WORLD ARCHITECTURE

The business magazine for the global architect

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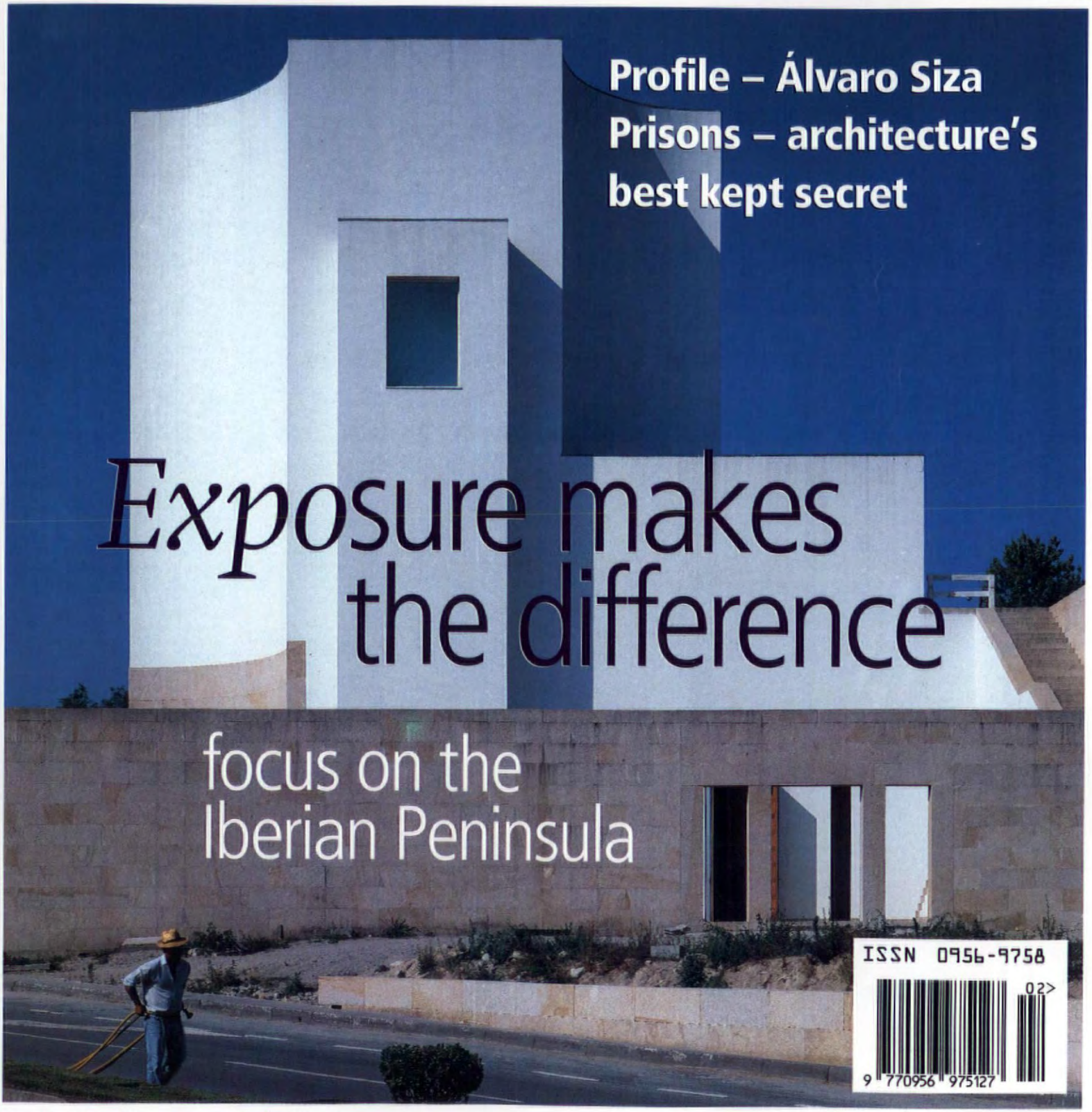

Profile – Álvaro Siza
Prisons – architecture's best kept secret

Exposure makes the difference

focus on the Iberian Peninsula

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South Africa's post-apartheid planning poser | Frank Gehry and the Jimi Hendrix Experience | Hanover 2000 turmoil

WORLDARCHITECTURE

Issue Number 73 | February 1999

Cover
Álvaro Siza's award-winning Santa María Parish Church, Marco de Canavezes, Portugal. Photo: Duccio Malagamba.

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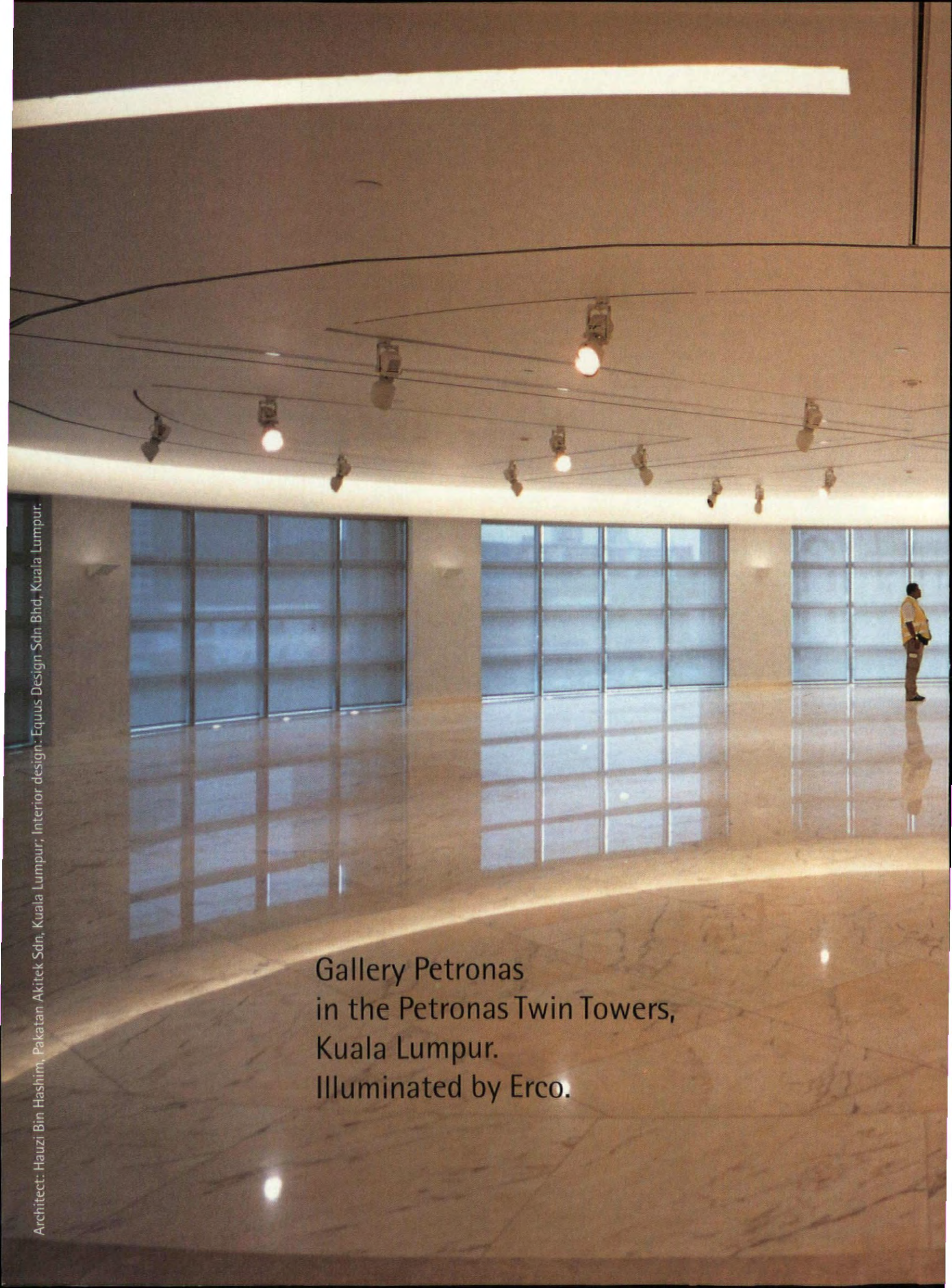

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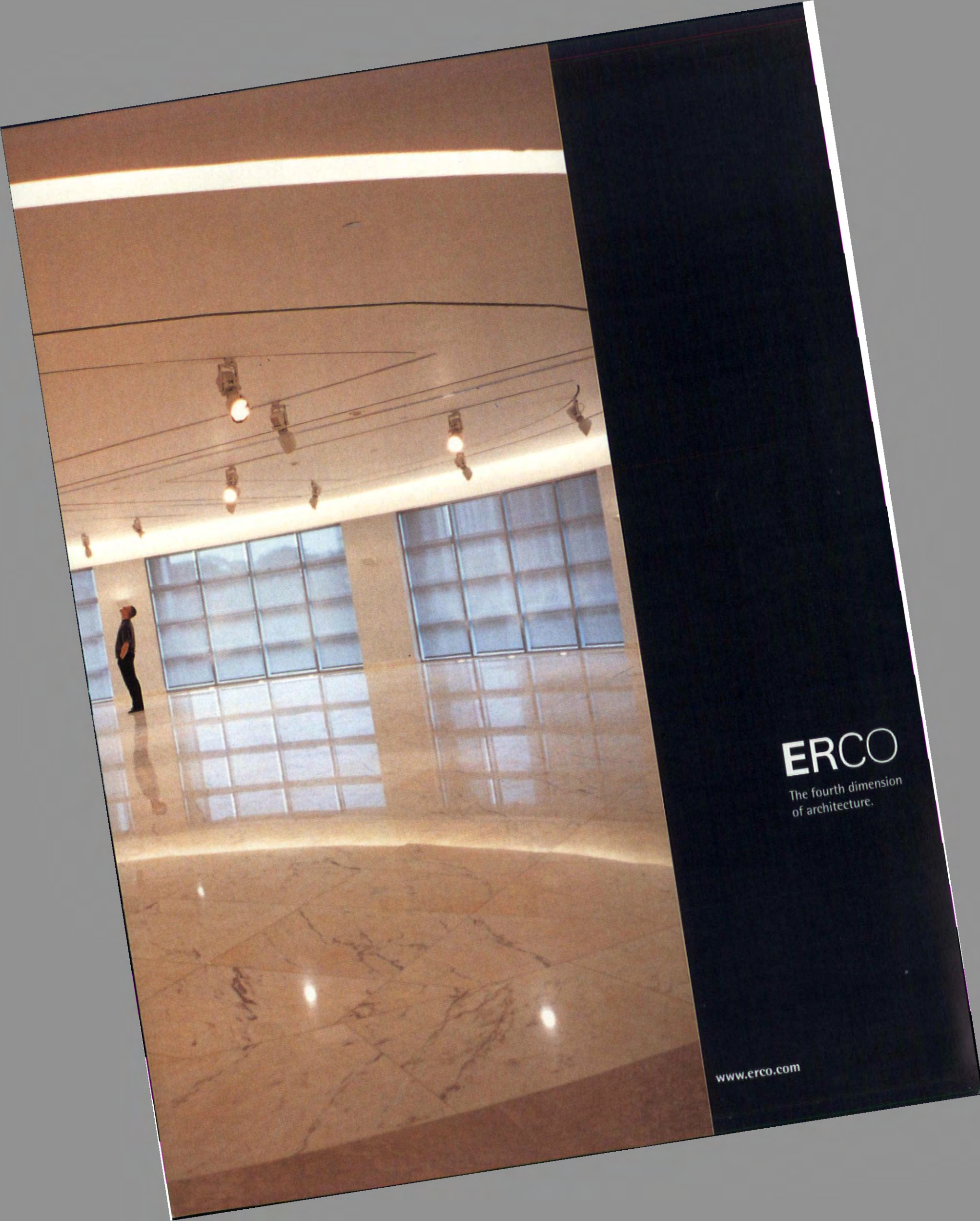
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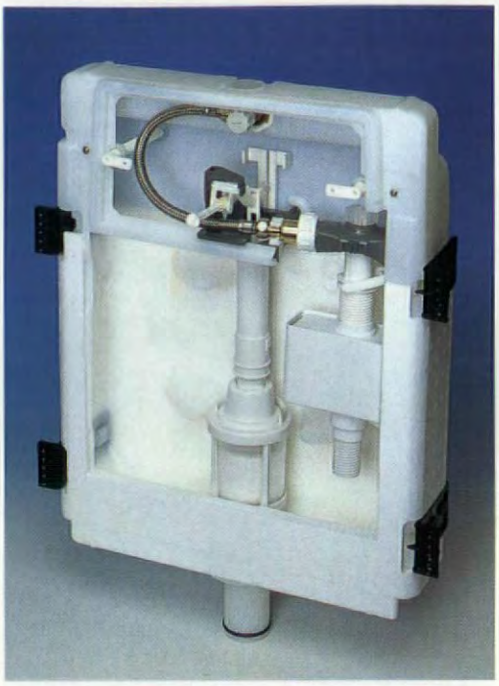

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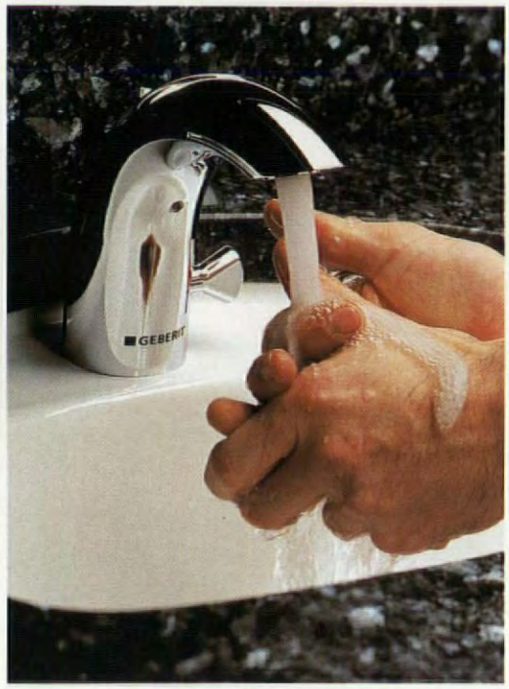

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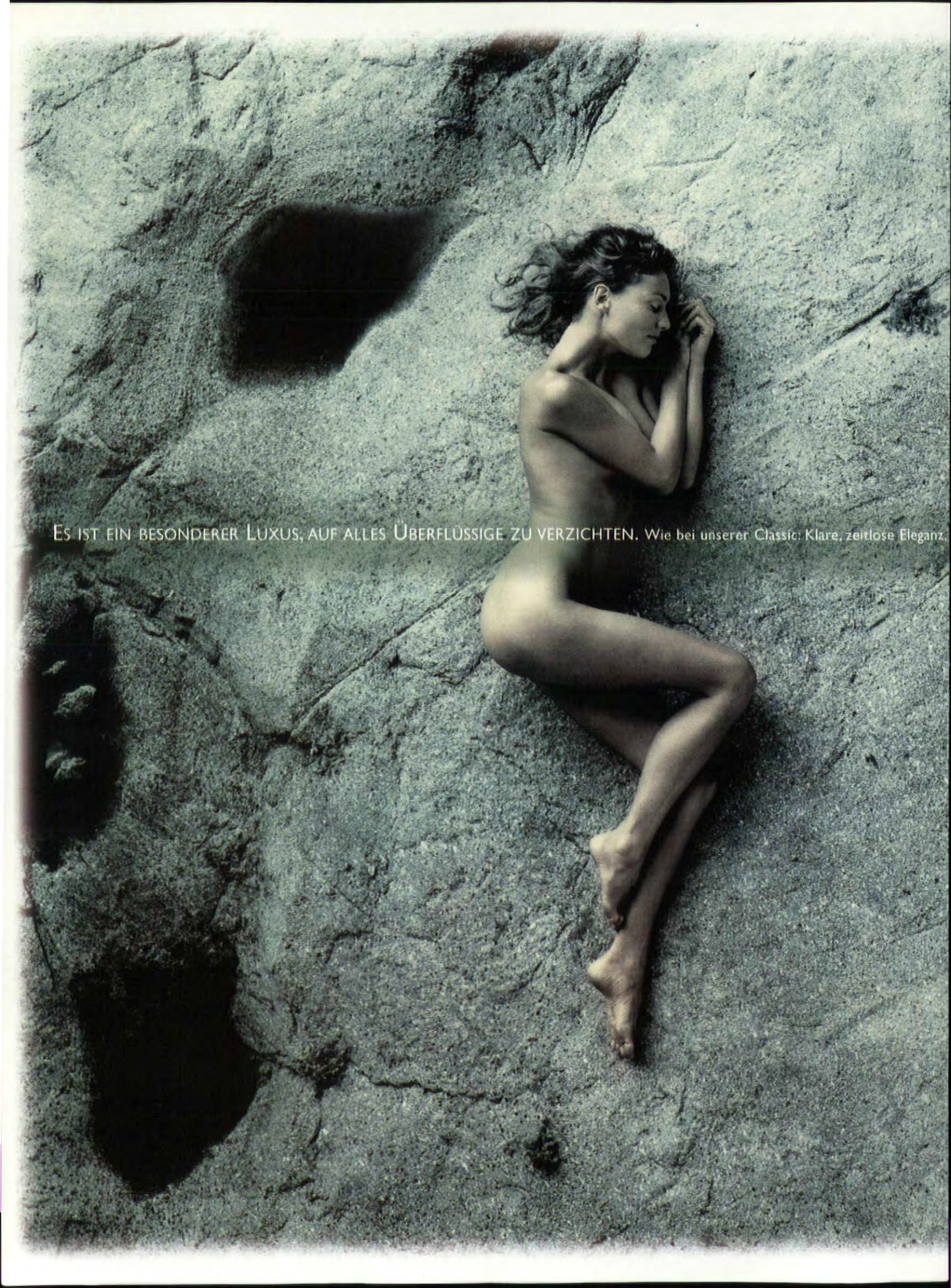
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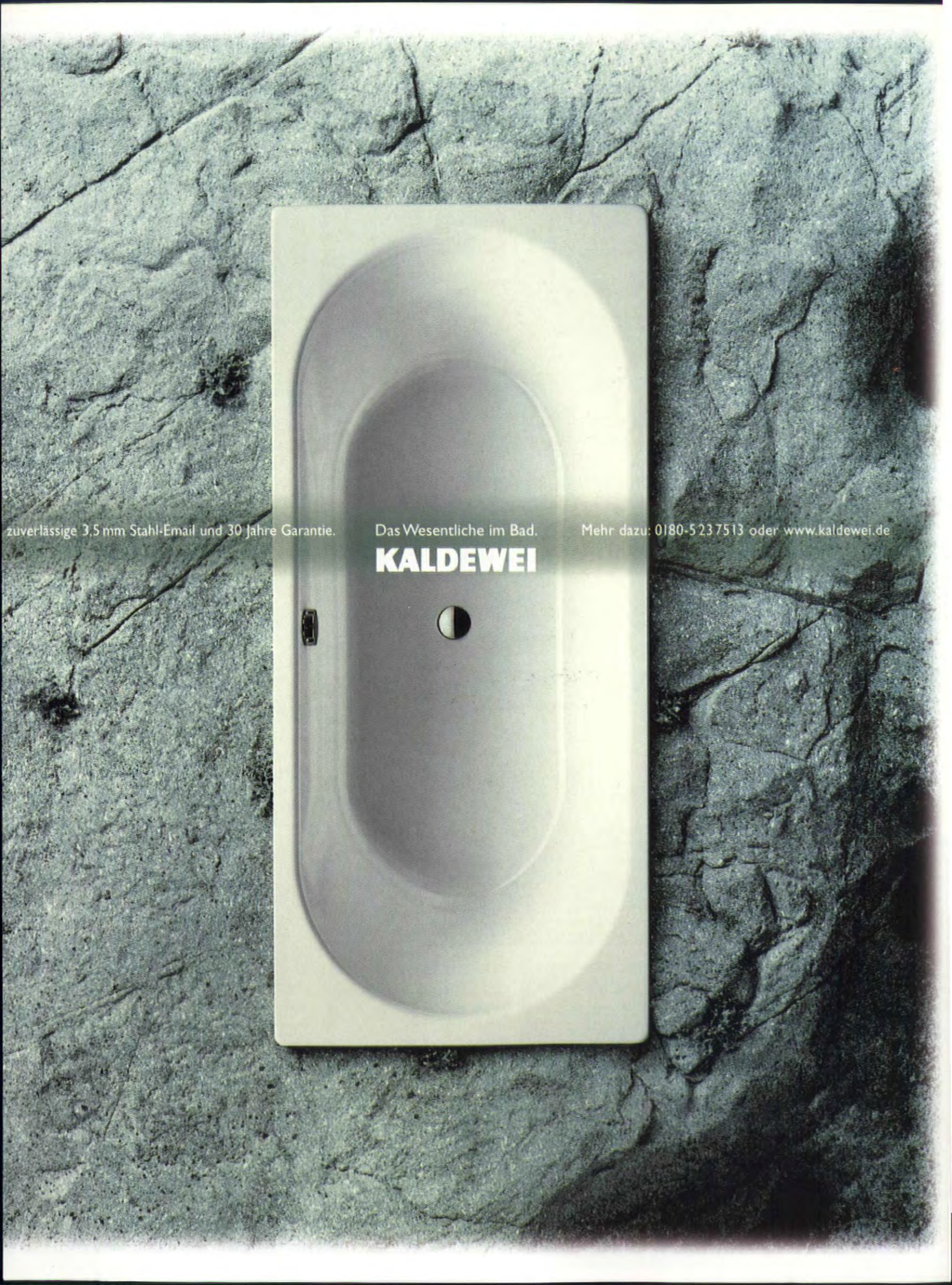
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The idea of expanding key systems is crucial to Reynolds approach. Primarily it is the method of giving bespoke looks at commercially realistic prices.

Add to this the individuality of the GT70 window system or the flexibility of RT50OPF curtain walling system and it becomes clear that the Reynolds palette of solutions is both broad and deep, indeed its only limit is your imagination.

GT70 has been used extensively in both new build and refurbishment, its a thermally broken system that tries to capture the essence of steel window design.

RT50OPF is a curtain walling system where the opening lights look the same as the fixed lights. The system can also integrate structural glazing and panel solutions into one unified facade.

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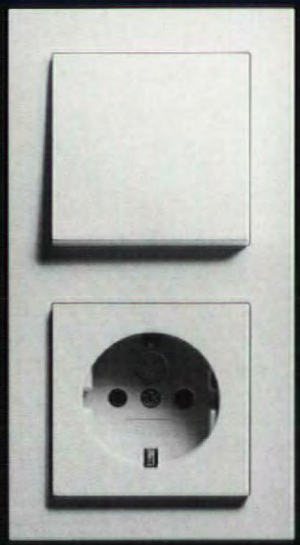

The switch programme Gira E2 was awarded the International Designer Prize of Baden Württemberg 1998.

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The form is always determined by a reduction to the essential elements – whether these are the clear information display or the key sensors, that can be programmed for different light scenes. This principle also impressed the jury of the Design Centre in Stuttgart, who awarded Gira E2 the International Designer Prize of Baden Württemberg 1998.

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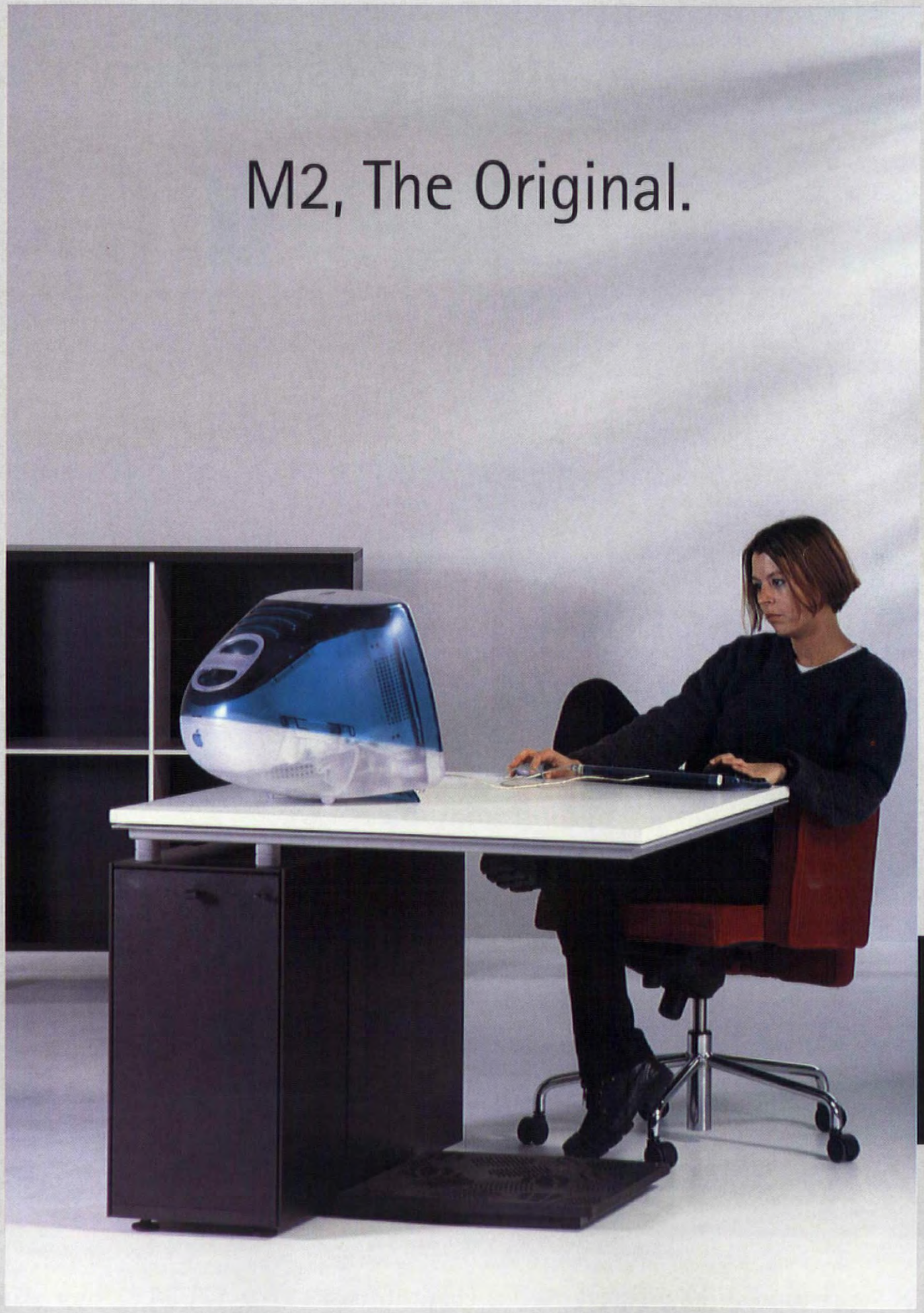

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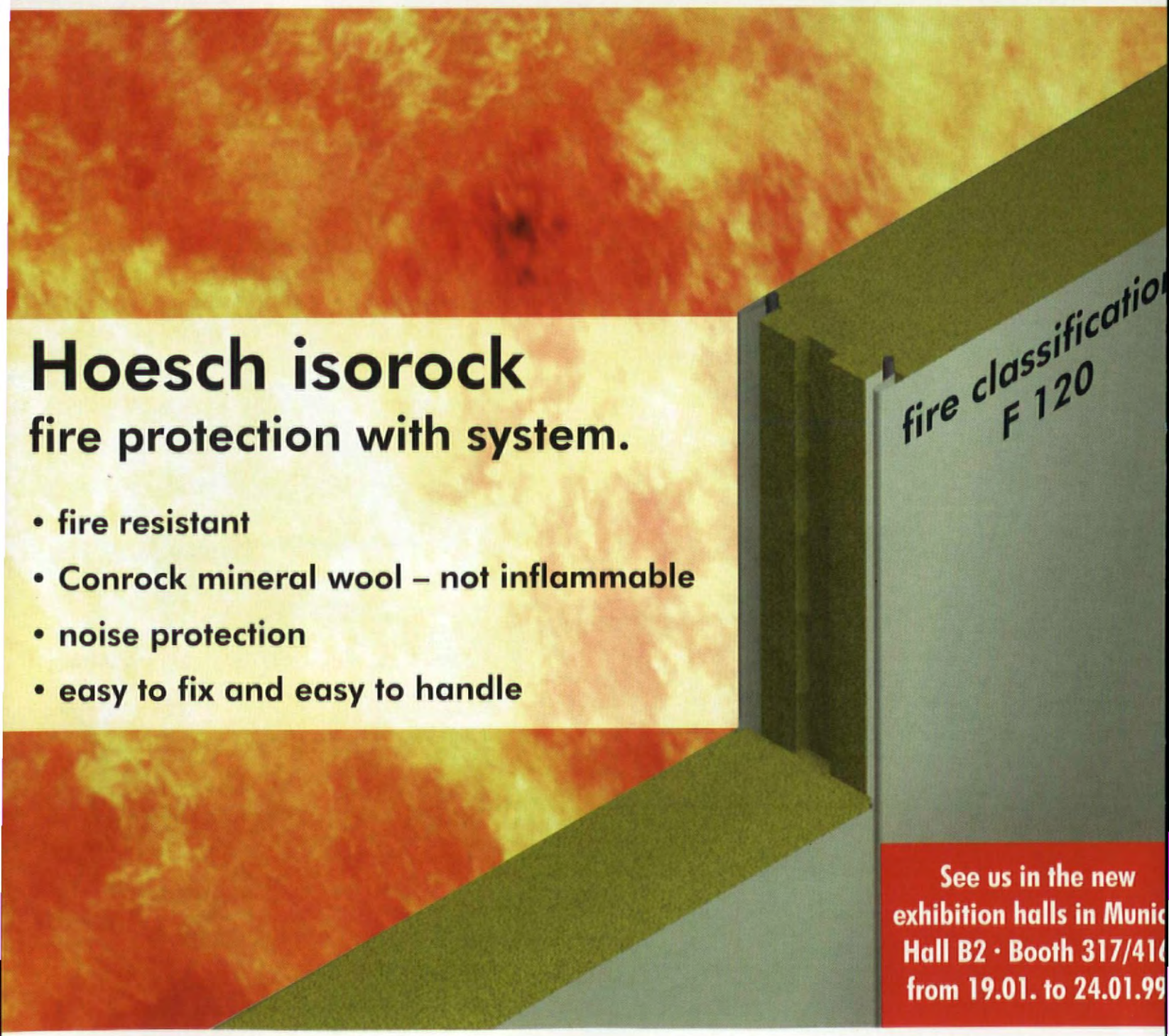

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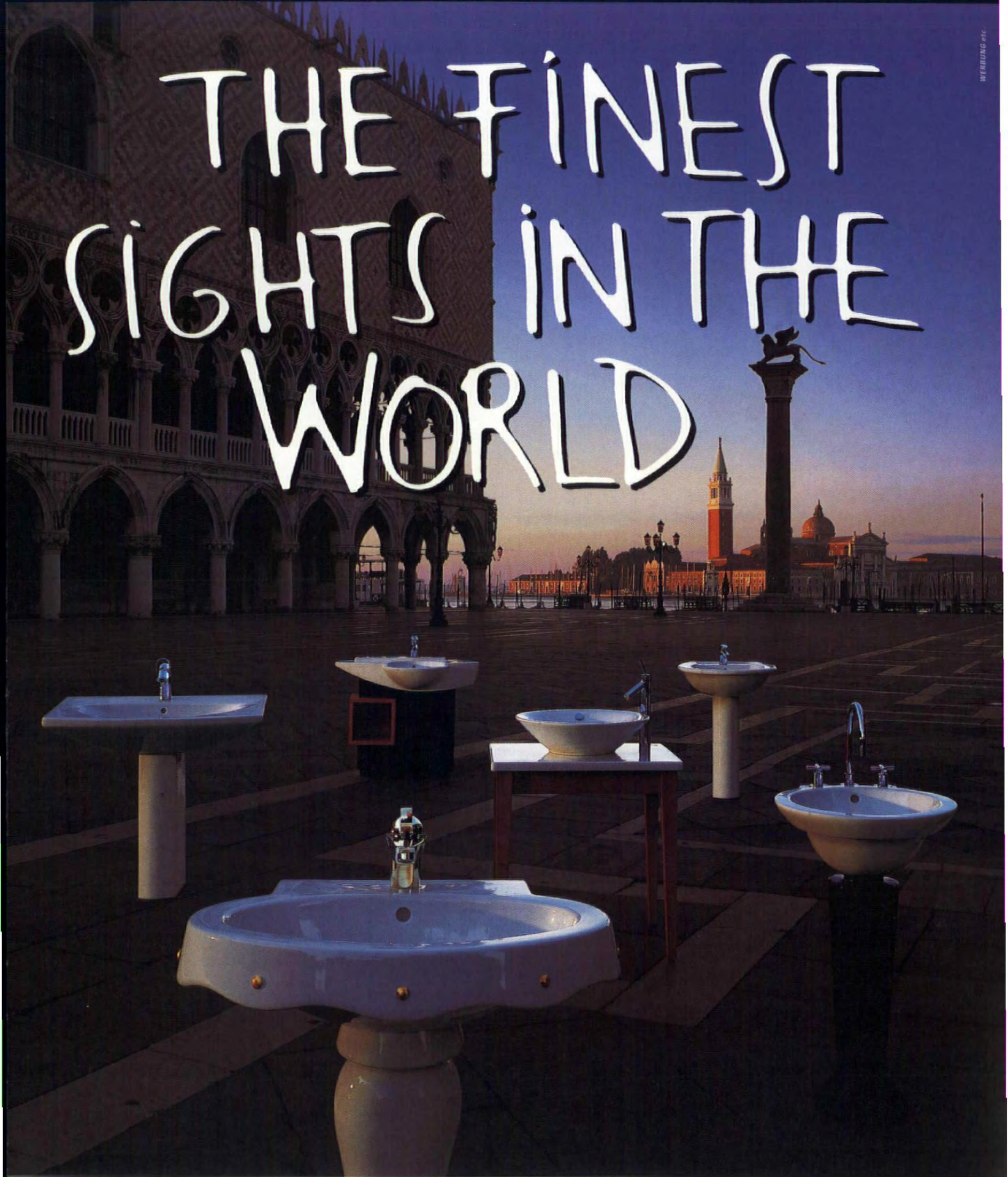

It's worth taking a look at the Duravit programme, from the leading manufacturer of high-quality bathroom ranges. Sanitary ceramics, bathroom furniture and accessories. From classic to avant-garde, from elaborate to ascetic. By top designers like Philippe Starck. For more information, please contact Duravit, Post Box 240, D-78128 Hornberg, Germany, Phone +49-7833-7 03 80

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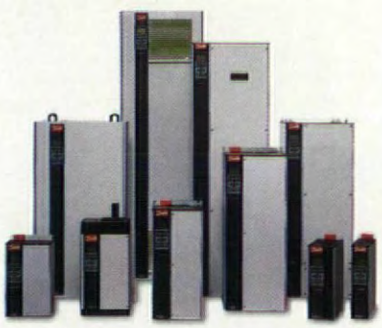

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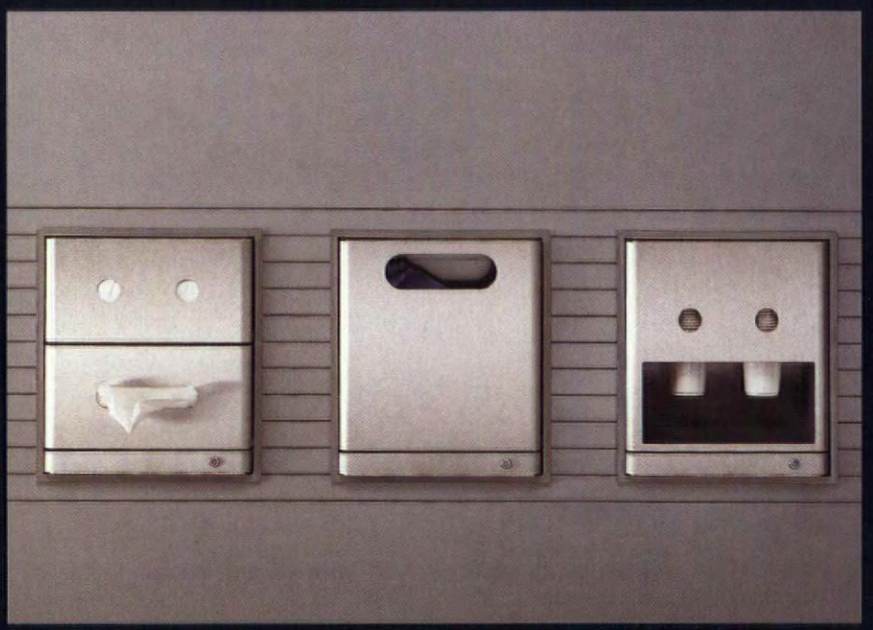

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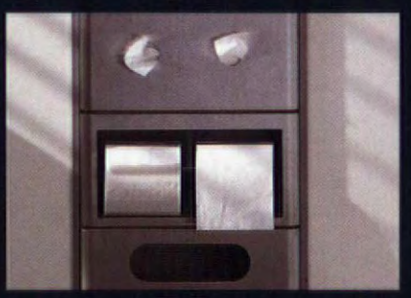

Designed and developed by **d line**™ *international as* and Knud Holscher Industriel Design, this innovative and complete sanitary panel programme has been conceived with the vision that the concept will be appropriate for a variety of applications, primarily toilet cubicles, washroom areas and kitchenettes.

With flexibility in mind, the individual sanitary modules have been designed in three alternative sizes, 1, 2 and 3, where the sizes are dependent upon the products' function. The series allows each individual sanitary panel to be constructed with the exact module combination as per desire and requirement.

Consistent with **d line**'s policy of marketing low maintenance and hygienic products, the modules are designed with curved surfaces and manufactured in AISI 316 acid resistant stainless steel.

d line's sanitary panel programme is manufactured in Denmark by **d line**™ *international as* which is a DS/EN ISO 9001 certified company.

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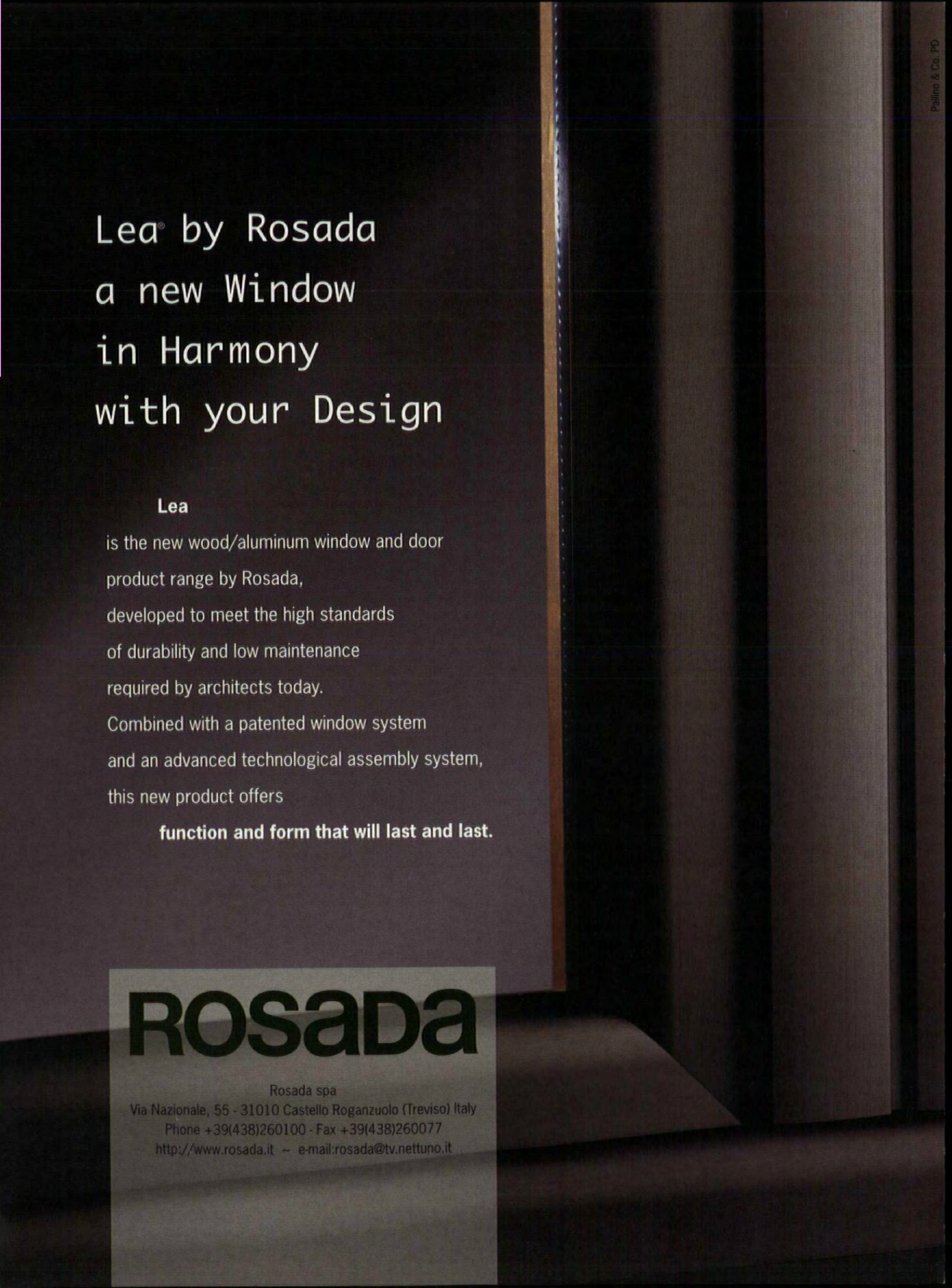

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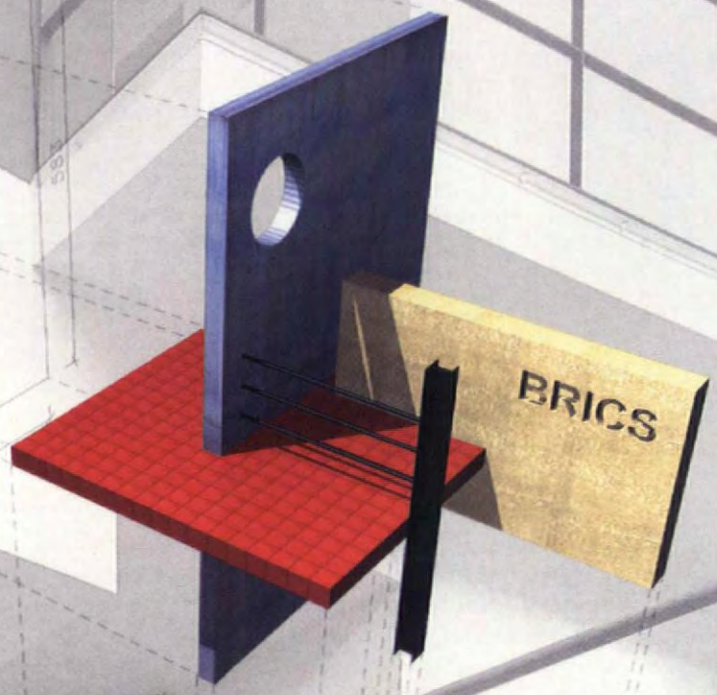

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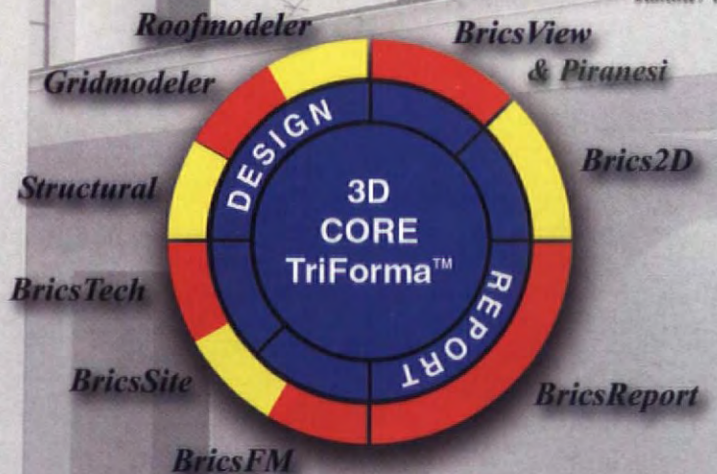

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CERAMIC TILES FROM SPAIN

TERRACOTTA
Natural tiles from baked clay

No natural building material is more suitable for reflecting Mediterranean flair than Spanish terracotta when used for floor and wall coverings that have been designed with the bright colours of the Mediterranean.

