrance and the 500-seat auditorium, and the entry canopy and dining pavilion on the south side, reduce the verticality of the scheme. The granite has already been bought for the construction of the next phase, which will be one storey higher and further contribute to the layering of the masterplan.

One of the current complaints about Midwest architecture is its inherent conservatism since the golden days of Mies van ►

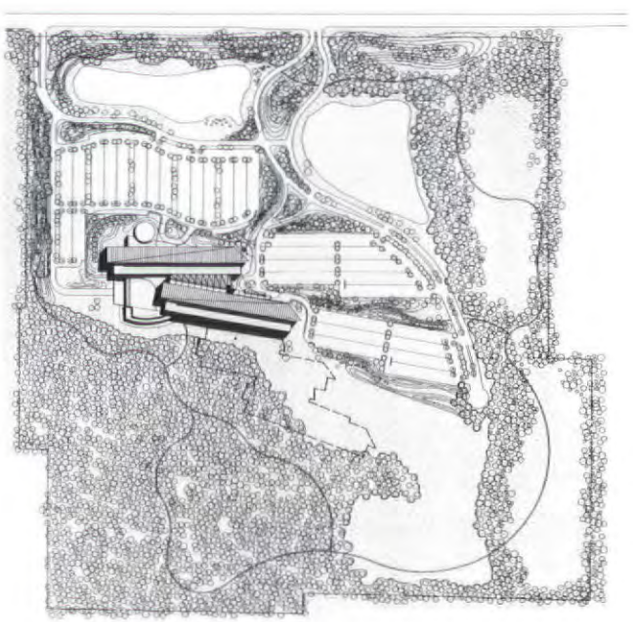
Building A: east elevation



Building A: section and west elevation

Building B: east elevation

Building B: section and west elevation



Site plan, showing outline of two planned further phases

Facing page: A planar wall clad in black granite springs from the leading edge of the buildings and runs its length just above the roof, grounding the building and beginning a series of referential planar walls within the plan which help to reinforce major circulation patterns and provide orientation **Above:** Interior of the circular auditorium

▶ der Rohe, Frank Lloyd Wright, et al. The local architects, or perhaps more significantly the clients, have been loath to experiment with building forms and techniques. But here at the Grainger headquarters Perkins & Will claims to have been "on the edge of technology all the way". This shows itself not only in the structural manipulation of the column-free bays, but also in replacing blinds and shades with Viracon low-E glass with a coating of Viracon's new Solar Screen 2000 which reduces glare and thermal intrusion.

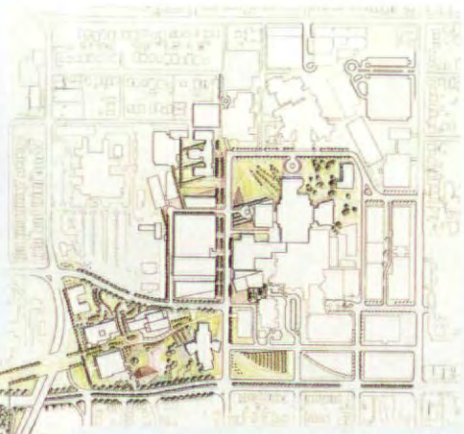
Architects who design houses and office buildings have little or no hold over the way their clients furnish and decorate the interior. In the case of WW Grainger this is a pity. Perkins & Will was responsible for the interior design of the public spaces, including the auditorium and dining facilities. Unfortunately, their intelligent treatment, with the Miesian furniture and stone floor made up of 15 different types of stone sourced from all over the globe, has meant that the public spaces, along with the open plan office spaces (designed by the Environments Group) are in a class of their own when compared with the disappointing classical pastiche interiors of a few of the individual directors' offices, most of which were "designed" by their occupants. But it's a small price to pay for an otherwise fine building which goes a long way to breaking new ground in architecture in and around the windy city. WA

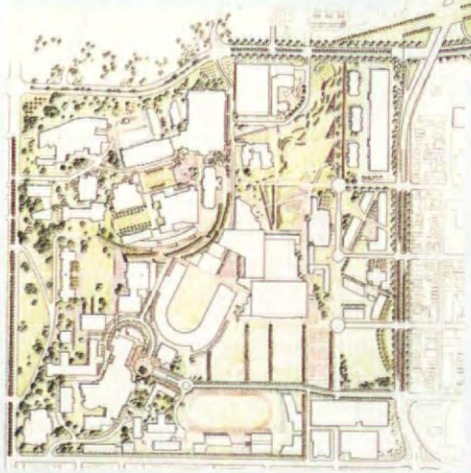
Client **WW Grainger**
Architect **Perkins & Will**
Design principal **David Hansen**
Managing principal **Terry Owens**
Senior designer **Michael Henthorn**
Senior technical assistant **Jim Nowak**
Project architects **Randy Guillot, John Bowers, Hans Thummel, Marty Jerasek**
Architectural staff **David Powell, Michelle Fisher**
Base building interior coordinator **Peggy Hoffman**
Interior designer **Todd Baisch**
Field representative **Rod Noble**
Interior architect **the Environments Group**
Structural engineer **Perkins & Will (Koz Sowlat, John Tingerthal)**
MEP **Consentini Associates**
Landscape architect **the Brickman Company**
Curtainwall consultant **Heitmann & Associates**
Civil engineering **Manhard Consulting**
Roofing consultant **Chuck E Crowley & Associates**
Stone consultant **Franco Barsi**
General contractor **Pepper Construction Company**

Development by degrees

The reinvention of the University of Cincinnati

Over the next five pages Marisa Bartolucci reviews the transformation of UC's campus by some of America's biggest names, including Gehry and Cobb whose buildings open this month.





1989 ▶
MASTERPLAN

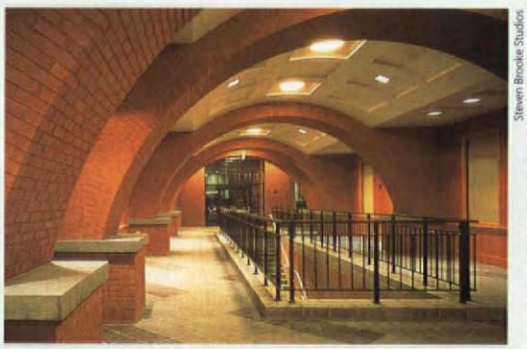
The 1991 masterplan and 1995 update were driven by the university's need for an additional 200,000 square metres of space on its 80 hectare campus and a new commitment to the development of campus open space. Created by Hargreaves Associates, the masterplan radically changed the mode of campus development by reversing the roles of building and open space. The design restricts cars to the periphery, making the campus a strictly pedestrian environment, while the open space network became primary, with buildings now serving as infill. The strategy was to improve connections between the buildings by creating a coherent tissue of open space and pedestrian pathways. By making spatial references to the history and topography of the campus, the paths create symbolic as well as literal connectivity, reinfocing the human scale and creating a richly-textured landscape.

Lisa A Souders

◀ 1991
VERA CLEMENT EDWARDS CENTER

David Childs, SOM
Glaser Associates

The Edwards Center was conceived as a flexible space to accommodate a variety of uses from admission offices and classrooms, to child development space. As the campus evolves, the centre – at the southeast corner – will become a gateway to the site.



Steven Brooke Studios

▼ 1992
CENTRAL UTILITY PLANT

Cambridge Seven
URS Consultants

Despite its function, the main plant building has been designed as a sensitively-scaled, neighbourly building which enhances the street feel of the campus.

▼ 1995
UNIVERSITY COLLEGE

NBBJ
Wilson & Associates

An innovative infill building and renovation of an outdated residence hall provides the first permanent home for UC's open access colleges, at the heart of the campus.

Lisa A Souders

◀ 1995
ENGINEERING RESEARCH CENTER

Michael Graves, Michael Graves & Associates
KZF

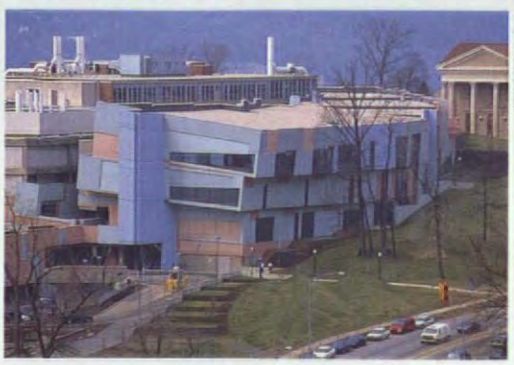
A series of six-storey blocks of laboratories and offices with an entrance pavilion which establishes a route through the building.

Mauricio Luzuriaga

▶ 1996
CARDIOVASCULAR RESEARCH CENTER

Baxter Hodell Donnelly Preston

The 12,700-square-metre facility is connected at most of its seven floors to the Medical Sciences Building. The modular architectural, structural, mechanical and electrical systems allows for future changes in space requirements and advancements in technology.



Mauricio Luzuriaga

1996 ▶
ARONOFF CENTER FOR DESIGN AND ART

Peter Eisenman; Eisenman Architects
Lorenz & Williams

"Any space created for a school of design should somehow reflect the activity carried out in the building... For the students, living with and working in this building ought to be an education in itself."
– Peter Eisenman

Thanks to Cattlyon Design, Cincinnati, and University of Cincinnati

▼ 1999
VONTZ CENTER FOR MOLECULAR STUDIES
Frank Gehry, Frank O Gehry & Associates
Baxter Hodell Donnelly Preston
Futuristic in form, and even more so in function, the centre's curved walls appear to have grown, cell-like, out of the ground. The interior consists of open modular laboratories, core support areas, office suites, a lobby, and lecture hall. A permanent exhibit honours Albert B Sabin, the UC researcher who developed the live oral polio vaccine.


Mauricio Luzuriaga

1999 ▶
COLLEGE-CONSERVATORY OF MUSIC
Harry Cobb; Pei Cobb Freed & Partners
NBBJ/Roth Cincinnati
The College-Conservatory of Music has been transformed into a "campus village", a collection of renovated and new facilities. The village stresses the synergy between the performing arts and electronic media and will accommodate up to 1,000 performances each year. "CCM Plaza, the heart of the new campus village, embodies the conception of architecture as above all an art of place-making, dedicated to the enrichment of public space and public life," says Henry Cobb.

2000
CLERMONT COLLEGE EXPANSION
ATA Architects (no image)
Much like the academic experience, ATA sought to generate an architectural language informed by the known, which provided the opportunity for the unexpected to emerge.

2001 ▶
JEFFERSON SITE RESIDENCE HALLS
William Rawn Associates
Centerbrook Associates
KZF
The clarity and strength of the masterplan's forcefield geometry will enable new residences to be exciting and provocative.


Mauricio Luzuriaga

1999 ▶
RAYMOND WALTERS COLLEGE
Science and Allied Heath Building
Baxter Hodell Donnelly Preston
This new science and allied health building has a sense of place, an architecture and campus environment that fosters a vital learning community through active, creative relationships between people.


Mauricio Luzuriaga

◀ 1999
UNIVERSITY CENTER
Walsh, Higgins & Company
VOA Associates
Baxter Hodell Donnelly Preston
Between the academic campus and the medical campus, University Center, including the Kingsgate Conference Center and University Hall office building, unites the two campuses, functionally and symbolically. It links all the elements of the site is the pedestrian promenade with pavilions, plazas and stopping points along its path.

2002 ▶
CENTER FOR ENROLLMENT SERVICES
Leers Weizapfel Associates Architects
GBBN Architects
The Center for Enrollment Services (already nicknamed the "One-Stop") will bring together administrative services and a new visitor centre at the heart of the academic campus. Entries and connections to adjacent buildings on several sides, as well as views past the new building to the campus beyond, are essential to the success of this ensemble building.The long side of the building facing the Commons is conceived as a "window on the campus"' alive with activity.

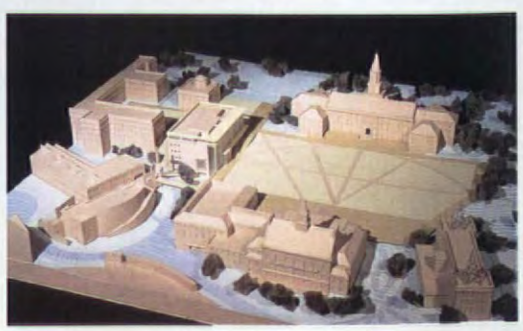
◀ 1998
SIGMA SIGMA COMMONS
George Hargreaves and Mary Margaret Jones, Hargreaves Associates
Glaser Associates

TOWER OF LIGHT
Machado and Silvetti Associates
Created on the site of a former car park, the Ronald F Walker Tower is intended to be a legible icon symbolising the fruitful collaboration between the university and Sigma Sigma fraternity. However, architect Rudolfo Machado says he hopes "the enigmatic effect it evokes in those not cognisant of the symbolism is memorable and seductive, the sheer result of elaboration in form, materials and light".


J Miles Wolf

▼ 2000
UNIVERSITY COMMONS
George Hargreaves and Mary Margaret Jones, Hargreaves Associates
Myers Schmalenberger Meisner
University Commons sits at the intersection of the academic and medical campuses and creates an open-air setting for the conference centre. It brings the entire university community together with a complex, tightly woven series of earthworks, plantings, fountain, and major sculptures.

◀ 2000
CAMPUS GREEN
George Hargreaves and Mary Margaret Jones, Hargreaves Associates
Champlin/Haupt
A linchpin in the university's masterplan, Campus Green, on the west campus, is the central feature for a series of new residential villages on a former car park. The diverse green environment includes an arboretum and a water feature reminiscent of the region's geology.



In its glory days at the turn of the century, Cincinnati was nicknamed "the Paris of the Midwest". Paris it wasn't, but it was briefly a rival of Chicago, and an important Midwestern centre for industry, culture, and education. Lately, though, Cincinnati hasn't seemed like Cincinnati. The dawning of a high-tech global economy has sent this once-proud industrial city scrambling for a fresh identity.

Leading the way has been the University of Cincinnati's architecturally bold, lavishly renovated campus. Over the past decade, guided by a new masterplan, the university has been transfiguring a site once notorious for its chaotic design, undistinguished buildings, and preponderance of parking lots into a modern verdant grove of academe, adorned with striking sculptures and showy architecture by stars of the calibre of Peter Eisenman, Michael Graves (an alumnus of UC's architecture school), Machado/Silvetti, Cambridge Seven, and David Childs of Skidmore, Owings & Merrill. This autumn the masterplan takes defining form with the opening of Frank Gehry's Vontz Center for Molecular Studies and Harry Cobb's renovated and expanded campus for the College-Conservatory of Music. And there's more to come from Gwathmey/Siegel, Morphosis, Centerbrook Architects and Planners, Moore Ruble Yudell, William Rawn Associates, and Leers Weinzapfel.

Midwesterners are a practical bunch, so it wasn't aesthetics that prompted this radical revision. It was money. In the past, the university's construction projects had never stayed within budget. When in 1989, Dale McGirr, UC's vice-president for fiscal affairs embarked on devising an eight-year capital budget for several major new buildings, he realised the university was in desperate need of a co-ordinated growth strategy. He made the case to the college president, Joseph A Steger, who eventually launched a competition for a masterplan. The winner was Hargreaves Associates, a landscape architecture firm with offices in San Francisco and Cambridge, Massachusetts, currently completing construction of the grounds for next year's Olympics in Sydney.

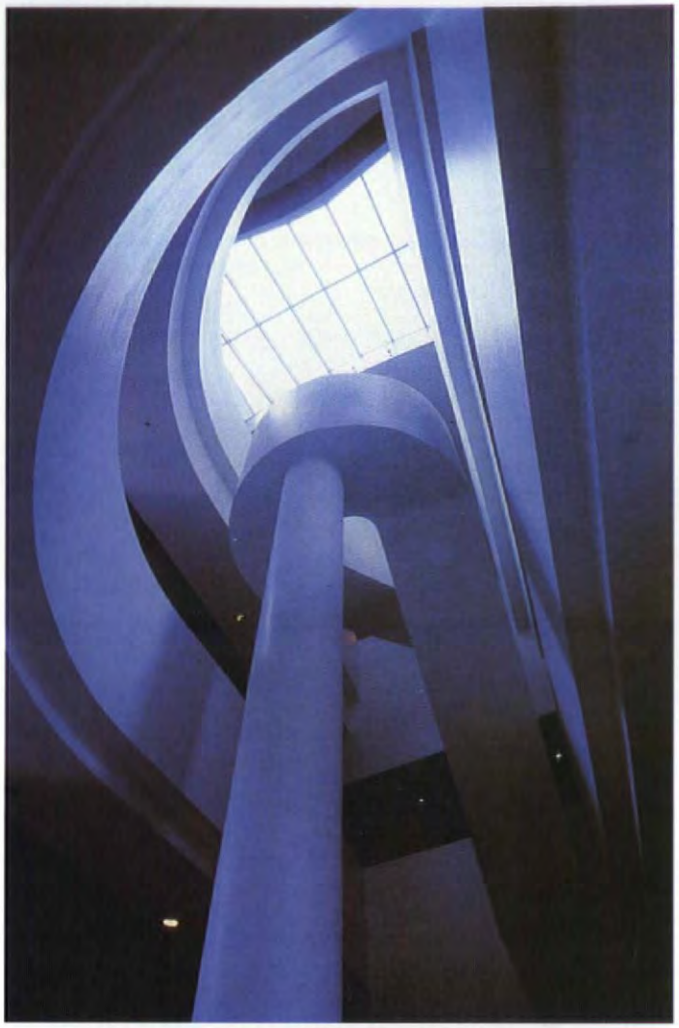
Indiscriminate growth over the years had all but destroyed the university's original beaux-arts quadrangle plan, resulting in a campus indistinct from the surrounding urban neighbourhood and with precious little green space. Hargreaves' masterplan, drafted in 1991, called for the creation of a network of open spaces and pedestrian pathways linking the main campus with UC's medical school, and the construction of an assortment of new buildings to serve as both infill and gateways to the university. The final phase, currently in development, would concentrate on improving the university's deplorable, and often far-flung, student facilities. For this vision, the university chose to select internationally recognised or "signature" architects with the intention of creating distinctive buildings that would en-noble the campus and attract students.

Gehry's Vontz Center, open this month

Serving as a gateway to UC's top-ranked Medical Center is Gehry's eye-catching Vontz Center, an animated multi-angled fungiform. Although Gehry detests the term "signature architect", this is undeniably a signature piece. The Medical Center's dean, Donald Harrison, had argued against hiring a big-name architect, worried that the laboratories, devoted to cancer and neuroscience research, would suffer in the name of style and the budget would be too high. As it turned out, Gehry sits on the board of a hereditary disease foundation and enjoys being around scientists. "I love their ability to soar, to go where angels fear to tread," he says.

