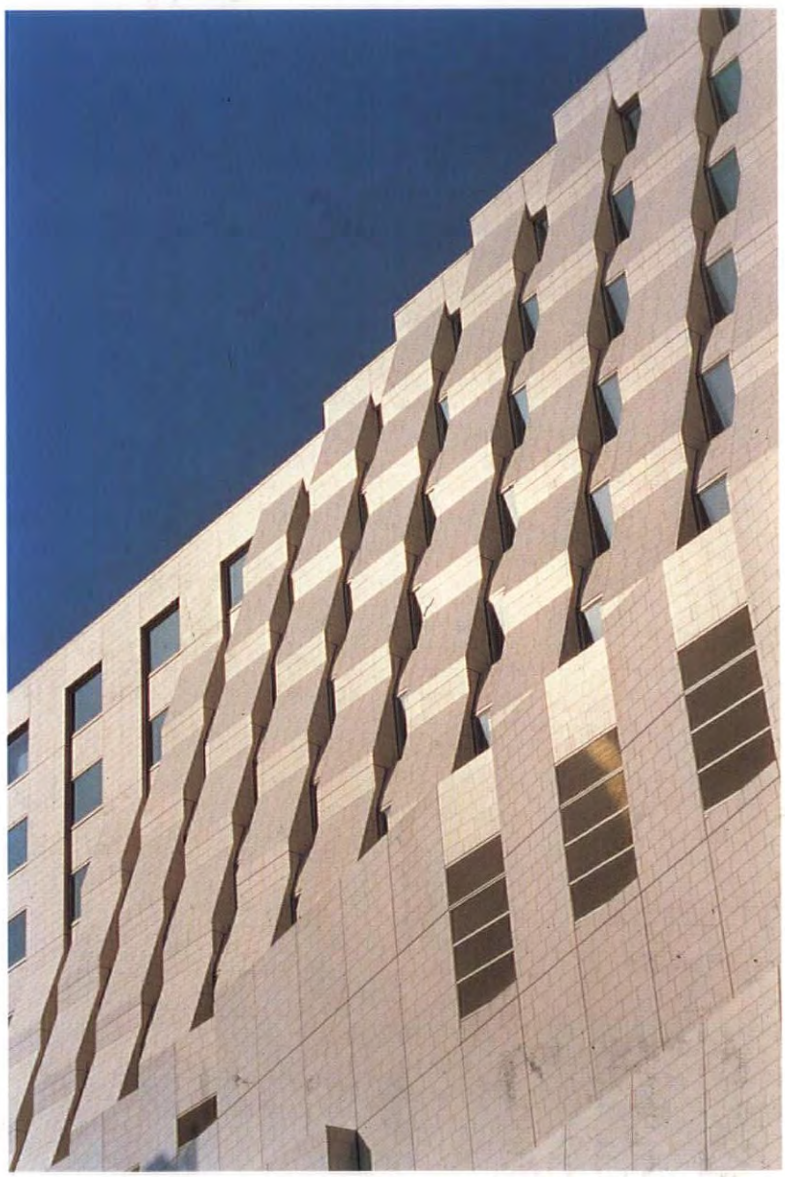
WORLD ARCHITECTURE

ISSUE NO. 32 US$10 UK£10



KIYONORI KIKUTAKE

IAN GLOVER IMAGES
THE BEAUTY OF THE MORNING
ROGERS IN JAPAN
SUBWAY MAN SPEAKS

THE INTERNATIONAL ACADEMY OF ARCHITECTURE

JUNCKERS
Solid Hardwood Floorings

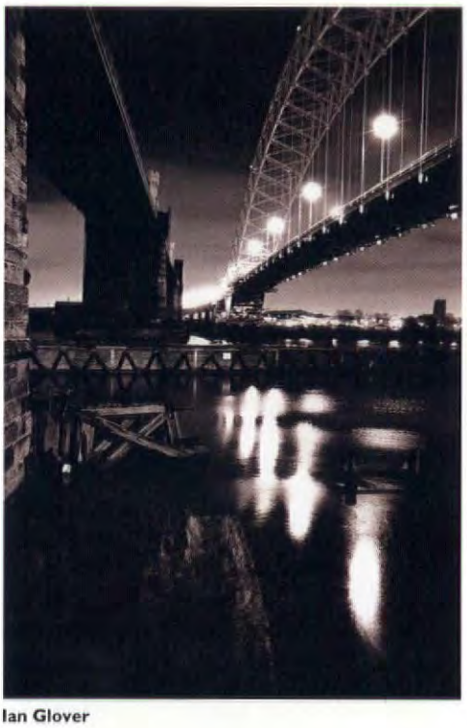
Junckers Industrier A/S • DK-4600 Koege • Denmark
Tel: +45 53 65 18 95 • Fax: + 45 53 65 99 36

ux, Canada, Cyprus, Finland, France, Germany, Gibraltar, Greece, Hong Kong, Iceland,
Israel, Italy, Japan, Korea, Kuwait, Lebanon, New Zealand, Norway, Portugal, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, U.K., U.S.A.

WORLD ARCHITECTURE

THE INDEPENDENT MAGAZINE OF THE INTERNATIONAL ACADEMY OF ARCHITECTURE (IAA) NUMBER 32

Cover: A detail of Kiyonori Kikutake's Ginza Theatre Hotel, completed in 1987. Photograph by Waki Shinkenchiku-sha Company Ltd



Ian Glover

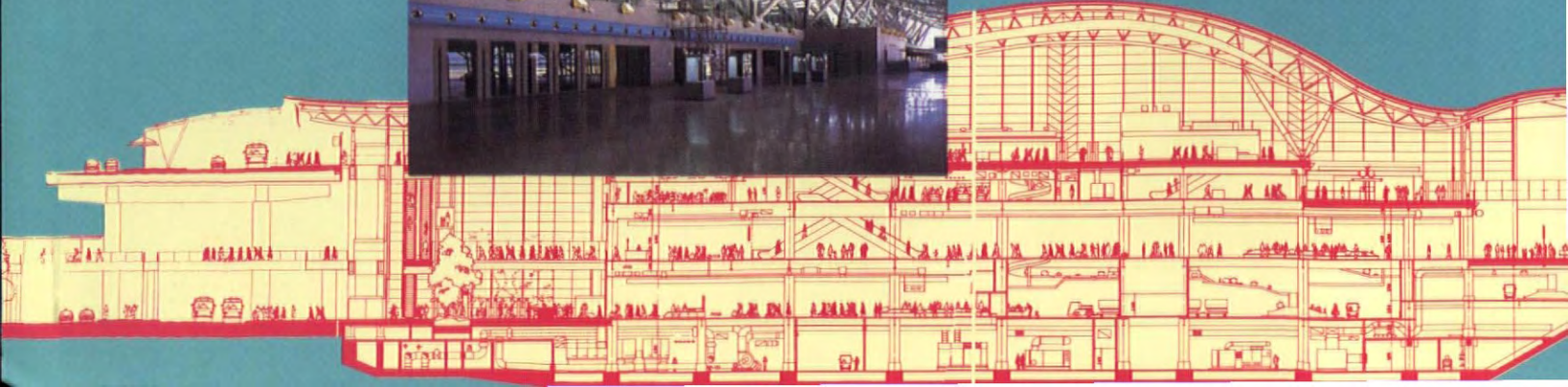
Cleveland – Spinning into the future

World Architecture is published by Cheerman Ltd. The views expressed in World Architecture do not necessarily reflect those of Cheerman Ltd or the International Academy of Architecture. All editorial matter should be addressed to: The Editor, World Architecture, 301-305 Euston Road, London NW1 3SS, England. All advertising and subscription enquiries to: Cheerman Ltd, 301-305 Euston Road, London NW1 3SS, England. Tel: 071-383 5757. Fax 383 3181.

World Architecture ISSN No 0956 9758 is published bi-monthly for $140 per year by Cheerman Ltd., 301-305 Euston Road, London NW1 3SS. Second Class postage paid at Middlesex, N.J. Postmaster: send address changes to World Architecture c/o C&C Mailers International Inc., 900 Lincoln Boulevard, PO Box 177, Middlesex, NJ 08846.

KANSAI INTERNATIONAL AIRPORT
OSAKA, JAPAN

Project	**Kansai International Airport**
Location	**Osaka Bay**
Client	**PTB - S10 JV**
Architects	**RENZO PIANO** Building Workshop Japan **NORIAKI OKABE** Associate Architect
Products	**INTERNAL FENCES**

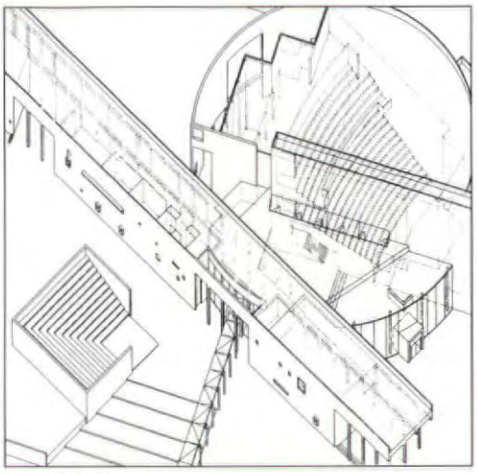


FOCCHI S.p.A.
Curtain walls
Circonvallazione Ovest, 9
47037 Rimini (Italy)
Tel. 0541.740055
Telefax 0541.742167

FOCCHI

ARCHITECTURE FROM FINLAND WITH ARCHICAD

B&M Architects is a Finnish architectural office founded in spring 1992 by Daniel Bruun (born 1963) and Jussi Murole (born 1962). The office has been active in designing buildings and master plans as well as taking part in national and international architectural competitions. Projects currently under realization are mainly international.



3D axonometric views

The main projects that the office is working on are an administrative center (70 000 sq.m) and a residential area (115 000 sq.m) in North Africa. Both are under construction. Designs for supplementary commercial, cultural, municipal and religious service buildings for 10 000 people will be finished this year.

Work at B&M Architects started in spring 1992 when we designed the master plan for an administrative center of 16 office buildings with congress hall and library, in total 70 000 sq.m. The master plan was followed by building designs.

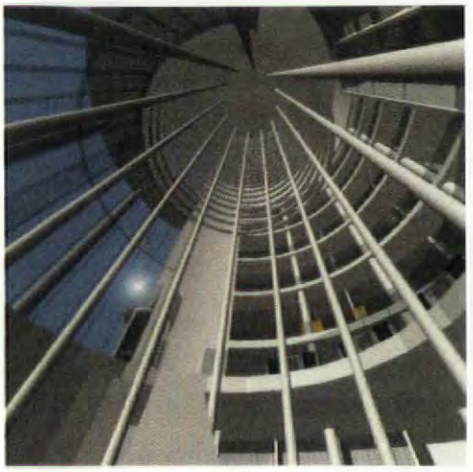
The site environment led us to a small scale solution with several building types and their variations grouped around a central square. Narrow lanes between the buildings and interior courtyards were natural solutions in the hot North African climate.

As we had no previous experience of computer aided design, we started the design work manually. After half a year of sketching working drawings for construction, the work actually started. The size of the project and the limited design period available compelled us to think of other solutions.

We started to compare different computer systems available for architectural design. We wanted to concentrate on designing buildings - so we needed a computer system that would be easy to learn and easy to use. The computer would be primarily for the creation of technical working drawings, but the system also had to be able to manage different kinds of architectural design and the presentation of projects. Our solution was the Apple Macintosh Quadra 950 computer and Graphisoft's ArchiCAD program.

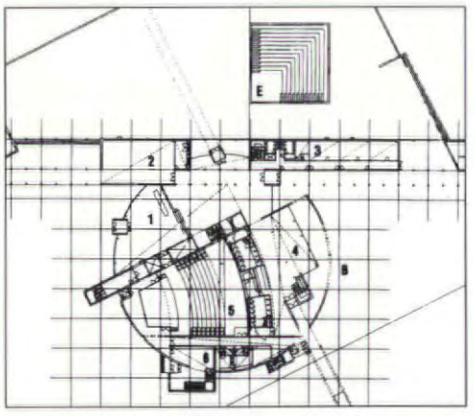
With the ArchiCAD system we managed to finish this (for a young architectural office) exceptionally large project in a short time. As the project included several building types, their variations and mirror images, we were able to save a lot of time and effort by using CAD design. In addition, revisions of a large number of drawings were easy to handle.

Environmental study with enhanced photo-realistic rendering



Sophisticated perspective views

We started our CAD career with routine tasks, but soon discovered the possibilities ArchiCAD opened up in design presentation. Adding three dimensional designs to photographs



Floor plans and working drawings

from the site has created a new level of photorealism. It is now possible for the architect as well as the client to get a realistic image of the design.

ArchiCAD has also proved effective in architectural competitions. It is possible to get illustrative and graphically qualified drawings in a short time. The program is well suited for different tasks from the smallest cottage up to master plans and environmental designs.

Our experience over two years has proved ArchiCAD to be an indispensable working method for designers, and we are constantly finding new ways of using it.

MAKE BETTER ARCHITECTURE WITH

ArchiCAD®

Buildings are represented in two and three dimensions, but the practice of architecture always deals with four dimensions: length, width, height, and **time**. How your software manages the fourth dimension can make or break your practice.

ArchiCAD®, the world **leader** architectural SW, with its unique ease-of-use and integration of the 3D model and 2D documents, helps you remain the master of your design and your time.

Available worldwide on Apple Macintosh, Power Macintosh, MS Windows and Windows NT.

"This program is incredible... It's like opening up a magic box." -MacBusiness

For more information contact

UNITED STATES
GRAPHISOFT U.S., Inc.
400 Oyster Point Boulevard, Suite 429
So. San Francisco, CA 94080
Phone: **1-800-344-3468**
1-415-737-8655
Applelink : GRAPHISOFTUS
America Online : GRAPHISOFT

GERMANY
GRAPHISOFT
Computerprogramme GmbH
Lindwurmstraße 129a
D-80337 München
Phone: (49-89) 746 43-0
Fax: (49-89) 746 43-299
Applelink: GER.XSE0103

JAPAN
GRAPHISOFT Japan
5-1-18, Minami-Aoyama,
Minato-ku, Tokyo 107
Phone: (81-3) 3406-9239
Fax: (81-3) 3406-9289

INTERNATIONAL INQUIRES
GRAPHISOFT
Kolumbusz utca 29
1145 Budapest, Hungary
Phone: (36-1) 251-1000
Fax: (36-1) 251-1890
Applelink: GRAPHISOFT

GRAPHISOFT®

GIS Geberit Installation System

Use

The Geberit installation system GIS permits simple, fast and complete construction of sanitary installations to the building shell stage in installation areas in new buildings and in the modernization of old buildings.

Rationalization

The modular system adapts individually to every situation. The installation work in the sanitary areas is simplified and considerably speeded up. Time-consuming and difficult work is transferred from the building site to the workshop.

Everything from one source

With GIS, the fitter is able to provide all services for the entire installation from one source. The number of people involved in the building work is reduced and coordination is simpler. The only remaining work consists of tile laying and electrical installation.

Clear separation of functions and free bath design

With its support system, GIS permits not only the erection of the usual installation against the wall but also the construction of room walls or free-standing walls (e.g. partitions). Problems of the past, such as slotted walls and hence poor sound insulation,

and unnecessary costs owing to the large number of people involved will no longer be encountered in the future.

Computer support

To simplify planning and scheduling, Geberit has developed a computer-assisted service software package, GIS-DLS, which can be used on commercial personal computers. An offer can be prepared for the end user on the basis of plans or diagrams.

Future

GIS is a system that opens up many more possibilities in sanitary technology for the planner and architect and sets no limits for creativity.

Geberit Pluvia Syphonic Roof Drainage System

Economical

The Geberit Pluvia syphonic roof drainage system for draining flat roofs differs from conventional drainage systems in that the pipes are laid horizontally and thus save valuable building space. This innovation also allows the architect to consider new designs (pleasanter appearance).

Reliable

The Geberit Pluvia syphonic roof drainage system is equipped with a special roof outlet which largely fills the connected pipes and therefore acts as a pressure pipe. Consequently, the high flow velocity of the water ensures that the pipe is self-cleaning.

Environmentally friendly

The pipe diameter and hence also the material consumption can be greatly reduced by this system. The Geberit Pluvia system requires few underground collecting pipes, few drain connections and therefore also less materials. The Geberit Pluvia pipes are made of the environment-friendly material polyethylene (PE).

Geberit software at the building site

Calculations for a Geberit Pluvia syphonic roof drainage system are assisted by specially developed Geberit software.

GEBERIT

Our Element is Water

We are an international leader in the sector of sanitary engineering. Our complete systems for prewall installations, flushing cisterns, drainage, water supply and syphonic roof drainage respond to the market needs by offering pace-setting and vital solutions.

Thoroughly thought out and well-founded concepts and implementations. From the domestic bathroom to the most complex industrial plant.

GEBERIT

THE BAUHAUS LEGEND

STUDENTS IN DARMSTADT REBUILD FORGOTTEN MASTERPIECES

A glass office building by Mies van der Rohe interpreted by Michael Wiesner

The tremendous impact that the Bauhaus had on architecture is legendary. Today the Bauhaus is undergoing a renaissance.

This current 1920s revival has come about mainly because of the striking parallels which have emerged between the 1920s and the 1990s. In the 'twenties people were looking for a new perspective, new hope after the old order had broken down. The modern architecture of the Bauhaus embodied that belief in the future and the search for a new world order. It was at the point when that new system for world order - Communism - broke down in the Eastern bloc that the current revival of Bauhaus architecture began.

Also the Bauhaus - sharply interrupted after only 14 years of activity - is searching to find a new orientation. Is it going to be an experiment, or is the apparent Bauhaus revival after all the "-isms" we have lived through in the past decades still an experiment?

Obviously, it is worthwhile scratching the surface of architectural history in order to discover the designs for non-existing buildings and to visualize and document the ideas.

By means of state-of-the-art computer technology it is today feasible for the first time in the history of architecture to carry out "critical reconstructions". At the risk of losing the illusions and myths that surrounded them, frequently quoted masterpieces of famous Bauhaus artists were put to the test in order to decipher the spirit of their designs.

The works represented here are the result of a two-term senior class seminar at the Technical University of Darmstadt. Entitled "Bauhaus - seminar", it was jointly directed by Manfred Koob, Visiting Professor and Professor Johann Eisele.

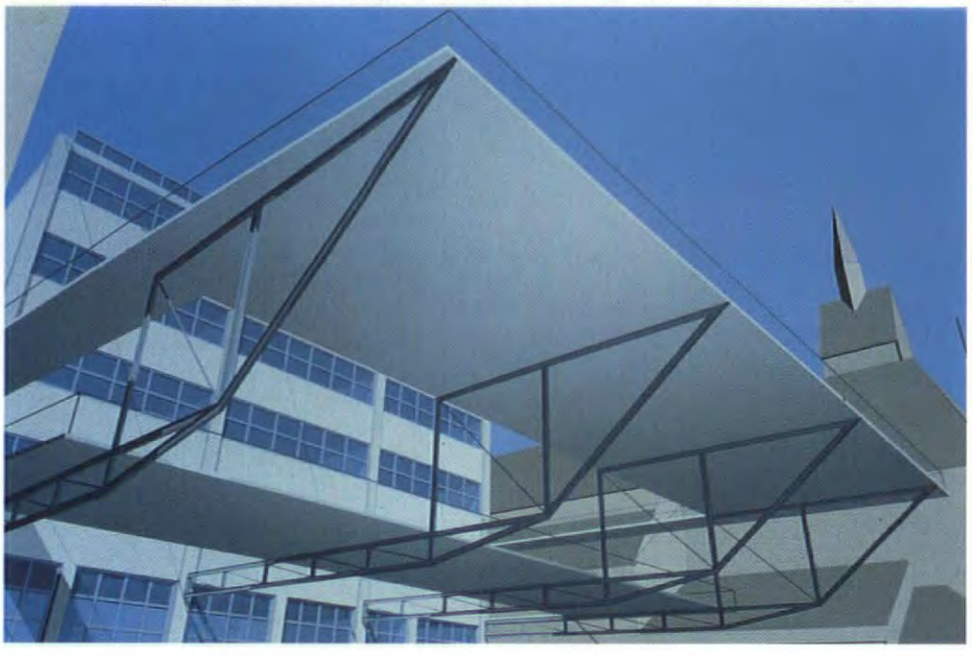
At the beginning of the seminar most of the students had no knowledge whatsoever of CAD. Therefore in the winter term 1992/93 they were trained in CAD basics during weekly sessions and simultaneously were taught the theoretical background - in the form of block seminars - of actual Bauhaus projects "on the spot" in Dessau. The students' seminar projects were then worked out during summer term '93.

At the outset only the unpublished projects of Bauhaus architects and artists were to be elaborated, but because of the students' exceptionally high level of interest, the subject matter was extended to include the European avant-garde that marked the beginning of the Modern style. The list of elaborated projects includes the work of Walter Gropius, Hannes Meyer, Hans Wittwer, Mies van der Rohe, Oskar Schlemmer, Marcel Breuer, Bruno Taut, Theo van Doesburg who represented the De Stijl movement, the Russian Constructivists El Lissitzky, Leonidov, Melnikov and Tatlin, and Le Corbusier. The one factor that all the projects have in common is the fact that none of them exists. They were either built and then destroyed or were designed but never realised.

Objectives of the seminar

The objectives of the seminar went beyond getting trained in CAD and learning to use all

(Below) Hannes Meyer's Petersschule, *Basel interpreted by Simone Mann. (Bottom left) Bruno Taut's glass industry exhibition pavillion interpreted by Sandra Hilbert and (bottom right) Tatlin's* Monument to the Third International *interpreted by Claudia Drilling/Matthias Wehrle and Birgit von Lukas/Andreas Bergmann*



programme functions: by integrating a prestigious architectural subject - the Bauhaus - CAD training was more strongly incorporated with architectural studies. Additionally, students were highly motivated to intensify their CAD training as with it they were able to quickly test and complement the theoretical background learned in the previous term. Unsurprisingly then, participants in this seminar had much higher expectations of their course than participants in ordinary seminars, and, impressively, almost all of them had produced a finished model of their project by the end of the term .

Basic methodology and approach

Quite a variety of basic material for the projects was input into the system. The quality of this material varied widely - it was rare for all details necessary for CAD elaboration to be in existence and it was unusual for the drawings to be fully or even partly dimensioned. But with the aid of the architects' sketches or isometric views, and by analysing dimensions and their proportions, in most projects it proved possible to draw conclusions. Texts and other verbal statements of the architects in respect of colour, movement and means of projecting their particular design were taken into consideration as additional methodological bases for elaboration.

Thus, students not only faced the demanding task of progressing their chosen projects, but also had to study the entire oeuvre of the respective architect in order to work out what the missing project details could be. Comparable objects which architects referred to in various publications were thoroughly analysed by the students.

Model building and visualisation

In all projects, building areas and floors were put in as volumetric elements in various floor plan levels. From their combination volumetric models of sections or the entire building could be derived. Depending on the structures defined by the students, thus different storeys were realized upon each other or elements such as walls, beams, columns, slabs, roofs or facades were combined. Students then derived from one central building model elevations, sections and perspectives as well as floor plans. At the same time, precise quantity take-off of both volumes and surfaces were carried out. All surfaces of building models were embellished with colours, textures and various light effects. Thus students created not only artificial horizons and skies, they also generated beautiful images and succeeded in representing virtual space.

As the technical requirements for adequate computer simulation of the project were slightly beyond the facilities at the faculty of architecture, some additional support was required from asb baudat, Bensheim. Thanks to this support, students were able to input their projects into high-performance graphic workstations and to produce impressive images of the projects with the help of experienced asb personnel. A video has been produced of these images.

We would like to express our sincere thanks to those who have supported the project: Hewlett-Packard for providing workstations and IEZ AG Bensheim for providing their AEC software speedikon.

How to interpret the results of project work

Although the students carried out precise research into details of projects and the intentions of the architects, they make no claims as to the completeness or accuracy of their work. Their completed projects cannot therefore be regarded as accurate overviews of the architects' or artists' completed works.

The seminar objectives and the projects realised by the students should be regarded as a promising experiment carried out within a limited period of time to link CAD training to thorough analysis of a famous architect's oeuvre. Thus, through the handling of a new medium, fascinating views of projects were presented - views that not only revealed the incompleteness of an architectural thought or a conceptual idea, but above all revealed the genius of these projects which could not be realised in their own time. Thanks to the use of a new technology, they have returned from oblivion to be appreciated by a wide audience. □

speedikon®

speedikon®
ARCHITECTURE

High performance in CAD

© IEZ AG/asb baudat

Via strategic international cooperations with such well-known companies like Siemens Nixdorf and Intergraph, IEZ is about to extend its world-wide network setting AEC standards. In the field of future-oriented research and development, IEZ participates in major European research programmes.

Since its foundation in 1981, IEZ AG has become a major player in the AEC CAD market. IEZ´s integrated solution *speedikon* is installed more than 6.500 times world-wide at small and medium sized architectural firms as well as in huge, well-known industrial companies and public institutes. More than 200 qualified experts work at IEZ in Germany to develop *speedikon* as a model-based CAD solution for the whole range of AEC tasks: Architecture, Civil and Structural Engineering, HVAC, Facilities Management and Interior Design.
Sales and distribution of *speedikon* are efficiently carried out by more than 30 resellers in Germany and distribution partners in Switzerland, Austria, Belgium, France, Italy, Slovakia, the Czech Republic, Scandinavia, Netherlands, Luxembourg, Spain, Hungary, Singapore and in China.
All *speedikon* applications are based on a system nucleus running on the major UNIX workstations as well as on PC's under SCO UNIX.
IEZ AG recently released *speedikon M*, an additional architectural solution based on MicroStation, also running under Windows NT.

© ARCH-Y-TELL/LINEAR

IEZ AG

IEZ AG Headquarters
Berliner Ring 89 · D-64625 Bensheim · Tel. +49 / 62 51 / 13 09-0 · Fax +49 / 62 51 / 13 09-21
Ask for your local representative!

light constructs

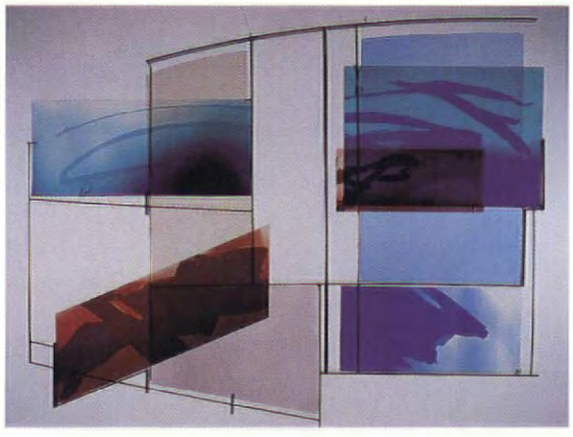
an exhibition of two and three dimensional contemporary stained glass installations

Julia St Clair Forde **John Patsalides**

to be opened by

Richard Burton

Chairman, Arts Council of England, Architecture Advisory Panel



'Stained glass conjures up images of church windows . . . Today, in the new generation of stained-glass artists, it is very different – lighter, more abstract and, most importantly, capable of enhancing a space and fulfilling a room's potential, rather than as an ornamental add-on. And artists like St Clair Forde, Patsalides and Alexander Beleschenko are encouraging architects and interior designers to recognise its potential.'

The Times 20 August 1994

The Gallery in Cork Street 28 Cork Street London W1X 1HB

Friday 25 November – Saturday 17 December 1994

Monday – Friday 10.00am – 6.00pm

Saturday 11.00am – 6.00pm

Late night opening on Thursdays until 9.00pm

Both artists will be present from 6.00pm

You have the ideas! We have the solutions, use your fax.

During the last five years we have developed new steel construction methods, prefabricated building components and elements, which permit the architect to serve and create form and harmony. We have a strong information package which presents our construction management principle, products and abilities. It will tell you about design, planning, automatic manufacturing and installation solutions for steel-framed buildings, good looking facades and industrial structures. It also introduces to you the prefabricated units for balcony, kitchen and sanitary purposes, specially developed for the renovation of old apartment houses. We do not ask you to image everything that modern steel construction technology can offer you. Instead, we would ask you to send a fax and receive some ideas to support your imagination.

RAUTARUUKKI
Building Products Division
Tekniikantie 12
P.O. Box 364, 02151 ESPOO
FINLAND
Tel. +358-0-435 42007

Fax this part to +358-0-435 43085

Please send me further information on the following products and services:

- ☐ SBS design and contracting of commercial, office and residential steel buildings
- ☐ design, manufacture and installation of steel frameworks for buildings
- ☐ Mäkelä renovation systems for facades of old buildings
- ☐ Producta prefabricated sanitary units
- ☐ Nordicon external wall and facade units
- ☐ Liberta cladding panels
- ☐ plastic-coated profiled steel sheets
- ☐ waterway steel structures
- ☐ hollow steel sections
- ☐ welded plate girders
- ☐ line pipes
- ☐ tapered tubes
- ☐ steel pipe piles
- ☐ cold roll-formed steel sections
- ☐ aluminium profiles
- ☐ lightweight brackets

Name: _____

Company: _____

Address: _____

naco

IDEAL FOR EVERY CLIMATE

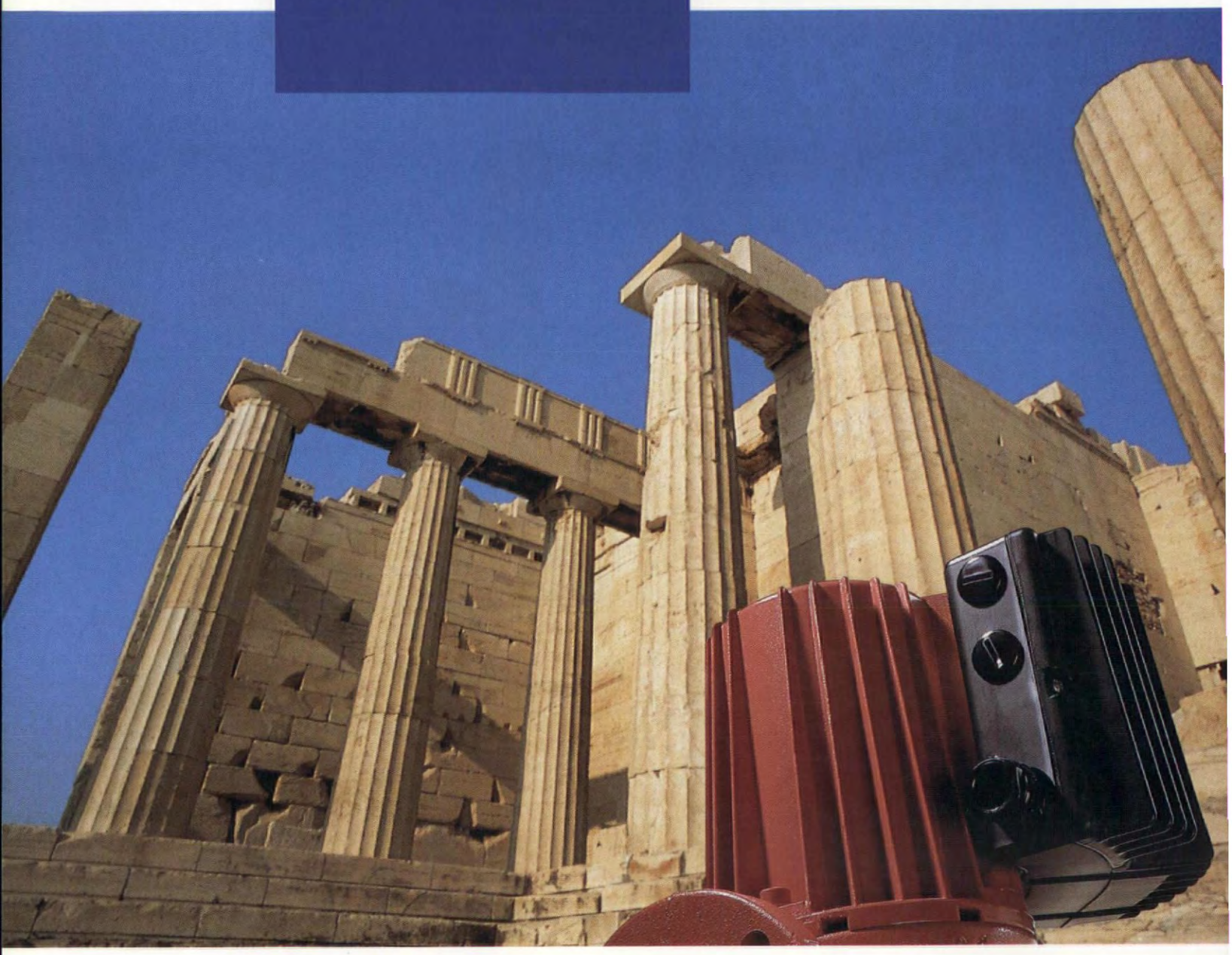
ENRICO SEGRE'

Caradon Naco

naco

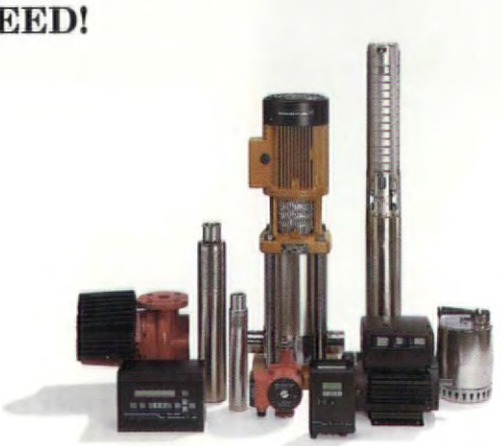
Corso d'Italia, 35/B
00198 ROME (ITALY)
Phone (06) 84.15.766
Telex 626433 NACORM
Telegr. NACOLITE
Fax (06) 88.45.197

THE MODERN CLASSIC...



GRUNDFOS PUMPS - INTELLIGENT PERFORMANCE FOR EVERY NEED!

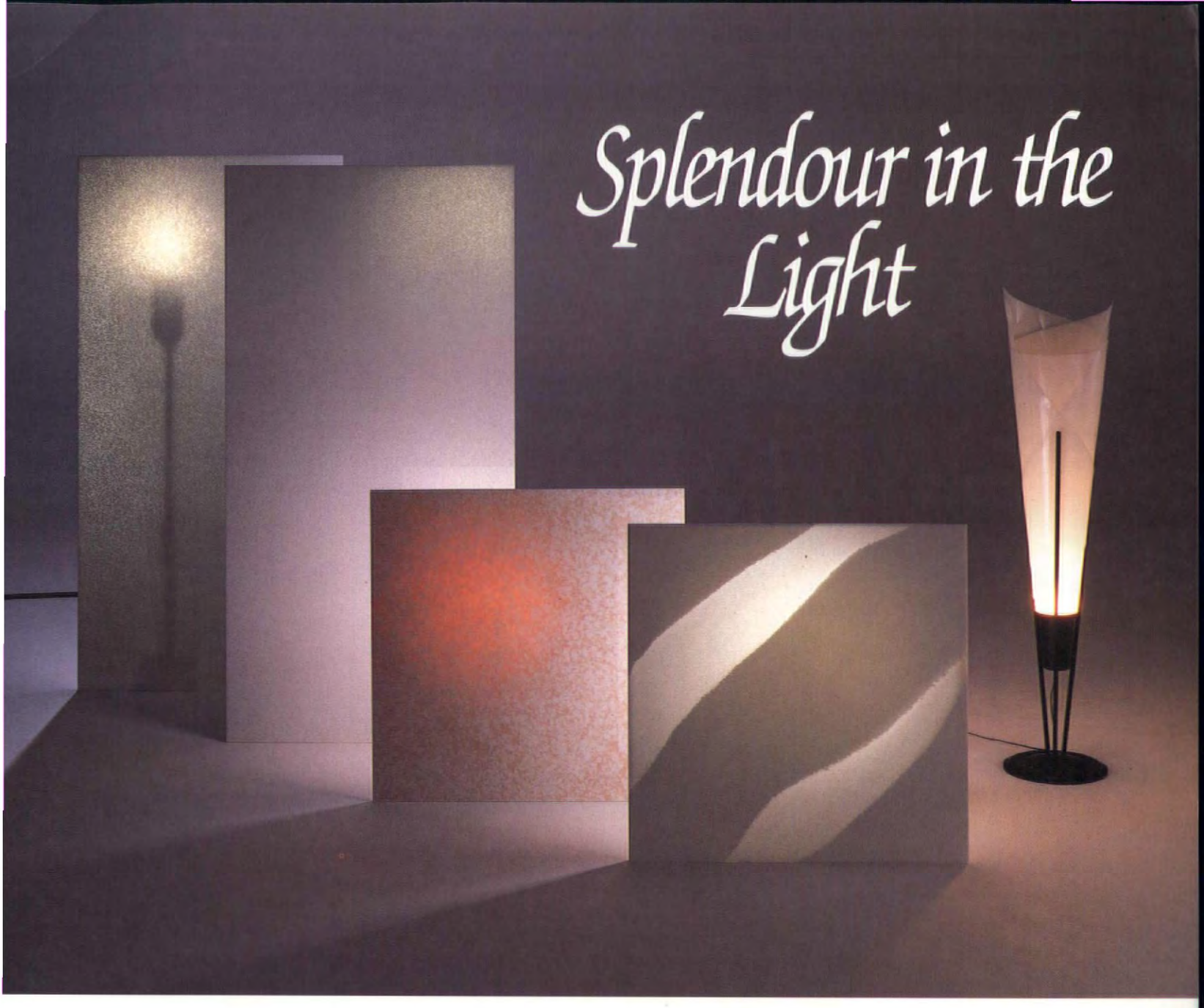
At Grundfos we are always striving to achieve the best - and so we have been for almost fifty years. Our efforts resulted - among many other things - in the first generation of intelligent circulator pumps. More than 3 millions are being manufactured every year - enhancing comfort and saving energy for many more millions of people around the globe. Truly a modern classic.