Terracotta tiles cannot be compared with industrially manufactured high-tech products. The beautiful glazes of terracotta tiles are softer and more sensitive to scratches and weal and tear than tiles made from normal porcelain or ceramic material. Due to technical characteristics, the dimensions of terracotta tiles cannot be as exact as industrially manufactured ceramic tiles. Furthermore, the tile body is more porous than that of porcelain or ceramic tiles. A follow-up treatment or impregnation after fixing together with the use of the appropriate waxes for regular care can help to overcome the unglazed terracotta tile's sensitivity to stains. Some manufacturers offer pre-treated products. Cerámicas Calaf has developed a system to attain a better finish for these rustic tiles. The objective of this system, named Terracotta Plus, is to avoid the installation problems of terracotta tiles, with a treatment that enhances the finish of the tiles, providing them with higher resistance to stains and easier maintenance.

A healthy material to live with

The terracotta tile is an essential contribution to a pleasant and healthy room atmosphere. The porous material of terracotta provides a climatic balance in the room and its heat retaining ability makes it an ideal surface material for underground heating systems.

Denomination

The most common denomination of a wide variety of products with very different characteristics that only coincide in their rustic appearance. They are frequently manufactured in small production units and are handmade. They must not be confused with mass produced stoneware tiles with a rustic finish.

Appearance

The tile body is earth-coloured and irregular, with a very heterogeneous grain. Grains, pores, incrustations, etc., are visible with the naked eye. The surface and edges of the tile have irregularities that are typical of this variety which are accepted and may even be intentional. There is a wide range of shapes and sizes available.

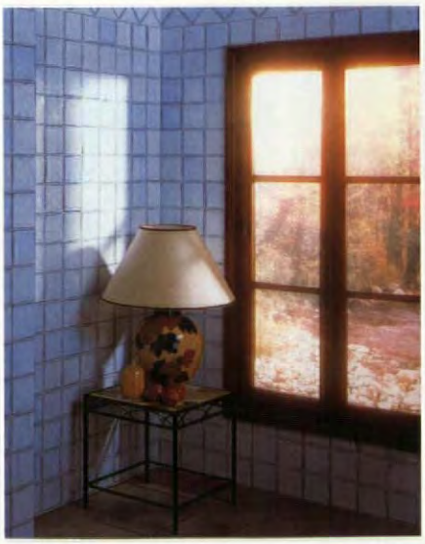
Use

The special characteristics of these tiles make them almost exclusively apt for buildings o-r rooms with a rustic look. Due to their characteristics, the tiles may need to be treated prior to fixing or afterwards in order to maintain their glossy appearance or impervious qualities. Because of technical advances in the treatment of terracotta, these tiles can now be used together with the most modern designs and materials. To accompany these new designs, glazed and unglazed borders and special pieces are prepared on mesh to ease fixing, these borders can also be mixed to include small decorative pieces of terracotta, marble or stone. Glazed and rustic terracotta also complement the wide range of possibilities of new designs and applications.

Classification standard

These tiles are mainly included in group AIIb 2nd part (Extruded ceramic tiles with 6% <E<10%, 2nd part water absorption) and group AIII (Extruded ceramic tiles with E>10% water absorption) of standards ISO 13006 and UNE 67-087.

▲ Cerámica Mayor



▲ Cerámica Mayor

▲ Cerámica Decorativa

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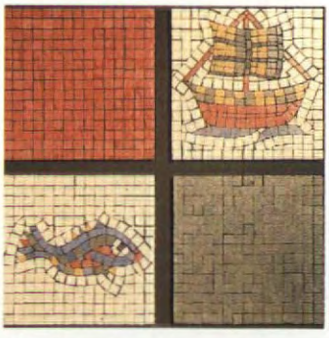
▲ Baldosas Vallés

▲ Cerámica Alteret



▲ Cerámica Ferret

Baldosas Vallés S.L.

The production of Baldosas Vallés S.L. consists of:

- flamed, unglazed terracotta, and red, unglazed terracotta tiles,
- a section dedicated to restoration work and rustic paving with a natural feel, using hand made red or flamed floor tiles in various formats and colours depending on the project.
- lastly, craft production of glazed terracotta wall tiles and borders.

Their latest range of products includes the Export Model in 30x30 cm. with a thickness of only 2 cm. Another new product is the 10x10x1cm glazed terracotta wall tile in natural colours or unglazed. Totally hand made borders are also available to complete the ranges.

Cerámicas Ferret S.A.

Cerámicas Ferret S.A. was founded in 1939 and is dedicated to the traditional production of terracotta. Amongst their new products, Cerámicas Ferret introduce their Mediterranean Collection - This collection is made with special glazes and is hand painted. Available formats include the 5x15 and 10x10cm with a thickness of 1 and 2cm. With a PEI 3, this collection comes in a range of 11 plain colours and 50 decorated models, all of which are hand painted, thus providing endless decorative possibilities.

Sugrañes Gres Catalán, S.A.

Sugrañes Gres Catalán introduce their rustic, unglazed, Terracotta series in the 30x30cm format. With a Mohs 5, this series is available in Flash and Red with corresponding special pieces, the Alba in 15 x15 and 15x30cm - steps and skirtings.

Ticsa Ceramics S.L.

Ticsa Ceramics specialise in the production of terracotta tiles and introduce their Adobe series available in the 20x20 and 15x15cm formats. This antique style terracotta floor tile has a water absorption level of between 15 and 20%.

Cerámica Decorativa, SA

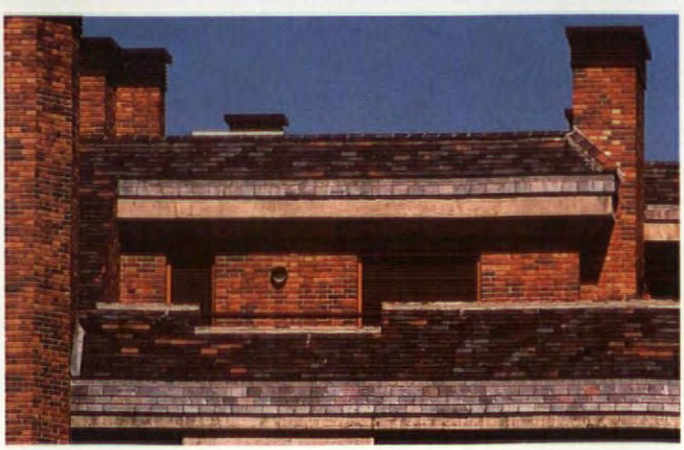
Cerámica Decorativa S.A. was founded in 1967 by a family whose tradition in the world of ceramics dates back to 1862. The company production of terracotta floor tiles reaches 2,000 square metres per day and is based on two lines, the Manual Series and the Mechanical or Extruded Series. Terracotta floor tiles manufactured by hand using traditional methods lends a rustic appearance to the tile in a wide range of natural shades.

RUSTIC STONEWARE
An ideal building material

Rustic stoneware is generally considered to be an ideal building material. These products are very cost effective. Some Spanish manufacturers continue to produce rustic stoneware with a thickness of 1.5cm and more and some companies have developed a complete range of special and decorative pieces for floors and walls. Within the relatively small production of these types of tiles in Spain, there are various groups such as the ones described below (quarry tiles, spaltplatten and salt glazed).

Denomination
The name usually given to ceramic tiles that have been moulded by extrusion, and which are generally unglazed with a low or medium to low water absorption level.

▲ Gres Rústico Ebreo



▲ Gres de Castilla

Appearance
The tile body ranges from ochre to very dark red, with a heterogeneous grain, so the non-homogeneous elements can often be distinguished with the naked eye (grains, pores etc.) The predominant shapes and sizes are squares and rectangles, although hexagons and octagons are also seen together with a wide range of complementary pieces (mouldings, coves, beads, strips, tacos,...) and special pieces (steps, skirtings, drip plates,...). The thickness of these tiles varies greatly depending on their size and type and is usually greater than that of stoneware floor tiles.

Use
The characteristics of these tiles make them suitable for various uses: façade facing, exterior paving, including public areas, industrial floors and floors of public buildings, etc. The colour of the tiles and finish with moderate surface irregularities provide exceptional decorative possibilities.

Production in Spain
With a relatively small production in Spain, there is a wide variety of types.

Types
This group includes:

- Tiles denominated "quarry tiles" due to their similarity to traditional

▲ Gres de Aragón

◀ Azulejos'A

▲ Natucer

▲ Ferrogres

▲ Cerámicas Calaf

extruded English tiles.

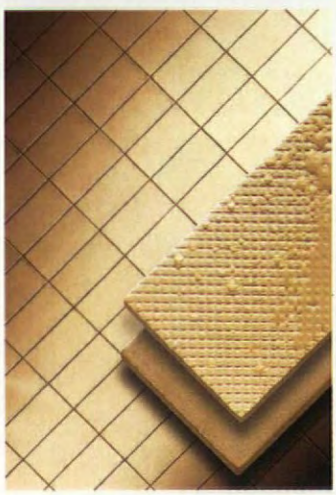
- Split tiles, also known by the German name "Spaltplatten". They are moulded by the simultaneous extrusion of two tiles joined by ridges on the back, and they are separated after firing.
- "Salt glazed" tiles, onto which common salt is applied during the firing process, results in a shiny, uneven bronze film that has a decorative effect. These tiles are suitable for interior as well as exterior use.

Classification standards

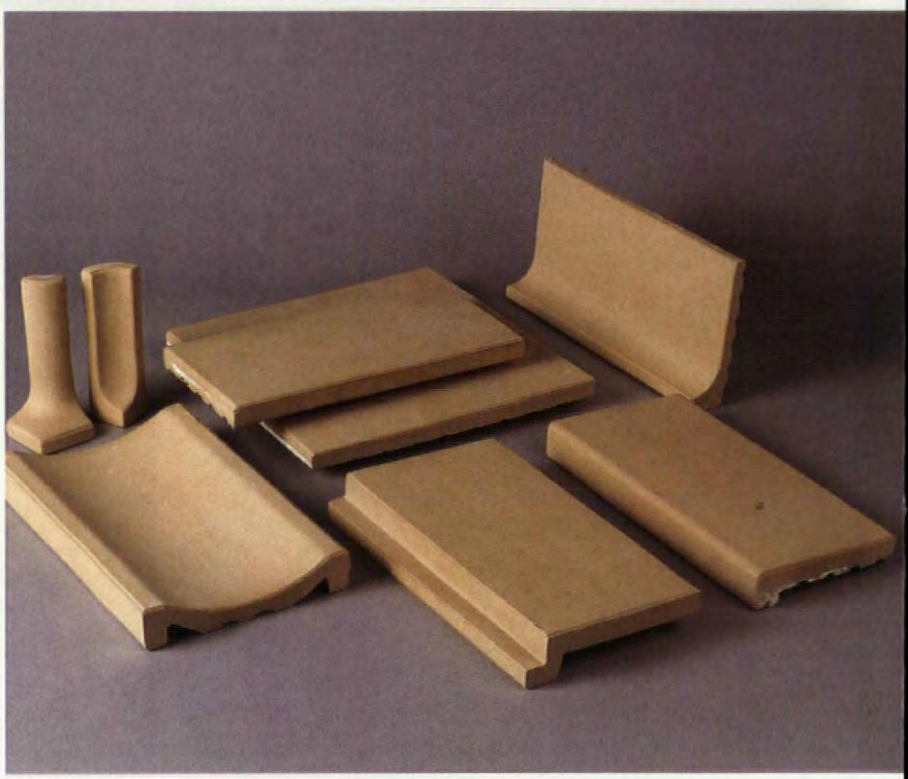
These tiles are chiefly included in the A1 group (Extruded ceramic tiles with E <3% water absorption) or the Alla group (Extruded ceramic tiles with 3%< E <6% 1st part water absorption) of the ISO 13006 and UNE 67-087 standards.

Brancós ▶

▲ Gres de Breda



▲ Rosagres



▲ Exagres

Cerámica Sugrañes, S.A. "Rosa Gres"
Cerámica Sugrañes introduce their Arte wall tile series in the 15x15cm format, available in white, blue, green and earth colours. This series incorporates embossed and hand painted special pieces. The availability of special pieces allows the company to achieve different finishes and surfaces to create special surroundings.

Natucer S.A.
Natucer S.A. was founded in 1988 as manufacturers of smooth extruded stoneware. Their natural ceramic tiles are available in basic formats together with complementary embossed special pieces. Frost resistant and slip resistant tiles are also available for exterior use and the company currently export 25% of their total production.

Supercerámica S.A.
Supercerámica present their Inca floor tile series available in the 31.6x31.6 and 25x25cm formats. This frost resistant tile has a Pei IV, Mohs 9, and thickness of 13mm making it suitable for exterior use and public places. All of the models in the series are complemented by their corresponding special pieces (steps, skirtings, tacos etc.), and are available in three textures: smooth, rough and slip resistant. This traditional, rustic tile has multiple uses and can be applied in kitchens, living rooms, staircases, terraces, gardens, swimming pool areas, industrial spaces etc.

Cerámicas Calaf, S.A.
With their modern production plant, Cerámicas Calaf manufacture extruded floor tiles and special pieces using systems of dry crushing of clays, grinders, automatic conveyors, and totally automatic dryers and ovens, selection lines and palleting and packaging.

Daily production capacity reaches 5,000 square metres of split tiles or a total of 10,000 square metres per day of 14x28cm format floor tiles.

New products and services recently introduced by the Company include the introduction of a pre-treated material "PLUS", a factory treatment which guarantees the elimination of kiln scum after fixing, thus facilitating cleaning and subsequent care, making the tiles especially suitable for use in interiors which are sensitive to grease or oil stains.

For further information contact:

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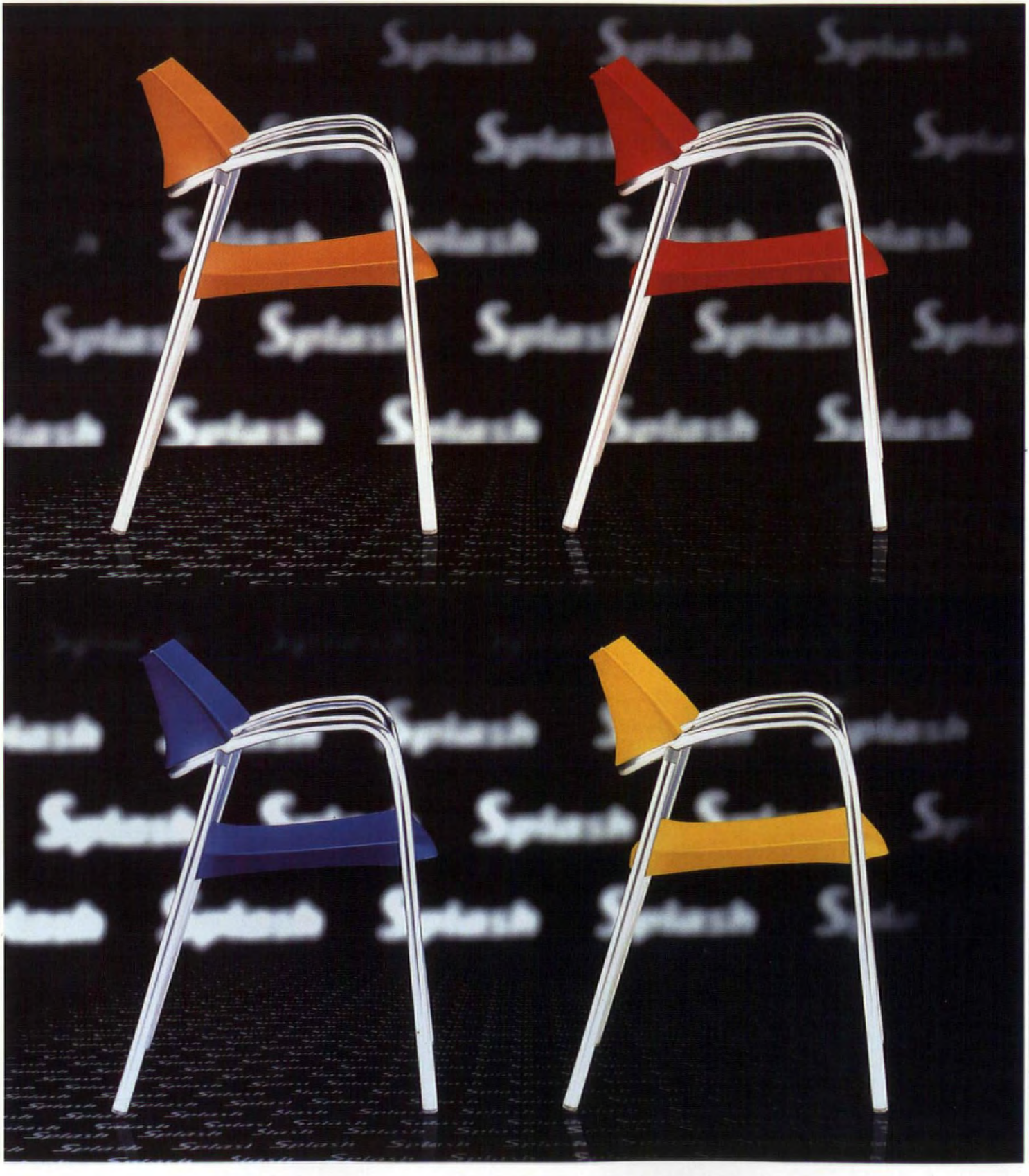

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RAL classic - RAL design - RAL digital
Tools for Developing Colour Concepts

RAL Farbfinder – 1688 RAL Design colours

The classic colour collection RAL 840-HR with its four digit colour numbers is well known and often used by architects all around the world. In the last five years however, more and more architects are working with other colours. These colours are more suitable for developing colour concepts because they are systematically ordered with defined colour differences between each other. The colours we are talking about are 1688 RAL Design Colours described by a seven digit number. The colour code is not only a reference number; it defines hue, the lightness and the chroma of the colour. With these values it is easier to develop a colour concept because you can use the logical connection between several colours to find a suitable ensemble for your project.

The colours of the RAL Design System are recognised by many paint producers as well as manufacturers of carpets, furniture and kitchen units i.e. manufacture their products in RAL Design Colours.

RAL offers a range of colour swatches and other presentations for choosing colours. Moreover the RAL Colours can be used on computer as well. RAL Digital integrates all the RAL Colours, the Classic collection and the RAL Design System, in several CAD and graphic programmes.

All RAL products can be obtained directly from RAL and its distributors.

RAL Digital – RAL Colours Design software

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Reosil S.A., Curupayti 1442, Prov. Buenes Aires, RA-1607 Villa Adelina

Austria
Clariant (Österreich) AG, Abt. Kunststoffe und Pigmente, Altmannsdorfer Strasse 104, A-1121 Wien
Büro Nova, Gerhard Kopplhuber, Irisweg 18, A-4623 Gunskirchen

Benelux
Multicolor b.v., Londenstraat 16, NL-7418 EE Deventer

Czech Republic/Slovakia
Tradix Color s.r.o., Herink 10, CZ-251 70 Dobrejovice Praha

Finland
Suomen Standardisoimisliitto, P.O. Box 116, SF-00241 Helsinki

France
Erichsen, 4, Passage Saint Antoine, F-92508 Rueil-Malmaison Cedex

Great Britain/Ireland
Multicolor CMS Ltd, Nacton Road, Ipswich, Suffolk IP3 9QP

Hungary
INTERDIST KFT, Vörösmarty u. 19, H-2463 Tordas

Italy
Erichsen Instruments Srl., Via Zuccoli, 18, I-20125 Milano
Matherson SPA, Via Olimpia 2, I-24030 Presezzo

Poland
ALCOR sp. z o.o., Centrum Badawczo-Produkcyjne, ul. Kepska 12, PL-45-130 Opole

Singapore
Lee Hung Technical Co., Blk 2022 Bukit Batok, St. 23 #03-/134/136/138, Bukit Batok Industrial Park A, SGP-629527 Singapore

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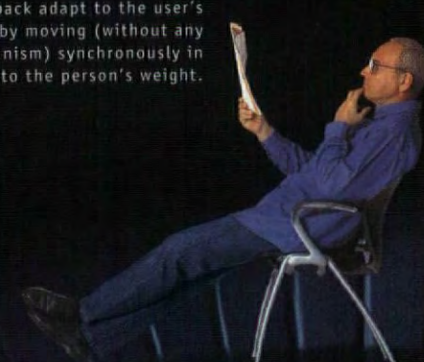

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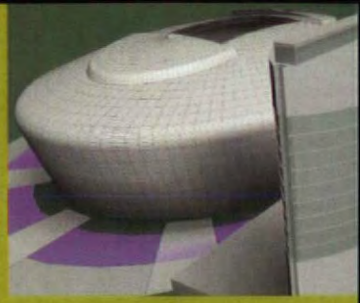

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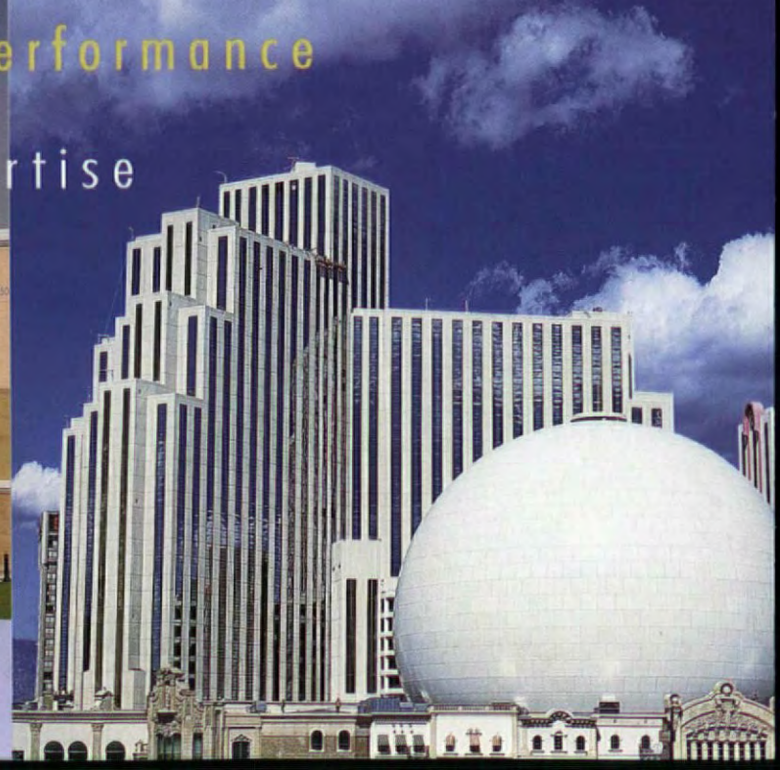

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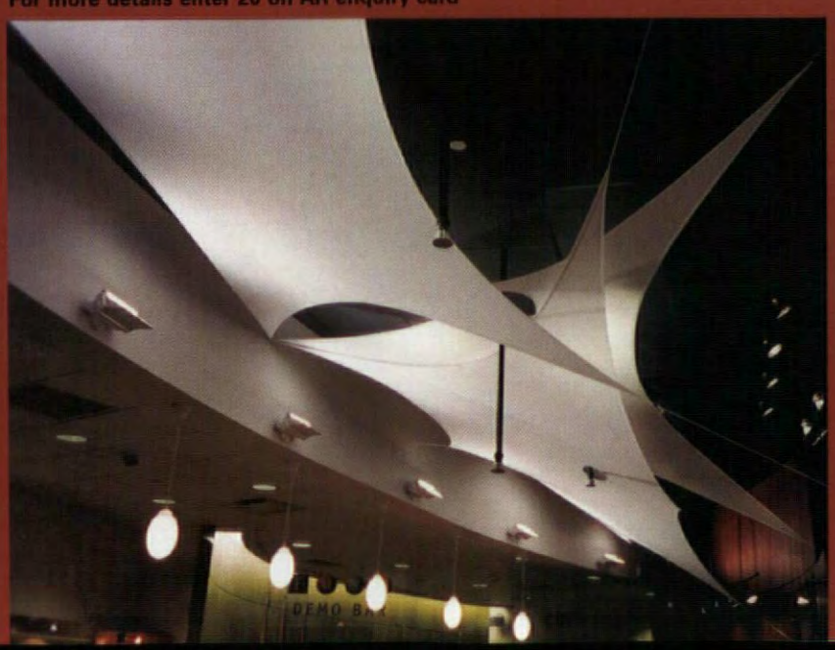

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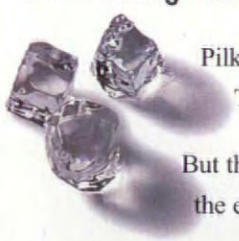

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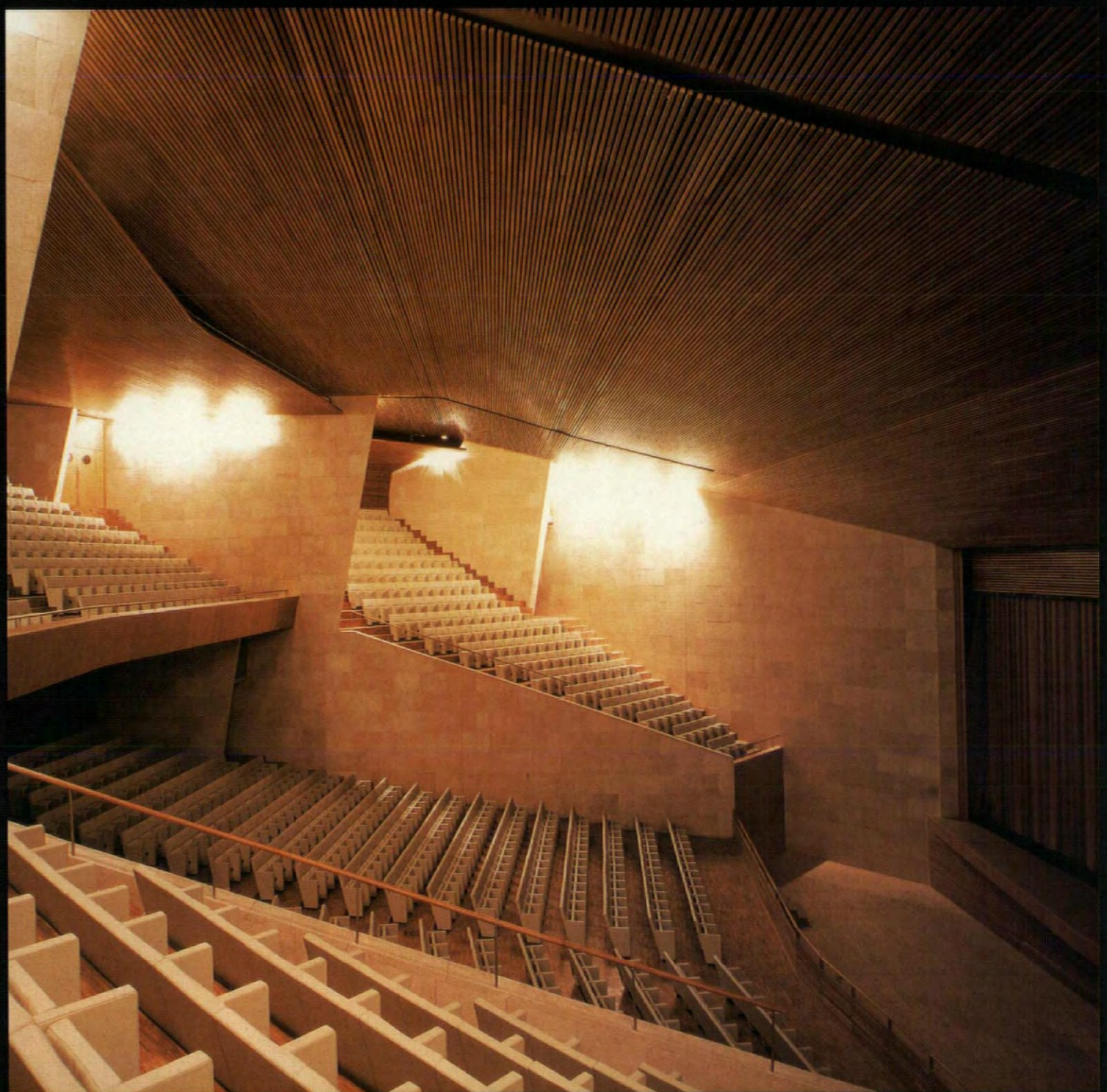

Caceres, Auditorio de Caceres. Model: Pitagora Theater System, designed by Lella and Massimo Vignelli.

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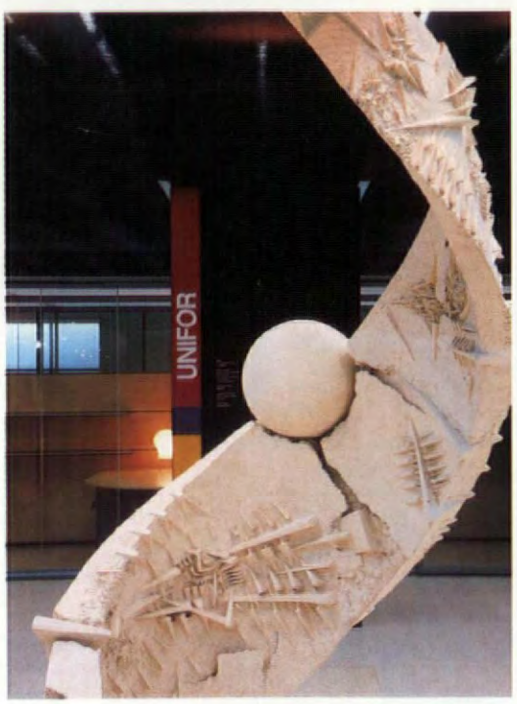
Orgatec 1998

Unifor's stand at Orgatec 1998 reflected the company's continuing commitment to a technologically advanced but humane design ethos. A series of environments demonstrated Unifor's products in situ: standard elements characterised by visual clarity with high quality materials and natural finishes. Unifor's approach is known for its understated elegance with conceptually innovative layouts underpinned by an exceptional attention to detail. With its deceptively simple forms, Unifor furniture is flexible and thoroughly adapted for the modern office context being easy to assemble and maintain. The technological component, is always present but never overt, handcrafted detailing is obvious throughout.

The exhibition stand (designed by Studio Cerri & Associates) suggests today's forward-looking work place with a series of open, multifunctional, light-filled spaces maximising environmental comfort. The separate functional areas range around the **Task Space**, created for flexible working methods and defined by modular elements from I Satelliti S/200 series (designed by F&L Design). Desk tables move, ascend and descend separated by dividing panels of various heights and lengths with service poles for cable management. The centrepiece, formed by Arnaldo Pomodoro's fibreglass sculpture *Open Spiral*, hints at Unifor's longstanding links with architects, artists and designers.



UNIFOR

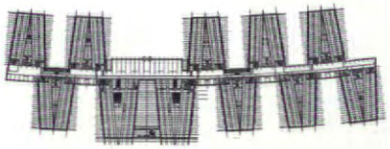
Facing page, top: Reception area with sycamore finished table from Naos series; **Below:** Detail from Arnaldo Pomodoro's fibre glass sculpture Open Spiral; **This page top:** Meeting area, modular elements from Project 25 with multimedia case pieces from the Move series and Flipper tables; **Above left:** Task area, modular elements from I Satelliti S/200 series, insular configuration; **Above right:** Task area, modular elements from I Satelliti S/200 series, open-room configuration

Clockwise from top left: Reception area, view of red service wall with meeting area to the left; Office area, glazed surfaces and interior partition elements from Project 25 with work tops and furnishings from the Easy series; 7/8 Office area, transparent panels, partition elements and tool fences from Project 25, work tops and furnishings from Project 25 and the Easy series; Conference room, set up for smaller meetings, in the foreground, with eight tables, in the background with four tables, in the background, multimedia support equipment from the Move series; Conference room, largest configuration (sixteen tables), from the updated Flipper series

› The **Reception Area** is dominated by a service wall providing storage for files, wardrobe, refreshments etc. Coloured in Unifor's characteristic intense red and carrying the imprint of the company trademark, it forms a simple but effective graphic device. In front of the wall stands a large table finished in sycamore from the Naos series (design by Pierluigi Cerri).

The **Meeting Area** is a plate glass parallelepiped, a place for small meetings, group working, larger conferences, private conversations. With broad glazed surfaces, sliding doors, telescopic sliding partitions, simple construction components from Project 25 (designed by Luca Meda) provide an instantly adaptable working environment. A restful atmosphere is achieved through the use of diffused light, pale and calming tones, natural materials and finishes, curvaceous forms. The furniture, square and arc-shaped tables from the recently updated Flipper series (designed by Luciano Pagani and Angelo Perversi), allows for a variety of configurations. Multimedia support equipment is made up of case pieces, writing desks, multipurpose trolleys from the Move series (designed by Luciano Pagani and Angelo Perversi).

The **Office Area**, another plate glass parallelepiped, contains a selection of smaller individual offices. With transparent panels, partition elements and tool fences from Project 25, these essentially private spaces remain in constant communication with their surroundings. Work tops, from the Easy series (designed by Fernando Urquijo) and the Project 25 series, adapt easily to differing needs, while soft and rounded shapes promote a home-like atmosphere.



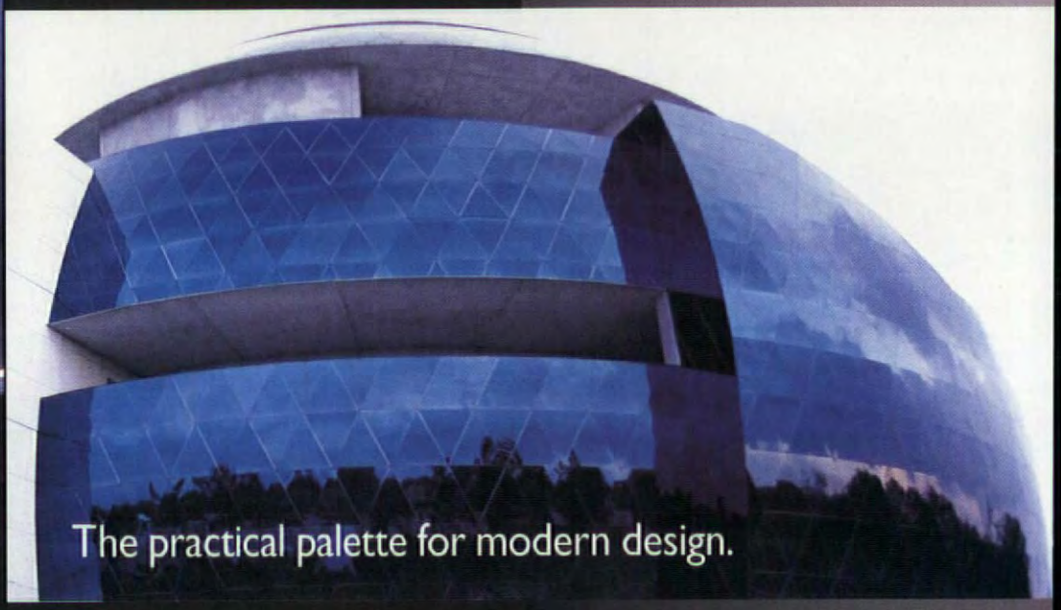
UNIFOR

Deutsche Bahn

Completed in 1998 the award-winning Deutsche Bahn Service Centre DB Cargo, Duisburg demonstrates a creative collaboration between Unifor and Dusseldorf-based architects RKW Rhode, Kellermann, Wawrowsky. The largest call centre in Europe, the building operates 24 hours a day with 1200 employees working on a shift basis. With many of the workers relocating from different parts of Germany, environmental factors and employee comfort were given a high priority. As well as providing furniture for conference and waiting areas, Unifor was contracted to furnish 500 offices taking into account the nature of shift working. Unifor has a long-standing reputation for creating tailor-made products for designers who have in the past included Nicholas Grimshaw, Jean Nouvel, Michele de Lucchi and Renzo Piano. Working with designs provided by RKW they developed a service wall with height-adjustable shelves which handles all IT requirements. The desk, also fully adjustable, is free to be detached from the wall and pushed to the centre of the room allowing both concentrated CPU use and group work. A mobile caddy for personal effects was also designed specially for the project. The pared-down simplicity and warm wood finishes of the Unifor products worked in harmony with the building's ethos of light, open spaces where the natural surroundings integrate seamlessly with the interior.

Top left, below and above: Deutsche Bahn, Service Centre DB Cargo, architects: RKW Rhode, Kellermann, Wawrowsky, interior views of individual offices showing service walls, desking and partitioning all by Unifor; **Top:** Deutsche Bahn, Service Centre DB Cargo, architects: RKW Rhode, Kellermann, Wawrowsky, ground floor plan showing layout of offices; **Left:** Deutsche Bahn, Service Centre DB Cargo, architects: RKW Rhode, Kellermann, Wawrowsky, interior view showing cafeteria with offices left and right

To make an architectural statement these days, you need a material that makes a lasting impression.



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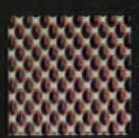
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An exercise in self-promotion

At the end of last year, WA's editorial office was inundated with Christmas cards, not only from old friends, but from architects with indecipherable signatures and from firms that had never before contacted the magazine. Grateful though we are for these good wishes, can it be that architects too have fallen for the commercial myth that sending greetings to faceless names is somehow a successful marketing ploy? Perhaps this is why the most frequently-asked question to editors at conferences (however erudite the orignal subject) is simply: "How do I get my work published?"

In an age when all businesses are subject to increased competition and slick marketing campaigns, publishing remains architects' most potent vehicle for promotion. So why do so many firms still fight shy of investing in the necessary personnel and resources for handling the media? It is no coincidence that the most successful architects are also those who have a dedicated team to deal with marketing and press enquiries, and who understand the importance of presentation. Indeed, many of the international stars have perfected the art of self-promotion and handle the majority of their book publications themselves. These are not just talented designers, they are shrewd businessmen who appreciate the benefits of a professional approach to media relations.

Why does it come as a surprise to readers that these same names fill the pages of the professional press? Of course the primary criteria for inclusion are the quality of the work and relevance of the proposed subject to a given issue. Beyond this all reason is likely to evaporate when faced with a badly written, ill presented press release, the promise of images upon further enquiry, and an impenetrable real estate document with cursory reference to the project in question. But when a distinctively packaged press pack drops onto the desk complete with a minimal but enticing description, a set of six stunning transparencies and the promise of a "site visit at your convenience", apathy is replaced with intrigue.

Contrary to popular belief, there is nothing complicated about getting through to magazine editors. Just follow a few simple rules: know the editorial policy of the magazine; introduce yourself personally; maintain regular contact and always include good quality illustrations with any documents. Christmas cards are always gratefully received. But as a one-off marketing exercise they are not worth the paper they're printed on. A belated Happy New Year, and we look forward to hearing from you.

Nicola Turner

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In next month's WORLDARCHITECTURE

Right: Poland: ING Bank building, Warsaw, by Atelier Pro with Marek Swierczynski and Denton Corker Marshall

Above right: Energy efficient buildings: The Torrent Research Centre, Ahmedabad, India, by Abhikram Architects and Brian Ford & Associates

Far right: Lighting: Caliz halogen floor lamp from Italian manufacturer Foscarini

Country Focus - Poland

As Russia's economic and political troubles cast a shadow over Eastern Europe's construction industry, Poland remains the continent's "tiger", with no shortage of opportunities for Western architects and their multinational clients. Marek Wielgo, senior economics correspondent of the Polish newspaper *Gazeta Wyborcza*, offers an overview, whilst Ewa Przestaszewska Porebska reviews one of Warsaw's best publicly-funded recent buildings, the Bialoleka Town Hall. ING's Holland Park development – the developer's first Polish project, and an exemplar of international project organisation – is discussed in detail. *WA* also reviews projects including an airport terminal in Wroclaw, an international university complex on the German border, and a Warsaw city centre office scheme which shows that Polish architects and contractors are often capable of matching the standards set by their Western peers. Peter Wislocki speaks to Denton Corker Marshall's Mark Kubaczka, an English-born Pole who has led the Australian practice's impressive Warsaw office since its foundation.

Sector Analysis - Energy efficient buildings

David Lloyd Jones addresses the myriad design and economic issues surrounding "green" architecture, arguing that energy-efficient buildings can be both comfortable and cost-efficient long term. International case studies profile the latest low-energy buildings from around the world, from a laboratory in India with zero-energy cooling systems based on the methods of the Mogul empire, to a futuristic ecological skyscraper in Manahattan's Times Square. Both are examples of how advances in the technology and theory behind measures such as solar energy generation and de-mechanised cooling and lighting are at last making environmentally-friendly buildings commercially viable. As the "green" workplace becomes as comfortable and controllable as its conventional counterpart, businesses are tentatively accepting that the advantages of energy efficiency may outweigh the risks.

Product Focus - Lighting

As architects know, all good design must be balanced by practicality, and this applies equally to lighting manufacturers. Energy-saving measures are an important aspect of the latest lines from the world's top lighting companies although, as Carl Gardner's review confirms, this has not led to any compromise over aesthetics or performance. *WA* also looks at a selection of daylight-related lighting systems, new switchgear and lamps from names such as Zumtobel, iGuzzini, Erco and Concorde; previews the year's upcoming international lighting trade shows; and rounds up the latest business news from the industry.

News desk: Adam Mornement e-mail: warch@atlas.co.uk; telephone: +44 171 470 7020; fax: +44 171 470 7007
International contributors: Bay Brown, David Cohn, Susanne Ehrlinger, Arbind Gupta, Gary Morrell, Dennis Normile, Ed Peters, Michael Rowe, Vera Vaughan-Bowden, Albert Warson

Hanover 2000 turmoil

GERMANY

Hanover Expo 2000, the international trade show which will double up as the focus of Germany's Millennium celebrations, has been dogged by controversy, derided by its critics and is well short of its sponsorship targets. To top it all, the design of the German pavilion has been assigned to a virtual unknown, whose design and motives have been questioned by sections of the German press.

Award-winning Florian Nagler, Stuttgart, was the original architect of the Expo's architectural showpiece. He won the competition to design the pavilion late in 1996 but quit last September, after 18 months of hard graft. He cited behind-the-scenes meddling by the pavilion's financial backers as the reason.

The German pavilion will now be designed by Josef Wund. Wund, a developer who had invested heavily in Nagler's original design and has no track record as an architect of "trophy" buildings. He has made his fortune designing primarily leisure and healthcare facilities.

Not impressed

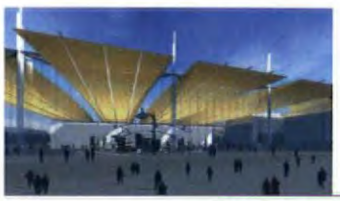
In a letter to Chancellor Schröder, Andreas Gottfried Hempel, the chairman of the Association of German Architects (BDA) described Wund's US$165 million design as "a disgrace of the first order". He has stated his intention to stop Wund's involvement in the project. The view is shared by the German daily *Frankfurter Allegemeine Zeitung*, which describes Wund's design as having "the aesthetic appeal of a blown-up car-lot on an industrial estate".

Nagler's walkout was provoked by the site owners' view that his design did not meet their internal space requirements. Trägergesellschaft Deutscher Pavilion Gmbh, (TDP) the Expo organiser, had reservations about the competition-winning design on the grounds that, the building could not meet exhibitors needs, "for design, structural and functional reasons".

At this point, Nagler suggested a review of the five original short-listed pavilions. The idea was taken up, but he still came out the winner. Then TDP consulted the pavilion's main backer (Josef Wund), without Nagler's consent. Wund came up with a design which increased the capacity of the planned 360-degree cinema by half, bringing it up to 6,000 persons, which was enough to satisfy both TDP and key exhibitors.

Amid the claims and counter-claims, and without a valid contract, Nagler felt that he could no longer bring the plan "up to the required architectural quality". He declined an offer to be "artistic adviser without directorial authority". He told *WA*: "What little input I was allowed was not sufficient for me to be able to do justice to the demands placed on a building that would be under the public gaze."

It took only four weeks for Wund to finalise his own proposal, which in turn took only days to be approved by the Advisory Board of TDP. Expo 2000 opens on 1 June 2000. SE



"[The new pavilion has] the aesthetic appeal of a blown-up car-lot on an industrial estate." Frankfurter Allegemeine Zeitung

Good sports

HOK Sport and LOBB in US$500m merger

USA/UK

HOK Sport (Kansas City, USA) and LOBB Sports Facilities Group (London, UK and Brisbane, Australia) have merged. The new firm, HOK+LOBB Sport is the world's largest international practice dedicated to sport. With an anticipated annual turnover of US$500 million, no other sport architect even comes close.