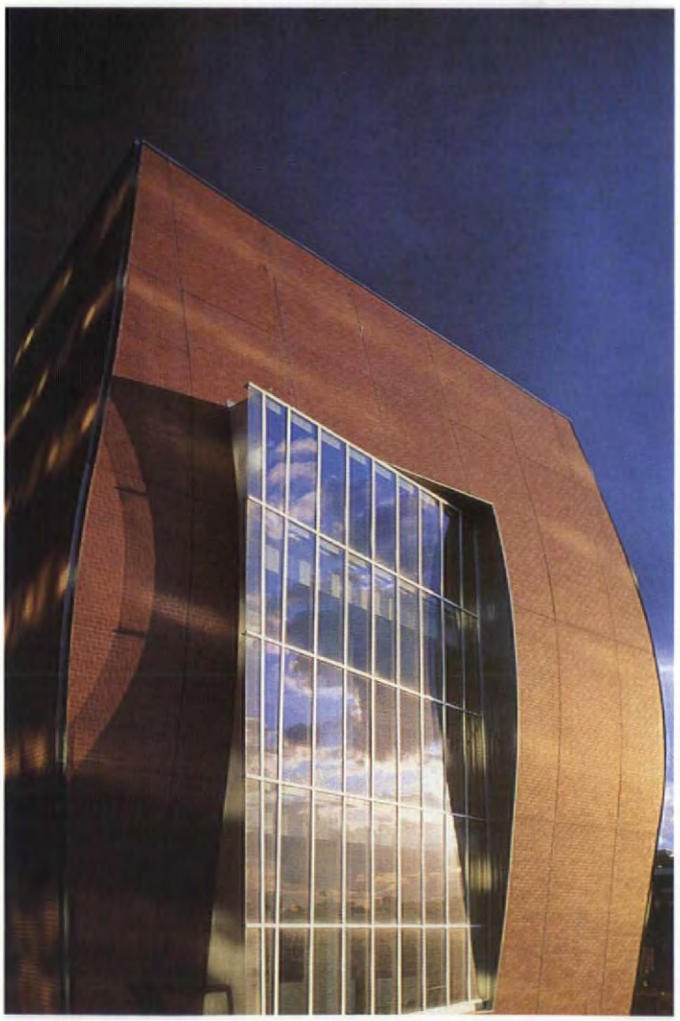
Gehry wanted to design a structure where "when people come to work... they'll feel loved", and the tight budget necessitated facing his spirited building in brick (a first for him). The once standoffish Harrison has since become a rapturous admirer of Gehry's architecture and a close friend. Never having designed a laboratory before, Gehry collaborated with Earl Walls, the lab design expert who had consulted on the laboratories at the Salk Institute, Louis Kahn's fabled work. While Kahn emphasised the heroism of science, Gehry sought to express the "free-flowing creativity of scientists" which, no doubt, like his Loony Tunes-looking building, often takes eccentric form.

Gehry's real triumph here is the interior, with its soaring, enthrallingly awry skylit atrium, a marvelous antidote to the tedium of geometrically predictable lab modules. Through



Facing page, left: Frank Gehry's Vontz Center. Expansive windows flood the building with natural light **Facing page, right:** The Vontz Center forms a gateway to the rest of the university's prestigious Medical Center **This page, left above:** The enthrallingly awry skylit atrium is the perfect antidote to the more formal labs **Left below:** Gehry tackles brick for the first time **Above:** Gehry sees his multi-angled building as an expression of the "free-flowing creativity of scientists"

All photography J Miles Wolf



expansive jauntily angled windows, skylights and light wells pours an astounding quantity of natural light, which Gehry has skillfully filtered into the laboratories.

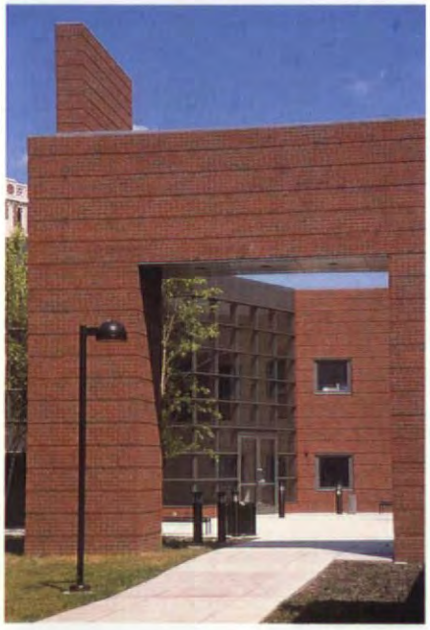
The labs themselves are true works of innovation. Since they need to be substantially reconfigured to suit the needs of each new research programme, which can happen as often as every five years, there are interstitial levels between the lab floors where the mechanical systems are installed. All the work necessary to set up a new experiment can be done inexpensively in these spaces without disturbing the surrounding research projects below. Because of this, the building should have a life span of at least 40 years, far longer than most conventionally designed lab buildings which are quickly obsolete.

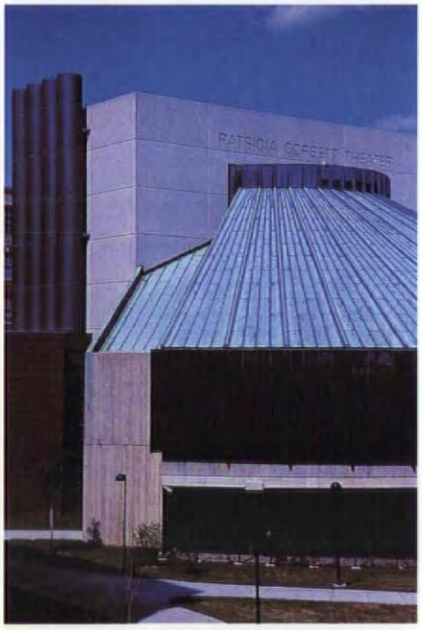
Ensemble piece shares the limelight

Cobb's assignment to renovate and expand the College-Conservatory of Music, which also opens this month, was even less straightforward. This internationally renowned institution for the training of performing artists is one of the university's crown jewels, but its campus-within-a-campus was a hotch-potch of outmoded structures, lost in a wasteland between the university's football field, administrative centre, and engineering building. "It was one of the worst places, the most disastrous campuses I'd seen," says Cobb, who was at turns excited and daunted by the challenge.

Rehabilitation included transforming a gym into a vocal arts centre and a dorm into music practice rooms and teaching studios; reconstructing an outdated performance facility to serve as administrative and faculty offices, classrooms, and a new electronic media centre; renovating the main proscenium theatre and adding a new production wing; and making all these odds and ends fit together as a comprehensive whole. Cobb says he was less interested in doing something flashy than in "creating ▸

All photography / Miles Wolf





Harry Cobb's College-Conservatory of Music. **Clockwise from top:** Cobb was interested in creating an "eventful series of spaces"; the Patricia Corbett Theater; the complex nearing completion, showing the dramatic pyramidal skylights; entrance to circular courtyard

an eventful series of spaces both for people destined for CCM and students passing through the complex". He's done just that. While the architecture is straightforward, at times verging on dull, the buildings and open spaces have been well oriented to make for a handsome, welcoming assemblage and a fine backdrop to the exciting activities in and around the buildings.

All this is just what CCM's dean, Robert Werner, had wished for. Werner, like Harrison, was suspicious of auteurs, and was relieved to discover Cobb sympathetic to his utilitarian concerns about good acoustics, sound insulation and lighting. But CCM is not entirely without visual zest – it now boasts two exceptional outdoor sculptures: one of Magdalena Abakanowicz's bronze "hand trees" greeting visitors as they enter the main plaza, and a luminous glass tower by James Carpenter marking the entry to the electronic media centre.

Architectural zoo

What may be most extraordinary about this ambitious reconstruction programme is not how well the buildings look but how well they work. That's a real accomplishment for a group of academics and administrators with little collective experience as architectural clients, especially of "signature architects". All too often it seems that clients of renowned architects let them dictate a vision, and end up with dramatic design statements that function poorly. Why was the outcome different here? Perhaps because UC, being in the Midwest, was far enough removed from celebrity hype to treat these architects as anything other than distinguished practitioners. Even the most theoretical of these architects were forced to address nitty-gritty user issues. By way of example, the Aronoff Center for UC's College of Design, Architecture, Art and Planning, completed in 1997, may be the most intelligently functional building Peter Eisenman has ever designed, in addition to being a truly groundbreaking work.

Nevertheless, UC's decision to commission architects of such differing, often contradictory visions, seems a rather unsophisticated approach. There is no defining personality to the place. With its future construction projects, the campus runs the risk of becoming an odd kind of zoo or outdoor museum, displaying a variety of architectural specimens from the turn of the century. Yet this wild diversity is in keeping with UC's advertising slogan "All dreams are welcome here" and the buzz about all this high-style building has attracted international press attention, dramatically raising its profile. Indeed, the *New York Times* deemed the university "one of the most architecturally dynamic campuses in America today".

Although such hyperbole may say more about the insipid architectural state of other campuses than the true brilliance of this one, as higher education becomes an increasingly competitive enterprise, such publicity is an enormous boon. Student candidates have already expressed excitement at being at a school with such a visually stimulating environment. It seems that for all its apparent naiveté, this Midwestern university has made some very clever choices. WA

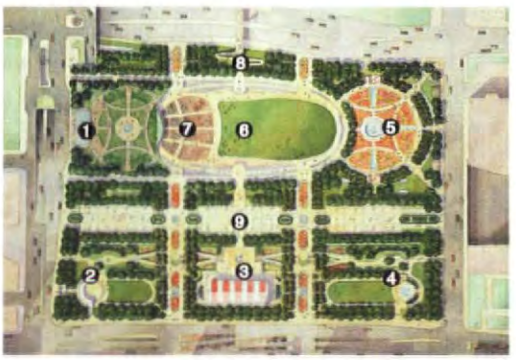



Left: Artist's impressions of Chicago's Millennium Park, masterplanned by SOM, to include a number of elements by Frank Gehry

Architects
Skidmore Owings & Merrill (Adrian Smith and Leigh Breslau)
Frank Gehry
Civil and structural engineer
McDonough Associates

Planting the future

Millennium Park, Chicago



Key to Millennium Park site plan
1 Chicago Music and Dance theatre entrance
2 Peristyle – north lawn
3 Ice rink
4 South lawn and fountain
5 Monroe garden
6 Great lawn
7 Music pavillion
8 Pedestrian bridge
9 Millennium terrace

The foundations have now been laid for the 6.6-hectare site for the Millennium Park – the completion of Daniel Burnham's vision of Chicago's Grant Park which reserved the lakefront for public recreation. The park will include Frank Gehry's first Chicago project – the Millennium Park Music Pavilion – underwritten by a Pritzker Foundation gift of US$15 million. Gehry will design the park's band shell, the Great Lawn area, and a pedestrian bridge that connects Millennium Park, across Columbus Avenue, to Daley Bi-Centennial Park. He was asked by Skidmore, Owings & Merrill partner Adrian Smith to join the Millennium Park project and integrate his design into SOM's overall park masterplan. The involvement of Gehry at this later stage means that the scheme will inevitably evolve, but the basic organisation will be retained. As well as acting as co-ordinating architect for the park, SOM is also the engineer behind the performing arts venue and bridge, and was selected for the task for its experience in the performing arts sector and its work on the regeneration of Chicago's State Street (see *WA*68 page 31).

The park will also contain formal gardens, an ice skating rink, a promenade, a fountain and a 1,500-seat below-grade auditorium for the Music and Dance Theater Chicago, to be designed by Chicago-based Hammond Beeby Rupert Ainge. The park will be built over existing and expanded rail lines, bus lanes, and two new parking levels, which will form a multi-modal transit centre linking the parking and transit lines to the park and to the convention centre, stadium complex and museum campus to the south of the site. The circulation pattern at grade allows for full access for disabled users despite the several changes in level.

Incorporating the technical requirements for the parking and transit services below was demanding. Ventilation shafts are concealed within the landscape, and clearance levels above rail lines have been accommodated.

Although the park has absorbed millennium mania into its name the scheme has been on the boards for many years, and the goals are much wider than a temporary festival platform. Grant Park is perceived as "a living room of the downtown area", explains Breslau, "and this adds a critical element to the public entity. It is not faddish or gimicky, and will expand the range and length of ongoing festivals year round." NT

Architect
Lohan Associates
Reviewed by
Nicola Turner

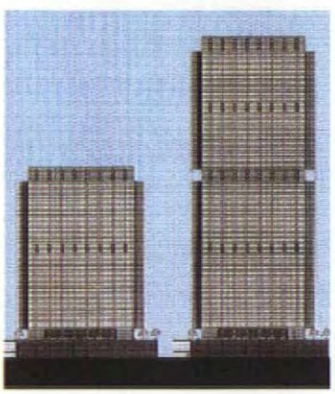
Rhythm and blue

Blue Cross Blue Shield of Illinois headquarters, Chicago, Illinois

Chicago's Grant Park is defined on the east side by the vast expanse of Lake Michigan, and on the west by the dense wall of buildings on Michigan Avenue. Lohan Associates' headquarters for Blue Cross Blue Shield health insurance on Randolph Street is a valuable addition to the north end, providing definition which it had lacked previously in the shape of Chicago's first "tall building" of the 1990s.

Lohan Associates has a long history of progressive office design, rooted in the innovations of president Dirk Lohan's grandfather, Mies van der Rohe. At Blue Cross, design architect James Goettsch has responded to the "needs and requirements of a workplace where productivity is prevailing over privacy and teamwork is eliminating hierarchies".

Most striking, on first sight of the sleek blue block, is the truncation of its wedge-shaped form, a broad trapezoid transected by a more slender rectilinear block. The wedge shape was chosen partly because of the shape of the site, but also to maximise the elegance of the tower. The long dimension on Randolph Street provides an appropriate response to Grant Park. Currently standing at 32 storeys, the scheme allows for growth to 54, though this is not due for at least three years. Its completion will make more sense of the breakouts expressed on the mechanical floors of the tower, a reminder of the structural nature of high-rises, and interrupt the uniformity of the curtainwall.



Seventy five per cent of the exterior of the building is glass (chosen because it is easy to clean), fifty five per cent of which is vision glass and the remainder non-vision spandrel glass. The vision glass has a low-E coating to provide good thermal performance and a high level of light transmittance. The non-vision spandrel glass sections are made up of insulated units with a one-inch grid of square silk-screened frit pattern. In between are stainless steel panels with a reflective textured finish which, says Goettsch, "provide a horizontal expression which avoids the contraction of trying to make a lower building [than the nearby Amoco tower] seem taller and at the same time reinforces the individuality of the building."

The design details of the exterior facades were developed to reinforce the individual identities of the interlocking trapezoidal and rectilinear forms. While the former appears smooth and shiny, with a dominant horizontal stripe, the end facades of the rectilinear form are characterised by vertical expressed granite-covered columns and mullions which, from some angles,

All photographs by Steinkamp/Ballogg except for middle, below by Hedrich Blessing

obscure the view of the glass, providing a contrasting texture to the centre form, and making reference to the neighbouring Amoco building to the west.

Inside, the atrium rises the entire height of the building, allowing the transparency and flexibility of the public and office spaces to be immediately apparent. At various intervals, three-storey lounges and meeting areas, with connecting stairs, allow for group discussions to take place at the centre of the building. The full height of the atrium was crucial for allowing the additional expansion to be implemented without interrupting operation of the existing building.

The trapezoidal floorplan is reflected in patterns on the white terrazzo floor and ceiling of the entrance foyer, and the criss-cross pattern continued in the strong diagonal lines of the escalators which can be seen between the glass elevator shafts beyond the oval reception desk. "The pulse of the organisation can be felt by the movement of elevators and counterweights," explains Goettsch. In contrast to the lightness of the glass, and the predominance of the stainless steel finishes, the two large core walls are clad with red Verona marble.

In Lohan Associates' new building Chicago has gained a significant new landmark in the traditional form of a tall building, though it will only be appreciated fully on completion of the second phase. What is more remarkable is that unlike so many of the city's high-rise office buildings, the Blue Cross Blue Shield tower achieves a sense of community and connectivity more usually associated with horizontally planned offices. WA

Client
Healthcare Service Corporation of Illinois
Structural engineer
Chris Stephanos Associates
Mechanical engineer
Consentini Associates
General contractor
Walsh Construction

Facing page, top: Elevation showing full height of tower on completion of phase two **Facing page, clockwise from left:** Three-storey meeting spaces with interconnecting stairs; two views of Grant Park elevation; oval reception desk **Above:** The end facades reflect the Amoco building, visible to the left

Sector analysis – Tall buildings

The mile high club

FINANCIAL LIGHTHOUSES

Global spread of the 100 tallest buildings

USA – 59

Canada – 4

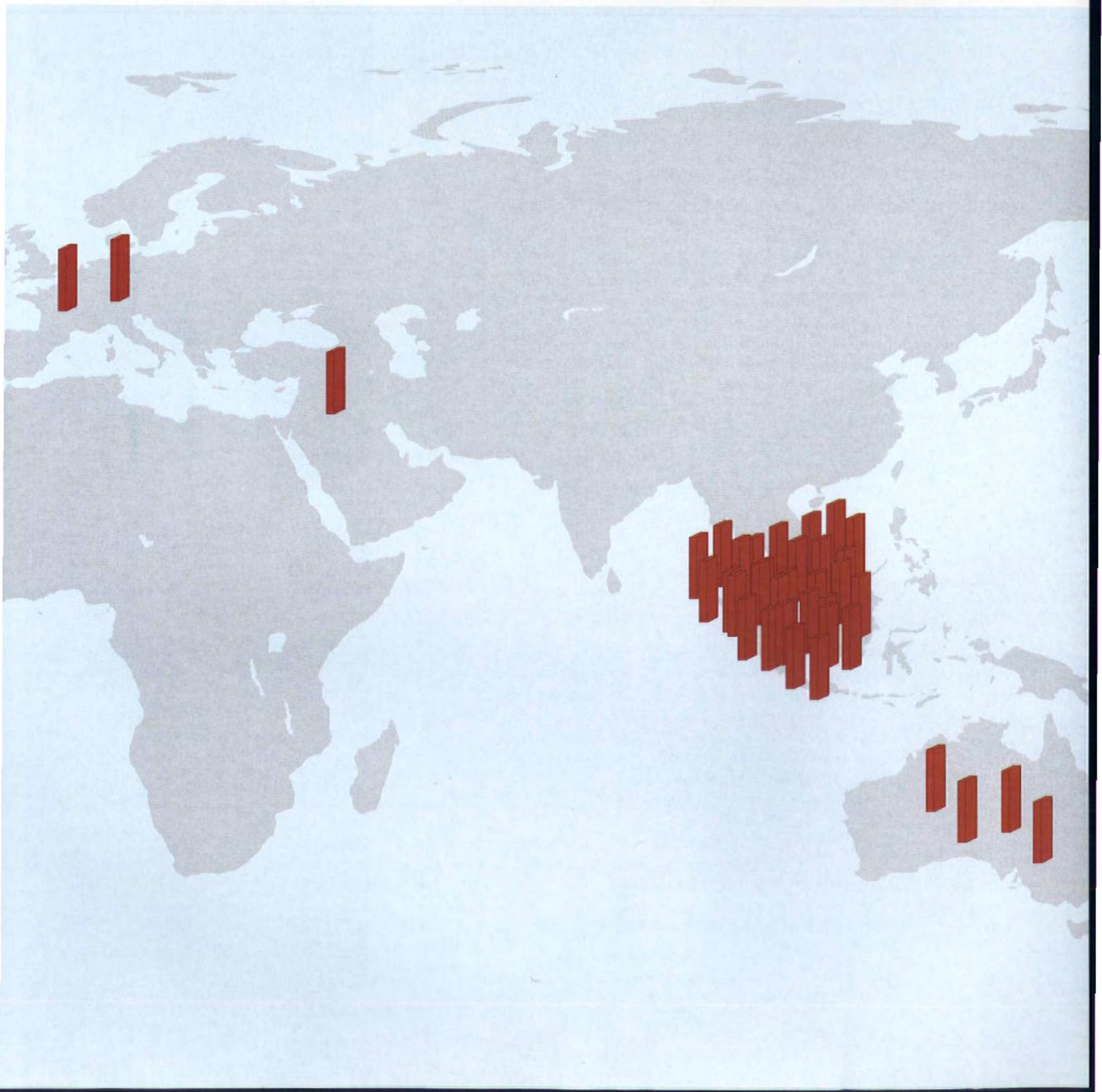
Western Europe – 2

Middle East – 1

South-East Asia – 30

Australia – 4

After a decade of South-East Asian domination, the signs are that the Americans are keen to claim back their tall building birthright. The ten-year-old plans for Cesar Pelli's 609-metre tall Miglin-Beilter Tower in Chicago have been resurrected, and Frank Lloyd Wright's "Mile High Illinois" may soon see the light of day. Hugh Pearman finds out whether the defining building type of the 20th century is still scraping the sky – or scraping the barrel.