GRUNDFOS®

Leaders in Pump Technology

Europe - Tel. +45 86 68 14 00 · Americas - Tel. +1 209 292 8000 · Middle East - Tel. +971 4 815166 · Asia/Pacific - Tel. +61 834 00200



Design and imagination. Through a special process of crystallising glass, we at Nippon Electric Glass, Co., Ltd. created Neopariés, a breakthrough in building materials.

We now introduce Neopariés-Glare, a surface material capturing the dramatic visual elements of transmissive light. Achieving classic light depth with an air of modern elegance, Neopariés-Glare serves as an ideal cladding for either interior or exterior surfaces.

NEOPARIÉS-GLARE

Beautiful yet ruggedly durable, Neopariés-Glare boasts a 6.5 Morse hardness–harder than natural stone. A zero percent water absorption rate makes it impervious to freezing and moisture damage, and it resists acid and alkali better than granite and marble. And with the Neopariés advantage, panel curvature can be accomplished through a heating process.

The next time you're searching for materials to highlight a creation, or want striking design emphasis, think about splendour in the light. Neopariés-Glare stands out in a world of otherwise grey and dreary designs. As for us at Nippon Electric Glass, well, we've always been captivated by the imagination of light.

Nippon Electric Glass Co., Ltd.

Building Material Division, 1-14, Miyahara 4-chome Yodogawa-ku, Osaka 532 Japan

European Office

Nippon Electric Glass Co., Ltd.
Europe Representative Office
Graf-Adolf-Straße 68,
40210 Düsseldorf, Germany
Tel : (0211) 353551
Fax: (0211) 361-3611

Representatives in Europe

T. I. Tiles International Limited
9 Tollpark Road, Wardpark EAST
Cumbernauld G68 OLW
United Kingdom
Tel : 0236 732727
Fax: 0236 720857

Sumitomo France S.A.
87 avenue de la Grande Armée
75782 Paris Cédex 16 France
Tel : (1) 4067 8400
Fax: (1) 4067 9861

Sumitomo Corporation (UK) Plc.
Vintners' Place, 68,
Upper Thames Street,
London EC4V 3BJ, England
Tel 071-246 3761
Telex: 887382 SUMI G
Fax: 071-246 3924

Dekker Natuursteen
Rading 154, P.O. Box 40
1230AA Loosdrecht Netherlands
Tel : 02158-23051
Fax: 02158-26296

Getting fresh air indoors...

...is a breeze

If you think air-conditioning is an expensive luxury or a long and complicated process to install, then you obviously haven't been introduced to Fujitsu's new 45,000 BTU/h cassette unit.

The 45,000 BTU/h fits unobtrusively into any false ceiling and features knock out panels that can provide fresh or recycled air to even the furthest corners of a building. This means that additional rooms may be linked to the system. It also features a 3 phase operation with reverse cycle heating options.

But the 45,000 BTU/h is just one of a wide range of air conditioners from Fujitsu. As well as cassette units they include floor standing and wall, window or ceiling mounted models, all of them neat, unobtrusive and stylish. They feature a whole host of technological innovations such as infra-red remote controls, a super quiet action and a unique multi-directional air flow adjustment system which ensures an even distribution of air in every direction. There is also a choice between units which supply cool air and those which offer both cooling and heating options.

If you'd like to know just how much of a breeze it is to get fresh air indoors contact your nearest international office.

Fujitsu General (U.K.) Co. Ltd.,
154, Great North Road, Hatfield,
Herts, England. AL9 5JN.
Tel: 0707 272841 Fax: 0707 273111.

Fujitsu General (Euro) GmbH
Werftstrasse 20, D-40549,
Dusseldorf, Germany
Tel: 0211 50098-0 Fax: 0211 50098-50

Fujitsu General (NL) B.V.
Marconiweg 10, 4131 PD Hagenstein
(Vianen) The Netherlands.
Tel: 03473 73744 Fax: 03473 73747

Ceiling mounted

Floor mounted

FUJITSU

Window mounted

Wall mounted

WATER BASED DECORATIVE-SYSTEM

Realization with OIKOS products

Oikos,
a leader in the interior design products field presents:

New Book

This work tool was conceived and developed to offer the most advanced and complete interior design technology in a single compact unit. The selection of colors, designs and finishes is the fruit of many years of experience and on-going research dedicated to devising a unique interior design system. The color samples are all real as life, you can almost reach out and touch them. The 400 possible color combinations, the infinite style options and the 18 different products make the Oikos Book an ideal tool for interior designers. The technical features, the manner of application, the itemized specifications, the photo brochuer illustrating the infinite design possibilities all contribute to making this an indispensable and comprehensive tool for interior design.

New Book by Oikos

The most complete collection of products, finisches and working procedures available on the market. Find out more by sending us the attached coupon.

REALIZZATO DA KRONOS sas

DECORSYSTEM
DECORATION COMPUTER GUIDE

IMAGE of applications screen

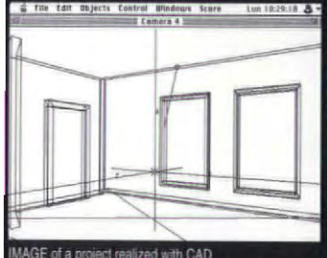


IMAGE of a project realized with CAD

IMAGE at a project done with OIKOS products

CD ROM — AN INTERACTIVE CATALOGUE

Decor System is a multi-media interactive tool with which Oikos, a leading company in the interior design products field, is able to illustrate its vast arrat of products. It's a sort of interactive catalogue that makes possible for the customer to access all the pertinent information about any of Oikos's products by simply keying into the desired category. After initially selecting the appropriate field of application (private houses, hotels-catering, historical structures, public institutions, public works, work environments, commercial buildings, fairs-conventions and furniture-accessories) the customer may proceed to determine which Oikos products best satisfy the specified requirements.

Once a product has been selected, one may scrutinize its technical features, the safety data, the specifications, the certification, how it is applied and visualize possible design and finish scenarios by means of textual information, color images and narrated films, all the latest multimedia features. Another very important service that Decor System offers the is printing of all the textual data that is then transferred along with information about materials onto the hard-disc of the customer's computer so that all of it can be used for his in-house needs (designing a project or compiling an offer, utilization of the materials for illustrating interiors in perspective with CAD). In addition to product information, the customer has access to all information regarding the Oikos company. Decor System is operated with Windows or Apple programs on CD-ROM disc. It may be used on any type of personal computer equipped with a graphic card, color monitor, 4 Mb Ram and CD drive.

COLORANDO
Video course for applicators

VHS

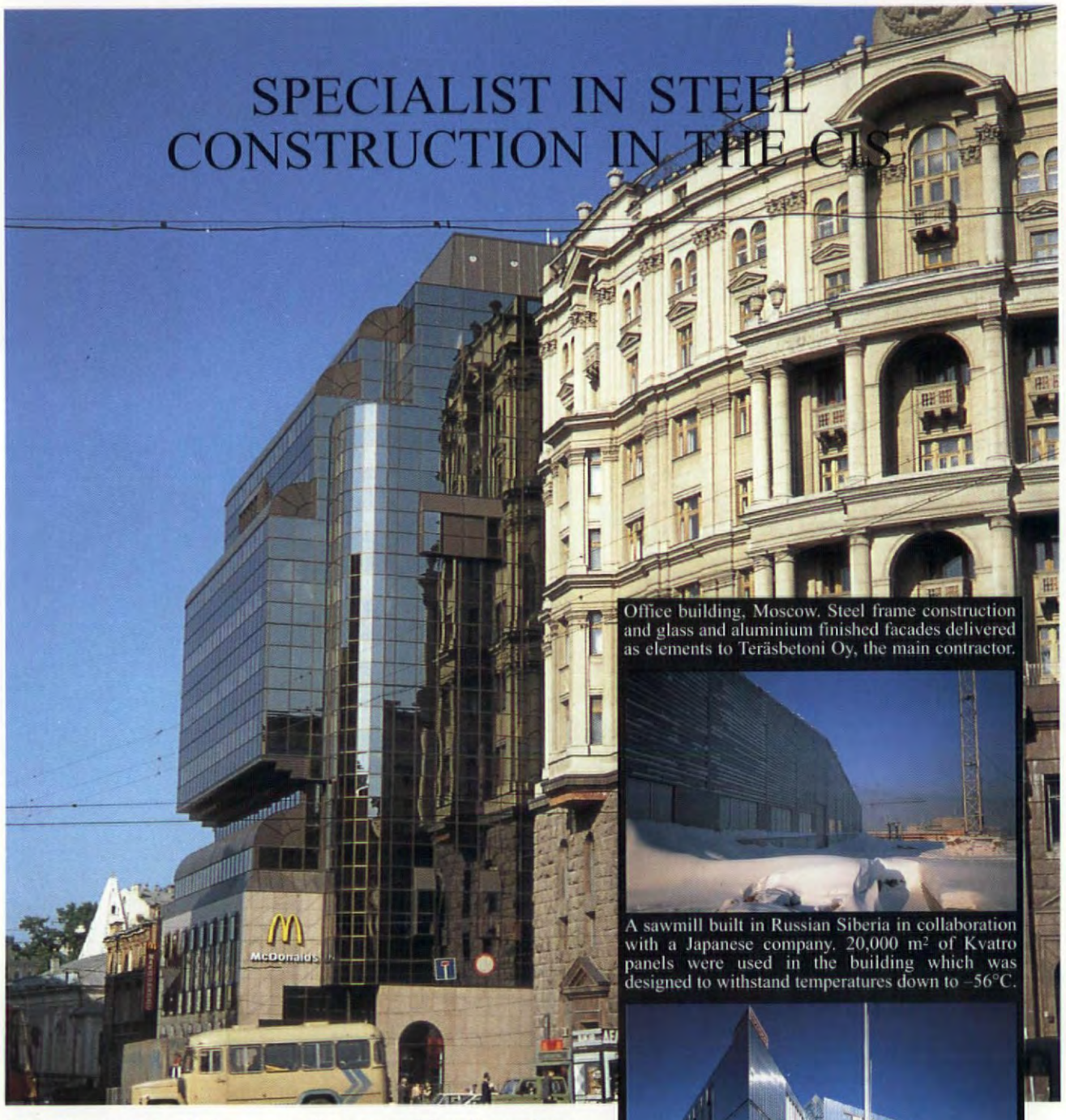
In an age of momentous changes, businesses are bound to change their communication methods as well as goals. Bearing this in mind, Colorando, a video course for applicators, represents a giant step in moving beyond the old formulas of business communication in which the message was primarily oriented at creating an image and promoting products and services, of ten employing very sophisticated methods, but their main interest in the recipient was limited to encouraging his consumption and purchase of their product. The colorando video course is divided into five parts. The first part deals with the corporate philosophy emphasizing top quality products that are startlingly revolutionary, conceived to reflect the latest design trends while still respecting an "historical" appreciation of the field's traditions with an extremely vast range of products that are all ecological, free of solvents and completely sensitive to environment and human health considerations. The second part is concerned with color theory and deals with theoretical concepts of perception and the nature of color in a concise but through manner. The third chapter discuses the use of color in terms of the overall interior design's requirements, whereas the fourth chapter provides the decorators with useful tips on how to develop new professional contacts, suggesting ways to best present one's own professional qualifications to prospective new clients. The final section deals with actual methods of applying Oikos products and techniques that will help the decorator to best express and stimulate his own unique creativity, thereby bringing out the best in the product as well.

For more information kindly send following to:
OIKOS srl - via Negrelli, 1 - 47042 Cesenatico (FO) - Italy

Name _____ no. _____
Surname _____ Address _____ City _____
Cap _____ Country _____
☐ Decorsystem ☐ Colorando ☐ Book

OIKOS®
Via Negrelli, 1 • 47042 Cesenatico (Fo) ITALY • Tel. 0547-81412 • Fax 0547-75650

SPECIALIST IN STEEL CONSTRUCTION IN THE CIS



Office building, Moscow. Steel frame construction and glass and aluminium finished facades delivered as elements to Teräsbetoni Oy, the main contractor.

A sawmill built in Russian Siberia in collaboration with a Japanese company. 20,000 m² of Kvatro panels were used in the building which was designed to withstand temperatures down to –56°C.

The Nixdorf office building in Tampere, Finland. Teräselementti Oy was the main contractor for the project.

Teräselementti Oy designs, manufactures and installs steel structures either independently or in collaboration with international building contractors. The proof and guarantee of our expertise is based on 30 years of experience with a client base ranging from the biting frost of Siberia to the scorching heat of the Sahara.

Contact us if you would like to learn more about our successful Kvatro mineral wool insulated wall and roof panels; our steel construction in general and our special experience in the CIS.

teräselementti oy

Hammareninkatu 7, FIN-33100 Tampere, Finland
Tel. +358-31-2236 211, fax +358-31-2128 630

STEEL FRAMES • KVATRO FACADE PANELS • STEEL BUILDINGS

Creative latitude in metal ceiling design with Gema modular systems. Support and planning service included.

Architects, builders, planners and general contractors all over the world know that Gema metal ceiling systems offer abundant creative latitude as regards geometric form, materials, and colours. In fact, the most fascinating metal ceiling designs are frequently developed on the basis of our standard modular ceiling systems.

The final result is always precisely what the customer has in mind. Functionality and design in perfect harmony – an ideal blend of features which address interior architecture, lighting, acoustics, room climate, and fire prevention requirements.

Our professional approach to the design and production of metal ceilings saves money for the customer because support and planning services are included in our scope of delivery. Your expectations deserve our full attention.

BfG Bank Building "TRIANON", Frankfurt/Germany

Lufthansa Computer Centre, Frankfurt/Germany

Zurich Stock Exchange, Switzerland

Office Building Broadgate, London

Our business is designs in metal. Our skills are your capital.

The Gema reference list includes numerous prestigious projects for airports, railway stations, administration buildings, universities, hospitals, banks, stock exchanges, insurance companies, hotels, shopping centres, etc.

No matter where you are, we're nearby. Call us to discover and experience quality and creativity.

gema

Metal Ceilings

Headquarters:
Gema Metal Ceilings Ltd.
Kunklerstrasse 9
CH-9015 St. Gallen/Switzerland
Telephone (+41-71) 326 326
Telefax (+41-71) 326 400

Head Office Far East:
Gema Metal Ceilings (FE) Pte. Ltd., 80 Marine Parade Road #14-08, Parkway Parade, Singapore 1544
Telephone 65 348 0628, Telefax 65 348 0223

Gema distributors worldwide:
Europe: Austria, Belgium, Germany, Great Britain, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain. **Middle East:** Kuwait, United Arab Emirates. **U.S.A.:** Flushing, N.Y. **Far East:** Hong Kong, Indonesia, Malaysia, Singapore, Taiwan, Thailand, Vietnam. **Australia:** Brisbane.

Szombath & Zürrer Künasacht/Zurich, Switzerland

THE LOCATION

FOR INTERNATIONAL

PROPERTY DEALS

The International Property Market for developers, advisers, construction companies, banks, regional authorities, institutional investors, end-users and other allied sectors.

Reserved exclusively for senior professionals with over 5500 participants from 48 countries, MIPIM means direct contact with the decision-makers.

Four intensive days of new business opportunities in the exhibition hall and a programme of top-level conferences.

MIPIM 95

International Property Market

9 - 12 March 1995

Palais des Festivals
Cannes - France

For more details telephone
David SCHINDLER today on
0171 528 0086
or Fax : 0171 895 0949

Reed Midem Organisation Ltd,
Metropolis House,
22 Percy Street, London WIP 9FF

A MEMBER OF REED EXHIBITION COMPANIES

Take a stand. It's your headquarters away from home and enables you to meet the maximum number of delegates, particularly the investors and end-users.

Contact us today. You may qualify for a DTI subsidy providing your stand is booked in time.

Advertise! Get your message across in the highly targeted MIPIM GUIDE, the international "Who's Who" of property. There's the MIPIM DAILY NEWS, the essential daily magazine given to all participants. And the MIPIM PREVIEW, mailed to all companies three weeks before MIPIM.

MEET AT MIPIM

sturdy outdoor lighting
designed by niels enevold
hot galvanised or hot galvanised
and powder coated

incandescent 60w, compact
fluorescent tc-d 10/13w, tc-d 18w
ip55, corrosion class 3
vandal class II

denmark
tema lamper as
telephone +45 42 85 30 48
facsimile +45 45 83 18 05

belgium and france
transat sarl
telephone +33 20 32 05 62
facsimile +33 20 32 06 08

germany
adolf ladiges gmbh+co
telephone +49 (0)40 43 16 68-0
facsimile +49 (0)40 43 16 68 66

sweden
fox design ab
telephone +46 (0)8 20 42 00
facsimile +46 (0)8 24 22 33

switzerland
bmp handel
telephone +41 66 77 85
facsimile +41 66 86 22

united kingdom
gfc lighting ltd
telephone +44 (0)171 735 0677
facsimile +44 (0)171 793 0122

tema

buen

ROBERS-LEUCHTEN

GmbH & Co. KG

Weseker Weg 36
D-46354 Südlohn

Tel.: 0 28 62 / 80 51 - 53
Fax: 0 28 62 / 84 16

We are manufacturer of:

- interior lighting
- outdoor lighting
- street lighting
- bollards
- park benches
- tree rings
- fountains
- forged gates
- lighting in special execution

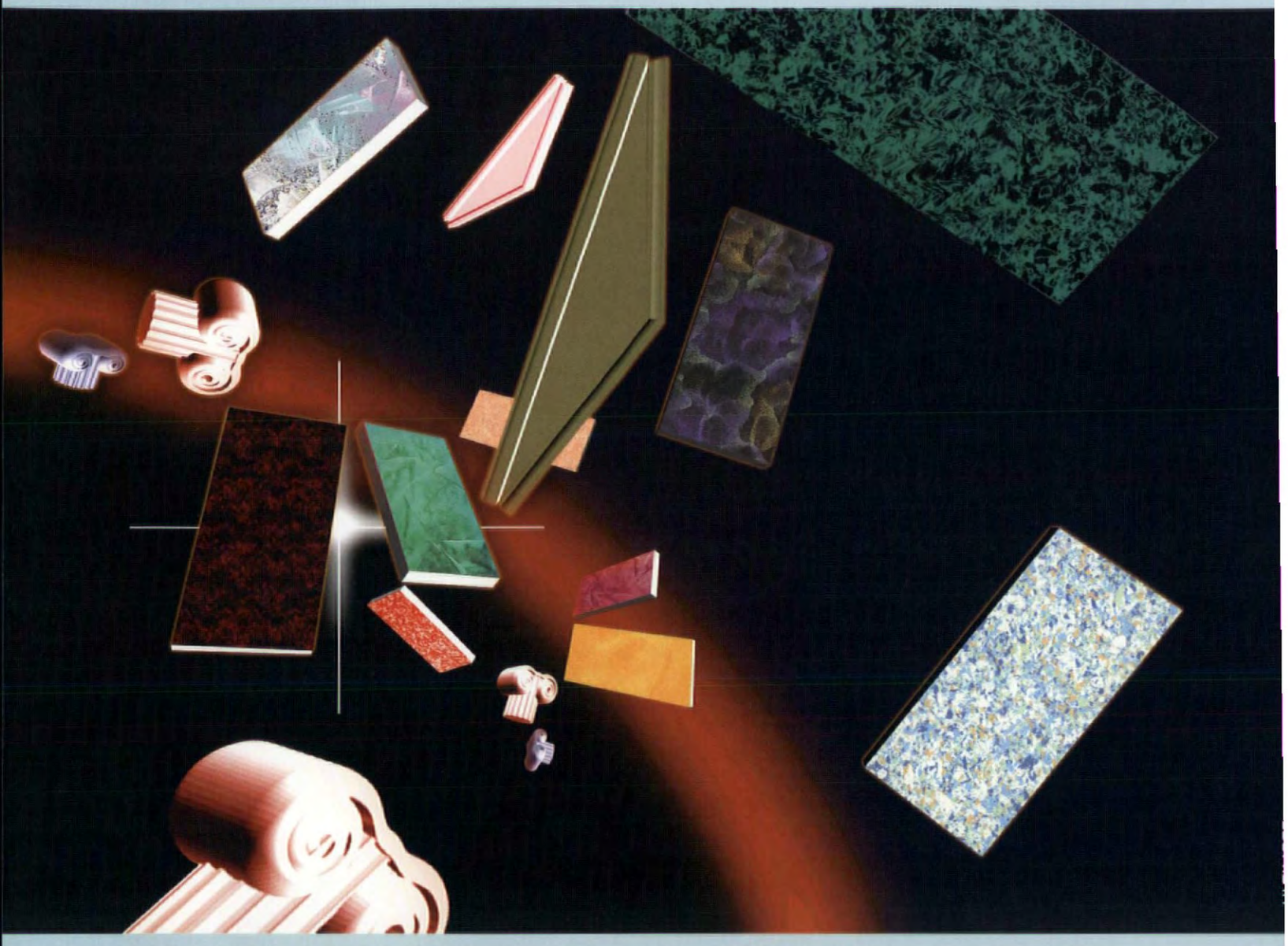
forbo

KROMMENIE

Experts in floor coverings

MARMOLEUM®

Imagine finding one day something matching your universe of creativity



Fractalis is the leading edge in multicolor and multieffect fully water-based architectural finishes.

Fractalis through the Classic and the High-Dec Collections offers design options and effects that are unequaled.

On an international basis, Fractalis is the vehicle through which "Opinion Leaders", i.e., Architects, Interior Designers, Decorators, real estate Developers, corporate building Departments, and property Managers gain access to the most advanced international trends for commercial interiors finishes.

Fractalis™
COLOURS & DESIGN

For information contact: SPETRA s.r.l. - Via Venezia 14/A - 41034 Finale Emilia (MO) - Italy
Phone +39-(0)535-92530 - Fax +39-(0)535-93400

WORLD ARCHITECTURE

We have enough original geniuses

Cartier, Blvd Raspail

Nearly 60 years ago there was a great scandal in the world of music. The celebrated violinist Fritz Kreisler admitted to a journalist that for years he had been inserting pieces of his own composition into recitals of the works of seventeenth and eighteenth century composers. Kreisler came under virulent attack from critics and historians but he was unrepentant. If his listeners could not distinguish between the pieces he played and genuine baroque music, he argued, why should it matter whether they were forged or not?

This long forgotten episode has its analogues in architecture today. A modern building may be no more than a piece of industrial design, "like an enormous typewriter", as Robert Venturi once put it, but its unique combination of industrial components is still considered to be intellectual property, like the compositions of Couperin, Stamitz and Albinoni that were actually Kreisler fakes. In this way architecture, like music, is inextricably bound up with an erroneous idea of individual creativity.

Why this should be is not clear. Architects know that getting a building built is not like writing a book or painting a picture. It is more like winning an election: a process of great and unplannable complexity involving many personalities, products, schedules, bureaucracies, statutes, regulations, budgets, review boards, protest groups etcetera. Even a small building can involve a cast of thousands, amongst whom only one, the architect, is trying to create anything original. In such circumstances we can only echo the sardonic words of Adolf Loos from 90 years ago: "We have enough original geniuses, why don't we repeat ourselves endlessly instead!"

If individual creativity in architecture is a myth, as Fritz Kreisler proved it to be in music, can a case be made for un-creative architecture instead? If it can, then the leading candidate must be technology transfer. That is what happens when methods and materials developed in one industry are applied to a completely different one. Technology transfer is bizarre rather than creative. Scissors were the origin of modern spectacle frames. Bone china mills were adapted to make chocolate. In the fifth century, the dome of the church of San Vitale in Ravenna in Italy was constructed from clay water jars, still with their carrying handles. In the twentieth century the American architect Michael Reynolds built houses for wealthy clients in New Mexico out of their modern equivalents, discarded aluminium beverage cans.

Stochastic and unplanned as it is, the adaptation of the technology of one field to advance that of another is a tremendously efficient process, replete with all the unpredictable wonderment of genetic mutation. In every field of science and technology its influence has been direct and seminal. In architecture in particular its capacity to exploit the results of research and development in other fields to enhance the design of buildings enables an impoverished profession to survive with virtually no R&D budget of its own. To put it bluntly, technology transfer is a far more Modern process, far better attuned to the needs of global construction industry, than art-historical architectural theory can ever be. And yet even those high-tech architects who most dramatically use technology transfers today, temporise over its importance. Perhaps we should all read our Adolf Loos again.

Martin Pawley

ON THE NOTION OF REPLACEABILITY

Kiyonori Kikutake spent his early years as an architect studying traditional Japanese timber building which had evolved its own methodology of component replacement over a period of centuries. Here he recollects his early years in architecture and explains how the principles of Metabolism grew from very traditional roots.

Over 40 years have passed since I first established my office and began to work on designing and planning. This is the fortieth year to be exact and looking back I cannot help but feel deep emotion. However, at the same time, I sincerely feel that I have reached the age to initiate full-scale activities. I am presently very enthusiastic with a new prospect based on my past experiences.

Immediately prior to the end of the war in 1945, Tachikawa Aircraft, the largest aircraft manufacturer in Japan, was constructing a huge underground plant at a place called Nirasaki on orders from the military. Students and pupils were sent there and I was among them. It was my responsibility to design and supervise the construction of numerous lodging quarters for the workers, fighter aircraft hangars etc.

This was all wooden architecture and all our efforts were concentrated on creating an effectual structure with as little material as possible. This practical experience proved very valuable and it formed the foundation of my technical skills at the time I entered the Housing Competition sponsored by Shinkenchiku following the war.

The greatest competition of that time involved the planning of the Hiroshima Peace Memorial Church. I was still in my first year of university at the time, but nevertheless, I entered the competition and was happily surprised to receive a prize. (No first prize, two second prizes - Tange, Inoue, third prize - Maekawa, Kikutake.)

After graduating from the university in 1950, I joined the Takenaka, Murano, Take studio and then established my office in 1953. I have continued my work in designing and planning ever since.

Backed by the support of a person from the same prefecture, a great businessman and the President of Bridgestone, Mr Shojiro Ishibashi, I was able to attain opportunities primarily in the planning of cultural institutions.

Initially, I was solely in charge of remodelling old existing wooden architecture which afforded me a gradual study of traditional Japanese wooden architecture. This led to my discovering the unique relationship between the three systems of "structure", "space", and "living" within the wooden architecture of our country, as well as many problems to be considered.

Actually, I felt that I had almost grasped a completely new way of looking at Japanese architecture, which signified the development of a new international image.

My interest was thus focused on the image of the old, traditional architecture of the past, but not architecture as it involved the whole city.

The problem which formed the pivot of my concept was the "System of Replacement" of components. How would replacement become possible, when should it be done and what should result from it, were questions which were constantly on my mind. Also, upon observing some architecture, my standards for evaluation were determined by whether or not there was "System of Replacement" embodied in the construction.

From this viewpoint, steel-frame structures had a certain amount of similarity to wooden structures, but reinforced concrete construction, which is considered most superior, seemed to lack regard for the system. Furthermore, the planning of petrochemical complexes was active at the time, but most plans lacked any arrangement to facilitate remodelling to meet the tech-

nological progress of the future. This problem was barely considered in the area of city planning and the dream of planning a Utopian city remained as an after image throughout the world at the time.

Consequently, I gained knowledge from Japanese wooden architecture, which is a complete architectural system in which the expansion, remodelling, removal and reconstruction of buildings is possible according to life styles. My main consideration is to establish a human environment by the application of this system to modern architecture and cities.

The 1960s saw political confusion resulting from the Japan-US Security Pact. They also saw the commencement of the International Design Conference. Not only was the conference significant because internationally active, leading authorities gathered under one roof, but also because of the fact that our country began to display an earnest desire for contact with people in the field of design, including architects. This new trend occurred along with the changes of the times.

In preparation for this conference, architects gathered under the leadership of Mr Asada, the secretary-general of the Institute and Mr Kawazoe, the critic, in order to discuss the problems of that time. Each individual wrote an essay under the title, *Metabolism - 1960*, which was published at our own expense.

In my essay, I developed "Ideology of Replacement". I considered the extension of "Replacement" as a basic concept necessary for the establishment of a human environment from sky houses to cities in the ocean.

I therefore introduced the theme that the ideal of finite architecture, which had been the object of conventional modern architecture, may have been delusory. Additionally, the essay stressed the necessity of correctly re-positioning the problem of "Replacement", which had accumulated within the system of wooden architecture of our country.

Here occurs a spontaneous relationship between two elements: things that alter and things that do not alter, things that can be altered and things that cannot be altered, as well as things that one desires to alter and things that one desires not to alter. At times these elements are function and space and at other times they are technique and image.

Then there was my exciting and very meaningful encounter with Louis Kahn, who entered the scene with this methodology. I still recall the memorable evening during which Mr Oshita, President of the publishing firm, Bijutsu Shuppan (who was sympathetic and responsive to Metabolism), Mr Kawazoe and other members of the Metabolism Group sat in a circle around Kahn in the Sky House and talked all through the night in a strange atmosphere of excitement.

This talk with Kahn and others afforded me an opportunity to start actively employing the methodology of "Definition of *Ka* (Image), *Kata* (Technology) and *Katachi* (Function)", which I had been nursing in my mind, for the practical development of design.

When I related this concept to Mr Kawazoe in 1959, he introduced me to the book, *Questions concerning Dialectics*, written by Mitsuo Taketani.

The book was concerned with the well-known three-stage methodology which is supposed to have supported the logical development of atomic physics in Japan and I was deeply impressed by its content.

Thence, I started to think of a way to apply this three-stage methodology to architectural design, which led to the emergence of "Three Stages of *Ka*, *Kata* and *Katachi*".

Strangely enough, Louis Kahn's methodology had a striking resemblance, in that it was also composed of "three stages: order, system and form".

In the Kyoto International Conference Centre Competition I adopted a method of design based on this methodology. All designing that followed centred on this methodology. Therefore, the decade which followed 1960 may be designated an era of methodology for me.

Here, the problems which occurred during the design process were converted into designing hypotheses as follows:

1. Identical functions to be placed on identical levels (floors).
2. Unification of light, sound and air.
3. Construction to follow the order of replacement.
4. Spaces most used by the inhabitants should be the most interesting.
5. Artificiality to be given value by naturalness.
6. Mobile parts to be attached as equipment.
7. Control systems to be devised for building maintenance.

I expanded this methodology from architecture to city planning which resulted in my advocating the "Multichannel Environment". This was further applied to the drafting of "Tokyo Rural City Plan".

In 1970, when the International Exposition was held in Osaka, Japan, I participated in the producer group organised by Mr Tange by being in charge of a project within that group. Furthermore, I took charge of a project to plan a city in the ocean at the University of Hawaii in 1971 and the planning of an aquapolis at the Okinawa Ocean Exposition in 1975. Consequently, the problem concerning materialisation and substantiation of *Kata*, which I had been studying for some time, had come to be taken up anew as an innovative subject.

Before then, I had brought forth the same problem again and again, but it proved to be a struggle against reality. The subject was neglected and I felt quite pessimistic about it ever being taken up. However, the unfruitful phase passed and the situation changed. All of a sudden, not only was my theory accepted but it was welcomed.

Moreover, the project of planning a city in the ocean developed from its conceptional stage into the actual building of an aquapolis based on technology, and the drafting of a realistic design became possible. For example, the plan for a disaster relief station is of a concrete nature which efficiently employs the special characteristics of "Floating". This example alone is sufficient to demonstrate that the results of investigation and research into floating land are gaining gradual recognition.

The theme with which I am now dealing involved the concept, "System Architecture".

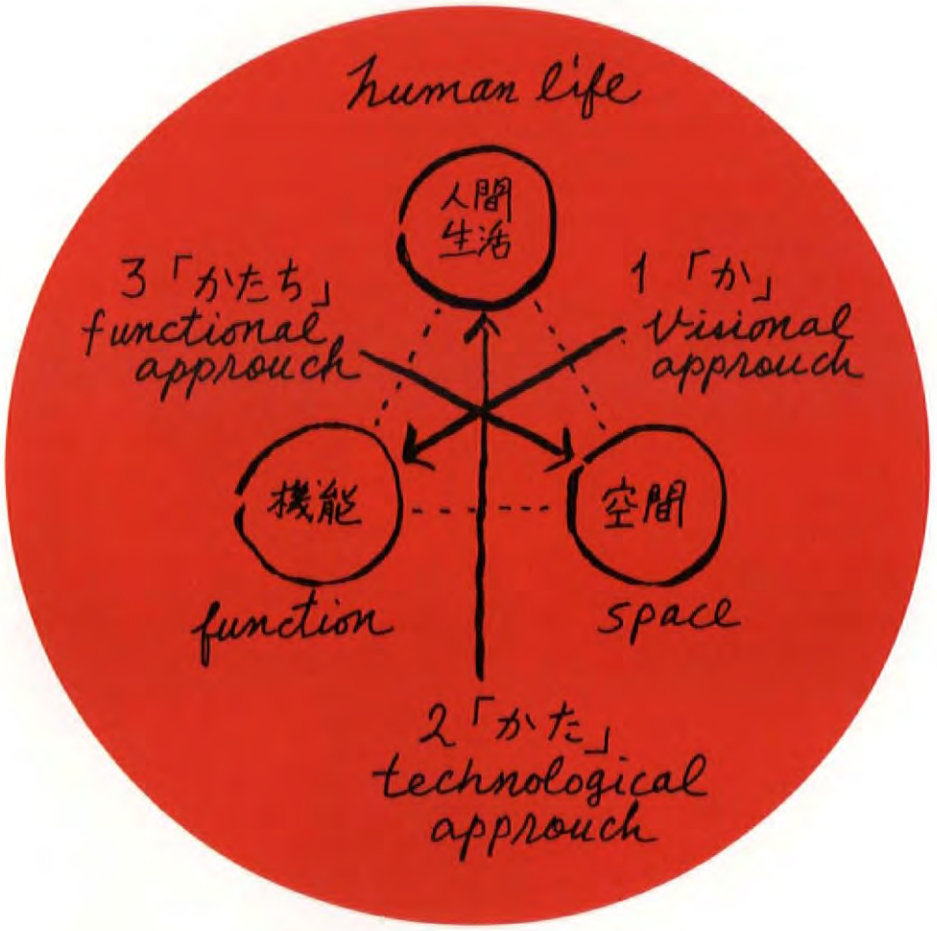
The effectiveness of this concept has already been ascertained in the design of offices, hospitals, banks etc and therefore I am planning to rationalise the field of design in the future and hope to promote the socialisation of architecture from this field.

Meanwhile, there is a new problem concerning the operational control of equipment by the use of computers. Ever since I joined in the research study of the electronic comprehensive control system of buildings, as suggested by Professor Hirayama of Waseda University, I became aware of the revolutionary changes in the new technology of communications.

In the midst of such developments, what I appreciate the most is the guidance of Dr Gengo Matsui in structure, the instruction by Dr Uichi Inoue in equipment and the education of Dr Hiroshi Hirayama in communications system. I am more than delighted that I was able to pursue my studies in architectural design, supported by the excellent professors of Waseda University. □

METABOLISM AND HABITAT

World Architecture's *Georgi Stanishev and Georgi Stoilov of the IAA have both interviewed Kiyonori Kikutake in the last three years. Here,* World Architecture *presents a summary of the responses of the great Japanese architect to their long and searching questions on the relevance of the Metabolist philosophy to current urban problems.*



Japan has a long history of importing cultures from other countries. It started with China and India, and by the time of the Industrial Revolution, it was experienced in selecting and incorporating ideas from a wide range of foreign cultures. But there are various modes of incorporation which result in different levels of originality, and Japanese society is taught to choose at what level it wishes to express itself. One might be inspired by a purely spiritual example, and its imitation, its copy, can also work as self-expression.

But the importing and adaptation of foreign cultures is a universal principle. European civilisation has been working in a similar way for centuries. The same has also happened in Western architecture.

Unlike our Japanese culture, European cultures are much more susceptible to nostalgia, to influences from their own past, while we are more impressed by the simultaneous, by the parallel but different experiences running at different speeds, all at the same time.