Speaking at the announcement, Jerry Sincoff, president of HOK said: "We believe in globalisation, we believe our clients want consultants with global reach and experience." The catalyst for the merger was the working relationship that evolved from the two firms' involvement on Gilroy McMahon Architects' Croke Park stadium, Dublin (featured in *WA*64 pages 66-67). The firms cemented their ideals on the joint contract for the new Wembley stadium in London. AM

Paris gets the Vegas treatment

USA

Las Vegas firm Bergman, Walls & Youngblood is bringing "gai Paris" to the casino capital of the world. Landmarks from the Eiffel Tower to the Arc de Triomphe will soon be inflicted on the Vegas skyline.

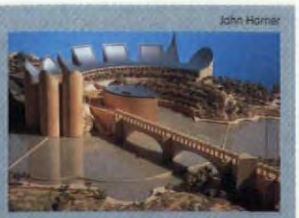
Clearly, authenticity is paramount – the design team spent a week-long design session in Paris before attempting to recreate the highlights of the French capital.

Opening in October, the US$750 million ten-hectare transcontinental resort boasts a 7,900-square-metre casino and 3,000 guest rooms. See also WA59 page 33. BB

ASIA

Contracts

John Horner



INDIA

- Ground has broken on Khalsa Heritage Memorial, a 23,000-square-metre museum complex celebrating 500 years of Sikh history. The museum is located in Anandpur Sahib, Punjab. Boston-based architect, **Moshe Safdie and Associates Inc** has designed the complex, with associate architect **Ashok Dhawan** of New Delhi. Chief Minister Badal of Punjab commissioned Safdie after visiting the Yad Vashem Children's Holocaust Museum in Jerusalem, Israel – another of Safdie's designs. Completion is scheduled for 2001.

JAPAN

- The Olympic Hiratsuka Shopping Centre, a 64,000-square-metre retail centre designed by the Tokyo and Dallas offices of **RTKL International Ltd** is on site in Hiratsuka, Japan. **The Olympic Corporation** is developing the project which is slated to open later this year. Located just south of Yokohama, in one of the most rapidly expanding commercial districts in Japan. Olympic Hiratsuka Shopping Centre is located directly opposite the JR Tokaido Railway Line.

PRC

- **Nelson Chen Architects** of Hong Kong has been commissioned to design new manufacturing facilities for US-based Mattel Toys near Nanhai, Guangdong Province, PRC. The 56,000-square-metre low-rise development will comprise a diecasting manufacturing plant, training centre and dormitories. Construction is already underway. Completion of phase one – which includes industrial facilities and staff dormitories – is expected by the middle of the year.

RSP wins INSEAD expansion

Ray of light for South-East Asia?

SINGAPORE

Leading European business school INSEAD has chosen Singapore practice RSP Architects Planners & Engineers Ltd (PTE) to design an Asian campus for the school in the Buona Vista district, Singapore's developing educational belt.

Construction will start in 1999, and the first phase will be completed in 2000. The remainder of the 2.8-hectare site will be continuously developed over the next 20 years.

Liu Thai Ker, a director of RSP and design architect on the project, was one of four local architects interviewed by INSEAD. He has an extensive background in public housing and urban planning, and he is chairman of Singapore's National Arts Council. With a staff of around 300, RSP is present in India, Dubai, Kuala Lumpur, Jakarta, London and Bahrain. "The masterplan has been conceived as a chess board on a tartan grid, with most buildings fitting into a 12 metre by 12 metre module, surrounded by three metre-wide borders," comments Thai Ker.

INSEAD started thinking about establishing an Asian campus in 1995, with the aim of catering for the region's huge potential demand for management education. The region's economic downturn made the school hesitate about a year ago, but it has now decided to resurrect the plans.

"We believe that the current downturn is natural and temporary, and that most Asian economies have sound foundations and all the ingredients for dynamic long term growth," comments Antonio Borges, dean of INSEAD. "Tactically, this is a good moment for us to invest in the region, since costs are currently lower than they will be when the local economies start growing again," he adds.

"The Singapore government has made the land available to us at a very attractive rental, and they are also arranging for us to obtain finance for building purposes at two percent below commercial market levels," Borges continues. "Singapore offers a particularly international setting for our activities in the region. The government is working hard to make the country the educational hub of Asia," he concludes. MR

Mumbai: "an ugly, male city"

says feminist Lalitha Das

INDIA

"Men have used town planning and the creation of public institutions to entrench a male system," says Mrs Lalitha Das, a renowned Indian architect, known for her feminist views in planning and design.

"I'm not against males, but I think architecture is tilted towards male values, and that is where architecture suffers." Das feels that in contrast to male architecture, feminist architecture embodies values such as "concern", "caring" and a sense of "symbiosis for mutual benefits".

She singles out her home town of Mumbai as a particularly bad example: "If Mumbai had been designed by a female architect, it would have been a different city altogether. It would have been a kinder, more sharing place". According to Das, the division into city and suburbs was essentially due to the dominance of male architecture. "If the planners of Mumbai had thought to develop the hills of the city and connect up the islands with bridges instead of reclamation, Mumbai might today have been one of the great cities in the world." AG

The Gateway of India, as seen from Mumbai's waterfront, but would it have benefited from a woman's touch?

ASIA

World Cup 2002

The competition has already begun


Yokohama International Sports Stadium – the largest multi-purpose stadium in Japan

SOUTH KOREA/JAPAN

World Cup fever is building up in east Asia where 2002 World Cup joint hosts Japan and South Korea are in a frenzy of new stadium construction. Both countries had embraced the World Cup at least partly as an excuse to pump public money into sluggish building sectors. Korea is finding it may have bargained for more than it can handle.

Japan is spending US$2.25 billion on seven new stadiums and the renovation of three others. Local governments are picking up the tab and, in the true World Cup spirit of rivalry, there has been competition to build the biggest and the best.

The city of Yokohama now boasts the biggest multi-purpose stadium in Japan with the just completed 70,300-seat Yokohama International Sports Stadium. The US$500 million complex was designed by a joint venture of MHS Planners Architects and Engineers, and Tohata Architects and Engineers, both of Tokyo. In this, as in most cases, designers were selected through limited competitions and construction was let for competitive bid.

Not to be outdone, Korea is building ten new stadiums with the US$1.07 billion required coming from a combination of national and local governments and private investors. The showpiece is the US$166 million Taegu World Cup Stadium, in Taegu (designed by Idea Image Institute Co) which will have seating for 70,140. For all stadiums in Korea, design-build tenders were evaluated through a scheme that allotted points for design, construction price, and past experience.

While the rivalry on the field is still years away, there is no question as to who is leading in the construction race. All of Japan's stadiums are well underway while Korea is just coming up to speed. Only five of the projects were underway by the end of last year – they are all supposed to be completed by the end of December 2001. Local governments have been hit hard by falling tax revenues to the point that it was widely reported that Korea was asking for US$100 million from Japan to help finance the construction. Japan's Ministry of Foreign Affairs says the request never made it beyond informal discussions. The Korean Embassy in Tokyo denies there was ever any request for help. DN

Mori unveils Roppongi revamp plan

JAPAN

Mori Building Co has unveiled what will be Japan's largest privately funded urban redevelopment project. The US$2.04 billion scheme in central Tokyo's Roppongi entertainment zone involves a 54-storey office building, a hotel, two 38-storey housing blocks and seven other buildings on an 11-hectare site.

The Hyatt group will run the 500-room hotel, and ASAP National Broadcasting Co (known as TV Asahi) will house an eight-storey television broadcasting centre. A consortium made up of over 300 organisations, including Mori and TV Asahi, are involved in the project.

Construction will start by March 2000, and completion is scheduled for March 2003. Mori, which owns a third of the plot, will be responsible for designing the project. DN

"Darling you were wonderful" – International AWARDS round-up 98

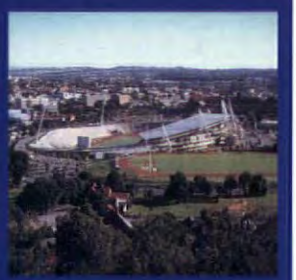
AUSTRIA

The Mies van der Rohe Award for European Architecture went to the French National Library in Paris by **Dominique Perrault**. Architektur Zentrum Wien presented the bi-annual award for projects completed in 1997. The French National Library was the last of François Mitterand's *Grands Projets*.

PRC

The AIAs' Hong Kong Chapter celebrated its first anniversary by presenting AIA Honor Awards (for projects completed in China and the Asia Pacific region) to: **Nelson Chen Architects**, (whose Hong Lok Yuen School, Hong Kong is pictured above) **Wong Tung & Partners Ltd**, **Sherman Kung & Associates Architects Ltd** and **HOK International Ltd**.

SOUTH AFRICA



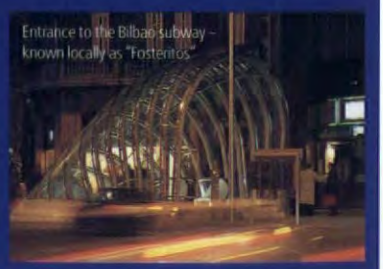
British multi-disciplinary practice **Arup Associates** won the 1998 South African Institute of Architecture Award of Excellence, for its Johannesburg Athletics Stadium. The award is given every four years for the country's "most outstanding architectural project". The 38,000-seat stadium hosted the Athletics World Cup in 1998. The associate architect on the project was **RFB Architects** of Johannesburg. See pages 132-153 *WA45* for project review.

UK

In perhaps the least surprising award of the year, **Foster and Partners** picked up the Stirling Prize for its American Air Museum at Duxford, UK. At US$33,000 the prize is Britain's richest. After an incredibly successful year it seems fair to suggest that the helicopter-flying, fitness fanatic has truly joined the architectural global elite – last month's cover star, Chek Lap Kok airport, Hong Kong, was arguably Foster's greatest international hit of 1998. Duxford also won the London Royal Fine Art Commission's Building of the Year award.

USA

Here we go again: **Foster and Partners** was presented with the fifth bi-annual Veronica Rudge Green Prize in Urban Design, from the Harvard Design School. The judges cited two Foster projects for particular merit in combining "accessibility and elegance" in public life – the subway system in Bilbao (Spain) and the development of Carré d'Art plaza in Nîmes (France).


Entrance to the Bilbao subway – known locally as "Fosterito"

WESTERN EUROPE

Left: Masterplan – the enclosed "micro-town" is in the centre of the landscaped oval

When the heart's not in it

GERMANY

The latest project in the ongoing redevelopment of ex-mining communities in the Ruhr (Germany's former industrial heartland) is also the most spectacular to date. The design for an enclosed "micro-town" on the site of the former Mont-Cenis colliery is the work of Paris-based Jourda Architectes.

Located near to the town of Sodingen, Mont-Cenis was first mined in 1871. The mine closed in 1978, but during the century that it was active, a community had evolved around it. The challenge to the architect was to replace the heart of the town.

Under a climatically controlled canopy, constructed of wood and glass, the architects are constructing a library, civic hall and community training academy for the state of Nordrhine-Westfalen. When complete, the complex will include retail outlets, 250 housing units and a landscaped park. Jourda Architectes is collaborating with German architect Hegger Hegger und Schleff of Kassel.

The architects were selected after a two-stage international design competition and an urban planning conference.

Mont-Cenis comes under the umbrella of the Internationale Bauausstellung Emscher Park (IBA) initiative. IBA was established in 1994 to reinvigorate former industrial districts throughout Germany. Perhaps the most well-known of completed projects to date is Foster and Partners' Micro Electronic Centre in Duisburg. See also "Top marks go to IBA Emscher Park" WA66 page 23. AM

Below: The wooden framework of the cone-shaped library as it stood in January

Contracts

GERMANY

- **Helmut Jahn**, German/American skyscraper specialist, has won the competition to design the new Bavarian Business Centre in Leverkusen. Jahn won the competition with a glass and steel, open-plan, four-level oval design. Construction will begin in May. Completion is scheduled for May 2001.

- Ground was broken on the new Indian embassy in Berlin at the end of last year. Designed by German architects **Hilde Leon** and **Konrad Wohlhage**, the concrete panel and red sandstone (imported from India) structure stands within the Tiergarten, next to the South African embassy.

FINLAND

- The winners of the competition to design Finland's pavilion at Hanover Expo 2000 are **Antii-Matti & Siikola** and **Sarlotta Narjus**. According to the architects, the wood-based design "incorporates the reciprocal effects of rational and emotional space".

FRANCE/SWITZERLAND

- **Ellerbe Becket** continues its impressive push into the international sports architecture market with two new European commissions. The US firm will assist with renovations to the Parc des Princes, Paris – formerly the French national sports stadium – and design a new stadium for Swiss soccer club Servette in Geneva. The client for both projects is French television company Canal+.

ITALY

- UK architect **Pascall & Watson** has won the open competition for the US$26 million redevelopment of Capodochino Airport in Naples. The major overhaul will almost double the number of passengers from 3.5 million to 6 million per year.

SPAIN

- Swiss duo **Jacques Herzog** and **Pierre de Meuron** (Basel) have won a limited competition to revitalise the port of Santa Cruz in Tenerife. The competition, organised by the Tenerife Port Authority, follows the successful conversion of Barcelona's historic port to recreational and commercial uses. Amongst the other proposals was **Rem Koolhaas'** suggestion that the port be transformed into a multi-level transport interchange.

UK

- The Perth 2000 international competition has been won by **Building Design Partnership** (Britain's biggest practice, see World Survey *WA*72). The US$25 million commission involves the construction of a new arts and conference centre for the Scottish city. Amongst the other shortlisted practices were: **Moriyama & Teshima**, Toronto, Canada; **Michael Wilford & Partners**, London, UK; **Terry Farrell and Partners**, London, UK and **Page & Park Architects**, Glasgow, UK.

Architects assassinated

SPAIN

Spanish architects are up in arms over proposed legislation that would permit engineers to validate construction documents, a privilege at present in the hands of licensed architects. The latest draft of the National Building Ordinance eliminates the mention of architects and architecture from its text.

Ramón Queiro, dean of the College of Architects of Andalucia, says the law represents, "the assassination of architecture. It strips projects of their aesthetic and artistic dimensions. An agricultural engineer, for example, could redesign the Prado Museum".

The deans of Spain's 18 colleges of architecture have declared their opposition to the legislation. The ruling Popular Party has not backed down. DC

WESTERN EUROPE

Stop me if you've seen this one before – the building which put Bilbao on the map

Cashing in

Bilbao Guggenheim one year on

SPAIN

On the first anniversary of the Bilbao Guggenheim's inauguration, a survey has revealed the Museum's impact on the regional economy. Frank Gehry's much-lauded titanium-clad landmark has also been credited with the "intangible" value of giving "international prestige" to the Basque region and improving the confidence and self-esteem of its citizens. DC

- 1.4 million people visited the museum – three times the projected first year figure.
- 85% of visitors travelled to the city or prolonged their visit to see the museum.
- The survey found a net economic impact of US $172 million on the region – accounting for 0.47 percent of its annual GNP
- The museum maintains 3,816 jobs.
- Tax revenue produced by museum visitors is estimated at US$31 million.

(Source: Peat Marwick)

Building of the year 2004?

Libeskind's "Spiral" given go-ahead

UK

Against all odds, Daniel Libeskind's cubist/po-mo extension to the Victoria and Albert Museum in London's Conservative stronghold of the Royal Borough of Kensington and Chelsea, has been granted planning consent.

With the possible exception of Richard Rogers' Millennium Dome, Libeskind's "Spiral" has provoked more outrage, and has been more successful in capturing the attention of the British public, than any other building of recent times.

Libeskind has developed the design with Cecil Balmond of Ove Arup & Partners. AM

Image: Miller Hare. Photography: Peter MacKinven

Better late than never

Moneo wins Prado extension

SPAIN

Rafael Moneo has won the competition to build an addition to the Prado Museum in Madrid. The decision follows the 1996 competition, which failed to produce a winner. On this occasion, the ten finalists from the 1996 competition were asked to re-submit their proposals for further evaluation.

The present competition has been criticised in the local press for allowing architects few liberties in the development of their designs. Moneo closely followed competition guidelines, but his design is not without originality.

The red brick building will be located behind the Museum on the site of a ruined eighteenth century cloister. The cloister is restored in Moneo's design as a skylit reading room for the Museum Library. The building will house temporary exhibition galleries, restoration studios and storerooms for the collections. An underground connection below an existing street leads to the back of the main building, where a 400-seat auditorium and cafeteria will be added under a glass and steel roof.

The additional spaces designed by Moneo are located to the left of the above section

The budget for the project is US$25 million. It is scheduled to be built within two years.

Among the other participants were Alberto Martínez and Beatriz Matos of Madrid, winners of an honourable mention in 1996 and Alfonso Govela of Mexico City – the only non-Spanish participant. Swiss architect Jean-Pierre Dürig, also winner of a 1996 honourable mention, did not participate on this occasion. DC

In brief

CZECH REPUBLIC

Aukett heads east

Aukett Associates, London has continued its expansion into Europe with the acquisition of Prague-based Collingwood & Partners, for US$530,000. The new firm will be called Aukett + Collingwood Architects. Aukett now has joint-venture offices in Amsterdam, Berlin, Brussels, Dublin, Glasgow, Madrid, Milan, Paris and Prague, with affiliated offices in Munich and Rotterdam.

ITALY

Rome is where the art is

The winner of the international competition to design a US$65 million centre for contemporary art in Rome will be announced later this month. The shortlist is made up of: Toyo Ito & Associates, Japan; Office for Metropolitan Architecture, The Netherlands; Caruso St John, UK; Jean Nouvel, France and Zaha Hadid, UK. The 26,000-square-metre building is scheduled to open in 2000.

THE NETHERLANDS

Doors open in Den Haag

The restored Den Haag Municipal Museum re-opened its doors at the end of 1998 after a US$26 million facelift. The restoration is one element of the on-going US$2.5 billion drive to revamp the centre of the Dutch capital. The 60 year-old museum is the largest and most extensive restoration of any listed building in the Netherlands. The architect was Braaksma & Roos Architecten BV.

CENTRAL AND EASTERN EUROPE

Shopping central

Is Budapest "over-retailed"?

One of many – the recently opened Mammut Shopping and Entertainment Center, Budapest

HUNGARY

Budapest, a city which was described as "under-retailed" only two years ago, could soon have ten large-scale retail and leisure centres with a combined total of over 35,000 kilometres of gross retail area.

The latest complex to open, on the Buda side of the Danube, close to the city centre, is the US$38 million, 27,000-square-metre Mammut Shopping and Entertainment Center, designed by architects Schon Architect Bureau in association with Studio-C, both of Budapest.

Mammut follows the topping-out of the 40,000-square-metre Campona Shopping Centre. Campona was designed by Barnabas Wrinkler of the Hungaro Austro Plan and Pieter Van Lustgraaf of Ludema and developed by Cora Kft in partnership with the Belgium firm Compaignie Immobilere de Beligique SA (CIB).

The debate continues among retailers and property developers as to how many large complexes are viable in a city of two million. Furthermore, a political debate is ensuing over how many such developments are desirable in terms of maintaining the character of the city.

Since the fall of the Berlin Wall, developers and retailers have been taking advantage of Budapest's liberal planning regulations, and the fact that local municipalities need to attract inward investment and employment. However, local authorities and the Budapest Municipality have come under increasing pressure to tighten up the regulations with the result that the proposed Magyar Optikai Muvek retail, commercial and residential project, developed by the Munich-based firm, Bayerische Hausbau, has had problems gaining planning permission.

In reaction to claims of over-development, Gabor Czigany, director of the Hungarian developer, Transelectro comments: "There is still excess capacity for shopping centres in Hungary." Backing up this claim are figures from the International Council of Shopping Centres which ranks Hungary only eighteenth in Europe in terms of the density of shopping centres in relation to population. GM

Contracts

CROATIA

- **Zane**, the real estate development arm of the **Croatian Zagrebacka Banka** is to exploit the lack of western standard office and retail space in the capital, Zagreb, by developing Kaptal Centar, a 42,000-square-metre shopping and office centre in the centre of the city. The complex will house 18,000 square metres of retail space on three levels.

HUNGARY

- **HOK International** is designing one of the largest construction projects in Central Europe. The Meder complex will provide 360,000 square metres of commercial and residential space on a 15-hectare brownfield site, with one kilometre of Danube frontage, close to the centre of Budapest. HOK International (London) will work with **HOK Studio E** and Hungarian architect **Odenberger** on the project.

HOK leads the way in Warsaw

POLAND

A 50,000-square-metre office and logistics distribution centre is to be built on the site of a former meat processing factory in the Zeran district of Warsaw. HOK International, one of only two Western firms with a full-time office in Warsaw, is the architect.

The Rida Development Corporation, a privately owned real estate company, and Apollo Real Estate Advisors, which manages three of the largest real estate investment funds in the US, will level the whole area, which was bought from the official liquidator.

Four buildings, each of which will house 10-15,000 square metres of modern light industrial and warehouse space, are to be constructed on the site. Negotiations for a general contractor are on-going. The work will be completed over two stages by the end of 1999.

Though Poland has a large supply of old industrial space, much of this is unusable for modern light industrial storage and transportation use.

Developers, however, have been slow to respond to the market demand, with the result that large multinationals such as General Motors and Isuzu have built their own plants. This situation, however, is starting to change with the development of projects like the Warsaw Distribution Centre, close to the airport. Next month's Country Report will focus on Poland. GM

Kiev gets office space in Perspectiva

UKRAINE

The Kiev City Architectural Department is nearing completion on the Ukrainian capitals's first new-build class A office block.

Perspectiva Office Centre comprises approximately 17,000 square metres of rental space. The heavily-glazed eight-storey development is situated in the fashionable Podol area of the Ukrainian capital, on the banks of the Dnieper River.

Though there is an acute under-supply of class A office space in Kiev, the question remains as to what affect the Russian financial and economic crisis will have on the country and the market for commercial space. Mark Mangum of real estate agents, Colliers International Kiev, predicts that the market will slow down over the next six months as multinationals wait for signs of stability. After which, he predicts, normal levels of activity will return to the burgeoning market.

The developer behind Perspectiva Office Centre is a Turkish bank, which preferred to remain anonymous. GM

Best in the business

Regio Twente

Above: Refuse Transfer Station at Enschede, The Netherlands by oosterhuisassociates

USA

Eight architects and their clients received 1998 *Business Week/Architectural Record* (*BW/AR*) awards for their "exceptional partnerships". The annual global awards programme, co-run by the American Institute of Architects, recognises businesses that integrate two objectives: business and design. "For each of the outstanding projects we selected, the architect and client collaboration was very strong and constant," said jury chair Rodolfo Machado, Assoc AIA, principal of Boston-based Machado & Silvetti Associates, Inc. BB

The full list of recipients:

The New York Times printing plant
Client: The New York Times. Architects: Polshek and Partners Architects and Parsons Main.

Gap Inc 901 Cherry Office Buildings
Client: Gap Inc (San Francisco). Architects: William McDonough + Partners and Gensler (San Francisco office).

Futures by Temps & Co
Client: Temps & Co, Vienna (Virginia). Architect: Adamstein & Demetriou Architects

Osho International
Client: Osho International (NYC). Architect: Daniel Rowen Architects.

QMR Plastics Division
Client: Quadion Corporation (Minneapolis). Architect: Julie Snow Architects (Minneapolis).

Praxair Distribution
Client: Praxair Distribution, Ankeny, Iowa. Architect: Herbert Lewis Kruse Blunck Architecture (Des Moines).

K J McNitt Construction Company Inc
Client: K J McNitt Construction Company, Inc (Oklahoma City). Architect: Elliott + Associates Architects (Oklahoma City).

Voorzieningengebouw Elhorst/ Vloedbelt (Refuse Transfer Station)
Client: Regio Twente, Enschede, The Netherlands. Architect: oosterhuisassociates (Rotterdam, The Netherlands).

Down on the waterfront

NYC's "other" river receives some much-needed attention

USA

The winners of the international competition, "Design Ideas for New York's East River" are currently on show in New York. The competition, open to all, drew 214 entries.

The US$8,000 first prize went to Victoria Marshall and Steven Tupu of NYC, who propose that waste accumulation be used to build liveable and evocative landscapes in the river itself. The project suggests a constructive transformation of waste, a major urban issue in NYC. Second prize went to Michael Jacobs and Aaron Neubert of Brooklyn. Dirk Bertuleit of the Dagmar Richter Studio, Berlin, Germany, came third.

The winners were announced at the opening of an exhibition focusing on the future of the East River waterfront. The exhibition runs until 27 February at New York's Van Alen Institute (VAI). The VAI, a civic organisation whose aim is to improve the public realm through projects in public architecture, also sponsored the competition. BB

The Van Alen Institute. Tel: +1 212 924 7000. E-mail: vanalen@vanalen.org

Steven Tupu and Victoria Marshall's winning scheme proposes that waste accumulation be used as a building product

Contracts

- Skidmore College, New York, has commissioned **Antoine Predock** of Albuquerque, New Mexico to design its new Tang Teaching Museum and Art Gallery, an interdisciplinary arts centre. The US$10 million, 3,200-square-metre complex will house a theatre, the school's film and video programme, a recital hall, gallery space, faculty offices and classrooms. Groundbreaking is scheduled for the spring.

Robert Peck

- Boston-based **Einhorn Yaffee Prescott Architecture & Engineering** has been contracted to provide design services for the Jackson Laboratory in Bar Harbor, Maine. The project involves the design of the new Genetic Resources Project. Consulting engineering services are provided by **Bard Rao + Athanas Inc, Souza True & Partners** and **Rizzo Associates**. Construction manager is **Tishman Construction Company**. The project will be complete by the end of the year.
- New York Studios has retained **HLW International LLP** (New York) as architect for the 42,000-square-metre television and film studio complex at Brooklyn Navy Yard, NYC. HLW is responsible for the entire design of the project, from programming to construction services.
- **Brennan Beer Gorman/Architects** (BBG) has completed schematic designs for the new 600-room Westin Baltimore hotel on the Inner Harbor, New York City. Construction of the US$124 million hotel will begin in the first quarter of 1999. Completion is slated for December 2000. The developer is **Schulweis Realty Inc**.

- **Gensler**'s Houston office has been commissioned to design the first new high-rise in Houston's city centre since the mid-1980s. **Century Development** will develop the 25-storey speculative building to capitalise on the 100 percent office occupancy rates in the Texan city.

In brief

USA

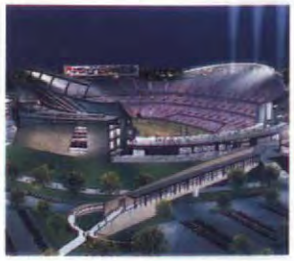
Grand Central unveiled

Two years and US$200 million down the line, Beyer Blinder Belle's refurbishment and preservation programme for New York's Grand Central Station has been unveiled. Warren & Wetmore and Reed & Stem's 1913 railway terminal now features upscale restaurants and shops, in the manner of Washington's Union Station which was redesigned in the 1980s as a destination site. The renovation included the accurate rendering of the transposed image of the constellations, which was originally painted back-to-front.

Peter Aaron

US$360m NFL stadium approved

The citizens of the Denver metropolitan area have voted in favour of a "penny-per-US$10" retail sales tax to fund 75 percent of a new stadium for National Football League team, Denver Broncos. The 1998 Super Bowl champion will play in a new US$360 million, 76,125-capacity (85,000 for non-American Football events) stadium designed by a joint venture of HNTB Design/Build Inc, Fentress Bradburn Architects and Turner Construction Co. The stadium is set to open in time for the 2001 NFL season.



REST OF THE WORLD

Dubai's US$500m facelift

UAE

A US$500 million redevelopment of Dubai's downtown core began last month with the renovation/expansion of the 1980-vintage main shopping centre into a 74,000-square-metre cornerstone of a new "retail city".

The Al Ghurair Centre – the first shopping mall in the Middle East when it was built 18 years ago in this commercial-industrial hub of the United Arab Emirates (UAE) – is the pivotal development.

The owner, Abdulaziz Al Ghurair, retained NORR Limited Architects and Engineers of Toronto, Canada and RTKL International Ltd of Baltimore, USA, to handle architectural, engineering and interior design services. NORR has about 100 staff at its UAE office, which it opened in 1990. Its design credits include the National Bank of Dubai's corporate headquarters (*WA*65 pp48-51) and the 360-metre high Emirates Project towers. RTKL is new to Dubai.

The new shopping centre will include a 600-seat food court, integrated with 700 apartments and 28,000-square-metres of office space, parking for 3,500 cars below grade and in new parking structures, and a multi-screen cinema. Construction will be managed by Turner Steiner International of New York City, until its scheduled completion in 2001.

NORR vice-president Victor Smith notes the development is a, "major component of Dubai's strategic plan to sustain the city's enviable track record as the leading tourist and shopping destination in the region, and to upgrade older parts of the city to world standards, with commercial and residential infill, and in this case sports facilities, other retail space and a supermarket connected by new streetscapes and pedestrian walkways". AW

Contracts

ANGOLA

- A US$21 million, 12-storey diamond sorting centre designed by **Hentrich Bergs & Associates** has recently gone on site in Luanda, Angola. The structure is the De Beers Group's fourth international diamond sorting facility. It will be used for the training of Angolan citizens in the sorting and valuation of rough diamonds. Portuguese firm **Teixeira Duarte SA** is the contractor. Structural, mechanical and electrical engineering will be carried out by international multi-disciplinary consulting practice **Dar Al-Handasah/Shair and Partners** (Cairo/London/Luanda). Hentrich Bergs & Associates is an affiliate of German firm **HPP Hentrich Petschnigg & Partner**.

LEBANON

- British architect **Nicholas Grimshaw & Partners** has won an invited competition to design a US$16 million Millennium Pavilion in Beirut. The competition was run by Lebanese developer **Solidere**. The 10,000-15,000-square-metre mobile structure will function as a "cultural forum" (housing a theatre/concert auditorium and conference facilities) and will initially be located in the Place des Martyrs, in the pedestrianised central district of the war-ravaged city. The Millennium Pavilion will be complete in time for the Francophone Conference 2001. **Ove Arup & Partners** is the engineer. Grimshaw beat two other British practices, **Michael Hopkins and Partners** and **Lifschutz Davidson** to win the contract.

MAURITIUS

- **Loebl Schlossman & Hackl/Hague Richards** (LSH/HR), of Chicago has won the international competition to design the new Bank of Mauritius on the Indian Ocean island. Working with local architect **Lampotang & Siew**, LSH/HR has developed a scheme to integrate two existing buildings with a new landmark tower. The new 23-storey tower houses 18,500 square metres of office space. The top two floors have been reserved for a boardroom and for future use by the Governor of Mauritius.

People and practice

EGYPT

US architect **Ellerbe Becket** (EB) has established an office in Cairo. **Ellerbe Becket MENA Ltd** is the firm's twelfth international office, and its first on the African continent. EB intends to use Cairo as a platform from which to launch operations in northern Africa and the Middle East. Architect Ghaleb Abdul-Rahman will lead the office. The office has already been commissioned to provide construction management services on the Taba Hilton Hotel on the Gulf of Aqaba.

NORWAY/UK

Anglo-Norwegian engineering and construction group **Kværner** has appointed Kjell E Almskog as its new president and chief executive officer. Almskog moves from his role as chief executive officer of executive vice president of **ABB Asea Brown Boveri Ltd** (Zurich). He succeeds Eric Tonseth, who was asked to resign in November last year, after the Group's value had more than halved in the previous 12 months.

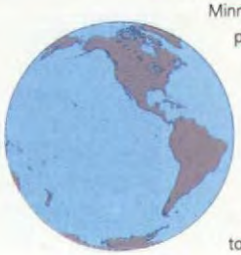
UK

Ove Arup & Partners has made Faith Wainwright its first female director. Wainright (36) is responsible for **Foster and Partners'** US$825 million London headquarters for the Hong Kong & Shanghai Banking Corporation at London's Canary Wharf. She has been with the international multi-disciplinary firm since 1983.

Aukett Associates plc has appointed David Cross to the position of divisional director. Cross has been with the architectural and engineering practice since 1988. As divisional director he will be responsible for all major UK projects in the corporate office sector.

Gillian Stewart has joined **DEGW** as a senior interior designer. She joins the firm's Scottish office – in Glasgow – after 16 years with **Building Design Partnership**. Also moving to DEGW's Glasgow office is Adryan Bell, (formerly of **Scottish Enterprises**) who will specialise in management consultancy support.

USA



David Dimond has rejoined **The Leonard Parker Associates** (TLPA), a Minneapolis-based interdisciplinary planning and design firm, as a design principal. Prior to the last year, during which he was working with another Minnesota architect on the Department of Revenue State office building (St Paul), Dimond had spent ten years with TLPA.

Fox and Fowle Architects has named Steven Kratchman, John Locke and Ann Rolland as associates of the New York-based firm.

After 22 years with the firm, **Cannon** has promoted Robert J Peterson to senior vice president.

REST OF THE WORLD

Egypt's new slice of Americana

EGYPT

Visitors to Dreamland, a North American-style theme park which opened last month, near Cairo, will have a bird's-eye view of the Giza Pyramids about three kilometres away, from the top of a man-made mountain.

Forrec Ltd (Toronto) planned and designed the US$50 million development as the centrepiece of a 2,000-hectare residential/retail project called "Sixth of October City" that will follow.

Forrec's Cairo-based client, Ahmed Bahgat Fatouh, one of the largest television manufacturers in the Middle East, didn't want to compete with ancient Egyptian archeological themes – already somewhat overdone in the region. "We designed one theme area more as an 'ancient wonders of the world' attraction, and not specifically Egyptian," says Steven M Moorhead, chairman of Forrec. "The rest was influenced by the kinds of Hollywood television programmes and movies that most of the world watches and understands."

Given the desert location and extreme heat, the site is heavily landscaped, with lots of shaded areas. Water has been drawn from the Nile; there is no other source of irrigation. "There is nothing else like it in Egypt," says Moorhead. *WA*75 will feature a Country Focus on Egypt. AW

Obituary

Benoît Cornette (1953-1998)

French architect Benoît Cornette was killed in a road accident last November. Cornette was one half of the emerging Paris-based practice Decq and Cornette. The husband and wife team were travelling in Brittany.

Odile Decq survived the accident. She is recovering from extensive injuries, and has already stated her intention to continue their work.

Decq and Cornette, whose striking "gothic" appearance and inventive hi-tech style set them apart from the French architectural establishment, had set their sights on the British market. A confirmed Anglophile, the relative freedom of expression and interest in the construction process is known to have appealed to him.

Cornette had just begun to lecture at the Bartlett School of Architecture, London. The duo had considered setting up an office in the English capital.

The practice is best known for the Banque Populaire de l'Ouest in Rennes, France (1990). Current projects include a luxury boutique for Taiwanese clothes retailer Shirtzy in Paris and a restaurant on London's South Bank.

Millionaire patron goes shopping

Architectural *Who's Who* to build Mexican city

MEXICO

Mexican multi-millionaire and patron of architecture, Jorge Vegara, has gathered a team of international architects to design a new city on a 300-hectare greenfield site close to Guadalajara.

The list, which reads like a *Who's Who* of modern-day architectural superstars, includes Frank Gehry, Coop Himmelb(l)au, Jean Nouvel, Enrique Norton, Steven Holl, Carme Pinós, Daniel Libeskind and Toyo Ito. Vegara went on a round-the-world "shopping trip" to pick out his personal favourites, says Wolf Prix of Coop Himmelb(l)au.

The first task is to design the city's centre. Each architect has been allocated a portion of the central area, which they will develop according to Enrique Norton and Rem Koolhaas' masterplan (Koolhaas has since dropped out of the project). Clearance work has already begun.

The central area is scheduled for completion in 2003. The new city has yet to be given a name. AM

ERRATA

Mistaken identity

On page 137 *WA*72, an interview was conducted with Davis Langdon & Everest, the UK member firm of Davis Langdon Seah International. In the "Quality of Service" vote on the same page, No 1 position worldwide should have read "David Langdon Seah International". *WA* apologises for any confusion caused.

The editors also point out that the "Quality of Service" votes, profiled on pages 136-139, reflect an international poll and the winners are shown in order of preference, internationally and not regionally, as may be interpreted.

Solid Danish

WA apologises for any misunderstanding resulting from the choice of "Glass Box" as the title to Martin Keiding's review of the extension to the Carlsberg Glyptotek in the Country Focus on Denmark (*WA*71 pp68-69). The reference was to the "glass case ... which was lowered into the courtyard". We accept that the emphasis on glass is misleading given the "milky-white glossy marble-stucco material" of the outside of the case.

Writes and wrongs

Marco Polo of Canadian Architect, who attended *WA*'s debut international symposium in Toronto, was incorrectly attributed with having said that: "Stanley has 17,000 employees world-wide", and that "the number of Malay architects working with Adamson on the Petronas Towers varied between 60 and 70", in the piece "Critical globalisation" (*WA*70 pp54-57). The correct figures, respectively, are: "1,700" and "between six and seven".

Technical

Are you experienced?

After an unusually quiet 1998, Frank Gehry is set to take 1999 by storm. His latest and most complex project to date, an interactive museum inspired by the music of Jimi Hendrix, opens in 12 months. Stephen H Daniels went to Seattle to meet the design team and find out what a French fighter plane has got to do with it.

With the tools of the aerospace industry, Frank Gehry is driving architectural design to unprecedented heights. The Guggenheim Bilbao (1997) was a mind-boggling performance. "The Experience Music Project [scheduled for completion in early 2000] is many generations of complexity beyond Bilbao," says Paul Zumwalt.

Zumwalt is the project manager for Experience Music Project owner Paul Allen, the guitar-playing, hi-tech guru and co-founder of Microsoft, who is in the midst of erecting a 12,000-square-metre, US$100 million (and climbing) shrine to rock-and-roll legend Jimi Hendrix in Seattle, Washington.

EMP, like the Guggenheim, is an assembly of wildly skewed metallic-skinned, amorphous modules which will house a Disney-like, hi-tech, amusement-park experience, an interactive museum, a restaurant, gift shops and performance spaces. It has been made possible only by the new three-dimensional design tools created by IBM and Dassault Systemes for the design of the French Mirage fighter plane.

Let the CATIA out of the bag

CATIA, a solid modelling tool with which the Gehry design team translates hand-crafted models into working drawings, has been adopted by Boeing, Chrysler, Mercedes and BMW. It is now undergoing trial in the building industry. "For a building of this complexity, with so many compound curves," says David D Arnold, project manager for LMN Architects of Seattle, the local design collaborator, "conventional methods of designing and documenting the structure are useless".

"This is outer space stuff," says David W Schiffrin, a Seattle construction lawyer who recently toured the EMP site.

Working on a 200 MHz Pentium II computer with 256 MB RAM, "a single analytical run of EMP's more than 6,000 elements took ten hours. To do a design run took two days; a final design run seven to eight days", says Jon Magnusson, chairman and CEO of Seattle-based structural engineer Skilling Ward Magnusson Barkshire.

Gehry says the main obstacle to constructing his unusual designs is documenting three-dimensional shapes with two-dimensional drawings. Members of Gehry's 60-person staff in Santa Monica, California, would measure his hand-crafted models, perform lengthy calculations and prepare multiple sections and plan cuts to try to describe the design. The drawings were time-consuming, costly and made the buildings appear even more complex then they actually were.

Worse, contractors, uncertain how the bizarre forms could actually be built, erred wildly in their cost estimates. "Flat drawings of curved surfaces can be beautiful," says Gehry, "but they are deceptive". A system, like CATIA, which gives Gehry complete mathematical control of the model, is able to define surfaces with descriptive geometrical mathematical formulas that can be applied by steel fabricators to build the sculpture.

"In terms of its complexity, EMP surpasses anything we've ever done before by a factor of ten," says Bob Park, owner and chairman of Columbia Wire and Steel of Portland, Oregon.

"And yet," says Zumwalt, "steel ribs as unusual as anything anyone has ever done before [eleventh order magnitude curves with constantly changing radii] have gone together like a Swiss watch. The process is incredibly accurate."

Have a good trip?

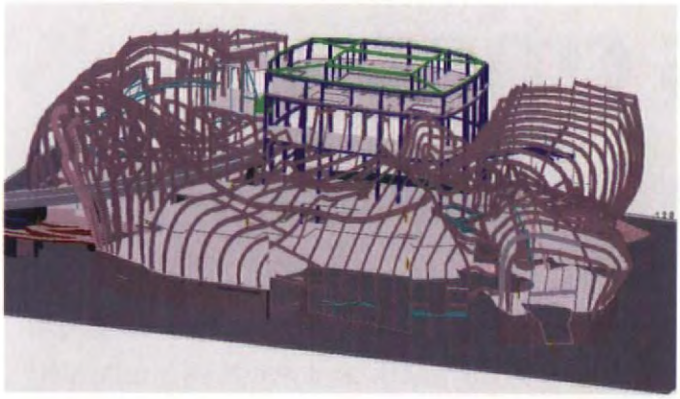
Hoffman Construction Co project superintendent Chris Raftery jokingly proposed at his first meeting with the Paul Allen team that, "we start the meeting off by taking a mild hallucinogen". Raftery now hopes that Hoffman will continue to use CATIA not only for "sculptural" buildings, but for all of the firm's projects.

"If I have anything to say about it, it will be [used]," he says. "I'll tell you why: in almost every unit price used to estimate construction costs, there is some percentage embedded to take care of mistakes, whether jackhammering or pushing down a wall because it's in the wrong place, or whatever. In my vision, CATIA will help reduce the [contingency] percentage carried in unit prices so that you can either make more money or be able to reduce your unit prices because it significantly reduces the amount of error that can take place.

"The opportunity to reduce costs due to mistakes and/or increase productivity I guess would be somewhere between 10 and 25 percent," says Raftery.

"Let me give you an example: you are forming a below-grade wall that has imbed plates in it for steel. What the carpenter foreman has to do is take

"The only difference between me and a sculptor is that my sculptures have a working toilet." Frank O Gehry



the drawings, then imagine the mirror image and change the dimensions so that when you imbed the plate in the form it will be in the right spot. If you had that same elevation, with the imbed plates shown on it not as placed in the form, but as placed in the wall, ready to accept the beam, you could flip it 180 degrees and it would be dimensionally perfect. You have now got what you need to place the beams at exactly the right spot; no calculation, no thinking in the field."

Industrial interaction

Lisa Wickwire, a CATIA operator with Boeing for 12 years, was hired by Hoffman to be the conduit through which the construction team communicates with Gehry. "Is this easier than airplanes? Well, you don't have to worry about this thing falling out of the sky," she says. "But at Boeing, I didn't have to worry about earthquakes. The other thing is airplanes are usually complete in design before fabrication begins. I wasn't prepared for the design changes, and the pace that creates in construction."

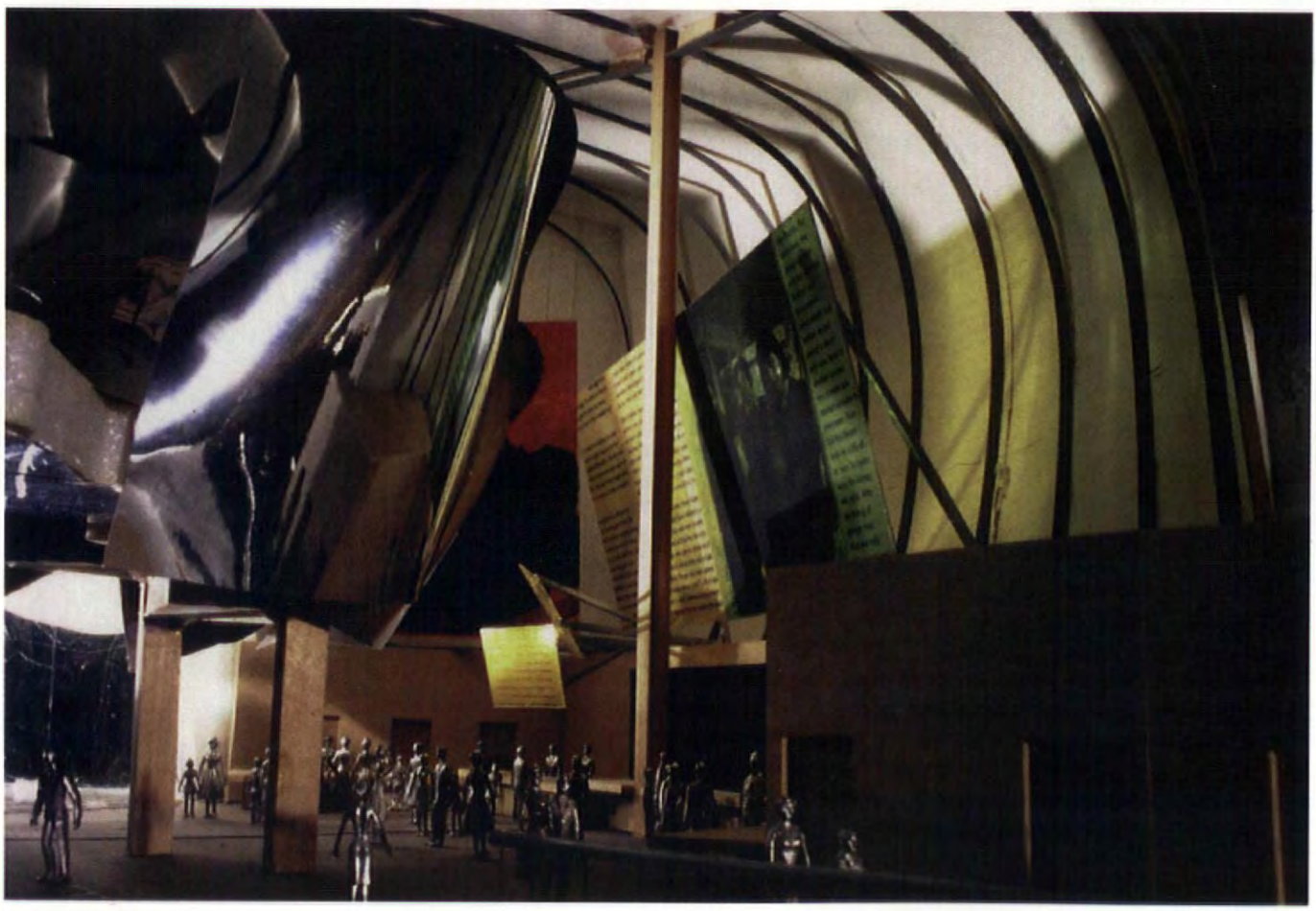
A majority of the subcontractors at EMP are working in AutoCAD. For them, the Hoffman technical staff must convert Gehry's CATIA models using IGES software.