All architecture is to do with money, but supertowers are to do with entire global economic movements. If enough high-level economic activity concentrates itself in any one place for long enough, the towers shoot up, built expressions of financial activity. Whereas Manhattan and Hong Kong could do little else but build tall – given the limited amount of land, coupled with the necessary commercial activity – other cities have adopted the tower form more for its symbolic qualities.

If supertowers are an expression of financial success, then cities have to have them. There is no option, even if there are more obviously economic ways to achieve the desired floor area. If finance and corporate headquarters are pretty much all a city does, then it has to have lots – hence the Frankfurt skyline. London and Paris and Berlin and Melbourne, having other fish to fry, reserve most of their towers for their business districts. And the business/finance element is vital to the success of all supertowers. Yes, they are mixed-use. But whereas other uses can fluctuate significantly, the office element is nearly always constant. Supertowers do not bite the hand that feeds them.

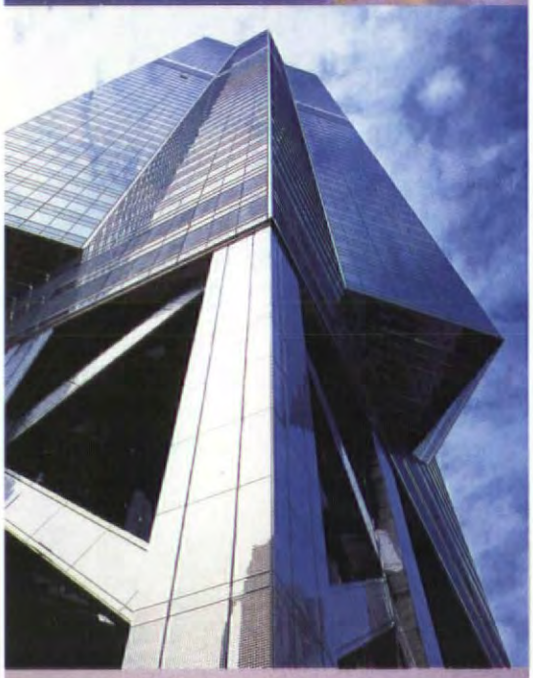
"[It's probably a good thing] that so many towers remain unbuilt. They represent hubris"

All in the timing

To an extent it is surprising that there are as many of them around the world as there are. For a tower to be built, the political and economic climates have to be just right: hitting the moment is difficult, given the usually protracted process of getting a supertower approved and built.

By the time everything else is in place ready to build, the economic cycle is usually on a downturn and the financial package starts to unravel. For this reason Jean Nouvel's "Tour sans Fins" at La Defense in Paris, or Foster and Partner's Millennium Tower in Japan – envisaged as a self-contained structure rising from the sea with its own harbour – remain unbuilt; and the Grollo Tower in Melbourne by Denton ▸

80 METRES
Depth of Jin Mao building's foundation piles



From top: Visualisation of Foster and Partners' proposed Millennium Tower, Tokyo; the 346-metre Centre, Hong Kong, by Dennis Lau & NG Chun Man, opened last year; view over Hong Kong harbour, with I M Pei's Bank of China in the foreground

Hugh Sitton

SOM ON A SHANG-HIGH

Jin Mao Building, Pudong, Shanghai, People's Republic of China

The Jin Mao is the most recently completed of the world's tallest buildings. It provides the first concrete evidence of Shanghai's role as China's financial hub.

At 421 metres, the Jin Mao (Golden Trade) Building, by Skidmore Owings & Merrill's Chicago office (chief design partner Adrian D Smith) is the tallest in the People's Republic of China, and the fourth tallest in the world – if you include the Petronas Towers as individual buildings.

The lower 50 of its 88 storeys house office space. The upper 34 storeys house a Grand Hyatt Hotel – the highest hotel in the world – which is built around a full-height central atrium. The 88th floor is an observation deck, offering views over all of Shanghai, as well as into the Hyatt's 34-storey atrium.

The Jin Mao is a combination of Chinese aesthetics and international technology. The gently stepped pagoda form is clad in stainless steel, glass, aluminium and granite. Advanced structural engineering concepts – also by SOM – protect the tower from the typhoons and earthquakes prevalent in the area. The structure is of composite design, using a concrete core, eight concrete mega-columns, eight steel columns and steel floor framing.

VITAL STATISTICS

- The Jin Mao building was inaugurated on 28 September 1998. Eight is considered a lucky number in China.
- The building has 88 storeys. Deng Xiaoping, China's former leader, was 88 at the time of the international design competition for the Jin Mao (1992).
- Each segment of the tower is an eighth smaller than the 16-storey base.
- The only vertical elements of the structural system are an octagonal-shaped reinforced mega-concrete shear-wall core, eight exterior composite columns and eight exterior steel columns.
- The foundation consists of high-capacity steel piles driven 80 metres deep. The two-hectare site is surrounded by a 40-metre deep slurry wall which acted an excavation retention system during construction.
- Jin Mao was designed to withstand "rational" winds for the Shanghai climate, including the 200 km/hour winds of a typhoon.
- Over 2,000 workers – many living on-site in pre-fabricated accommodation – worked three shifts a day, seven days a week, to complete the tower since ground was broken in May 1994.

Developer
China Shanghai Foreign Trade Center
Local architects
The Shanghai Institute of Architectural Design Research
East China Architectural Design Institute

Josef Gartner courtesy of SOM LLP

▶ Corker Marshall (DCM) – which was going to seize for Australia ownership of the world's tallest building at 560 metres – has gone very quiet, though the slow revival of the Pacific rim economy may yet save it.

Another contender for the crown, Kohn Pedersen Fox's 460-metre World Financial Center in Shanghai – the one with the giant hole and viewing gallery in the top, making it look like a Cyclopean bottle-opener – has been much delayed and now needs an extension on top if it is not to be second best by the time it is built. It is threatened by the proposed Tapei Financial Center in Taiwan (designed by C Y Lee) which will reach 508 metres.

299 METRES
The most popular height among the 100 world's tallest buildings – there are seven

Look at mine

According to research carried out by Dresdner Kleinwort Benson's economist Andrew Lawrence, construction of the latest "world's tallest building" is always followed by an economic crisis in its region. This, says Lawrence, has been the case for the past 100 years.

This fact is, no doubt, the macro-economic equivalent of that other oft-observed phenomenon: that when a company or corporation gets big, rich and self-regarding enough to commission a purpose-designed headquarters, it is time to sell your shares. Takeovers, mergers or insolvency beckon – though happily not in all cases. So on the whole, better perhaps for the world economy that so many supertowers remain unbuilt. They represent hubris.

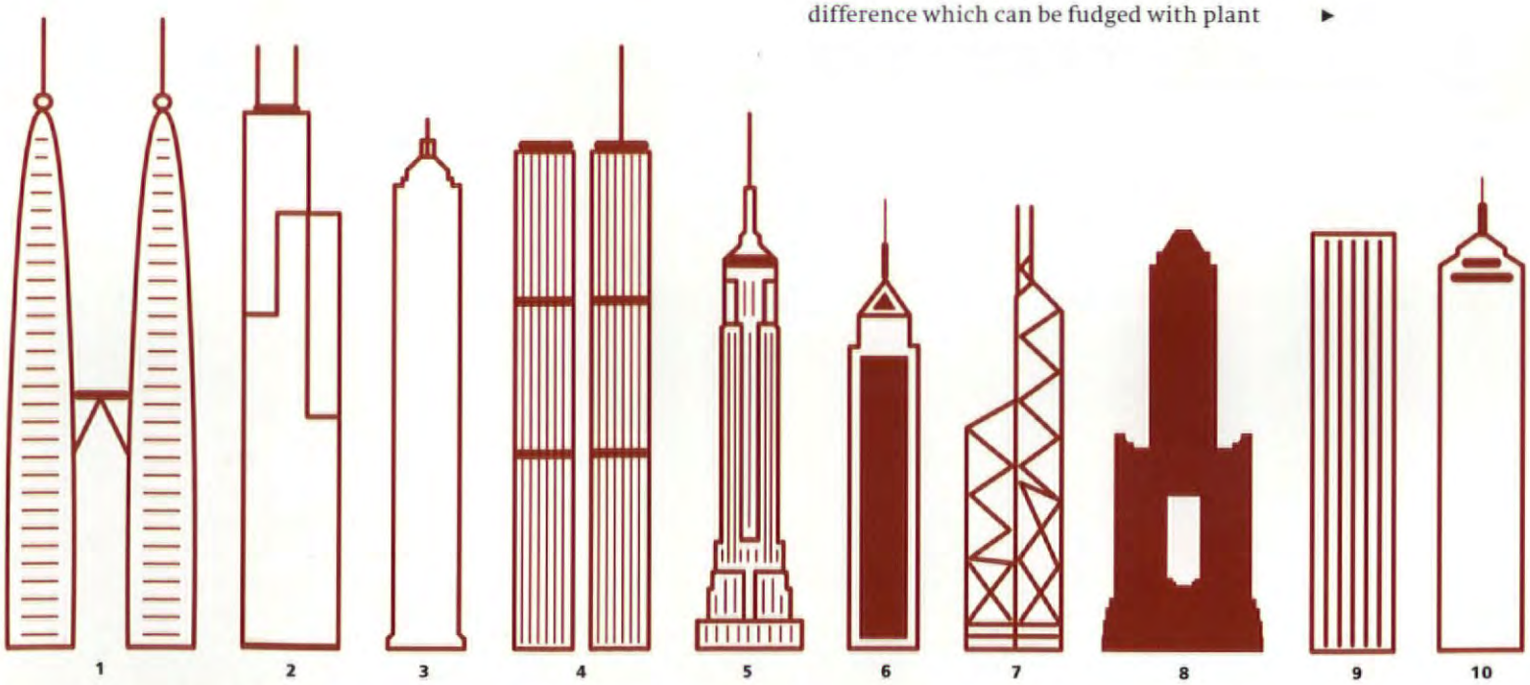
But many do indeed get built. Cesar Pelli's Petronas towers in Kuala Lumpur being, of course, the prime example both as a building and – given the economic turmoil that engulfed the region shortly after completion – as proof of the Lawrence dictum. All the activity in building supertowers appeared at one time to be focused in the Far East and Pacific Rim, with China doing the most. In 1980 there was only one building over 150 metres in the whole of China: that was the 200-metre Jardine House, in what was then the British colony of Hong Kong.

69,000
Kilometres of telephone cabling in the Sears Tower

Today there are 96, of which 41 are in Shanghai, and 39 in Hong Kong. Most have been built in the past decade: only a handful more are planned in the next decade. No other Chinese city scores more than single figures.

Meaningless measurements

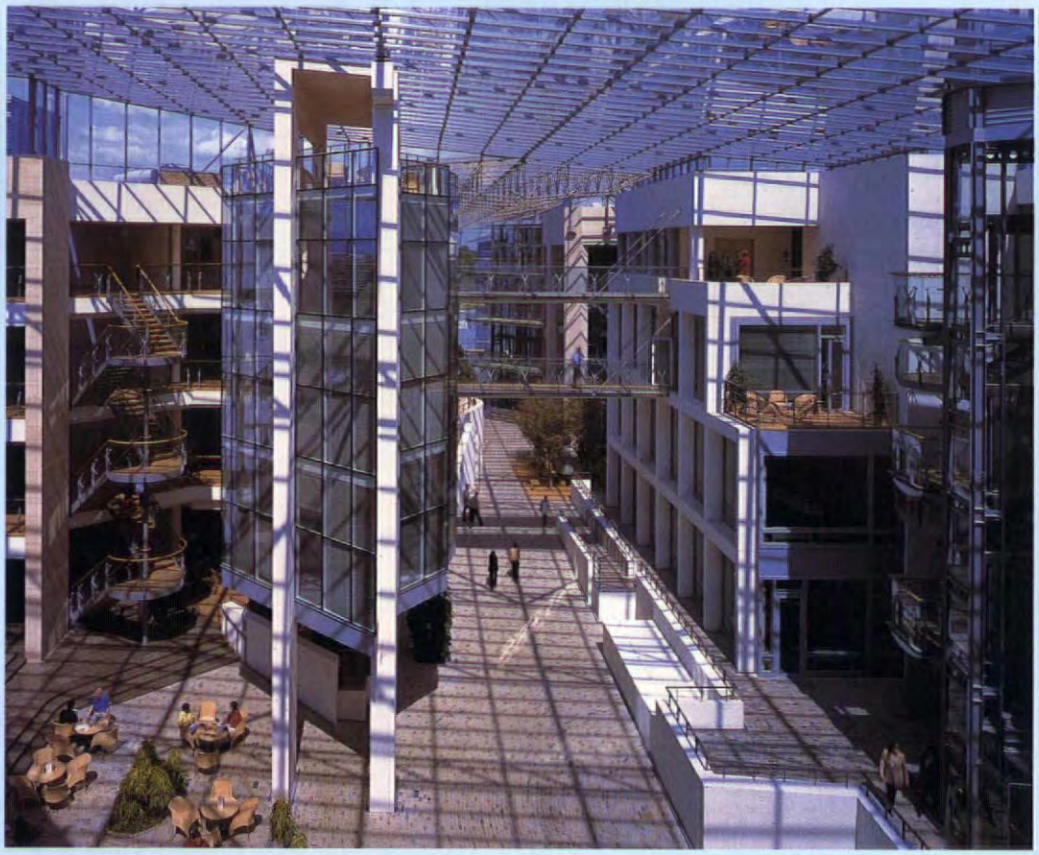
The race to build the "world's tallest" is always at risk of becoming somewhat meaningless, since most of the proposed towers leapfrog each other by only by a few metres each time, a difference which can be fudged with plant ▶



THE WORLD'S TEN TALLEST BUILDINGS **1** Petronas Towers, Kuala Lumpur; 452 metres; Cesar Pelli & Associates **2** Sears Tower, Chicago; 442 metres; SOM **3** Jin Mao Building, Shanghai; 421 metres; SOM **4** World Trade Center (I & II) New York; 417 and 415 metres respectively; Minoru Yamasaki Associates **5** Empire State Building, New York; 381 metres; Shreve, Lamb & Harmon **6** Central Plaza, Hong Kong; 374 metres; Ng Chun Man & Associates **7** Bank of China, Hong Kong; 369 metres; I M Pei & Partners **8** T & C Tower, Kaoshiung; 348 metres; C Y Lee/HOK **9** Amoco Building, Chicago; 346 metres; Edward D Stone **10** The Center, Hong Kong; 346 metres; Dennis Lau & NG Chun Man

SKYSCRAPERS – IS THE END NIGH?

Will cities that do not choose to build high have any chance of prospering in the 21st century? Frank Duffy makes the case for the end of the skyscraper.



Peter Cook/VIEW

Waterside, British Airways' world headquarters, by Niels Torp. Is this low-rise, horizontal skyscraper the prototype for the 21st century office building?

Frankfurt's planners have only to propose a batch of new skyscrapers and the City of London jumps higher. Rotterdam and Dublin feel an urgent need to have policies for high-rise development. To compete with Singapore, Kuala Lumpur must have not only one but the two highest buildings in the world. Melbourne must compete in the altitude stakes with Sydney. Chicago has to challenge New York. Tokyo is right up there with mixed-use high-rise structures, and even gentle Vancouver follows the building pattern of Hong Kong. Even superbly horizontal Paris has felt it necessary to hedge its bets with high-rise buildings at La Defense and Montparnasse. Only the Berlin planners have had the nerve to keep their city relatively low – so far.

It's obvious that height excites. Nevertheless, is it really true that city centres must be high to be successful? Experience tells me not. In my own field of office design, at least, it is by no means self-evident that high buildings will continue to be advantageous in economic terms. Admittedly the office is only one building type but the one that is, perhaps, the most significant building type for increasingly knowledge-based economies. The office building also has a certain historical significance, having started the race for the skies 100 years ago.

What seems to be happening in office design is this. There is an emerging conflict between the revolutionary demands of advanced office users and the conservative attitudes of supply-side developers, of financial institutions, of contractors and, I am afraid, of many architects. Conventional office buildings are predominantly high-rise. Everyone knows what conventional office buildings are supposed to be like – big, tall, hierarchical, hermetic, modular, efficient, mean. Everyone knows where they are supposed to be – zoned together in city centres served by vast infrastructures of transportation that have been designed to bring in commuters, every day at the stroke of nine. Everyone knows about the timetable of city offices – exercises in synchrony, from 9am to 5pm, five days a week. What almost everyone tends to miss is that all these assumptions on which offices continue to be built, traded and valued are based firmly on conventions from a past that is dying and doomed to disappear.

"All these assumptions are based firmly on conventions from a past that is dying and doomed to disappear."

Attitudes and demands are changing fast. We live in the age of e-commerce and the internet. Information technology becomes cheaper and more accessible even more quickly than it increases in power. Synchrony and co-location are no longer necessary for the conduct of office work. Huge aggregations of office workers in separate office buildings make less and less sense as organisations outsource, network, downsize, create nuclear headquarters, learn to buy in specialised skills, become more mobile, mutate, cross boundaries, change.

"Presenteeism" is becoming even more of a danger to employers than absenteeism. Office workers are winning the freedom to invent their own work styles and timetables. Old fashioned hierarchies don't make much sense to them any more. Control has to be self-generated, rather than imposed from above. What does matter is increased interaction, within businesses and across organisational boundaries – turning offices into clubs, making sociability and serendipity the *raison d'être* of the working city.

All this leads me to predict a renaissance in city life, although following a far more complex choreography than the crude and rigid temporal and spatial conventions that have cramped so many lives since the middle of the nineteenth century. Office workers are abandoning conventional forms of work as quickly as they can. Architects are faced with the task of inventing the urban landscapes of the 21st century, the salient features of which will be mobility, transience, permeability, interaction, pleasure, sociability, creativity, stimulus, transparency. We might do better to use our imagination than to continue to rely for urbanistic imagery upon the conventional office skyscraper, the iconography of which seems to me to express with stunning accuracy an outmoded, non-too-admirable and rapidly decaying culture of work.

Frank Duffy is chairman and founder of the DEGW Partnership, London, UK.

► housing, finials and the like: anything deemed "architectural" counts, though transmission masts do not.