The basic difference here is in the principle underlying choice. It is very well illustrated even in the architectural field. In Europe the figure of the architect is central in defining the architectural result. In the Eastern World we feel that the key figures related to architecture are people who own, live and work in buildings. Respectively, when people evaluate architecture in Western society they usually ask who designed a building; in Japan we ask who lives in it.

In contrast to the Western world, which is founded on bourgeois individualism, Japanese society tries to develop its own social model by gradually raising the collective standard of living and way of decision-making. Thus, in Western society, things are discovered, made, and decided by specialised individuals, leaders or geniuses , and there are many such geniuses in various fields, establishing a kind of elite. The Western model seeks fulfillment of a prophecy, that a genius will come along to make the right choice, and that has been the permanent model of progress since the Renaissance.

Unlike this, in Japan we try to increase the average intelligence level of the masses of people, as well as their abilities to decide. Today these Eastern and Western conceptions of progress are beginning to be seriously in competition.

I think the East-West cultural differences start with these basic concepts. According to the European approach, order is a complete and ideal scheme, and every system starts from an ideal construction then gradually moves

towards entropy. in contrast the Oriental world begins with the conception of Chaos and ends with order.

Within the binary opposition of Order and Chaos, Order is the one valued in Europe. It is the basis of progress in the Western understanding of this term. Western history is a history of different orders replacing one another after periods of dissolution. Even if some European theories of architecture leave a building the option of changing and expanding over time, this is considered part of the initial concept of Order.

Conversely, progress in Japan is thought to be attained through the conception of Chaos. History is understood here as a sequence of Chaoses , one chaos after another. After each chaos the self-structuring of society leads to another level of social and urban reality. Using this model, progress is unpredictable. It can grow towards something good or it can move towards something very bad. And the key to this is the state of society itself, its morality, system of ideologies, the state of its collective mind, etc.

The first step out of Chaos is an emphasis on local systems from which the structuring process can start; in a similar way our own destiny can be altered by absolutely random events.

The same happens in the process of city growth. In Japan an openness to change, and the possibility to grow unpredictably is an essential virtue. A good building is expandable, adaptable, rebuildable at any time in its existence. In the same way when you plant a seed and let it follow its own order of growth, you are giving a chance, and finally allowing a new diversity of types and species - a diversity you can not produce yourself. In our architecture too, the diversity is itself the ultimate goal.

The great role of the architect is to offer to society as many alternatives and choices as he can invent, letting society with its own collective mind make its final selections and decisions for ordering the Chaos of life. But it takes a long time for the initial Chaos to be oriented in a certain direction — and people are not patient, they want to live today, they hurry on to live. As a result we have two speeds — the velocity of urban transformation and the slowness of social and cultural shifts — which are not compatible with each other. This is the most dramatic point in this process. And to resolve this incompatibility, it is necessary to introduce a complex infrastructure. I believe that people should be free to choose their own life style. Some families share the old type of relationships, and other families like the modern life style, and each wants to keep its own possibility of choice. I think the family itself is like a metabolic organism: each 25 or 50 years the system of choices changes and new families appear, but their life continues to relate to the architectural infrastructure which offers more and more choices.

I do not segregate the conceptual from the real in my architecture. On some level I count all my projects as very real, even the most fantastic ones. I think that whatever completely innovative project is conceived, it needs to refer to something already existing — in the fields of ideas, forms or even particular objects. In fact each innovative work must be placed somewhere between the custom-made and the ready-made . Something like semi-tailored or ready-to-wear clothing. In these designs I do not depart from a future picture of society. In that sense they reflect what society is already looking for now, and I try to relate that to what can realistically be done.

In fact the relationship between the actual project and the conceptual design creates a network which is like one large cosmos, where realistic architectural ideas, related to particular places and spaces, are born simultaneously with the most fantastic ones sharing one and the same system of thought. And this system runs through from present to future.

In the 1960s we made many projects of Future Cities which were aimed at presenting Metabolism. But our ideas then were very primitive: to build a very high tower, a community tower, and to put on family units plugged in like cells. Now we have established that clusters or walls made up of private dwelling spaces could form a semi-public space which has the self-same regulating principle installed in its structure.

Today we are trying to bring the conceptual vision nearer to reality. Today we start to build our vision but enriched with advanced technologies, information systems, robotics, automatic control and autonomous energy resources. All these new possibilities have helped us to construct a cyclic system of life processes in our neo-Metabolist projects. Our design today is bound to the very difficult problems of the human ecological environment of contemporary settlements. The mechanisms which we use to harmonise and help the coexistence of artificial and natural environments lead to macrosystems of a new MetaPolis. This makes our present day work closer to the Japanese tradition of 400 years ago, in the Edo period, than to the futurology of the 60s, 30 years ago. Architecture in the Edo period was designed as an open system, so as to give unlimited possibilities for any reasonable change that might be required in the future, such as additions, conversions and remodelling.

But this openness was aimed at, and was defined by the necessity to save on resources, energy or labour, and it reached out to simplify the system, making it more flexible and adaptable, more vital. Today we are taught by this architecture and we continue the tradition, towards a sustainable environment for our society, re-discovering the virtues of reducing energy loss through making architecture flexible.

Recent urban experiments in Japan have been very contextual, related to particular environments and social demands. The concept of a vertical city is developed for a place like Tokyo, where the city is spread out and there are huge transportation, pollution and other problems to solve. That is where we are working right now on a project for a Linear Sea City which will span the Japanese Inland Sea. It is designed as a giant linear bridge on pilotis, a place with an excellent environment, food and water supply, with active solar energy use and a resort type of environment. It is also a perfect solution for the transportation problem with its magnetic monorail train covering the distance of 400 km in just 40 or 50 minutes. This project incorporates all the developed ideas of the Metabolic philosophy such as self-organisation and the self-regulation of processes, different speeds of change in different sub-systems, etc. It will work as an intelligent creature, a living organism. Consider our Amazon City, presented as a projected Ecopolis at the Earth Summit in Rio in 1992. At the beginning it was commissioned as a project for a hospital, but in the end it became a city around the hospital. We have started with infrastructure for doctors, nurses, and all people living in this area. But step by step it grows larger, new functions — such as a stadium, cultural centre, schools, etc — appeared and gradually it became a settlement. But I assure you that, whatever growth this city will have, it will always remember that it started from the code of a hospital for a small local settlement. And this memory is implanted in its genetic structure forever. Its spatial structure is itself the code for further development. Future architects will only have to read that chromosome direction in the correct way, then they will be able to upgrade the qualities of its environment at each stage of its development in the right direction.

Our designers and architects should work

Osaka Expo tower (left) and 1965 Pear City high rise (above)

only as advisors and executors, so that the scope of many individual choices, wishes and movements will show them the right course for the development of the system.

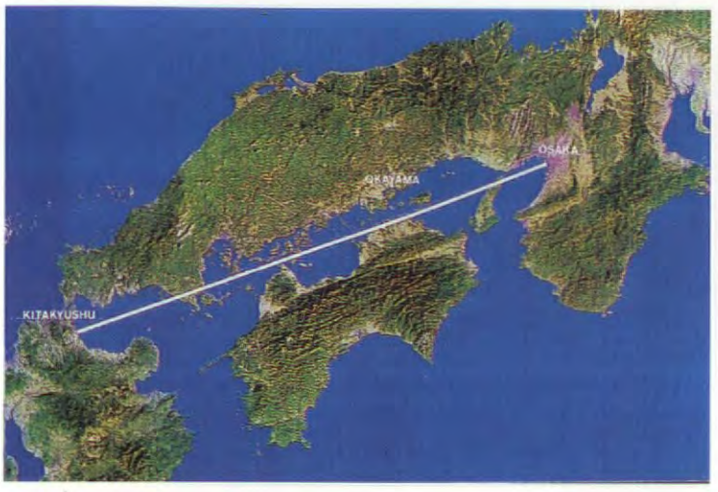
I think history itself has always created societies which work to mix and equalise and make translatable many different co-existing traditions. In the time of antiquity Mediterranean cultures mixed in Greece, and later in the Roman Empire and in other empires...

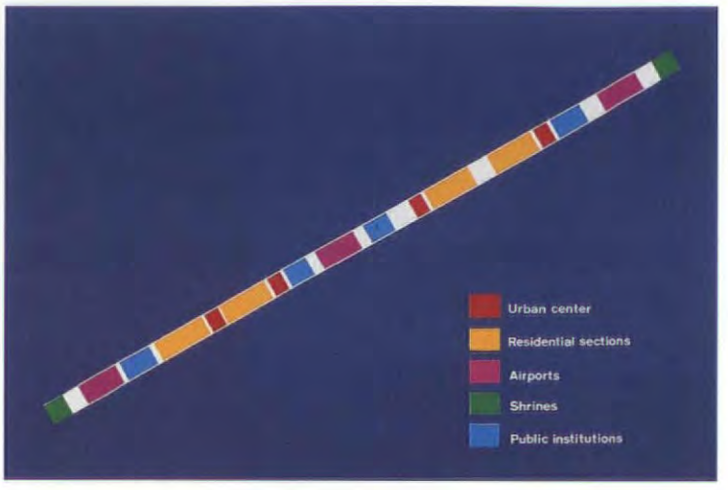
Similarly in the twentieth century many European cultures mixed in the United States. And now I am very curious to see how and where the real world's next mixture of cultures will occur. It is the dream of the next century. Metabolism is opposed to everything that is static.

The history of architecture includes a lot of temples, castles and other public buildings, but almost not a single dwelling. What is the reason for that? Because architecture does not mean only usefulness, but above all it is spirit, emotion, ethics. In millions of houses around the world, there is not a trace of that. Probably it is not included in the living process itself which takes place in these residences. But it is not so in Japan. The Japanese way of life - with regard to its spiritual wealth, emotional intensity and significance of human relations - exceeds any sacred ritual.

The trip of the Japanese from city noise towards his home is an amazing phenomenon. He steps out of the surrounding crowd, escaping the noise and dust of the street and enters his garden-oasis. Further on, his way is a way towards himself. Gradually he gets free of his city garments and shoes, with which he has been in touch with the "alien" environment, and reaches his small housing space covered with the permanent *tatami* mats and takes his cup of tea. His relatives are his silent and intimate environment - another personal micro world, which is the main and real life of man.

Silence, spiritual peace and harmony reign over this micro world, where the personality is respected far more than God is in temples. In





Inland Sea linear city project (top). Ecopolis structural system (above left) and aerial view (right) showing city in the Amazon jungle

Europe this spirit of peace of mind could be felt only in a monastery.

The one who has never entered a traditional Japanese dwelling, would never understand the flow of space from universal to miniature and vice versa. You enter the Japanese garden of the house. It is miniature - sometimes only some square metres in size. But you are in a mini model of Nature. You feel the presence of the universe and you become a part of it.

And all this is in harmony, ecologically and genetically it is entirely clean, preserved and ensured for life and development.

You enter a Japanese house with narrow corridors and tiny rooms. But the floors are covered with *tatami* mats; light wooden walls shape a space, which is integrated with the universal one. The vulgar chairs, tables, cupboards and beds of the European, which alter the scale and kill space are absent. Here everything is small and endless.

The small could become endless. The space could bear a variety of different functions. But you ought to let it free. This way, despite being small, through rhythmically changing functions the space becomes universal, bearing a great function - the way it happens in Nature. Thus the theory and practice of metabolism is being born - a changing space for a changing man.

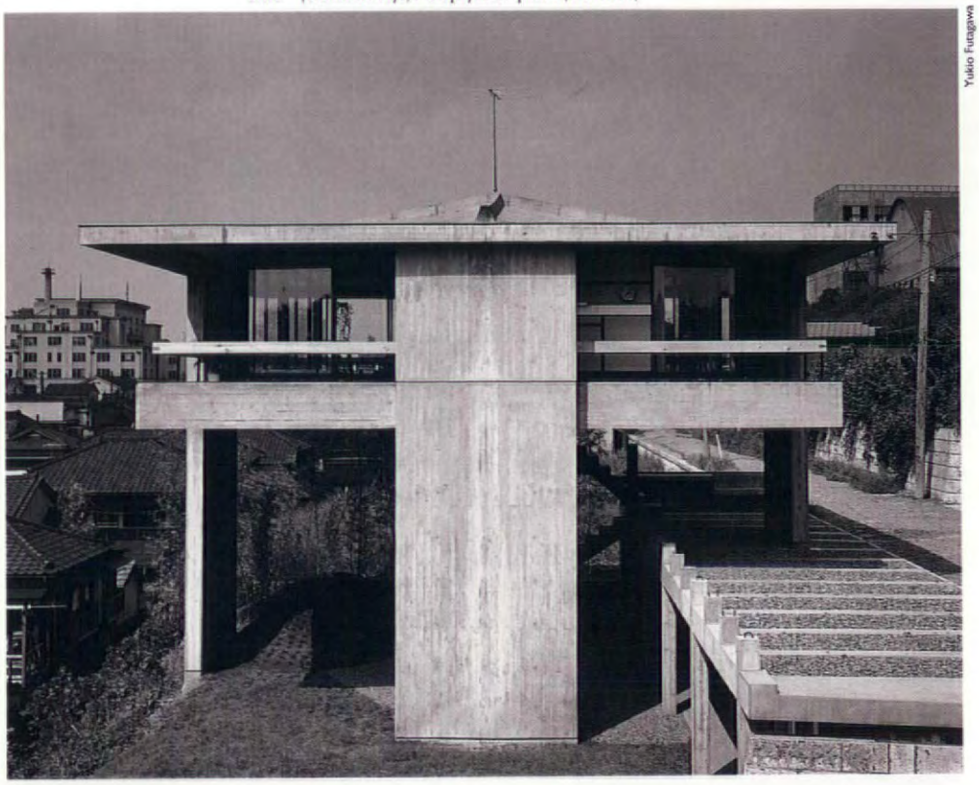
Ecologically clean cities - Ecopolises - are an alternative for twenty-first century urbanism. Ecopolis is not only a ecological problem, it is a key to solving the knot of technological, psychological and socio-cultural problems of the contemporary city. However, in its essence it means harmony between man and Nature. Space megastructures and marina-cities are possible spatial bases for Ecopolises. In all such structures nature is included everywhere. Using the principle of transfusion - "Universal in miniature" - in each of these dwellings, even in great megastructures, the small Japanese garden is included as a green fire of eternal life. And again, the theory of metabolism for growth and change finds brilliant application. □

Sky House elevation (below) and interior (below left). Added "children's capsule" (bottom left). Top floor plan (bottom)

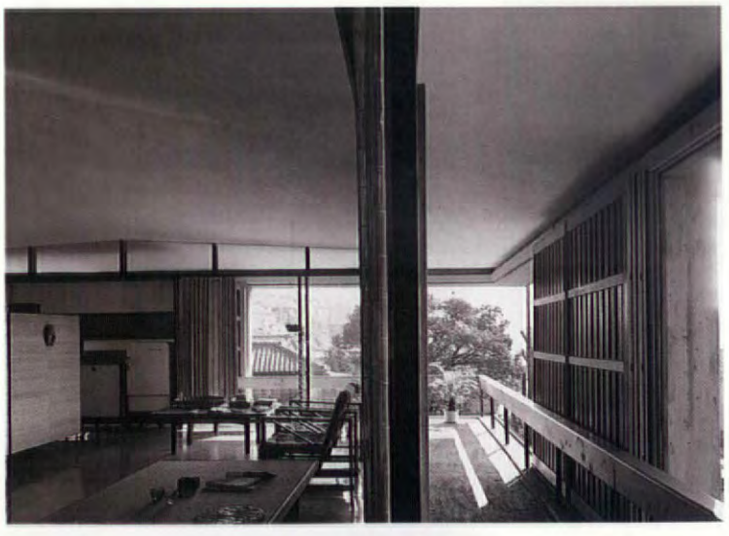
Sky House, Tokyo, Japan (1958-1980)

Houses are the basic cells that comprise the city, and a dwelling is a place where a family lives. An important task in designing a dwelling, therefore, is to find a way of responding to changes in one's life. One solution is to install devices which are capable of change. I also thought that it would be possible to create a spacious, comfortable home by including a Japanese-style dwelling space in which the rooms are not fixed in any particular place by furnishings.

My own Sky House is raised on pilotis to be open to the outside world. Increase in the number of home appliances and facilities could be incorporated, thus allowing us to live in the house for a long time. Children bring about the biggest changes in a family's life and so a capsule for each child was to be attached which could be removed when they grew up. This amounted to the birth of the Metabolism dwelling. The problem at the moment is how to incorporate these renewable systems into collective housing and into the city itself.

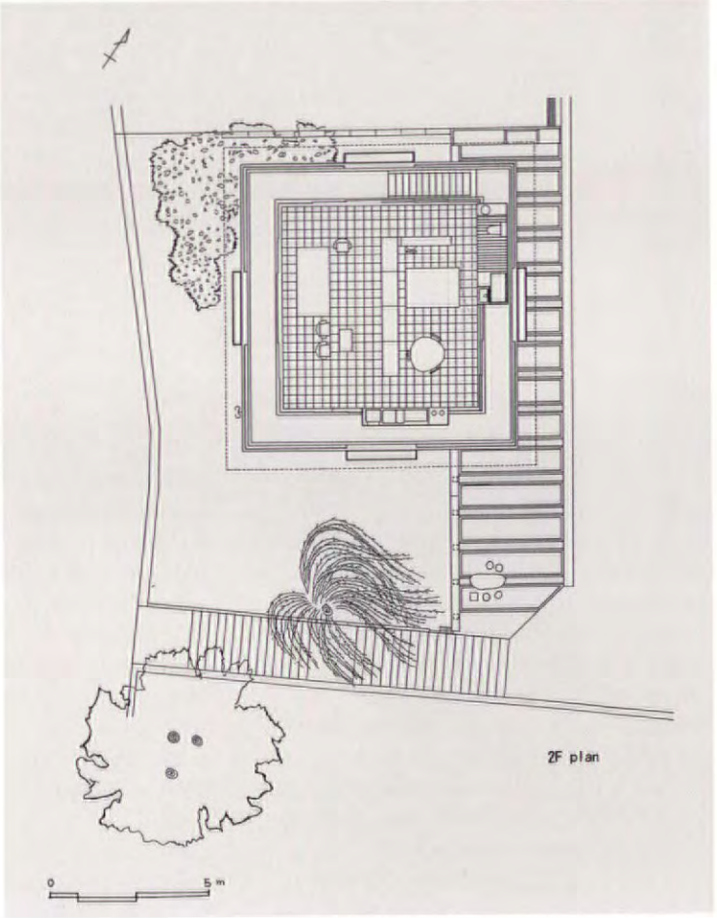


Yukio Futagawa

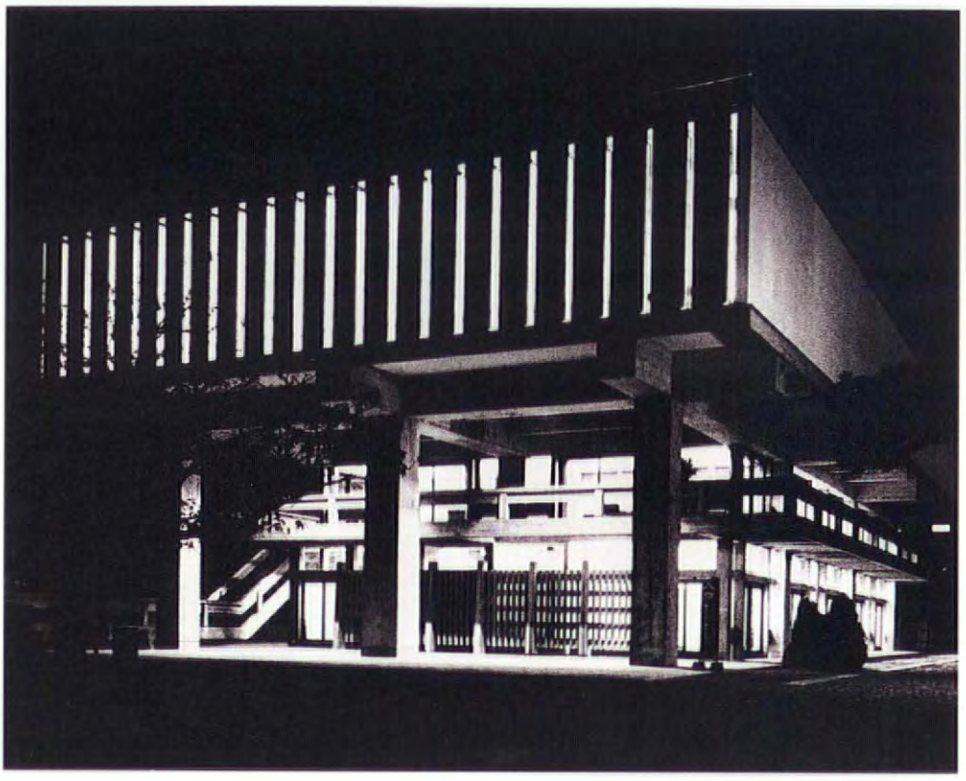


Yukio Futagawa

Osamu Murai



Night view (below) and section showing pilings (bottom). Exterior and interior (below right)



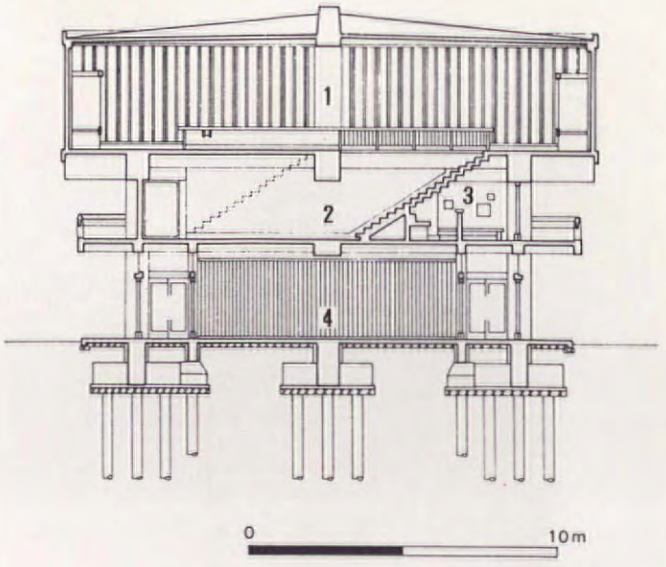
Chuji Hirayama

Shimane Prefecture Museum, Japan 1958

One finds a distinct type of space in a Japanese Folk house (minka). I think that it is characterised most importantly by the zashiki (sitting room) and the kura (storage). The former is an open-ended space for people to live in, and the latter is a closed space used for the storage of tools. The perfect harmony and striking contrast between these two spaces suggests one basic posture of Japanese architecture.

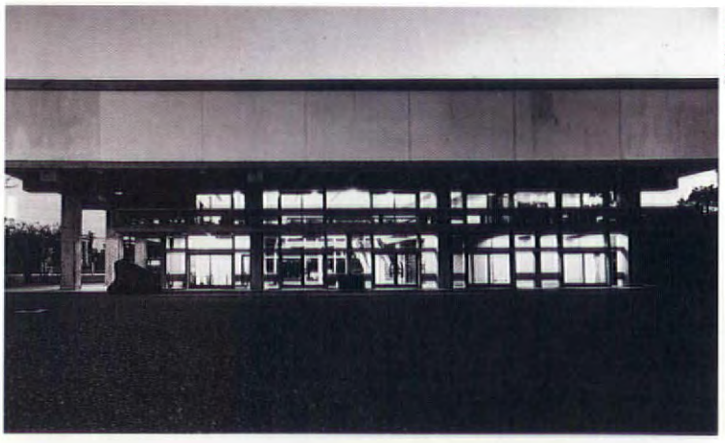
I thought of combining the zashiki and kura in a vertical composition in the museum project. This idea effectually corresponded with the environment: a rainy and humid climate, cherry trees in the southside garden, old pines in the northside garden, a nearby castle, etc.

Today, a museum needs to be more than a place where objects are exhibited, it has to be a multi-purpose centre where all sorts of events take place. This vertical composition of two spaces takes these considerations into account. Above all, the clear contrast and harmony of the two spaces impresses an essential beauty.

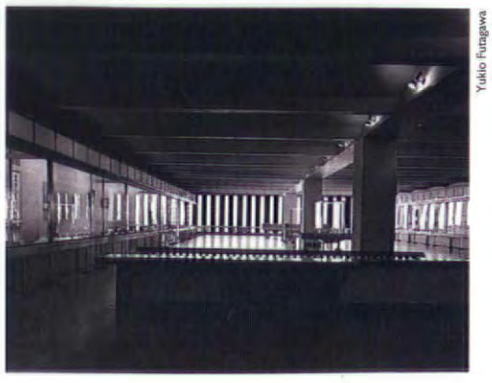


Section

1 exhibition room
2 exhibition hall
3 tea room
4 meeting hall



Chuji Hirayama



Yukio Futagawa

Marine City, project 1958

Marine City is meant to construct a totally new world on the ocean. Humankind has always been confronted with the sea – which covers 70 per cent of the Earth and has repelled humankind for 5,000 long years. Today, humans are better equipped to tame the sea as living space.

Marine City is not a mere attempt to expand land nor to escape from land space, for it requires too huge an amassing of technology and resources to expand land, and it takes too long a time to plan such an exodus.

The sea will always continue to reject discovery and confused approaches. Reclaimed sprawl is nothing but a violation of the stern and clean sea. An excellent new city must be planned on a long-term and multidisciplinary basis. Colossal construction causes destruction and confusion. It cannot be tolerated forever.

Advance onto the ocean must leave adequate space for fish, shellfish and aquatic plants. The sea awaits the construction of a new city upon it which promises us true amenities.

Marine City must be conceived as a political, economic and cultural unit of society and simultaneously as a social unit to maintain international peace and commonwealth.

Fresh air, a healthy and mild climate, panoramic scenery, an horizon, the blessings of the sun from dawn to dusk, a sense of liberty that transcends racial and national borders, opportunities of diverse yet orderly life styles – these are the benefits with which Marine City will be born. It must protect human communities and make them feel the joy of being alive.

Then, when a marine city accomplishes its roles or fails to satisfy social needs or changes, it will be renewed or reassembled and, in time, eliminated. It will be towed away and sunk in an ocean trench. A floating habitat for people then becomes a grand gathering place for fish.

Marine City will be built and moved as necessary. A marine city will be a mobile city. Its building will start with construction of its "parent body" – a floating industrial park. From that will evolve a succession of "cells" of Marine City. And beneath will be fish farms for preserving and breeding aquatic life. Energy will be provided by deep ocean water, solar heat, etc. and tap water by desalination and recycling systems. The city will be pollution-free and self-sufficient, and will coexist with the ocean.

Marine City will be built as the ultimate artificial city, on a long-term programme of infrastructure and public services - a totally new intelligent environment.

Kiyonori Kikutake

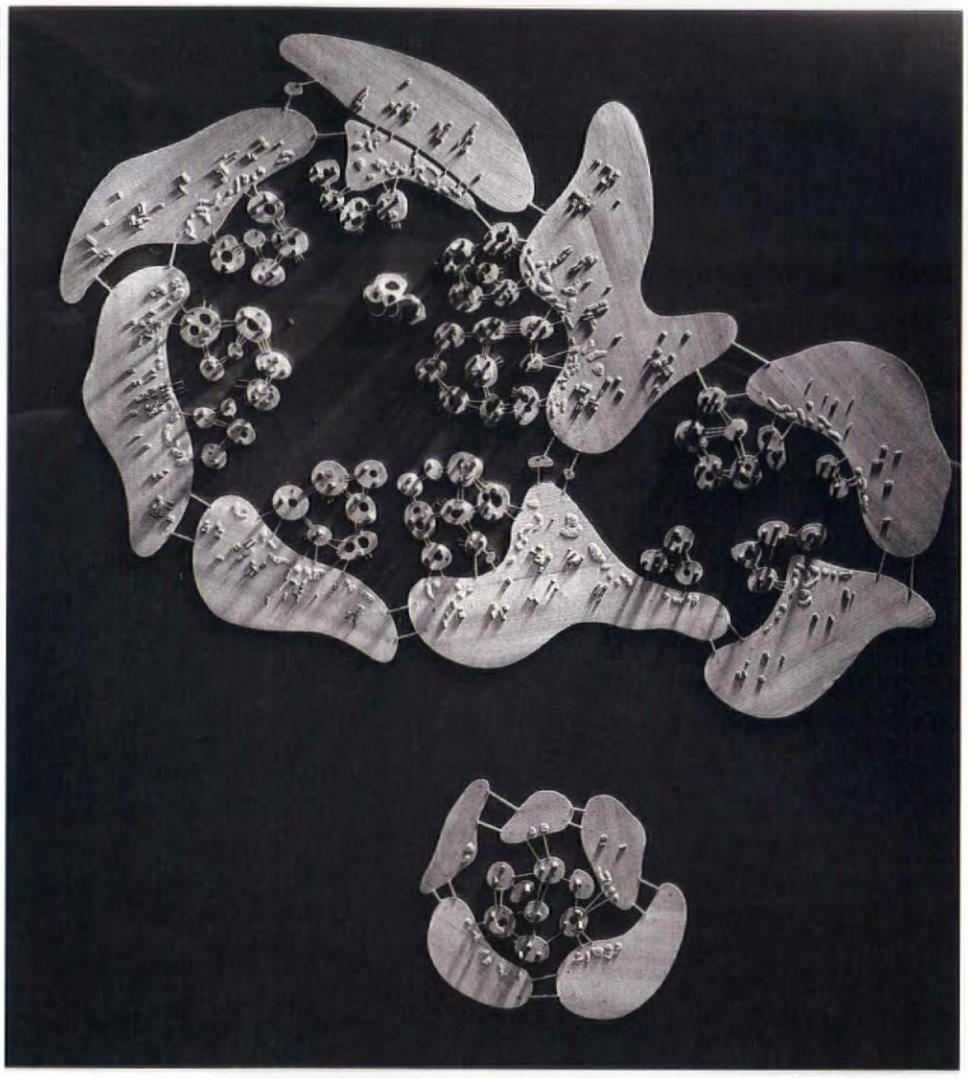
It will be an ideal living space and should help build a new world and bring lasting peace.

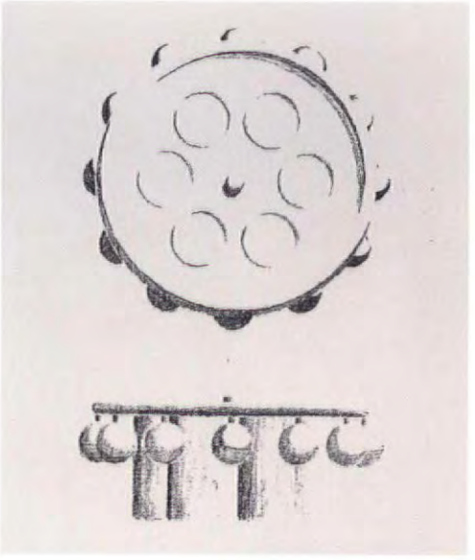
There are many possible means of transport for Marine City dwellers – giant vessel, submarines, hydro jets, hover craft, electromagnetic ships, etc., and aircraft.

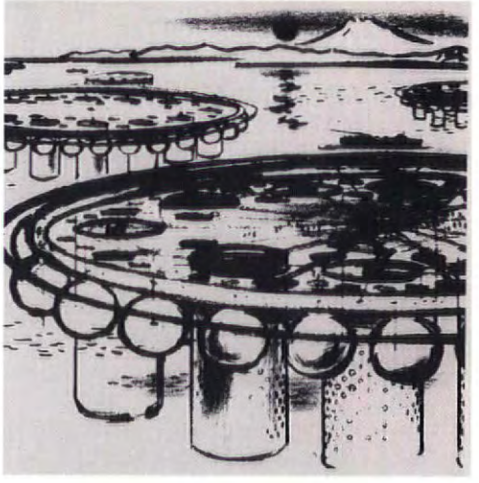
As one sits surrounded by the continually changing sea, as one physically feels the elements and is reminded by the faraway horizon of one's existence on Earth, the thought may occur that humankind has long fought bravely to conquer the ocean. Children will then be strongly moved by the wishes and wills of their ancestors

In retrospect, land-based civilisations have been histories of wars. Civilisation on the sea must turn over a new leaf in history - an era of hope rather than conflict. Marine City waits to be realised in the twenty-first century. For decades now, I have been trying, through preparatory projects, to speed this course of urban development.

Osamu Murai







1963 version of Marine City (opposite page and above left) is developed from original 1958 project (above right). Land-based "tower community" (left) also dates from 1963

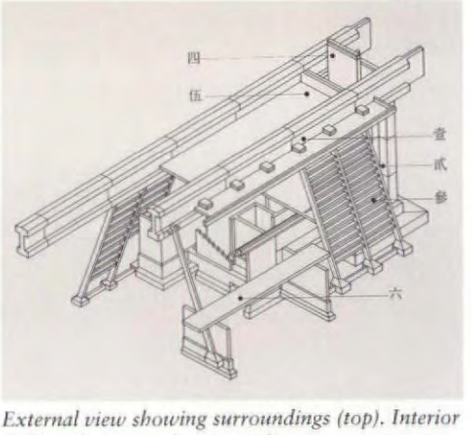
The Izumo Shrine administrative building, Shimane Prefecture, Japan 1963

The Ise and Izumo Shrines represent the oldest shrines existing in Japan. The Ise Shrine, located near the Pacific Ocean, is small and delicate whereas the Izumo Shrine near the Sea of Japan impresses us with its grand architecture. The two differ in architectural form and scale, but they coexist as symbols of Japanese culture.

In this Izumo project, modern materials - concrete and glass - were carefully selected to create a traditional yet modern architecture that would harmonise with the traditional and sacred environment.

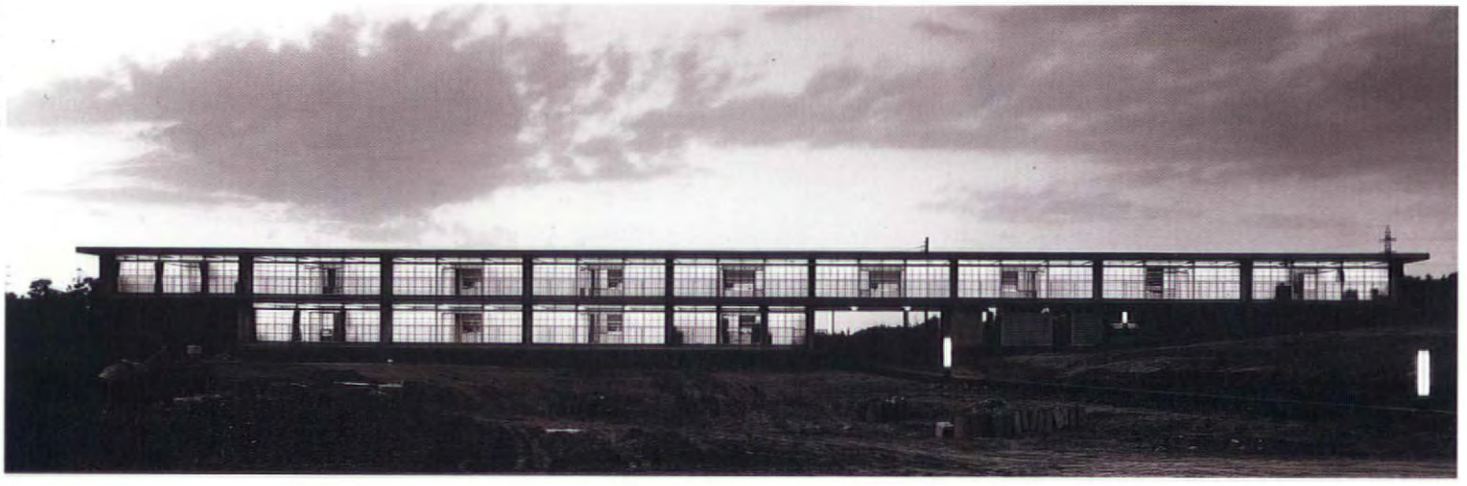
Two 40 metre-long prestressed concrete beams are supported by two posts at each end, and the interior space, the Treasury, is structured by slanting walls of precast concrete and glass.

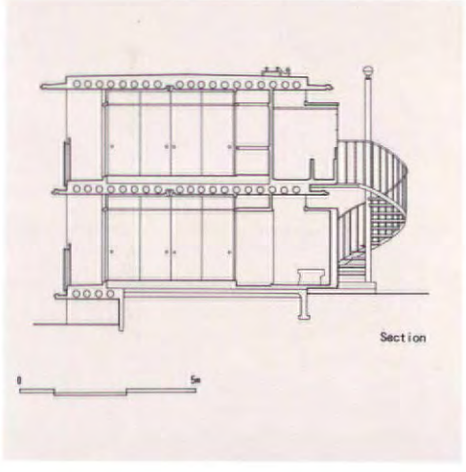
This building received the Award of the Architectural Institute of Japan, the Minister of Education Award of Arts and an AIA Pan-Pacific Architecture Citation in 1964.