Three CATIA workstations at Gehry's California office are devoted to EMP. Wickwire and her staff operate another at the Seattle job site. In addition, there are three off-site workstations: one at Skilling, one at the steel detailer, Angle Detailing Inc, of Portland, Oregon, and a third at Zahner Architectural Metals Co, Kansas City, Missouri, where EMP's exterior stainless steel aluminium skin is being fabricated.

The multicoloured stainless steel sheets that will form EMP's exterior are being milled in Germany and will be coloured through an electrical charge interference process at Rimex Metals UK Ltd, outside London. WA

Facing page: The Mirage 2000-5 in flight

This page from top: CATIA, a solid modelling tool developed by French aeronautical firm Dassault Systemes, allows Frank Gehry complete mathematical control over EMP's ever-evolving amorphous form; Site shot – no two building elements are exactly the same shape, and there are no straight lines in the entire building; Model view of the interior



The first in an occasional series on cities coming to terms with political re-birth. Next month Budapest.

Analysis

South Africa's cities – making sense of nonsense

Apartheid, with its land use zoning practice including spatial planning based on race, has left South African cities dysfunctional. The legacy is cities patterned about the needs and wants of a relatively affluent minority and a majority that is alienated from it. Erky Wood explains what architects can do to help redress the balance.

"Until spatial democracy is achieved, each city is a potential flash-point of post-apartheid discontent."

Marginalisation of communities on the periphery of South Africa's cities has left enormous spatial disparities. The integration of these communities is now the country's primary focus of urban planning.

Aside from the social costs, the dislocation of South Africa's cities means that they are unsustainable in almost every respect. Socio-political friction, together with the resource-scarce environment in which urban integration is to be achieved, makes the rebuilding of the post-apartheid city a formidable task. Also, urbanisation is increasing, including migration to cities (notably Johannesburg) from sub-Saharan Africa. Until spatial democracy is achieved, each city is a potential flash-point of post-apartheid discontent. So, how do we make sense of the nonsense?

First up

New urban legislation gives clear direction to both policy and strategy, and includes focusing on public transportation; nodal, corridor and activity spine development; more efficient use of existing social and service infrastructure; regenerating the urban economy; filling the "void" areas of discontinuity in the urban fabric; intensifying the urban fringe; and using open space systems as a determinant of urban form.

What these principles mean on the ground is, however, hotly contested. Even where strategic urban development frameworks are in place, the ability to make substantial changes is thwarted at the more local scales of planning. Vested interests in the existing spatial make-up of cities prevent change on a significant scale. Thus housing for low and very low income communities, for example, continues to be provided in areas well beyond the urban fringe where it is both inexpensive to assemble land and not politically contentious for those with vested interests in the existing property values of "their" areas.

In a search by market-led development, on the other hand, to find security, certainty and "islands of privilege" in a system that is otherwise in flux, there is a trend to flee the inner city areas and spawn new nodes in the "executive belts". The market is thus tending to take economic activity and opportunity further away from people either on the periphery of the urban system or those who have moved into inner-city areas in search of opportunity. Instead of making sense of nonsense, it seems that more nonsense is being added, in that the inherited geography of dislocation is being reinforced.

All for one, and one for all

In the absence of strong intervention, cities will tend to find their own equilibrium. Change is likely to be slow, and will almost certainly result in increased complexity. It is in this complexity that the real robustness of an integrated city will be found. While public policy and resource investment must continue to redress historical imbalances, the urban hinterland is likely, of its own volition, to become more inclusionary. For example, whole areas of the city, previously the domains of an enfranchised minority, are becoming accessible to a broader spectrum in a silent redistribution of wealth. Both in inner-city suburbs and sectors extending from the inner-city, residential properties have shed value dramatically with many banks "red-lining" these areas as zones where mortgage bonds are difficult to obtain. These areas have thus softened to become accessible either for cash purchase or rental at greatly reduced values. Nevertheless, in the short term, integration remains elusive.

Face values

Notwithstanding the political transition, South Africa's cities are still characterised by vast disparities. Driving around many areas, one might believe them to be places of enormous wealth. Certainly, a review of

major private urban development initiatives would give the impression of booming city economies and large scale projects. It is, however, the reinvention of existing affluence that, regardless of its size and impressive projects, only obliquely addresses the issues of urban integration. A more general drive would highlight the continued extent of need.

One thus has to ask, what has been the role of architects, and what could they now contribute regardless of the type of work?

The challenge to architects

While it is true that many architects and planners were involved in community-based projects aimed at enabling disenfranchised communities to stand up to apartheid agencies, they also participated actively in putting apartheid in place. At that time they focused on commercial and government work, thus gaining the epithet of being the lap-dogs of rich patrons and power elites.

Involvement in community-based design work continues to be limited since delivery into the low income communities (notably in housing programmes), continues to be seen technocratically rather than as the creation of life-enhancing environments. Thus engineering disciplines continue to dominate this arena.

Where architects are involved, however, new challenges arise in the contributions that are possible through design. Increasingly, the single design input in many living environments is limited to a layout plan. Through the Department of Public works roster, more architects are becoming involved in the design of social facilities. In this regard, many fine small-scale projects are being undertaken with several award-winning projects now emerging.

In the realm of large-scale public architecture, the recent competition for the Constitutional Court in Johannesburg, and a few other prominent design competitions, point to a renewed interest in these as a basis for architectural appointments. To the extent that South Africa is again forging international ties, competitions are also focusing on large infrastructural projects, including airports, ports and the involvement of architects in large engineering projects.

What then of those architects focusing solely on the corporate, commercial and speculative work offered in the private sector? Does this work merely serve to address only obliquely the bigger issues of integration and the making of sustainable, life-enhancing cities? Clearly much of this work must be seen as rebuilding a healthy economy and creating employment. The tourism and leisure industry must be understood primarily in this context with architecture in the hotel, hospitality, entertainment and leisure markets being relatively strong.

Opportunity knocks

One of the most significant contributions that architects can make is to reintroduce cities' public dimension. With the growth of the informal sector, the public environment is once again an important focus. The public environment, in the form of street trading, market squares, transit nodes and the recycling of derelict buildings and spaces, is vital in making the city a place of opportunity for all. It is also an essential dimension in the making of a truly African city, rather than a colonial hangover.

Much of the public environment of cities through history has been delivered by rich patrons or power elites and only as cities democratise, are people able to take over these spaces. Similarly, while many of the privately-developed large-scale urban projects are still typically exclusive, they need to be understood as the making of semi-public environments that, through time, will become valuable additions to an invigorated public domain. Thus, even up-market shopping precincts need to be designed around a syntax of space that networks into a wider public environment. Each major private initiative must thus be seen as a potential catalyst for driving a more complex web of opportunity within the wider context of that project. Even security estates, be these office parks, business parks or residential estates, must have the ability to have their security-perimeters removed at some stage and simply become a seamless extension of the public realm.

It is now vital for architects to discover a socially responsible role as innovators. Most notably, innovation is required in approaches that engage the complexity of cultural diversity that can become the truly African city and, one hopes, a basis for an "African Renaissance". Investors need to be taken down this road boldly and, rather than tinkering with ethnic clap-trap, architects need to be hard at work discovering what this complex milieu really means for the making of extraordinary cities. South Africa's cities will never again resemble images from their colonial and apartheid pasts. Nor should they – they should be so much better.

Erky Wood is a director of GAPP Architects and Urban Designers.

"It is true that many architects were involved in community-based projects, but they also participated actively in putting apartheid in place."

Above left: Model shot of how the Kingsmead Office Park, an urban area to the east of Durban's CBD will look when Stauch Vorster Architects' plan is complete

Above right: In designing Bank City, a major inner-city development in Johannesburg, GAPP Architects and Urban Designers sought to create a public environment in the form of colonnaded shopping edges at street level and a new square in the centre of the four blocks

Facing page: Aerial view of the massive Victoria and Alfred waterfront development in Cape Town. The project is fast becoming as ingrained in Cape Town's identity as Table Mountain

Business

Bridging the transatlantic divide

The US and the EU are each other's largest trading partners, but neither recognises the other's architectural qualifications. Keith Nuthall listened in as the prospect of transatlantic professional mobility was discussed at last December's Euro-American Summit.

The European Union (EU) has been laying the groundwork for a deal with the US over the mutual recognition of architectural qualifications, as part of a bid to cut transatlantic red tape.

The idea was proposed by the European Commission as part of a detailed draft joint EU/US trade plan, for discussion at the Euro-American Summit last December, in Washington DC.

Brussels' blueprint was an attempt to give substance to the Transatlantic Economic Partnership, which was launched at the EU/US Summit in London in May 1998. The Commission proposed ",the removal of regulatory barriers to trade in both goods and services by closer co-operation between regulators, including more effective mutual recognition".

In particular, it wanted EU and US ministers to give the go-ahead to "spearhead projects [that] will include mutual recognition of professional qualifications for architects and engineers". If it becomes the basis of a detailed agreement, the plan would be a step forward in the move towards creating global professional mobility for architects, although there are doubts in the British profession about the value of doing deals with the American federal government.

In the US, individual States control registration, meaning that American architects can sometimes be forced to take extra examinations to be registered in a different part of their own country. As for European architects, they are usually forced to undertake additional studies, although the demands vary according to the state in which they want to register. Frank Duffy, vice-president for international affairs at the Royal Institute of British Architecture (RIBA) said: "We are committed to the exchange of qualifications everywhere as soon as possible, but where there is exchange, there has to be equal access on both sides."

His view was reflected by Betsy Visser, of the Dutch federation, the Bond van Nederlandse Architekten, who said: "We would be pleased if the American Institute of Architects [AIA] recognised all the diplomas that are recognised in the European Union. It would be nice if the registration terms were equal across all the states of the US. Why should they differ?"

In the EU, a mutual recognition regime for all professionals forces member States to recognise compulsory qualifications and experience of European architects, where they mirror those demanded in their own countries. Candidates are able to take "top-up" courses of study rather than undergo entire qualification procedures.

Where they have studied at certain accredited European schools of architecture, recognised through the EU's Architect's Directive, their qualifications are normally automatically accepted by official bodies across the EU. The summit followed a November 1998 mission to Washington by the RIBA, where three representatives discussed mutual recognition of qualifications with their US counterparts in the AIA, the National Council of Architectural Registration Boards (NCARB) and National Architectural Assessment Board (NAAB). AIA director of international relations Russell Keune told *WA* that he expected progress on trans-Atlantic mutual recognition of qualifications to be slow.

He said: "I see it as a long process. It took 12 years for Canada and the US to make the Interecognition Agreement for Architecture, and our systems are very similar.

"We would like to see more factual information about how the Architects Directive is working; we want to see more documentation."

But he stressed that in principle, the AIA was supportive of moves towards mutual recognition. "The public policy is to support free trade in professional services," he said. In consequence, the AIA has worked with NCARB and NAAB to harmonise architectural examinations across the US, which are now often very similar, with the additional knowledge being demanded by certain states which face special local problems, including earthquake damage in California and permafrost in Alaska.

Meanwhile, EU and US ministers have been considering the general benefits of fuelling trans-Atlantic free trade. They are each other's single largest trading partner. In 1997 they traded US$315,000 million (ECU277,000 million) – around 20 percent of world trade – in goods. Bilaterally, the Commission wants the US and the EU to remove remaining regulatory non-tariff barriers to trade. WA

"I see it as a long process. It took 12 years for Canada and the US to make the Interecognition Agreement for Architecture, and our systems are very similar."

Russell Keune, AIA Director of International Relations

Don't buy your flowers from the station

"There is a tide in the affairs of men," wrote William Shakespeare, "which taken at the flood, leads on to fortune; Omitted, all the voyage of their life is bound in shallows and in miseries." Of course the Bard had in mind the fading fortunes of a Roman Emperor but, had he considered the ebb and flow of property development and construction in the modern world, he might have applied the same insight to the great bursts of enterprise that created docks and harbours, ship canals, the railways and later on skyscrapers, motorways, airports and shopping centres. For there is a tide in the life of development which, if missed, can ground new projects forever.

Consider the view from a spacious walkway high among the great arches of what was formerly the largest railway terminus and is now also the biggest shopping mall in Europe. The city is Leipzig in Germany, and there the tide that is turning railway stations into shopping centres all over the world has finally reached flood warning level. The danger is retail overload, and although it is not peculiar to Leipzig, it is acutely visible there because of the sheer size of the station with its 260 metre-long concourse, and the staggering bombast of the cheque-book architecture that has been made possible by its US$250 million budget.

The original Leipzig railway station was a vast daylit train shed built for the age of steam. Today it is hopelessly oversized for the troglodytic world of modern diesel and electric railways but, at the same time, because of its Imperial grandeur and the way it was painstakingly rebuilt in the 1950s after being almost completely destroyed during World War II, the station is too important an architectural monument for the city to countenance demolishing and replacing it. So in Leipzig the problem of the viability of the station has been solved by a change of use: from railway to shopping mall plus railway. The trouble is that the retail accommodation has been laid on with a trowel. One hundred thousand people pass through the railway station every day and now there are 140 new shops including four anchor stores to serve them – enough shopping artillery say the retailers of the rest of central Leipzig, and the owners of its post-reunification suburban superstores – to drive them all into bankruptcy.

This is a conflict to tax the judgement of Solomon, let alone William Shakespeare. Taken at the flood, the tide of retail has saved the station – which looks better than it has at any time since 1910 – but in the process it threatens to bathe the retail heart of the city in the shallows and miseries of excessive competition.

The problem is that a century or more ago there was money to spare to build grand railway stations because railways themselves were tremendously profitable as the first and only means of high speed travel. Now all over the world railways have been eclipsed by cars and aeroplanes and trucks and are either in receipt of ruinously heavy state subsidies or in terminal decline. In the US, the fortress of deregulation, with the exception of a handful of key commuter and freight lines, railways have all but ceased to exist. In Britain, the country where railways were invented, the country where in a single year at the height of the railway boom no less than 299 Acts of Parliament were passed to permit the construction of new railway lines, the same route to extinction is being followed. Sold off and privatised, supposedly overseen by comic opera regulators striving to flog them back into life after 50 years of public sector closures and neglect, the railways of Britain are disintegrating. Elsewhere in Western Europe, as indeed in Germany, they may be being maintained to a high standard as a public service, but the cost of so doing is becoming unacceptable. Nowhere in the civilised world do they any longer need the great termini built for them in the nineteenth and early twentieth centuries. Nowhere can they attract the huge investment necessary to connect their discontinuous tracks into high speed routes that pass through the towns and cities they merely reached in the past. In consequence their usefulness declines and the prospect held out of such science fiction improvements as magnetic levitation monorail trains hurtling between the capitals of the European Community at up to 450 kilometres an hour, slip from the innovations page of the newspapers into the realm of broken promises.

The sad truth is that there is a historic time for development and, as far as railways are concerned, that time is past. In Europe there was only one time to build railways and that was in their heyday in the nineteenth century. By the same token there was only one time to build passenger terminals and that was when passenger ships were the only way to travel between continents. Likewise there was only one time to build motorways in Europe and that was between 1930 and 1950 when (to take another example from England), the entire length of the M1 was designed and built without a single objection or public inquiry. Today any proposal to build a motorway is opposed for a host of reasons; loss of agricultural or amenity land, encouragement to traffic, atmospheric pollution, danger to wild life, global warming ... In Berlin miles of the urban motorways bequeathed by the age of the two Germanys are to be torn up and built over, creating narrower streets and closed vistas with, yes, more room for retail architecture and less room for traffic.

So are we now at the climax of the age of retail conversion? It all depends on the answer to the question so directly posed at Leipzig. On the one hand there is no doubt that Germany is a country with reserves of purchasing power still held in check by strictly controlled retail opening hours. On the other there is growing concern, even there, that the economic limits of shopping mall conversion have been reached and the future may belong to another age altogether.

Martin Pawley

"The tide of retail has saved Leipzig railway station, but in the process it threatens to bathe the retail heart of the city in the shallows and miseries of excessive consumption."

Polemic

Book Reviews

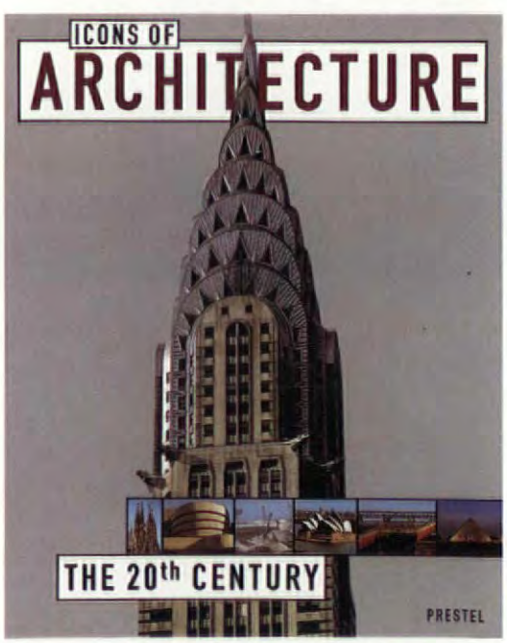
Fin de siècle fun and games

- *At The End of the Century – One Hundred Years of Architecture. Foreword by Richard Koshalek. Abrams, USA. 352pp, 316 illustrations. US$65/£40*
- *20th Century Architecture. Jonathan Glancey. Carlton Books, London, UK. 400pp, 390 colour illustrations. £30/US$60*
- *Icons of Architecture – The 20th Century. Edited by Sabine Thiel-Siling. Prestel, Munich, Germany c/o Biblios Publishers. 192pp, 307 colour and 215 b&w illustrations. DM49.80/US$29.95/C$43.95/£19.95*
- *Modern Architecture Since 1990 (3rd edition). William Curtis. Phaidon, London, UK. 736pp. illustrated throughout. US$29.95/£19.95 (paperback)/US$49.95/£29.95 (hardback)*

Reviewed by Hugh Pearman

For obvious reasons, there are a lot of books like these about right now, and the big worry is that there are going to be lots more – for they are bandwagon books, produced in haste, and it shows. Just how many times, how many ways, can you show the same clutch of significant moments in twentieth century architecture and still claim some sort of originality? With every title, the chances become slimmer.

There's *At The End of the Century – One Hundred Years of Architecture*, which is a series of essays by international academics of whom one has faintly heard. However, according to the blurb, they are, "some of the most original architecture historians and critics writing today". Accordingly it is a textbook with pictures, most very familiar and some not very good. But in it I liked, for instance, the essay "The Exhibitionist House" by Beatriz Colomina, which is a good take on the notion of the house as architectural testing ground.

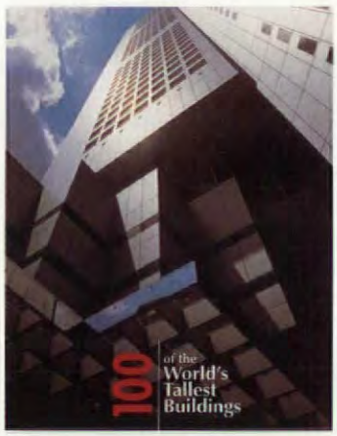


No such nuggets, alas, in Jonathan Glancey's pot boiler, *20th Century Architecture*. This is a picture book with extended captions, grouped vaguely into styles. Strange that of all the architectural landmarks of this international century, more than a quarter, according to this book, should turn out to be British – including some bonkers inclusions such as the Greater London Council's worthless 1970s Elgin Estate. The author claims to have written this book in six months. It took that long?

Icons of Architecture – The 20th Century, edited by Sabine Thiel-Siling, is a much better if much shorter stab at a populist round-up of the century's architecture. It avoids the trap of putting buildings into clumsy stylistic pigeonholes, there are some drawings as well as photos, plus potted biographies of the architects, from Aalto to Zumthor. It is unpretentious and clear; basic but at least useful. If its chosen buildings are so familiar (to those of us in the business) as to induce yawns, at least each of them is certainly significant enough to deserve inclusion, and the field of writers is knowledgeable and engaged.

None of these books comes close to William Curtis's definitive *Modern Architecture since 1900*, now in its third edition. It blows the competition out of the water with contemptuous ease. As a lay person's introduction to the subject, *Icons of Architecture* is OK. But for the real picture of the century, invest in Curtis.

Hugh Pearman is the architecture critic for The Sunday Times *(UK) and author of* Contemporary World Architecture.



Where's the tape measure?

100 of the World's Tallest Buildings. Contributors: Ivan Zahnic, Matthew Smith and Dolores Rice of the Council on Tall Buildings and the Urban Habitat. Gingko Press, Madera, California, USA. 220pp, fully illustrated throughout. US$59.95

By Andrew Rabeneck

At last, a really useful architectural book, ten years in the researching, listing the world's tallest buildings, from John Portman's forbidding Renaissance Center in Detroit at 221 metres to Cesar Pelli's Petronas Towers at 452 metres. The modest tone of the book's title acknowledges the moving target of "tallest". An appendix shows the ten tallest buildings under construction, all in Asia, which is poignant in the light of recent financial upheavals.

Each building is given two pages of photos and text, most with a plan or section. These contain useful information, but are not particularly rigorous. We can forgive the editors though because they include fascinating comparative data on height, number of floors, area, materials etcetera of each building.

The Council on Tall Buildings is itself a curious enterprise, centred in Lehigh University, Pennsylvania. It started life as a faintly risible gathering point for skyscraper buffs, but over time has become an authoritative clearing house for scholarship about tall buildings, and a global arbiter of the measures of "tallness", deciding where the tape measure shall be applied.

This volume comes at an interesting time when the digital world is challenging the need to bring workers together in emblematic buildings, and when the need for businesses to compete has never been stronger. The traditional equations involving land value, rental levels, cost of capital, and demand cannot be made with any certainty today. Nor can the anti-sprawl defence of skyscrapers, because in the end these structures are very expensive and are reserved to a small subset of the population.

What continues to fascinate though, is the magical compulsion to build high. That will certainly continue. Deep down, we like the idea of powerful and rational people, clients and their professional teams, behaving in a majestically irrational and very human way, whether at Beauvais, San Giminano, or Shanghai. That impulse is indestructible, so it remains to be seen what form it might take in future; certainly an increase in mixed use towers with residential and recreational atop what's left of the office demand (luxury HQ hotelling, most likely), if only we can figure out how to stop them swaying in the wind. We will, I'm sure of it.

Andrew Rabeneck is a London-based businessman and architecture critic.

Glass act

Glass Buildings – Material, Structure and Detail. Heinz Krewinkle. Birkhäuser, Basel, Switzerland. 155pp, 30 colour and 310 b&w illustrations. SFr88/UK£44/US69

Reviewed by Graham Dodd

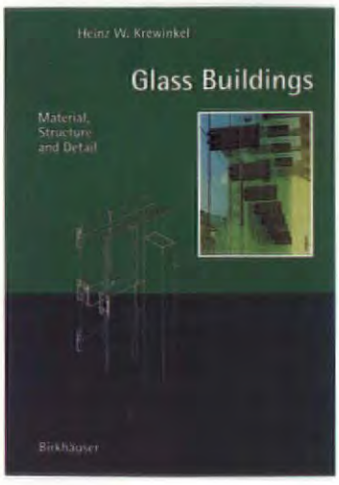
Whilst the use of glass in architecture continues to fascinate architects and engineers, the search for the definitive book on the subject continues. Perhaps this is because it is deceptively simple: after all, glass is glass, what can be interesting about windows? But whenever you start to push beyond the conventional solution, the balance of structural strength, failure mode, safety, weather tightness, heat gain and loss, appearance, cost and practicality collapses all at once. One has to address all aspects of the problem in order to achieve a satisfactory solution.

Krewinkle has not set out to explain glass and all its properties but uses his journalistic technique, which will be familiar to readers of the

excellent journal *Glas Architektur und Technik*, very effectively to present 25 case studies. These include a range of building types and glass applications, and some provide opportunity for discussion on specific aspects of performance. For example, Paul Andreu's TGV Roissy railway station, Paris raises the debate over the safety of using toughened glass overhead, though without drawing a conclusion; and Ingenhoven Overdiek + Partner's RWE Tower in Essen, Germany includes a detailed discussion of the natural ventilation system integrated into the façade and its effectiveness on an 88-metre tall building. Other examples of the integration of services, facades and structure include Peter Zumthor's fascinating Bregenz Art Gallery, Austria with its lapped open-jointed glass envelope and ground water cooling through pipes in the structure. As a source of ideas and inspiration the studies are extremely useful.

Most of the glazing systems are shown in isometric detail with the component parts identified and often the materials and finishes noted. However, there is little identification of functional features in the systems or explanation of the weathering principles. Annotation of rain screen gaskets, drained spaces and air seals would help in understanding the weathering principles and levels of performance and reliability to be expected. This is an important aspect of facade design but understandably difficult to discuss fairly in the context of case studies.

It is only in his use of technical detail that Krewinkel falls down – he might have benefited from thorough technical editing or collaboration with engineering authors. There is occasional confusion between reflection and absorption of heat when describing coated glass, and between different ways of expressing the strength of glass. Previous authors on the topic have steered clear of quoting figures for the strength of glass – it is a notoriously elusive quantity.



This is undoubtedly an important book for any practice interested in the benefits of modern glazing and integrated facade design. At Arup Facade Engineering we have already used it a number of times, to illustrate a concept during a design session, or to identify the supplier from a notable project.

Graham Dodd is an associate with Arup Facade Engineering, a division of Ove Arup & Partners, London, UK.

Flawed futurism

Green Buildings Pay. Edited by Brian Edwards. Routledge Ltd, London, UK. 160pp, fully illustrated throughout. £29.95/US$49.99

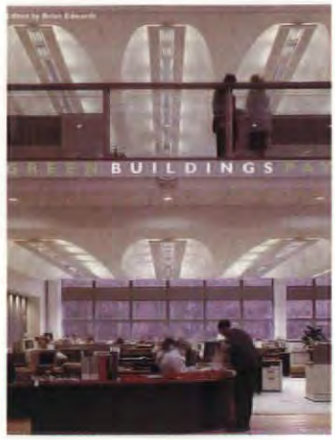
Reviewed by David Lloyd Jones

The message that Brian Edwards puts together in *Green Buildings Pay* is that green buildings *do* pay, but the dividends will not necessarily be found on the building accounts ledger. It is more likely to be found in the less tangible area of informed productivity – reducing absenteeism and recognising that you or your company have made a small contribution to slowing global warming. The book also indicates that investment in sustainable buildings is a sound bet now that it is clear that governments are gearing up to introduce some form of carrot and stick legislation to penalise the profligate.

It examines, through comment and case studies, how different approaches to bioclimatic design can produce more sustainable patterns of development. There are six short introductory chapters which set out the viewpoint of some of those established in the property sector and who are often clients for such buildings. William McKee points out that, "the key to more green offices lies not so much in developing the technical side but in adjusting economic arguments in favour of more sustainable solutions". In my experience, the prerequisite is a sense of vision and an understanding of our socio-economic destiny. The financial adjustments then fall into place and the technical solutions follow to meet overlapping social, environmental and commercial needs.

The second part of the book covers eight case study buildings. These are described by their architects and, in the case of the three educational buildings, also by their clients. There is interesting feedback from monitored performance on ECD's University of East Anglia library, but less on the other completed and operating buildings. This is a pity since a number of them have useful performance data.

The last chapter reviews possible future developments in building technologies to meet environmental depredation. It is just six pages. A more detailed appraisal would have been a valuable supplement to the rest of the book.



Green Buildings Pay has a slightly dated feel, with John Gummer (former British Secretary of State for the Department of the Environment) beaming out from the first page and other lugubrious mug shots of contributors interspersed throughout, but it is a useful, modestly priced book that marshals the arguments well. It will be a helpful reference for designers following in the footsteps of these pioneers.

David Lloyd Jones is a director of Studio E Architects, London – specialist in the field of sustainable architecture – and author of WA74's sector analysis on energy efficient buildings.

BOOKS RECEIVED

Jørn Utzon – The Sydney Opera House

Françoise Fromonot. Electa/Gingko. 236pp, 260 b&w photographs and line drawings. £29.95/US$49.95 (paperback)

Cesar Pelli – Recent Themes

Michael J Crosbie. Birkhäuser, Basel, Switzerland. 178pp, 175 colour and 225 b&w illustrations. SFr98/DM118/US$77?/£49 (hardback)

Private Architecture – Masterpieces of the Twentieth Century

Roberto Schezen. Introduction by Peter Blake. Monacelli Press, New York, USA. 360pp, fully colour illustrated. US$75/£50 (hardback)

Studies and Executed Buildings by Frank Lloyd Wright

Foreword by Anthony Alofsin. Rizzoli International Publications Inc, New York, USA. 224pp, 100 b&w plates. US$80/£50

Events

Lectures, congresses and conferences

Canada

Festival of Architecture 1999

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

Italy

BIBM 99

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

Malaysia

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

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

UK: Glasgow 1999 RIAS Architecture and Design Conference

Major conference entitled "From the City to the Spoon", organised by the Royal Incorporation of Architects in Scotland as part of Glasgow's tenure as 1999 UK City of Architecture and Design. Speakers will include Richard Rogers, Javier Mariscal, Richard Seymour and David Page. The programme will incorporate speeches, discussion forums, workshops and tours. Takes place at Sir Norman Foster's Scottish Exhibition and Conference Centre from 27-29 May. For details contact the RAIS Public Affairs Department, 15 Rutland Square, Edinburgh, EH1 2BE. Tel: +44 131 229 7545. Fax: +44 131 228 2188

South Africa

Urban Integration

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

USA

California Practice Conference

This event will provide a forum for 400 architects to address the business of architecture and leadership and practice skills, all with the aim of increasing profit margins. Delegates will discuss business theory and technology, both established and experimental. The conference will take place between 3-5 April at the Sheraton Grande Torrey Pines, La Jolla, California. For further details contact the conference manager Donalee Hallenbeck.
Tel: +1 916 429 1414
Fax: +1 916 442 5346
e-mail: assist@ix.netcom.com

Senior Housing South

Conference and exposition looking at the design and management of long-term healthcare facilities in the USA, in anticipation of a sharp rise in demand in the near future. From 1-2 March at the Miami Beach Convention Centre, Miami Beach, Florida. For information call Merchandise Mart Properties Inc, Suite 470, The Merchandise Mart, 200 World Trade Centre, Chicago, Illinois 60654.
Tel: +1 312 527 4141
Fax: +1 312 527 7782

Architecture and design competitions

Switzerland

WIPO International Architecture Competition

Competition organised by the World Intellectual Property Organisation calling for designs for an extension to its own administrative headquarters in Geneva. The project is to comprise office space for 500, conference space and parking. The deadline for registration is 26 February and a shortlist for the competition proper will be prepared in May. Requests for entry or information should be directed to Mr F Gurry, Legal Counsel, Office of Legal and Organisation Affairs, Architectural Competition, 34 Chemin des Colombettes, 1211 Geneva 20, Switzerland.
Fax: +41 22 733 3168
e-mail: francis.gurry@wipo.imt

UK

Akzo Nobel Student Ideas Competition

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

USA

Acsa/Otis International Student Design Competition

International competition for upper-level students calling for urban development proposals which integrate mid-rise housing into the existing urban context. The prize fund is US$4000, the registration deadline is 8 March 1999 and the submission deadline is 12 April 1999. For further

details contact John K Edwards, Association of Collegiate Schools of Architecture/Otis Elevator Company, Student Design Competition, 1735 New York Avenue NW, Washington DC 20006.
Tel: +1 202 785 2324
Fax: +1 202 628 0448

Exhibitions

Canada

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

Denmark

Cities on the Move 4 - The Asian City of the Nineties
Through its presentation of the work of a hundred different architects and artists, this exhibition seeks to highlight the dynamism and creativity of life and culture in Asian cities today. It will look closely at the exchange of architectural and urban planning ideas between Asian and Western professionals. Until 21 April at the Louisiana Museum of Modern Art, DK-3050 Humlebaek, Denmark.
Tel: +45 4919 0719
Fax: +45 4919 3505

Frank O Gehry
Exhibition mounted as part of the Louisiana Museum of Modern Art's "The Architect's Studio" series, which focuses on the pioneers of modern architecture, presenting a comprehensive overview of the architects' conception and working processes. Gehry's work is profiled through study of the unusual methods demanded to visualise, engineer, and build his organic designs, with the aim of giving a clearer understanding of this complex architecture. Runs until 7 February 1999 (See *Cities on the Move 4* for contact details for the Louisiana Museum of Modern Art).

UK

Vertigo: The Strange New World of the Contemporary City
Major exhibition staged as part of the *Glasgow 1999: UK City of Architecture and Design* programme of events. It will look at ten of the most significant current building projects in the world and examine their impact on the changing way we live in cities. The aim is to avoid distinction between "high" and "commercial" architecture. Takes place between 26 February and 16 May at the Old Fruitmarket, Albion Street, Glasgow. For more information contact the office of Glasgow 1999 at Charlotte House, Queen Street, Glasgow, G1 3DN.
Tel: +44 141 287 7346
Fax: +44 141 248 8754
Web: www.glasgow1999.co.uk

Modern Britain 1929 - 1939
Retrospective exhibition encompassing the architecture, art and design of the modern movement in Britain. The exhibition is designed by Sir Norman Foster in collaboration with Danish designer Per Arnoldi. Runs until 6 June at the Design Museum, Shad Thames, London, SE1 2YD.
Tel: +44 171 403 6933
Fax: +44 171 378 6540

USA

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

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

Trade shows

Italy

Samoter 99
The 24th time this international earthmoving and building machinery exhibition has been held. Takes place in Verona from 3-7 March 1999. Organised by Veronafiere, CP 525, 37100, Verona.
Tel: +39 45 829 811
Fax: +39 45 829 8288

Russia

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

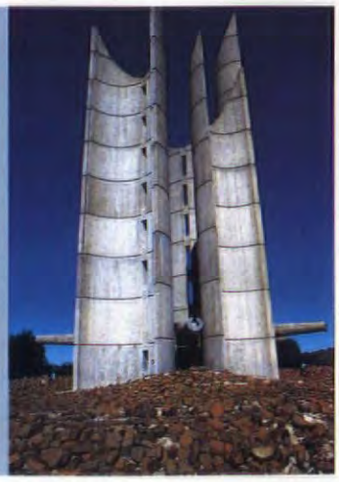
USA

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

Coverings 99
International trade show for floor and wall coverings. Incorporates "The Solution Source" conference, which features, round-tables and seminars for the delegates. From 23-26 March. For information contact TSI Inc, 900 E Indiatown Road, Suite 207 Jupiter, Florida 33477.
Tel: +1 561 747 9400
Fax: +1 561 747 9466

The Netherlands: Blank – Architecture, Apartheid and After

Exhibition mounted as part of the Netherlands Architecture Institute's South African Season programme, subtitled "A critical survey of South African architecture and urban planning in a social context". It deals with the work of the few architectural historians and critics who undertook to study the complex relationship between architecture and politics during the apartheid years. Runs until 15 April at the Netherlands Architecture Institute, Museumpark 25, 3015 CB Rotterdam, Postbus 237, 3000 AE Rotterdam.
Tel: +31 10 440 1200 Fax: +31 10 436 6975



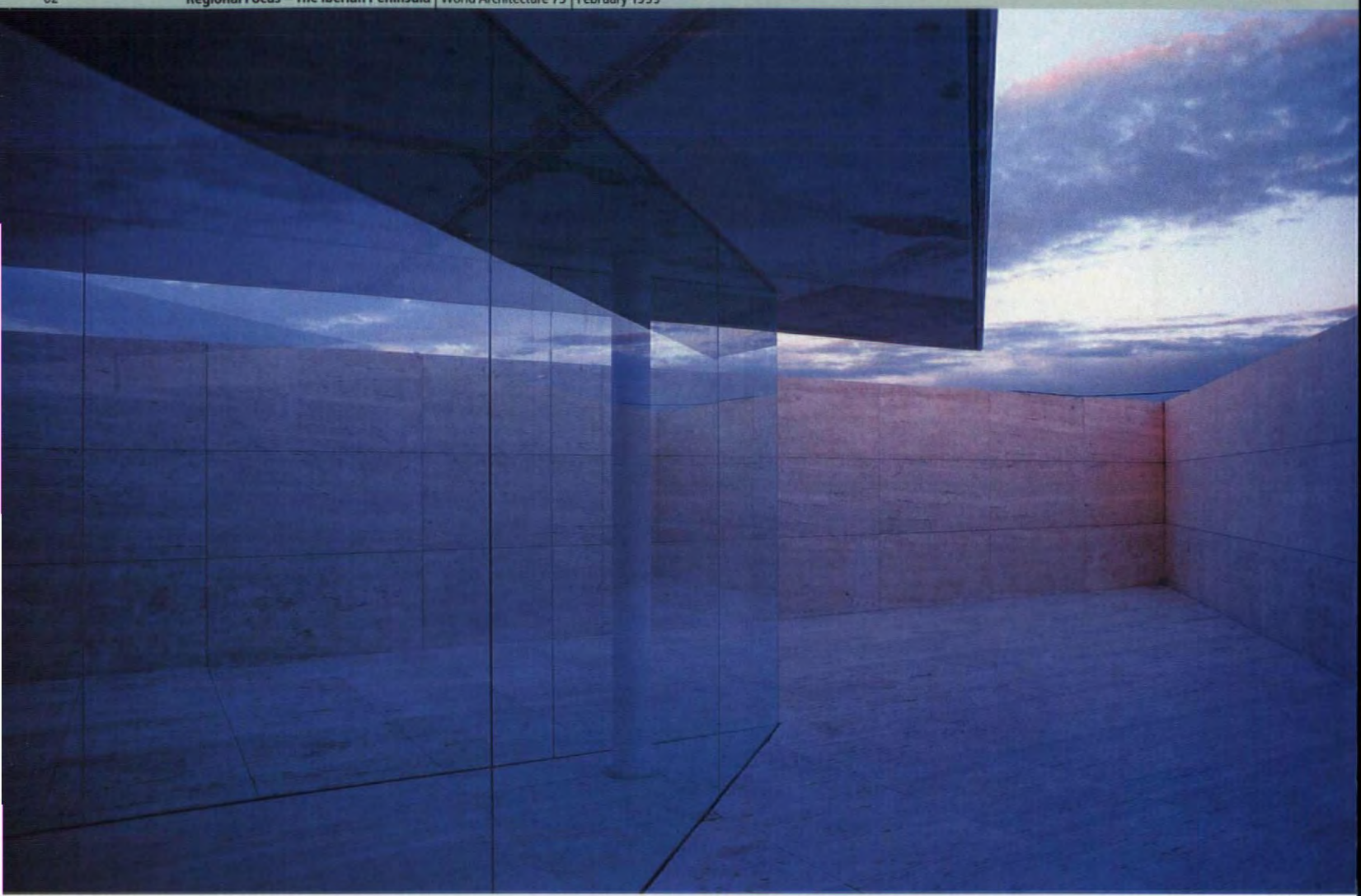
The Iberian Peninsula

Rui Moraes de Sousa

Site of last year's Lisbon Expo, the catalyst for major development in the Portugese capital

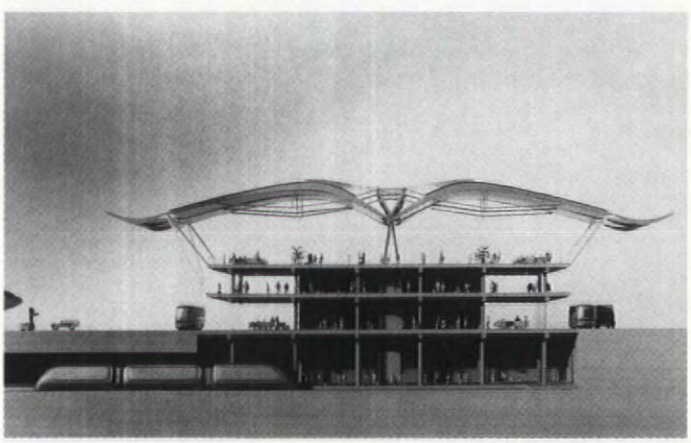
Country Focus

Although Spain is the larger, wealthier and more populous country of the Iberian Peninsula, the architectural fortunes of Portugal, especially since last year's Lisbon Expo, have never looked so good. For Spanish architects, 1992 increasingly looks like a slowly receding golden age, while Portuguese architects are enjoying the opportunities brought about by membership of the European Union, economic expansion and modernisation. David Cohn reports from Spain, and Miguel Rivero Lorenzo reflects on the fortunes of her neighbour.



Raul del Valle

Until very recently, cultural, commercial and political relations between Spain and Portugal have not been as close as one might expect. Although the two countries share a similar language and a common history, Portugal has resisted the gravitational pull of her larger neighbour, looking out to the Atlantic, to her exotic former colonies and to long-time allies such as the United Kingdom for its foreign horizons, while Spain has largely ignored her closest neighbour. Unlike Spain, Portugal surfaced from dictatorship in 1974 with heavy debts related to its former African colonies. Its economy was lethargic throughout the 1980s, while in Spain a policy of economic liberalisation helped promote robust economic growth. These differences are still dramatically apparent in any casual walk through the streets of Lisbon and Madrid.



SPAIN

Two-way benefits

With the current expansion in Portugal, and the wave of optimism and self-confidence brought on by the 1998 Lisbon Expo, relations between the two countries could be said to have entered a phase of "construction", both in metaphorical and physical terms. Spaniards made up the largest proportion of foreign visitors to the fair, and were well represented in its cultural acts and performances, while Portugal in turn has become a daily presence in the Spanish press. Spanish companies also captured much of the fair's construction contracts, in association with local firms. This activity follows the heavy investments of Spanish capital in Lisbon real estate over the past ten years. But basic connections such as highways and rail lines between the two countries remain to be modernised – as yet, neither country has planned a high speed train link between their capitals, for example.

Exploiting the public purse

Within Spain, architects are currently reaping the benefits of the recent economic expansion, although at a rhythm more moderate than the boom leading up to the 1992 celebrations in Barcelona and Seville. Spain's quasi-federal system of 17 autonomous regions continues to produce many important public projects, including cultural centres, public universities, hospitals, government facilities and public/private business initiatives such as the Centre BIT in Palma de Mallorca, an

Facing page, above: Centre BIT for startup software firms, by Alberto Campo Baeza, in Inca, Mallorca, is an example of one of many public/private business initiatives

Facing page, below: Model of Richard Rogers Partnership's new terminal at Madrid airport, designed in association with Lamela and Associates

This page, far left: Model of Barcelona's private Diagonal Mar development by US developer Gerald Hines and local firm Tusquets, Díaz and Associates

This page, left: The 1992 Expo site in Seville has been converted into the "Magic Island" Park

REGIONAL FACTFILE – SPAIN provided by Hanscomb

The land: Part of the Iberian Peninsula, Spain is Europe's third-largest country with an area of 504,750 square kilometres (800 kilometres from north to south, and 680 kilometres from east to west). Spain borders France and Andorra to the north-east, Portugal to the west, the Atlantic Ocean to the north-west, and the Mediterranean Sea to the east and south. The British possession of Gibraltar is on the southern tip of Spain and the Gulf of Cadiz separates Spain from Morocco. The Balearic Islands in the Mediterranean Sea and the Canary Islands in the Atlantic Ocean are also part of Spain. There are 17 autonomous regions in Spain, with extreme differences among the regions in climate, terrain and culture.