It is a tradition: the Empire State building in New York was extended a little at the top at one time in order to keep its world ranking for a few more years. The exceptions to the gradualist rule of skyscraper growth in recent times have been Foster's Millennium Tower and DCM's Grollo Tower, both of which were intended to go considerably higher than any previous example. All this is with the notable exception of Frank Lloyd Wright's unbuilt "Mile High Illinois" of 1956. At 1,609 metres and with 500 floors – rather than the 100 or so of the world's tallest buildings to date – and supporting a population of 100,000 (compared with the 16,500 of the 1974 Sears tower), this was wholly unfeasible at the time, and the way Wright gaily suggested helicopter platforms and nuclear-powered lifts suggests that he saw this primarily as a publicity venture. As did his backers – the mayor of Chicago declared a citywide "Frank Lloyd Wright Day" when the plans, on an eight-metre-long sheet of paper, were first unrolled.

32km/hour
Top speed of the Hancock Tower's elevators. The fastest in the world

"No one can afford to build it now, but in the future no one can afford not to build it." Frank Lloyd Wright on his "Mile High Illinois"

Wright, however, officially saw the only obstacle as finance. "No one can afford to build it now, but in the future no one can afford not to build it," he remarked. It is possible that Wright saw such towers as the salvation of his land-based Utopian ideal, Broadacre City. Certainly he said that "the Mile High would absorb, justify and legitimise the gregarious instinct of humanity". And it is equally true that the tapering form of the tower, with its plinth of transport facilities, uncannily anticipated the wind-resistant forms drawn by the latest generation of supertower designers.

60606
Sears Tower's personalised zipcode

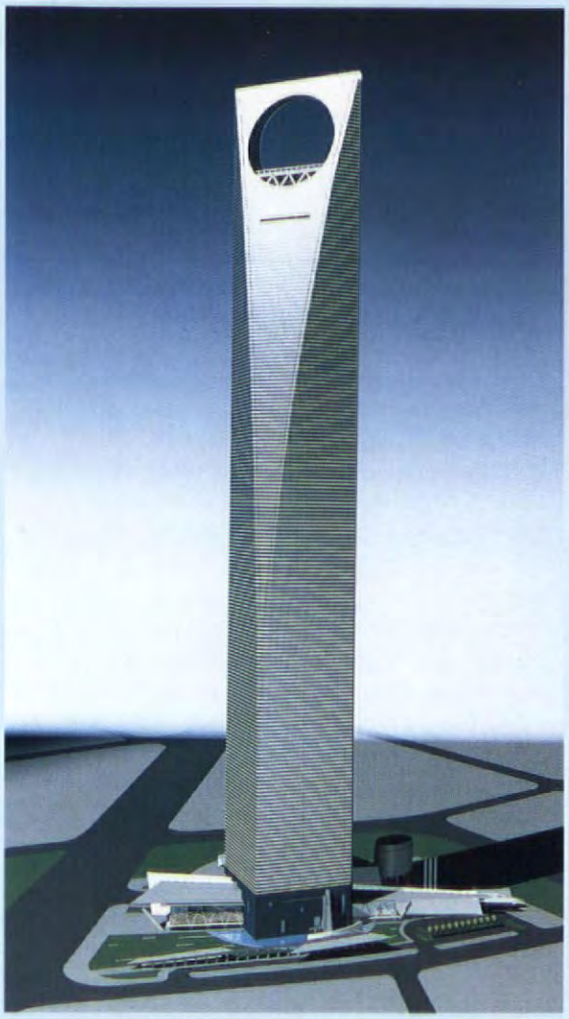
Chicago and New York took it in turns to house the tallest scrapers for over 50 years. Until Malaysia's Petronas Towers came along, Chicago had held sway for years with the 440-metre, SOM-designed Sears Tower. These days ►

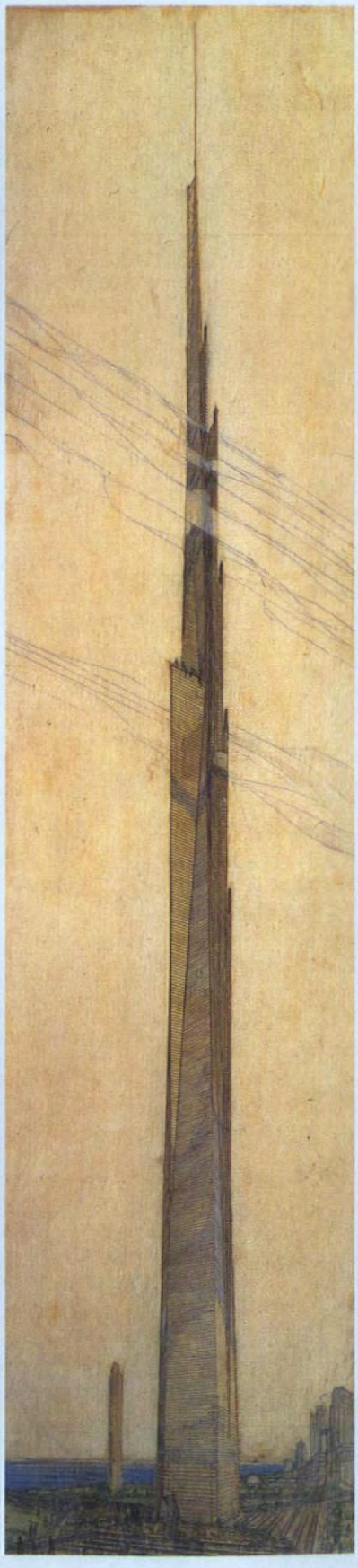
Moet Hennessy Louis Vuitton's New York headquarters (open this month), designed by Christian de Portzamparc in association with Hillier New York

Wade Zimmerman

WHO'S IN CHARGE?

Technology, imagination and monumental ambition make up the equation that produces tall buildings. They are contributed by the engineer, the architect and the owner respectively. At least, that's how it used to be. Andrew Rabeneck finds out what architects actually contribute to tall buildings.





Above: KPF's World Financial Center, Shanghai. **Right:** Frank Lloyd Wright's "Mile High Illinois"

While the evolution in "how to build" progresses, things remain unclear in the domain of "what to build". In what ways should building systems be enclosed or expressed?

Architects have been brought to earth with a bump. They have had to choose whether to assert their right to control the economic and technical parameters of the equation, in the interests of their art as expressive synthesis. The alternative is to disclaim any power to affect the basic building package, which is dominated by questions of real-estate economics and engineering imperatives. Many postmodernists have been content to adopt the latter position. Their efforts have the feel of gift wrapping or cake decoration about them.

It is clear that the motifs employed are free of engagement with the forces putting up the building. This is a position that diminishes the contribution the architect should make. Unfortunately, it is common not only in the West, but also in Asian cities.

At the other end of the scale is the particularly British "engineering for art's sake" tendency exemplified by Norman Foster's Hong Kong and Shanghai Bank building. Although it is not strictly a skyscraper, it embodies to the point of caricature the classical modernist adoption of engineering as a design motif.
Somewhere between these positions come architects such as Cesar Pelli and KPF for whom tall buildings have become a sort of plastic modelling clay, virtually independent of function.

From an urban or aesthetic point of view, this tendency is horrifying in that it emphasises the gigantic scale of such buildings, and offers forms of no discernible cultural logic Kohn Pedersen Fox's Shanghai World Financial Center (459.9 metres), is the exemplar; resembling nothing so much as a bracelet charm or perhaps a disposable lighter. It makes one yearn for the dignity of the great 1930s skyscrapers or the Miesian glass shafts of the 60s and 70s.

An architect wishing to design a skyscraper must bring something to the table to complement the depth of knowledge and sophistication of the best builders, engineers and developers. He or she may no longer be qualified to lead the team, as architects were up to the time of William van Alen (Chrysler building) or Shreve Lamb and Harmon (Empire State), who were involved in politics, engineering, construction planning and financial feasibility. Today's architects have probably narrowed their field of interest to such an extent that their contribution amounts to arcane chatter that sounds irrelevant in the boardroom.

"There is a role for architects in the building of skyscrapers, even if it is the subservient one of chief cake-decorator."

But all is not lost. Clients know that a timeless attribute of architecture is its ability to produce images of identity and status. So, there is a role for architects in the building of skyscrapers, even if it is the subservient one of chief cake-decorator. The opportunity to reset the ethical and aesthetic agenda for tall buildings has probably passed elsewhere, to owners with the will to command an outcome, for example.

Andrew Rabeneck is Managing Director of Interior Europe.

85,000
Petronas Towers would have to be stacked up to reach the moon.

► New York seems less interested in that kind of competition, but neither Chicago nor SOM have forgotten their ambition. Having built the 420-metre Jin Mao tower in Shanghai, opened in 1998, SOM has come to reclaim its birthright.

The tower SOM has designed for 7 South Dearborn (currently in design) will rise to 609 metres, if you count the three tubular transmission masts on top – or 468 metres, just a little higher than KPF's World Financial Center in Shanghai, if you do not. Since the three masts are clearly "architectural" rather than being mere add-ons – and are moreover extruded elements of the structure of the building – controversy is likely to rage as to whether they count.

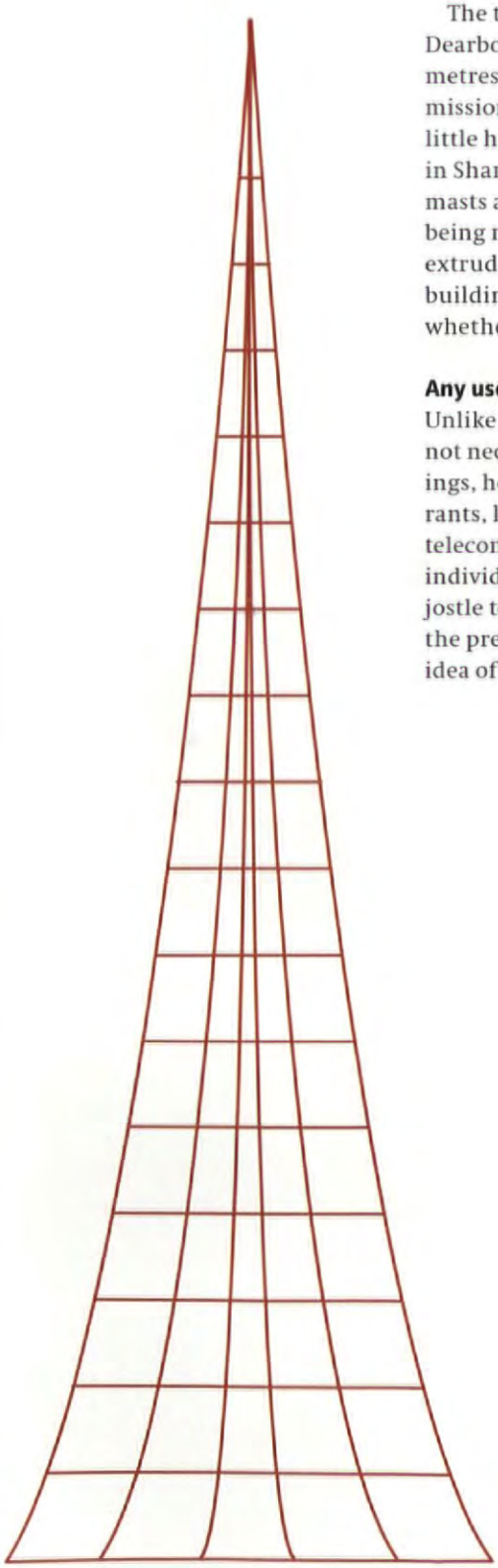
Any use?

Unlike most building types, the skyscraper is not necessarily defined by its use. Office buildings, hotels, homes, auditoria, shops, restaurants, leisure centres, transport interchanges, telecommunications towers... these are all individual building types, but all of them can jostle together within just one supertower of the present generation. The once fantastical idea of a complete city community in one ►

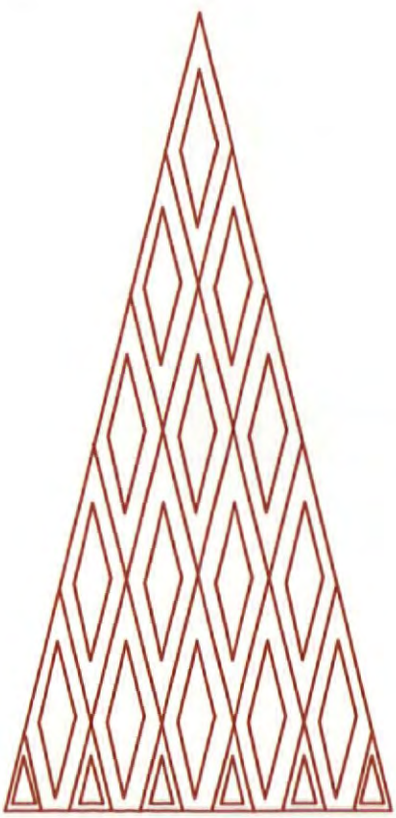
CITIES FOR WHICH CESAR PELLI HAS DESIGNED THE TALLEST BUILDING

- Chicago, Illinois, USA **Miglin-Beilter Tower** (unbuilt) 609 metres
- Kuala Lumpur, Malaysia **Petronas Towers** 452 metres
- Hong Kong, PRC **International Finance Center** (under construction) 420 metres
- Cleveland, Ohio, USA **Key Tower** (formerly Society Tower) 289 metres
- Charlotte, North Carolina, USA **Bank of America Corporate Center** 267 metres
- London, UK **Canary Wharf Tower** 237 metres
- Winston-Salem, North Carolina, USA **Wachovia Center** 140 metres

Kenneth Champlin



1

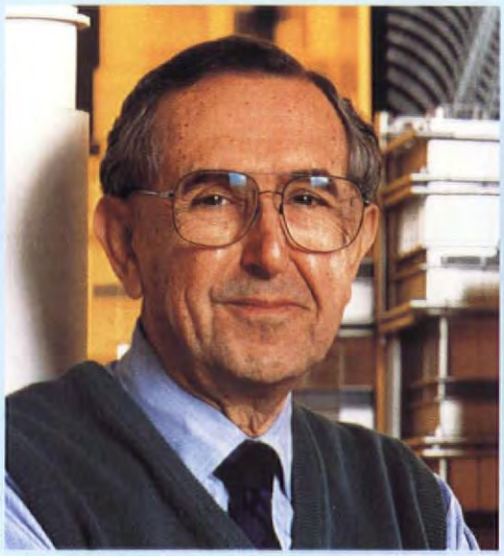


2

3

4

5



Hank Morgan

Left to right: Model of Miglin-Beilter Tower (unbuilt), Chicago; Cesar Pelli; in situ CAD view of International Finance Centre, Hong Kong (under construction)

EMPEROR CESAR

Cesar Pelli has built more of the world's tallest buildings than any other living architect, but don't ask him to pick a favourite – his other children might take offence. The big man spoke to Adam Mornement.

Add the tall buildings that Cesar Pelli & Associates has completed to those that are on the drawing board (see table opposite), and you find that the New Haven-based practice has broken height records in an amazing seven cities around the world – more than any other architect, ever.

So, does that make him the king of tall buildings? "I'd like to believe that, but I think you might find other architects who disagree," says Pelli. Maybe, but they'd be wrong.

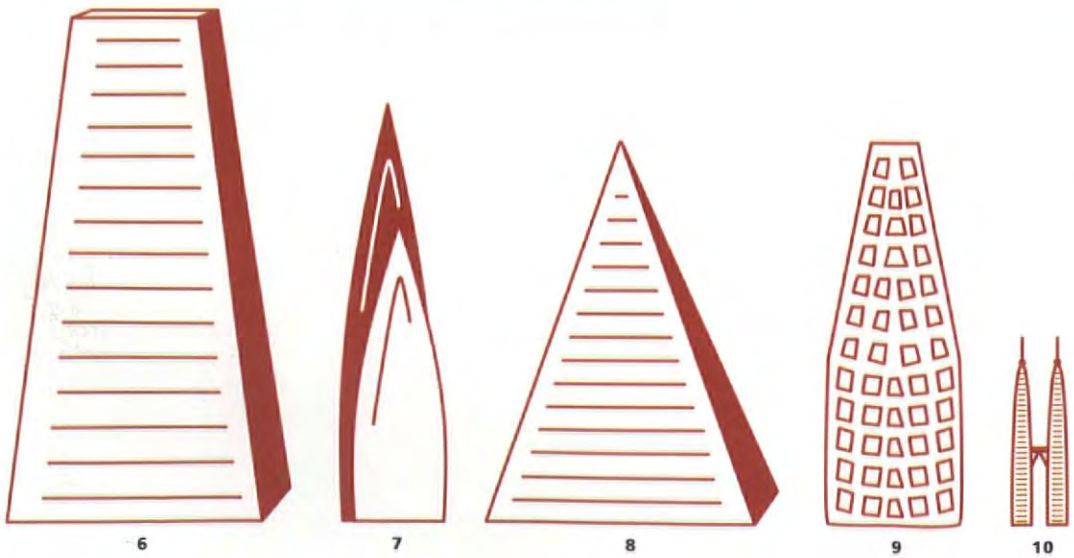
Human nature being what it is – competitive and narcissistic – you'd imagine there would be a sense of one-upmanship in the heady world of tall buildings. Apparently not, at least not if you're already top dog. "When I read of an architect designing a record-breaking tower, I say 'good for them'. It was a great feeling when Petronas Towers topped out, but these are not the values that count," says Pelli. But then he has to say that.

Which building is Pelli most proud of? "Oh, I can never say that. It's like choosing your favourite child." I see.

For a man whose name has become synonymous with tall buildings, does talk of the impending death of tall buildings worry Pelli? "Skyscrapers make a major contribution to the urban environment. Moving people up and down takes very little energy – only 20 per cent of what it takes to move people horizontally. To bring people together in the number that they need to be together would otherwise require buildings like the Pentagon – where people get around on roller-skates. Yes, tall buildings have an obligation to adapt to changing needs, but combining offices and apartments in one building is complex. You get a conflict of cores. Also apartments have financial constraints."

So what are the constraints? "The problems are economical rather than technical. Since we completed Petronas, at least ten taller buildings have been designed. They haven't been built because it's so hard to find backers. There's also a psychological problem. It takes so long to get up really tall buildings that forgetting your car keys in your apartment can become a major trauma."

For a man whose name has become synonymous with tall buildings, does it bother Pelli that his other work – which comprises something like 80 per cent of Cesar Pelli & Associates' output – is often ignored? "Yes."



THE WORLD'S NINE TALLEST BUILDINGS OF THE FUTURE
1 X-Seed 4000, Tokyo; 4,000 metres; Taisai Corporation **2** Try 2004, Tokyo; 2,004 metres; Shizmu Corporation **3** Aeropolis 2001, Tokyo; 2,001 metres; Hazama Corporation **4** Mile High Illinois, Chicago; 1,609 metres; Frank Lloyd Wright **5** Pyramid-In-Pyramid, Singapore; 1,500 metres; Kobayashi Corporation **6** Mother, Tokyo; 1,321 metres; Taisai Corporation **7** Bionic Tower, Hong Kong; 1,128 metres; Javier Pioz, Maria Rosa Cevera, Eloy Celaya **8** Super Pyramid, Japan; 1,000 metres; architect undisclosed **9** Sky City 1000, Tokyo; 1,000 metres; Takenaka Corporation **10** Petronas Towers (for scale)

tower has now passed beyond feasibility into the commonplace.

So what really goes into such a building? In the case of 7 South Dearborn, there will be 350 apartments, 71,000 square metres of offices, two levels of shopping, 11 floors of parking, and the top 13 floors devoted to television and telecommunications.