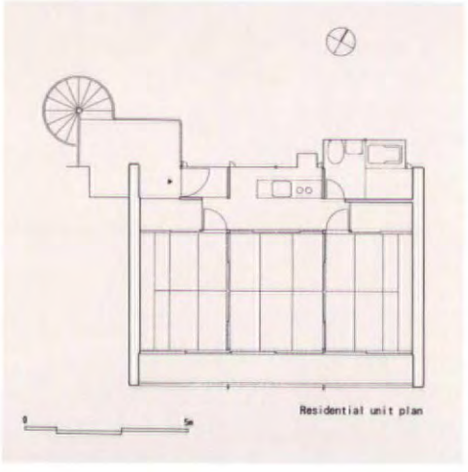


External view showing surroundings (top). Interior (left) and structural system (above)

All photographs by Osamu Murai



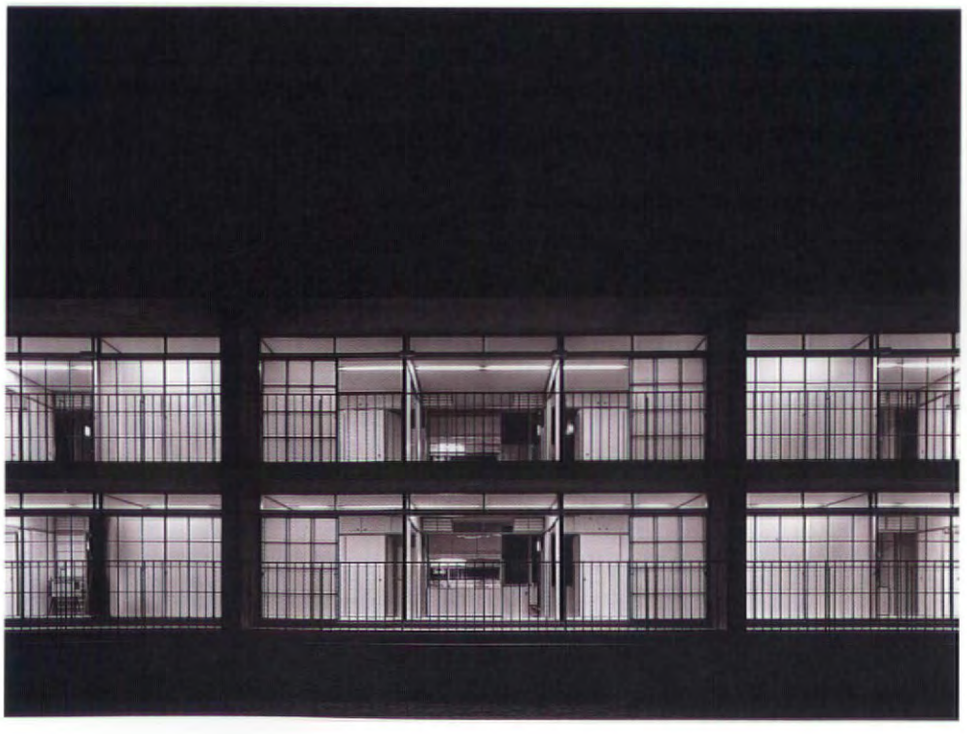


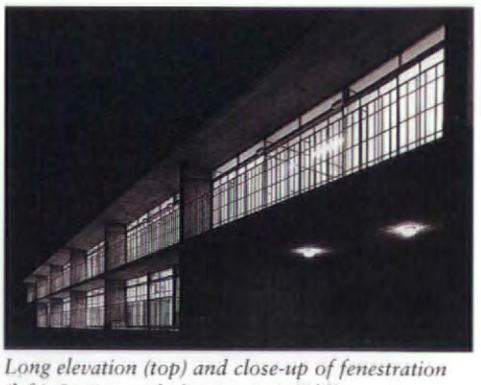


Asakawa Apartment House, Japan 1964

Structural engineer, Prof. Gengo Matsui and myself worked in partnership to develop this new "prototype" town house using wall pillars and void slabs without any beams and pillars in its structure. Thus free of structural beams and pillars, the interior is as attractive as that of a wooden structure home.

The bathroom and kitchen units are equipped as replaceable units, as used for Sky House.





Long elevation (top) and close-up of fenestration (left). Section and plan (centre). Oblique view shows lighting (above)

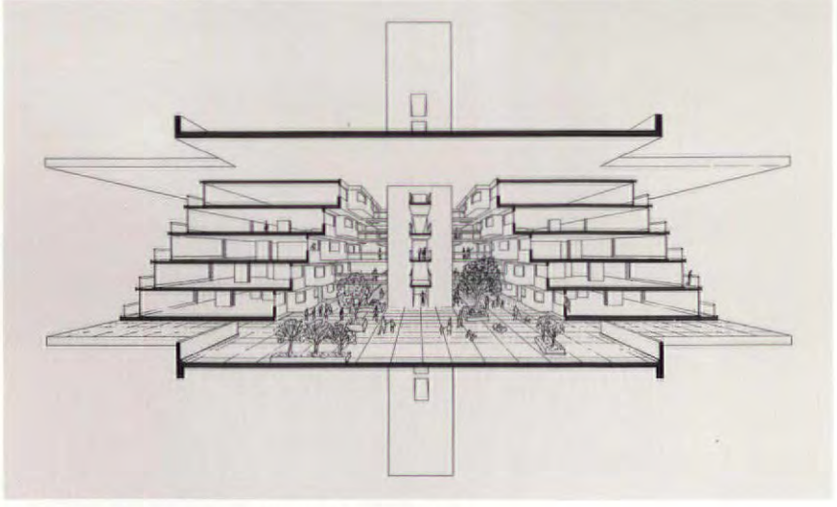
Tree-Shaped Housing, project 1968

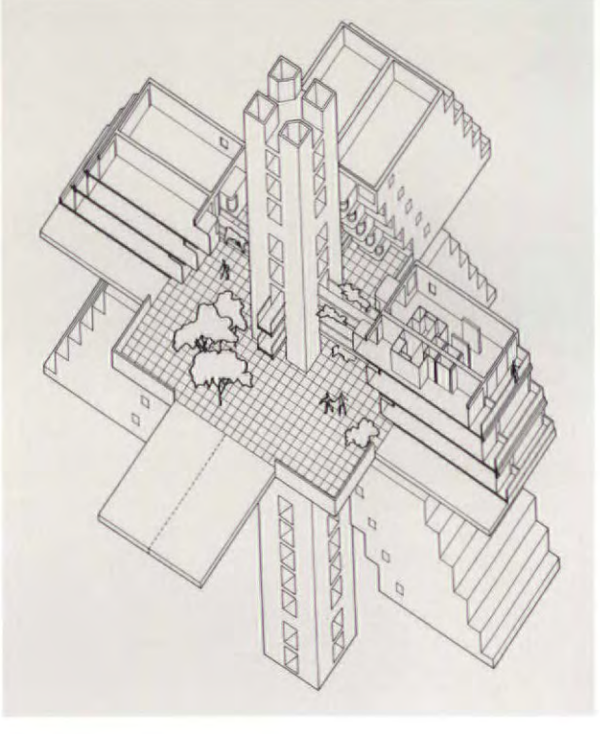
The exterior of this housing is similar in shape to a giant tree. Theories of collective housing are at work here, one of which is based on research into amassing by Keiko Watanabe (a researcher at the Building Research Institute, Ministry of Construction). He found that children living on the floors above the fifth floor do not participate in activities occurring on the ground directly below their windows - they just watch. However, children living on the floors below the fifth floor do go down and participate in the events. If these findings were taken into account in the planning of high-rise collective housing, then grouping five floors into a unit and providing a large park at every fifth floor would be appropriate for children.

According to research into Japanese communities by Yuichiro Kojiro, a professor at Meiji University, Japan, the number of units composing a community is 40. This "prototype" provides a solution to this finding. In the Tree-Shaped Housing a five-storey high atrium was proposed. By providing playgrounds, fire fighting equipment and communal facilities in the park, community conscience will be heightened and human contact will be encouraged. By stacking one community block onto another, each consisting of 40 residential units in five floors, a high-rise tower of collective housing can be created.

This tree-like housing, is beautiful in itself, and several towers together will appear like forests and will harmonise with nature. From the open park in the air the residences create a scene full of human warmth.

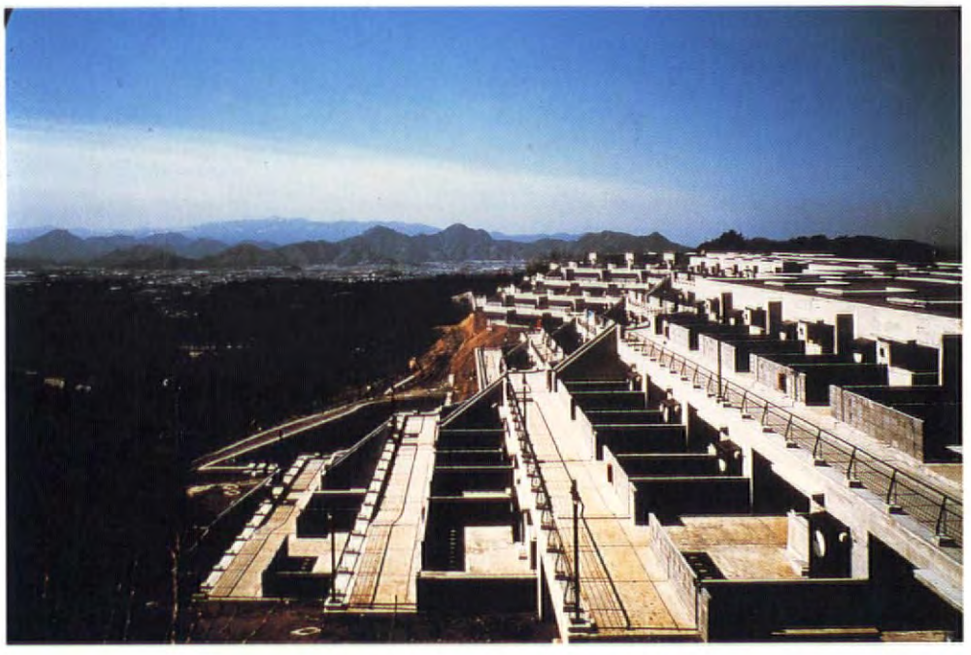
The mechanical system of each unit will be placed on the exterior wall so that it can be replaced. The shape of the 40-unit complex will vary in order to create various types of communities and to provide distinct shapes and characters.





Photomontage (top) with community block (above) and axonometric of structure (right)

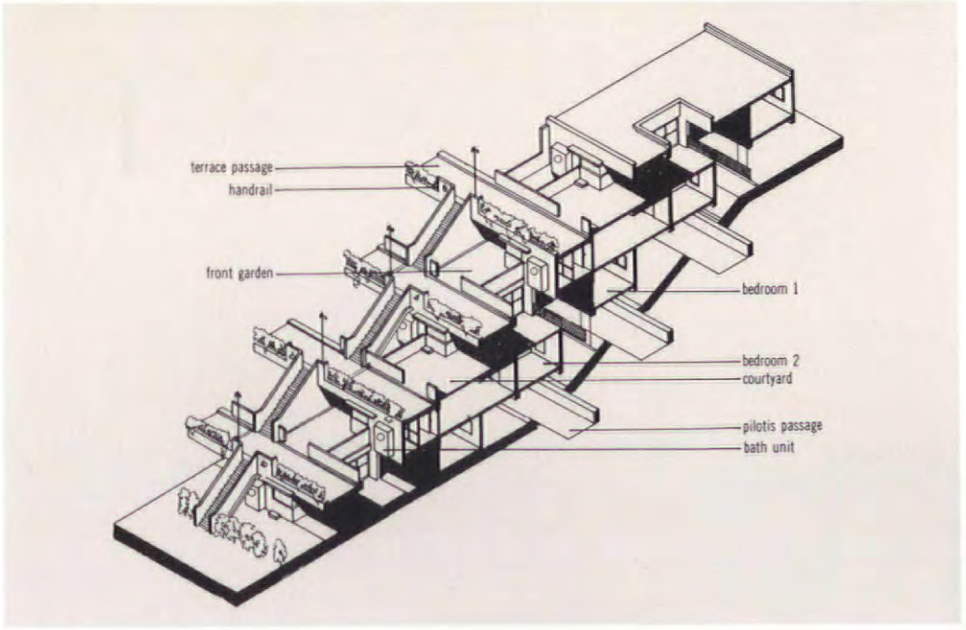
All photographs by Osamu Murai

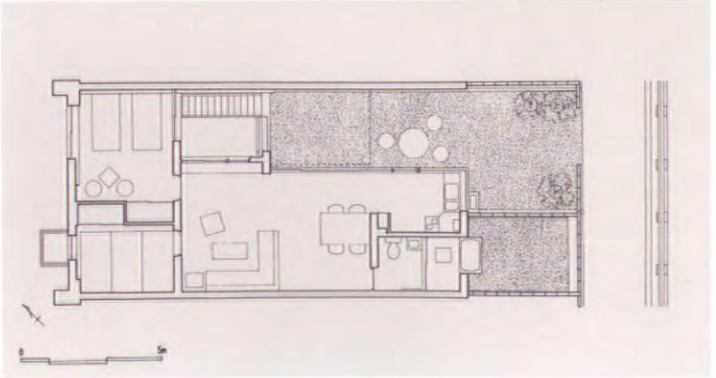


Pasadena Heights, Shizuoka Prefecture, Japan 1974

This apartment complex is a 120-unit terraced structure built along south-facing sloping ground.

A survey had shown that better relationships are established between residents living in independent houses which have passages located in the south, and I adopted this concept in the planning of this collective housing complex. Residents are able to approach their doorways from the terrace passage through the front garden of each house. There are steps in the courtyard leading to the service passage located in the north, and each unit has access to two exits. The kitchen is located to face the south passage in the hope of encouraging better communication between residents, and it is hoped that the stairs in the front will have a similar effect, especially among children.





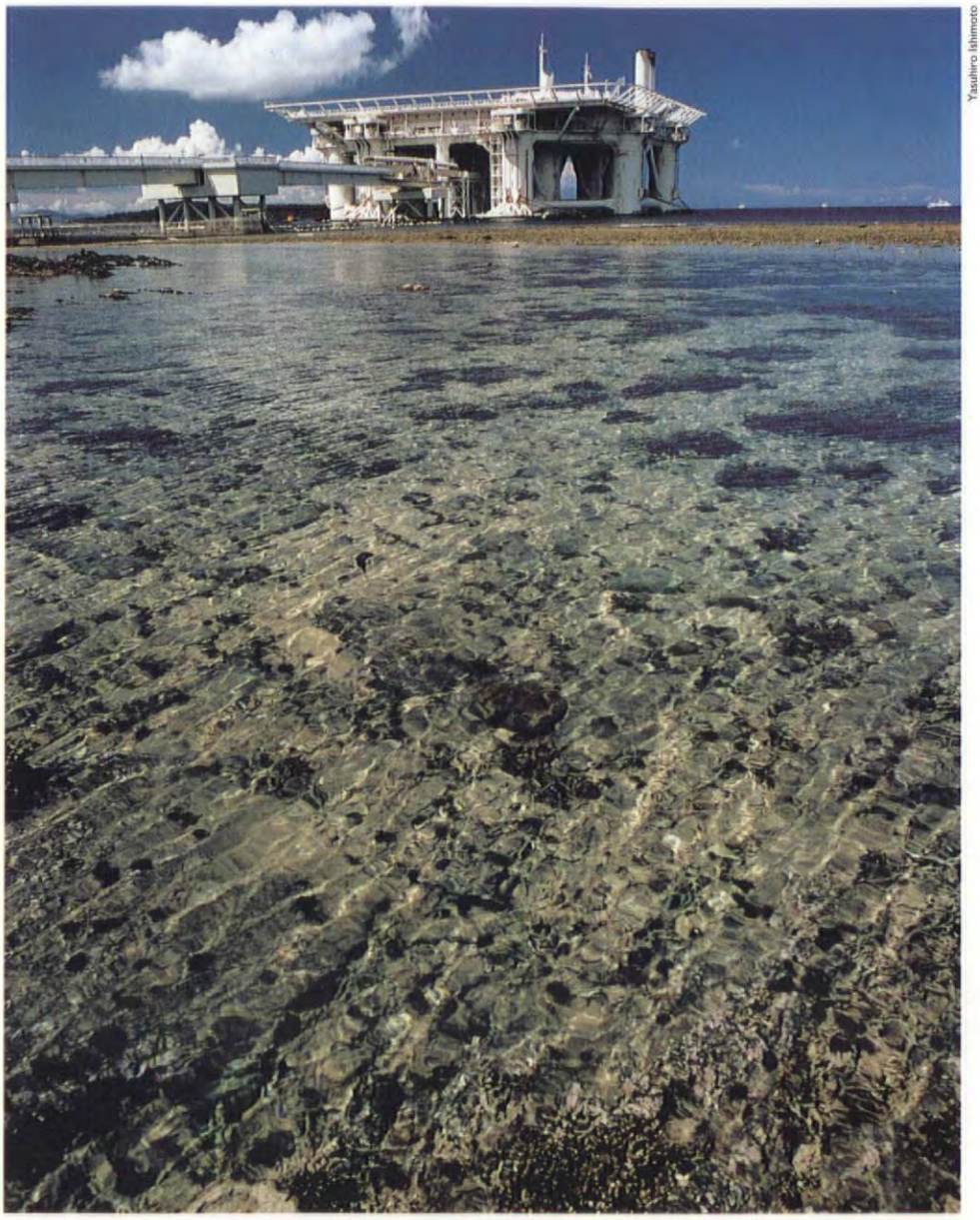
Despite its name this stepped condominium block is of uniquely Japanese design. Axonometric (above) and plan (left) show terraced access. Interior and terrace (right)

Aquapolis, Okinawa, Japan 1975

I realised a block of a city as a floating pavilion for the Okinawa Marine Exposition in 1975. Many people were able to experience the stability, safety and pleasantness of the environment in this marine city. The Aquapolis was significant in the development of the man-made island project that followed it.

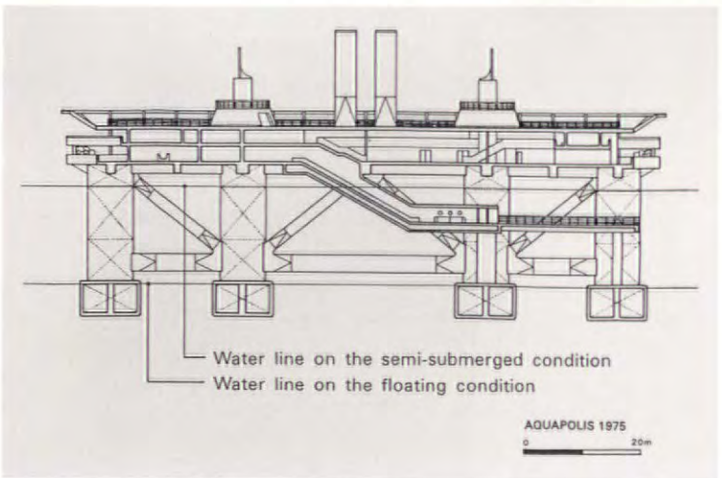
Purifying and garbage-treatment devices were provided to avoid contaminating the sea. Desalination and power-generating plants were also installed. Self-contained environmental units were fabricated which consisted of these devices.

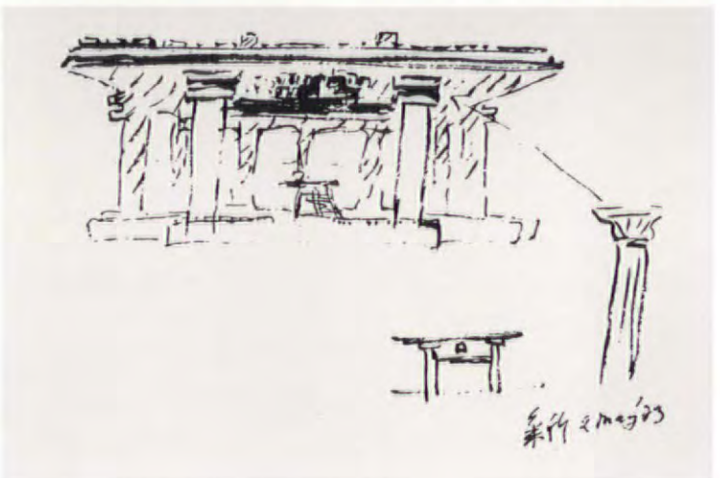
It was very important that Aquapolis proved that the most artificial type of structure can be planned as an Eco-Polis, to harmonise and coexist with the sea. Expo was an arena for showing symbolically how Japan, moving towards the twenty-first century, challenges and contributes to environmental problems globally. The Aquapolis platform was 100 m x 100 m in area and was approached by a floating bridge.



Yasuhiro Ishimoto

Okinawa Exposition pavilion (right) is derived from original sketch (below right). Section shows alternative floating levels





Exterior view of museum (below) and traditional tatara *hut (right)*

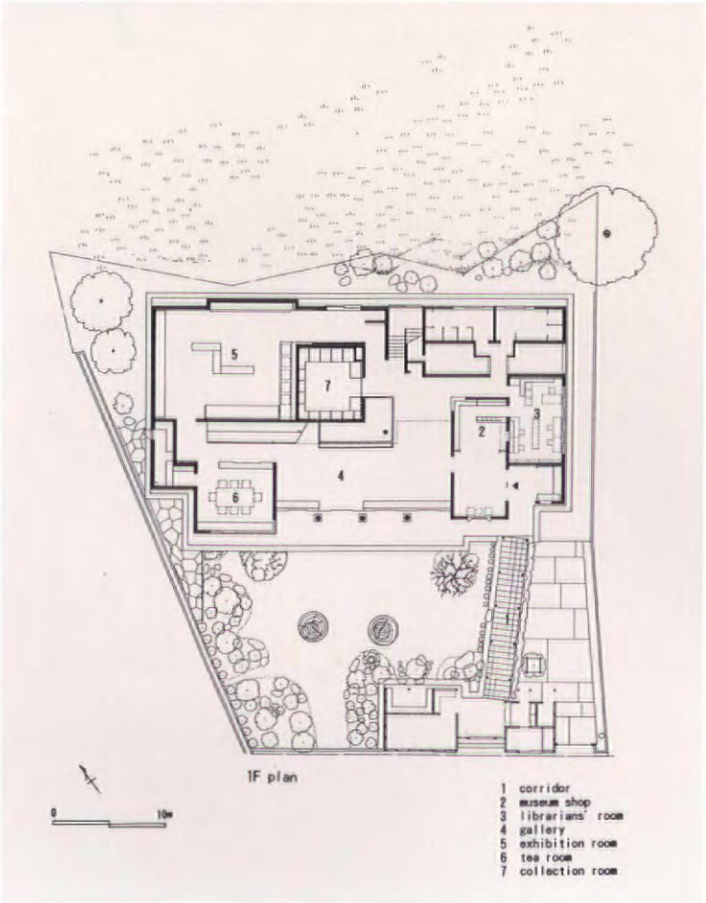
All photographs by Seiji Ueda

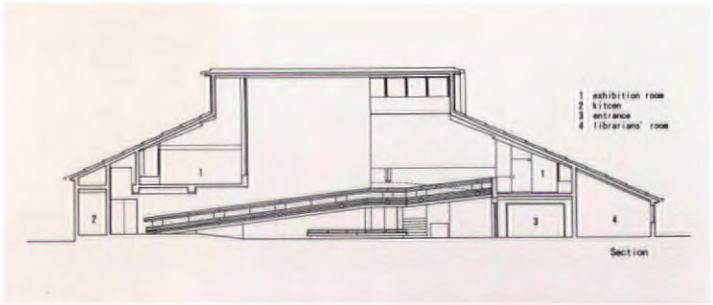
Tanabe Museum, Shimane Prefecture, Japan 1979

The Tanabe family has been a powerful local genealogical line for more than 400 years and this private Japanese-style museum was designed for the permanent display of articles relating to the tea ceremony which belong to the family and which were collected and made by Choemon Tanabe.

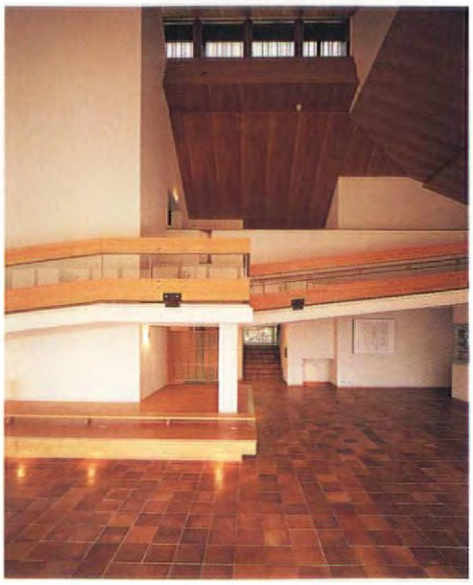
Using a single piece of concrete slab, it is desirable to secure natural ventilation and light intake. The air-conditioning system was installed to be used only when necessary.

Mr Tanabe said that, much to his delight, this building which was designed to employ natural resources and its environment looks very much like a tatara*, an old iron-stand refinery hut typical of this province. A* tatara *is still preserved on his estate.*





Interior (right), section (above) and plan (left)



Exterior of hotel (right) and interior of theatre (below). Section and floor plans (bottom) show internal volumes

All photographs by Toru Waki

Ginza Theatre Hotel, Tokyo, Japan 1987

This hotel and theatre complex is located in Ginza Street, Tokyo's beautiful and busy commercial area.

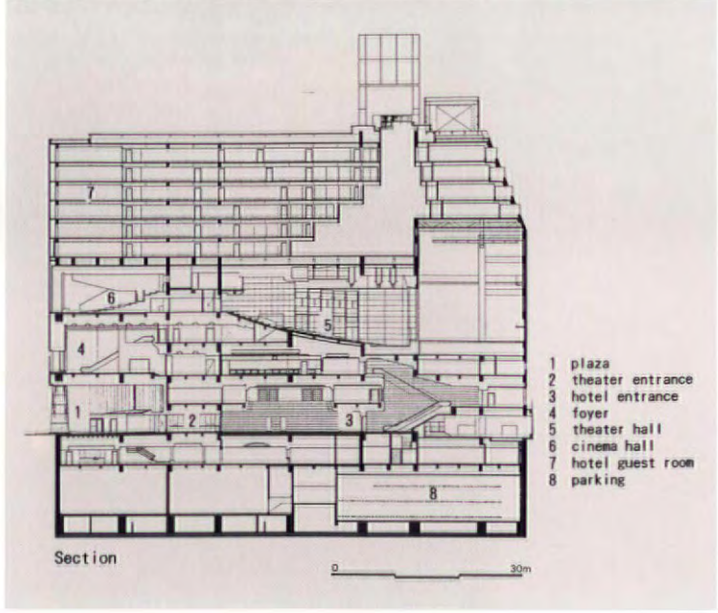
This is one of the few five-star hotels in this city. The number of rooms is limited to 80, so that the highest standards of service and security can be provided.

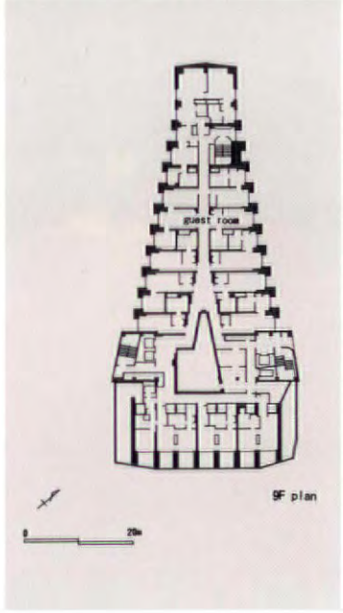
It has an 800-seat theatre with an adjustable stage and seating which can be temporarily modified according to various needs.

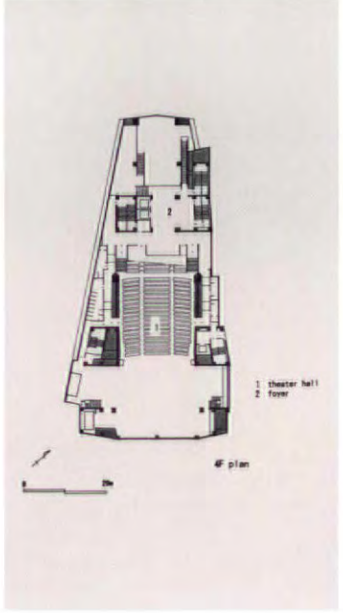
The theatre and hotel facilities are completely separate, but they share the banqueting hall which is located between the foyers on the third floor. It was intended that the hall would be used for the opening and closing events for theatrical productions.

The precast concrete panels of the external wall are covered with a new milky white ceramic material.

The Ginza Theatre Hotel was co-operatively designed with KUME SEKKEI Co. Ltd.





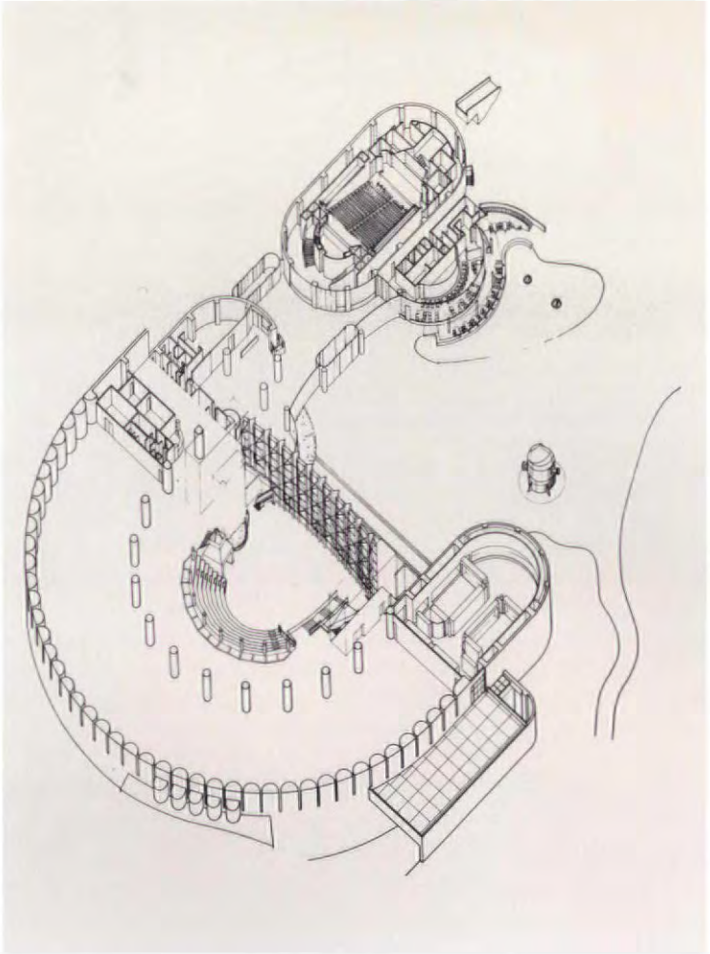


Susumu Koshimizu

Kawasaki Museum, Japan 1988

Every piece of architecture can be regarded as a combination of spaces linked to a central space with many tentacle-like branches. Lobbies and corridors are seen as subspaces rather than main space. However, the importance of subspaces immediately changes when viewed from the perspective of a space with tentacle-like branches. The greater the number of branches, the more important the subspaces become. Their relationship with the main space is reversed and eventually it becomes clear that subspaces have a core role as main space.

If this is so, the nature of almost all architecture can be determined by arranging how to place the space with many tentacles into what shape. In fact, the atrium of the Kawasaki Museum falls into the category of a space with many tentacles. The atrium is positioned so that it leads to all the exhibition halls. In addition, the atrium is linked to the outdoors and can be used as an event space. Thus, the atrium is obviously an extremely important space for both visitors and management.



Shinkenchiku-sha Company Ltd

Kawasumi Architectural Photograph Office

Axonometric drawing (left) is key to external views (above and right)

Kawasumi Architectural Photograph Office

Satoru Mishima

Edo-Tokyo Museum, Tokyo, Japan 1993

In ancient times the symbol of a city was a grand temple. Down the ages this symbolism has shifted to a cathedral, to a city hall, then to a guild house, and eventually to a museum.

This Edo-Tokyo Museum is planned to be a new symbol of the city of Tokyo. But why couple it with "Edo" - the old name for Tokyo? Because in the seventeenth century Edo had quite as much influence over the rest of the world as present day Tokyo has. First, both boast great economies; secondly, they each represent unique city planning; thirdly, the growing population of townspeople, or the commoners of old, developed a unique culture; fourthly, these developments clearly differ from anything comparable in Western history, and finally, this unique wave called Japonism has encompassed many aspects of people's life style.

After the Industrial Revolution, eighteenth-century Europe shed its mental complex towards Edo and has since predominated in the world of science, technology and industries, as with ships, arms, railways, etc. Today, the world is again witnessing a "century of Japan" emerge in which Tokyo may take the lead.

Why is it so? The Edo-Tokyo Museum answers this question by presenting us with archives of concrete facts and objects. For this purpose, I thought it should not end up being only nostalgic for past glory and tradition or a copy of a Western type.

There must be a noble "prototype" that inspires present-day citizens with Japanese spirit, with a sense of pride in both the past and the present, and of looking towards the future. A wholly new scale is needed to embrace such spirit.

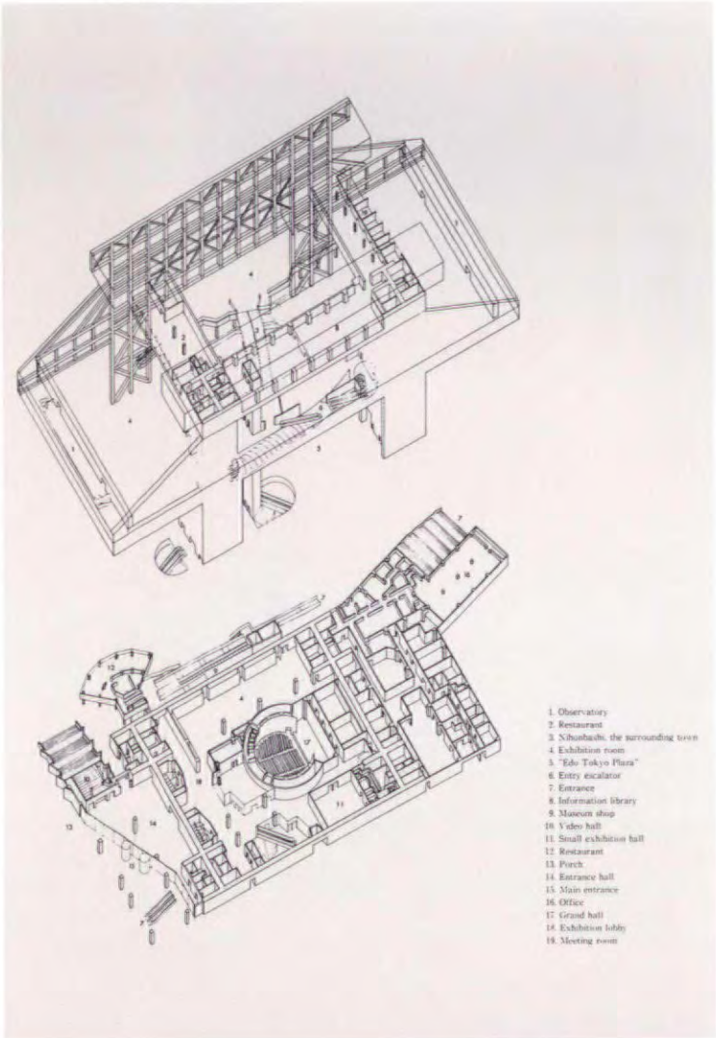
Tokyo is still running its course of change. It is changing into a city of the age of the environment. At the end of their tour, visitors to this museum will rediscover Tokyo and reconsider it with a sense of historical continuity.