Climate: A continental climate dominates the Meseta Central region with hot, dry summers and cold winters. A temperate Mediterranean climate is found in the Andalusian Plain and along the south and east coasts. Northern Spain has a maritime climate with milder winters, warm summers and abundant rainfall.

Population: 40 million, urban 78%, rural 22%.

Number of registered architects: Approx 27,000.

Official languages: Spanish, Galician, Basque and Catalan.

Capital: Madrid.

Time difference: Madrid is 6 hours ahead of Eastern Standard Time (EST), and is 1 hour ahead of Greenwich Mean Time (GMT).

Currency: Spanish peseta (divides into 100 centimos).

Dialling code: Spain's country code is 34, the international dialling-out access code from Spain is 07, and the special code for Andorra is 9738.

ECONOMIC DATA

Consumer Price Index: 1990=100

1992	112.2	1995	128.6
1993	117.3	1996	133.2
1994	122.9	1997	136.1

Exchange Rates: Spanish peseta per US$

1992	114.6	1996	131.3
1993	142.2	1997	150.1
1994	131.7	1998	151.9
1995	121.4		

"incubator" for startup software firms. A plan to implant a similar system of regional governments in Portugal was rejected by voters last November, and will most likely be replaced by more limited decentralisation measures.

The restrictive public debt requirements of Masstricht have only slightly slowed the healthy pace of infrastructural investments by Spain's central government. A high-speed train link between Madrid, Barcelona and the French frontier is now under construction, with a Madrid-Valladolid line in design development and a Madrid-Valencia line recently approved. Highway, subway and rail construction continues, particularly around Madrid, and Madrid's airport is expanding with a new terminal by the UK's Richard Rogers Partnership and local firm Lamela and Associates.

Spain's ports are also being systematically modernised, from Barcelona and Tarragona to Bilbao, Valencia, Vigo and Santa Cruz de Tenerife in the Canary Islands, recent subject of an international competition won by Swiss architect Herzog & de Meuron.

Planned communities

Low interest rates and pent-up demand have stimulated housing construction, which rose 5.8 percent in the first quarter of 1998. In Madrid, 36,000 subsidised units, began in the early 1990s in dormitory communities such as Leganés, Getafe, Alcobendas, are now being occupied. The City of Madrid is now planning new neighbourhoods for 72,000 units over the next eight years, two thirds of which will be subsidised. Ricardo Bofill is designing the urban plan for the Chamartín development of 13,000 housing units over railroad rights of way in the north of the capital, currently in the approvals phase. The project is led by Argentaria, a recently-privatised national bank.

In Barcelona, the private Diagonal Mar development is in advanced planning. It is being carried out by US developer Gerald Hines, with a masterplan by the local firm Tusquets, Díaz and Associates. It includes ten towers and 1,900 apartment units, as well as a major shopping centre and 74,000 square metres of hotel and office space.

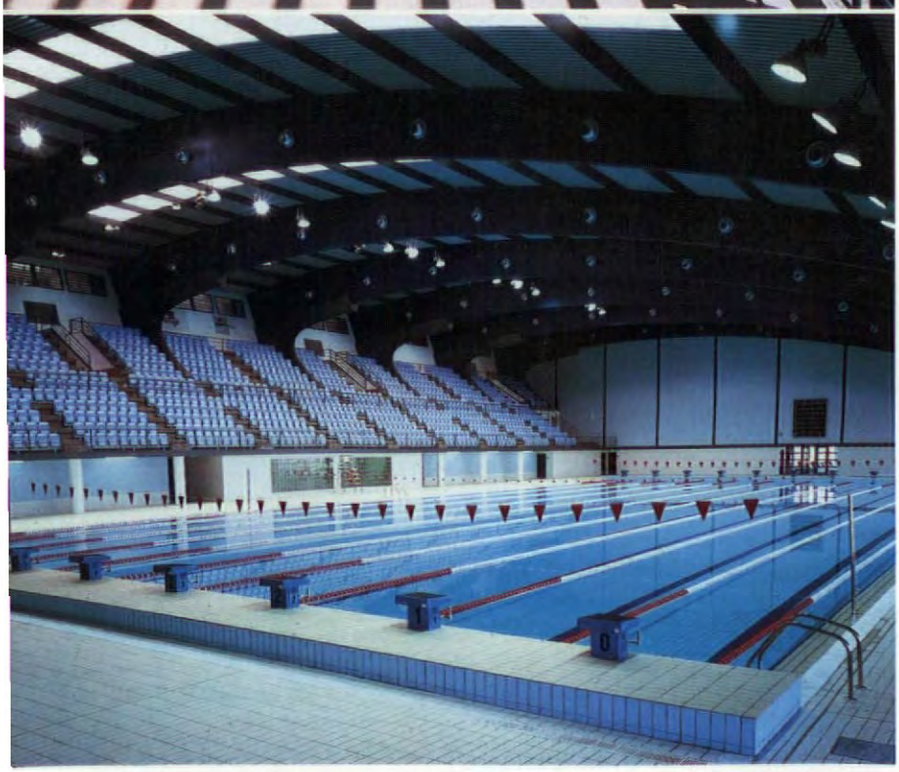
Unpredicted commercial demand

Commercial office builders were caught unprepared for the latest increase in demand, having overreacted to the last contraction. Most new projects are still in preliminary planning, such as a recent proposal by public authorities to add a 1.5 million-square-metre financial centre to Bofill's Chamartín plan. Only the World Trade Centre in Barcelona's port by Pei Cobb Freed, which opens in April, is on track to meet the increased demand (see project review in this issue).

Theme park development is another active sector. Universal Studios will invest US$1.66 billion in Port Aventura, near Tarragona; Time-Warner is developing a US$300 million park in Madrid; and plans are under consideration for the coastal resort of Benidorm, the central meseta of La Mancha and elsewhere. In 1997, the 1992 Expo site in Seville was converted into the "Magic Island" Park.

New faces through competition

The competition system for designing public works has proved to be a great leveller of opportunity for architects, permitting a new generation to emerge in the last few years. ›



Among the new faces are the Madrid studio of Emilio Tuñón and Luis Moreno-Mansilla, authors of the 1997 Provincial Museum of Zamora; Federico Soriano and Dolores Palacios, whose Bilbao Opera opened in late 1998; and Manuel Ruisánchez and Xavier Vendrell of Barcelona, who launched their careers with competition-winning facilities for the 1992 Olympics.

Competitions often present the best opportunities for foreign architects as well, as in the case of Madrid airport terminal. A few foreign firms are already well established in the country, such as Foster & Partners, London, author of the recently opened Congress Center in Valencia, and also signed up for a possible corporate headquarters for the Spanish petroleum giant Repsol in Madrid.

The profession currently faces a number of challenges which many fear could erode its stature. In one alarming trend, local governments are increasingly organising competitions for builders, who supply the architectural design as if it were just one more subcontract. And new state legislation proposes to allow civil engineers to sign building documents. Five hundred architects in Barcelona recently signed a manifesto opposing such measures, and protesting the alleged decline in public and private architecture in the post-Olympic era. For Spanish architects, 1992 increasingly looks like a slowly receding golden age.

PORTUGAL

The road to modernisation

Though Portugal is a peripheral European country, relatively small at scarcely 91,000 square kilometres and with only ten million inhabitants, it has managed to join the select group of nations within the European Union that will introduce the Euro in 2002. It is currently launched on an accelerated process of economic expansion and modernisation, which includes ambitious programmes in public infrastructure and historic restoration as well as a boisterous rate of private real estate investment.

Portugal's gross national product (GNP) per inhabitant is US$9,772, relatively low when compared to other developed nations. But inflation is about 2.2 percent annually and unemployment roughly seven percent, putting the country in a privileged position with respect to other member states. The Portuguese economy continues to present interesting growth indexes. It is anticipated that the GNP will continue to increase at a rhythm of between three and 3.5 percent over the next several years, while interest rates for the national currency, the escudo, continue to fall.

In the real estate sector, however, several factors exert a negative influence. They include the anachronistic rent law of 1975, which froze all rents (a succeeding law of 1985 permits some price increases, but only in Lisbon and Porto); an obsolete tax system for urban and rural property sales; agonisingly slow judicial processes; and, perhaps worst of all, the time-consuming bureaucratic procedures required to obtain building permits from Portugal's city governments. These factors contribute to a declining rhythm of private investment in the sector, which is counterbalanced by increasing public

Facing page, top: One of many large scale projects to emerge in Lisbon over the last few years. The exterior walkway of the Olympic pool at the University Stadium by Federico Valsassina

Facing page, below: Inside the pool's arena, showing the dramatic curved roofline

This page, left: Architect Manuel Tainha has an impressive portfolio of public works for social facilities including the Psychology School at the University of Lisbon

REGIONAL FACTFILE – PORTUGAL provided by Hanscomb

The land: Portugal is on the western side of the Iberian Peninsula in South-West Europe. The Azores and Madeira Islands in the Atlantic Ocean are non-contiguous areas of Portugal. Including the islands, it has an area of 92,390 square kilometres (335 kilometres east to west and 840 kilometres north to south). Portugal borders Spain to the north and east and the Atlantic Ocean lies to the west and south.

Climate: Portugal has a maritime temperate climate. The mountainous northern areas are wetter and cooler than the southern regions.

Population: The population of about 9.9 million is mostly rural (66%) and the density is 108 people per square kilometre.

Number of architects: Approx 7,000.

Official language: Portuguese.

Capital: Lisbon.

Time difference: Portugal is 5 hours ahead of Eastern Standard Time (EST), and is on Greenwich Mean Time (GMT).

Currency: Portuguese Escudo has 100 centavos.

Dialling code: Portugal's country code is 351, the international dialling out access code from Portugal is 00.

ECONOMIC DATA

Consumer Price Index: 1990=100

1992	108.9	1995	127.1
1993	116.0	1996	131.1
1994	122.1	1997	133.9

Exchange Rates: Portuguese escudo per US$

1992	146.8	1996	156.4
1993	176.8	1997	181.4
1994	159.1	1998	183.1
1995	149.4		

investments. But this has not been sufficient to dampen the current construction boom, which has swept the country as a whole and Lisbon in particular.

The responsibility of construction

The construction industry is one of the principal motors of the economy which, according to Francisco Maia Coehlo, president of the Northern Association of Building Contractors, gives direct employment to 420,000 workers, and is responsible for more than a million jobs in related fields in the country as a whole. Nevertheless, the well-known architect Manuel Tainha, with 48 years experience in the profession, expressed his "preoccupation" that the country's economy depends so much on construction. "At times I ask myself if it would not have been better to direct more investment towards other productive sectors. Construction increases the GNP, but it does not produce wealth. We have been mortgaging the future of the country, and perhaps the moment has come to open a national debate on the subject." Tainha has a large portfolio of public works for social facilities, including the Psychology School at the University of Lisbon, the Technology Institute in Tomar and the prize-winning School of Sociology also at the University of Lisbon.

Foreign objectives

Among the current objectives of Portugal's construction industry is the expansion into foreign markets, a move that may make Portuguese architecture an export item as well. One should not forget that Portugal was for many years a colonial power that controlled current African nations such as Angola, Mozambique, and Guinea-Bissau. To these should be added existing links to the gigantic Brazilian economy and growing fusion between Spanish and Portuguese firms, which are converting the Iberian Peninsula into an increasingly integrated market.

"Among current objectives of Portugal's construction industry is the expansion into foreign markets...Mozambique is the principal destination of overseas expansion."

The adhesion of Portugal to the euro is evaluated by businesses as highly positive. "The single currency will permit national companies access to the same types of financing as their colleagues in the community," according to construction business analyst Margarida Bon de Souza. But he continues, "the direct impact of the Euro would have been much greater if the strategy of internationalisation were more advanced".

Mozambique is the principal destination of overseas expansion, a country that is in the process of recovery from almost 20 years of civil war. There are great hopes that peace will be ›

Intergaup has designed two very different banks for the Banco Comercial do Portugal (BCP). Shown here the headquarters in Rua Augusta, Lisbon, showing Roman ruins found on the ground floor left exposed

Rui Moraies de Sousa

consolidated in Angola, one of the richest countries in Africa. The possibility of Portuguese companies investing in these regions jointly with other European companies represents an interesting opportunity, as Portuguese business already has inside knowledge of the markets. The large national construction companies equipped for global activity include SONAE, Soares da Costa, ENGIL, Somague and Teixeira Duarte. SONAE, founded in 1959, is the leading business group in Portugal, active principally in real estate, supermarkets and construction, and with branches in Brazil and Spain.

Restoring the housing market

The antiquated legislation for rental housing represents an obstacle for the potential work of conserving Portugal's older buildings. Around 90,000 families nationwide pay rents lower than US$8.00 per month, while rents for a simple room in Lisbon can cost US$200 or more. For 620,000 homes, rents are less than US$120 per month. Logically, the owners of these buildings, many of which are of great historic value, do not maintain them or make repairs, a situation which has prompted the state to organise and finance three different restoration programmes. RECRIA, the most important of these, was launched in 1987, and has restored 2,436 buildings containing 11,377 dwellings. Currently, work on 1,039 more buildings is underway.

The price of new rental housing is consequently very low. At the same time, an average of 80 percent of the homes in Portugal are owner-occupied, the highest rate in Europe (exceeded only by Spain in 1994 with a rate of 84 percent). The market for new housing sales is currently booming. In the first quarter of 1998, banks authorised 58,000 loans for the purchase of new housing for a value of US$500 million, up more than 30 percent on the same period in 1997. Individuals received 76.3 percent of the loans, surpassing those given to companies for the first time. In the same period, the total amount loaned by the National Housing Institute for the construction of apartments at controlled prices was more than US$200 million. Government policy is also directed at stimulating the purchase of new homes through tax benefits.

Housing is not the only sector enjoying the benefits of renovation. The Banco Comercial do Portugal (BCP) headquarters in Rua Augusta, Lisbon have been designed by Intergaup, and Roman ruins found on the ground floor left exposed. The same architect has designed a quite different building for the bank at the Tagus Technological Park, Oeiras, Lisbon.

After the Expo

The most important building project in Portugal following the Expo is the housing development known as "Alta de Lisboa" (Heights of Lisbon), a 300-hectare extension of the city towards the north near the airport, which comprises 17,000 apartments. Of these, 3,750 will be dedicated to rehousing families

Intergaup's second BCP building – this time a slick new-build at the Tagus Technological Park, Oeiras, Lisbon

Rui Moraes de Sousa

currently living in shantytowns, a phase of the project which receives priority and which should be finished by 2001. The project is managed by the City of Lisbon, together with the private consortium, the Alto do Lumiar Management Society. It is, according to a source in the city administration, "the largest private development ever realised in the country," and will be executed over a period of 17 years. The Spanish architect Eduardo Leira is responsible for the urban plan.

Lisbon is also becoming an important destination for both tourism and business meetings. In a recent survey undertaken by Healy and Baker, Lisbon rose to fifteenth place on a list of the 30 most popular European cities among businessmen. Investments planned for the capital surpass those of any other city in Western Europe. Commercial projects underway include a 100-room luxury hotel in the Val da Flor Palace by Manuel Tainha; a luxury hotel in the Chiado area restored by Àlvaro Siza; and several commercial office buildings.

SONAE's Colombo Shopping Centre in Lisbon (see over), inaugurated in 1997, is the largest in the Iberian Peninsula and rivals anything in Europe. With 410,000 square metres, it has more daily visitors than the 1998 Expo, according to SONAE's José M Quintela. SONAE has taken a leading role in the development of the area around the Expo site known as Expo Urbe. "We are building the Vasco da Gama towers, which will be the tallest in Portugal and which will rise on each side of a shopping centre, also by the SONAE group. Though the foundations are barely ›

PORTUGAL'S PROJECTS OF THE FUTURE

The construction of the metro in Porto, the second-largest city in the country with 300,000 inhabitants. Set to open in 2003, it will have an extension of nearly 80 kilometres and a cost estimated at more than US$1,000 million. Three Portuguese, three Italian and two French companies will begin construction next year. The head of the design team is Portuguese architect Eduardo Santos Moura.

A new Lisbon airport. Two sites are under consideration, one in the Rio Frio area 30 kilometres south of Lisbon, and the other an existing military base close to the town of Ota, 60 kilometres north of Lisbon. Competitions will be organised for the design. Authorities hope to begin construction in 2001, with a budget of over US$2,000 million.

New highways for the west and north of the country, with investments of over US$4,000 million.

Modernisation of rail lines. The reinforcement of the structure of the "April 25" suspension bridge across the Tejo River in Lisbon, with the addition of a second deck for trains, is in the final phase of construction with a budget of over US$150 million. High speed trains between the north and south of the country are planned, with investments estimated at about US$700 million.

Private investments for the development of the Expo Urbe, in the eastern area of Lisbon and site of the Expo. The urban design includes 7,400 apartment units and 300,000 square meters of office space. Total investments are estimated at US$1,500 million.

The new city known as "Alta de Lisboa" will be finished in 2015. It occupies 300 hectares with 17,000 new housing units, 21 schools, 4 swimming pools, 2 metro-stations, recreational and sports centres and retail. Its total cost is estimated at over US$2,000 million.

Right: Night view of the hugely successful SONAE Colombo Shopping Centre, Lisbon

Below right: Model of the Vasco da Gama towers, designed by José Quintela de Fonseca, also developed by SONAE, will rise in the area known as Expo Urbe. The towers will be the tallest in Portugal

Far right: London-based Building Design Partnership is one of several successful foreign firms to move into Portugal. Shown here, the Via Caterina Shopping Centre in Porto

Rui Morais de Sousa

finished, 84 percent of the apartments are sold," notes Quintela. The architect for the project is José Quintela de Fonseca.

Who are the architects?

In 1948 there were 150 architects in Portugal, almost all based in Lisbon and Porto. Before the April 1974 "Revolution of the Carnations", which ended 50 years of dictatorship, the number was close to 2,000. Michel Toussaint, architect and director of *Arquitectos* magazine, reports that there are now "some 7,000 architects distributed throughout the country".

The College of Architects was founded in July 1998. But as Toussaint explains, one of the obstacles facing practising architects is the building law of 1973. "Since at that time there were fewer architects in the country, the law allows building projects to be signed by civil engineers or builders. This provision has created many interests, which paralyse attempts to change the legislation. Now, we have a sufficient supply of architects for the country's needs, but the law hasn't changed, a situation which doesn't favour the professional role of the architect in the building process." However, the percentage of projects signed by architects among those presented for building licenses has increased significantly in the last few years, Toussaint adds. Architects are also increasingly involved in urban masterplans, and they are frequently consulted in real estate transactions or in determining the value of a building.

The great majority of Portuguese architects are young graduates, most from the Technical University of Lisbon and the schools of architecture in Porto, Coimbra and Braga. The average architect works alone or in limited and often informal association with one or two others, according to Jorge Alves de Oliveira, spokesperson for the Portuguese Association of Contractors. Prestigious architects may have several recent graduates working for them, he says, but "there are as yet no large corporate offices, as the development of the profession here is relatively recent".

"Portugal is a country where architects have much to do," says Toussaint. "Advances have been made in some infrastructures, with the financing of the European Union, but there remains much to do in the fields of public facilities and housing construction."

Prestigious opportunities also abound for foreign architects.

"SONAE's Colombo Shopping Centre in Lisbon rivals anything in Europe. At 410,000 square metres it has more daily visitors than the 1998 Expo."

Manuel Salgado, architect and director of the Expo facilities says that, "it was our intention to use the Expo to open Portugal to foreign architects. We are in a globalised world and architects from all over the world must be able to work without frontiers". Expo works include the Utopia Pavilion and Vasco da Gama tower by SOM London and the intermodal station by Santiago Calatrava. RTKL Graphics of Dallas, BAT of Manchester UK and Taybourn MacIlroy Coats of Edinburgh have all worked with SONAE on shopping centres and other commercial projects, while Building Design Partnership of London designed the Via Caterina shopping centre in Porto. Portugal is already on the road to modernisation, and offers opportunities not only to large companies, but also to those looking for markets with a strong future potential for growth. VA

CONSTRUCTION FACTFILE provided by Hanscomb

Rates of inflation for the building industry 1999: Estimated at 2-3%.

Forms of contract: Public sector contracts of all types are covered by the *Ley de Contrato del Estado*. It is applicable to any type of government contract. Public contract regulations are extensive and published in the book *Boletin Oficial del Estado*. Each contract has specific contract conditions (*pliego de condiciones*). For private sector work, the *Colegios Oficiales de Arquitectura* have their own standard contract document, the *Pliego de Condiciones Tecnicas y Economicas del Colegio de Arquitectos*. However, contracting conditions are only regulated by the civil code (*codigo civil*) and are negotiable. Larger projects tend to use specific tailor-made contracts. The typical contract package includes drawings, specifications, contract conditions, general description of the works, and bills of quantities (note there is no standard method of measurement in Spain). Bills of quantities are used for tendering, but contracts may be either lump sum or unit rate. Detail drawings are not always part of the tender package and occasionally the successful contractor prepares the detailed design drawings based on the ideas of the architect.

Design professions: Architects and engineers are highly protected and regulated. By law an architect must be employed for building projects. However, there are no similar statutory requirements for engineers. Both architects and engineers are organised into professional colleges and must be members to practice legally in Spain. For architects, there are 17 provincial *Colegios Oficiales de Arquitectura*. The *Consejo Superior de los Colegios de Arquitectura de España* is the national council for architects. The professional *colegio* plays an important role in the Spanish building delivery system. All design fees are paid to the *colegio* and building approvals are issued by it. The client must advise the local *colegio* when an architect is selected. Before a project can proceed beyond basic design, clients must pay the fees to the local *colegio*. It retains a percentage and pays the architect. This ensures the architect takes out the necessary indemnity insurance to cover the ten-year period for which he is responsible. The *colegio* checks the project for compliance with building regulations for the authorities. The client cannot apply for a building license without the *colegio*'s approval.

The technical architect (*aparejador*) is an additional member of the project team, which is also organised into provincial colleges, called *Colegios Oficiales de Aparejador*. Their appointment on construction sites is required by law, but this is often not done. In this capacity, they are usually employed by the client. The primary site tasks of the *aparejador* include tender documentation, progress valuations, and cost and quality monitoring.

Contractors: The largest construction companies are: *FCC; Dragados y Construcciones; Acciona (Entrecanales y Cubiertas y Mzov); OCP y Gines Navarro; Ferrovial y Agroman; Lain y Pacsa; Obrascon*. The Spanish construction industry uses general contracting over trade contracting. Much of the work is subcontracted.

Credits

Thanks to *Blastec Iberica S.L.* of Valencia, Spain for assisting in the presentation of information in this report.

CONSTRUCTION FACTFILE provided by Hanscomb

Rates of inflation for the building industry 1999: Estimated at 4-6%.

Procurement of construction: The *Regime Juridico* covers public sector construction contracts. Open tendering requirements allow all qualified contractors to submit tenders for public work. However, large projects are covered under special legislation which requires prequalification of tenderers. Private sector work will use selective tendering and prequalification. There is no standardisation of contracts, various parties use their own formats.

The construction industry in Portugal is very flexible in the types of construction contracts and contracting methods used. Both General Contracting and Separate Trade Contracting methods are widely used in Portugal. When General Contracting is used, much of the work is subcontracted. The typical contract package includes drawings, specifications, contract conditions, general description of the works, and bills of quantities. Bills of quantities are used for tendering, but contracts may be either lump sum or unit rate. Detail drawings are not part of the tender package – the contractor prepares them.

Design professions: Engineers as well as architects may design buildings, but some government institutions are working to condition the role of the engineer. Even construction administration and project management are controlled by the civil engineers. Architects must belong to the *Associaçao dos Arquitectos Portuguese* to practice. To design in Portugal, architects from EU countries must register with the association. The profession is dominated by small firms and individuals.

Contractors: Contractors are licensed depending upon their financial and technical capacity. The largest construction companies are: *Teixeira Duarte; Soares da Costa; Engil; Somague; Mota & Companhia; Bento Pedroso; Construcoes; Edifer*.

Labour availability: Portugal has an ample supply of both skilled and unskilled labour. During Expo 1998 contractors had some problems with the shortage of labour, both skilled and unskilled, and hourly rates rose for most trades by almost 50% between September 1997 and April 1998. This had an impact on the construction costs outside Expo 1998 that contractors used to renegotiate increases to their unit rates by as much as 20%.

Material and equipment availability: Most building materials are available locally; some are imported, mostly from other European countries. The full range of equipment is available.

Regional cost variations: The following variations are indicative of possible variations and are for general guidance. The Lisbon area is the most expensive in Portugal. The Porto area would be 10% less, the Algarve area about 15% less. In land areas could be as much as 20% less than Lisbon.

Credits

Thanks to *D y J Consultores de Construcao Lda* of Lisbon, Portugal for assisting in the presentation of information in this report.

Face to face

Performing on a world stage

João Soares, Mayor of Lisbon and President of the Lisbon Metropolitan Area, is the son of the former President of Portugal Mario Soares, now retired, and like him a member of the Socialist Party. In 1995 he succeeded Jorge Sampaio as acting Mayor, when Sampaio was elected President of the Republic, and won a five-year term in his own right in 1996. As host of the 1998 World Expo, he has presided over a dramatic transformation of this historic city of 800,000 inhabitants, designed to equip it for the challenges of the 21st century. Miguel Rivero Lorenzo talks to Soares about his achievements and aspirations for the Portuguese capital.

João Soares' political vocation began when he was a student, during the dictatorship of Antonio Salazar which ended in 1973; he was expelled on three different occasions from the University of Lisbon for political reasons. He became a Deputy of Parliament in 1987, and in 1990 entered the Lisbon city administration as Councillor of Culture. As Mayor, he takes a direct and active interest in urban policy and design questions.

The Mayor received us late one Friday evening, during a typically frantic week that included receptions for Portuguese writer José Saramago, recently announced winner of the Nobel Prize for literature, and audiences with several delegations to the Ibero-American Summit held in Porto at the same time. When we arrived, members of a commission struggled out of his office with a large model of a park renovation project. His waiting room was crowded with waiting dignitaries and advisers, as it was when we left after nine o'clock that night. He received us in shirtsleeves and without a tie, as is his custom, and was warm and lively in his conversation, although he spoke with a certain formality, a measure of respect for his responsibilities and the occasion that recalled, as so much does in Portugal, a bygone era.

"Top of his priority list are the shantytowns on the city's periphery – a phenomenon unique among European capitals to Lisbon."

Given the high profile success of Lisbon's Expo, and the consequent attention it has brought the city you might expect it to be central to any conversation with the Mayor. But top of his priority list, the matter that preoccupies him the most is the continued existence of substandard shantytown communities on the city's periphery – a phenomenon unique, among Europe's capitals, to Lisbon. He claims some success in dealing with the problem: "The construction of social housing is one of our top priorities. I made a political commitment...to resolve this problem by the end of my term in 2001. Our housing programme is being coordinated with the entire metropolitan area of Lisbon, in order to prevent marginal communities from proliferating in other nearby municipalities such as Aeries, Amadora or Loures." Under the programme, municipal architects, including Nuno Morais, Paula Teixeira, Filomena Rego and Rui Mateos, develop urban plans and building projects that are owned and managed by the city.

Another of Soares' top concerns is the decline of Lisbon's historic core, due to years of neglect on the part of both public and private investors. Soares explains that one of the keys to his approach has been to "establish urban planning offices in each neighbourhood, as close as possible to the residents, so that city planners are in the most direct contact with the specific problems of each street and building".

He continues: "Our golden rule is to maintain traditional residents in their neighbourhoods. There are other cities around the world where the rehabilitation of older neighbourhoods has involved the expulsion of the existing residents...who have been forced to move to peripheral suburbs or shantytowns. Maintaining the existing residents involves a more complex and lengthy process, but its results are already visible." He indicated as an example the completed restoration around the San Jorge Castle, located in the old medieval neighbourhood known as the Alfama, which was undertaken by a municipal corporation under the direction of city architects José and João Santa Rita.

In another part of this programme the famous Plaza of Rossio in the heart of the Baxia of Lisbon, will be transformed into a pedestrianised space. Soares explains that this project "is conceived essentially by municipal architects, [under the direction of Rui Valada] with some financing from the European Community. But the part of the project involving restoration buildings is undertaken entirely by the city".

Turning his attention to the 1998 Expo, which closed last September, Soares enjoys a moment of reflected glory. "I have an extremely positive vision of what was achieved in the eastern area of the city where the fair was located. The Expo was always conceived as a base for what would succeed it the day after it closed, taking as a starting point significant experiences such as the Barcelona Olympic Games in 1992 or the Seville Expo of the same year."

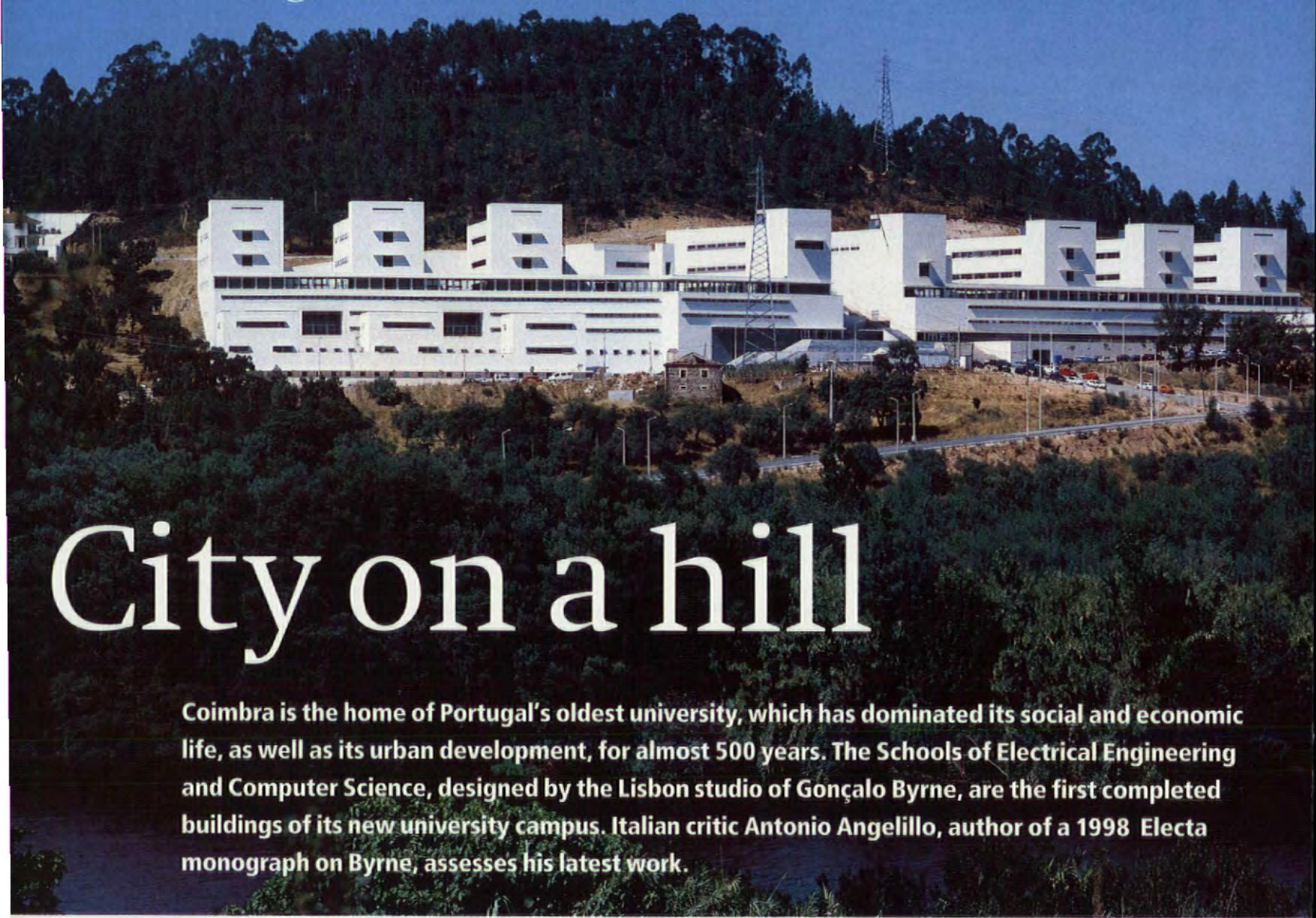
Most important for Soares is that the area "will be converted into a natural, living expansion of the city, with large private investments in housing and offices. The key is that the works were realised through the competition of private companies, which bought the sites in the area and are erecting modern buildings with some 25,000 new apartments, a good number of which have already been sold. This represents the guarantee of a resident population which will bring life to the area. It also involves hospitals, recreational centres, schools, hotels, government ministries and infrastructure for the city's expansion".

The Expo also provided an occasion for overdue infrastructural improvements. "One of the plans which we will have to rethink now is how to take advantage of the riverfront. Lisbon is the second European city with such a large front on the Atlantic. It is for this reason that we are constantly receiving more visits from large cruise ships. This is an extraordinarily important market which will condition the urban and commercial development that we will pursue along the entire seaboard towards the Atlantic."

"One of the plans we have to rethink now is how to take advantage of Lisbon's riverfront...this will condition the urban development..."

The Mayor sees tourism and business meetings as an important source of income and promoter of growth in the immediate future. "Lisbon is one of the world's meeting points. We must reaffirm our vocation as a destination for tourism, restoring the historic core and competing with other cities to host great international events. The city possesses the basic conditions to redefine and reaffirm itself while remaining true to its rich historic legacy and traditions." WA

New buildings: The Iberian Peninsula



City on a hill

Coimbra is the home of Portugal's oldest university, which has dominated its social and economic life, as well as its urban development, for almost 500 years. The Schools of Electrical Engineering and Computer Science, designed by the Lisbon studio of Gonçalo Byrne, are the first completed buildings of its new university campus. Italian critic Antonio Angelillo, author of a 1998 Electa monograph on Byrne, assesses his latest work.

The architect

Gonçalo Byrne's new Schools of Electrical Engineering and Computer Science are part of a national programme to improve teaching and professional formation, supported by financing from the European Community, which has affected almost all Portugal's public universities over the last decade. In the case of Coimbra, the new campus is the product of a policy of decentralisation designed to re-qualify in urban terms Coimbra's most marginalised periphery, and subsequently to decongest and rehabilitate the "university citadel" of the historic centre. Following the design of the two schools, Byrne won a 1995 planning competition for the old campus, a project that is still in its preliminary phases.

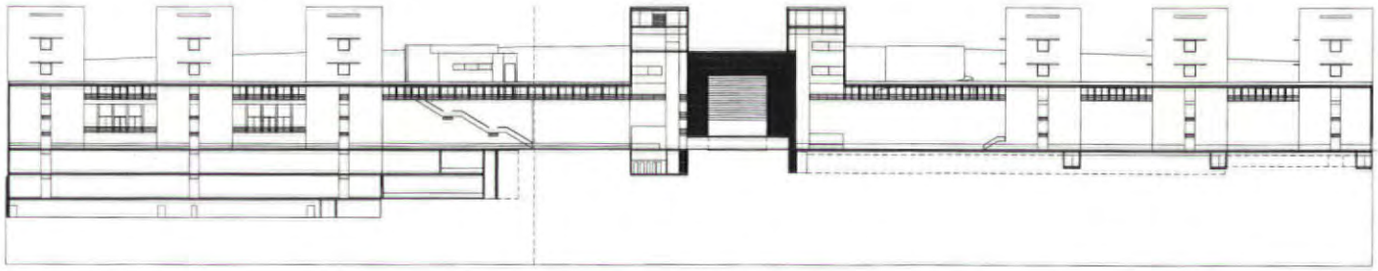
Byrne's winning 1991 competition project for the two schools confirms the high quality of the campus masterplan by Camilo Cortiçao of Porto, particularly in its objective to make use of the geographic features of the site to create a dynamic focus and organisational hierarchy for the new installations. The new campus embraces an entire hill – whose summit becomes a natural park conserving an existing stand of pines – and extends to the opposite side of the River Mondego, where sports and recreational facilities will be built. The university buildings descend towards the valley like geological tiers, rendering the design in section the characteristic compositional tool for Byrne's project, with the possibility of locating entrances at different levels (56 and 65 metres).

The nature of the programme – two similar but autonomous schools – and its required density were translated into buildings forming a long base to the hill, bending to follow the topography and opening at its centre to create a grand urban stair. This stair becomes a kind of walled theatre facing the valley, a metaphor which is reiterated in the interior of the buildings in the framing of exterior views.

For Byrne's studio the project represents the first, and for this reason the most resolved in experimental terms, of an uninterrupted series of educational and university buildings sufficient to constitute a critical discourse on the type. Comparisons with the historic university colleges of

Cost
US$9.4 million (1,700 million Portuguese Escudos)
Unit cost
US$43.60 per square foot
US$470 per square metre

Facing page: General view from east of two schools. The nature of the programme and its required density were translated into buildings forming a long base to the hill following the topography and opening at its centre to create a grand urban stair
Below: Section through the same view

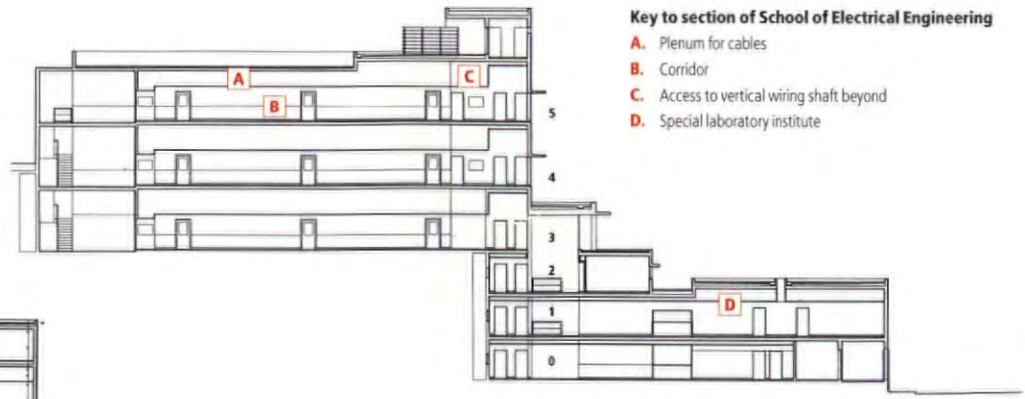


Coimbra's high campus are inevitable: in the metaphor of the building as an autonomous urban fabric which is nevertheless strongly related to the life of the city; in the idea of the university as a transitory micro-city; and in the suggestive landscape form of the acropolis, with its spatial typology of the podium and its combination of natural elements with dense urban fragments.

The horizontal base of the buildings forms an interior gallery housing administrative offices on the ground floor and two levels of professors' studies above. Beginning at the third floor, the level of general student circulation which is reached via the central stairs, three-storey "teaching" volumes containing classrooms and laboratories are arranged perpendicularly to this main distribution axis, each with a vertical circulation core that intersects the galleries. This parti is invariable in the two schools, adjusting only for the changing slope of the terrain, which reaches up to 40 percent on the western half of the site. The basic layout is complemented by two free-standing lecture halls in the main courtyards on the third level of each school, and in the School of Electrical Engineering by three special laboratory institutes that project from the base of the circulation gallery towards the valley.

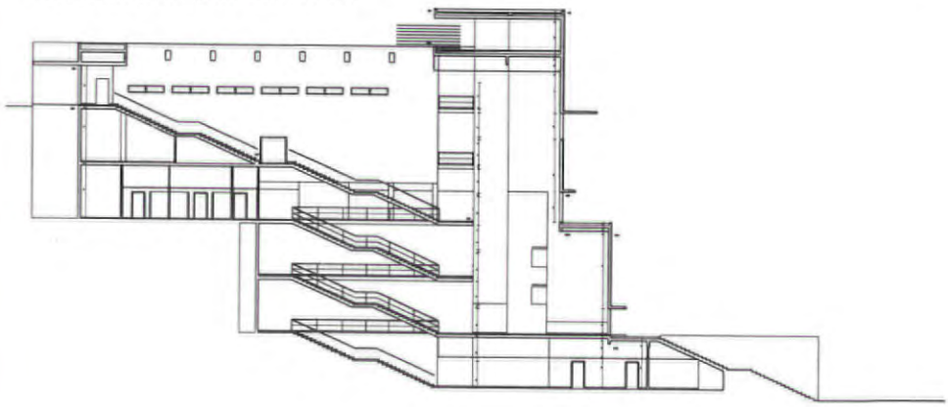
The efficient layout of building volumes and circulation results in generous public and social spaces, which represent, according to Byrne, the true heart of a scholastic building. The grand circulation gallery, which terminates in the faculty dining room designed by Byrne's close colleague Manuel Mateus, unites the two schools and resembles an urban street, while the courtyards between the teaching volumes become true hanging gardens, belvederes over the landscape.

The requirements for flexible and high-performance electrical power and communications were also well met by the plan. Accessible vertical shafts carry cables from the basement to each floor of the teaching volumes. A continuous open slot in the centre of the corridors' ceilings allows easy access to plenum trays for cables, which feed into accessible floor grids in the floors above. Professors' offices in the circulation gallery are also supplied from accessible ceiling ducts.