10,000,000 Bricks in the Empire State Building

In other towers and cities, the top floors are increasingly given over to hotels, since it is difficult to imagine anything more spectacular to boost the room rates. So SOM's Jin Mao tower in Shanghai has a Hyatt on top, and Stubbins Associates' Landmark Tower in Yokohama, Japan, is similarly endowed. In the case of the Stubbins building, the hotel is expressed as an architecturally separate element sitting on top; this idea is taken to its logical conclusion in the so far unbuilt Chongqing Tower by Haines, Lundberg, Waehler of New York. There, a polygonal shaft breaks away into a tall atrium and rectilinear hotel at the summit: a normally ground-based building perched way up in the air.

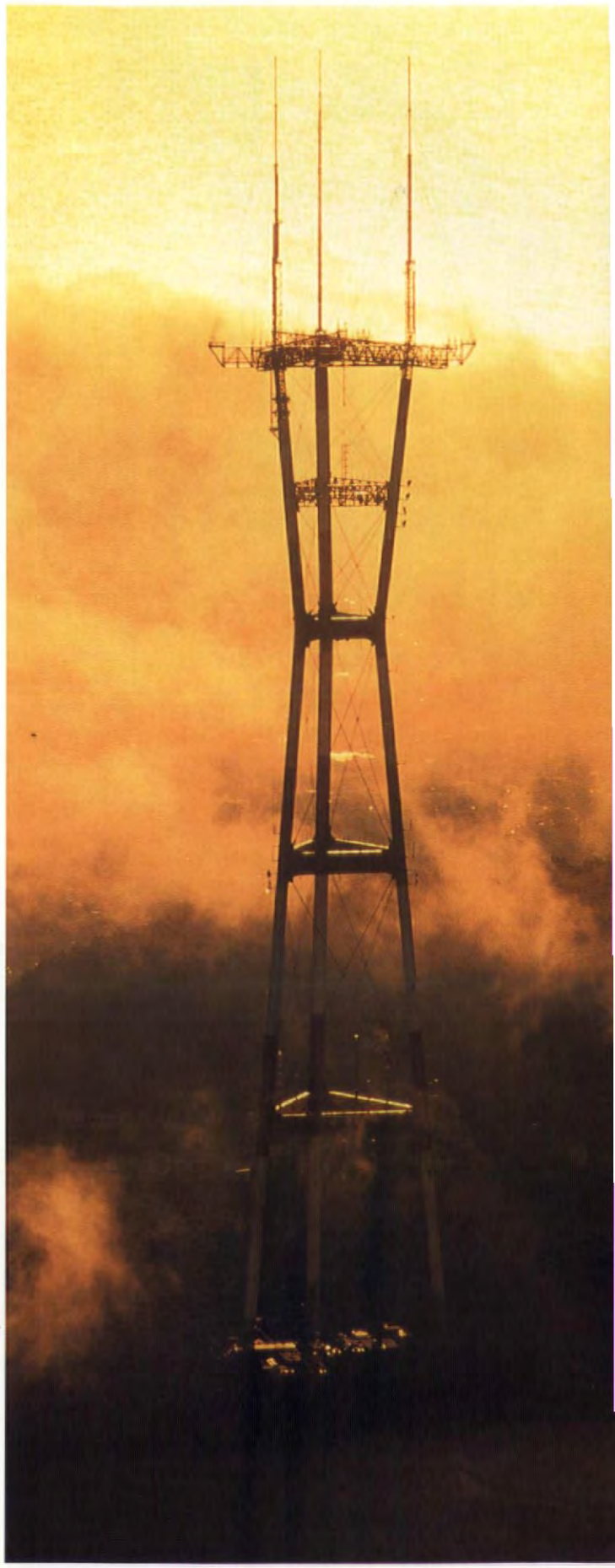
Green? Don't make me laugh

Height and mixed-use are one thing: what about sustainability? Nobody can so far ecologically justify a supertower, except on the argument that building tall might save the consumption of vegetation-supporting land elsewhere. The size of structure needed to build very tall with adequate wind resistance means that it is an inefficient way of obtaining net floorspace: economically this is justified by the higher rents that can be commanded, but in terms of the embodied energy needed to construct the building, it is ecologically disastrous.

102 Elevators in the Sears Tower

Towers can be clad in the latest generation of see-through photovoltaic cells, and their height theoretically makes them ideal for obtaining power from wind turbines. At one point, the giant hole in the top of Shanghai's World Financial Center was considered for a Ferris Wheel: perhaps windvanes would have been more appropriate. So far, however, eco-concerns have largely passed the supertowers by – witness the huge amount of parking deemed necessary for Chicago's latest.

For ecological thinking in practice, the naturally ventilated double skins of mid-height towers in Germany offer some examples. The RWE tower in Essen by Ingenhoven, Overdiek, ▸



Sutro telecommunications tower, San Francisco, USA – 548 metres above sea level at its summit, but lacking "magic"

Pictor Uniphoto

DOES THIS COUNT?

As long as tall buildings exist, there will be competition to build the tallest. And as long as the competition exists, people will lie to win it. The fascination is not just in the height, as Andrew Rabeneck explains, but in the technical genius involved in marrying the requirements of habitation with the challenges of madmen and egomaniacs.

The first recorded debate about what constitutes a structural element of a tall building, and what is superfluous decoration, can be traced to 1930.

When Gustav Eiffel died in 1923, his eponymous Parisian tower was still the tallest man-made edifice on earth. Its 40 year pre-eminence came to an end with New York's 318.2-metre Chrysler Building of 1930, but only because the Eiffel Tower had yet to receive a retrofitted television antenna. The antenna pushed its original 300.51 metres to 320.76 metres, nudging past the William van Alen edifice.

It was at this stage that things got interesting: while the Chrysler is manifestly a commercial building, Eiffel's tower is, well, a tower. In tall building folklore, the argument generally comes down to the perceived credibility of the use of the building that is claiming pre-eminence of height.

It is in fact the Eiffel Tower's very lack of purpose that lends it its mystery and is perhaps why, in the words of Roland Barthes' admiring essay, "Paris waited so long to acquire its symbol. The Eiffel Tower became Paris through metonymy."

At the other end of the function scale – for example where the Fargo ND guyed antenna reaches 628 metres we may be impressed but are not captivated. The function explains the feat, as it does with all the astoundingly tall television towers built around the world over the past 40 years. There's not much magic to them.

Occupied tall buildings, though, do engage us because at an intuitive level we admire the human propensity to take up the eternal and irresistible challenge, "to build to the very limits of strength and knowledge... to achieve the limits of the achievable", in the words of the Council on Tall Buildings and the Urban Habitat (CTBUH).

The CTBUH (for the last 25 years the self-appointed but respected custodian of technical know-how about tall buildings) recognises that the challenge of building tall occupied space is of a different order to building mere television masts. It has developed rigorous criteria for ranking buildings and arriving at precise measurements for their height, which can be put simply as: "sidewalk at the main entrance to the structural top of the building, but no television or radio antennas or flag poles are to be included".

Such a definition is necessary – the history of tall buildings is strewn with deceitful claims to height based on last-minute masts, faked numbers and devices which don't contribute to the real challenge, which is to build the tallest space fit for occupation, as a lease might say.

It is solving the engineering conundrum of minimising the compounding effect of the building's weight and the increase in lateral forces as one builds higher, not to mention the loss of space efficiency to cores crammed with lifts, service risers, fire refuges and smoke lobbies, that represents the real challenge.

"The history of tall buildings is strewn with deceitful claims to height based on last-minute masts, faked numbers and devices which don't contribute to the real challenge."

Apart from technical elegance the real fascination of tall buildings has always been that they solve problems that don't exist in the ordinary world of building design, where the art is to turn physical needs and realities into an aesthetic experience of personal and universal value. Tall buildings illuminate aspects of human technical genius by taking on the self-elected but not very real challenges of madmen and egomaniacs. This lends them an ineffable quality, a purity of purpose which transcends real estate logic or simple function.

Andrew Rabeneck is managing director of Interior Europe.

TALL BUILDING WEBSITES

From the number of bricks used in the Empire State Building, to the length of telephone cabling in Sears Tower, no building type inspires levels of statistical obsession like skyscrapers.

The High Rise Site
www.high-rise.co.uk

World's Tallest Buildings magazine
www.worldstallest.com

Council on Tall Buildings and Urban Habitat
www.lehigh.edu

New York City Skyscrapers
www.nycskyscrapers.com

The High Rise Pages
www.xs4all.nl

Los Angeles Tall Buildings and Structural Design Council
www.latallbldg.org

The Skyscraper Museum (New York)
www.skyscraper.org

My Favourite Skyscrapers
www.members.tripod.com

The Skyscrapers
www.iit.edu

Architecture that reaches the sky
www.fkd.aa.no

Highrises of the World
www.geocities.com

Nalyd's Skyscraper Page
www.skyscraperpage.com

The Shape of Tall Buildings
www.eliattia.com

WWW Skyscrapers.Com
www.skycrapers.com

► Kahlen and the Commerzbank tower in Frankfurt by Foster and Partners both sport this technology. In the case of Foster's Commerzbank, a spiralling series of "sky lobbies" allows office workers to open their windows into atria that in turn have fresh-air connections with the outside world: everything is not hermetically sealed and air-conditioned.

But thinking along these lines has far to go.

"The designer of tomorrow's towers will be more the masterplanner than the architect."

Research projects on green towers by Ken Yeang in Malaysia have so far been for relatively small buildings such as his "Hitechniaga" project of 1994 (unbuilt), which is all about solar shading and the elevation of open green spaces. In contrast, London architect Future Systems has shown over the years, on the basis of the best engineering research, what is possible on the largest scale. The practice's "Co-existence" tower (1986) was exemplary in showing how offices, housing, and public open space can be incorporated into a supertower of variable height, built out of repeatable modules.

6,000
The number of construction workers employed on the Petronas Towers at the height of the construction activity

Then Future Systems moved into the sphere of designing zero-emissions buildings, of which "Project Zed" of 1995 was a prime example: organic in form, naturally ventilated, and with a tall, slender wind vane in an elliptical opening at its heart. If that was symbolically female, the next project was distinctly male: the "Green Bird" supertower. Its tall, curving shape is designed to maximise the possibilities of natural ventilation, using air-uplift devices familiar from industrial chimney stacks. Photovoltaics, rather than windpower, reduce power consumption greatly – though not yet to zero levels.

32,000
Number of windows in the Petronas Towers

That is the dream: eventually to build supertowers that can contain whole mixed-use city districts, while simultaneously being able to generate all the power they might need. The designer of tomorrow's towers will be more the masterplanner than the architect, since the task in hand will be strategic and urbanistic. And as Jeff Koons said of SOM's 1970 John Hancock Center in Chicago: "Mozart would have had a condo on 93rd." WA

TALL BUILDINGS DATA *provided by Hanscomb*

Reasons

- Building as much floor area on a site as possible maximises the return per square metre.
- Businesses need to be close to each other, which has created a demand for multi-storey buildings – where the demand has been higher, so have the buildings.
- Image and prestige.

Definitions

- Viewpoints differ, but most people consider tall buildings to be any building with 15-20 storeys above ground level.
- Structurally, a tall building can be defined as one where lateral wind loads become the dominant factor rather than gravity loads – the need to work within the latter parameter is what makes the design of tall buildings unique.

Technical

One of the more popular structural systems used for tall buildings takes its lead from nature and uses an external tube to provide stiffness. In this system, both gravity and wind loads are carried by an external skeleton that forms a tube containing the building. This tubular form can accommodate the loads with relatively light structural members and tends not to encroach significantly into the building's floor area.

Advances in concrete technology, especially the advent of high-strength mixes, have assisted structural engineers, helping to make structures more rigid and reduce concrete member sizes. The tubular structure also enables the architect to be creative with the building shape – see Sears Tower (Chicago) and the Bank of China (Hong Kong).

Another benefit of tall building design is that the external skin is hung from the structural framing. The external facade requires the creative talent of the architect.

Inside, recent development of stacked elevator cabs and high speeds have helped even the tallest buildings function efficiently.

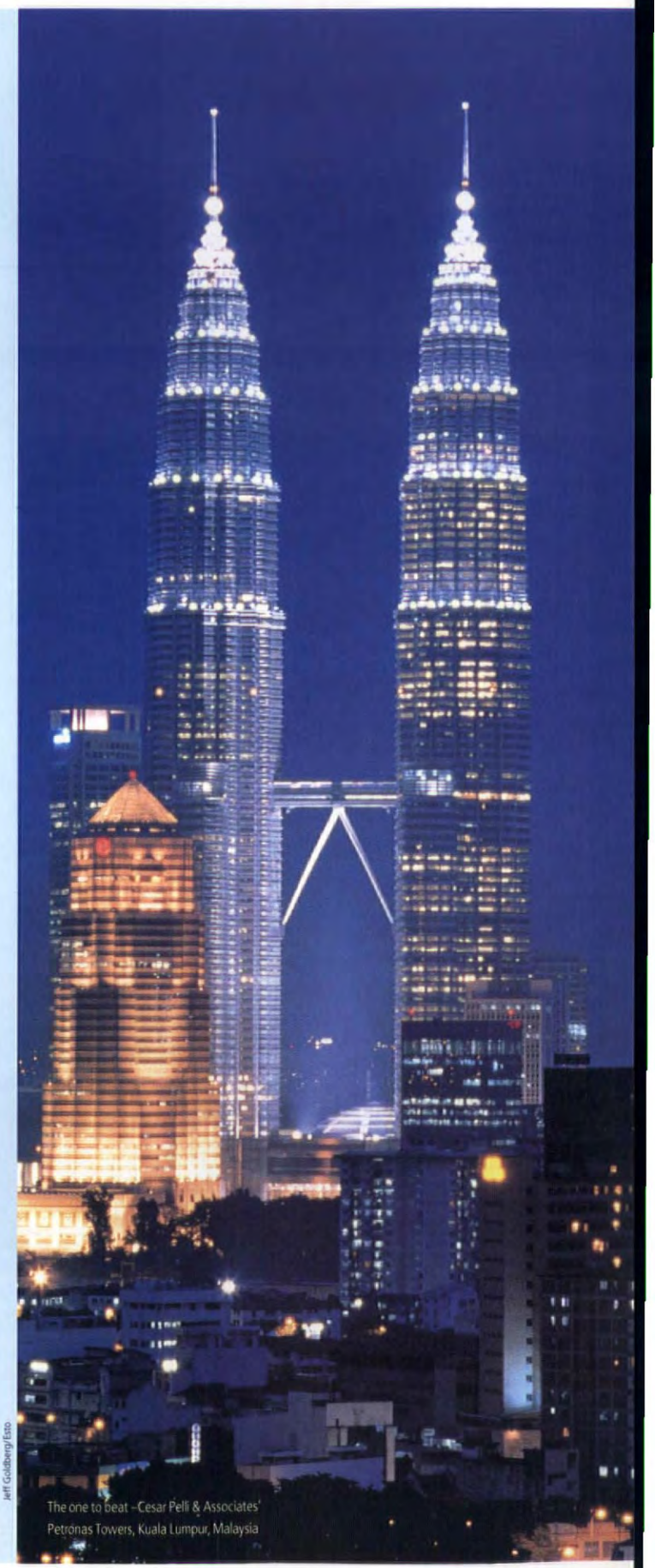
Tall buildings often have limited programmes. These are beneficial when planning the building's engineering services. Mechanical services are normally divided into zones of 15 to 20 floors: the mechanical design for a 60-storey building is the equivalent of three or four 15- to 20-storey buildings.

Fresh air intake can be a problem: it is not always possible to fit air intakes on to the face of a building due to external wind pressures and aesthetic requirements. In many instances, large air shafts or innovative double-wall construction schemes need to be incorporated. Restrictions on fresh air intake introduced in the 1980s, in an attempt to limit energy usage, resulted in "sick building syndrome". The regulations have now been revised so that more fresh air is required, although the limit is still generally lower than it was 30 years ago.

Occupants of tall buildings often notice movement or sway at the top of the building, and this constant acceleration can cause discomfort. The sway can be reduced by passive means, by stiffening the structure, or by active means, by introducing compensating dampers. The massive weights and floating mechanisms needed to create an active damper are expensive and therefore often rejected in favour of passive methods.

Comparative costs for 30- to 50-storey office building ($US)	**$US/m²**
Australia* Sydney	1,500 - 1,600
Canada* Toronto	1,050 - 1,150
Germany* Berlin	1,600 - 1,700
Hong Kong*	1,750 - 1,850
Malaysia* Kuala Lumpur	1,050 - 1,150
UK* London	1,600 - 1,700
USA* New York	1,650 - 1,750

**Costs include basic tenancy finishes (carpet, suspended acoustic ceiling, air-conditioning distribution, lighting and power)*



Jeff Goldberg/Esto

The one to beat – Cesar Pelli & Associates' Petronas Towers, Kuala Lumpur, Malaysia

Web feats

This year will see the release of a wave of CAD solutions which allow projects to be executed in cyberspace. The global marketplace is no longer the exclusive domain of the corporate big boys thanks to new off-the-shelf tools that could change the nature of practice for ever. Ed Goldberg reports.

Today it is truly possible for architects to access information instantaneously from consultants around the world, with different CAD software, in a number of different languages.

Recent benchmark international ventures such as HOK/Lobb's Stadium Australia, Kisho Kurokawa's Van Gogh Museum extension and, most notably of all, Foster and Partners' Chek Lap Kok airport, have led the way in showing that international collaboration is the future of practice, and with the advent of reliable wide-band networks on the internet, information sharing has become the major focus of development in the architectural community.

Technology becoming available this year will allow projects to be executed faster and more cheaply, dramatically reducing the need for business trips, shipping, administration of CAD data, telephone and fax calls and reprographics. Entire projects – models, technical data, revisions and correspondence – will be available online for editing or review by project participants.

The implications for practice are huge – in theory any architect could now work anywhere in the world, with a hand-picked international support team, without the expense of opening overseas offices or posting employees, creating new structures of cost competition and sector specialisation.

Buying into the web

This breed of "collaboration tool", as it is known in the trade, can take several forms. The most visionary approach is the rental of internet storage space and navigation equipment, providing portals for storage and retrieval of content and drawings.

These "locker" services, which weren't even conceived a few years ago, can offer additional benefits – the most exciting of which is online specifying. CAD details, models and specifications of products can be imported into building models and ordered through the host site – an excellent means of avoiding visits by sales representatives, although the fact remains that suppliers will have to pay handsomely to be included, ultimately reducing the architects' choice.

One of the fastest-growing of these services is the Blueline Online website. It offers two services: Project Net Online, and Project Net Enterprise, which supports teams which wish to set up their own extranet. Project Net's software applications are broken into three disciplines – design development, construction, and post-occupancy. The construction applications allow mark-up of drawings by contractors during the construction phase of a project. Attached to intelligent request for information (RFI) forms, marked-up drawings can be tracked, questions answered, and a history established for architect, general contractor, and sub-contractor.

All the user needs is internet access –Netscape 4 or Internet Explorer 4. No plug-ins are required. The system will view up to 200 different file types, and has a simple mark-up scheme for team use. Everything is "drag and drop", and accessed through the standard Windows Explorer. The service costs US$1,250 per month per project with unlimited online user access.