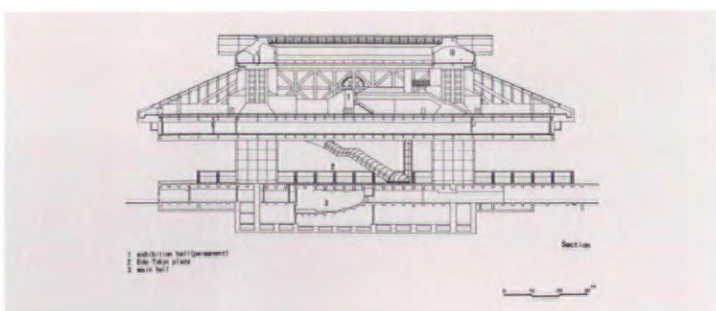
Spatially, the building is composed of three

Towering hull of museum (left and opposite page) marks huge intrusion into city grain. Axonometrics and section (below) are amplified by interior and model shot (bottom)

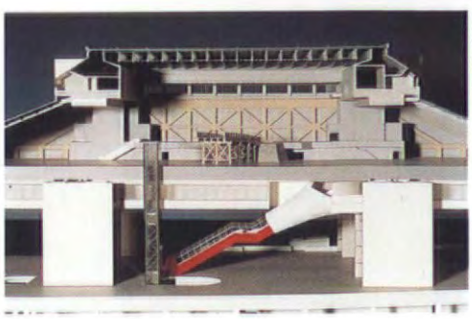
Kawasumi Architectural Photograph Office

Satoru Mishima





parts: (1) the superstructure containing the main exhibition room and repositories; (2) the substructure containing the special exhibition room, main hall, and operating facilities; and (3) the large open space (the Edo-Tokyo Plaza) with an area of 18,000 square metres sandwiched between these structures. The superstructure is supported by four posts and the main areas are connected by escalators. The building is accessible from three directions: on the west side is an approach route leading past the Kokugikan from Ryoguku station, the second approach is from the east side street from the new subway station, and the third, from the north side, is for tourist groups. They all lead to the third-floor plaza. The huge permanent exhibition hall is a double-height single room occupying the fifth and sixth floors. To allow visitors to grasp the entire space at a glance it is divided into two sections – Edo and Tokyo – by the life-size model of Nihonbashi bridge which existed in the Edo period, reconstructed in the centre of the room.



Yoshio Takase

Satoru Mishima

The giant shape of the Museum follows sketch (bottom right) of man pointing at aircraft. Entrance simulates entrance to air raid shelter. (Bottom left) A shide, *a traditional auspicious paper ornament*

Peace Museum, Tokyo, Japan 1993-

The Peace Museum is planned to be built in central Tokyo, along a moat close to the Imperial Palace as a tribute to the dead of World War Two and as a national symbol of lasting peace.

Fifty years have passed since the end of World War Two and memory of its great misery may fade away. This project will collect and exhibit relics of wartime history, particularly those that recall civilian hardship.

The museum is also conceived as a peace communication centre for the nation and the whole world. Designs showing people deep in prayer will symbolise the cause for which it will be built.

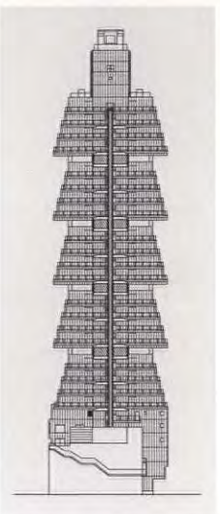
Bizarre outline of tower is reminiscent of earlier tree-shaped housing scheme

Satoru Misima

Hotel Cosima, Tokyo, Japan 1994

The Hotel Cosima has a total of 71 rooms, including seven varieties of suites and twin rooms. With a view to the east overlooking Ueno Park and to the west overlooking the University of Tokyo, each grouping of four floors is a unit of the service system. As a result, the hotel as a whole has the form of a five-storied pagoda.

Its shape may remind one of the five-storied pagoda that once stood in Ueno Park. Fortunately, this very form helped us to meet the strict regulations for volume, damage from wind, and building shadow.



Kiyonori Kikutake: a biography

Kiyonori Kikutake was born in Fukuoka province, Japan in 1928. After working on emergency projects at the end of World War Two he won third prize in the Hiroshima Peace Cathedral competition of 1948 and graduated from Waseda University department of architecture in 1950. He opened his first office in Tokyo in 1953. An important figure in the founding of the Metabolist movement in Japan, along with Otaka and Kurokawa, he was early recognised abroad and was made an honorary fellow of the American Institute of Architects in 1971. In 1978 he received the Auguste Perret Award of the UIA for his work with concrete and in 1982 became vice-president of the Japan Architects Association. He is president of the Tokyo Society of Architects and Engineers and Chairman of the Japanese Institute of Macro-Engineering

Selected projects

1958	Sky House
1958	Shimane Prefecture Museum
1958	Marine City, project
1960	Metabolic Floating City project
1963	Izumo Shrine administrative building
1964	Asakawa Apartment House
1968	Tree-Shaped Housing project
1971	Monorail project in Lima, Peru
1974	Pasadena Heights condominiums
1975	Aquapolis pavilion
1976	Floating Hotel project
1979	Tanabe Museum
1985	Pacific Airport 21project
1987	Ginza Theatre Hotel
1988	Kawasaki Museum
1993	Peace Museum
1993	Edo-Tokyo Museum
1993 –	Peace Museum
1994	Hotel Cosima

BUILDING IN JAPAN

Comprised of four main islands, called Hokkaido, Shikoku, Kyushu, and the most populated, Honshu, Japan lies off the east coast of Asia. The total area is 145,841 square miles (377,727 square kilometres). More than 70 per cent of the total land area is mountainous, rugged and inhospitable resulting in a highly urbanised population. Japan's south-west neighbour is China separated by the East China Sea, Russia is north-west, and the Pacific Ocean is east.

Climate: Japan's temperatures are generally mild due to the warming effects of the Kuroshio and Ushima current, although temperatures vary widely from the north island Hokkaido to the south island Kyushu.

Population: 123.5 million.

Language: Japanese is the official language. Despite two major dialects and many sub-dialects, standard Tokyo Japanese is understood throughout Japan.

Capital: Tokyo.

ECONOMIC DATA

Consumer Price Index: 1980 = 100

1989	1990	1991	1992
119	122	126	129

Exchange Rates: Japanese Yen per US $

1989	1990	1991	1992	1993
143.5	134.4	125.2	124.7	111.7

TRAVEL AND BUSINESS INFORMATION

Time Difference: Japan is 14 hours ahead of Eastern Standard Time (EST), and 9 hours ahead of Greenwich Mean Time (GMT), and does not recognise an hour ahead during summertime.

Currency: Japanese Yen, divided into 100 sen.

Business Hours:

Government: 9.00-5.00 Monday - Friday.
Office: varies 9.00-5.00 Monday - Friday.
Sometimes 9.00-12.00 Saturday.
Banks: 9.00-3.00 Monday-Friday.

National Holidays: If a holiday falls on a Sunday, it is celebrated on the following Monday, and if there is a day break between two holidays, that day automatically becomes a holiday.

Airport Information: Narita Airport is 40 miles (66 km) from Tokyo, with a flight time of 11 hours from Los Angeles and 14 hours from New York.

Dialling Code: Japan's country code is 81, the international dialling-out access code from Japan is 001.

GENERAL CONSTRUCTION INFORMATION

Construction Outlook: The "bubble economy" peaked at a very high level and the resulting drop has been more extensive than the usual economic pattern. The current recession shows signs that a long recovery period will be required. Facility investment will remain down for some time to come. Current projections show the recovery occurring after 1995. The recovery will be slow with no sudden increases in construction demand.

Price historically lags construction demand in recovery, so construction prices will bottom out at least 4 to 6 months after demand bottoms out. Demand will continue to decline through 1994. Construction prices will continue to fall in 1994 and 1995, influenced by the continuing decline in demand. The forecast decline is about 8% for 1994 and 2% for 1995.

Construction costs will also continue to fall. At present, they have fallen 20 to 30% from their peak. General contractors requests for discounts from subcontractors and material suppliers is stronger. It is almost certain costs will be further discounted. Construction costs have not yet reached bottom.

An interesting phenomenon of this recessionary period is that while demand for construction has fallen significantly, 13% between 1990 and 1992, the construction work force has grown by 300,000 during that same period. Workers laid off in other sectors of the economy found employment in the construction sector.

By the second quarter of 1992, labour costs started to decline. Falling demand and an increasing workforce combined to end the labour shortages and labour costs are showing modest declines. Labour cost will continue to decline in 1994 and as the recession lingers through 1995 further decreases in wages can be expected.

Rates of Inflation: The rate of inflation for the building industry is estimated at -15% per annum.

Forms of Contract: Some general background on the Japanese business sense should proceed any discussion of contracts. Contracts are not governed by the conditions of the contract only. There is a strong sense of social obligation. It is important to sustain a good and long term relationship. If a loss is sustained at the end of a contract, often there will be negotiations to secure an adjustment of the fixed price. Trust is a key part of the contractual relationship. This is underscored by the fact that lawyers are almost never present at contract negotiations. However, many of these principles are disappearing in larger contracting firms with more international business.

For companies who build regularly, the process of commissioning a building may be as simple as telling the construction firm what they want built, when they want it and how much they want to pay for it. The company will have a staff that has prepared drawings illustrating the general nature of the project. For special projects, consultants may be used to prepare the design.

There are several standard forms of contract used in Japan for construction work. The general conditions for a construction contract generally used is prepared jointly by the Architectural Institute of Japan, the Architectural Association of Japan, the Japan Architects Association and the Associated General Contractors of Japan Inc. Construction contracts are essentially based on a fixed lump sum and a fixed completion date.

In summary, the Japanese contractual system relies on trust, commitment and mutual understanding.

Design Professions: Except for small buildings, only authorised architects (first and second class) can perform building design services. The architectural design may be executed by either architectural firms or contractors with a design department. Governmental agencies also have their own architects on staff.

Contractors: In the Japanese construction industry the "Big Six" refers to the six largest construction firms in Japan. These firms, which dominate the construction industry are:

- Ohbayashi
- Kajima
- Shimizu
- Takenaka-Komuten
- Taisei
- Kumagai-Gumi

Nearly all construction is performed by specialised trade subcontractors on the basis of fixed lump sum contracts. The specialised contractors have almost a "family" relationship with the general contractors. They have worked for a particular general contractor for years. In many cases they will work for only one contractor. A high level of trust exists between them. At the bid and award stage the general contractor stipulates the contract price rather than letting the specialised contractor price the work.

There are two categories of the specialised trade subcontractors:

- Installation arm of a major manufacturing com pany (electrical, mechanical, component equip ment).
- Independent contractors which may range in size from small to large. Most trade work is labour only.

Governing Codes and Standards: The Building Standard Law regulates all building projects. There are also regulations for registered architects and construction which relate to building activities.

There are two types of standards which regulate construction materials:

- Japanese Industrial Standards
- Japanese Agricultural Standards

Items of Special Interest: Japanese buildings have substantial structures to resist earthquake damage. Seismic concerns are an important part of the design and have very definite cost impacts.

Since Japan is composed of rugged mountains and highly urbanised, buildable land is very expensive.

Confined building sites are another result of this situation.

The sense of fairness prevalent in Japanese society is also evident in compensating neighbours for loss of light because of a newly constructed building.

CONSTRUCTION METHODS AND MATERIALS

Methods: The construction methods used in Japanese construction are not significantly different from Western methods. The structures are designed for extreme seismic conditions, often reinforced concrete. They are erected in much the same manner as in the West.

A greater emphasis on site fabrication rather than prefabrication is evident. What prefabrication is performed tends to be of smaller building elements than is typical of the West.

Japan is one of the few countries where major construction companies invest heavily in research and development. The use of robots in construction is one area in which Japanese research is well ahead and the Japanese construction industry is making good use of robotics.

Material Availability: Most building materials and products are produced and readily available in Japan.

Labour Availability: Shortages of some labour trades existed during the peak period of the "bubble economy". However, with the present recessionary period there, labour availability is no longer a problem.

Equipment Availability: Generally, major plant and equipment are leased from equipment leasing companies. All major equipment pieces are readily available.

Pricing Manuals: There are two major publishers of construction costs in Japan of which we are aware. Kensetsu Bukka Chosa Kai (Construction Prices Investigation Institute), has published a English translation of material from their main publication "Construction Prices". They publish a number of periodicals. Sekisan Shiryo, the other publisher of construction costs, also publish several construction related publications.

USEFUL ADDRESSES

Overseas Construction Association of Japan, Inc.
Tokyo Tatemono No 3 Yaesu Building
1-9-9 Hatchobori, Chuoj-ku, Tokyo 104
Phone: (81) 3-3553-1631
Telex: 2523637 OCAJI J
Fax: (81) 3-3551-0148

Japan Architects Association
Kenchikuka Kaikan
3-16 Jigumai 2-chome
Shibuya-ku, Tokyo 107
Phone: (81) 3-3408-7125

The Association of Japanese Consulting Engineers
Shuwa-Daini-Toranoman Building
1-21-19 Toranomon
Minato-ku, Tokyo 105
Phone: (81) 3-3502-3911

Ministry of Construction, International Affairs
2-1-3 Kasumigaseki, Chiyoda-ku
Tokyo 100
Phone: (81) 3-3580-4311

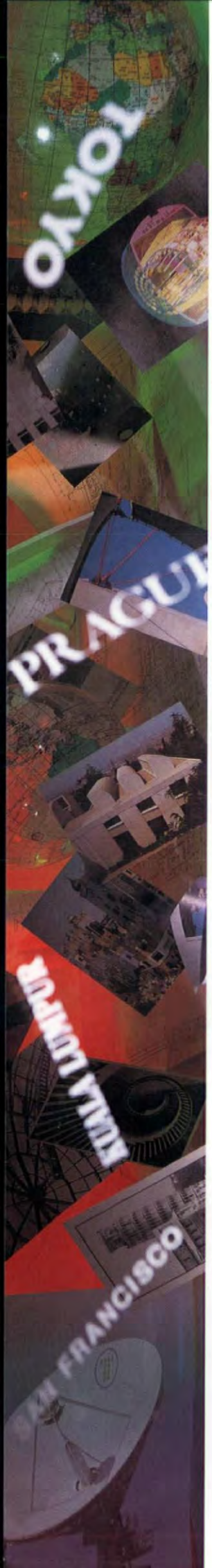
Japanese Society of Civil Engineers
Votsua 1-chome
Tokyo 160
Phone: (81) 3-3555-3441

American Embassy
10-1, Adasaka 1-chome
Minato-ku, Tokyo 107
Phone: (81) 3-3224-5000
Telex: 2422118 AMEMB J

World Architecture *and Hanscomb would like wish to thank Sato Facilities Consultants for assisting in the presentation of the information contained in this country report.*

Approximate Construction Costs:
The following square metre unit rates are provided for rough comparison purposes.

	Yen(000s)/m²
Warehouse – with offices	140 - 180
Office Building, 5-10 stories, Shell & Core	210 - 300
Office Building, 11-20 stories, Shell & Core	250 - 380
Mid Rise Hotel	340 - 400
Apartment Block	150 - 200



GLOBAL REVIEW

GOING FOR GOLD

There is an important difference between the gold medals for architecture conferred by the American Institute of Architects and the honorary fellows named by the Institute. The Gold Medal is a solitary honour, not necessarily awarded every year and which only comparatively rarely recognises non-US architects (an exception was this year's AIA Gold Medallist, Sir Norman Foster from the United Kingdom). The honorary fellowships throw a wider net, looking for political and professional skills as well as academic and design excellence and this year have turned up eight very different architects from Australia, Canada, Finland, Japan, Spain and Turkey.

The two Canadians are A J "Jack" Diamond from Toronto - noted as both an excellent teacher and designer - and J Brian Sim, a commercial architect known principally for his presidency of the Royal Architectural Institute of Canada.

Japan yields a further two new AIA fellows: Toyo Ito, whose unconventional architecture is described as "fascinating and powerful ... a true marriage of human vision and technology", and Azusa Kito, somewhat less well-known in the West, who is rewarded for his political skills in "professionalising" architecture in Japan and helping to set up a professional alliance between the American and Japanese Institutes.

A grand old man of Australian architecture, Professor Robert Peter McIntyre from Kew, Victoria, is honoured for his sense of the theatrical and the grandiose, from his Swimming Stadium for the 1956 Olympics in Melbourne onwards. He is described as a "scholar, practitioner, leader of his profession and orchestrator extraordinaire".

Another professor, Juan Bassegoda-Nonell from Barcelona, is named as an AIA fellow for his unmatched knowledge of Antoni Gaudí. The other Europeans to receive the accolade are Juha Leiviska from Helsinki, Sweden, for developing Finnish Modernism in the post-Aalto era and Dogan Kuban of Istanbul, Turkey, professor emeritus of history of architecture and conservation at Istanbul Technical University. Kuban, "the pre-eminent spokesman for the history of Turkish architecture" has previously won the Aga Khan award for architecture.

DOWNHILL SEVILLE

It was always the perceived wisdom, before the Barcelona Olympics and the Seville Expo, that these globally-publicised events, with their massive associated infrastructure investment, would act as a significant boost to Catalonia and Andalucia. Two years on, things do not look so rosy.

Catalonia is economically flat but fairly healthy, though Barcelona itself is still suffering from a property "overhang" following the building boom of the Olympics period. Andalucia, however, is another story. Always the poorest region of Spain, looking as much to North Africa as to the rest of Europe, the one-time Moorish stronghold of Al-Andaluz appears not to have responded to the Expo treatment.

In Andalucia there is plenty of evidence of European Union funded infrastructure development - roads, high-speed railways, a new airport and of course the science-park fibre-optic network of the Expo site itself. Despite all this, the unemployment figure in the region has grown to a staggering 34 per cent - three times the EU average and the highest in Spain. The number out of work has increased by half

in the past decade.

Andalucia, despite its tourist-appeal beauty, is fast becoming a significant problem both for the EU and for the Spanish government. According to the *Financial Times*, it has only a third as many companies as Catalonia, which has an even smaller population.

One consolation is that the north-south divide in Spain is not quite so marked as in other Mediterranean countries, most notably Italy. Another (economically if not aesthetically) is that the squashed southern Spanish international property market is picking itself up again. But privately, politicians in Andalucia will tell you that you can't buck history. Despite all the EU aid for this fringe area of Europe, it has more in common with the poor Islamic countries of the Magreb than it does with designer bars in Barcelona.

GRONINGEN

Studio 333 is quite possibly the shape of architectural practices of the future: a global network of independently-working architects capable of fusing at any moment to enter and win competitions. Prior to the Groningen win, the practice won the international competition for the revitalisation of Samarkand in 1991.

Three members are New Zealanders based in Britain: Nicholas Barratt-Boyes, Stephen McDougall and Christopher Moller. Two are English, based in the Netherlands: Dominic Papa and Jonathan Woodroffe. Associates of the core group include Ingeborde Felde, Burton Hamfelt, Lisa Raynes and Emmanuelle Poggi, recently appointed an associate of Alsop and Stormer.

The edge-of-town site is seen as an opportunity to create a "filter" zone for the main canal-girt city: dwellings are designed to adapt to living and working and each of the 180 units is arranged around a winter garden designed to be either an open space or a closed room.

Discussions are now proceeding over the implementation of the scheme.

TWIN STREAKS

Dominique Perrault, he of the Très Grand Bibliothèque in Paris, has produced a Very Big Plan indeed for Bordeaux.

Perrault has the task of somehow uniting the two banks of the River Garonne in what is effectively 290 hectares of industrial area, half of which is wharves and docks.

His commission sprang from a massive consultation exercise held by Bordeaux's mayor Jacques Chaban-Delmas in 1991 including not only Perrault but also Massimiliano Fuksas, Rem Koolhaas, Jean Nouvel and Christian de Portzamparc.

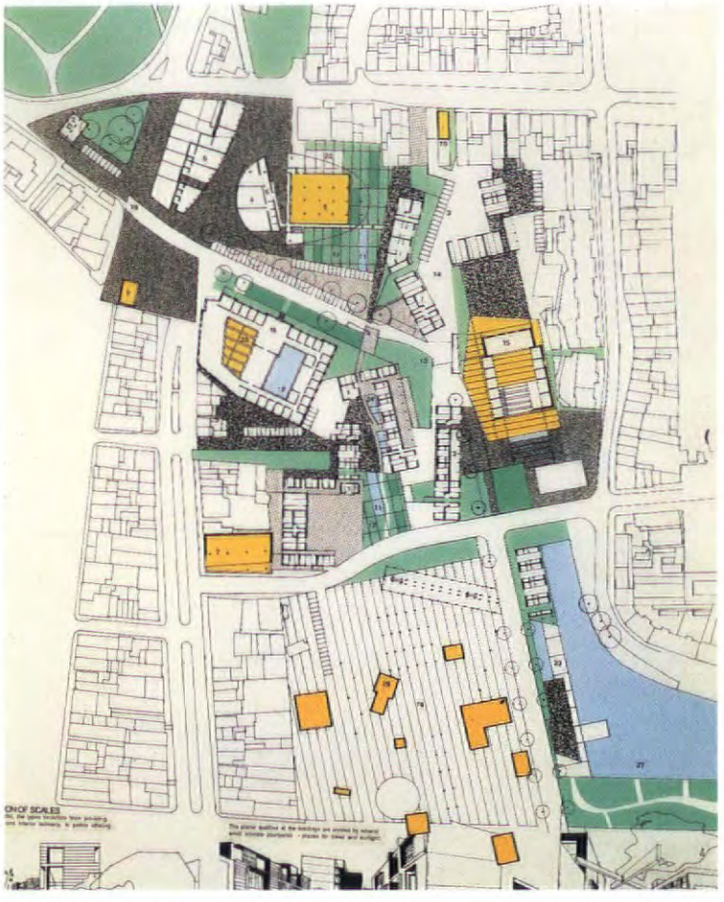
The outcome of Perrault's deliberations is to reinforce the differences between right (urban) and left (semi-rural) banks in Bordeaux, rather than try to homogenise them. The urban framework of the right bank will be reinforced with a new avenue; the left bank will be developed as a sequence of buildings and green open spaces, incorporating a 23-hectare university campus.

An exhibition of Perrault's proposals, "Bordeaux les deux rives" ran in the Bordeaux docks (Hangar 15, Quai des Chartrons, facing the Cours du Médoc) until October 16, 1994.

CLEOPATRA'S PROMISE

The ramifications of seemingly dry investment decisions by governments ripple round the globe. So, when the Tunisian administration decided last year to allow greater foreign investment in tourism initiatives, antennae started to twitch worldwide.

The studio 333 Groningen scheme site plan explores and re-affirms the marginal qualities of the site and delineates the boundary between urban, sub-urban and the open landscaped areas



The result of the twitching is a very 1990s scenario, in which architecture and design are aspects of the global theming business. US $18 million is to be invested in two new Tunisian holiday complexes. It has been decided that one of these, at Hammamet, should be in "European" style. The second, at Cap Gammarth near the ruins of Carthage, will be a version of Las Vegas.

Who builds such places? In this case, a company called Cleopatra Palace Ltd, which is registered in Dublin, operates mainly from London and is 70 per cent owned by a US public company called Nona Morelli's II Inc (not sure how that "II" is pronounced), based in southern California.

The architect is Lee Leighton, who has previously designed Ceasar's Palace in Vegas. The "European" resort, opening in 1995, consists of a 600-bed five-star hotel and a 250-seat theatre which will stage a Naughty 'Nineties Parisian cabaret. The "American" one, scheduled for 1996, is bigger - hotel, theatre, 250 apartments, 24 villas, sports complex and shopping centre.

But somewhere the cultural wires may have crossed. Tunis's version of Las Vegas will, it seems, include a French Le Printemps department store. This may just be a post-colonial legacy.

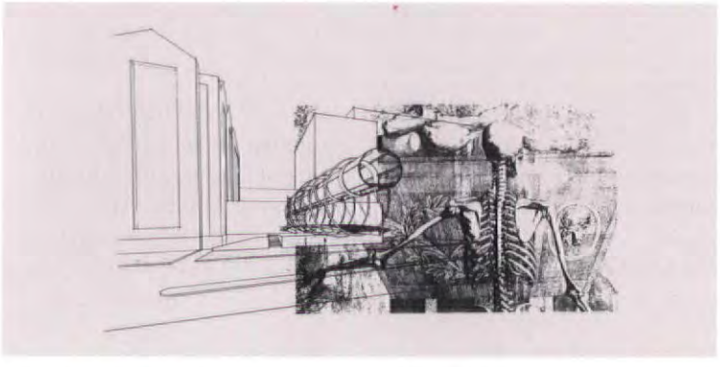
DANES CAP IT ALL

Denmark is to take the opportunity of its projected bridge/tunnel to Sweden to create a whole new district of the capital, Copenhagen.

Having already approved Copenhagen's direct rail link to Germany - no small undertaking, when you consider that the city is on an island, Sjaelland - the Danish state has immediately turned

to the matter of a fixed link in the other direction, with its neighbour across the Baltic, Sweden. The link will be a bridge in the shallow waters of the Swedish side and a tunnel at the Danish end - partly to satisfy Finland, which feared that a bridge might make it difficult to float its vast oil and gas platforms out of the Baltic into the North Sea.

Where the tunnel emerges, the new district of Orestad will be built. The size of the City of London - that is, one square mile - it will be built over 30 years by Denmark's first New Town Development Corporation. It is headed by the architect Anne-Grethe Foss, who until recently was planning director of Danish Railways.



Cautious in their approach to new architecture - a very few new office buildings are allowed in the centre of Copenhagen, for instance - the Danes are making sure that the transport infrastructure of Orestad is in place before any buildings are commenced. The new district will be linked to Kastrup airport and to a new 14 km metro system, as well as southern Sweden. It seems that London's Canary Wharf project - where huge buildings disastrously preceded transport infrastructure - is being taken as a warning of precisely how not to plan such areas.

Widespread consultations have already taken place over what form Orestad should take. A masterplanning competition will yield some preliminary results by the end of 1994.

SPINAL TAP

By the time you read this, John Breshears, an American architect and engineer working in Vancouver, should be well into the opening stages of his two-year research project on the adaptation of the structural principles found in the human spine, to engineering design. Breshears is the winner of the first Peter Rice Prize for original research in the field of design. Awarded bi-annually the prize, set up to commemorate the work of the late Peter Rice, is no mere gesture. The winner receives £15,000 and a year of free collaboration with leading designers in an Ove Arup Partnership office, together with a year in a development studio or academic institution pursuing related studies.

This practical and thoroughly worthwhile enterprise makes us wonder why more of the great architectural offices of the world do not set up such awards. Could it be that the Arup organisation, which of course provided the crucial technical support for such triumphs as Pompidou, Lloyds and Kansai, has a longer term view of its future than some architectural practices we could mention? Either that or it has bigger pockets and doesn't mind digging deeper into them to keep its lead in advanced building technology.

KPF's Provinciehuis scheme (below) and Breshears' "spinal bridge" (below left)

Eamonn O'Mahony

KPF WINS HAGUE

Kohn Pedersen Fox, London working with the Dutch practice, LIAG, has won the European competition for the Province of South Holland's new building in The Hague.

KPF/LIAG's winning design, chosen by the Provincial Executive Committee, is a 24,000 m² office building that will adjoin the Provinciehuis, the province's legislative headquarters. The scheme reinforces an important intersection between the Zuid-Hollandlaan and the Koningskade. The building utilises an innovative series of strategically placed social spaces which create a chimney effect to naturally ventilate the structure. This application, combined with the Dutch tradition of natural ventilation, minimises the use of non-renewable energy.

Kohn Pedersen Fox, the London-based practice has already worked in The Hague. They designed the 55,000 m² De Centrale project, also won in an international competition which has a targeted completion date of 1996.

TOWN KRIER

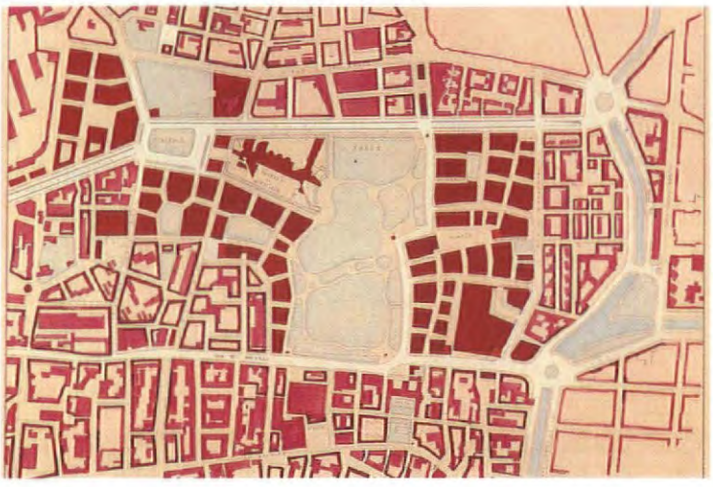
Were you wondering what Leon Krier was up to these days, following rumours that he had quit both the UK and architecture? Wonder no longer. The Luxembourgeois urbanist, sometime confident of Prince Charles and brother of the equally famous Rob, has turned up with a new urban masterplan for Novoli, an industrial suburb of Florence.

The closure of the vast Fiat car plant in Novoli in 1989 had led, after five years of local wrangling and various earlier plans, to Krier's appointment by the local government. The Krier masterplan, intended to be built between 1996 and 2002, was proclaimed in the *La Repubblica* newspaper as "Novoli 2000: a town with an old density".

The vast factory area is replaced with a familiar Krier townscape of small districts with densely-packed low buildings - not more than four storeys. Courtyards, squares and a large park with lakes are introduced into what is currently a very poor and traffic-choked part of the city. A debate continues as to whether the traffic problem should be addressed with a by-pass or a tunnel.

Krier, controversial as ever, is stepping outside his immediate brief to take issue with plans for a grand new 50-metre high Palace of Justice in the area, designed by Leonardo Ricci - the proposed Palace is brutal, too tall, 20 years out of date, Krier says cheerfully, admitting that he was told by the organisers that he could concern

Krier replaces a car factory in Florence (below)



A welcome change from brickwork is McCormac Jameson Prichard's Cable and Wireless building

Tim Soar

himself with everything in the area apart from the new Palace. Its accommodation could readily be distributed over his four-floor height limit for the area, he says.

So Krier is fighting his corner urbanistically as ever. The content of the new Novoli could include a university, public and private offices, housing and a hotel, he suggests. As usual with Krier he mixes uses. There is as yet no indication of any particular architectural style, though the scale and section of the indicated blocks could take a number of forms depending on who the project architects chosen to build them may be.

AUSTRALIAN REVIVAL.

"This", says Steve Quinlan, pulling out a cutting from the *Melbourne Age* about the city's new exhibition centre, "is where the recession ended for us."

"Us" is the Australian practice of Denton Corker Marshall. Or Australian by origin, anyway. Quinlan is speaking from London, where he heads the British office. Previously when *WA* tried to contact him, he was at a DCM conference in Macau. They don't have an office in Macau - that was why they chose the location - but they do have offices in Hong Kong, Tokyo, Singapore, Jakarta, Melbourne and Sydney. Plus a token presence in Warsaw, linked to London. The two biggest, however, are Hong Kong and Melbourne. Tokyo and London have a mere handful each.

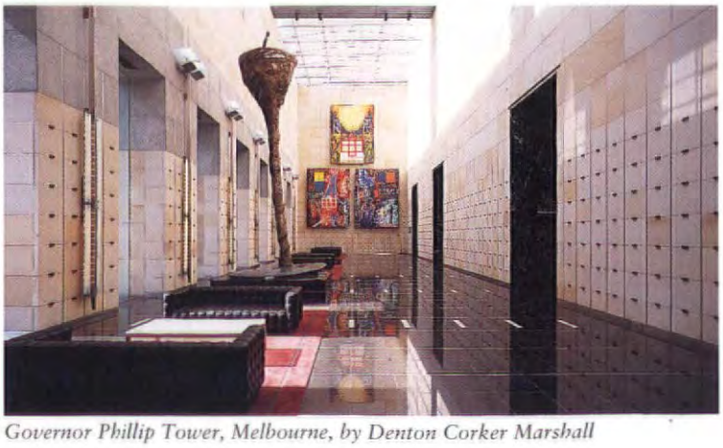
The Japanese and Australian recessions hit DCM pretty hard. They previously had an office in the governmental capital, Canberra, which had to close. And the British office is only just beginning to emerge from the shadow of the earlier UK recession, during which time it has been partly sustained by the commission for the UK governor's residence in Indonesia. But it was the other countries of the Pacific rim that kept DCM healthy when the shutters were down in some of their key markets. The geographical positioning of the DCM business makes it a very good indicator of the constructional health of the region.

"Everyone would imagine that China was the place where the work was - but oddly enough we don't do much work in China", says Quinlan. "On the other hand, we do a fair bit in Vietnam, mainly offices for Hong Kong companies."

With Indonesia continuing to expand and with a number of commissions in booming Malaysia, it is nonetheless the fact that building in Australia is starting to move again that has cheered the practice most. Like Japan, Australia embarked on a programme of state-funded works to allay some of the worst effects of the recession. Into this category comes the $120 million Melbourne exhibition centre, a building 360 metres by 84 metres in which a characteristic DCM (or rather, Barry Marshall) design motif - what Quinlan describes as "sticks and planes" - has been employed for a vast glass-walled public concourse running the length of the building.

Melbourne's desire to win back some of the cultural prestige lost in recent years to Sydney is reflected in the fact that this is to be the biggest exhibition centre in the nation. But commercial, rather than state-funded, property is also on the move in Melbourne. A 115-metre tall residential tower by architects Hayball Leonard Stent for developer John Hopkins & Company, will shortly get under way. Hopkins is offering the state of Victoria a chunk of land free for a $12m Museum of Modern Art.

Japanese developers famously pulled out of Australia when the recession bit a couple of years ago. Which makes another, utterly different, DCM project rather interesting. Burrawang West is an all-new outback settlement, specifically for executives of the Japanese development company Kajima. A modern interpretation of Australian sheep-station vernacular, it is a place where Kajima folk arrive by plane for an almost monastic retreat, then fly out again. The Japanese, then, are maintaining a presence in Australia, ready for the upturn. □



Governor Phillip Tower, Melbourne, by Denton Corker Marshall

THE WORLD ARCHITECTURE HANSCOMB COST INDEX

World Architecture *frequently receives inquiries concerning the level of construction price differentials around the world. In response to this demand, we are pleased to bring you on a biannual basis the Hanscomb Index. This is produced exlusively for* World Architecture *by the well-known international construction consulting firm of Hanscomb, who operate internationally out of 40 offices in Europe, North America, Africa, Middle East and Asia.*

		Exchange Rate to US$*	Index Range Low	High
EUROPE				
Austria	Asch	11.19	132	145
Belgium	Bfr	32.76	135	150
Czech Republic	Koruna	28.41	78	91
Denmark	Krone	6.25	154	170
Finland	Markka	5.30	110	128
France	FFr	5.54	128	142
Germany	DM	1.59	147	162
Great Britain	£	0.65	111	123
Greece	Dr	240.00	105	116
Hungary	Forint	102.00	86	100
Ireland	I£	0.66	102	113
Italy	Lira	1571.00	121	134
Netherlands	Guilder	1.79	125	138
Norway	Krone	6.93	131	152
Poland	Zloty	22554.00	82	95
Portugal	Escudo	164.00	98	109
Russia	US$	1.00	125	145
Spain	Peseta	132.00	94	103
Sweden	Krona	7.66	132	146
Switzerland	SFr	1.34	167	184
Turkey	Lt	32118.00	76	90
North & South America				
Canada	$C	1.39	79	87
Mexico	NPeso	3.38	74	82
United States	US$	1.00	95	105
Bahamas	US$	1.00	98	108
Jamaica	$J	33.35	75	83
Puerto Rico	US$	1.00	95	105
Virgin Islands	US$	1.00	105	116
Argentina	Peso	1.00	71	83
Brazil	Cruz.	2050.00	76	88
Chile	Peso	420.00	77	90
Columbia	Peso	827.00	75	88
Panama	US$	1.00	77	89
Peru	N Sol	2.19	80	89
Uruguay	Peso	4.92	80	89
Venezuela	Bolivar	196.00	82	91

To introduce the second issue of the Hanscomb Index (the first appeared in the May 1994 issue), we are bringing you a quick round-up of construction in key markets around the world.

North America

USA: Pulling out of the recession with investment in construction increasing in general in the industrial, housing, and public sectors. Commercial remains in the doldrums, however. With this improvement have come increases in construction prices, in some cases quite dramatic. Not all parts of the country share in the improvement, with California and the Northeast waiting to benefit.

Canada: Traditionally, Canada follows the US economy with a gap of a year or two. The west is buoyant, markets are improving in Ontario, but from all-time lows. Quebec is suffering from political uncertainties. Prices remain static, but with the falling Canadian dollar, relative construction costs in Canada are as low as they have ever been.

Mexico: Investment levels continue at a strong pace, albeit not increasing as fast as predicted prior to NAFTA. Prices are reasonably stable.

Europe

From the depths of gloom last year, there are tantalising signs of improvement in the UK, but without any significant upward price movements. The German economy shows signs of improvement, but growth rates are not predicted to rise significantly. Construction orders continue active in the east, but slow in the west. Prices, if anything, have fallen or remain static.