Key to section of School of Electrical Engineering
A. Plenum for cables
B. Corridor
C. Access to vertical wiring shaft beyond
D. Special laboratory institute

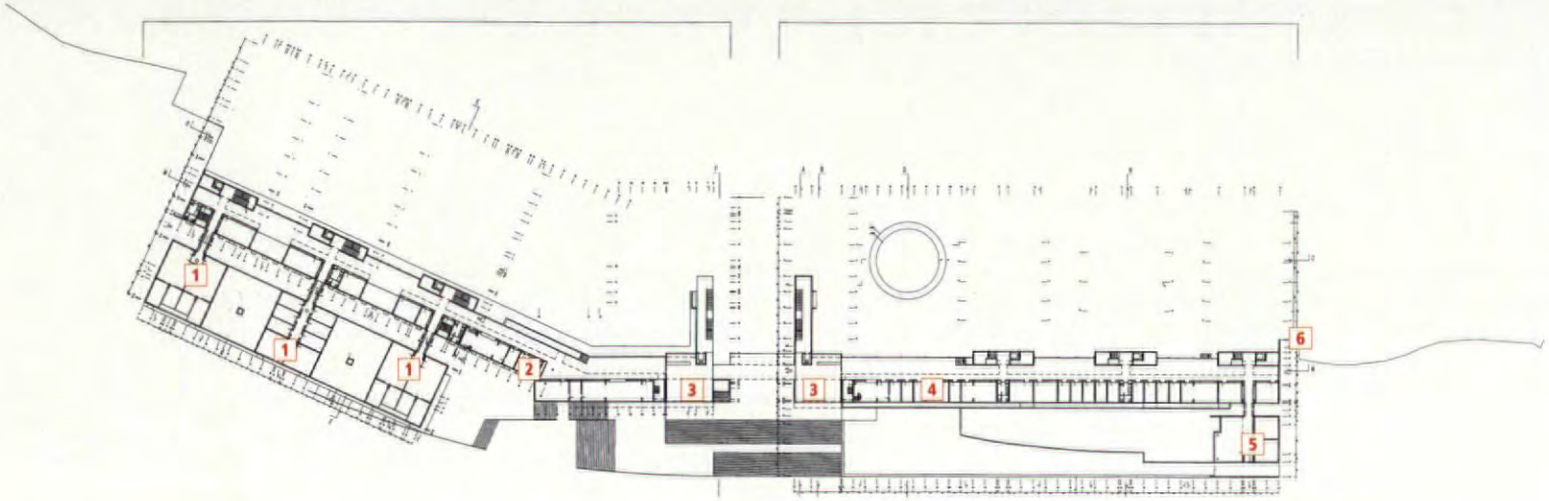
Section through Computer Science School



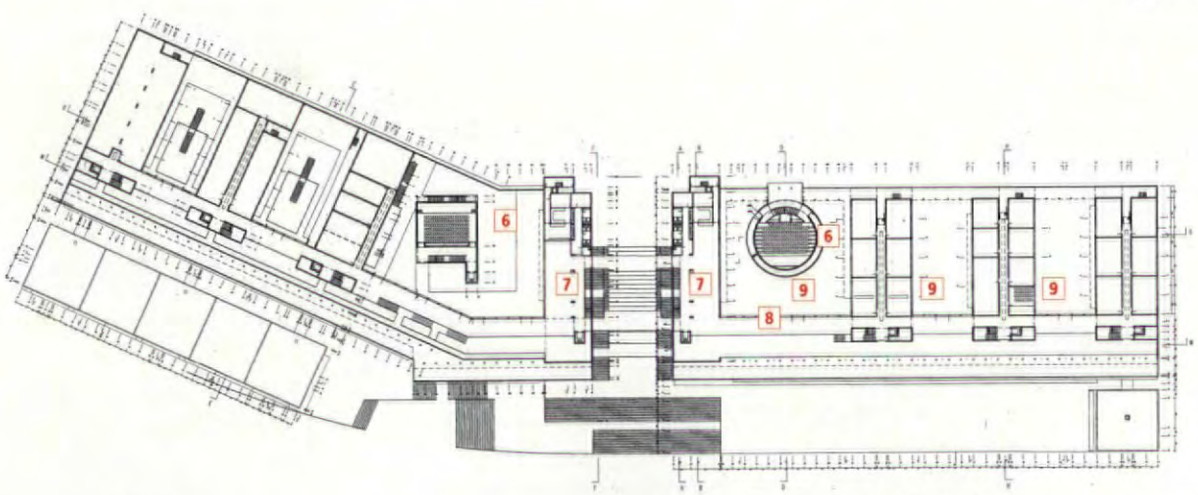
Key

1. Special laboratory institutes
2. Admin professor office
3. Entrance
4. Administration office (Faculty offices, same zone levels 1&2)
5. Faculty bar and lounge
6. Main lecture hall
7. Student cafeterias
8. Main circulation gallery
9. Courtyards
10. Teaching spaces – mainly labs for large equipment
11. Library
12. Rear upper entries
13. Roof
14. Pedestrian stair through site
15. Teaching spaces, classrooms etc

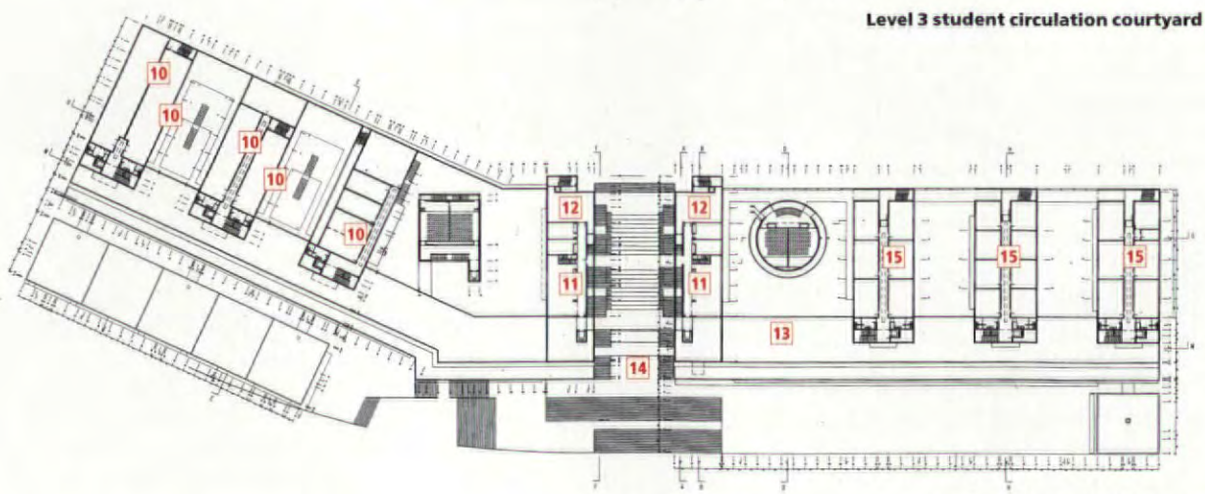
SCHOOL OF ELECTRICAL ENGINEERING **SCHOOL OF COMPUTER SCIENCE**



Entrance level



Level 3 student circulation courtyard level



Level 5 upper entry level from rear

Exterior view from east end of School of Computer Science showing its relation to the hillside. The buildings descend towards the valley floor geological tiers allowing for entrances at different levels

›The client

The generous public spaces did not translate into added costs, due to the reduction of interior finishes to a few standardised elements. Byrne comments that he preferred to accept cuts in the quality of finishes and fittings rather than sacrifice the quality of the spaces. "Finishes can be improved," he says, "spaces cannot." The poured-in-place reinforced concrete structure, including walls, is finished with interior plasterboard, with local stone for the floors of public spaces. The exterior, including roofs, is clad in what Byrne calls an "overcoat" system of exterior insulation, with a coat of acrylic stucco on the walls. Heating is via a budget-conscious two-pipe hot water system with fan coil units. Cooling is supplied only to the libraries and large lecture halls, although penthouse spaces are provided for future chillers. However, due to the efficient insulation, the thermal balance provided by the earth of the hillside, and good natural ventilation, the mechanical cooling and heating needs of the building are low. Byrne reports that the heating system has yet to be used.

These cost-saving measures permitted the construction of the building for US$9.4 million (1,700 million Portugese Escudos), comprising over 20,000 square metres of space. The unit area cost is lower than that of popular Portuguese residential construction, not withstanding the elaborate foundation work required for the sloping site. A massive retaining wall was built behind the large circulation galleries, whose reinforcing must be periodically checked and adjusted by the university's technical staff.

As a state institution funded by annual government budgets, the University of Coimbra allocates contracts for major capital improvements via competitive bidding. For architectural services, a competition system is used following European Union regulations. Architects are publicly invited to submit written qualifications and experience. From these, a shortlist is chosen and paid to ›

Partial view of the western end of the School of Electrical Engineering showing the special laboratory institutes in the foreground, backed by the circulation gallery and transverse teaching volumes

prepare competition designs. Byrne was selected both for his related experience in complex technical programmes (such as the Biochemical Technology Centre in Oeiras, 1988-93) as well as for what the jury recognised as the high quality of his design.

The construction management team

To qualify for time-based European Community grants, the construction schedule was very tight. For this reason, bidding for the construction contract was broken into two phases. For the School of Electrical Engineering, for example, the structural concrete was executed under one contract in just fourteen weeks, and the rest of the work in another six and a half months. Byrne credits the university's precise and efficient construction management team for the timeliness and low cost of the project, a complex problem for a country without a long tradition of building public works. This team, composed mainly of engineers and economists, formalised the initial programme, managed the competitions, and, acting on behalf of the university as client, assigned responsibilities to builders and designers, controlled times and costs, and provided financial management for the project. The technical contributions and expertise of the construction companies involved, among Portugal's largest, also contributed to the project's low cost and quality.

Appraisal

Gonçalo Byrne is one of Lisbon's leading architects, together with figures such as Manuel Tainha, João Carrilho da Graça

View from inside the main stair volume at level three, western end of the School of Computer Science. The volume housing the main stair becomes a kind of walled theatre facing the valley, a metaphor which is reiterated in the interior of the buildings in the framing of exterior views

Top: Stair to main entrances, leading towards the central stair through the site
Above: Circulation gallery from ground level of School of Computer Science

and the brothers Manuel and Francisco Mateus. His design for the two schools at Coimbra confirms the enormous influence that Porto architect Alvaro Siza has had on his contemporaries. The project has much in common, for example, with Siza's 1993 School of Architecture at Porto, in the proportions of the teaching volumes and their arrangement on a steep hillside, in the shapes and locations of windows and sun screens, in the white stucco finishes, and more. But whereas Siza's overall compositional method is idiosyncratic and intuitive, Byrne employs elements of the Sizian vocabulary to develop regular typological patterns. His work shows how Siza's personal style can be successfully generalised for large-scale projects, in the best tradition of the modern movement. WA

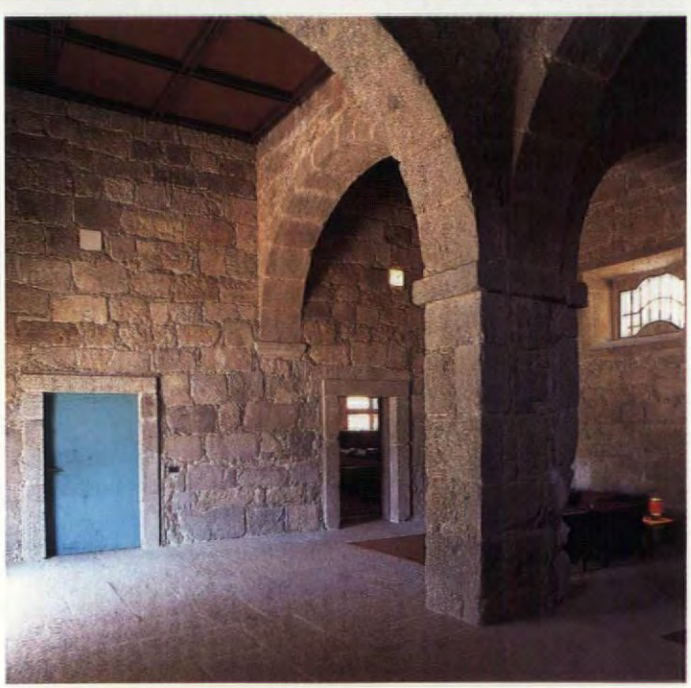
Client
University of Coimbra, Portugal
Collaborators
Architects José Barra, Vitor Pais, Francisco Pereira, Silvia Mauricio, Francisco Polvora, José Laranjeira, Paula Calado, Carlos Mourão, Teresa Teles, Patrícia Gruber
Structural engineers
Câncio Martins, José Carvalheira, Queiroz de Morais
Engineers, electrical installations
Joule, Caetano Gonçalves
Engineers, electrical distribution
Grade Ribeiro
Engineer, mechanical installation
Galvão Teles
Contractors
First phase: Teixeira Duarte SA
Second phase: Soares da Costa SA

Architect
Eduardo Souto de Moura
Reviewed by
David Cohn

Different voices

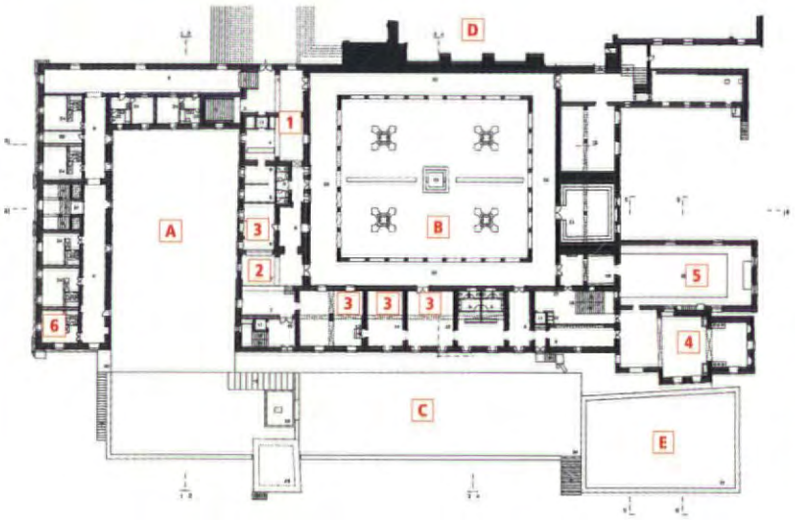
Pousada of Santa María of Bouro, Portugal

All photographs Luis Ferriera Alves



The dazzling architectural patrimony of the Iberian peninsula and its vital tourist industry come together in the Pousadas of Portugal and Paradors of Spain, state-owned five star hotels that are generally installed in rehabilitated monasteries and palaces. The Pousada of Santa María of Bouro, the latest addition to Portugal's chain, is typical in its attractions: an imposing eighteenth-century Cistercian convent with a handful of rooms (35), abundant but intimate public facilities, an ambitious kitchen and ample grounds, beautifully sited in the pristine rural village of Amares beside the Cavado River, 10 kilometres north-east of the old religious centre of Braga.

Architect Eduardo Souto de Moura, a disciple of Alvaro Siza and leading member of the so-called School of Porto, found the convent in ruins beside its intact church. Established in the twelfth century, it had been abandoned since 1834, when



Facing page above: Oval swimming pool, south grounds. First floor terrace on roof of new service wing. Former kitchen chimney, right (brick tower), is roofed with skylights and incorporated into main dining room. **Below:** First floor interior, between cloister and south terrace. Original beams and floors over vaulting replaced with steel decking

This page top left: Patio of orange trees; entry arch at back

Top left: Consolidated ruins of cloister. Ruined vaulting has not been replaced

Key to first floor plan

1. Reception
2. Bar
3. Lounge areas
4. Restaurant
5. Banquet room
6. Typical guest room

A. Patio of orange trees (entry)
B. Cloister
C. Terrace
D. Existing church (not part of scheme)
E. Reflecting pool

church properties were auctioned by the state. An expert in traditional stonework, Souto de Moura rebuilt the convent's collapsing walls, re-using stone found on the site to match surviving sections, and distinguishing new work mainly through the use of horizontal window openings. Lost wood beams and joists were replaced by steel decking, exposed on interior ceilings, which provides better lateral reinforcement for the walls. The missing pitched roofs were replaced with flat roofs seeded with ground cover, maintaining a sense of ruined incompleteness to the facades, an effect bolstered by the sheer steel-framed glazing.

The hotel is organised around two courtyards: a U-shaped entry court planted with orange trees, and the ruined cloister, rebuilt as a free-standing cube of walls. A new service wing was built against the lower flanks of the southern facade, its roof acting as a terrace to the public spaces off the cloister. The main dining room is located in the former kitchens and under the pyramidal brick chimney of their ovens, which forms a monumental closure to the main facade.

Souto de Moura justifies his free adaptation of the ruins as follows: "This project is a new building in which various voices can be heard. The ruins are more important than the convent in its original form; it is they that are open and manipulable, just as the building was throughout its history." WA

Client
ENATUR (Portuguese National Tourism Corporation)
Project architect
Humberto Vieira
Structural, electrical engineers
G.O.P.
Mechanical engineers
Gestão Energia Térmica (Thermal Energy Management)
Contractors
Soares da Costa

Architect
Manuel de las Casas
Reviewed by
David Cohn

Building as landscape

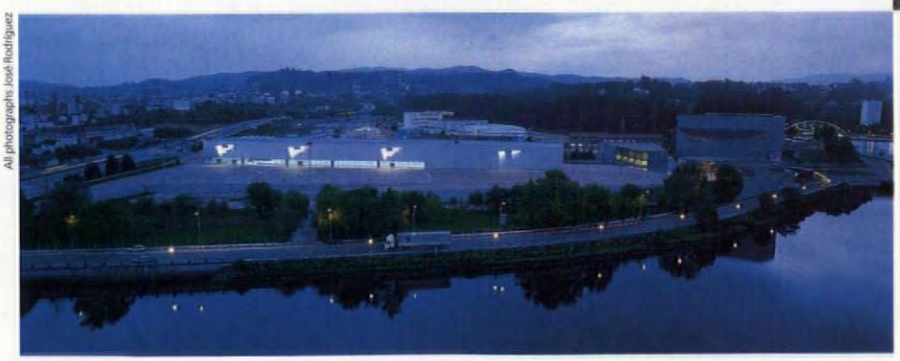
Lérez Cultural Complex, Pontevedra, Spain

Like many Spanish architects, Madrid-based Manuel de las Casas wins most of his commissions in competitions for public works, such as this cultural and business complex in the Galician city of Pontevedra, in north-western Spain. Completed in 1997, the Lérez complex combines facilities for conventions and cultural acts, with an auditorium/concert hall, exhibition galleries, meeting rooms, a 7,500-square-metre exhibition hall, restaurant and support facilities.

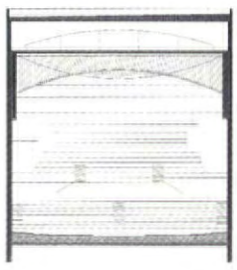
De las Casas' design responds to the challenges the complex presents to traditional urban values, in terms of its relatively large scale, the complexity and insularity of its programme, and its suburban setting. The centre is conceived not as a single building, nor simply as a group of buildings. Rather, it is designed to the scale of the landscape, of its setting in a tree-filled park along the curving bank of the Lérez River. It is integrated into the horizontal lines of the river like a major infrastructure such as a highway or a bridge, but with the full repertoire of architectural tools applied to the problem.

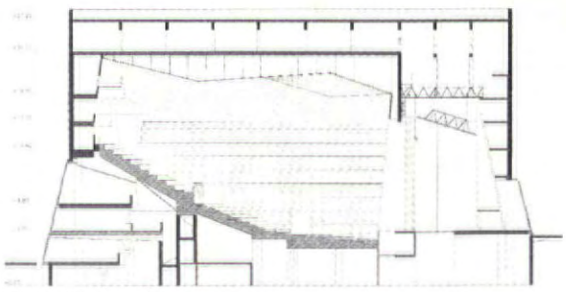
Much of the built volume, comprising windowless programme and service areas, is merged into the site in the form of terraces along the riverbank, a series of accessible platforms at different levels, faced in large granite blocks and connected by ramps and stairs, which recall the stone piers of Galicia's fishing ports and the raised plazas of its oldest settlements. The centre's main points of attraction rise from this podium as singular formal events, most notably the monumental cylinder of the main auditorium and the long prisms of the Exhibition Pavilion and Congress Centre, as well as the glass cube entrance to the exhibition galleries located under these terraces.

In place of the usual closed box, de las Casas has scattered and merged the building into the park, transforming the sealed spaces of such facilities into elements of an architectural promenade. The terraces, ramps and stairs are arranged like ›



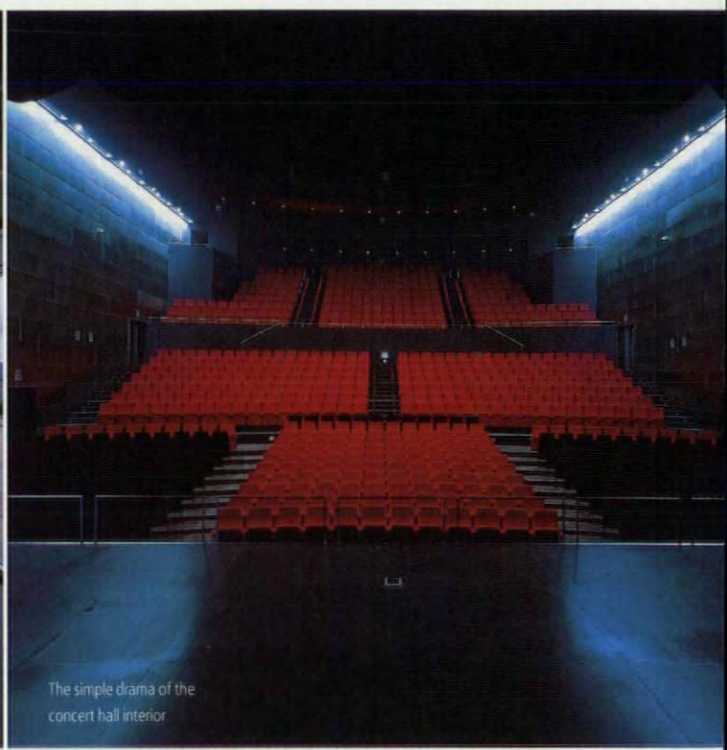
All photographs José Rodríguez



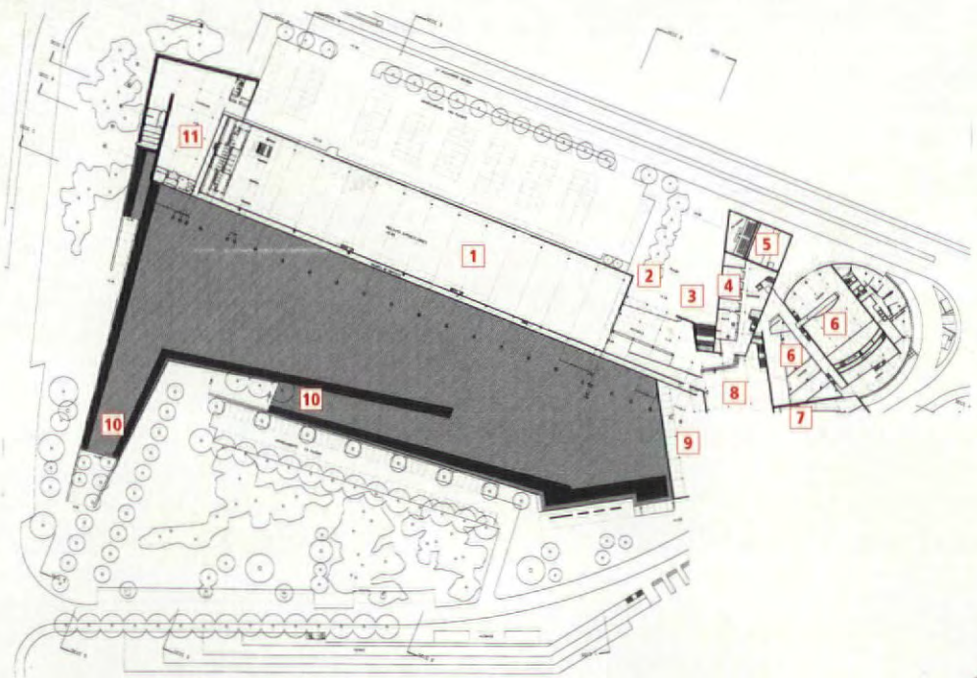


Facing page: The centre is conceived neither as a single building, nor a group of buildings, but rather as a complex designed to the scale of the landscape and its setting. Aerial view from the south at dusk
Above: Dramatic linear reflections in the lobby of the concert hall
Far left: Transverse section
Left: Longitudinal section

Interior, trade fair hall, from south mezzanine balcony looking east. The largest platforms can be used for outdoor fairs and other events

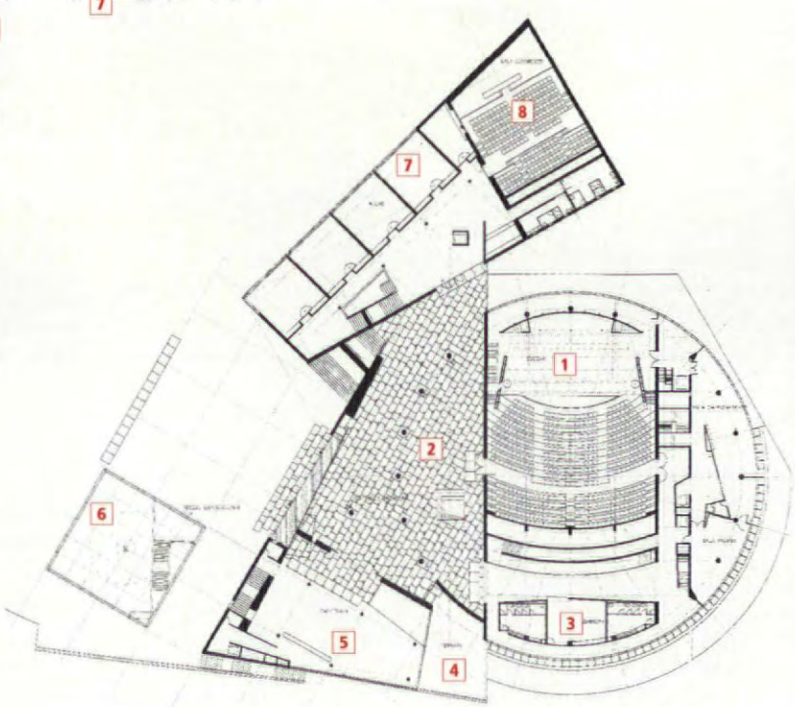


The simple drama of the concert hall interior



Key to entrance level

1. Trade fair hall
2. Entry to trade fair
3. Stairs up to terrace, concert hall entry
4. Seminar rooms
5. Conference centre auditorium lower level
6. Storage
7. Restaurant
8. Exhibition gallery
9. Ramp up and over exhibition gallery to entry level concert hall
10. Ramp up to platform
11. Service area, trade fair hall



Key to concert hall level

1. Concert hall
2. Lobby
3. Courtroom
4. Terrace
5. Cafeteria
6. Entry cube to exhibition galleries below
7. Seminar/meeting room (typical example)
8. Main auditorium, conference centre

Large solid planes are cut by a few long-span openings. Seen here, the view from exhibition gallery to glass entry cube

›directional vectors, leading visitors towards the principal landmarks of the project. The largest platforms, with their privileged views of the river, the city, and the distant mountains to the east, can also be used for outdoor fairs and other events.

In keeping with this landscape-scaled formal strategy, de las Casas employs simple, broad gestures to articulate the volumes, a language of large solid planes cut by a few long- span openings, with structural elements simply and clearly expressed. In its restraint, this formal language allows the subtle voices of the different materials used to be heard: the granites of walls and walks; the green Bernardos slate of the auditorium cylinder with its copper roof; the sky-reflecting stainless steel of the fair pavilion, with panels which can be removed and substituted for special displays, customised for different events; and the glass cube of the galleries, which becomes a glowing beacon at night. WA

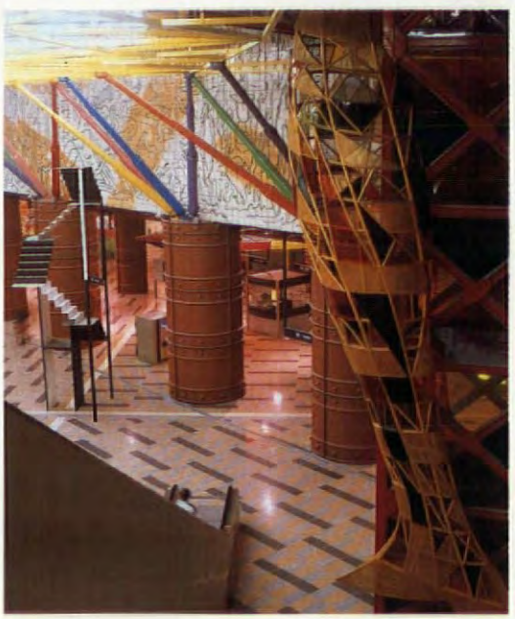
Clients
Junta of Galicia (regional government); City of Pontevedra
Plastic studies
Felicidad Rodriguez
Structural engineer
Antonio de las Casas
Mechanical engineers
GEASYT
Control
HOC
Contractors
Huarte (First Phase)
NECSA (Entrecanals & Cubiertas) (Second Phase)

Architect
Tomás Taveira
Reviewed by
David Cohn

Candy-coloured cathedral

Olaias Metro Station, Lisbon, Portugal

All photographs Ana Carvalho



Far left:
View of main reception hall

Above:
Main hall showing the suspended metal ceiling with its 60 x 32 metre chandelier

Left:
View of train platform

Below left:
Detail of the fish sculpture by the architect

Tomás Taveira attracted international attention in the 1980s with projects such as the Amoreiras Centre in Lisbon, a development of pink and blue reflective glass towers in a fanciful post-modern mode. He currently works in a colourful polymorphous vein, composing collages of curving pop volumes clad in brilliantly contrasting colours of ceramic tile. His designs recall the work of Frank Gehry or Arquitectonica, but also continue the Portuguese tradition of exuberant tilework and uninhibited, outlandish eclecticism.

Taveira calls his personal idiom a "free style," which he opposes to the "minimalist rationalism" of Alvaro Siza and the School of Porto. His work is popular with clients and the public, and has inspired a school of its own, visible for example in the commercial developments of the Expo Urbe, where he was responsible for the southern sector masterplan.

Taveira likens the Olaias Metro Station to an underground cathedral: it is a profusely ornamented and art-filled "nave" over 120 metres long and 12 metres high, and built at a cost of US$46 million. The station is part of the new line connecting the business centre of Lisbon to the Expo grounds, and includes a future link to Lisbon's regional train system. It serves a residential area designed by Taveira for a private developer over the past 20 years.

The station illustrates Taveira's interest in decorated surfaces, from the porcelain ceramic floors to the tile walls of the vestibule, the metal screen balustrades of the stairs, the de-Stijl inspired prefab concrete panels on the platform walls, the fat metal-banded columns topped by spiky punk angled struts in pink, blue, red, green, yellow and purple; and the custom-designed suspended metal ceiling with its 60 x 32 metre wing-shaped chandelier of coloured glass. WA

Client
Metropolitano of Lisbon
Principal in charge
Eliseu Almeida
Structural engineers
Concrete: GRID (Luis Pedrosa)
Metalwork: Eduardo Alves
Lighting
Carlos Lima
Contractor
Metrolis
Sub-contractor, metallic structures
Metalrruda
Artwork
Graça Perreira Coutinho, Wall frieze
Pedro Cabrita Reis, "Staircase" sculpture
Rui Sanches, Untitled sculpture
Pedro Calapez, Wall frieze
Tomás Taveira, "Fish" elevator enclosure
Ricardo Taveira, Ceramic tile design

Architect
Pei Cobb Freed
Reviewed by
David Cohn

Well-timed port entry

World Trade Centre, Barcelona, Spain

Photographs courtesy World Trade Centre, Barcelona and Pei Cobb Freed

This 130,000-square-metre development, spectacularly situated at the end of a pier in Barcelona's harbour, is the largest commercial project currently underway in Spain, and one of the few timed to meet the rising local demand for prime office space (the original plans date to 1988, but construction was postponed during the post-Olympic recession).

To be inaugurated this April, it includes 42,000 square metres of offices in three nine-storey blocks, organised around a central courtyard and rising from a base containing a conference centre with a large auditorium and 10,000 square metres of retail space. A 235-room hotel will open in 2000 on the fourth side of the courtyard facing the city. Two ferry and cruise ship terminals designed by local architect Rafael Cáceres occupy the long sides of the pier, which has been transformed into an urban promenade that extends 500 metres from a large circular entrance plaza. The reported budget for the project is US$155 million.

The four buildings around the central courtyard are modelled as quadrants of an inverted and truncated cone, and are clad in precast architectural concrete. The concrete panels have an unusual two-tone polished finish, with buff "spandrels" and white "lintels" – an effect achieved by supporting differently coloured concrete mixes on a common concrete backup. Architect José Bruguera of Pei Cobb Freed (PCF) reports that the complexity of the panels did not result in excessive costs and that the local fabrication was of a high quality.

Pei Cobb Freed has not maintained a project office on the site. Construction documents and details were realised in New York, following the firm's customary practice for all jobs, whether in Boston or Hong Kong. Local architects hired by the developer acted as consultants to PCF and facilitators with local authorities, guiding the firm through local codes, approvals processes and other local requirements. Project architect John Sullivan of PCF explains that the firm sees this through-project control from New York as an essential element of quality control and client service.

Projects of this size are scarce on the Iberian peninsula, and similar opportunities for large international firms are rare. The commission was secured in part due to the direct intervention of retired partner I M Pei with regional and port authorities. The project caps the reconversion of Barcelona's historic port from industrial to recreational and commercial uses, following the Mare Magnum shopping and entertainment centre by local architects Viaplana and Piñon, completed in 1995 on an adjacent pier, and a new recreational marina, dockside parks and promenades. WA

Above:
General view from south-west

Below left:
View from Jaume I Tower into central courtyard. A hotel will open in 2000 on the fourth side of the courtyard facing the city

Bottom left:
View from west. Tower to left ("Jaume I Tower") supports a cable car line from port to mountain peak of Montjuic overlooking harbour; and dates to 1920s

Client
Autonomous Port Authority of Barcelona and International Trade Centre of Barcelona
Design architects, cruise ship terminal
Rafael de Cáceres Zurita, architect, in collaboration with Pei Cobb Freed
Structural engineers of record
MC-2 Studio, Engineers
IOC Civil Engineers
Mechanical engineers of record
JG & Associates, SA Consulting Engineers
IMOGEP SA Engineering Services
Local architects
Ricardo Pérdigo Nárdiz, architect
Tomás Rodriguez i Coll, architect
Technical architect
Santiago Loperena
Contractor
UTE Trade Centre (FCC & Dragados)

In defence of architecture: Álvaro Siza

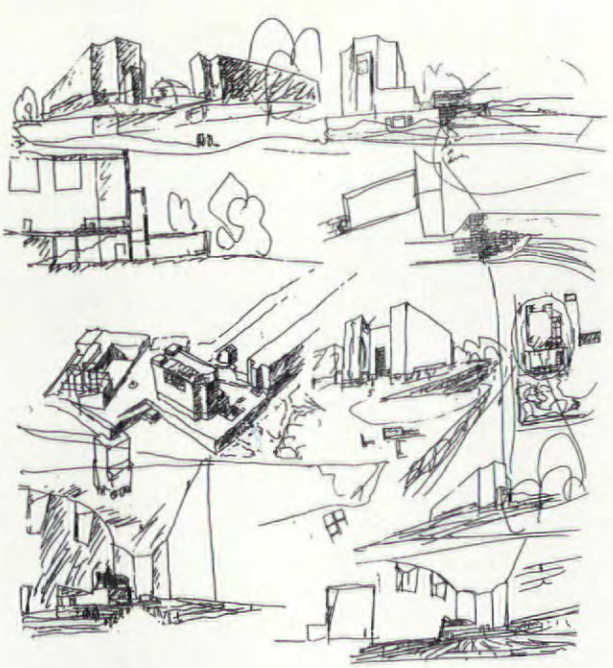
Álvaro Siza is much more than an architect to the people of his native Portugal. Since rebuilding the Chiado, Lisbon's historic literary neighbourhood, and designing the Portugese National Pavilion for the 1998 Lisbon World Expo, Siza has achieved fame far beyond architectural circles. David Cohn speaks to him in his office in Porto, and profiles projects from the Expo Pavilion and award-winning Santa María Parish Church in Marco de Canavezes, to hitherto unpublished works including the Serralves Museum in Porto (scheduled to open in June 1999), and the new wing of the Stedelijk Museum in Amsterdam, the Netherlands. Photographs by Duccio Malagamba.

The dramatic skylight cone of the Revigres Showroom in Agueda, floodlit to attract passing motorists

Álvaro Siza, 65, Portugal's best known architect and 1992 winner of the Pritzker Prize, has also become something of a national symbol in his native land. When a devastating fire destroyed several irreplaceable blocks of the Chiado, Lisbon's historic literary neighbourhood in 1988, it was Siza who was called on to oversee their painstaking reconstruction. The state turned to Siza again in 1998 to design the Portuguese National Pavilion for Lisbon's World Exposition, a building that is currently being refitted to house the Presidency and Council of Ministers. Siza's highly original and personal approach to modernism, in which apparent idiosyncrasies prove to be the flawlessly logical products of a unique and finely-tuned sensibility, has thus gained an official and representative status, an irony that Siza himself is the first to recognise.

Siza continues to practice in his native Porto, Portugal's second-largest city. We met one evening in the offices he has occupied for over 40 years in the Roa de la Alegria. He spoke carefully in a deep sonorous voice, his clear English infused with the sad musical accent of Portugal, and animated by a wry sense of humour, firm convictions and great personal warmth.

Half-filled boxes were scattered around the office for an upcoming move to a new building overlooking the Douro River, designed by Siza and already occupied by some of his oldest friends and colleagues. The new building will bring together three generations of the "School of Porto", the main pole of reference in contemporary Portuguese architecture, including Siza's teacher, Fernando Távora, and his most well-known student and former assistant, Eduardo Souto de Moura (see review of the Pousada of Santa Maria of Bouro in the regional focus).



Siza's sketches for the Santa Maria Church in Marco de Canavezes

Though his practice has grown considerably and there are many demands on his time, Siza maintains direct design control over all the projects that come out of his office. "I have 25 people working, which is already a lot, and it's hard to control the work. Someone in the office is responsible for each project, and then a number of collaborators help the different directors of projects. But of course I control all of them. The last word is mine."

Siza's staff is international, from Portugal, Spain, the United States and Italy. Most stay for two or three years, a few for ten or more, before moving on or opening their own offices. "When people have really matured they usually leave," Siza notes. "But on the other hand, there is a lot of enthusiasm in the office. People are really happy working here."

Siza is increasingly selective in the work he agrees to do, though he confesses, "it's hard to say no". He tries to avoid juries, conferences and competitions, but he enjoys having one or two private residential designs on hand. "Financially they are a disaster for the office. But I like to do them, because we can experiment."

"In Holland it's already almost normal that the architect makes the drawings and then construction is completely in the hands of the promoter and the builder. This is terrible for architecture."

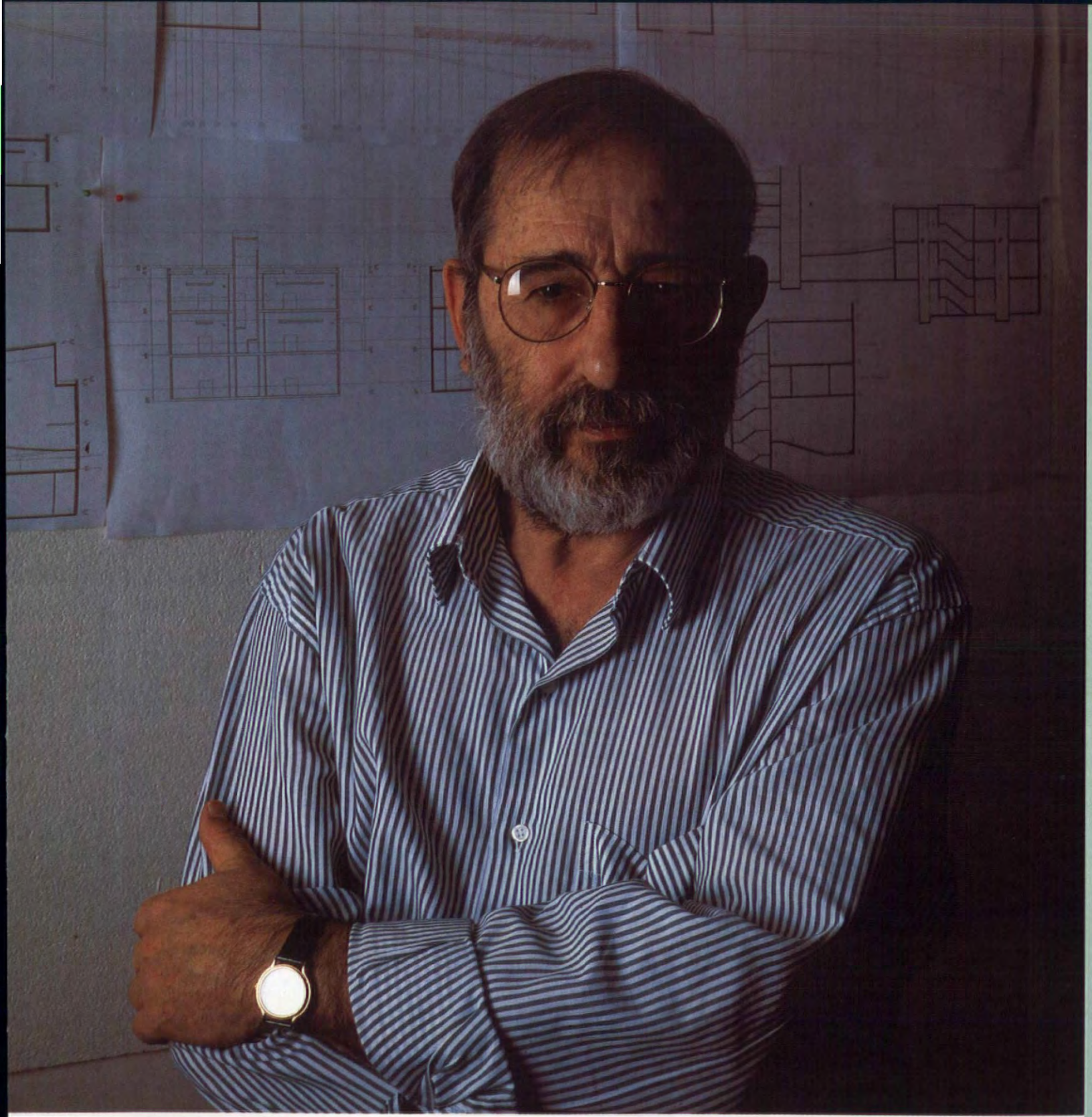
The problems of fame and a growing practice are overshadowed for Siza by what he sees as the deterioration of the conditions under which the architect works, both in Portugal and in Europe as a whole.

"In Portugal there are changes, some positive, some problematic for the profession. Regulations are appearing as in the rest of Europe, so we have constraints that we didn't have years ago. There is more preoccupation with climate control and comfort, more control of the work and of responsibilities. Handcraft work is in decline, and industrial work, prefabricated elements, are beginning to appear, but not without problems. You can buy everything from Germany, Holland, Spain, and so on, but the information and knowledge on how to use these products is not as good here as elsewhere in Europe. So we are in a period of transformation, which is difficult."

In Europe as a whole he regrets the "loss of the architect's total responsibility in the building process. In Holland [where he is working on a public housing project] it's already almost normal that the architect makes the drawings and then construction is completely in the hands of the promoter and the builder. This is terrible for architecture."

He continues: "This is beginning to happen in Portugal as well. And as always, in the worst way. I have had many problems with construction management teams. They are mostly incompetent. And arrogant. And they are backed by the owners. They tend to see the architect as someone who makes the drawings and then makes problems during the work.

"So most buildings in Portugal are badly-built today. The control exists in theory, and so escapes from the hands of the architect. It goes to the specialists. But in fact the control doesn't exist."



Hisao Suzuki

Siza affirms that these changes have hurt the development of his most recent designs. "The process of making architecture is not finished in the drawings. Even if you make models, as we do, at different scales and so on. When you have the experience of the work going up, you find other things ... But today it is very normal that the builder and owner will say, 'No, you can change nothing'. For the quality of architecture this is a disaster."

Siza's design process begins with careful site visits and his frequently-published free-hand sketches. In 1978 he wrote: "I have always taken care to look at the site and do a drawing before calculating the square metres of construction area. The process of designing comes from the initial confrontation of these two gestures. As a working tool, the rapid sketch helps establish a dialectical relation between intuition and precise examination, in a progressive process of full understanding and visualisation. In this progressive visualisation, that all important *almost nothing* beyond what is already there, gradually takes shape." (See Siza, Álvaro, *Architecture Writings*, Skira, Milan, 1997, page 23 - 25).

Other scattered notes taken from Siza's experience as a teacher offer clues to his creative process. He has said, for example: "Architecture requires the perfection of the detail until the detail dissolves." And speaking in more abstract terms: "Architecture does not allow or accept the unexpected, the immediately and directly transposed idea. Architecture is a revelation of the hazily latent collective desire. This cannot be taught, but it is possible to learn to desire it." (*Architecture Writings*, page 30).

The canopy and the box:

PORTUGUESE PAVILION, EXPO 98, LISBON

In the original masterplan for the Expo, the Portuguese Pavilion was to be located on a flat, anonymous site across the street from its present location and on axis with the Oceanarium. "I didn't know how to make a building there," Siza recalled. "So I asked to bring the building to the edge of the water, in a corner, rising directly from the supporting wall of the dock and on an axis of 45 degrees with the Oceanarium. And I told them: 'Like this I know what to do.' The building had a base, it was connected to the ground."

He modelled the volumes to contrast with the surrounding buildings, which "tended to be high. If I wanted to detach this building, I had to make it low, and reflect in the water. So it will be high in the other direction, towards the base, and not the sky". The suspended concrete canopy that covers the large ceremonial plaza adjacent to the pavilion was also an intuitive response to this insight: "The idea for the curving of the slab comes I think from this attraction to the earth and not the sky."

Siza struggled with the binary nature of the programme. "The problem was to put together two very different spaces. One, the ceremonial plaza, had to be very special because it's a large free-span covered space [see above right]. And the other, the exhibition hall, [top] had to be, I almost could say, banal, because I didn't know the use of the building after the Expo. They told me that it could be a museum, but it could also be offices.

"So what should I do? And then I thought, I must accept the contrast, and make a whole using precisely the contrast. Something very special, and something very banal. The canopy alone means nothing, but the building alone also means nothing. Few people understood this. I heard comments such as: 'It's a fantastic work of engineering with a horrible building attached'." Siza chuckled at the recollection.

He worked with structural engineer Cecil Balmond of Ove Arup and Partners to develop the innovative concrete canopy over the plaza, which is 20 centimetres thick and spans 65 metres. "Cecil is an architect. He speaks with a pencil in his hand like an architect, making sketches, and he is very imaginative. I was studying how to cover this big space. I realised it should not have central pillars. I was experimenting with different forms and discussing them with him. Once I tried this catenary form and told him: 'This can be simple, this can be possible.' He said: 'We can make it in plastic or canvas.' I replied: 'No, I want it solid, concrete if possible.' He was very enthusiastic. He made some quick calculations and told me, 'Okay, let's go ahead with this'."

The two also worked together on exposing the reinforcing cables where the canopy meets its supporting pylons, allowing light to steal across under its surface, "making it so light it is almost flying".