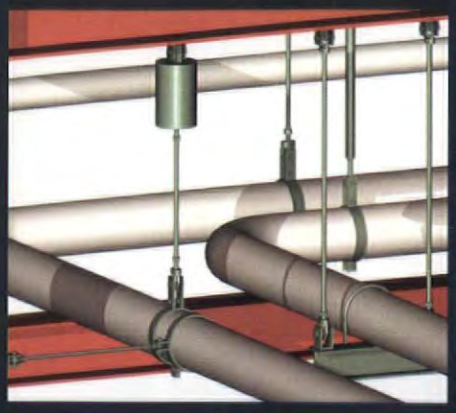
Viscomm's website solution is one of the most futuristic developments in the field. E-commerce already in place on the site, allows pricing, buying, and order-tracking of building components. The site, "www.visualibrary.com", contains complete catalogues, specifications, CAD details, and photographs from thousands of suppliers.

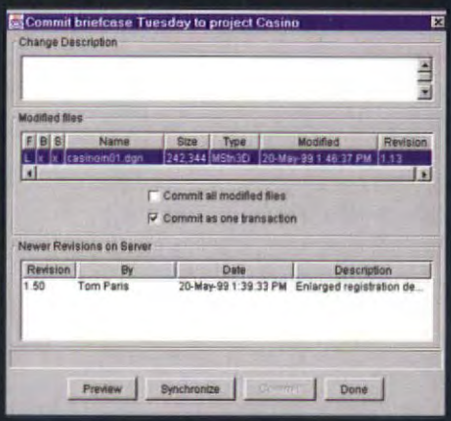
RELMS (Real Estate Lifecycle Management System) is an integrated series of services working over the internet for the management of leases, facilities and work orders, and the collection and distribution of reports, drawings, bidding and contracts. Something to watch out for as competition evolves in the sector are good-value introductory offers – Viscomm's is free use of the system for one project.

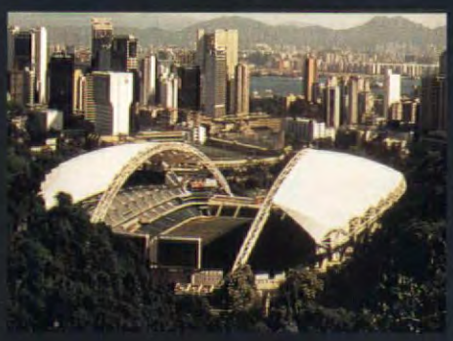
"The logical conclusion is a world of architects categorised only by sector and style, able to bid on projects anywhere in the world on an equal basis with the competition."

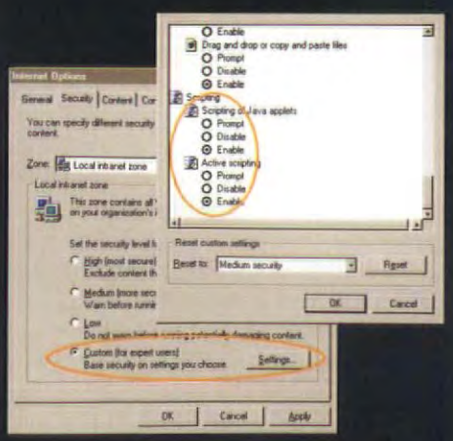
All the major developers of architecture, engineering and construction (AEC) software are riding the bandwagon, and most are preparing price structures and incentives that will make it impossible for architects to ignore the trend.

They are producing specialised intelligent systems which maintain histories, manage documents, and allow for virtual file translation. This type of operating system provides a structure for interaction in cyberspace, allowing simultaneous work on models, recording of revisions ▶









From top: Individual components are stored separately through Bentley's Project Bank, and are configured in drawings according to the file requested; Kisho Kurokawa's Van Gogh Museum extension, one of the international collaborations which has defined the nature of the new CAD; Viscomm's website allows complex file structures to be navigated through drag-and-drop menus; HOK/ Lobb's Stadium Australia, multi-disciplinary, multi-national, profitable, and IT-led; Blueline Online's website, a transparent "locker" for global access of project data.

Cost comparisons

Network-based project management's great strength is not as a money saver, it is as a facilitator of business which would not otherwise have been practical. However, a theoretical study of a practice based in the US, working on complex US$15 million project for one year, with an engineer in the UK and the site in the Middle East, show that the cost benefits are nonetheless considerable. The information that can be secured in a project extranet or workgroup includes:

- CAD models, drawings engineering files
- Project schedules
- Microsoft Office and Corel Office files
- Corporate standards
- Design standards
- Project standards
- Project correspondence
- Site photographs

The cost benefits come with the streamlining of working processes. If operational engineering staff have all the information they require at their fingertips, a productivity increase is inevitable – a 10 percent increase could save US$35 per seat per day. Similarly, if a project were to require 2,500 check plots per month at US$3.50 per print, and use of the web as an interaction space reduces the number of check plots required by half, the saving on a one-year project would be US$50,000. Savings like this have to be balanced against the cost of training and licensing, but nonetheless the indications are of a short-term return on investment.

	WITHOUT PROJECT WORKGROUP	WITH PROJECT WORKGROUP
Telephone, fax, delivery	$20,000	$15,000
Travel, per day	$15,000	$12,000
Copies, drafts	$15,000	$11,000
Support staff	$35,000	$12, 000
Delays	$35,000	$10,000
Extras	$35,000	$25,000
Total project costs	$155,000	$85,000
SAVINGS		**$70,000**

TECHNICAL – CAD

► and correspondence, flagging of conflicts, and archiving.

Bentley Systems' Project Bank is the highest-profile forthcoming release in the sector. According to Keith Bentley, company CEO and all-round CAD industry powerhouse: "Project Bank is the most significant piece of software Bentley has ever written." Indeed, the project journal and change-merging features could revolutionise the management and tracking of projects.

Project Bank replaces the traditional project directory structure with a repository called a component data bank (CDB). Design files won't exist – individual design components will instead be stored in the CDB. Information such as timestamp and unique component identifiers are stored about each component, for which a history is kept for the life of the project. Models look the same, but their structure is infinitely more sophisticated.

Bentley is now working on a new scheme for storing AutoCAD DWG files in Project Bank, which will enable users to store and retrieve DWG files for editing with AutoCAD, or as DGN files in MicroStation. Collaborators will be notified in real-time that someone has made a change or red-lined, and can choose whether to synchronise with the change. Bentley's Gatesian plan for the future is to have Project Bank, which will already include a free copy of Microstation, support all its products as well as products offered by others.

Point of view

Autodesk, the world's biggest CAD developer, is dragging its heels slightly, while it develops its internet web site solution, ProjectPoint. This web storage system will include content from product manufacturers. Autodesk has also released its new Volo View Express software, an internet-enabled viewer for AutoCAD which extends design access to everyone on a project team. Volo View Express makes design communication efficient and easy by enabling anyone to open, view and print DWG, DWF and DXF files. It can be downloaded free from "www.autodesk.com/volo".

Space-age

A third type of collaboration tool focuses solely on enabling numerous team members to work simultaneously on one project. ArchiCAD for Teamwork offers equal access to its object libraries, allowing members of a project team to work on separate parts of the same project and merge their work into a master project file on command.

No server software other than the operating system's network capability is needed. It works on both Windows 95/NT and Macintosh operating systems, and can be accessed from either system interchangeably. In use, the architect defines his or her part of the project by story, layer and area and starts working as usual. The operator works in what Graphisoft, the maker of ArchiCAD, calls a "work space". The project file is held in a separate location, and users are able to access a clone of the file in their work space, where changes are made. Other users can then synchronise their clone versions of the files in their workspaces over a local network, intranet, or over the internet.

The continually expanding capability of the computer is beginning to bind the architectural profession into a new creative entity. This year's sea change in the nature and function of CAD software represents the beginning: the future offers even more extravagant possibilities. Ordering online satellite surveying data from a hand-held e-book may only be ten years away.

The logical outcome is a world of architects categorised only by sector, able to bid on projects anywhere in the world on an equal basis with their competition. However close we are to this, developmental momentum has now shifted from the sophistication of the modelling, to the actual process of building design.

H Edward Golberg is co-ordinator of CAD and multi-media at Carroll Community College, Maryland.

Performance architecture

The futuristic vision of virtual practice seems within touching distance, but how close are architects on the ground? The case of the Philadelphia Performing Arts Center shows how the new ideology of CAD is already filtering through.

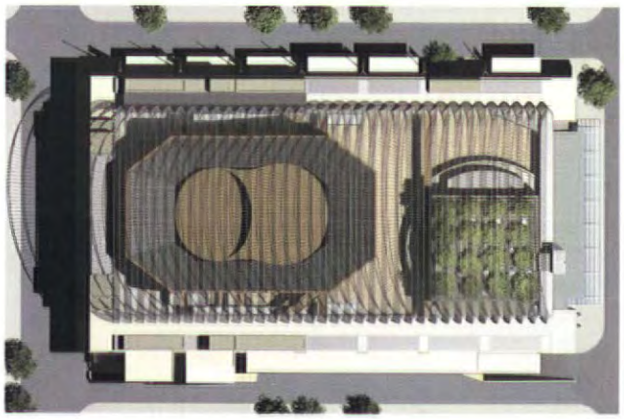
Rafael Viñoly and Dewhurst MacFarlane (DM) are designing the Philadelphia Performing Arts Centre, a project which combines complex technical experimentation with the involved aesthetic brief of a municipal trophy building. So how does a modern design team reconcile these exacting demands without compromising each other's work? The answer indicates not only that architects are ready for information-sharing IT, but that they have been dabbling with the principles for years.

"The facade is immense, nothing on this scale has ever been done before," says James O' Callaghan, Dewhurst MacFarlane's project director. The tension in the building's barrelled steel and glass roof is kept constant by large steel weights on cables hung from the ends of the facade – this type of construction is so new that it has no building codes to cover it. The in-depth mathematics involved were produced with DM's high-powered QSE engineering software, a specialised off-the-shelf program configured to suit the company's specific needs, with Lusas used for finite element analysis.

The software enabled multiple revisions to the engineering calculations in order to come up with the middle way between Vingoly's vision and the structurally possible. This information was then transported into 3-D Studio to make the full building model. O'Callaghan says: "Rafael (Viñoly) wanted the facade to have no back structure – this required extensive wind tunnel analysis. It took time to build the model because of this complexity, but when it was finished then small changes could be made to the design and the full implications could be seen clearly."

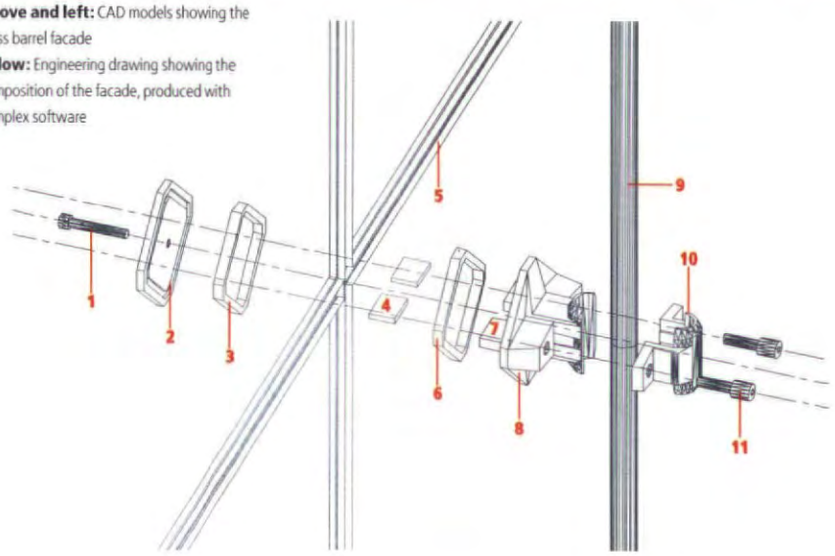
It took many different takes before Viñoly was happy with the density and DM was confident in the structure. DM's experts in glass design are based in their UK office, and drawings were sent between the two offices by e-mail, using ISDN lines to handle the larger files. "The communication was seamless – we'd work on the drawings in New York, send them to England at the end of the day, and by the time we got in the next day they'd have been marked up and were ready for us again. But there is a potential danger of laziness in terms of what is official and issued. I think there has to be a protocol set up before embarking on a collaboration of this type."

But the real creative progress was made, according to



Above and left: CAD models showing the glass barrel facade

Below: Engineering drawing showing the composition of the facade, produced with complex software



Key to structural drawing

1 Exterior cap screw
2 Exterior face plate
3 Compression ring
4 Silicon setting blocks
5 Low-e tempered glass
6 Compression ring
7 Deadload plates
8 Steel clamp plate
9 Vertical cable
10 Cable clamp plate
11 Cap screw

O'Callaghan, in the face-to-face meetings. "Our people and Viñoly's would hold informal meetings where we would get round the table with the drawings and a big sketchbook – there really is no substitute for that." It is worth remembering that the creative tension borne of Viñoly & DM's "smoke-filled room" style discussions needs to be guarded carefully.

The PPAC shows a balanced approach to IT and communication in architecture – using technology as an operating platform for the creative process rather than as a language.

TECHNICAL – CAD

Future exchange

Most practices have the technology to maximise the efficiency of their design development process, but use it at an estimated mere 30 per cent of capacity. Nigel Davies, CAD director at structural engineer Buro Happold, sets out his model for maximum yield on IT investment, arguing that people need to operate as systematically as the programs themselves.

The challenges faced day to day by project teams exchanging data are numerous, and the same problems occur on nearly every job. Yet amazingly, in this age of digital technology and high-speed access, lack of attention to the exchange of CAD data prevails. The era of CAD as "computer-aided draughting" is over, and, in fact, the view of CAD as a digital drawing board can cause resistance to more efficient working. CAD can, and should, be used for full-size representations of what you are designing – not as an expensive way of viewing a piece of paper.

Whenever a paper issue is sent out, it is checked, signed, noted on an issue sheet, and a record copy stored for reference. So why is it that issuing a CAD document involves nothing more than acquiring the recipient's e-mail address, and the pressing of "send"? Can the person receiving this file open it? Is it spatially correct to the site co-ordinates or grid? Can they wade through information to extract the data they require? Is the recipient going to know which version to work to? Is there a digital back-up copy in case we need to trace the issue at a later stage? It's a poor show that in the age of almost complete reliance on computer data, the answer to any of these questions is still "Eh". There are solutions available for electronic data management, but a system of protocols for day-to-day management and tracking of CAD issues can provide an alternative at minimal extra cost.

The hardest obstacle to overcome is encouraging staff to follow agreed standards. The solutions can be simplistic, but there is no definitive set of answers . Everybody works in a different way to produce data for a different reason. When working as a team and sharing CAD data, the best topic to cover first is why others do things the way they do. Don't dismiss others' systems without understanding them – remove the element of hope when exchanging CAD data by preparing the teams up front and define a set of guidelines by which you will produce and issue all data. Use issue sheets, but don't send them by e-mail. Provide a list of the files by fax so that if an issue gets mislaid in the digital jungle of the world wide web, the recipient will still know the files should be coming. That way, back-ups are easy to find and any stage of the project is retrievable within minutes.

It is essential that others understand the names of the files. How many times have you received a ground-floor plan file, tried to overlay the first floor and found it to be in the next street, rather than in the same location? Find a simple, short convention. Forget using a project reference in the file name, it wastes digits and only refers to the job in your office – use directories to split the projects up.

Never treat a CAD file as revised – CAD file is a continually developing building issued as a snapshot at a given time. You will run into problems if you switch back to the traditional ideology of revisions. Paper drawings have revisions; CAD data is progressed continually. If a file is issued with the same name every time, the recipient never has to think how to store all the revisions – they know that it is the current one that you want to work from. Linked to a simple issue back- up procedure, you should never lose data.

A problem with plotting others' files is that text is no longer formatted as it should be. Stick to default fonts when possible, but if not, find out how your files will plot at the other end. If you expand these standards to every project, the efficiency of your whole company can be enhanced. Nobody swapping between jobs will have to think about how the new project is set up. For example, glazing is always on the layer defined for glazing, trusses on the truss layer; every file is in millimetres, et cetera.

Tracking data at a later date is another hurdle. People's attitude towards a shelf of labelled boxes of record copies stored with issue sheets and a facing library of CDs with some bizarre labelling system is extremely different. For some reason, digital issues cause more fear than paper. Whatever protocols you implement, you must be confident that any CAD issue can be retrieved within minutes.

Forget paper. Bold and brash move, but for CAD data it is the most flexible approach. Paper is a 2D format developed for translating ideas from a designer thinking in 3D to a builder thinking in 3D. Remember also that interaction between software packages is key. Make sure your systems cover all eventualities.

The whole team has to buy into these procedures. There is no easy way to convince people, except to openly discuss how and why it can be helpful and understand the requirements of the others. The industry has to make progress, and the biggest advances are in collaborative working. But the industry, as a whole, led by those who can appreciate the advantages of change, must want to change.

Even though you may be proposing these protocols, make sure your mind is open to alternatives. The next person may have an idea that will improve your methods. Be aware, and willing to embrace progress, because there is always a better way.

"CAD can, and should, be used for full-size representations of what you are designing, not as an expensive way of viewing a piece of paper."

Hayes Davidson

The most complicated CAD data ever?

Buro Happold's methods of efficient CAD management were honed working on large scale, multi-disciplinary projects like the Millennium Dome (*WA77* pages 50-55). The design team comprised Richard Rogers Partnership and construction manager McAlpine Laing Partnership. This feat of engineering required more data output than anything the partners had worked on before. Nigel Davies approached the task with a clear structure of protocols in mind. "We knew each others' working methodologies, so we drew up a list of each firm's resources in terms of both CAD and general office management and came up with a solution. We agreed on file-naming conventions and directory structures. So long as we informed the other team members of our own colours, weights and layer use, we didn't need to go any further."

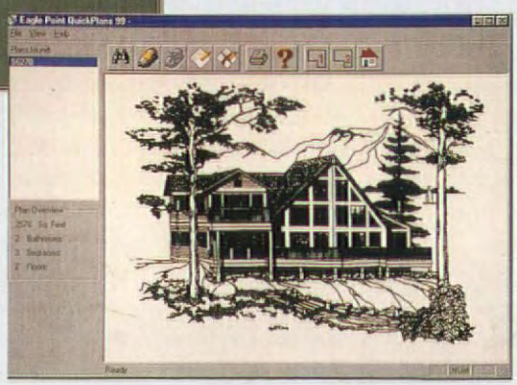
Live design data was stored on a central server on site, with ISDN lines to Buro Happold's and RRP's main offices. Links were also set up to run down the hierarchy of sub-contractors. Issued drawings were passed through McAlpine Laing onto the server, so that anyone logging on was safe in the knowledge that they had the latest drawings. Rogers used three teams – all were able to work concurrently, using the same data, but going in different directions. The solidity of the CAD management structure led all the work back into the main server at the right time.

The result was a 3-D Microstation model which was one of the most complex ever produced. Davies says: "The model contains an unprecedented level of detail which includes almost every bolt." Although intended for 2-D calculations, there is enough information to enable to team to use it for complex engineering and design work.

TECHNICAL – CAD

Net prophets on show

A benchmark AEC Systems show took place in Los Angeles in June. The talk was of collaborative practice, interoperability and the internet. Things are changing fast in CAD, and there's money in it for architects who are ahead of the game...



Top: DataCAD 8'5's digital terrain modeller in action **Right:** Eagle Point's ArchPro drawing software

In an industry which carries as much money with its fortunes as CAD, there is always the sound of new themes and ideas buzzing excitedly around any gathering of its inner circle. Last year, AEC Systems reverberated to talk of 3-D visualisation software, and its potential for "hooking" new clients. This year's big news was the crop of new internet-led releases from both the big names and the smaller independent publishers. CAD vendors are wholeheartedly embracing the interoperabalilty as the key to a new era in their technology and in architecture as a whole.