The French construction industry continues depressed with little upward pressure on prices. Spain is still recovering from the hangover after

		Exchange Rate to US$*	Index Range Low	High
MIDDLE EAST				
Egypt	E£	3.34	105	116
Israel	NSh	3.05	77	85
Lebanon	L£	1682.00	84	97
Oman	Rial	0.39	97	108
Kuwait	Dinar	0.30	91	106
Qatar	Riyal	3.64	97	108
Saudi Arabia	Riyal	3.75	95	10
UAE	Dirham	3.67	95	105
AFRICA				
Nigeria	Naira	24.15	99	110
South Africa	Rand	3.60	90	100
Zimbabwe	$Z	7.83	96	112
ASIA & AUSTRALIA				
Australia	$A	1.37	94	103
China	R.Yuan	8.65	80	88
Hong Kong	$HK	7.73	129	143
India	Rupee	31.37	76	85
Indonesia	Rupiah	2166.00	90	99
Japan	·	100.00	200	221
Malaysia	Ringgit	2.59	87	96
New Zealand	$NZ	1.69	84	93
Pakistan	Rupee	30.65	75	88
Philippines	Peso	26.74	99	110
Singapore	$S	1.53	117	130
Taiwan	$T	26.39	112	123
Thailand	Baht	25.04	83	92
Vietnam	Dong	10971.00	95	105
South Korea	Won	806.00	112	124

* June 1994 exchange rates are used.

1992 and prices have fallen dramatically there. In Italy, political confusion has led to a virtual cessation of public sector orders. Scandinavia remains quiet.

Far East

Japan is still reeling from industry scandals and the recession with orders significantly down from previous years. This has led to an actual drop in prices — a welcome relief for Owners considering that these are the highest in the world.

Elsewhere in Asia, all the traditional markets remain strong if not quite as active as they were a few years ago in Thailand, Malaysia, Indonesia, and Hong Kong.

The following World Economic Development Congress list of 30 countries experiencing greatest annual year-on-year foreign direct investment growth, shows the anticipated strong markets in 1995. The ones on the list likely to have very active construction activity are: Argentina, Russia, South Africa, India, Vietnam, and China.

North America: Canada, Mexico, USA

Latin America and the Caribbean: Argentina, Brazil, Chile, Cuba, Peru, Venezuela

Western Europe: Spain

Central and Eastern Europe: Czech Republic, Hungary, Kazakistan, Poland, Russia

Africa and the Middle East: Bahrain, Botswana, Kuwait, Nigeria, South Africa, Turkey

Asia: China, India, Indonesia, Korea, Malaysia, Philippines, Thailand, Vietnam.

Australasia: Australia

International Construction Price Comparisons

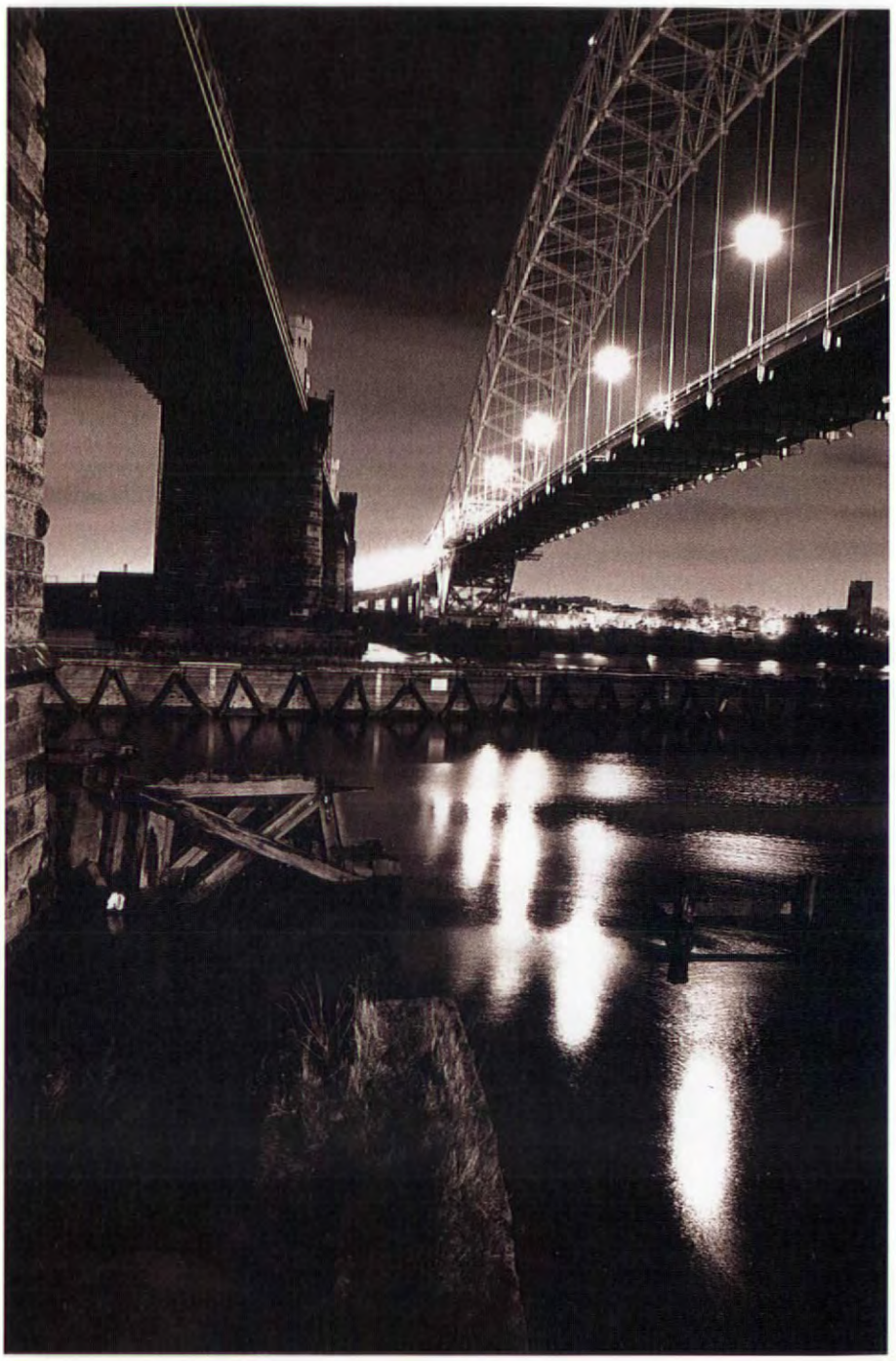
Attempting to compare construction prices from one location to another is far from an exact science.

Given all these factors, the measurement of price differentials between countries is particularly hazardous and it is important that our readers understand how Hanscomb arrive at their index figures which appear on these pages:

- Construction to "Western" (ie USA/Western Europe) standards at location.
- The index base is 100 in Chicago, Illinois, USA at third quarter July 1994.
- The index reflects construction at the outskirts of principal cities, not for rural or highly urban locations.
- The index is based on private or institutional building construction, ie, it does not reflect differences in civil, heavy industrial, or residential construction. Also, note that the index does not attempt to compare price differentials for highly sophisticated buildings such as hospitals and laboratories, which may show a different pattern of index from simpler building types.
- Exchange rates are as stated.
- Due to the vagaries of comparing construction prices, an index range is provided.
- The index reflects differences in construction prices only and excludes any arising from site costs, furnishings and equipment, design and management fees, financing or any potentially recoverable tax, including Value Added Taxes.

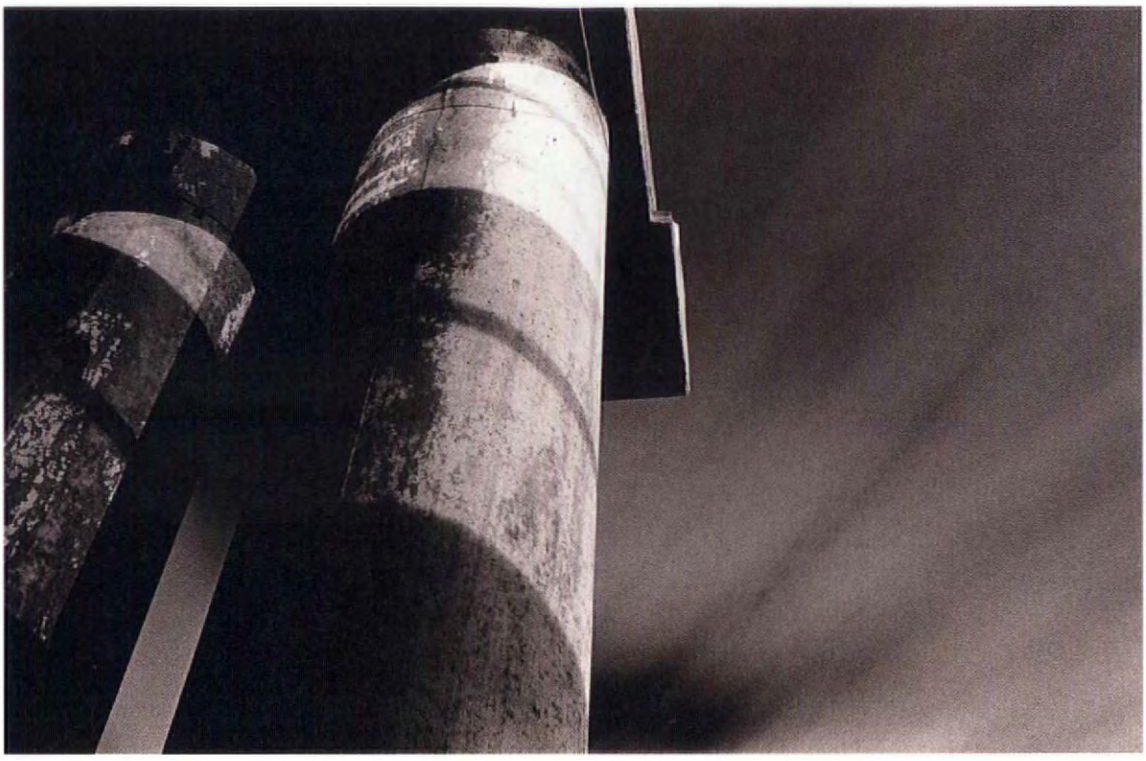
Finally, the index is intended to provide general guidance only and should not be used for definitive estimating purposes.

The Hanscomb Index is produced for World Architecture *by the Hanscomb group of companies, international construction consultants and project managers. The editor for this series with* World Architecture *is Gary Mardon in Hanscomb's Chicago USA office, who co-ordinates input from over 70 countries around the globe.* □

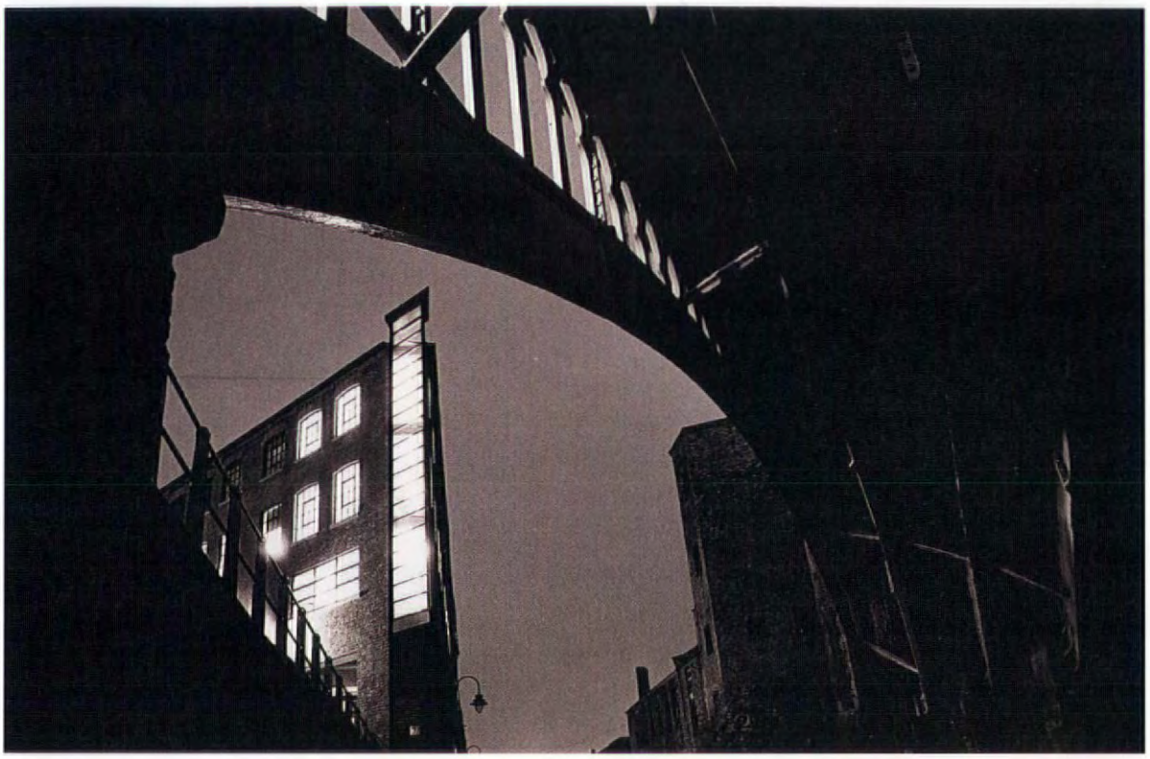


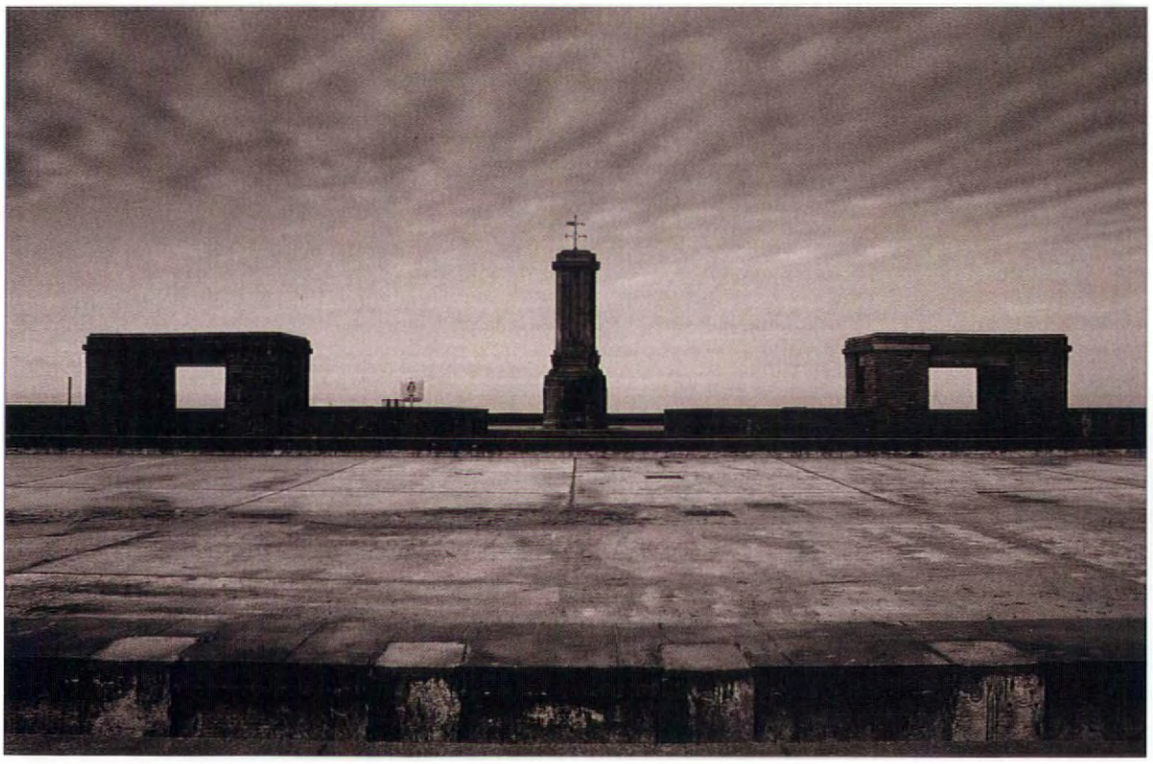
IAN GLOVER

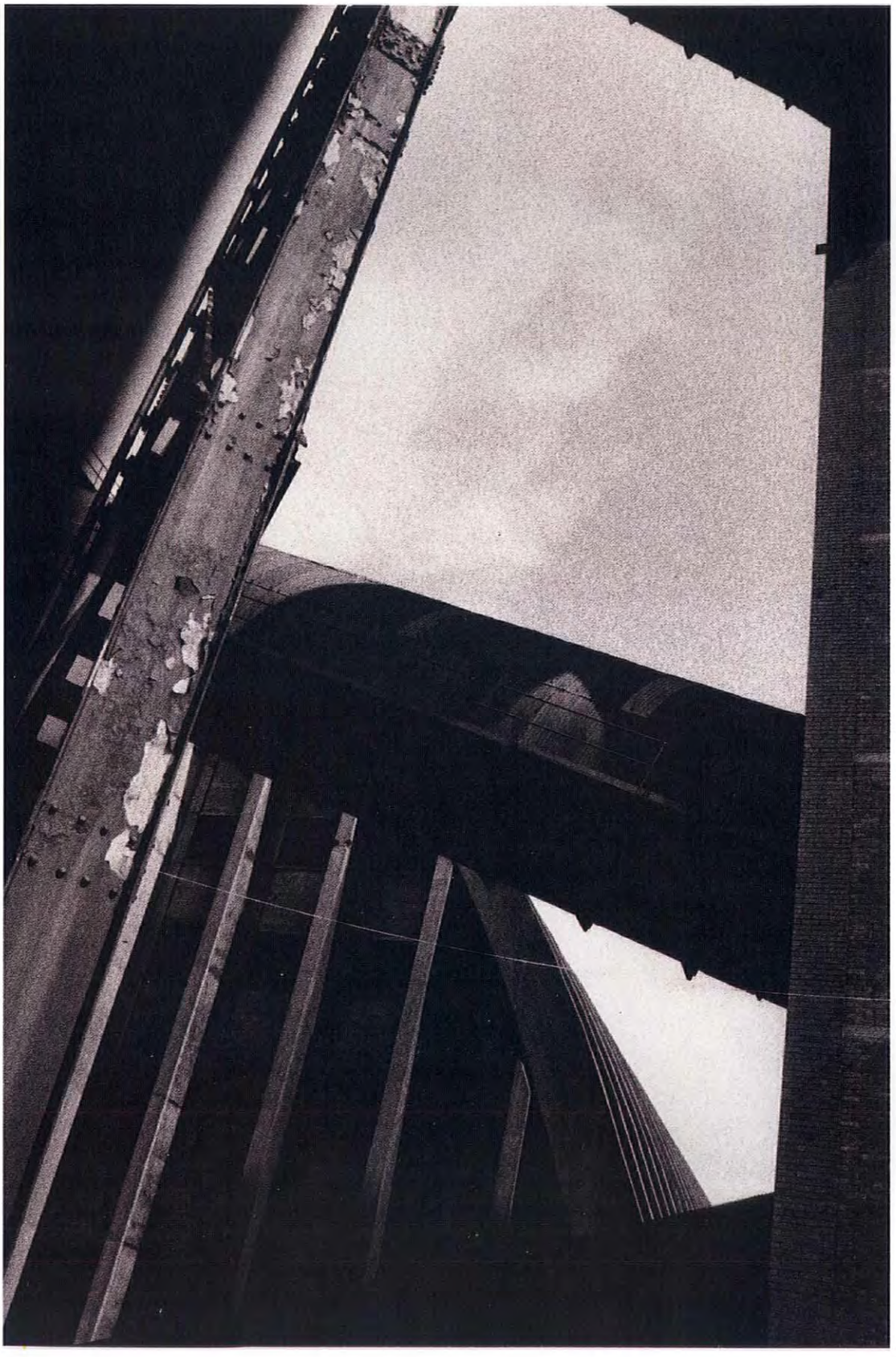
Ian's images have appeared in several major exhibitions and numerous publications. His work is held in collections in Britain and abroad. He can be contacted on 051 733 0342 or 051 709 9460.

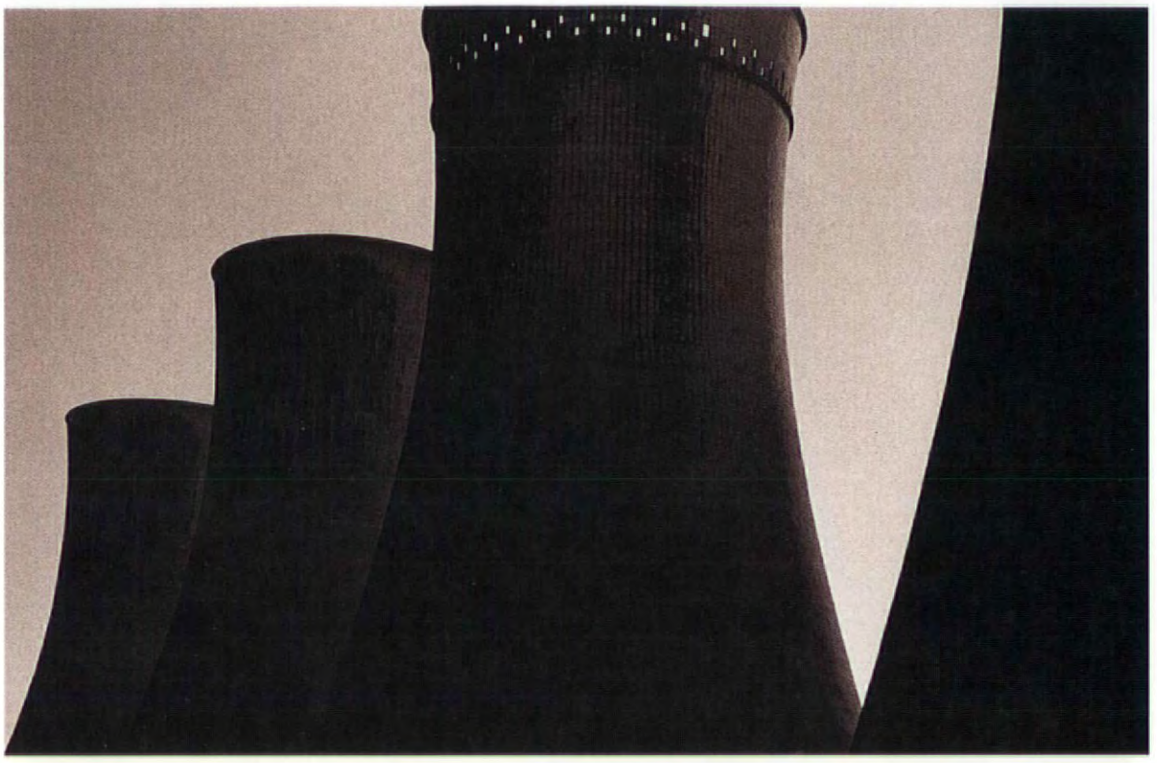


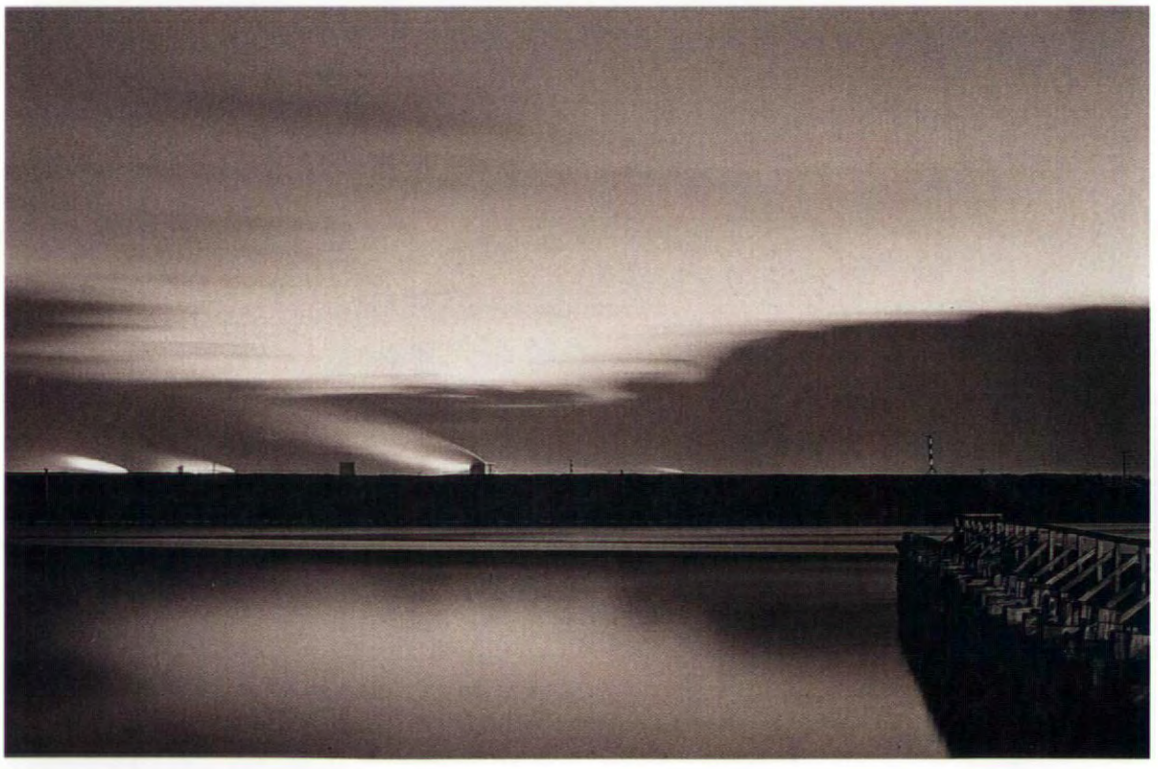

STOTHERT
&
PITT











THE BEAUTY OF THE MORNING

In the England of the 1990s, the only visionary programme for the city with any credibility involves the ruination of the future and the elevation of the past. This is the popular revivalist programme in the architecture and planning of Adam, Krier, Simpson, Terry et al – now significantly strengthened by a celebrity-strewn agenda in the royally approved Perspectives *magazine, writes Nigel Gilbert.*

The illustrations on the following pages represent a storyboard for a 1998 film production, and outline the opening scenes as they establish two locations in a "remodelled" city. One location is inside the city's new defining walls, part of the revival of "The Golden City", and one location is outside in the "surplus" area. These locations symbolise the two main characters of the film and are a new town house in a development centred on a traditional garden square, and a bed-sit, one of many thrown up in an obsolete office block.

Both locations feature artificial environments: the house, a full Virtual Reality facility programmed with a simulation of Claude's landscapes, and the bed-sit, basic layered light shows shaped to induce inertia.

Scenes in the house are shown on the top "strip" with the bed-sit scenes below. The locations would be intercut to a quickening rhythm as the opening sequence progresses.

The future world of the modern city will be an architecture of debased towers and barren precincts, impoverished concrete and destitute glass; and its dramatisation in print, pictures and song has made that world synonymous in the popular imagination with a state of anxiety, not to mention fear.

The dramatic material contributing to the modern city's negative equity in the collective psyche probably began with H G Wells. Elaborated and expanded by his cinematic successors [1], the latest wrinkles occupy William Gibson's novel *Virtual Light*, where the action goes down against rawly contrasted backdrops – a teeming parasitic barrio, sealed rooms high in the sky, and isolated "stealth" houses. This is a vision of the city as essentially comprised of a fundamentalist opposition between a rich, empowered few and the many poor and disenfranchised. As Wells originally put it, "a vast lunatic growth producing a deepening torrent of savagery below, and above, ever more flimsy gentility and silly wastefulness". Both "above" and "below" it is a vision of a shadowed and distorted arena occupied by "otherness" and evoking alienation and dread. The density of the modern city as popularly represented is "doomed" Megalopolis.

If the future of the modern city is no longer palatable, what is to become of "that magnification of all the dimensions of life, through emotional communion, rational communication, technological mastery, and above all dramatic representation (that) has been the supreme office of the city"? [2]

Reyner Banham gently pointed out that European "litterateurs" and academics were forever missing the point about Los Angeles – the freeways may divide fixed communities but they also unite like-minded individuals who would otherwise be isolated within the vast and varied populations of that city. [3] Banham's understated insight was that any dominant technology inevitably structures the primary means of human association and exchange of its time. Now the pre-eminence of the freeway is inexorably being supplanted by the information superhighway of communications technology. Like all cultural transformations, the changes attending this process are creeping up in the guise of mere technical progress: with MPP processing, the global communications traffic together with interactive multi-media seem set to be squirted direct to you through the copper banality of your existing phone line.

Extending Banham's insight, the point here is that Internet, the clandestine club of contacts operating inside the global communications traffic, provides a new model for the system of human association and exchange hitherto embodied in the city. Massively extended by video-conferencing, telepresencing, simulations, and VR parties, this model will be an unprecedented means of "emotional communion, rational communication, and (even) dramatic representation" for a culture that is already internationalised and absolved of the responsibilities of physical proximity for its workings.

This is the internalised, invisible city – the new public realm of virtual communities [4] and its emergence signals the ultimate withdrawal of the imperatives of function and usage from the real, outer city. And this, in turn, has to mean that the impending manipulation of that city by the revivalists will have as its goal a vision motivated by the symbolic, the ceremonial, and the picturesque alone. [5] A vision apparently that,

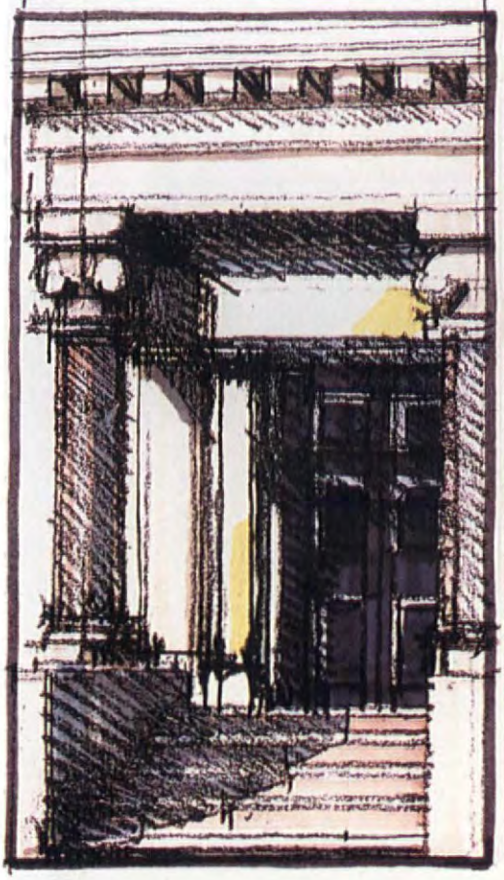
> This city (soon may), like a garment, wear
> The beauty of the morning; silent, bare,
> Ships, towers, domes, theatres and temples lie
> Open unto the fields, and to the sky;
> All bright and glittering in the smokeless air. [6]

What alliances, selections and magnifications of the husk of the "vast lunatic growth" that is the modern city such a revival involves can only be guessed at – and dramatised in the true Wellsian manner.... □

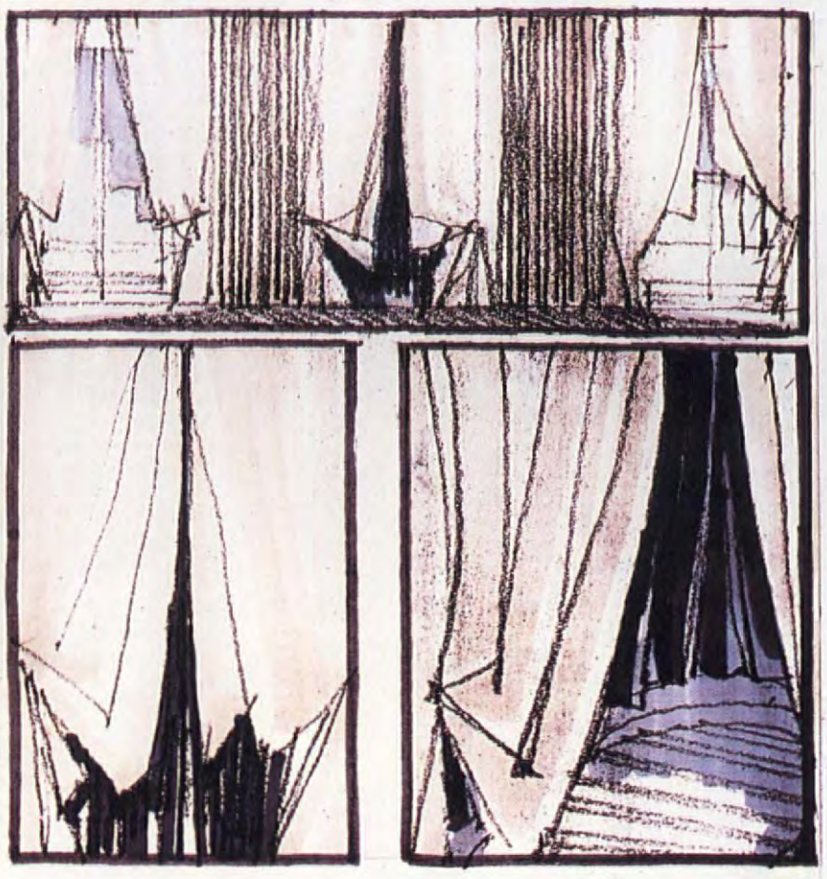
Notes:

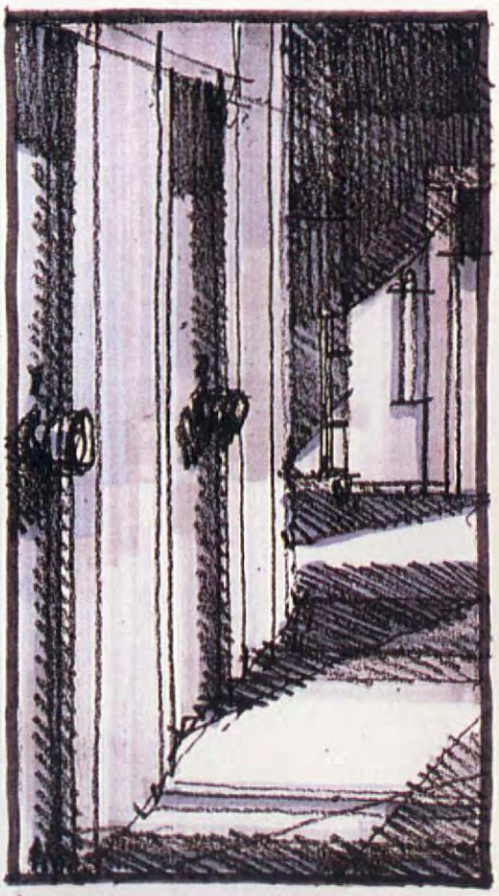
1. From Fritz Lang's *Metropolis* to Ridley Scott's *Blade Runner*.
2. *The City in History* by Lewis Mumford, p 656.
3. *Los Angeles: the Architecture of Four Ecologies* by Reyner Banham, p 243.
4. *The Virtual Community* by Howard Rheingold, see also *Cyberville* and *The Man who made Cyberspace*, both interviews with William Gibson by Steve Beard and Jim McClellan respectively, in *The Face* and *Arena 82*.
5. *Cyberspace Inside, Continuity Outside* my illustrated article in *World Architecture*, May 1994.
6. *Composed upon Westminster Bridge, Sept 3, 1803* by William Wordsworth – the association implied here is entirely mine – based on an inspection of the relevant architectural prospectus.

UP STONE STEPS TO PORCH. CLOSE IN ON PANELLED FRONT DOOR (FX. AUTO – MECH SEQUENCE / ARMOURED DEADLOCKS.)



A MORNING ROOM – DAWN LIGHT THRU' FRENCH WINDOWS. CLOSE-UP OF CENTRAL WINDOW AND INNER DARKNESS. GLIMPSE OF HIGH SHALLOW RECESS – HUNG IN BLACK AND CANDLE LIT



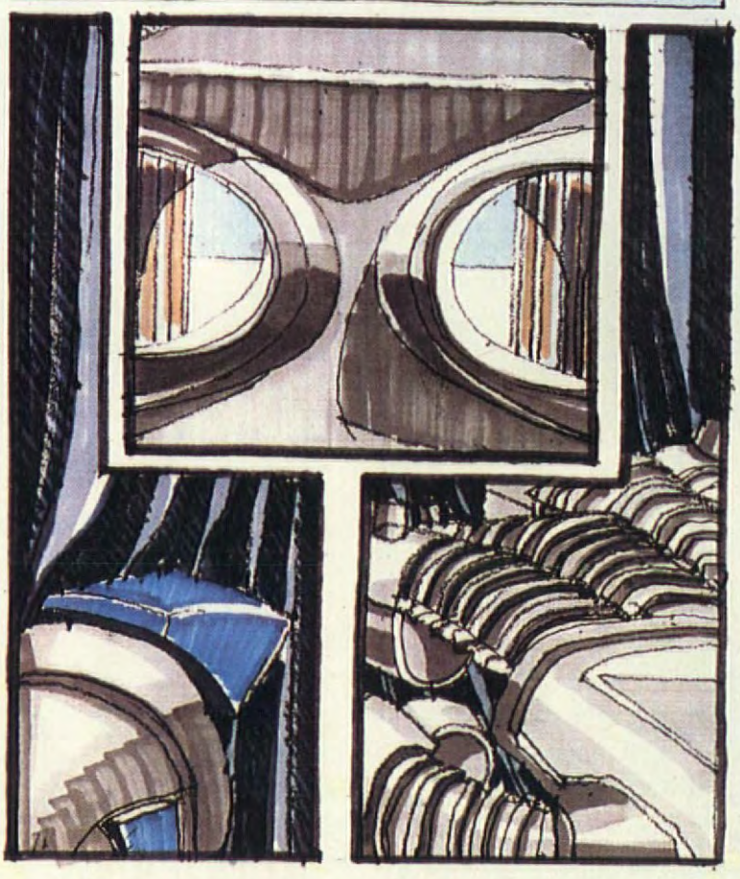


DOWN CORRIDOR WHERE LIGHT HARDLY REACHES. EACH DOOR PASSED LEAKS NOISE (FX) UP TO PLAIN CRUDBOARD DOOR.