The violence of southern light:

RECTORATE, UNIVERSITY OF ALICANTE, ALICANTE, SPAIN, 1998

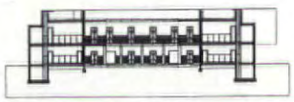
"When I worked in Alicante I could not ignore the Islamic architecture of Granada and Córdoba, its idea of the interior patio, of small windows, transition spaces and galleries, all in response to the violence of the light and temperature."

The new university campus is situated on a former military airfield in suburban Alicante, on Spain's south-eastern coast. Siza requested that an existing modernist control tower at the south-west end of the site and an adjacent aircraft hangar be preserved. He removed the roof of the hangar, exposing its structure, and transformed the space into a planted garden.

The Rectorate contains the university's administrative offices, which are arranged along deep, shaded galleries around a long central patio [see below], together with a semi-circular hall and other social spaces located around a smaller patio at its north-east end. The building is virtually closed to the exterior, with white windowless stucco walls over a low stone base.

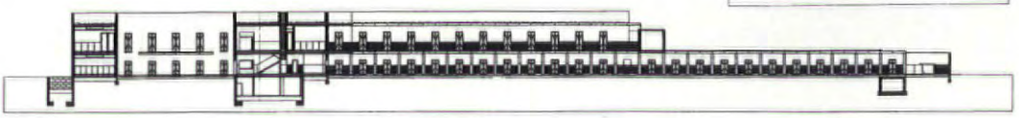
It is accessed at the south-west end of the central patio via a tangential gateway. The two long arms on either side of the patio step down from two storeys to one as they approach the entry, yielding airspace to the nearby control tower. At the point of this transition, a white stucco tube bridges the patio at the second storey, giving the space a sense of suspended closure without breaking the spatial flow, in a curious inversion of British critic Colin Rowe's classic modernist principle of "phenomenal transparency".

Siza regrets that the building was constructed in only five months, strictly following the original plans, and with little room for changes on site. "In theory the plan was good, and they built everything very well, including the gardens, and on time. But the architecture..." His voice trailed off in disappointment.

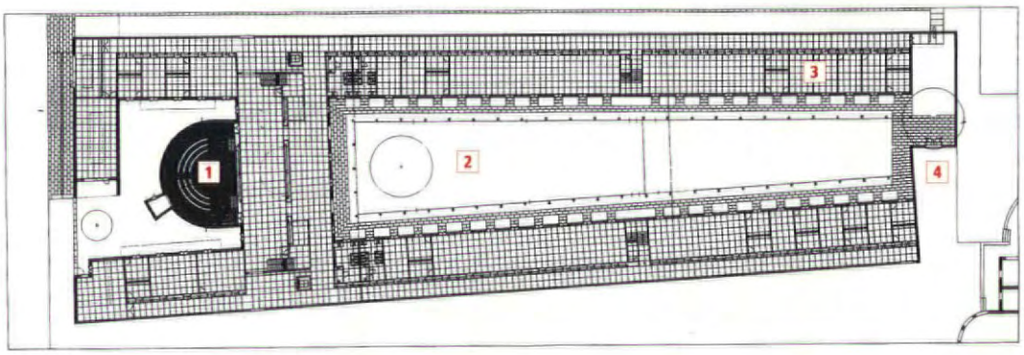


Section through patio from south-west

Section through single storey area



Section through patio

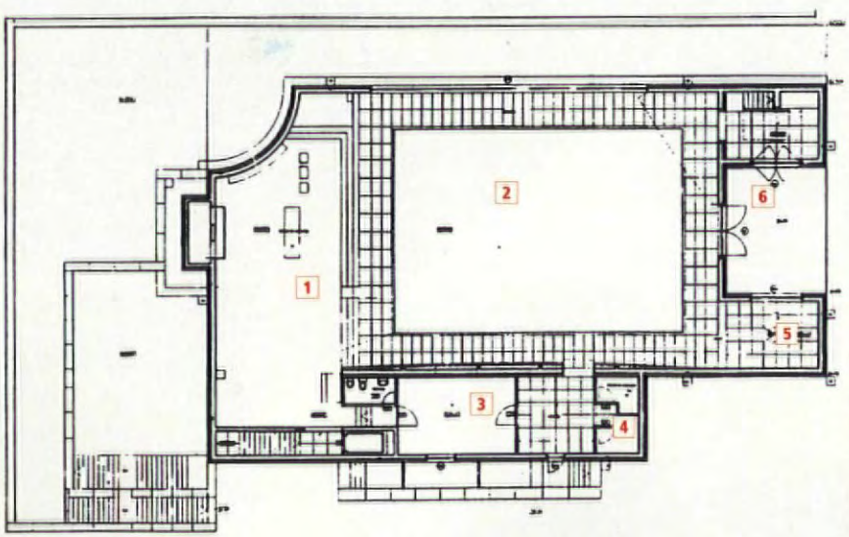


Key to ground floor

1. Hall
2. Central patio
3. Admin offices
4. Entry

Key to ground floor

1. Altar
2. Nave
3. Sacristry
4. Confessionals
5. Bapistry
6. Entry



The new liturgy:

SANTA MARÍA PARISH CHURCH, MARCO DE CANAVEZES, 1996

A team of theologians appointed by the Bishop of Porto worked with Siza to develop a parish church suited to the rituals of the modern Catholic mass. "We had a lot of conversations about the new liturgy," Siza explains. "The priests themselves have many doubts about how to design churches for it. After the Second Vatican Council, the tendency was to make churches like auditoriums. But then the atmosphere of the space loses mystery and concentration. And when the priest turns to face the assembly during the rites of the sacrament instead of facing the altarpiece, the whole space of the apse loses its justification. We had many discussions about the choreography of movement around the altar, of how to arrange the different elements. As a functional problem, it is very rich."

The stark prismatic parish church serves the needs of a growing population in an industrial town on the outskirts of Porto, and beat Gehry's Guggenheim Museum in Bilbao to win the regional IberFAD (Foment of the Decorative Arts Society) award in 1998. Together with the former chapel and a future new parish house, it is set around a raised granite plaza, following the tradition of northern Portugal. The ten-metre-high central ceremonial door is flanked by two tower-like projections [top], one containing the baptistry and the other a more worldly entrance, with the organ in an upper loft and a rack of bells at its top. The simple nave [above] with its shallow apse is bathed in natural light from various directions, including an upper clerestory in a thick bowed wall on one side, and a low horizontal slot on the other, positioned so as to afford views over the town.

All in the family:

ARCHITECTS' STUDIO BUILDING, FOZ DO DOURO, PORTO, 1998

Siza worked together with Távora, Eduardo Souto de Moura and other colleagues to design and build this multi-storey building in Foz do Douro, Porto, for their different studios. His position as undisputed leader of the group did not save him from friendly horseplay.

"Of course, we are all old friends – some older, some younger. Everyone had his own opinion. 'I want the windows turned to the sea,' one would say about his floor, and another would reply: 'No, no, I don't want the sea, I want the river view'. And then a third would chime in: 'I don't want any windows'.

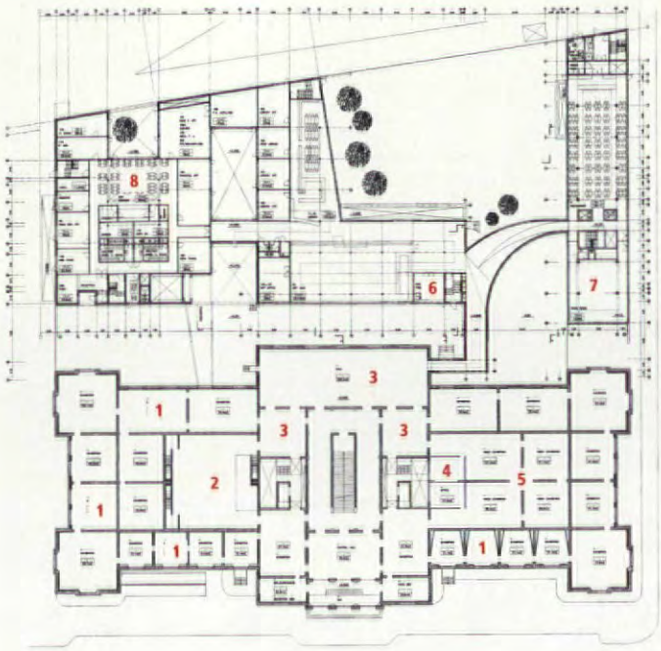
I think they were amusing themselves, so I had to amuse myself too. 'You put the windows where you want,' I told them, 'and then I will try to put the pieces together'. And that is more or less how we did it."

Key to entrance level

1. Exhibition space
2. Auditorium
3. Hall
4. Office
5. Video exhibition
6. Friends room
7. Show room
8. Canteen

Key to level 2

1. Exhibition space
2. Hallway
3. Study room
4. Office



Entrance level

Level 2

Through the looking glass:

STEDELIJK MUSEUM, AMSTERDAM (project)

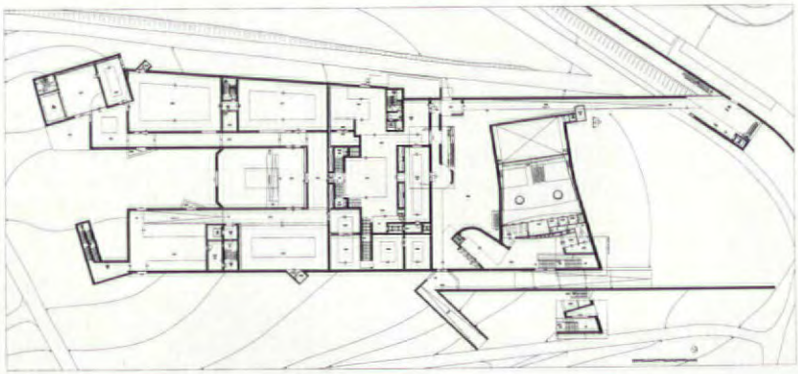
Rudi Fuchs, Director of the Stedelijk Museum, was an advisor to the Serralves Museum, and a staunch defender of Siza in the battles to defend his design against the protests of ecologists and the changing whims of changing ministers. Soon after, Fuchs invited Siza to build a new wing to his Amsterdam museum, a project that is now in design development. Siza proposes that previous additions to the back of the building, dating from the 1950s and 60s, be removed, exposing the original rear facade. The new wing is separated from this facade by a shallow patio, and connected via two galleries that pass through former windows of the existing building, in a typically Sizian combination of stunning originality and restraint. On the other side of the new addition, a larger patio overlooks an adjacent park.

The pavilion in the fruit garden:

SERRALVES MUSEUM, PORTO

(scheduled to open in June 1998)

This state-sponsored foundation dedicated to contemporary art is Siza's second museum, following his facility in Santiago de Compostela, Spain, inaugurated in 1994. The 4,000-square-metre pavilion of granite, concrete and glass is rising in the park of a 1930s Art Deco mansion, beside a grove of fruit trees near its formal gardens. The rooms, featuring a variety of proportions and penetrated in a variety of ways by natural light, are arranged around a U-shaped gallery. Siza's design is inspired in "the atmosphere of the garden and the presence of the trees, which are really very beautiful."



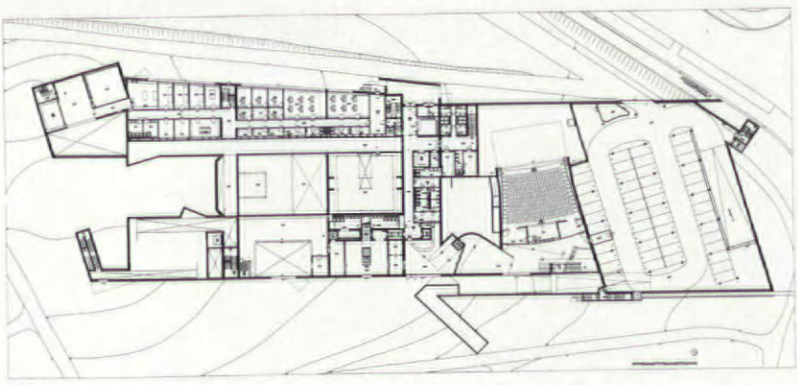
Third floor

Key to Second Floor

1. Office space
2. Library
3. Auditorium bar
4. Auditorium atrium
5. Changing rooms
6. Auditorium
7. Audience staircase

Key to third floor

1. Main exhibition spaces
2. Balcony
3. Storage
4. Cloakroom
5. Bookshop
6. Ticket office
7. Translators' booths



Second floor

Commercial beacon:

REVIGRES SHOWROOM, AGUEDA, PORTUGAL, 1996

Siza's first essay in roadside architecture, this showroom for a ceramics factory is designed to attract the attention of passing cars [left]. The large skylight-topped cone lights a central lobby [above] for the office wing, while the clerestory-lit volume parallel to the road contains ceramics displays. Behind, an elevated, enclosed walkway links the building to the adjacent factory.

Sector Analysis – Prisons

Architects behind bars

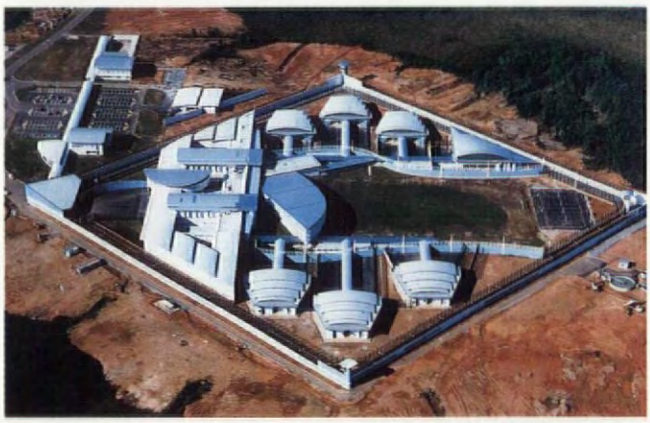
The "Stone Guards" at Martin van Dort's De IJssel Penitentiary at Krimpen aan de IJssel, Holland

All over the world, architects are breaking into prisons. As new engineering design and technology becomes available, architects are regaining their authority in the project design process by incorporating innovations and delivering a value-added synergy. Peter Krasnow discovers that unlike other prison revolts, and to the delight of owners and operators throughout the world, this architectural uprising has yielded programme improvements and significant cost benefits.

Exercise space at the Guyane Penitentiary, France, by Guy Autran

Right: Living space radiates from the communal areas at Guy Autran's Guyane Penitentiary

Far right and facing page: The use of pre-cast concrete cells is a fairly recent innovation, but can cut the critical mass required in a facility to a lower number of cells



No sooner does a prison open, than one group deems it a "country club", while another crowd rails against that same facility's Dickensian nature. Throughout the world, prison design seems to be the branch of architecture that creates the most controversy.

The simple fact of the matter is that the architect's role is not to define the mission of the prison. Rather, the justice architect has been recognised as a driving force in helping authorities achieve the individual mission of their prison or justice facility. They have seen that design can compel behaviour just as certainly or effectively as any reward or punishment. If criminals are a product of their society, then prisoners are the product of their incarceration environment. Prisoners, like everyone else, react to their environment. Equally as important; good design can lead to built-in savings on institutional costs. For the purposes of this article, political debates will be set aside in favour of the architectural ones.

Architecturally, prisons present complex and serious challenges, not the least of which involves facility longevity. For every calendar year, a jail ages 3.5 years. This is because a prison operates 24 hours a day, which equates to 8,760 hours per year. Compare this to a normal office building, which is open 2,600 hours per year – the architect must be acutely aware of additional wear and tear on a prison.

Cultural variety

While the concerns regarding facility security may have remained constant, prison issues and their related design challenges are evolving differently from country to country as you spin the globe. At a recent conference in Senegal, state authorities and penal experts discussed how to address the epidemic of AIDS in African prisons. How will this affect the

Circulation at the Guyane Penitentiary is organised hierarchically, with living space on the outer edges

The cost of confinement

provided by Hanscomb

Scott Higgins of the Federal Bureau of Prisons notes that cost per bed, particularly when compared with private companies, is the main factor in many development decisions. One of the biggest adjustments is changing standards to allow double bunking. For US Federal prisons in planning they are assuming 50 percent double bunking for medium security and 25 percent double bunking for high security. However, cell sizes for single and double bunking are the same, about 7.5 square metres, which of course reduces the cost per bed. He feels that the current inmates are tougher and there is greater concern about controlling them and about the safety of prison staff. The Federal Bureau of Prisons recently built a new facility with gun towers around the perimeter. This was the first in a while, but it provides more control. Probably one third to one half of the new beds they build will be high security.

Other determining factors for prison costs include security level, configuration (campus, mid-rise, etcetera), and level of supporting functions provided. Typically, prisons provide a mixture of security levels. Costs in the table are below an approximation for a facility to the level of security stated.

Modern Western prisons are predominately campus-type facilities in rural areas. The typical components include perimeter fences, housing, the infirmary, dining/kitchen, educational areas, shops, warehouses, recreational areas. The housing units are generally the most expensive component of the prison. Urban facilities require a more secure exterior wall since perimeter fencing is not used.

Security, derived by the physical design and by security systems, is a major cost issue. Campus plans allow the distinct functions of a prison to be housed in separate buildings. However, this is not always cost effective. Designs with connected buildings which reduce exterior wall area can achieve lower square-metre costs. Using two storey housing where possible is another way to reduce costs.

Equipment can be a major component of prison costs; food service, laundry, medical/dental and security equipment. For medium and maximum security facilities this cost can be 20 percent of the total building cost and security equipment can be ten percent of the building cost. Total costs for these facilities on a per bed basis can vary dramatically depending on the level of support facilities provided.

Cost ranges for US correctional facilities

	Campus type		Mid-Highrise
	US$/ square metre	*US$/ bed*	*US$/ square metre*
High Security	1,600-2,150	78,000-84,000	1,800-2,500
Medium Security	1,350-1,650	48,000-56,000	1,550-1,900
Low Security	1,100-1,400	36,000-42,000	n/a

design of the prison medical facilities and public areas? How can prisons be designed to stem the flow of further contamination? Another justice trend that calls for design solutions can be found in the USA, where the inmate population of violent juveniles is exploding: fully 25 percent of all juvenile inmates in American prisons are violent criminals. How do you design a facility that will meet the government-mandated juvenile programme requirements for education and still reduce the threat that exists in a group setting? And what suppositions can we make about concerns facing designers in countries whose prison systems are shrouded in secrecy?

At an international correctional design conference at the end of 1997, several Asian ministers and high level administrators were asked for contributions to this feature. They politely refused to discuss their prison designs, citing a state policy of absolute confidentiality. Sensitive human rights issues are rife throughout Asia and Eastern Europe, and examples of progressive prison design are therefore unsurprisingly scarce.

While their approaches and cultures may differ, prison authorities around the world are becoming ever more aware of how thoughtful justice architecture can save them money while achieving their unique or complex missions.

Counting the cost

There was a time when a prison mandate for security resulted in a carte blanche infrastructure entitlement. No more. In recent years, there has been a trend in correctional facility design and construction to be more and more economical. Budgets are being stretched despite unprecedented demand to construct more facilities. Communities and correctional administrators maintain their interest in finding ways to economise both on construction and operating costs on a year-to-year basis – driving planners, designers and construction managers to find ways to make spaces more compact, efficient, and economical whilst still ›

Far left: Rich colours are used to counter the institutional look

Left: Two-storey accommodation blocks give groups of prisoners the impression of sharing a house

Facing page, right: Various methods of steel fencing were used on the site

Facing page, far right: A bird's eye view of the site

Woodford Correctional Centre, Brisbane, Australia – Phillips Smith Conwell Architects

by Philip Drew

In 1989, the Queensland State Government was one of the first governments in the world to introduce privately operated correctional facilities when it contracted the operation of the Borallon Correctional Centre. The new correctional centre at Woodford, a small regional township 70 kilometres north-west of Brisbane, replaced an older prison which closed in 1992. The Woodford facility was the result of tender with the government bidding in competition with the private sector. The Queensland Corrective Services Commission consortium, which also included Concrete Constructions as Managing Contractor was awarded the contract in August 1995. The construction of the centre took 18 months and was completed in March 1997, ahead of schedule, at a cost of US$34 million (A$58 million). The building tender was the least expensive of those offered and the operations provided the best value.

The facility is constructed on a greenfield site, and comprises 27 separate one and two-storey buildings, arranged in zones according to security levels. It contains cell accommodation for 630 in a mix of high and medium security cell blocks. The high security buildings hold 50 accommodation units in a highly structured regime, whereas the smaller scale medium security blocks each consist of four self-contained units accommodating six prisoners and detention cells, and are designed so that the inmates feel more like they are sharing a house than a prison. There are also special management, medical and crisis support units, as well as educational and recreational amenities, and administration, visiting, storage and reception areas.

Generally, single-storey reinforced concrete construction was used with slabs on the ground floors and concrete blockwork walls, fully concrete-filled and security reinforced where required. A steel framed truss supports the Zincalume corrugated steel roof. Elsewhere, a combination of concrete slab, metal-cored FC, FC perforated corrugated steel and plasterboard ceilings have been adopted, depending on security and acoustic needs.

Two razor wire fences, taut wire, microphonic cable, CCTV detection and monitoring systems are used to maintain the security of the perimeter.

The size of the centre represents an incremental tripling in size from centres which previously accommodated around 200 prisoners and was designed to balance the needs of security, containment, flexibility and a humane environment which will encourage and assist the rehabilitation of prisoners. There is a strong emphasis on programmes and industries to promote this objective. The major aim of including a range of prisoner classifications from higher to lower levels of security within the same centre was to encourage the movement of prisoners into facilities offering greater freedom and privileges. Rich colours have been used inside and out to counter the institutional look.

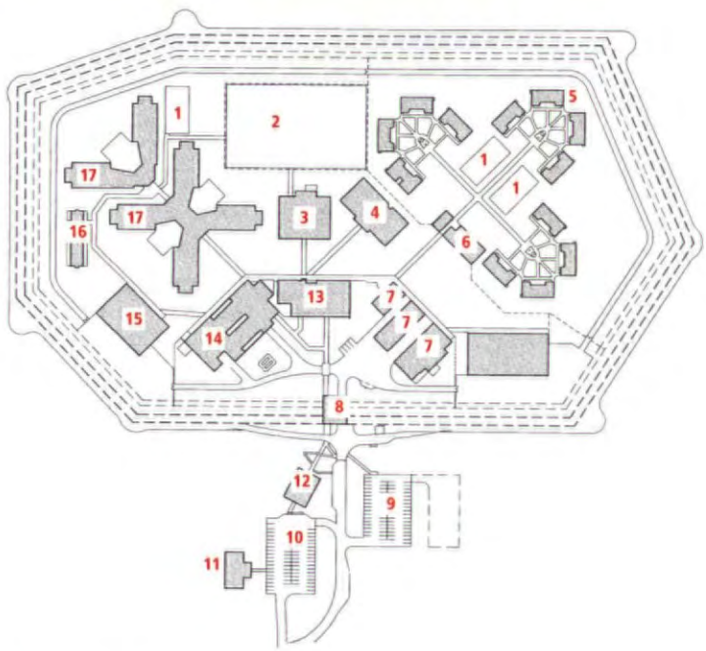
Woodford is the sixth such centre designed by architects Phillips Smith Conwell Architects Pty Ltd, which has considerable experience in the building type. The firm is currently working on the new US$110 million (A$110 million) SEQ1 and SEQW mens' and womens' centres at Wacol, west of Brisbane.

"The joke goes that if prisons were sold through catalogues, they would read: 'Please allow six to eight years for delivery.' Most prisons are out of date the very day they open."

›providing as safe and secure an environment as possible.

One definition of insanity is doing things the same old way and expecting a different outcome. Faced with the new economic realities of justice architecture, many bureaucrats and engineering consultants who had grown comfortable on the big budget were stymied. This seemingly adverse turn of events was really the opportunity many prison architects had been waiting for. Suddenly, years of experience and knowledge could be applied in delivering critical design solutions with secure and successful results.

Prison architects are well aware that the chief economic considerations divide into two important categories – initial design/construction of the physical plant and long-term operations. It should come as no surprise that the total cost of a prison facility over its life breaks down to ten percent capital investment in the structure itself, with 90 percent going to operations. Of that operational cost, 75 percent goes to staff. The way to reduce the cost of the



Architect
Phillips Smith Conwell
Owner
Queensland Corrections
Operator
Queensland Corrections
Design/Construction manager
Concrete Constructions Group
Structural engineer
Alexander Browne Cambridge & Partners
Security communications
Project Service
Mechanical engineer
Meinhardt

Key to site plan

1. Hardcourt
2. Oval
3. Gym
4. Education
5. Residential accommodation
6. Programmes
7. Reception/stores/kitchen
8. Gatehouse
9. Staff carpark
10. Visitor carpark
11. Pump house
12. Visitor processing
13. Administration
14. Medical
15. Secure industries
16. Detention unit
17. Secure accommodation

staff component is through effective planning.

While the advances in modern prison design are myriad, the six most influential factors in producing a successful prison, whatever its mission statement, are: design flexibility; innovative construction techniques; appropriate process determination; compact footprints; designing for direct or indirect supervision; and aesthetics.

Flexibility is the key

The first and most important issue impacting prison design economics is flexibility: designs that allow for updating and upgrading facilities long after their approval and/or occupation.

The joke goes that if prisons were sold through catalogues, they would read: "Please allow six to eight years for delivery." In fact, while recently the Queensland Correctional Centre in Australia (with multiple inmate population) took only 18 months from excavation to final completion, it generally takes years and years to get through the process from approval on a prison to opening its doors, or "going on-line". This fact has meant that far too many prisons are out of date the very day they open (imagine buying a computer that was three, five, or even eight years old). And yet, most of the technology that is designed into a prison is approved and acquired several years before the first officer ›

Touch-screen technology can be used to control the security of an entire prison from a central terminal

Right: Overhead view of the "prison estate"

Facing page, above right: The interiors are lined with levels of one or two bedrooms which open onto central space

Facing page, below right: New generation design units holding 50 or 60 inmates are easier to manage

Altcourse Prison, Fazakerley, Liverpool, UK – Tarmac Professional Services

by Katherine MacInnes

The Altcourse prison in Liverpool is the first private enterprise prison in the UK. It is run by Group 4, which, in consort with Tarmac, formed a joint venture company to bid for private correctional facilities. The logic of opening the prison system to private enterprise stems from the fact that the government does not have to find the initial outlay for the new prison which in this case was US$165 million (£100 million) – the expense per inmate per day is greater than that for government prisons in order to recoup building costs.

Altcourse Prison in Liverpool was built by Tarmac Professional Services, which was previously the Public Services Agency (PSA), an arm of government that procured buildings. Charles Erickson, director and general manager of Prison and Court Services Ltd, a Group 4 subsidiary, said: "Group 4 was satisfied that the architectural design team was experienced because the PSA transferred a considerable body of staff and therefore expertise into Tarmac."

The design has worked well. Each inmate area is designed in units, the core entrance leads into the service area, which contains administration, catering and medical facilities. Cell wings extend to the right and left. The interiors are lined with two levels of one or two bed units that open onto the central space. Each inmate area is served by a consul or "office area" from which the prison officers can control the doors, monitor camera surveillance and trigger alarms. The consul can be made secure by pulling down a slatted metal screen to shut it off.

Erickson says: "Much of the existing prison estate was designed for a style of management that is largely no longer in use." He continues: "Instead of large radial prisons where there are three or four hundred inmates in a single wing, new generation design units of 50 to 60 are easier to supervise and manage. The new design employs a campus layout using housing units with secure corridors. The design has to provide efficient sightlines, there shouldn't be any hiding places or cubby holes." Erickson believes in using a "prudent balance of technology like CCTV, sophisticated alarm systems and prisoner access control to support staff in supervising prisoners".

"We have learned that prison design is not a precise science. There needs to be a process of review so that we can revert back to the drawing board. We have revised our thinking on the entry buildings, visitors, staff and vehicles."

Each computer system is specifically designed. Although computers are being used increasingly, Erickson thinks that "prisons can't be used as test beds. Whatever you use you have to be satisfied that it works."

› goes on duty. Flexible design allows for, and even anticipates, advances in technology, operation and management.

The inclusion of touch-screen technology is one expression of flexible design, which translates into heightened security. With a touch of the fingertip on the right touch-screen, an officer can open doors with no keys for inmates to grab. This is a "living system" of hardware which accommodates new software programmes as they are created. In this way, a prison can reshape its technology without retooling.

Flexible design can also mean designing buildings with high-security lockdown capabilities and introducing them onto a lower-security setting. As the population demographics shift to hard-core and violent offenders, the security level of each building can be upgraded as is appropriate.

New ways to cut back

In recent times, innovative engineering and construction techniques have been able to deliver considerable cost savings while ensuring a high level of prison security. But take care, "new" does not equal "improved". As the design leader, the architect has to consider which approaches are appropriate to the individual situation and which deliver the greatest benefit to the client.

One example of helping a client to choose between innovative and cost-beneficial architectural approaches can be found in the area of cells. In recent years, pre-cast concrete cells and prefabricated steel cells have proved to be two of the most popular choices for large scale prisons looking into economy of scale. Yet, both yield separate and distinct advantages in terms of time, cost and operational efficiencies.

Steve Weirich, President of Rotondo Weirich, a speciality contractor in the field of prefinished modular construction, points to Farzakerley Prison near Liverpool, UK as an example of the emergence of pre-cast concrete

Architects
Tarmac Professional Services
Clients
Fazakerly Prison Services Limited
Sub contractors
Tarmac Building
Engineering
Crown House Engineering
Security
DES Systems
Operating Sub Contractor
Group 4 Prison Services Ltd

Sympathetic design

The Dutch prison architect Herman Magis and his firm Magis Van Den Berg Architekten is committed to encouraging rehabilitation and reducing institutional costs through sensitive design. Magis' controversial Peter Baan Centre, a psychiatric clinic in Utrecht, was a sharp departure from the cold and basic institutional buildings of the past; it looked beyond ease of operation and used colour, natural light, and sympathetic choice of materials to improve the ambience for the inmates, thus enhancing the functionality of the building.

Magis' prison in Vught, The Netherlands, comprises small buildings for groups of 12 inmates in an open and natural environment. This number was chosen on the basis that inmates could get to know each other well enough to discuss their experiences in prison. The groups were large enough that inmates could sub-divide and find special friends, but not so large that anyone would feel neglected and drop out. Designed to imitate real streets, the central concourse has brick pavements and elements of glass, but at the same time the corridors are arranged to be disorientating and tough transparent walls keep prisoners apart from warders.

A similar Magis design in Veenhuizen tempts prisoners to rehabilitate themselves by dangling the carrot of freedom. The entrance building is halved by the concrete perimeter wall, which cuts into the actual prison buildings, whilst the walls are visibly separated from the roof slabs by glazed strips, creating the feeling of proximity to a free world.

Allowing the architect to use his skill in creating the right atmosphere adds value and efficiency to the facility. There is probably no field which benefits more from this area of the architects' expertise than prison design.

in the international prison marketplace. "Fazakerley utilised pre-cast concrete to deliver Great Britain's first array of modular prison cell technology, marrying up-front savings with long-term operational efficiency," states Weirich. "More and more, we are seeing a call for it overseas, but it's still in the embryonic stage. Two of our three international projects are first time modular prisons for their country. The key is that the critical mass you can achieve is constantly dropping to a lower number of cells. The smallest job we've done is 28 cells. The stigma about using a technology associated with large-sized prisons is slowly yielding to the time and cost benefits."

Pre-cast concrete cells come fully equipped, including a finished exterior wall comprising a ten-centimetre layer of concrete, an insulated inner air space of approximately five centimetres and a twelve-centimetre interior concrete wall mirroring the exterior. The pre-cast concrete cells offer savings through their fireproof and self-supporting nature. Their steel cell counterparts weigh less and are more soundproof, offering cost benefits in foundation requirements and acoustical design. A recent 224-bed addition to a facility in New York took only five days to install using pre-cast concrete cells. It is worth noting, however, on a comparable project, traditional masonry delivered the cells for less money with no adverse affect on the project's overall completion schedule – another case of exploring all the options to yield the best architectural product for the client.

The future is private

With the introduction of private sector developers and operators into the justice marketplace, the pressure to save money is stepped up. Officials must choose from among several different ways to plan and build their facilities from concept to occupancy. Project architects should always take on the responsibility of making all these approaches available to the client.

›

Above: Instead of a radial design, Tzalmon employs manageable pods of inmates

Above right: The doors of the bedrooms all face onto interior courtyards

Right: The terrace scheme allows observation of each courtyard as the land falls away

Far right: The building is so inherently secure that a low property line fence suffices at the perimeter

Photography Paul Gross

Tzalmon Medium Security Prison, Lower Galilee, Israel – STV Silver & Ziskind and Poreh Ya'Acovi

by Katherine MacInnes

Donald Currie, project architect from STV, says that his company, which has extensive experience of justice architecture, "does not refer to these buildings as prisons because it immediately conjures up a negative image. We call them correctional facilities". The correctional facility that the US-based firm has designed with its Israeli joint venture partners, Poreh Ya'acovi Architects, is designed to transform the Israeli government's outdated system which comprises old British forts built to stem the advances of the Ottoman Empire prior to the Great War of 1914-18.

"We don't call them bars anymore," Currie continues, "we call the metal straps that prevent inmates from leaving through the window 'blades'." The

› The traditional system for delivering a facility is called Design/Bid/Build. The advantage of this system is that the roles of each party are clearly defined, and communication is absolutely interactive. One method gaining popularity is the Design/Build approach. Design/Build allows a client to place all the responsibility for a project with a single entity, and can also be faster. But remember, with Design/Build, the client may lose a lot of control over the design aspect of a facility. Another pitfall may involve the contractor driving down estimates to a point where the client doesn't get the building they set out to create in the first place. In a prison, this shortfall can compromise officer safety.

A third method, known as Design/Build/Finance, involves privatisation of the construction process. Essentially, when the client does not have the money to build its facility, a developer can be called in to finance and build the prison. The client then rents the facility from the developer and operates it.

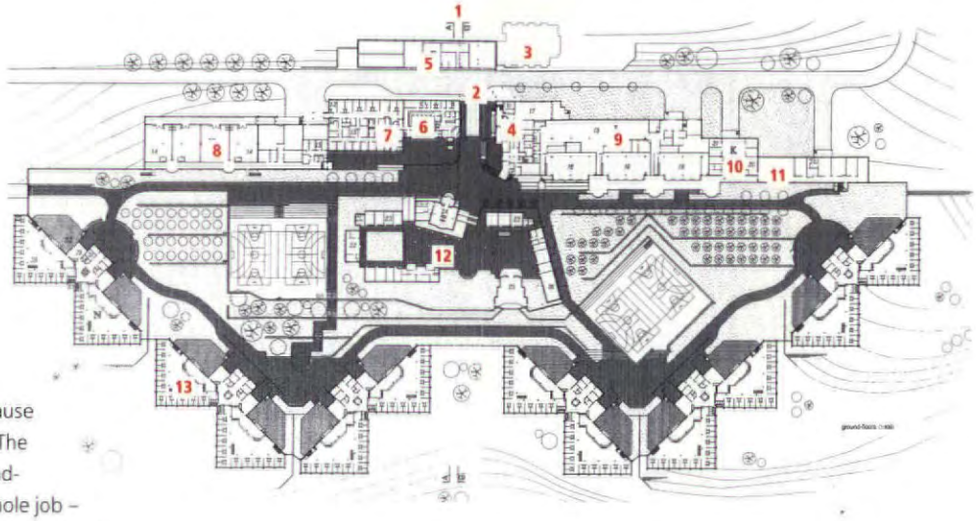
Then there is total privatisation. In this situation, called Design/Build/Finance/ Operate, one party becomes responsible for arranging the design and construction of a prison, financing the prison from private sources, and the hiring of private operators to run the prison. An interesting variation on this scenario is Australia's Queensland Correctional Centre. The prison is a group of 25 buildings on a large open campus. It's more like a small town. It was a two-stage Design/Construct within a Design/Construct/Operate tender. The first stage was to select the designer and operator. The second stage was to develop the design and to document and construct. Ross Carseldine, director at Phillips Smith Conwell Architects notes the unique nature of this facility's tender process.

"One of the interesting things about this project was that the operator was actually the government. The state government in Queensland said, 'we want to issue a Design/Construct/Operate tender with private operators tendering and the government

Section

Key to site plan

1. Entrance plaza
2. Entry wing
3. Staff housing
4. Administration and control office
5. Energy centre
6. Admission and discharge section
7. Medical services
8. Vocational training and industry section
9. Food services
10. Prisoners' dining rooms
11. General stores
12. Education and recreation
13. Inmate housing



windows are either too small for a person to escape through or made of toughened glass. "And with the blades we have tried to recreate a venetian blind effect," says Currie.

The windows of this facility have to be particularly secure because the outside of the building forms the exterior wall of the prison. The buildings are arranged in a necklace configuration with doors leading only to the interior courtyards. "But, buildings can't do the whole job – think about it – it mirrors the programmes that have been set up by the local jurisdiction. Buildings create an important environment and it is essential to the success of the programme that inmates perceive it as a positive environment."

Currie concurs that the radial configurations in old fashioned prisons were very negative because the guards could see everything that was going on. "This new approach stems from the new style starting in the 1960s. In the 1980s the new idea of a mini jail, creating manageable pods of inmates, was introduced, as was the idea of locating the services near the prisoners rather than vice versa, and direct supervision by officers who sit at a desk and relate to the inmates."

Tzalmon has been described as a prison without walls. This is Israel's first of a new generation of prisons. The building was designed according to Western standards. The campus design seeks to allow conditions of comfort and privacy that are similar to the conditions of the outside world in order to encourage rehabilitation and reintegration into society. The effect of Tzalmon is the opposite of the fortress prisons of old; it is designed to look like a village integrated into its environment, like the other villages in the area. At the same time, the land slopes to allow a terraced scheme allowing open observation of each courtyard as it falls away towards the landscape of Galilee.

The project was designed for the police and the prison service, based on the concept of a campus with a built area of about 26,000 square metres.

The facility uses bi-nuclear, fourth generation architectural geometry: the population of 500 is divided into groups and then subgroups. It is organised into two major housing zones with educational and vocational training areas for inmates, an area adjacent to the "Town Centre" for support services, and two clusters of housing, each segmented into three groups of units.

The Israeli Government feels that the building is so inherently secure by its very design that there need only be a low property line fence around the complex. This allows inmates to have a view of the outside world at all times making their confinement less visually oppressive but no less secure.

Architect
STV Silver & Zizkind, NY, USA
Joint venture partner
Poreh-Ya'acovi Architects, Israel
Client
Israel Prison Service, State of Israel Ministry of Police, Kallanit
Construction management
KMR Ltd, Israel
Structural engineer
Yaron-Shimoni-Shacham, Consulting Engineers Ltd
Landscaping
Moria-Sekely Ltd

"An advantage of a compact footprint is that it ensures line-of-sight advantage for officers. This can translate into a reduction of staff required."

tendering against them.' In the end there were two private operators plus the government tendering. The government won by providing the best value for the money."

Compact footprints

There are several economic advantages to creating a prison with compact footprints. These include greater flexibility in the design, easier and more economic future expansion, and of course, reduced acreage in the facility itself. However, the first and foremost advantage (indeed, an often overlooked necessity) of a compact footprint, is that it ensures line-of-sight advantage for the officers on duty. Enhanced observation can translate into reduction of staff required to monitor any given situation. Compact footprints also offer the officers greater control in all prison situations. "In our high-security cellblock, every officer has a back-up officer in view, with a central observation control room. This has a tremendous psychological effect," says Ross Carseldine.

Marianne McKenna, Principal of Canadian-based Duwabara Payne McKenna Blumberg Architects, applied "the concepts and ›

Grand Valley Institute for Women, Ontario, Canada – KPMB Architects

by Katherine MacInnes

The new complex is a far cry from Kingston's notorious Prison for Women known as P4W, a limestone edifice described by locals as "unfit for bears". It includes nine separate cottages where eight to ten inmates live together, cook their meals and do their own laundry. "The reaction of some people might be that it's so darn nice the inmates will want to come back," says warden Marie André Drouin. But, she says, "it is still a prison – no matter how nice it looks".

KPMB architects was given a construction budget of US$9.1 million to build a prison with a total area of 6,000 square metres in Kitchener, Ontario. The challenge architecturally was to translate the recommendations of the Task Force on Federally Sentenced Women into built form and to replace the institutional atmosphere of women's prisons with a more community-based, interactive environment. The location, adjacent to a neighbourhood which includes a pioneer heritage site and an affluent subdivision, persuaded the architects to design a complex that would blend with its architectural context.

The concept is derived from the village model with buildings organised around a central green. To emphasise the residential scale of the complex, the individual programme elements – administration, visiting areas, case work, the gymnasium, classrooms and so on – are located within a series of interconnected building elements that share a common circulation loggia fronting the green.

Approaching the prison one can see an obvious difference from the federal penitentiaries: the absence of a guard tower and barbed-wire gate. The two-storey sandstone administration building will house prison offices, a visitors' complex, interview rooms for social workers, vocational areas, computer-equipped classrooms, a hospital and a gymnasium. Attached to the prison is a 12-cell maximum security area for inmates who need to be segregated either for their own protection or as a punishment.

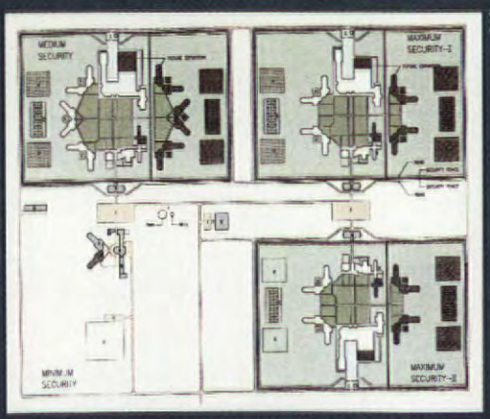
Residential and agrarian references such as deep porches, sloped roofs and simple materials respond to the rural context. Natural light, colour and ventilation provide a healthy environment. Kim Pate, executive director of the Canadian Association of Elizabeth Fry Societies says that she would describe this development as "corrections for women catching up to where men's have been. The next stage is to focus on children since two-thirds of inmates are mothers and the children will need to be accommodated".

Some may argue that the architects have gone one step too far – to one side of the property, inside the security fence, is a white picket fence which Drouin describes as "purely decorative".

Above left: Grand Valley's central administration area

Above: Overhead view showing the cottages around the communal "green"

Facing page: Each cottage accomodates ten inmates



Masterplan for the new Bilibid prison in the Phillipines, to be used as the basis for future justice architecture in that country

› principles of compact footprint on a broader scope, [aggregating] the cost of programme spaces and their functions by placing the nine cottages around the 'village green' set up in Grand Valley. This meant that the administration building, the visitors centre, the two educational programme buildings, the spiritual centre, the gym and the secure house are all easily accessible to staff from any other location on the green".

Wielding the staff

When we discuss design flexibility and prison management we address two basic styles of prison operation, even though variations exist. These are Direct Supervision and Indirect Supervision. Direct Supervision relates to the hands-on physical presence of an officer in managing the day-to-day inmate operations. This concept is applied most visibly at Canada's Grand Valley Institution for Women. "We've created an open campus that reflects a 'design of wellness'", says McKenna, "a place where smaller groups and a sense of community are encouraged by the design, because women tend to 'heal' better in these environments".

The resulting interaction and rapport between staff and inmates can minimise tensions and resolve problems and conflicts in

Key to main building

1. Administration
2. Visits
3. Programme
4. Spirituality
5. Education
6. Recreation
7. Health
8. Secure house
9. Loggia

Architects
KPMB
Client/Owner
Correctional Service Canada/Public Works Canada
Structural engineer
Read Jones Christoffersen
Mechanical and electrical engineer
Crossey Engineering
Landscape consultants
Milus Bollenberghe Topps Watchorn
Contractor
G W Harkness Contracting

Financing the growing need for lockdown

provided by Hanscomb

According to the *Sourcebook of Criminal Justice Statistics*, in1996 there were over 750 adult prisons and over 200 juvenile prisons operated in the USA in 1995. The Federal Government operated 86 prisons. The prison population was over one million and about 100,000 were in Federal prisons. It has more than doubled in the past ten years creating an ongoing problem of overcrowding.

The growing prison population created a buoyant construction market for prisons beginning in the early 1980s. Nationally, capital expenditures for prisons and jails have probably averaged about US$2-3 billion during the past several years. The current Federal prison capital expenditure budget is about US$300 million. Scott Higgins, Chief of Design and Construction Branch for the Federal Bureau of Prisons expects similar funding for the next few years.