Microstation User editor Randall S Newton said: "Seemingly overnight, or at least in time for AEC Systems, a variety of companies have sprung up offering forms of Internet-based project management." The basic theory of a streamlined, globally accessible project archive, containing every nut, bolt, idea, decision, review and redline from concept to completion, is exciting for everyone in architecture, but perhaps none so much as the book-keepers.

It's not that the internet is new, but for the first time the technology to exploit its huge data-handling capacity is commercially available. Until now, a casual stroll down the information superhighway gave the impression that the only way to boost your bank balance online is by auctioning original-release *Star Wars* action figures to obsessive collectors, or running an information site which carries more advertising than information. But now manufacturers are showing that there are tangible ways to make practice cheaper, architects are waking up.

The 1999 AEC Systems conference was themed "Collaboration for Productivity and Profits," and attracted over 1,500 attendees. A programme of seminars was given by industry leaders and experts and users from on the ground. Drawing in standing-room-only crowds, the hands-on sessions gave participants an interactive learning experience

while working on some of the industry's leading-edge workstations. With an audience of over 1,200 the "Software Industry Leaders Keynote," akin to the US agriculture department's crop report in terms of setting buying and production trends, featured the CEOs of leading CAD companies.

One of the most popular sections of the show was the "Designers 3D CAD Shootout". Hundreds of architects watched teams challenged to design a resort clubhouse in Florida. The project had strict criteria – 2,000 square metres with a spa, health club, extensive pool, restaurant, lounges, and poolbridge. It had to be completed within six hours and full drawings had to be finished and posted on the web. The winners, which look no worse than real built projects of the genre, are displayed at www.aecsystems. com.

New releases on the exhibit floor were myriad. Apart from the genre-defining tools unleashed by the major players Bentley, AutoCAD, Graphisoft, Blueline Online, Autodesk, Viz and Viscomm (see page 80) , there was plenty of note for architects with an eye on their next acquisition. DataCAD debuted its latest upgrade, DataCAD 8.5 for Windows 95/98/NT, which includes features such as a Digital Terrain Modeler, expanded object libraries, and a characteristic DXF/DWG translator.

DataCAD is a founding member of the OpenDWG Alliance, a group campaigning to make the DWG format an open industry standard. This extra compatibility should broaden DataCAD's user base from a core of registered architects to include other AEC professionals.

Brics won a "Showstopper" award for its integrated modelling systems and portfolio of internet and extranet information services. Bricsnet Architect is a sophisticated programme which specialises in enabling the transfer of complicated 3-D models into consistent 2-D drawings and reports. Its associated web services offer news, specifying information, bidding forums and a host of other tools. The product will be available for IntelliCAD later this year and for AutoCAD in early 2000.

Archsoft's new plug-ins for 3D Studio Max & Viz, Realpeople and Realtrees, drawing on libraries of thousands of meticulously extracted blue-screen images, allow animators to drag-and-drop photo-realistic components into their animations. The potential for embellishing a rendering is enormous, and for relatively little effort, it is a potential money saver for practices of all types.

Mensi, better known for pioneering work in 3-D data capture and scanning technology for modelling applications, unveiled its new modelling software program. It acts as a "middleman", processing point data from its scanner or any other source into 3-D models, which can then be output into the any mainstream desktop CAD application. This has a particular advantage for architects involved in restoration projects, as it provides a quick and simple way to turn readily available data on existing structures into workable models.

InQuest Technologies released Projectquest 2.0, an internet project collaboration system which can handle an unlimited number of project and file directory levels along with read only and check in/check out file support. The workflow component provides built-in support for file routing and file dependency control, and the package intergrates with Microsoft index server to provide the ability to search files by their contents including text within CAD files.

Adaptive Media's new Envision 3D Release 4 is designed to enable both technical and non-technical users to work together on large-format 3D CAD models. With its Shared Vision plug-in, design teams and their colleagues can simultaneously access 3D CAD models over the web and review, redline and even discuss complex 3D designs in real-time. The new navigation feature allows one member of the team to "drive" others through the model, providing distributed teams with a way to visually communicate and collaborate without downloading the entire CAD model.

Hell bent on progress

"The focus of CAD has shifted from computer aided drafting to computer aided projects. Coordinating teams are disseminating, and project engineering is key," says Keith Bentley, keynote speaker at this year's AEC Systems conference. His company, Bentley Systems, is channelling its energy and resources into cutting-edge information management tools, and his long-held vision of streamlined "e-practice" is now shared by many. "The pace of development in design tools has slowed, and it is the IT framework in which they are used which determines their capabilities. Microstation (Bentley's staple design package) is an old tool, it has it's roots in the days of mainframes. The key to its effectiveness now is compatibility." Codewriters are concentrating on the idea of storing each element of a drawing as a single unit, merging changes through all areas of a project, comparing simultaneous work, flagging the changes. But are we ready for the paperless design pro-

"Inertia's not a bad thing. People won't let hard copy go straight away."

ject, and is the internet ready for the enormous amount of information that will be loaded on to it if remote working picks up in the way CAD did in the late 1980s? "Inertia's not a bad thing, and slow change is a fact of life. People will not let hard copy go straight away. But the wide bands available on the net nowadays are perfectly capable of delivering the information reliably. We are seeing a sea change in the business," Bentley states, ambiguous about whether he is referring to architecture or IT, "because design data is about more that just images."

THE UNIVERSE OF CAD

precision in creativity

International Exhibition on Solutions for

CAD • CAM • AEC

EXPO CAD ARGENTINA '99

29 - 30 September 1999

1 October 1999

Centro Costa Salguero

Buenos Aires - Argentina

Be part of the second exhibition on technologies and applications for CAD, CAM and AEC

- Architecture / Engineering / Construction
- Manufacturing Design
- Solutions for the Industry
- Animation and Multimedia

- Conference Series
- Workshops
- "Expo Cad '99" Contest

... and more!

EXPO CAD **Please, fax this reply form** EXPO CAD

Please, send information as: ☐ Exhibitor ☐ Visitor

COMPANY

COMPANY'S ACTIVITY

NAME

SURNAME

POSITION

ADDRESS

CITY

STATE

ZIP CODE

COUNTRY

TEL

FAX

E-MAIL

EXPOTRADE

INTERNATIONAL CONFERENCES & EXHIBITIONS

Argentina (Juan Ignacio Peña)
Guatemala 5885 - (1425) Buenos Aires
Tel.: (54-11) 4778-7070
Fax: (54-11) 4778-7171
e-mail: expo-cad@expotrade.com.ar
http:// www.expotrade.com.ar

USA (Maarten Wagener)
2550 S. Centinela Ave., Bldg. 102, 3rd Floor
Los Angeles, CA 90064
Tel.: (1-310) 479-6867
Fax: (1-310) 477-3012
e-mail: mwagener@expotrade-usa.com
http:// www.expotrade-usa.com

Europe (D) (Katrin Klosterkemper)
Saarlandstr. 5
22 303 Hamburg
Tel./Fax: (49-40) 270-0862

Visit
The Building Centre *at*
www.buildingcentre.co.uk

▸Bookshop

Architecture
Monographs
Design
Surveying
Construction
Landscape

▸Information

Products
Services
Standards
Regulations
Research
Reports

▸Services

Conferences
Exhibitions
Seminars
Export

the BUILDING Centre

The world's largest permanent exhibition and single source of information for the building industry

26 Store Street • London • WC1E 7BT

Tel: +44 20 7692 4000 • Fax: +44 20 7580 9641

Advertisers' contact directory

The manufacturers advertising in this issue are listed below and will provide you with the latest product information or literature to service your planning requirements. All the relevant contact information is supplied for your convenience, however, should you experience any difficulty in reaching any particular company please call or fax the World Architecture Enquiry Service on Tel: +44 171 560 4120 Fax: +44 171 560 4026.

THE BUILDING CENTRE
26 Store Street
London WC1E 7BT
UK
Tel: +44 (0) 20 7692 4000
Fax: +44 (0) 20 7580 9641
www.buildingcentre.co.uk
p.87

BENTLEY SYSTEMS INC.
690 Pennsylvania Drive
Exton, PA 19341
USA
Tel:+ 1 610 4582743
E-mail: tim.brown@bentley.com
Web:wwwbentley.com
OBC

BRICSNET
Koning Albertlaan 15
B-9000 Gent
Belgium
Tel: +329 243 9310
Fax: + 329 243 9311
email:info@brics.be
Web:www.brics.be
p.11

BULO OFFICE FURNITURE
Industrie Zone Noord11,
B-2800 Mechelen
Belgium
Tel: +32 15 282828
Fax:+32 15 282829
p.4

CELOTEX CORP
P.O Box 31602
Tampa
Florida 33361
USA
Tel: 813 873 4000
p.14

ERCO Gmbh
Lundenscheid D-58474
Germany
Tel: +49 2531 551 0
Fax: +49 2351 551 340
p.6-7

EXTERIEUR VERT SA
Chemin De Fondurane
r83440 Montauroux
France
Tel: +33 (0) 49 44 76247
Fax: +33 (0) 49 44 76221
E. Mail katrien.h@exteriurvert.fr
IFC

GRAPHISOFT
H- 1031 Budapest
Graphisoft Park 1
Zothony U
Hungary
Tel: +36 1 437 3000
Fax: +36 1 437 3099
p.89

THE HOPPER COMPANY
302 South 30th Street
Phoenix
Arizona 85034
USA
Tel: +602 273 1338
Fax: +602 275 8933
IBC

KIM LIGHTING
16555 East Gale
City of Industry
California 91745
USA
Tel: +1 626 968 5666
Fax:+1 626 369 2695
p.13

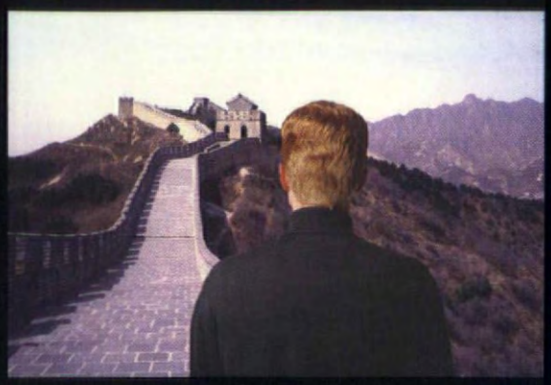
LAMM SPA
Via Verdi 19/21, 43017 San Secondo
Parma
Italy
Tel: +39 0521 873 547
Fax:+39 0521 872 668
E-mail: lammpr@tin.it
p.15

RAL
Siegburger Strabe 39
D- 53757 Sankt Augustin
Germany
Tel: +49 2241 1605 30
Fax:+49 2241 1605 16
p.8

SPS
Via Enrico Mattei 1
35046 Saletto
Padova Italy
Tel: +39 0429 89544
Fax:+39 0429 899294
p.10

SUMMIT FURNITURE EUROPE
198 Ebury Street
Pimlico Green
London SW1 8UW
UK
Tel: +44 171 2599244
Fax:+44 171 2599246
p.9

WILKHAHN GMBH
PO Box 2035D- 31844
Bad Munder
Germany
Tel: +49 5042 999118
Fax:+49 5042 999245
Email: wilkhahn.export@t-online
p.12



Is there anyone who speaks my language?

Yes, there is! ArchiCAD breaks the language barrier. Besides your language, there are 24 further language versions. But this is not the only reason for being easy to communicate with it: we have adopted the national versions to standards of the relevant country, while we preserved the basic ArchiCAD system of symbols: the world language of architecture.

ICONOS

ArchiCAD® – The world language of architecture.

BUDAPEST MUNICH HONG KONG TOKYO MADRID LONDON SAN FRANCISCO SÃO PAULO SANTIAGO
Corporate Headquarters: Graphisoft R&D Rt. Hungary Phone: (36.1) 437 3000 Fax: (36.1) 437 3099 e-mail: mail@graphisoft.hu
W W W . G R A P H I S O F T . C O M

GRAPHISOFT®

Legal and practice

AIA'S NEW ORDER

By the end of this month, AIA-affiliated architects who have not earned 36 Continuing Education System learning units will have their memberships lapsed. The vote to make CES mandatory was taken at this year's AIA conference in Dallas, and is seen as a step toward standardisation of state licensing requirements. Dan Fox explains.

The homogenisation of AIA membership requirements across all 51 states is a clear signal that US architects want to address the disparity between the individual states in the qualifications for a licence to practice.

The new level of mandatory participation has been set to mirror the level demanded by the US states which already issue licences based on continuing education programmes. States are announcing switchovers to this method at an average rate of three per year.

However, this year 12 states, Alabama, Arkansas, Florida, Iowa, Kansas, Kentucky, Louisiana, North Carolina, Oklahoma, Tennessee, South Dakota, and West Virginia, have adopted mandatory continuing education programmes for licensing, and 16 more are at various levels of discussion indicating their intent to implement.

Each state has the legal right to establish its own guidelines and requirements. Alabama, for example, requires 12 hours of continuing education per year, whereas Florida requires 20 hours every two years. Each state (except Kansas) requires that 8 to 12 of these hours are in the area described as health, safety, and welfare.

Context

Over the course of a year, however, few of these local idiosyncrasies will make a difference to the architect. The average AIA member has four or more state licences, which could on occasion mean having to complete state CES programmes at odds with each other, but most states with mandatory continuing education indicate that they will accept AIA/CES transcripts as evidence of completion of valid continuing education credits, although some tend to audit and reject self-reported activities.

ASSESSING AND MANAGING Y2K RISK

Although the clock is ticking, it's not too late for design professionals to manage the risk associated with the Y2K problem. Maura A Greene outlines some of the steps design professionals should be taking right now.

1. Develop and implement a Y2K plan

Design professionals who have not done so already must quickly develop and implement a Y2K plan to identify all of the design professional's non-compliant computer programs and successfully remediate them. The steps that design professionals should take to address the Y2K problem at their own firm include compiling a list of all hardware, software, systems, applications and data that could be affected.

Design professionals should assess hardware and software to determine how widespread the Y2K problem is within the firm. If necessary, design professionals should consult the firm's IT staff or an outside consultant to renovate systems or replace them. All actions should be documented to show a good faith effort in the event of future litigation.

Design professionals should also remember to determine whether or not suppliers, business partners and vendors are Y2K compliant. Even if your own firm's systems are compliant, you may not be able to furnish services and meet deadlines if you are dependent on another firm whose systems are not compliant.

2. Use appropriate contract language to avoid or shift the risk

The design professional's Y2K obligations to the client for services should not be in the form of a representation or warranty, but should be in the form of the ordinary standard of care, which governs all the design professional's services. The liability for Y2K-associated problems in defective computer components and systems must remain with the supplier of those systems.

Appropriate contract language will pass through the liability to the supplier and avoid the design professional accepting liability for defective computer components and systems.

3. Prepare appropriate responses to Y2K requests, surveys and questionnaires

Design professionals should seek legal assistance in preparing an appropriate form response to Y2K requests, surveys and questionnaires which can be modified when each request is received. The firm should

THE ITALIAN JOB

Italy, home of Romano Proddi, the new European Commissioner, is restricting access of non-native architects into the country. Is it time to take action? Keith Nuthall finds out.

Laws preventing non-Italian architects from establishing permanent offices in Italy are to be challenged at the European Court of Justice by the European Commission, which views them as breaking European Union freedom of movement laws.

One of the key principles of the EU is that its citizens are able to move their homes and employment from member country to member country, without being hindered by laws that discriminate against their nationality.

As a result, a series of directives have been introduced insisting that member states recognise each others' professional qualifications, allowing EU professionals to work where they want.

As regards architecture, the Council of Ministers passed a directive in 1985, "on the mutual recognition of diplomas, certificates and other evidence of formal qualifications in architecture, including measures to facilitate the effective exercise of the right of establishment and freedom to provide services."

It listed a string of qualifications that had to be accepted by all member states, and in particular stated that an architect with such qualifications, "shall provide services with the same rights and obligations as nationals of the host member state."

National governments had until 1987 to incorporate the directive into their national laws, although Italy did not do so until 1995. Even then, following an examination of the legislation by the commission, the Italian regulations were found to have strayed from the directive on a number of counts.

These included:

- A prohibition on the freedom of non-Italian architects to have a permanent base in Italy.

Published in association with the international section of the Practice Department of the Royal Institute of British Architecture. Keith Snook. Tel: +44 171 307 367. e-mail: Keith.Snook@member.riba.org

For members, this means that the AIA's record-keeping can be used for reporting state requirements. Continuing education units are calculated by multiplying the contact hours by the predetermined quality level of that component. Quality level one is deemed "passive activity", quality level two is an activity with interaction, and quality level three activities require feedback on the learning.

The more feedback and interaction with the knowledge, the more credits. Professional development hours are more involved still, and automatically earn one credit per hour.

"The average AIA member has four or more state licences, which could mean having to complete state CES programmes at odds with each other."

Last minute

A last-minute rush to get up to date with the new mandatory requirements is putting a strain on registered providers of CES learning units, but by the cut-off date the AIA expects the infrastructure to be in place to record over 750,000 learning units each year.

Firms are taking the lead by preparing their own registered courses to save on the travel and education costs of keeping their employees in credits. And the value of CES could grow – the AIA department responsible is working on reciprocal agreements with the RIBA in the UK, the RAIA in Australia, the JAA in Japan and the SIA in Singapore.

These will enable AIA architects in these countries to participate in the local system of continuing education and use the credits towards their membership. Members in other countries can be required to self-report non-accredited learning activity for assessment or use AIA Online's distance learning facility.

With thanks to Thom Loather, AIA director of Continuing Education Systems.

designate one person to respond to requests in order to keep the responses consistent. Design professionals should not attempt to respond point by point to lengthy surveys or questionnaires, but should prepare an appropriate response which outlines the steps that the firm has taken over the problem. The response should avoid making any certifications as to Y2K compliance.

4. The issue of embedded systems on completed projects

Embedded computer chips (microchips with sequences of hard-coded instructions) are found in systems such as elevators, climate-control systems, medical devices, building security systems, factory equipment and office equipment. These embedded computer chips are in completed projects and present a difficult problem because of the effort involved in locating and remediating each chip. Design professionals who specified systems with embedded chips may face future lawsuits if the chips have date-related problems.

Design professionals should consider sending a form letter (modified on the computer) to each owner of a project completed within the past ten years notifying them that there may be systems in the building with embedded chips which should be assessed and remediated, if necessary. At the very least, the design professional is giving the building owner the opportunity to remediate the problem now. The design professional's failure to take any action may result in greater liability.

5. Develop a Y2K contingency plan

Design professionals should consider how their firm will manage its day-to-day business if its computer systems fail in January 2000. It is important to assess which projects may be adversely affected and what deadlines missed if the firm's software systems are inoperable. Design professionals should develop a contingency plan to keep the firm operating in the event this occurs.

In summary, design professionals can avoid liability and take steps to keep their business operating in 2000 if they take appropriate action now.

Maura A Greene is a member of the Y2K Group of the Boston, MA law firm Burns & Levinson LLP and is a partner in the firm's professional practices group. She can be reached on: mgreene@b-l.com

- Overly "cumbersome" and "lengthy" procedures for obtaining authorisation to set up a practice in Italy, or to provide services. An example is a requirement for applicants to submit original documents or certified copies, with an official translation into Italian. Under the directive, such documents are required only where there is justified doubt about their contents or authenticity.
- A failure in the national regulation to fully list the EU diplomas, certificates and other qualifications that must be recognised in Italy. The European Commission has not succeeded in persuading the Italians to reform their law and as a result, Brussels has referred the matter to the ECJ. It has the authority to order Rome to bring its laws in line with the directive. If Italy ignores its ruling, it could be subject to massive recurring daily fines of hundreds of thousands of Euro until the legislation is reformed.