INSIDE, A SINGLE ROOM WITH A CURTAINNED SLEEPING ALCOVE – (FX BREATHING UP) COLOUR LIGHT PROJECTIONS TRIGGERED ONTO GAUZE. (FX WAKING RHYTHM) – A DREAM SIMULATION, A SLOW EXPOSITION OF A SCENE, THE EDGE OF A BRIGHT CORNFIELD

SUSPENDED IN THIS HIGH RITUAL SPACE – A VIRTUALITY HEADSET, DATAGLOVE AND JOYSTICK CONTROL.

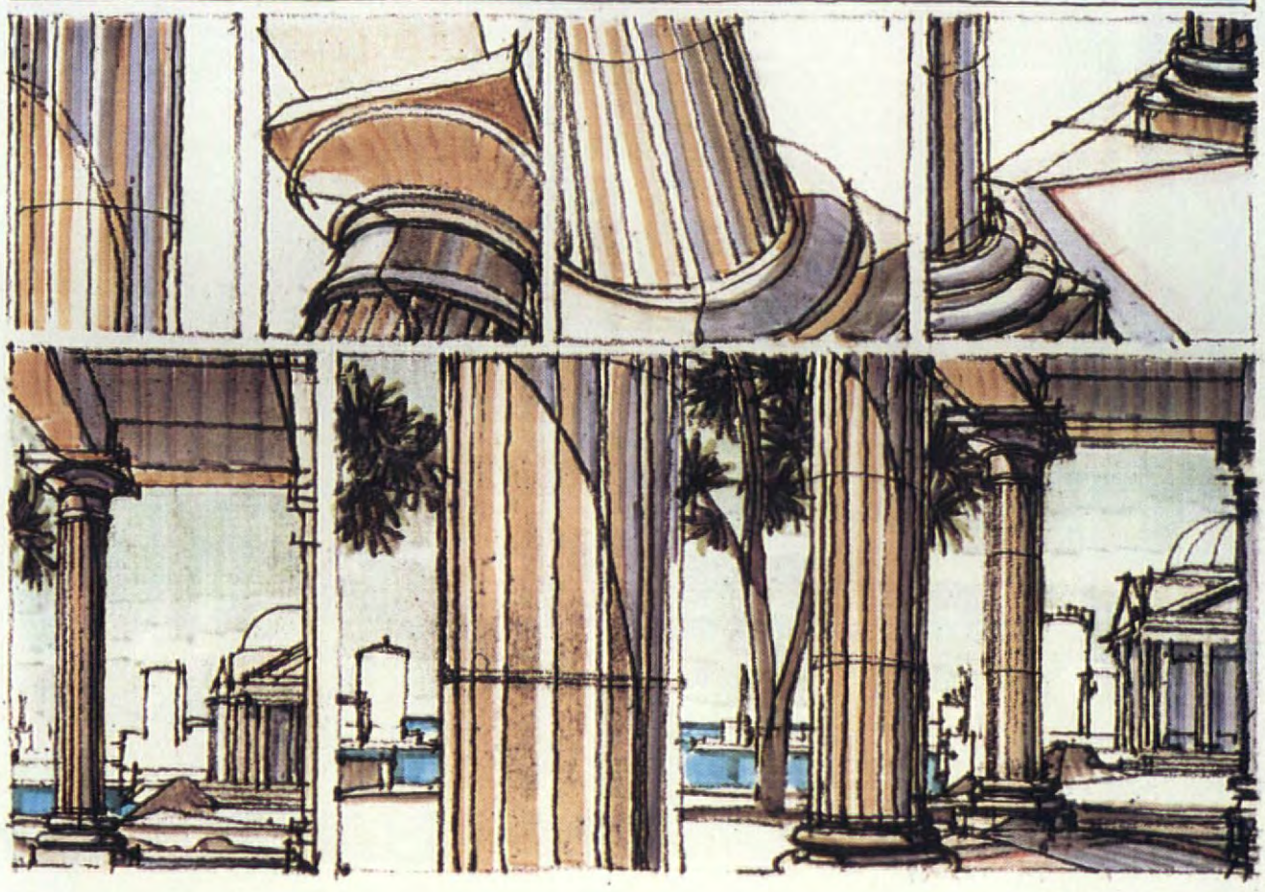
HEADSET ON, FEED FINGERS INTO GLOVE CONTACTS, GRASP JOYSTICK, AND SETTLE TRAILING LEADS (FX START-UP WHITE NOISE) STEREO EYE DISPLAY LIGHTS, PIXEL FLICKER.....

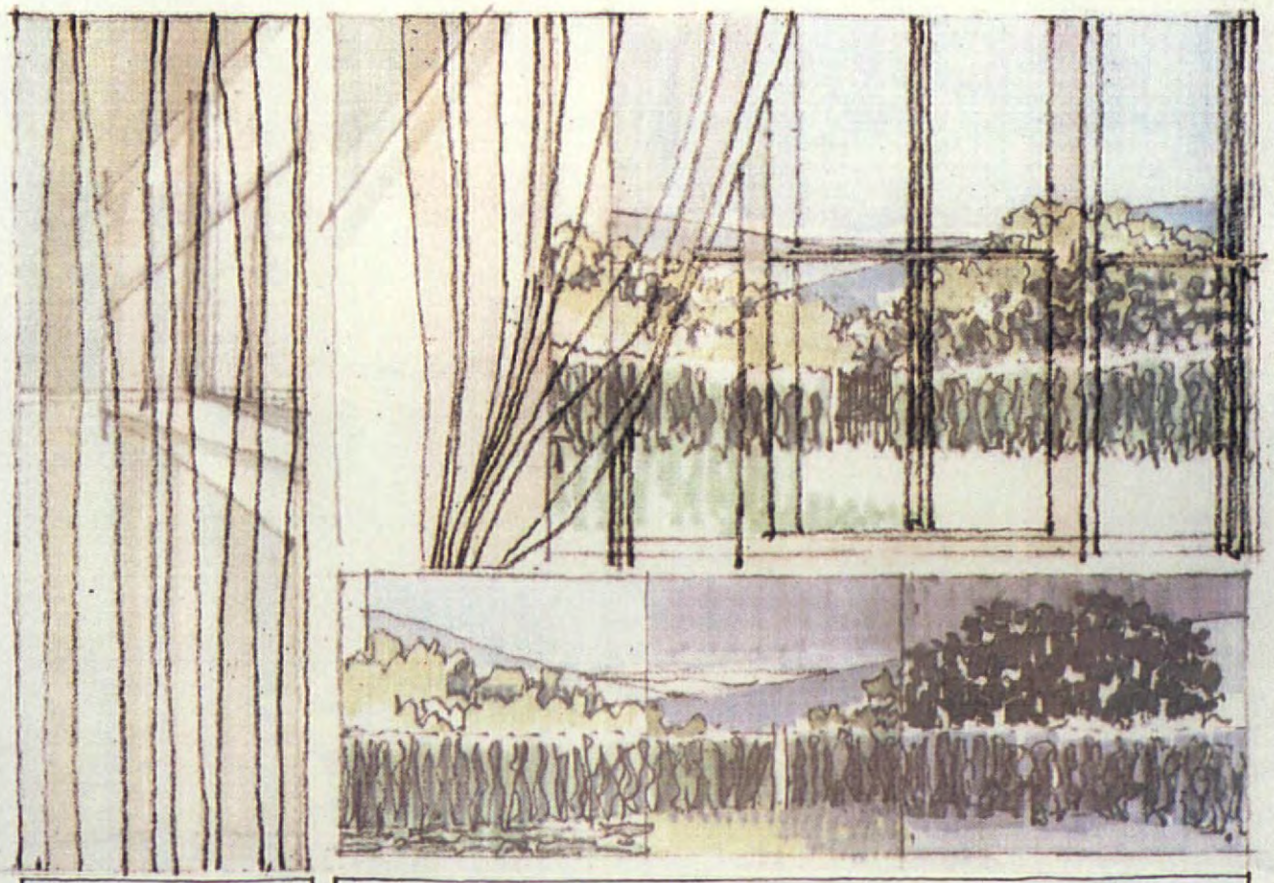


SUDDEN RISE INTO WINDSWEPT OPEN SKY FX. MUSIC CRESCENDOES)

SCENE WIDENS AND SURROUNDS, SKY BRIGHTNESS INCREASES IN SLO-MO SHADOWED LOVERS FADE IN AND OUT OF SKY– ABOVE THE ROLLING FIELDS.

A 3-D IMAGE OF A SUNLIT COLUMN STEADIES - MOVE 'HEAD' AND SCAN FROM CAPITAL TO BASE.- SWING 'HEAD' TO TAKE IN FURTHER COLUMNS AND TILED FLOOR. 'PERIPHERALS' KICK IN, OPENING DISPLAY RANGE, AND IN 'TOTAL' MODE, MOVE ALONG PORTICO TO HARBOUR SCENE BEYOND.

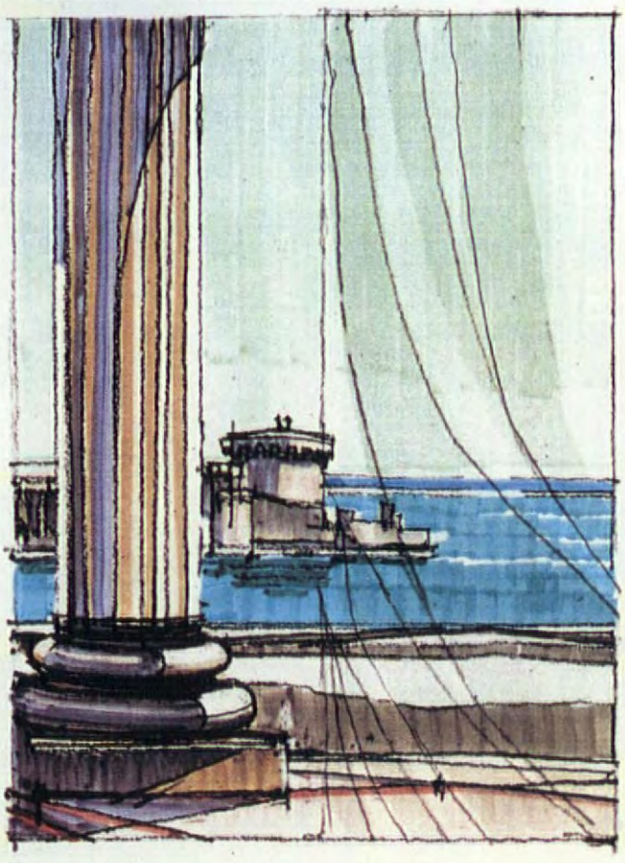




(FX MUSIC FALTERS TO SINGLE NOTES) COLOUR OF SIMULATION FADES FROM GAUZE TO SHOW ANOTHER LIGHT BEYOND.~

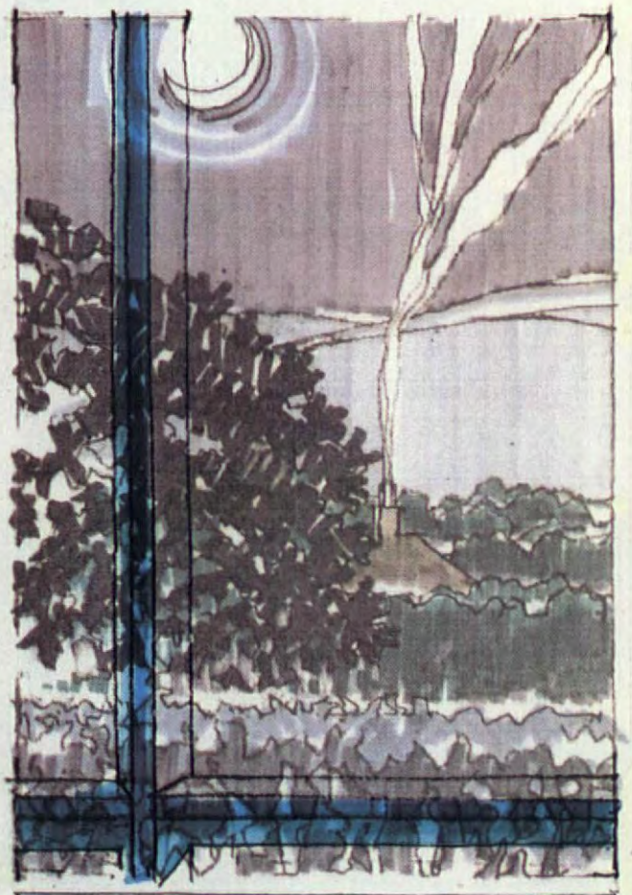
MOVE UP TO 'WINDOW' WITH A 'VIEW' (FX UP SONGBIRDS AND DISTANT VOICES) HOLD ON VIEW AS ACCELERATED TIME LAPSE LIGHT MOVES ACROSS IT FROM DAY TO EVENING TO NIGHT. IN THE ROOM, PROJECTED SHADOWS LENGTHEN AND FADE.

EASE OUT INTO SUNLIGHT AT EDGE OF PORTICO STEPS AND TAKE IN THE WELL-BELOVED VIEW.



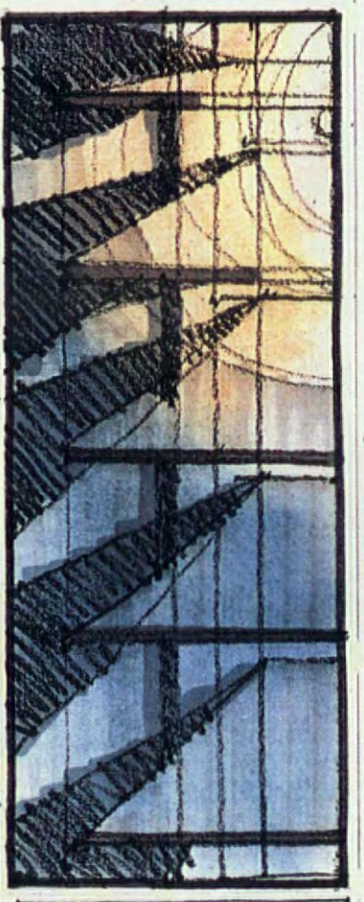
DISPLAY SHUTDOWN, 'RETURN TO MORNING ROOM (FX FOOTSTEPS) PAUSE AT WINDOW)

MOVE OUT TO VIEW OF GARDEN FORMAL TOPIARY WITH IMPLIED VISTA BEYOND.- CLOSE UP ON HEDGE SHOWS LAYERS OF GREEN STEEL MESH, HIDDEN CAMERAS + INFRA-RED ALERTS



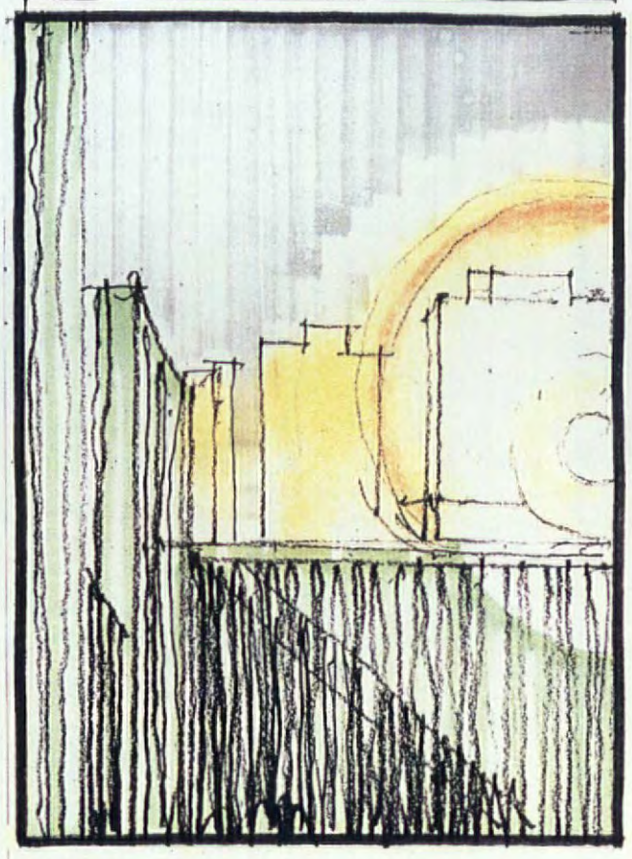
MOONLIT NIGHT: SMOKE RISES FROM A HOUSE ALMOST HIDDEN AMONG SILENT TREES IN THE VALLEY BELOW THE PEACEFUL HILLS.....

MOOD OF INERTIA SHATTERED - 'VIEW' PUSHED ASIDE - BEHIND MORE GAUZES A WALL WITH AIR INLET

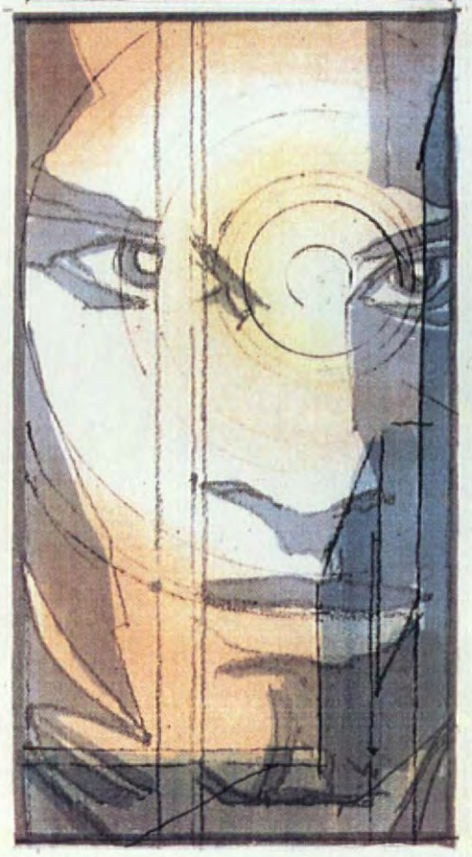


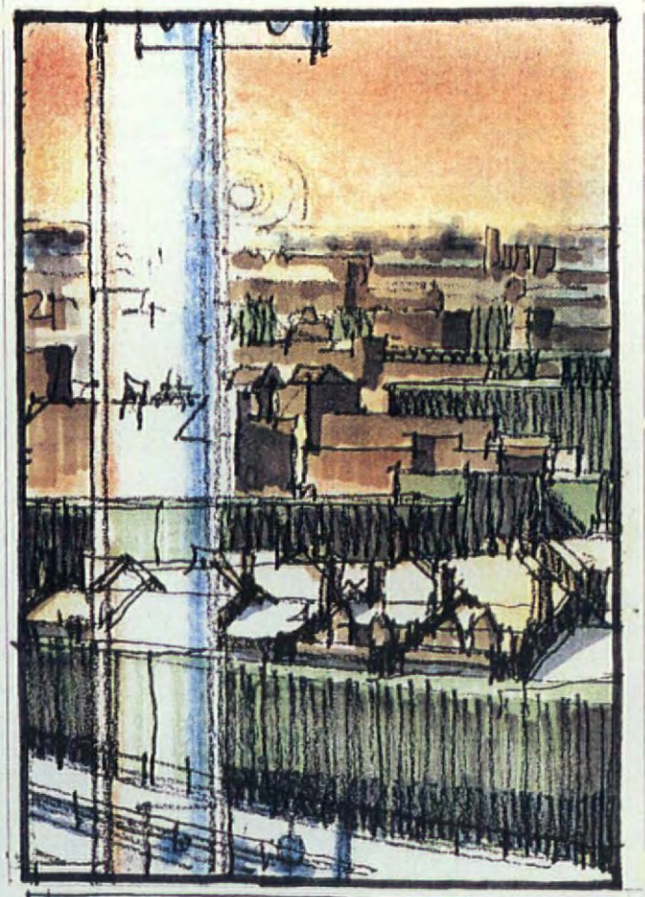
INLET DAMPER BLADES ARE PRISED OPEN AND A NEW LIGHT STREAMS IN.

PAN UP TO 'HEDGE' TOP - ANGLE SHIFTS TO EXPOSE MIRROR GLASS CLAD BLOCKS ON SKYLINE. - SUN RISE REFLECTED IN GLASS BRINGS LIGHT TO GARDEN.



CLOSE UP OF FRENCH WINDOW - PULL FOCUS — REFLECTION OF REFLECTED LIGHT - AND THE FACE OF SUCCESSFUL MAN ABOUT TO BECOME OBSESSED.... BY A TRICK OF THE LIGHT.





THRU' OPEN BLADES TO PANORAMA OF CITY SEEN FROM INSIDE MIRROR GLASS CLADDING (FX MATTE / GLASS SHOT.) IN FOREGROUND GIANT TOPIARY WALLS SNAKE ALONG STREETS AND SQUEEZE BETWEEN BUILDINGS — DAWN OVER THE PARTITIONED CITY.

CLOSE UP OF MIRROR GLASS WITH SURFACE REFLECTION OF SUNRISE — AND A FACE BARRED BY THE LINES OF DAMPERS, THE FACE OF A YOUNG MOTHER ABOUT TO BE PURSUED.....

ANY COLOUR AS LONG AS IT ISN'T BLACK

Housed in Fumihiko Maki's Nippon Convention Centre and mounted at a cost of 60 million yen, Paint Show '94, the Japanese paint industry's annual spectacular, was dominated this year by remarkable illuminated event-nodes in a theme area designed by RRPJ, the Richard Rogers Partnership Japan. Overall project management was by Dentsu and the feature was designed in collaboration with the Italian Installation group – Studio Azzuro.

Paint Show '94 was the Japanese paint industry's trade fair held near Tokyo at the Nippon Convention Centre from April 14-16 1994. It was staged in halls one, two and three of the Makuhari Messe, or Nippon Convention Centre, designed by Fumihiko Maki in 1989. The exhibition hosted over 700 exhibitors and occupied an area of 19,500 square metres in the enormous 130,000 square metre complex. At the outset the paint industry's Paint Show Planning committee appointed the firm of Dentsu to manage the project. Dentsu is reckoned to be the world's largest advertising and PR company. Dentsu in turn commissioned Richard Rogers Partnership Japan (RRPJ) to conceive and design the central 5,000 square metre thematic area of the exhibition.

RRPJ's design incorporated concepts based on the environment surrounding the fabled Makuhari Messe building complex, coupled with a multi-media production combining video, computer graphics, sound, light and performance art on the theme of Painting Dynamism: colour in the environment.

The layout of the theme zone of the exhibition was an axis linking and uniting each of the three exhibition halls. The theme zone axis was itself the focus of three transverse routes linking the main access and exit points from each hall. Siezing upon this coincidence RRPJ designated the intersection points in the centre of each hall as an event node for sculpture and interactive performance art productions. These nodal areas were down-lighted with combined red, green and blue light to produce pools of white light. People passing through these areas thus cast moving shadows of primary and secondary colour as a result of the parallax effect created by the three separate coloured light sources.

Along the theme zone axis, linking the floor with the curved roof above, was a series of wires delineating the radial geometry of the hall's roof. These wires, supporting translucent white fabric sails, appeared to gradually vary in length and angular displacement from the vertical as the visitor moved along the zone axis from one hall to the next.

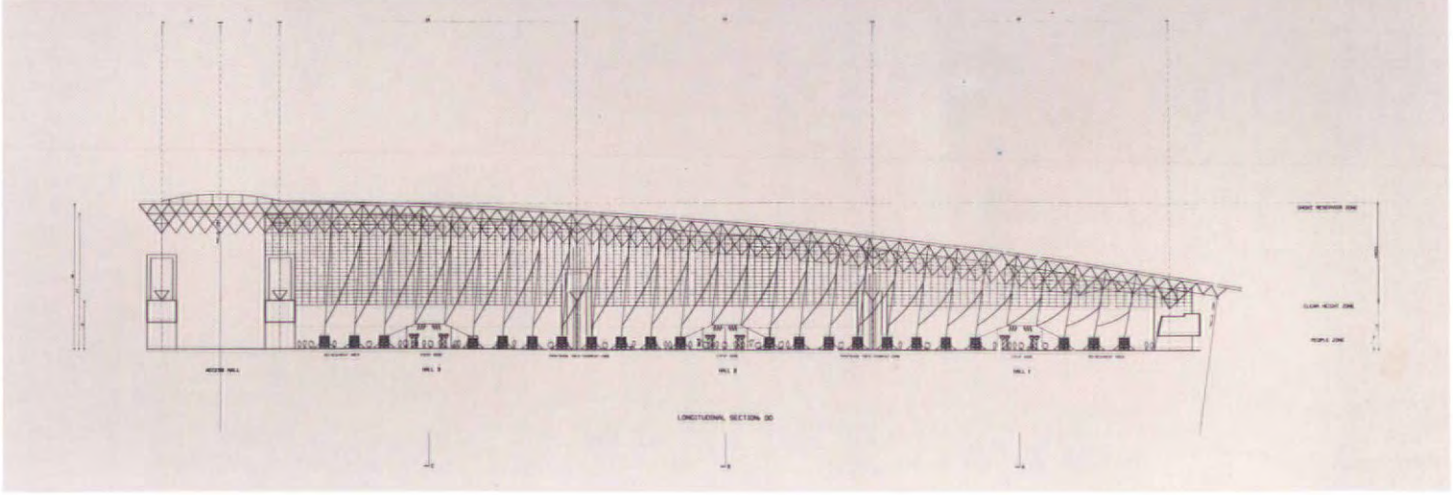
The tensile structure itself was anchored near floor level on a series of triangulated aluminium modules incorporating computer-controlled, coloured uplighters focused on the fabric sails, the video monitors, audio loudspeakers and back projection screens of the multi-media installation. The structural system was provided by means of a Swiss nodal space frame manufactured by Syma with cast aluminium foot pads specially made for the exhibition. The lighting sequence itself was coordinated with the audio visual production in a 20 minute time-loop.

The circulation pattern of the central theme zone aisle is intersected by the three cross-routes and was designed to give clarity and a sense of orientation to the visitor to Paint Show '94. The geometry and scale of the theme zone installation, reaching from floor to curved ceiling, acknowledged the architectural context of the exhibition and provided a dramatic visual reference from any point within the trade fair exhibition.

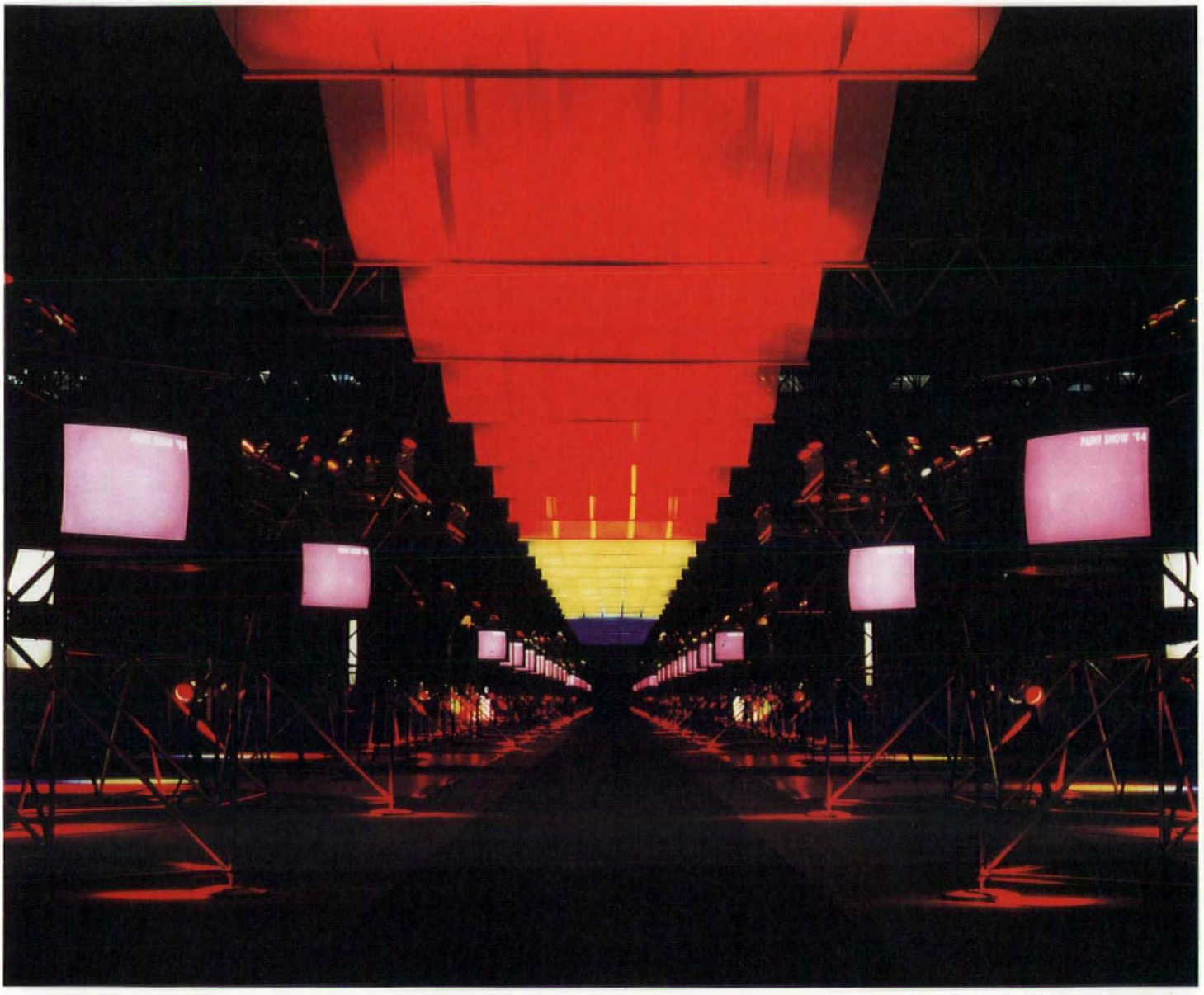
The installation was erected over a period of 72 hours. During the three days of the Paint Show it was seen by 95,000 visitors. It took 24 hours to dismantle and an unprecdented 95 per cent of the construction materials used to make it was salvaged for reuse or recycling. The total cost of the Paint Show was 60 million Yen.

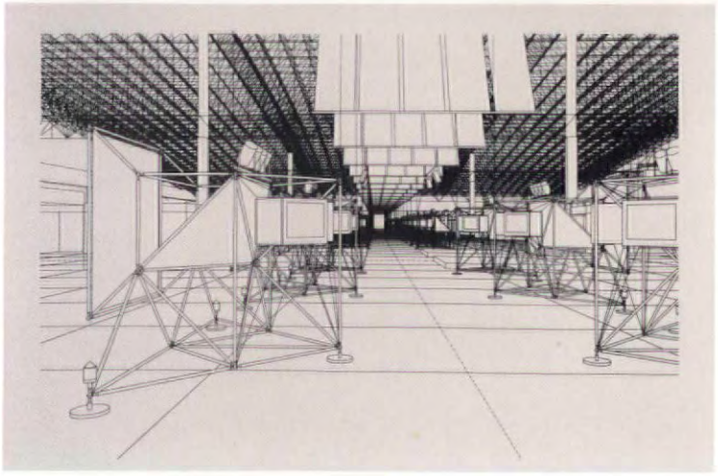
In realising this concept, RRPJ collaborated with the Italian installation group Studio Azzurro and used special lighting effects developed in association with Erco-Toto in Germany and Japan. The fabric sails were developed with Riggarna (UK) through their Japanese agents T+M Marine. The event-node artwork was by the Japanese sculptor Hiroshi Daikoku. Overall project management and communications software design was by Dentsu, and the exhibition contractors responsible for procurement and logistics were Murayama. □

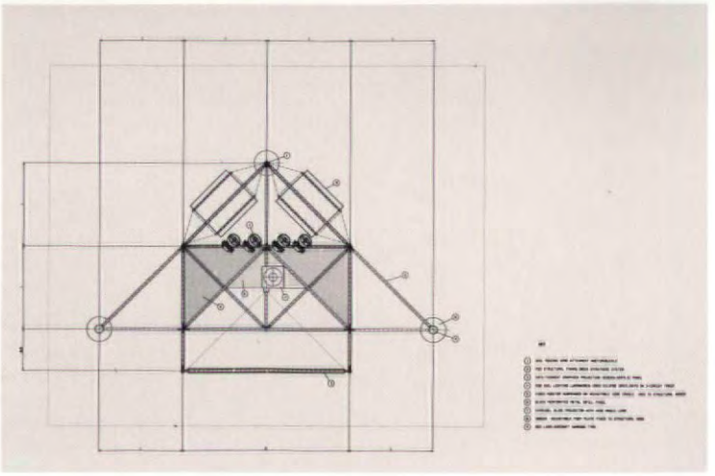
Translucent fabric sails (below) and a section through the main hall (bottom)



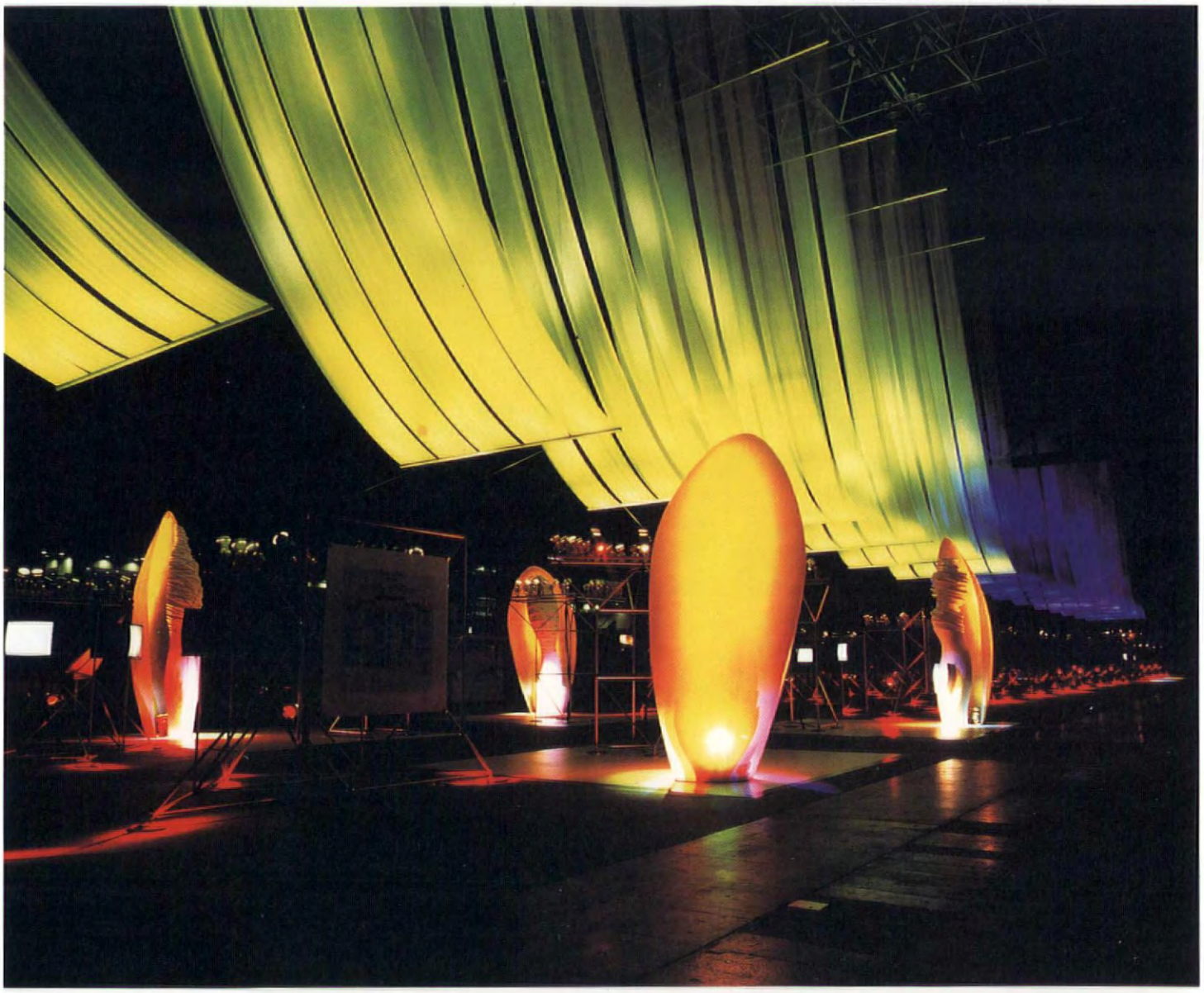
"Info-tainment" screens with illuminated sails (below). Drawing of pod systems (bottom)