The cost of the growing prison population is an increasing concern because it comes during a period of shrinking public budgets. The facilities must be operated and maintained after they are built. For most states, prisons are usually the second largest budget item after social services. Nationally the average annual operating cost per inmate is nearly US$20,000.

Crime statistics do not explain this growth in prison population, which is the result of new legislation, such as mandatory minimum sentencing and truth in sentencing, arising from public concern. The result is longer sentences for repeat offenders. The lack of bed space from overcrowding creates the opportunity for alternative justice methods, such as restorative and community, for first time offenders that might have been sentenced to prison.

Another trend in the US may be the construction of fewer, but larger prisons. Ten years ago the typical prison was planned for less than 500 inmates. Newer facilities are planned for 1,000 to 1,200.

a proactive manner often before they come to a head. Many facility directors say direct supervision is a programme that saves more than it costs. Up front it can look more expensive because 75 percent of a prison's budget goes to human resources, and direct supervision can require more staffing. But the proactivity of the supervision can save the client money in the long run, as it relates to defence litigation or even litigation avoidance and facility destruction.

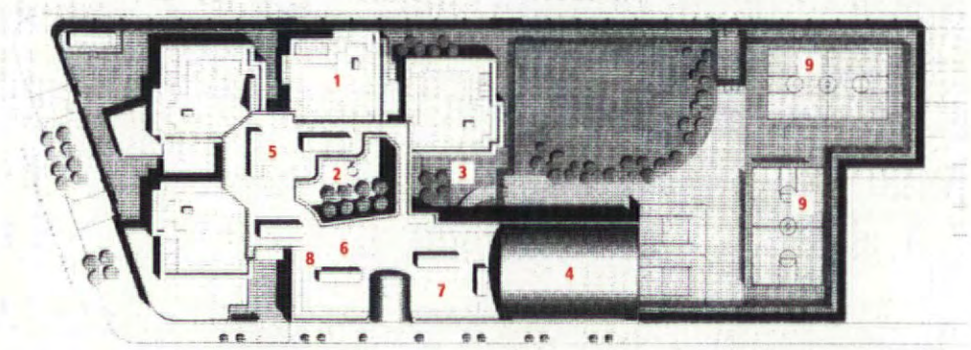
An exceptional situation exists at Grand Valley Institution for Women, where the majority of inmates are non-violent offenders. "We're actually seeing a reduction in the maintenance budget by placing normative drywall, instead of cinder blocks," McKenna contends. "This was initially chosen because the administrators wanted the ability to track incidents of violent physical behaviour by its effect on the environment. With block walls, you might get to see the rubber marks where someone kicked at a wall. Here, if someone has a 'private' outburst, you'll know when and where an incident took place. The prisoners are aware of this as well, and perhaps in reaction, are more cautious about how they treat the walls and buildings. They don't want to leave any evidence." In this extremely unusual case, a normative environment for the great number of average prisoners results in savings on facility wear and tear.

Indirect Supervision relates to visual observation of the prisoners from within a control room (usually protected by secure walls and glazing) or by electronic surveillance. Whether located within a housing unit or between several housing units, the officer's responsibilities are to control access to rooms and housing activity areas, as well as monitoring inmate behaviour from this secure position. On average, ten percent of prison inmates require housing units that are subdivided into smaller groups. For these special needs or violent ›

Inner city prisons have to integrate with, and enhance, their urban context

Keyto site plan

1. Long-term housing
2. Courtyard
3. Outdoor space
4. Indoor recreation
5. Multipurpose
6. Administration
7. Education
8. Ancilliary
9. Outdoor recreation



Far left: The San Diego Central Jail by HOK, a 980-bed prisoner transfer facility

Left: The St Louis County Justice Centre, by HOK, holds 1,200 inmates

›inmates, indirect supervision is more operationally and economically efficient than Direct Supervision through its reduction of the officer to prisoner ratio. Speaking from a purely architectural point of view, Direct Supervision offers both the prisoner and the officer a more normative environment. In this less confrontational setting basic respect, and even a rapport in communication, can result as prisoners attempt to convey their needs to the officer who is presumed to be more open by the open environment he or she administers. So along with the economic benefits, there are operational and aesthetic pluses, as well.

Crossroads Juvenile Detention Justice Facility, New York, USA – Kaplan McLaughlin Diaz

by Bay Brown

Located in the Brownsville section of Brooklyn, the US$24 million Crossroads Juvenile Justice Detention Facility is one of the two new complexes designed by San Francisco-based Kaplan McLaughlin Diaz for the City of New York. With a capacity of 124-beds, this short-term facility opened last spring on the heels of the closure of the Spofford facility in the Bronx, and there is no better comparison. Spofford, constructed according to 1950s modernist principles, ill-served its inmates with its long double-loaded corridors that made it difficult for officers and counsellors to monitor the young offenders, and conversely restricted the contact the juveniles could have with them.

Crossroads houses both boys and girls, typically aged between 13 and 16, in a series of eight-bed and 16-bed U-shaped suites. Staff are stationed at the bottom of the U and thus are able to view both the rooms and the common areas. The U-plan also separates the common area into two distinct sections thus allowing the youths on one side to study quietly, while their suite-mates play games on the other. The complex also contains a police arrest processing area, cafeteria, chapel, school and sports facilities as well as other service areas. Most striking is the generous amount of fenestration and glazed walls throughout the complex.

Clad in brick with a precast concrete trim, the two-storey complex is contextual in this dense neighbourhood comprised largely of masonry houses or commercial structures. A slightly overhanging concrete cornice gives the building a formidable presence, but not the ominous fortress-like appearance of many prisons. The building's materials, horizontal silhouette, connection to nature through light and landscaping and metal mullions with their simple geometrical pattern, give the complex a Wrightian quality. As a whole, there is a sense of community, reinforced by the design which suggests this is a place for change, not merely punishment.

Facing page: The Crossroads centre is designed to melt into the urban background

Left from top: Recreational facilities abound – but no compromise on security; there is a generous amount of fenestration and glazing throughout the complex. The slightly overhanging cornice gives the complex a formidable presence, but not a fortress-like appearance

Architect
Kaplan McLaughlin Diaz
Associate architect
Conchor & Sput
Structrual engineer
De Simone Chapman & Associates
Mechanical engineer
Syska & Hennessey
Landscape architect
Maurice Wranel
Civil engineer
Krauchenko & Associates
Security consultant
Electronic Systems Associates
General contractor
Moniaros Construction

Washington County Justice Complex by Zimmer Gunsul Frasca, USA

Washington CJC's "friendly" communal space

The prison next door

Some people are surprised to learn that the look of a prison has direct economic consequences. "If the exterior environment is more normative, a prison's physical profile can positively influence economic development around itself as it blends successfully into the fabric of the community," comments David Hobstetter, principal at Kaplan McLaughlin Diaz. Also, staff tend to perform better in a more pleasant environment with less sick time registered.

Conversely, an ugly prison complex is often considered a "bad neighbour" for devaluing local land prices and this can negatively ›

Right: Mosaic floors in the central halls

Far right, above: Inside the symbolic stone watchtowers

Far right, below: One of the two-storey cell wings

De IJssel Penitentiary, Rotterdam, The Netherlands – Archivolt Architecten

by Vera Vaughan-Bowden

A number of Dutch prisons built within the last ten years – doubling inmate capacity from 6,000 to 12,000 – have been likened to moderate hotels, except that the bars are on the windows.

Martin van Dort of Archivolt Architecten's maximum security prison at Krimpen aan de IJssel was built for the Ministry of Housing and Construction at a cost of US$50 million (NGL100 million) It resembles a medieval cloister. Based on Van Dort's earlier prison plan at Zwolle, but with double the capacity (360 cells), it is divided into a detention section and a prison for long-term inmates, each with 180 cells. The formal character of the entrance with its symbolic stone watchtowers and a columned portico confirms the social implication of the complex. The open forecourt and work of art by Peter Kattenberg, are in keeping with the openness of a democratic constitutional state.

The two-storey cell wings with passages of 12 to 24 cells is reached from a hall covered by a glass pyramid. Artist Maria van Elk created different mosaic floors in the four central halls, each displaying its own theme: water, forest, earth and desert. The 14 inner yards were given separate themes by landscape artist Richard Koek, with paved areas and green zones, shell paths and coloured concrete tiles.

Because of a need for speedy construction the architects opted for an entirely prefabricated supporting structure and built-in units. The stacked

Left: NBBJ's Federal Detention Centre, King County, Washington, USA – a 677-bed facility which cost US$56,000,000

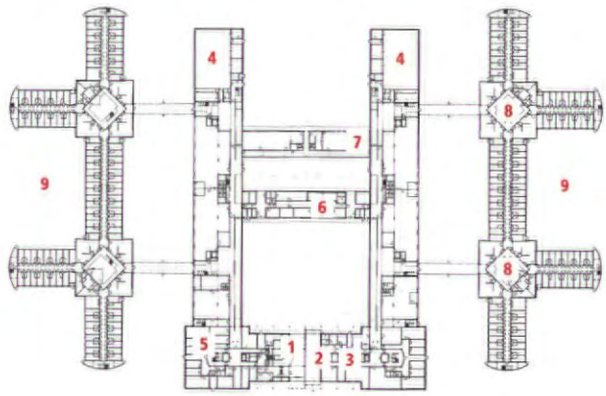
› impact the morale of the staff. There's certainly no premium on producing aesthetically pleasing prison design over mediocre design. In fact, the use of colour or scale have no real impact on the budget of a project. So while there's no economic penalty to good design, the benefits it yields are multi-layered.

"Our use of available materials (at De IJssel Prison, Netherlands), from cinder block to large quantity paints in bright colours, made our client happy as well as the people who have to live in these prisons for a long time. As an architect, it is important to me that our prison projects look good," states Martin

The prison, built for US$50 million, resembles a medieval cloister

buildings are entirely concrete constructions with brick facade cladding. The activity wings and the distribution centre form a steel skeleton construction with curved, laminated wooden trusses. The wide application of prefab was also utilised in an architectonic sense. Structure-determining elements were outlined in salmon and anthracite-coloured concrete. The same colours can be found in the five-metre-high prison wall and watchtowers. Use of coloured joints in the facade brickwork intensify its colour. Galvanised steel, white laminated wood, brown bricks and clean sand/limestone inner walls also play a direct part in the decor.

Architect
Martin van Dort
Client
PLCbv, 's-Gravenhage
Ministry of Housing and Construction
Construction
D3BN, Rotterdam
Main contractor
Van Hoorn IBC, Capelle aan de Ijssel
Security consultants
Laan Infra Consult, Mijdrecht
Landscape architects
Ch & Partner



Key to site plan

1. Main entrance
2. Vehicle entrance
3. Prisoner entrance
4. Sports hall
5. Warden's quarters
6. Kitchens
7. Church
8. Recreation rooms
9. Sports field

Dort of Archivolt in Amsterdam.

Prison design and the architect

While these six design considerations can greatly impact the architecture and resultant environment of any prison, they represent only a sample of the design knowledge the architect must bring to bear as the leader of the prison design process. An intimate knowledge of space and function yields a value-added service unavailable from any other party in the process. In other words, the architect is responsible for delivering what one could call "Value/Design."

Value/Design consists of testing the programme and conceptual footprints against cost models to assure that the building conforms to the client's budget. By having the architect take the lead in this pre-design phase, a client can see up to 30 percent of their facility's schematic design before formally beginning that phase. The information gained can be applied to a 3-D model, enabling a walk-through of the facility before the schematics are even completed. That saves the client real money, while clarifying design concepts with little or no margin of error. Another benefit is that there are no surprises. The building the client gets is the building they programmatically set out to build. In the end, for the architect's prison to succeed, it is incumbent upon him/her to be the ultimate knowledge source and facilitator in the design process. Only in this way, can the architect assume and maintain the lead design role in the changing world of prison architecture. WA

Peter Krasnow has spent the past 25 years designing award-winning justice facility architecture. He is the author of Correctional Facility Design and Detailing *(McGraw-Hill, 1998) and an active member of the American Institute of Architects (AIA) Committee on Architecture for Justice (CAJ).*

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Architects profile showcase

Largest firms in criminal justice		TOTAL NO. OF REG. ARCHITECTS	ARCHITECTS DEDICATED
1	**DLR Group** (USA)	140	**60**
2	**Hellmuth, Obata + Kassabaum, Inc** (USA)	511	**41**
3	**NBBJ** (USA)	321	**32**
3	**HLW International, LLP** (USA)	180	**32**
5	**HDR Architecture, Inc.** (USA)	144	**26**
6	**Vitetta Group** (USA)	120	**24**
6	**Kaplan McLaughlin Diaz** (USA)	91	**24**
8	**HLM Design** (USA)	132	**20**
9	**Spowers Architects** (Australia)	150	**15**
10	**Spillis Candela & Partners, Inc** (USA)	63	**13**
10	**Phillips Swager Associates** (USA)	47	**13**
12	**Zimmer Gunsul Frasca Partnership** (USA)	236	**12**
12	**Pierce Goodwin Alexcander & Linville (PGAL)** (USA)	80	**12**
12	**Nihon Sekkei, Inc.** (Japan)	295	**12**
12	**3D/International** (USA)	120	**12**
16	**Institute of New Architecture** (Japan)	107	**11**
17	**The Durrant Group** (USA)	50	**10**
17	**Schenkel & Shultz, Inc.** (USA)	32	**10**
19	**HKS Inc.** (USA)	177	**9**
19	**Cromwell Truemper Levy** (USA)	25	**9**
21	**TPS Consult Limited** (UK)	40	**8**
21	**Pei Cobb Freed & Partners Architects LLP** (USA)	55	**8**
21	**Karlsberger Companies** (USA)	75	**8**
21	**Hassell Pty Ltd** (Australia)	158	**8**
21	**Ehrlich-Rominger** (USA)	75	**8**
26	**Zeidler Roberts Architects & Engineers Inc.** (Canada)	68	**7**
26	**Perkins Eastman Architects** (USA)	140	**7**
26	**BWBR Architects, Inc.** (USA)	70	**7**
29	**KSP Engel Kraemer Zimmerman Architekten BDA** (Germany)	130	**6**
29	**Ewing Cole Cherry Brott** (USA)	58	**6**

Information compiled and published in WA72 – December 1998/January 1999, *The 1999 World Survey of the 500 largest architectural/design firms.*

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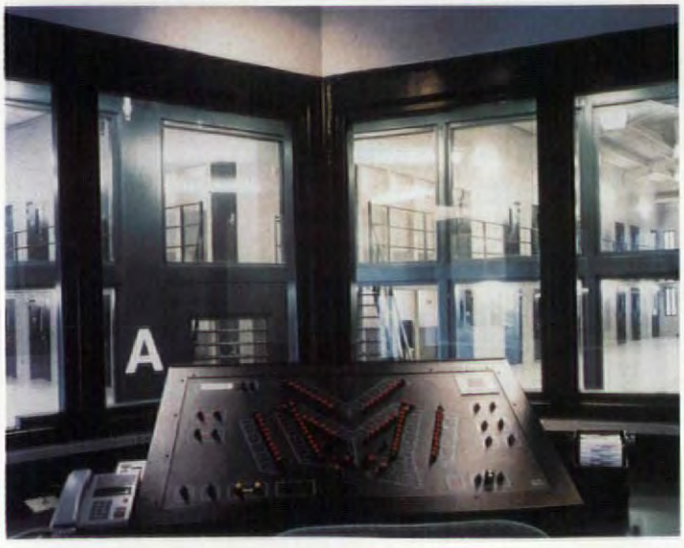

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Portland	503/274-2675
Seattle	206/461-6000
Sioux Falls	605/332-4500
Tampa	813/254-9811

Size of Practice

525

Key Personnel

Bryce D. Pearsall, FAIA
managing principal
Dale D. Hallock, AIA
managing principal
James Roubal, FPE
managing principal
William (Griff) Davenport, AIA
senior principal
Joseph F. Haines, AIA
senior principal
Richard Pawelko, AIA
senior principal
Thomas E. Penney, AIA
senior principal
Jon Pettit, AIA
senior principal

1: United States High Security Penitentiary; Florence, CO (Project designed in a joint venture with LKA Partners of Colorado Springs)
2: Roman L. Hruska Federal Courts Facility; Omaha, NE (DLR is working in association with Pei-Cobb Freed, Design Architect Consultant)
3: La Crosse County Law Enforcement Center; La Crosse WI
4: Crossroads Correctional Center; Cameron, MO

Practice Profile

The DLR Group is a dynamic, full-service, employee-owned architecture, engineering, planning, design and construction management firm, committed to excellence within the criminal justice market. With 19 offices, we are consistently ranked as one of the nation's leading firms. Backed by a rich history of satisfied clients, DLR delivers responsive planning, design and construction delivery services for today's built environment.

We have provided justice facility clients with judicial facilities, correctional facilities, jails and state and federal penitentiaries. In 1998 alone, DLR Group has been involved with correctional projects that represent more than 17,000 beds in facilities throughout the world. Since 1980, DLR has earned more than 30 awards for excellence in criminal justice facility planning, programming and design.

In the past 32 years, we have provided services for more than 100 justice facilities with a total construction value in excess of $1 billion.

Visit our website at:
www.dlrgroup.com

Areas of Specialisation

- Criminal Justice Facility Planning
- Juvenile Justice Facility Planning
- Space Needs Analysis
- Programming
- Architecture
- Security Systems Design
- Mechanical/Electrical/Structural Engineering
- Space Planning/Design
- Site Planning
- Construction Services
- Transition Planning

Recent Clients

- Corrections Corporation of America; Nashville, TN
- Federal Bureau of Prisons; Washington D.C.
- General Services Administration; Washington, D.C.
- Graham County, Safford, AZ
- Manatee County; Bradenton, FL
- Maricopa County; Phoenix, AZ
- Marion County; Salem, OR
- State of Nebraska Department of Correctional Services; NE
- New Zealand Department of Corrections; Auckland, New Zealand
- Olmstead County; Rochester, MN
- Oregon Department of Corrections; Salem, OR
- Pinellas County; Clearwater, FL
- State of Missouri Department of Corrections; MO

Eastern Women's Reception, Diagnostic and Correctional Center, Missouri Department of Corrections, Bonne Terre, Missouri, USA

Federal Bureau of Prisons, Three Rivers, Texas, USA

Snake River Correctional Center, Oregon Department of Corrections, Ontario, Oregon, USA

Rendering of Illinois Youth Center, Illinois Department of Corrections, Kewanee, Illinois, USA

HOK
(Hellmuth, Obata + Kassabaum, Inc.)

Corporate Office

HOK
211 North Broadway
St. Louis, MO 63102-2733
USA
Tel: + 1 314 421 2000
Fax: + 1 314 621 0944

Recent State and Federal Prison Projects

Illinois Youth Center
Kewanee, Illinois
Eastern Women's Reception, Diagnostic and Correctional Center
Vandalia, Missouri
Eastern Reception, Diagnostic and Correctional Center
Bonne Terre, Missouri
Federal Bureau of Prisons
Atwater, California
Two Rivers Facility
Umatilla, Oregon
South East Correctional Center
Charleston, Missouri
Wisconsin Supermax
Boscobel, Wisconsin
Federal Bureau of Prisons
Honolulu, Hawaii
Virginia Women's Correctional Facility
Richmond, Virginia
High Security Facilities
Colorado City, Lamesa & Woodville, Texas
Snake River Correctional Institution
Ontario, Oregon
Youthful Offender Facilities
Pahokee and Polk City, Florida
Mode I State Jail Facility
Beaumont, Texas
Baltimore Central Intake Facility
Baltimore, Maryland
Psychiatric Care Facilities
Lubbock & Sugarland, Texas
Special Management Facility
Sommers, Connecticut
Alberti Transfer Facilities
Palestine, Abilene & Huntsville, Texas
Somerset Prison
Somerset County, Pennsylvania
State Reception Centers
Wasco & Delano, California

Established in 1955, HOK's vision is to lead the world in innovation for the built environment by responsively serving clients with quality design that enables them to achieve their goals, enrich lives and contribute to communities. HOK's team of 2,000 people provides architecture, engineering, interiors, planning, landscape architecture, graphics and facilities consulting services from 25 offices throughout the world.

HOK Justice

The HOK Justice team's experience is without equal. HOK Justice has designed more than 200 Federal and State prison projects totaling close to 100,000 beds. These include minimum, medium and maximum security facilities, segregation and special needs facilities – supermax, women's, juvenile, psychiatric/medical and drug/sex offender – housing more than 30 million square feet in six countries throughout the world. Since 1991, **HOK Justice** has handled 25 projects totaling 34,108 beds and more than $1.3 billion in construction costs.

HOK Justice focuses on reducing long-term operational costs. Over the typical 30-year life of a facility, close to 90 percent of a project's cost stems from operations and staffing salaries. By designing an operationally efficient facility which minimizes staffing needs, HOK designs significantly reduce long-term operational costs without compromising safety or security while still meeting the goals and objectives established for the facility.

Contacts

Michael Frawley, AIA
Justice Group Director/Group Vice President
HOK St. Louis
Tel: + 1 314 421 2000. Fax: + 1 314 421 6073.

Jim Kessler
Justice Group Director/ Group Vice President
HOK Washington, D.C.
Tel: + 1 202 339 8700. Fax: + 1 202 339 8800.

Dale Nederhoff
Justice Group Director/ Group Vice President
HOK Tampa
Tel: + 1 813 229 0300. Fax: + 1 813 223 7116.

Chuck Oraftik
Justice Group Director/ Senior Vice President
HOK San Francisco
Tel: + 1 415 243 0555. Fax: + 1 415 822 7763.

Bill Prindle, AIA
Vice President
Justice Group Director
HOK San Francisco
Tel: + 1 415 243 0555. Fax: + 1 415 882 7763.

Wantland (Jay) Smith
Justice Group Director/ Vice President
HOK Los Angeles
Tel: + 1 310 453 0100. Fax: + 1 310 453 2052.

DOORS AND WINDOWS

THE NAMES IN THE FRAME

Doors and windows play a vital role in defining a building's character, but must also be designed to meet more practical performance criteria. Peter Wislocki's look at the latest doors, windows and associated products reveals not only good design, but a range of specialised solutions to almost any problem – showing that manufacturers are fulfilling the evolving requirements of forward-looking architects.

Facing page: Levolux louvres at Aukett Associates' Proctor and Gamble headquarters, Weybridge, UK
This page, below: Jewers "Esavian" security doors at Abbey Mills Pumping Station, Stratford, UK, by Allies and Morrison

Windows are the eyes of a building; complex environmental filters, required to meet strict performance criteria and make a major contribution to defining an architectural character. A window can be little more than a pane of glass, fixed in a timber or metal frame, inserted within a masonry opening. But it can also admit only light of specific wavelengths, control views and privacy, and provide a means of natural ventilation appropriate to a given climate and building design strategy. Windows might be exposed to the extremes of the weather; and they can be specified to prevent the spread of fire, heat and smoke between buildings. Windows are, almost by definition, the most visible of building elements; and, particularly in confined spaces with natural ventilation, the most tactile of components. Replacing the timber (or steel) windows of a historic (or early 20th Century) building in order to meet current performance requirements – a very common occurrence – can seldom be achieved without some compromise in aesthetics. Insensitive window replacement can fundamentally ruin a building's architectural integrity.

Given the importance and complexity of window design, it is surprising how many buildings around the world appear to use almost identical glazing systems. But the picture is changing. From the conceptually straightforward but well-engineered sliding sashes just introduced by **Technal**, and **Scrigno**'s "disappearing" sliding window concept, to the timber and aluminium hybrids, such as the Lea system by **Rosada**, the range of "standard" products is widening. The Lea design, which combines the thermal insulation (and the perceived "warmth") of timber internally, with the maintenance-free durability of aluminium externally, has the added advantage of a patented fixing system, with factory-assembled windows mounted on zinc-plated subframes, making the system attractive to clients and contractors alike. A glazing system's ability to accommodate building tolerances is, indeed, amongst the most frequently ignored criteria in specifications.

It's all in the system

The final appearance of facades, as well as the comfort of occupants, often owes as much to accessories as the window systems themselves. Solar shading devices have become almost universal on commercial projects – arguably irrespective of genuine climatic considerations. A system of louvres, or a *brise soleil*, gives an elevation an appearance of layering and depth, and can assist designers in manipulating the scale and proportion of elevations. At the level of detail, leading manufacturers such as **Dasolas** and **Levolux**, are constantly refining their profiles of louvre blades and fixing brackets. Aluminium can evidently be extruded into curved and aerofoil sections, combining rigidity and structural efficiency with aesthetic elegance and durability. Specifiers should not neglect the technical advice which both these suppliers readily provide. Used intelligently, external shading devices can reduce heat gains, and hence reduce air-conditioning loads, even in temperate climates. Less obviously, ›

Top row from left: The Skyvane system from Levolux can reduce up to 90 percent of solar heat gain; Technal's new FV75 vertical slider can be used in sliding sash and fixed light configurations; Hawa's sliding glass door and partition systems

Middle row from left: Lualdi's range of standard internal doors – popular with many well-established architects due to their dependability and performance; Häfele's Dialock security system uses an optical key clip for "touch free" locking

Bottom row from left: The Slimdrive SL from GEZE is just seven centimetres high, and can be integrated seamlessly into almost any building facade; Rosada's wooden internal windows combine perceived warmth and thermal insulation; Scrigno's specialised framing system for disappearing doors and windows








› shading devices can eliminate glare and contribute greatly to visual comfort, and can therefore be appropriate on any large expanse of glazing, regardless of orientation.

The integration of louvres and windows takes many forms. **Renson** have introduced louvre systems specifically to provide safe, secure and controllable overnight ventilation, arguing that their product, used in combination with massive, thermally stable construction, can often eliminate the need for mechanical ventilation, cooling and air conditioning. Less dramatically, manufacturers of both windows and shading devices have recognised that even glazed openings of highly complex form require protection from excessive insolation. Levolux, for example, can adapt its roller blinds to suit such specific installations as a recently completed circular rooflight project in London. In other cases, window manufacturers have taken the initiative – particularly those, like rooflight specialists **Velux**, whose products are less compatible with standard ranges of blinds and curtains.

The Velux roof window has become ubiquitous, and has – obviously subject to continuous technical improvements – been in production for over 50 years. Less well known, perhaps, are the company's associated products, ranging from the "Cabrio" rooflight-cum-balcony, to the variety of external shutters, internal blinds and electronic control systems made to further increase the potential for utilising lofts and roofspaces.

Shown the door

Doors are as significant as windows in establishing a building's character, and some of the same technical issues arise in their design. Traditionally, joiners employed very similar techniques in making doors and windows, and today leading manufacturers of aluminium windows and curtain walling invariably offer matching aluminium door assemblies.

Some doors need to meet much more specific requirements. The **Jewers** doors specified by Allies and Morrison for the Abbey Mills Pumping Station offer the highest standards in security. Each four-square-metre sliding-folding door is of steel construction, with locking devices linked to the building's alarm system. From the architect's point of view, a more commonly encountered challenge is to specify a door which is both elegant and secure. **Hawa**'s range of sliding glass door systems are certainly the former, having minimally proportioned aluminium top and bottom sections, and no side frames. The firm's Hawa-matic sliding-folding glass partitions are complemented by a totally frameless, patch-hung sliding door: the Hawa Junior GP. Despite the visually minimal fixings, the Swiss manufacturer incorporates custom locks with crank mechanisms to fasten glass panels firmly in the locked position when required. German firm **Geze** produces an automatic door drive system, the Slimdrive SL, which, being only seven centimetres high, is claimed to be "almost invisible and silent but very powerful." Geze's systems are available in framed or frameless configurations, both controlled by a 16-bit microprocessor.

Whereas Geze and Hawa bring a distinctly engineering-led approach to door design, Italian company **Lualdi** has developed a range of standard, internal doors, founded on its experience of bespoke joinery fabrication. Lualdi's range of architect-designed doors includes the Londres, a radiused, veneer-faced door fully integrated with side panels. The Tris door is characterised by distinctive, bull-nosed edges; whilst the Filo is perfectly flush with its solid timber frame. Lualdi's Planare doors are, as the name suggests, made of structural glass. Whilst architects and interior designers have traditionally detailed doors in a manner unique to every project, Lualdi's standard ranges have proved popular with many well-established design practices, and offer higher levels of dependability and performance than more individually crafted doors and frames.

What's your handle?

Few doors are complete without ironmongery – and here, too, manufacturers compete on both technical and aesthetic qualities. At one extreme, ironmongery becomes an integral part of security systems – as in the case of **KFV**'s Türverschlüsse range, featuring multi-point locks integrated with automatic controls. KFV is nevertheless conscious of the need to package it's products neatly, if not with any gratuitous styling. In contrast, **Colombo Design** of Italy has employed designers including Jasper Morrison and their own Luca Colombo, respectively the authors of the Gira range of simple, brass handles and Taipan – an elegant and appealingly tactile collection, fabricated with natural wood inset in metal. **Fusital** is another manufacturer of ironmongery with a constantly updated stable of signature designers, including Ricardo Bofill and Norman Foster. It is ironic that Foster should be responsible for the design of products intended to appeal to other architects, given his firm's policy of not specifying any item designed by rival architects.

"Lualdi's standard ranges offer higher levels of dependability and performance than individually crafted doors and frames."

The intrinsically tactile quality of ironmongery is challenged by **Dialock**, a security system manufactured by Häfele. By using an optical key clip, Häfele has arrived at an entirely "touch-free" locking mechanism, which is claimed to be intelligent, extendible and, above all, virtually maintenance-free. By eliminating physical contact between key cards and locks, Dialock provides the programmable versatility of other computerised magnetic systems – allowing, for example, various combinations of access to sports facilities within a hotel or health club – with much less wear to sensitive components. WA

Above left: KFV's locking systems feature multi-point locks with automatic controls **Above right:** Colombo Design's Taipan handle, by Luca Colombo

BUILDING SERVICES

AT YOUR SERVICE

The increasing complexity and scope of building services available today is adding new dimensions to the architect's role as specifier. Peter Wislocki surveys the market, and discovers that from intelligent management systems which control every light in a skyscraper, to moving walkways that sense their own traffic levels and consume power accordingly, innovations in this sector are emerging as fast as the technology is developed.

Facing page and this page, below: Bespoke elevators and autowalks installed by Montgomery Kone at Denver International Airport, designed by Fentress Bradburn Architects. In some sections there are four 50-metre-long autowalks operating in simultaneously

The importance of building services to large projects seems to be somewhat unsung. As numerous architectural historians have concluded, environmental science has contributed far more to the dramatic and continuing advances in contemporary architecture than has the development of new structural systems or forms of construction. The very high proportion of construction budgets expended on services – seldom less than a quarter of the cost of even a very straightforward commercial development, and frequently far more – confirms their importance. Despite the fact that many modern buildings become totally uninhabitable when mechanical or electrical systems fail, architects and occupiers alike are generally disinterested in their design. Like car buyers who demand elegant styling and good performance, but prefer to remain ignorant of the contents of the engine compartment, those who commission and design buildings take the engineering for granted. The result is that, even in temperate climates, supposedly excellent buildings designed by distinguished architects are replaced or modified after only a few years, having proved uncomfortable, if not unbearable, in use.

In some instances building services can become primary generators of architectural form – the Pompidou Centre by Piano and Rogers being an obvious example. Not only is all the ductwork exposed, but visitors' most memorable experience of the building is created by riding up the escalators which are also a major element in the elevation facing Place Beaubourg. Manufacturers of lifts, escalators and moving walkways rightly emphasise their importance – and the necessity of their early consideration in design concepts, if not always with the exhibitionist zeal of Rogers *etal.*

Walk this way

O & K, a division of the **Kone** Corporation, believes that "congestion in a building is a sure sign that escalators and autowalks were not considered at an early enough stage and are either inadequate or badly sited". Manufacturers are eager to share historical data with consultants, in order to analyse likely traffic, leaving a good margin for future increases in use. "If there is a golden rule," O & K explains, "it is that the actual capacity of the installation should equal 60 percent of its theoretical capacity".

Kone has acquired something of a reputation for innovation lately, having introduced the concept of lifts without separate motor rooms to many markets with their Monospace system. Where the Monospace saves vital plantroom accommodation, the O & K TransVario range of escalators and autowalks has been developed to minimise energy consumption and life cycle costs. With over 80 models, O & K can supply transport systems that integrate well with most architectural concepts, with a range of balustrade designs, colour finishes and associated lighting. Using chainless drive systems, and planetary gearing with a claimed efficiency of 98 percent, O & K's TransVario escalators and autowalks are designed for ›

Ron Johnson

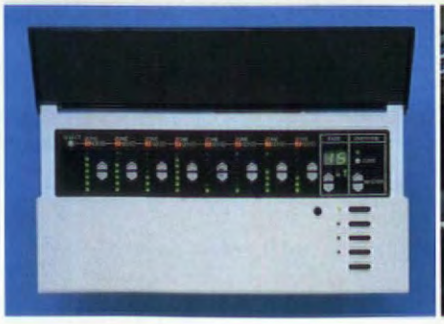
Top left: The Evolution elevator from Thyssen, a "new wave lift" with gearless motor and no machine room

Top right: Advanced Ergonomic Technologies Hiross underfloor air-conditioning system – an unconventional solution to a common problem

Centre left: Control terminal for Delmatic's computer addressable lighting management systems

Centre right: One of 16 Transvario escalators installed by O & K in the White Rose Shopping Centre, Leeds, UK, designed by Building Design Partnership

Bottom row from left: Lutron's GRAFIK systems can control a room's lighting combination from a wall-mounted keypad, as here at the mbanx building in Toronto



Above: An operating unit for the VLT 6000 dedicated drive for HVAC systems from Danfoss

› indoor or external use, and are commonly specified in public transport interchange facilities in which, notwithstanding heavy use for 20 hours a day, they are expected to last a minimum of 25 years. Recent installations have included Copenhagen and Denver airports, subway stations in Amsterdam, and the Hannover Expo 2000 complex.

Escalators and moving walkways are no longer seen as autonomous pieces of equipment. O & K's products can incorporate data transfer facilities, through which their operation is continuously monitored. The OkaVario-Tronic 401 control and diagnostic unit collects real time data and transmits it via a simple landline to a network of computers, allowing OkaVarioMonitoring software to scan and check up to 100 units simultaneously, making maintenance more responsive and cost-effective. The integrated electronics within each OkaVarioDrive unit switch to economy mode whenever traffic levels drop, saving up to 20 percent in energy.

New-wave lifts

Whilst mould-breaking products offer manufacturers short term competitive advantages, many clients, particularly institutional investors, can be reluctant to specify an unknown system, or one which might be difficult to maintain or replace in the wider marketplace. Thus, when Kone introduced the Monospace lift, clear technical and commercial advantages were not enough to win universal approval. Predictably things have moved on, with a number of firms now offering attractive alternatives. **Thyssen**'s Evolution is amongst the latest entrants in this new-wave lift market, featuring a new, compact and energy efficient "Mini" gearless motor. Similar in technical principle to Kone's Monospace and recently introduced products by **Schindler** and others, Thyssen's Evolution offers the unique advantage of the firm's "Vario Design" cabin interior, which allows for a wide range of combinations of wall elements, floors, ceilings, mirrors and handrails, with an emphasis on quality and clean, modern aesthetics.

Take control

Whilst architects are competent to specify a range of interior fittings, albeit within technical criteria generally defined by others, the more sophisticated services require the close involvement of engineering consultants. Increasingly complex building management systems integrate the control of heating, lighting, air conditioning and other services from one computer.

The argument, put forward by firms such as **Delmatic**, manufacturers of ZMC computer-addressable lighting management systems, is that the new technology can be programmed to conserve energy, reinforce security and optimise appropriate comfort levels, whilst still allowing occupants a degree of control. Similarly, **Lutron**'s Grafik 6000 lighting control system runs through Windows-based PC software, and modem capabilities permit remote electronic setup, diagnostic and operation. User control, of course, is at the heart of the matter – as it has repeatedly been found that people will accept objectively inferior environmental conditions provided they have had some means of controlling their habitat. Lighting, in particular, appears to be an area where industry standards are constantly being redefined – lower levels of illumination being accepted by today's clients than by their recent predecessors.

Building systems are also made operable from a single station with the implementation of dedicated drives such as the VLT 6000 from **Danfoss**. It is designed specifically to run under conditions unique to heating, ventilation and air conditioning systems such as mains phase loss, overheating and fluctuations from the grid, while its array of specialised technology allows flexible control of both the building's environment and energy costs depending on conditions.

Keeping cool

Architects' involvement in the specification and design of HVAC systems is often confined to superficial aesthetic issues, ignoring fundamental concerns such as the physical coordination of structure, enclosure and inhabited space, and patterns of cellularisation and occupation. The selection of individual components (fans, ducts, compressors, drives and control systems) within a strategically coordinated services installation is clearly a matter best left to specialists. Architects should never miss the opportunity, however, to explore innovative servicing strategies as a fundamental part of conceptual design.

This is particularly true of refurbishment projects, in which it is often necessary to achieve markedly improved levels of comfort cooling, heating or ventilation, within structures allowing insufficient space for the ceiling mounted four-pipe fancoil systems generally favoured in new buildings.

"The very high proportion of construction budgets expended on services – seldom less than a quarter of the cost of a commercial development – confirms their importance."

Innovations include chilled ceilings, or upgraded perimeter servicing – but there are occasions when neither of these is appropriate. In response to these constraints, **Advanced Ergonomic Technologies Ltd** produces the Hiross underfloor air-conditioning system, a solution specifically tailored to refurbishment projects. The system involves no chilled water distribution – making it safer for use in the proximity of computer hardware and cabling. The manufacturers also claim that Hiross can be installed far faster than more conventional alternatives. Another solution to problems caused by lack of space, cost or building design limitations is **Airflow**'s Econimiser centrifugal fan system, which uses a simple principle of destratification to redistribute ai flow, with the aim of creating a more comfortable and uniform temperature all year round. WA

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DELMATIC
lighting management

Lighting management systems liberate designers from the traditional rigidities of electrical services installation. Lighting designs are configured and programmed through graphical software to enhance the building structure and reflect its contribution to the street and urban environment. At the same time, very personal lighting space may be created with individuals able to vary lighting to suit their unique needs and preferences.

Delmatic are the leading designers of lighting management systems and have been equipping key projects on the global scene for forty years. Latest computer addressable systems provide absolute flexibility through independent control and monitoring of every luminaire. Virtual Wiring software links luminaires to local control devices through software and lighting arrangements and scenes are instantly altered through graphical software.

Traditional forms of local control are often precluded through building structure and design, while numerous ceiling-mounted sensors spoil simple harmonies of interior space. Delmatic telephone control of lighting combines powerful user control with the sought-after uncluttered ceiling profile, while telephone dimming provides staff with a means of self-expression and the ability to create their own personalised lighting environment. For the Client, telephone control achieves long-term benefits through the ability to add and adapt local control by software-matching lighting to telephone extensions and without changes and disruption to installation.

Delmatic are at the forefront of interoperable system technology using internationally-recognised Echelon LonWorks protocol with landmark systems setting the trend through integrated control of lighting, fan-coils and window blinds.

Contact details

Delmatic Ltd
117 Cleveland Street
London, W1P 5PN
UK

Contact: Stephen Woodnutt

tel: +44 171 927 6500
fax +44 171 927 6525
e-mail sales@delmatic.co.uk
web: www.delmatic.co.uk

1: Action. Scene-setting drama at the broadcasting centre and headquarters of Pearson Television where lighting throughout production and office areas is dimmed from desk telephones. M&E Consultant - Oscar Faber.

2: Telephone control of lighting dispenses with switches and wiring at Apicorp Headquarters, Al Khobar, Kingdom of Saudi Arabia. Architect - DEGW, M&E Consultant - Ove Arup (photo credit Andrew Putler)

3: High-tech. The 350m tall Emirates Project Tower offers individual addressable switching and dimming of every office luminaire. Architect - Norr Group, M&E Consultant - DSSR.

4: And all monitored and programmed through powerful graphical software.

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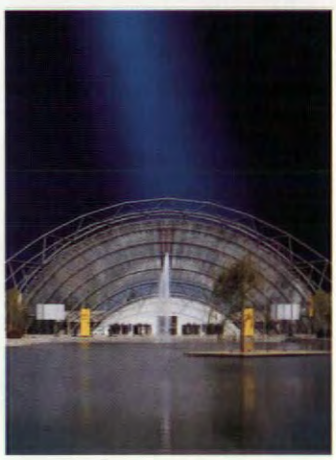
electrical wiring devices and system

Progress as a tradition



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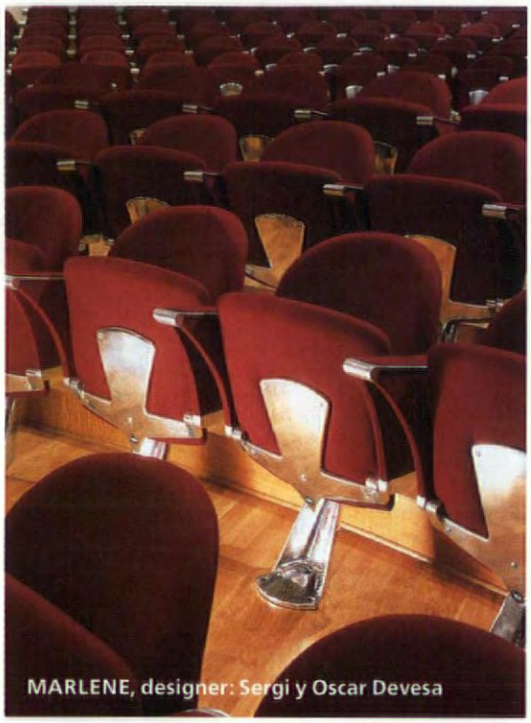

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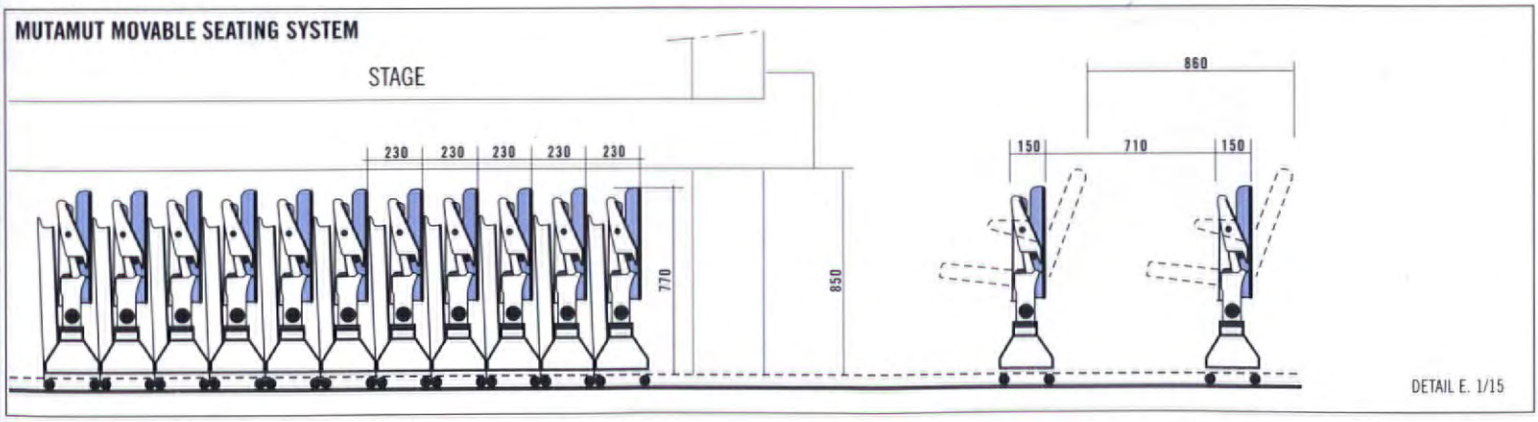

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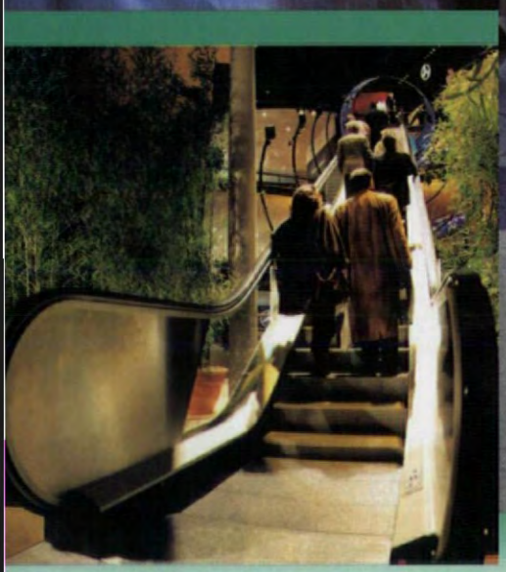

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