Change would be welcome to large European practices hoping to work inside Italy. At the moment, the only way non-Italian firms can establish themselves is in a joint-venture with Italian architects.

This is the case with UK firm Chapman Taylor, which has had to set up an Italian arm Chapman Taylor Open Projects, in Bologna, with the joint venture employing both UK and Italian architects. Open Projects managing director Giovanni Nuti told *World Architecture*: "We have terrible regulations. It's a mess. The only way forward is the way that we have tried to follow – being a joint venture."

He said that the Italian situation was complicated by the fact that individual municipalities have their own particular rules on architectural practice, that often conflict with each other.

Keith Nuthall is writing from the headquarters of the European Union.

RIBA BRIEFING

Suite SFA in shops

The RIBA's new family of Appointing Documents 1999 are now available in the RIBA bookshops, with the exception of just two documents which will be published later in the year.

Following negotiations between the RIBA and RIBA Publications, it was agreed that the complete family of contracts will be published commercially – there had been doubts initially over the level of demand for Contractor's Proposals (DB2/99) and the Form of Appointment as Project Manager (PM/99), but these are now in preparation.

The available documents are:

- **Standard Form of Agreement for the Appointment of an Architect (SFA/99), the core document from which the other new documents are derived. Used with Articles of Agreement.**
- **Conditions of Engagement for the Appointment of an Architect (CE/99). Used where a letter of appointment is preferred.**
- **Form of Appointment as Planning Supervisor (PS/99). Used with Articles of Agreement.**
- **Form of Appointment as Sub-Consultant (SC/99). Suitable for use when a consultant instructs another consultant to take on part of his responsibilities.**
- **Small Works (SW/99). Suitable where project costs do not exceed £150,000.**

Employer's Requirements (DB1/99), a supplement to amend SFA/99 and CE/99 where an architect is appointed by the employer client to prepare employer's requirements for a design and build contract.

The 1999 annual general meeting of the RIBA has been deferred to 12.45 on Wednesday, 20 October, 1999 at 66 Portland Place, London, W1N 4AD

Architecture Week . . .

. . . is your opportunity for publicity

Architecture Week is establishing itself as the RIBA's big week of the year. Around 1,000 practices are expected to participate in just one part of this year's event, the charity-linked 'An Architect In the House' scheme.

Now in its third year, Architecture Week offers practices large and small a chance to participate. And it's not just the taking part that counts, it's the publicity. One of the great successes of last year's event was the length of column inches generated, many of them celebrating the efforts of small practices around the country in local and regional newspapers that would not normally touch the subject of 'Architecture', with a capital A. This is due to the nature of the event, which allows local press to give a local flavour to a national scheme.

Though the event is still some way off – dates are 5-14 November – practices should be registering their interest now. This year's theme, Designing Our Future, should be flexible enough to accommodate most ideas. Typical events include exhibitions of new architecture organised by local RIBA branches and tie-ins with schools – everything from hands-on workshops and design competitions to local tours and polls on favourite buildings.

RIBA's South East Region, for instance, will see sustainability workshops for sixth-formers, while younger school children in Canterbury will get the chance to make earth bricks and use them to rebuild a section of the city wall.

But it is the two central initiatives that will involve the vast majority of architects:

- Open Practice is a scheme organised by the Arts Council of England, the joint organiser of Architecture Week with the RIBA. Practices throw their offices open to the public, giving people the opportunity to ask questions, look at models and get an idea of how architects work. Over 80 practices took part last year, half of them in London.
- An Architect in the House is organised by the RIBA. People are encouraged to invite an architect into their house for a minimum payment of £10, which is donated to the housing charity Shelter. Participating architects typically spend an hour with home owners suggesting how modest building works could improve their homes. The scheme has been a winner all round: last year's event generated £17,000 for Shelter, lots of ideas for hundreds of householders, over 100 regional press articles as well as national press and broadcast coverage, and some actual work for architects.

Anybody with ideas, or looking for ideas, should be contacting their RIBA regional office. Alternatively the ACE has an Architecture Week Hotline on 0171 973 6436 for architects wishing to take part in Open Practice, and the RIBA has set up a special line on 0171 307 3702 for An Architect in the House.

Daphne Oxland promotes architects and architecture for the East Midlands Region (and soon West Midlands too, following a recent appointment). Last year's Architecture Week gave her enough material to feed stories to dozens of local papers – she was still doing follow-up stories in the New Year, reporting back on how successful the various local events had been.
'We made an effort wherever there was a member or cluster of members. We thought big, but thought local, and got great coverage even in some of the more remote areas. An Architect in the House proved very productive, as papers are always interested in local people doing things on their own patch for charity. The great thing about Architecture Week is that it lets us take ideas generated centrally and give them a local spin,' says Daphne.

RIBA drawings find V&A home

The RIBA drawings collection has finally found a new home. RIBA president David Rock and the director of the Victoria and Albert Museum, Dr Alan Borg, have signed an agreement in principle for the transfer of the vast bulk of the special collections to the V&A's Henry Cole Wing.

In an arrangement expected to last at least 25 years, the RIBA and V&A will share the costs of maintaining the collections, although ownership of some 600,000 drawings from Palladio to Foster, plus a similar number of photographs and an even greater number of archive manuscripts, remains unchanged.

The intention is to create a dedicated reading room for the unique resource, which will continue to be known as the RIBA Collection. Members of the RIBA will enjoy free access to the whole of the V&A as part of the new deal. The move will take place next year, except for the photographic collection and library which will remain for the time being at Portland Place.

A solution to the problem of where to house the library collections was long overdue, but the situation became acute due to the imminent expiry of the lease on the existing premises in Portman Square.

David Rock described the outcome as one of the most exciting developments in the 160-year history of the collections. 'I am delighted that this agreement ensures that future architects, scholars and members of the public will have guaranteed access to the collection,' he said.

The agreement commits the RIBA and V&A to working together to establish a combined study centre for architecture. The RIBA will meet the costs of the centre's fit-out, while curators will remain RIBA Library staff. The British Architectural Library Trust will continue to be the main RIBA vehicle for fund raising for the capital costs of the project.

What's on RIBANet...

How much should practices pay for a graduate with a good degree? The gap between what practices say they can afford and what students believe they are worth is revealed in Practice Management.

One architect said his practice paid £11,000 for year-out students; another had heard that £9,000 was a standard starting salary. The debate prompted a posting from the institute's director of education, Leonie Milliner. Year-out students were getting more than that in 1992, she said. 'The average graduate salary out there is now £15,000.'

One graduate told the group how low salary levels had driven him to seek work outside the UK.

In Architectural Practice, members have been discussing the pros and cons of an official 'rogues' gallery' of bad clients. Despite widespread feelings of frustration, the consensus is that naming and shaming is a good idea but a bad move, not least because of legal risks. A new after-the-event insurance package for RIBA members was launched as a more practical option for chasing bad debt.

Sources of funding for local feasibility studies and project design are explored in Community Architecture. The cost of delays by planners is discussed in Planning & Urban Design, while in Legal, one member reveals he has waited nine years for a reply on retention issues.

A students' survey of architecture schools is launched in Study of Architecture, and in World of Architecture there are details of trade missions to Athens, Moscow and Tokyo.

Ribanet is free to members – 2,000 are now online. Fax +44 (0)171 307 3786, e-mail: RIBANet@inst.riba.org

Strength in numbers

President's initiative to encourage formation of self-help networks

Small practices are achieving a higher public profile – and lower PI premiums – by forming local networks, research has revealed. And more small practice networks are expected in the future as architects adapt to client demands for a low risk procurement process, concludes a new RIBA report. Commissioned by the institute's immediate past president David Rock, the report* includes case studies of successful small practice networks and offers a blueprint for architects who want to set up their own.

The research, carried out as part of a president's initiative project to highlight the problems faced by small practices, also offers some solutions. Regional offices are to be encouraged to maintain registers of members interested in forming networks, effectively acting as clearing houses for individuals to make contact with each other. There are step-by-step guides on how to structure initial meetings, and on how to form a linked society.

Already, one established network – the North West Solo Practitioners Group – has applied to become a linked society, and others are expected to follow.

'If architects are to thrive it must be as a connected profession' says the report. 'The most effective network for architects for more than a century and a half has been the RIBA, and it remains so today. But as architectural specialisms proliferate and the demands of modern practice widen to include the systematic management of knowledge through CPD, a clear need arises for new, smaller, networks of architects'.

Case studies in the report range from networks which are little more than ad hoc social gatherings to fully constituted, pro-active groups such as Edinburgh Chartered Architects Network. Less than a year after it had its first meeting, ECAN had attracted 30 members. It now carries out its own market research, has negotiated reduced PI premiums for members, has formed its own electronic newsgroup, and manages databases of local clients, commissioning bodies and contractors. Marketing resources are pooled to produce brochures, stage exhibitions of work and run targeted campaigns: for example, the network has linked up with solicitors to promote architectural services to house-buyers.

Rock said the idea of promoting networks had grown from discussions within the small practice special advisers' group he had convened during his presidency. The idea of small practices – particularly sole practitioners – overcoming the problems of isolation by getting together to share experiences and support one another had always made sense, he said. His own early career was marked by pioneering workspace schemes at Covent Garden and Barley Mow, widely praised for their ability to kindle a sense of community among small companies

'It is easy to understand the benefits of what I call the "tangibles" of small practice networks – the pooled advice; the CPD presentations and discussion; the shared staff; a locum facility; the joining together on projects,' said Rock. 'What are not usually appreciated are the "intangibles". But these are very real benefits indeed. The sense of security that derives from belonging to a big group is a very important human need to most people working on their own. The essential factor in networks is that people are free to participate or not at various times, depending on individual needs and morale. This individual identity in a mutual support group gives confidence – in design, in dealing with clients and projects, in life and outlook generally.

* The President's Initiative: Small Practice Networks, £5 from RIBA Publications.

Architects in housing

Architects involved in housing design have a new voice in the industry in the form of Architects in Housing, which also happens to be the first RIBA Linked Society.

Born out of the RIBA Housing Group, AiH will work to improve the design quality of new homes and promote the role of architects. Its first initiative is the development of a website (www.aih. org.uk), which it hopes will evolve into a key knowledge centre for both architects and their clients.

The new group has already proved itself adept at attracting sponsorship to meet its running costs, with Redland, Celcon, Guinness Trust and NHBC all signed up as supporters. It plans to appoint an executive director and communications director in the near future.

Though AiH is independent of the RIBA, there are plans to build on links with the RIBA Housing Client Forum. AiH chairman Bernard Hunt says that AiH will benefit from the two-way exchange of ideas, and will be well placed to develop an agenda in response to the client concerns raised in the forum.

UIA unites on recognition

The further dismantling of international barriers to the practice of architecture has moved a step closer with unanimous approval by the General Assembly of the Union Internationale des Architectes (UIA) in Beijing of a new accord on professional standards.

The new agreement will be presented to the World Trade Organisation, which is turning its attention to engineers and architects following recent progress on mutual recognition agreements for accountants. Member organisations of the UIA, representing the architectural professions of over 100 countries, will also be lobbying their own government representatives individually to promote the agreement.

Titled the "UIA Accord on International Standards of Professionalism", the document was accompanied by additional guidelines on ethics and conduct. The success of the drafting exercise has been something of a coup for the RIBA, which had a major input. RIBA representative John Wright, who chaired the drafting panel, said that the new code of conduct is similar in many ways to the RIBA's own.

Polemic

The myth of the great Balkan rebuilding

Although architects everywhere have more or less given up waiting for the wall of money that was supposed to finance the reconstruction of the Balkans after the Kosovo crisis, it is interesting to look at the reasons for its non-appearance. As late as last June NATO was promising that $32 billion would be made available to the whole of the former Yugoslavia, yet within a month of the end of the war, this inspirational figure was quietly abandoned. The first allied technical mission sent to Kosovo at the end of hostilities came back talking about $4 to 8 billion.

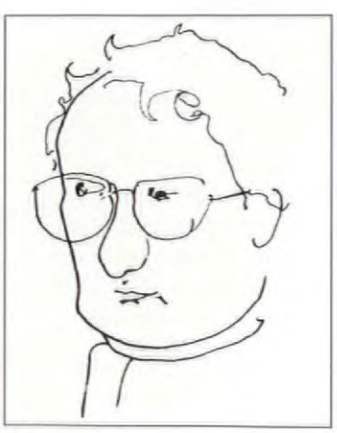
At this there should have been uproar but, because the whole business was more complicated than anyone had thought, there was not. The victors risked their reputation for, as the fog of war dispersed, so did it become evident that the damage inflicted by missiles and bombs had been much smaller than claimed. As a result the G7 world aid conference that convened in Brussels in July to raise the $32 billion disagreed over the uncomfortable suspicion that many of the already half-promised tranches of aid were beginning to look like undeserved largesse.

Torn between admitting that this latest attempt to bomb a country back into the stone age had actually done less damage than the value of the aid offered to patch it up – or else stumping up huge sums of money for undamaged states like Bulgaria, Romania, Macedonia, Bosnia and Croatia while ignoring the principal target – the participants in the grand reconstruction conference each found a way to temporise. When it turned out that Kosovo itself – where the UNHCR had earlier claimed that 50 per cent of all housing had been destroyed or rendered uninhabitable by the Serbian army and NATO bombers – was in fact relatively unscathed with less than 20 per cent of its dwellings damaged, all the participants began to retreat from their earlier generosity. The US insisted that the EU should pay because the US had already paid for the war. The EU argued that the whole Balkans aid package should be scaled down to the level of existing programmes. As a result of this bargaining, estimates for reconstruction-related aid for the whole region finally dwindled to some $2.4 billion.

If there is a lesson for architects and engineers in all this – apart from the oft-repeated one about the inadequacies of airborne warfare – it must be that funds for recovery are seldom if ever made available without a strong political motive. In the aftermath of World War II economic aid in the shape of the Marshall Plan was offered to Europe as a means of checking the Westward advance of communism. Similarly, the restoration of national sovereignty to Germany and Japan – which marked the beginning of the economic miracle wrought in both countries – came in response to communist aggression in Korea, which turned Japan into a logistic base, and converted occupied Germany into a bulwark of anti-communism in Europe. In the case of the Balkans (and in Iraq, where a low-intensity bombing war still continues), we have to consider the lack of any such overriding political need. Despite the dire warnings about the so-called "tinderbox" of the Balkans, neither the security of the US nor that of the EU is threatened by Slobodan Milosevic. As a result the repair of his damaged power stations, water works, roads, bridges and buildings has been carried out piecemeal by local firms. Unless things change dramatically the wall of money is a myth.

Martin Pawley

"If there is a lesson for architects and engineers it must be that funds for recovery are seldom if ever made without a strong political motive."



"We're unsure of the artist, but the wall is by Hopper."

HOPPER

HANDCRAFTED

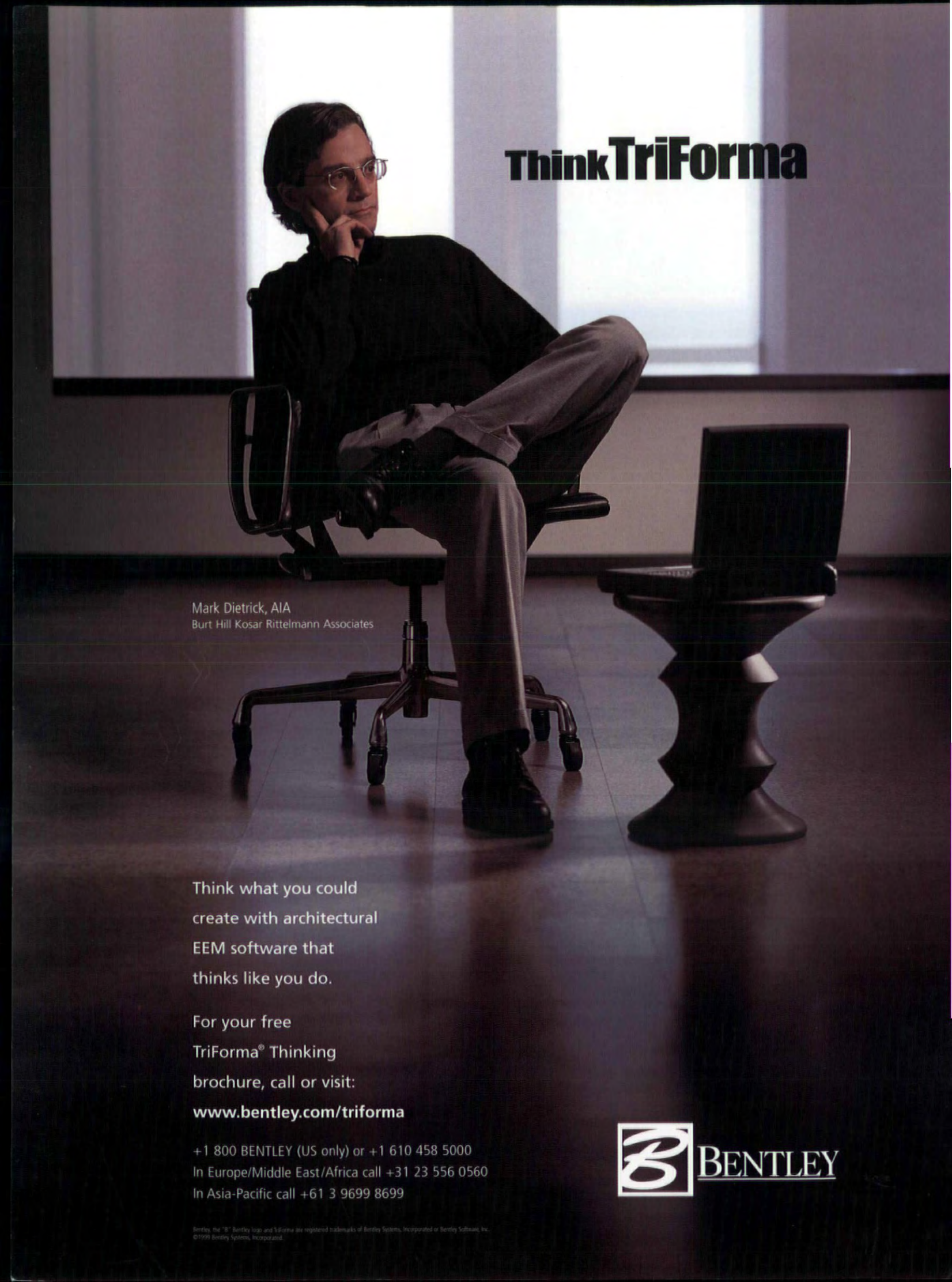
SPECIALTY

FINISHES

302 South 30th Street, Phoenix, Arizona 85034
phone: 602-273-1338 www.hopperfinishes.com

ALGALITE
MILANO
U.S.A. Distributor

View both works of art at the new Getty Center



Think what you could create with architectural EEM software that thinks like you do.

For your free TriForma® Thinking brochure, call or visit:

www.bentley.com/triforma

+1 800 BENTLEY (US only) or +1 610 458 5000
In Europe/Middle East/Africa call +31 23 556 0560
In Asia-Pacific call +61 3 9699 8699

BENTLEY