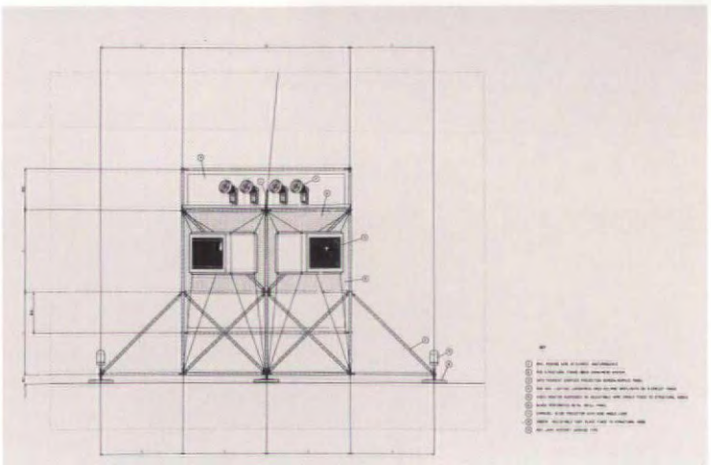


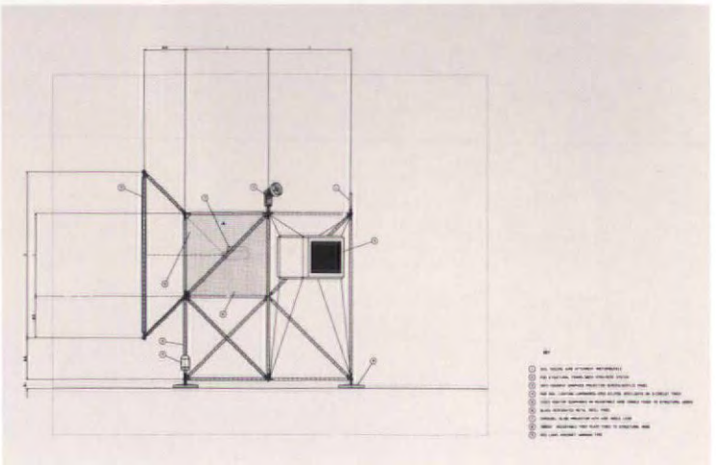




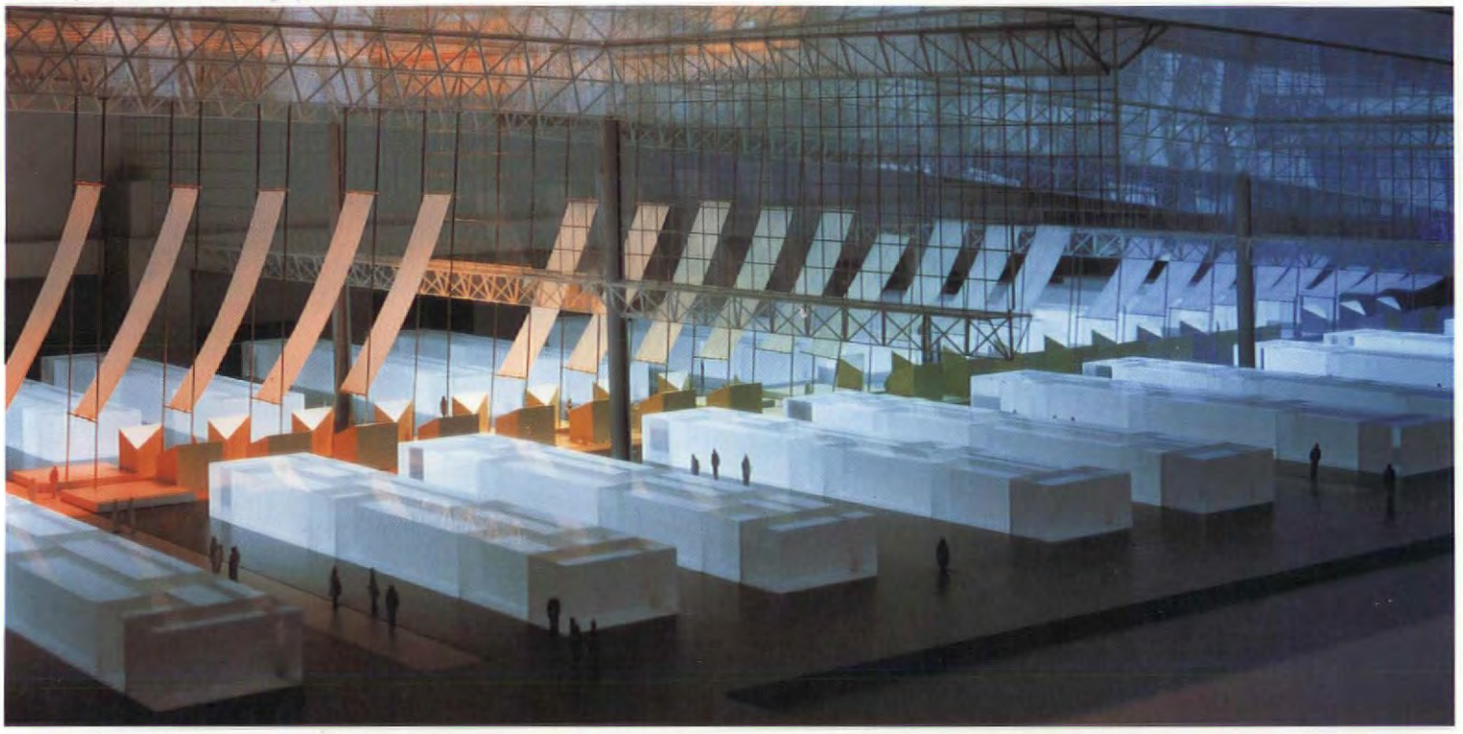
Downlit sculptures at an intersection point (below) with further details of the pod system (bottom)

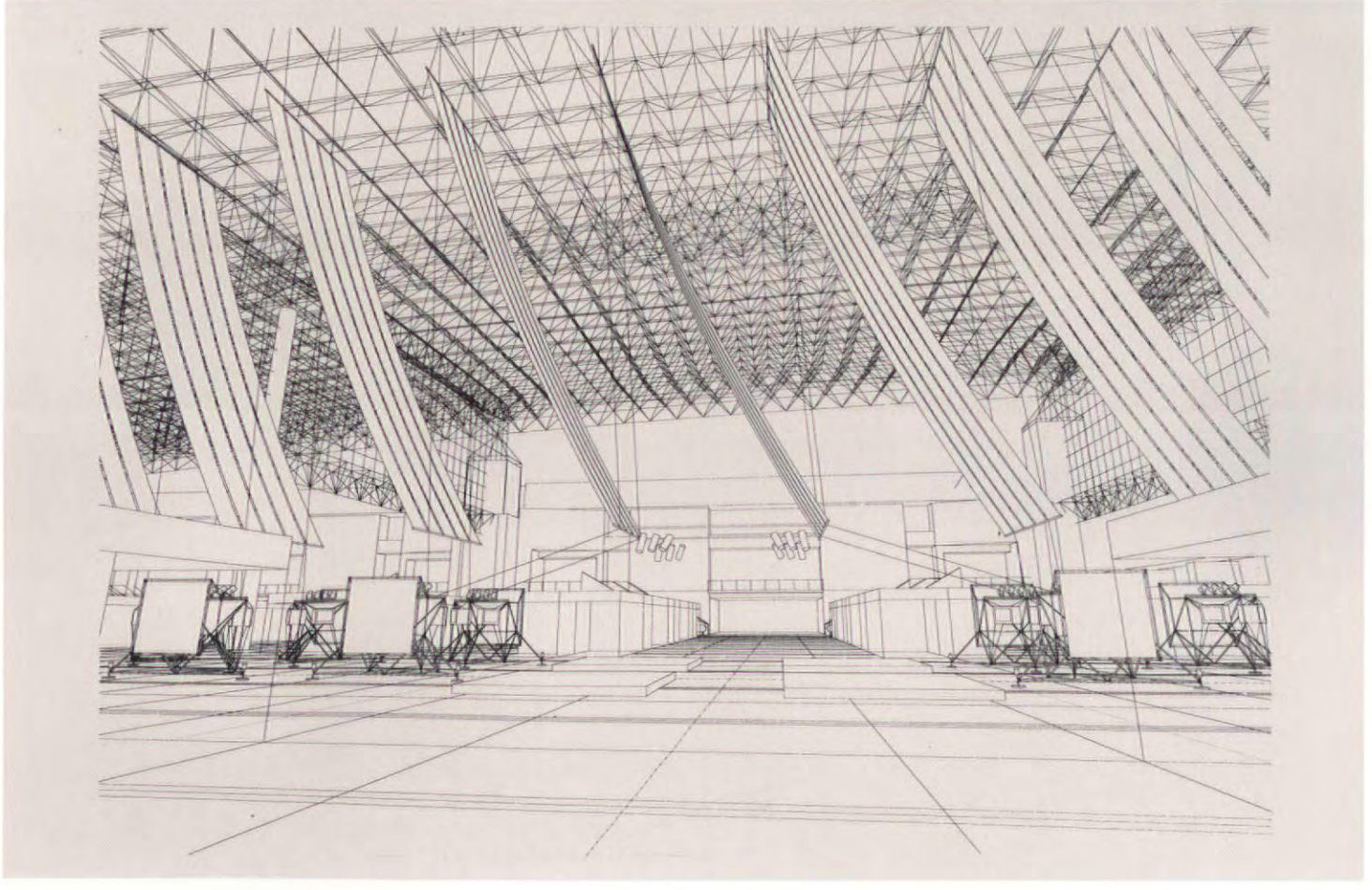




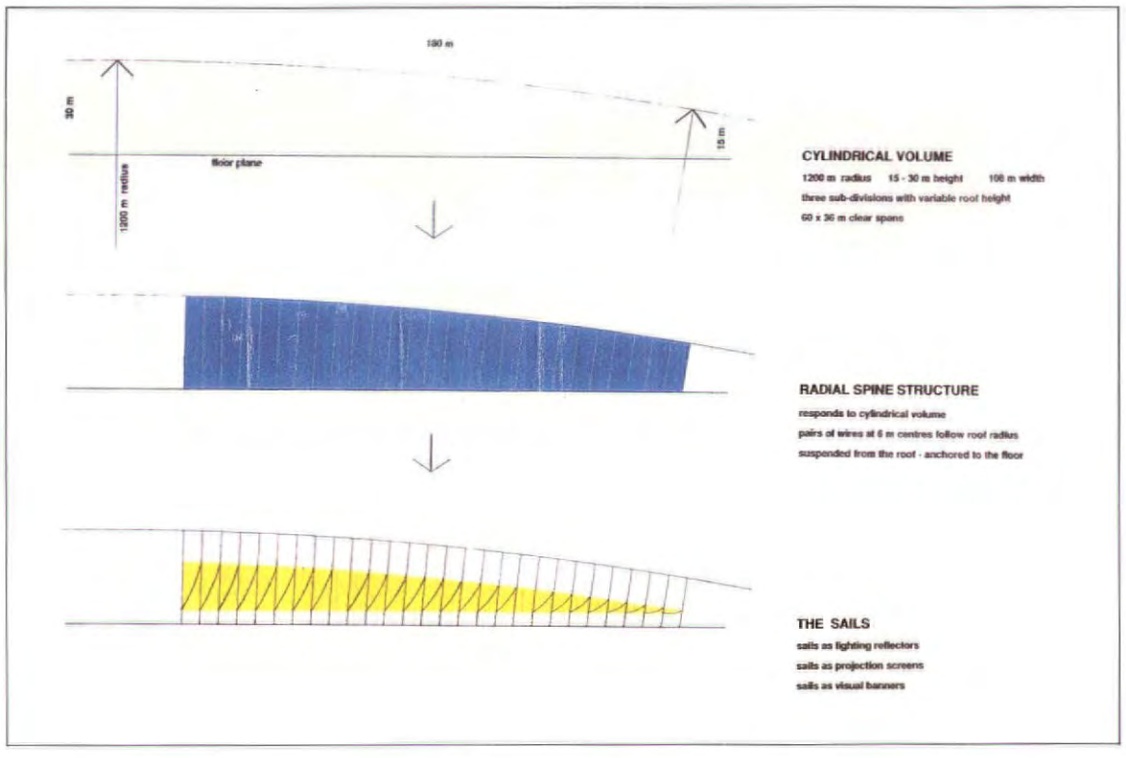


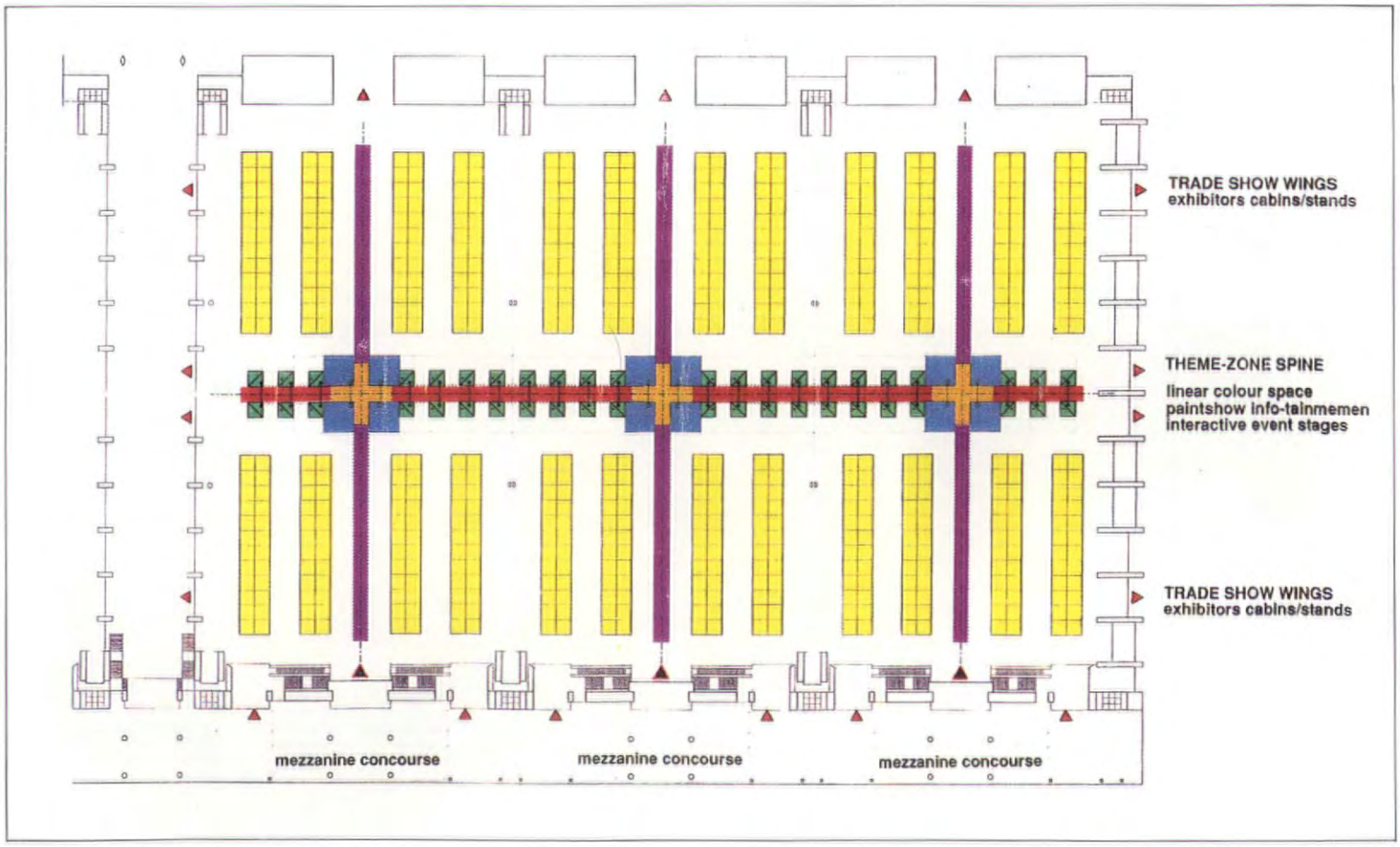
Mock-up (below) and drawing of exhibition area (bottom)





Design drawings. Section through concept (right) shows spine structure and sails. Plan (below) locates theme zone spine





SPINNING INTO THE FUTURE

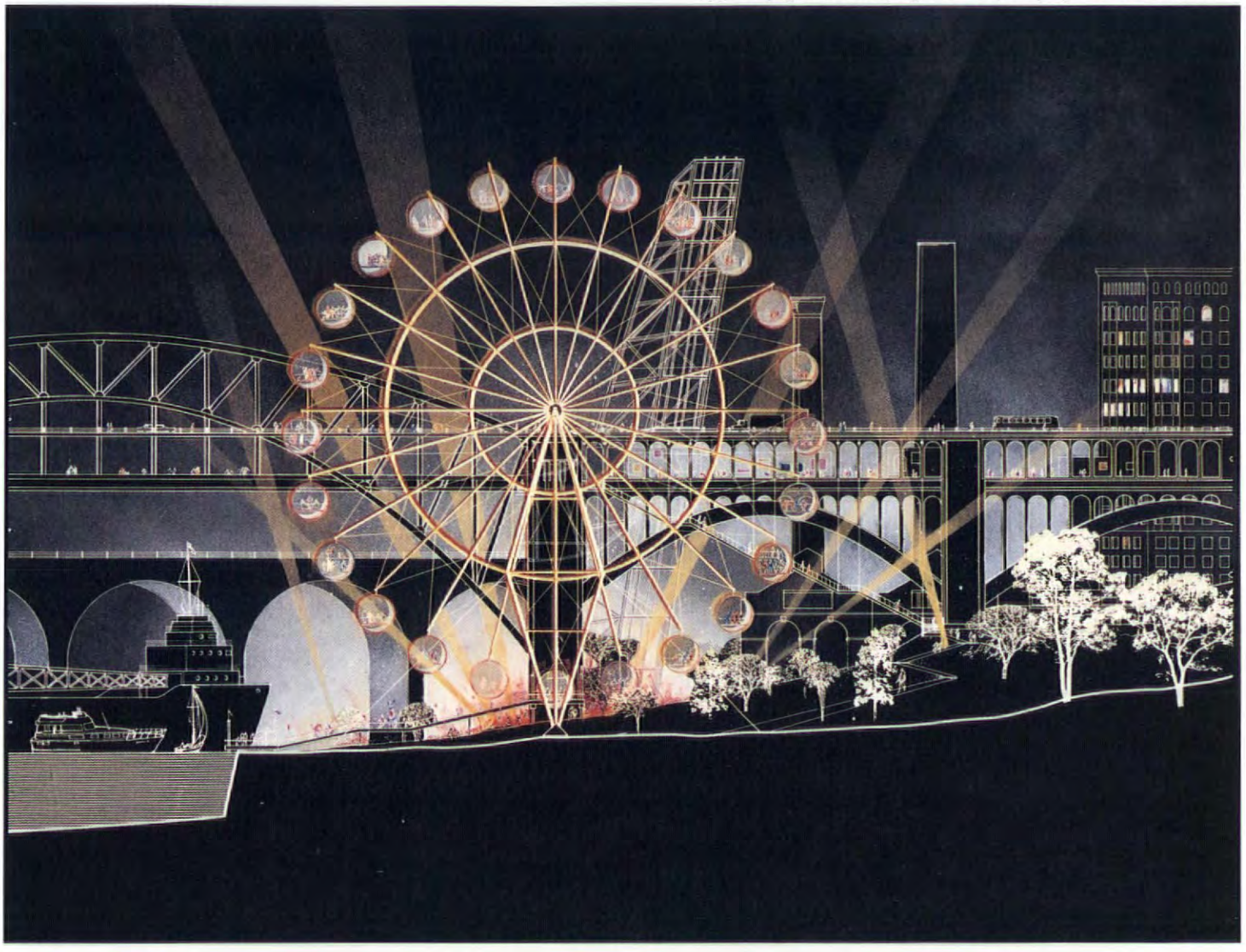
The bicentennial of the foundation of the city of Cleveland is in 1996. Among the proposals for structures to celebrate this event is a huge Ferris wheel containing a number of restaurant pods that are programmed to rotate once every hour, providing time for a brisk meal. This project is brainchild of Cleveland architect Richard Fleischman, who explains its operations here.

The planning for the Bicentennial of the City of Cleveland requires innovative attitudes and approaches to accommodate spectacular events and images that will leave behind them a commemoration of the birthday and a gift to Cleveland and the world. At the time of writing Mayor Michael White and the Legacy Committee were still contemplating the idea of a 280 foot diameter wheel, similar in principle to the monster Ferris Wheel built in 1893 for the Chicago World's Fair.

Using today's technology it is feasible to construct a circular space frame built of high-strength steel tubes 12 inches in diameter, tensioned by 1.5 inch cables - a spider-like wheel with, all around its perimeter, glass cylinders 20 feet in diameter and 40 feet long. Each individual glass structure will have a restaurant and catering facility inside it, like the Vienna Reisenrad made famous by the novelist Graham Greene.

Size, image, mobility and illumination are all components that would conceptually create this symbol for Cleveland and its visitors, during the coming decades. The Entertainment Wheel would consist of 24 gondolas, each one fabricated as a steel truss sheathed in two layers of specially designed glass. The dining/observation platform in each cylinder would allow for unlimited views of the City of Cleveland and would be suspended from the circular structure by means of mechanical gears designed to maintain its stability at all times. The glass gondolas are designed to allow maximum flexibility for catering while creating both psychological and physical security for the diners. Each gondola will have a galley for food and beverage service. A single toilet facility will accommodate the needs of each gondola. Depending upon each vendor's or caterer's requirements, seating could vary from 18 to 28 persons and reflect the cuisine

Opposite page and below, night views of the proposed Cleveland wheel



and ethnic diversity of the City of Cleveland. The decor would be the responsibility of the vendor and would conform to the design guidelines determined by the development team.

The steel frame of the gondola will consist of 5-inch round steel tubes, 10 foot on centre connected by steel tubes that reinforce and form the cylinder. All the components of the gondola will be constructed within the 20ft diameter frame, including dual 9/16-inch plate glass walls separated by a 6-inch air space.

Public access and services are located at opposite ends of the gondolas. This allows for maximum visibility along the curved surface. It is proposed that all food preparation will take place in the service podium, very much like a catering service. The Wheel will require one hour to make one complete revolution, allowing adequate time for both entering and leaving diners and the restaurant staff to have access to each gondola in succession.

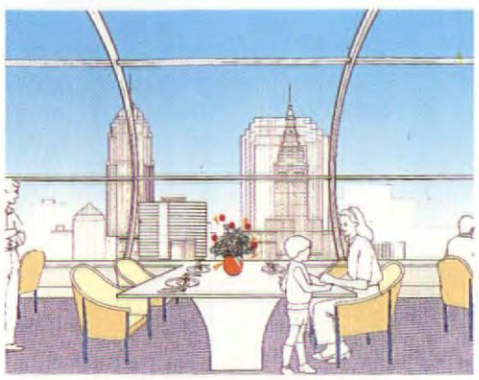
Similar to the technology at the Walt Disney Epcot Center in Florida, a moving platform adjacent to the gondolas will move at the same speed as the Wheel, thus permitting the public easy access. It is estimated that 10 minutes will be sufficient to enter each cylinder before commencing a major cycle.

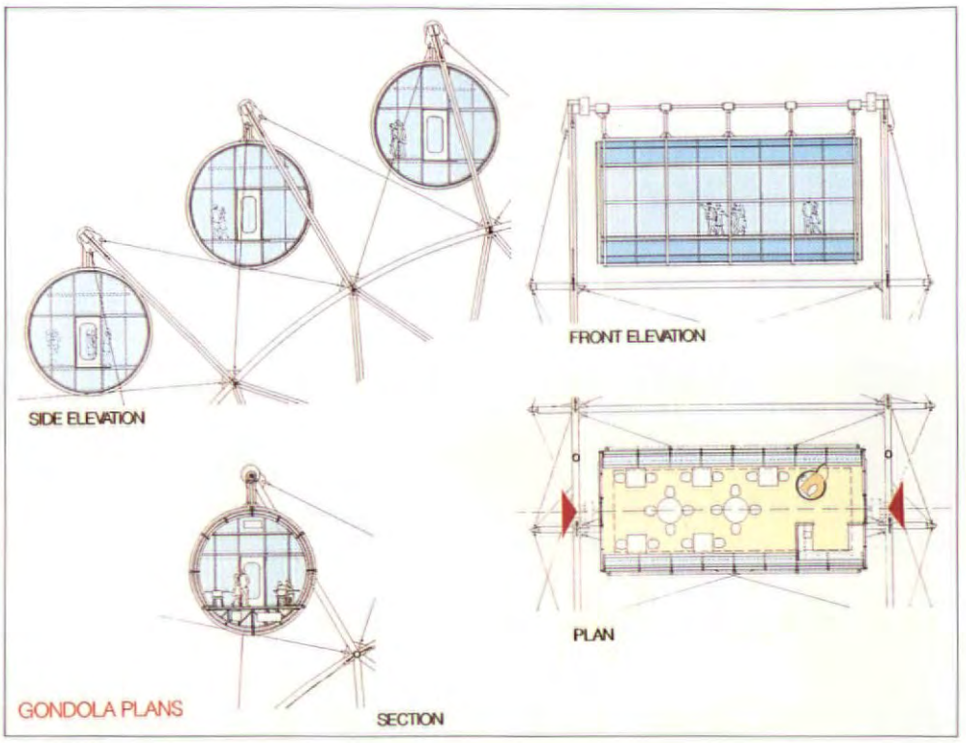
The podium is approximately 150 feet in diameter and 20 feet in height and will accommodate kitchen and other ancillary services.

The movement of the Wheel is generated by eight jet engines, strategically located within the construction of the frame, allowing consistent and controlled movement. Emergencies may occur and methods are available to accelerate the Wheel to allow egress when required.

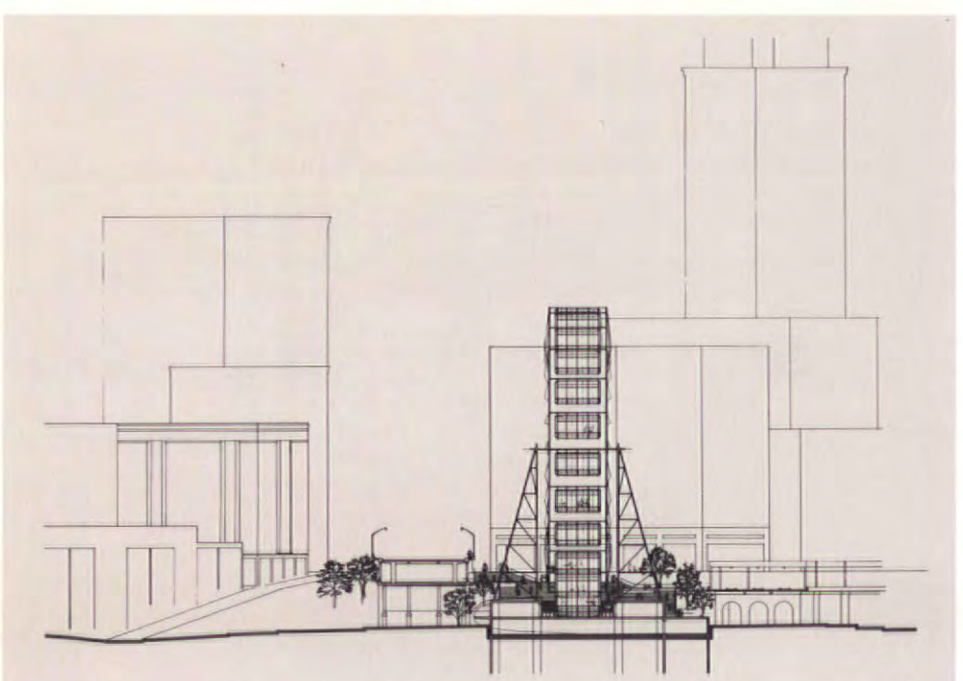
Cleveland is constantly reinforcing its image as an international city. Gateway, Rock and Roll Hall of Fame, Great Lakes Museum and Aquarium are projects that reflect the City's vision. An Entertainment Wheel rotating in an area adjacent to the Detroit Superior Bridge would strongly reinforce this goal. The major monumental sculpture is a vehicle for transportation while creating a new image as well as an innovative attraction for Downtown Cleveland.

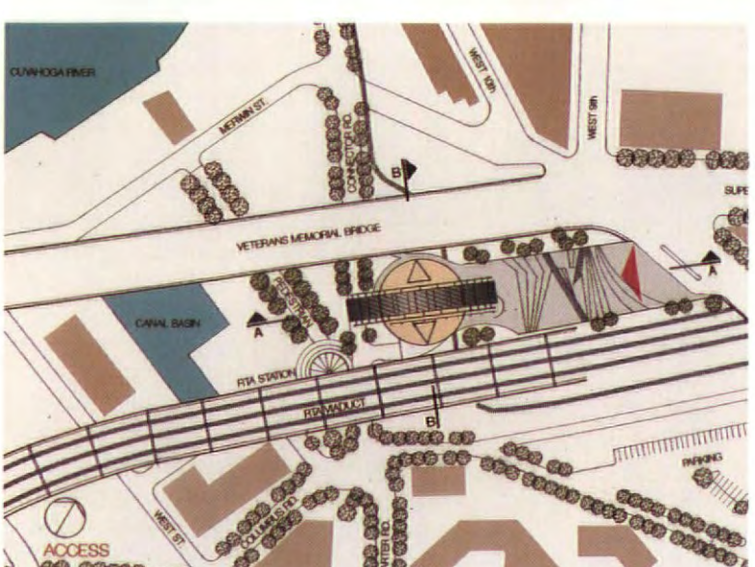
The Entertainment Wheel will be located at the terminus of Huron Road at Superior Avenue, the beginning of the multi-level Detroit Superior Bridge. Access to the Wheel would be available from Huron Road along a linear adjacent to the Cuyahoga River in

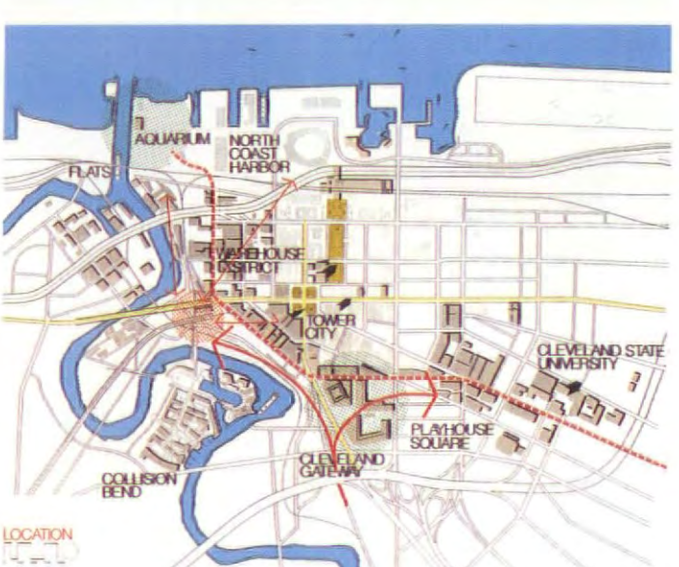


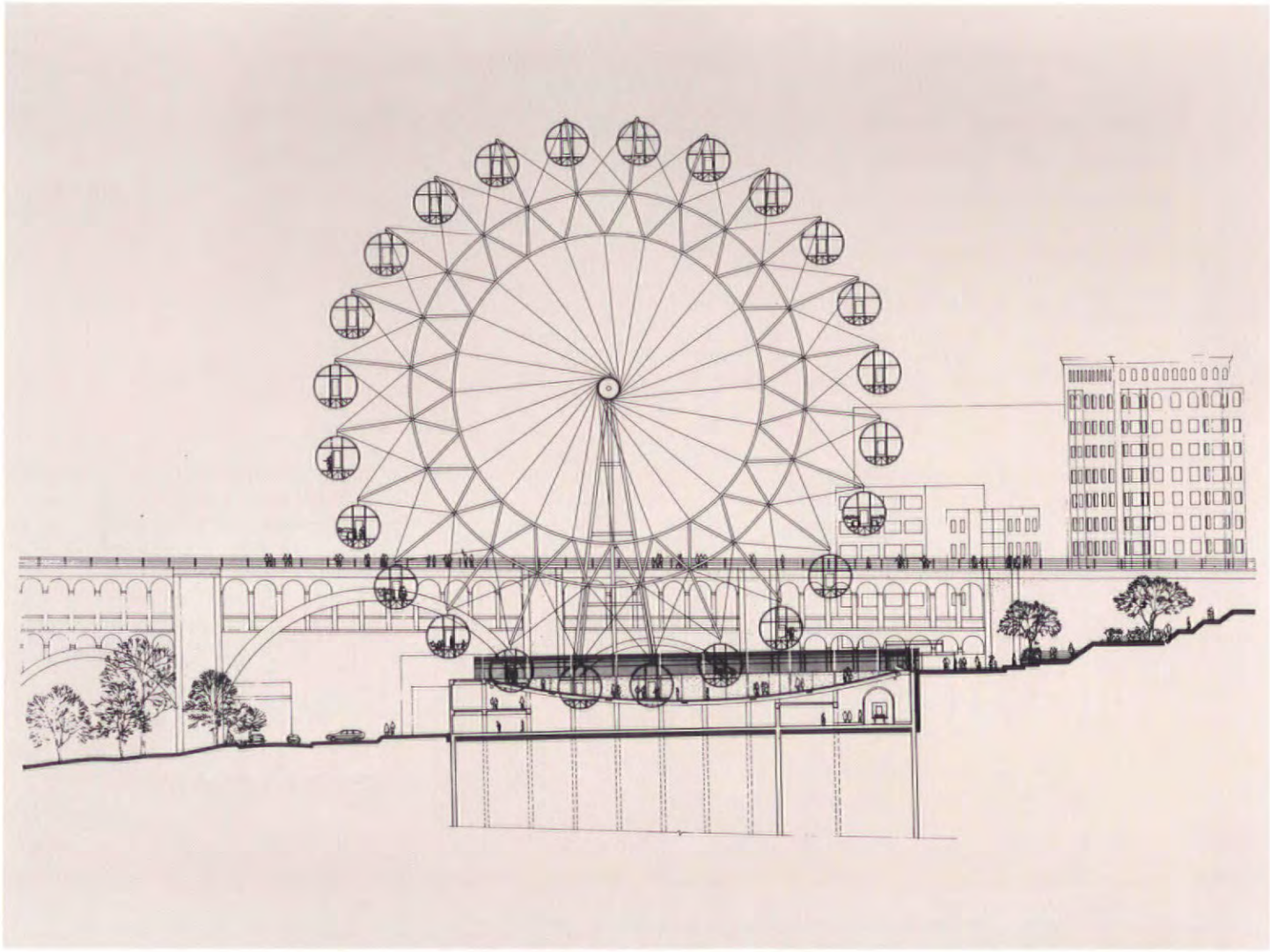


Restaurant gondolas (above and right) with section, site plan and location plan. Long section (opposite page) shows service and diner boarding positions









Downtown Cleveland.

Besides having access to the Flats, it also provides immediate access to the podium, the primary entrance to the Entertainment Wheel. It may also have access to the second level of the Detroit Superior Bridge. This second level, which was a "trolley corridor", can be revived so that tourists can have shopping opportunities at various boutiques and retail shops. A new proposed trolley would be limited from West 25th Street to West 6th Street/the Perry Paine Building and the State Office Complex.

The location of the Cleveland Wheel provides a unique opportunity to create a kinetic image that identifies "sense of place" to both Clevelanders and visitors. Gateway which includes a baseball park and arena, Playhouse Square consisting of four legitimate theatres, Tower City and the Avenue and the Flats, a recreation and entertainment centre, collectively appeal to all ages, both night and day and are strategically located in proximity to each other and the Wheel. Together, they give meaning to an existing thoroughfare in downtown Cleveland.

The location of the Wheel at the southeast corner of the bridge also provides an opportunity to negotiate a major change in topography by creating this linear stepped park that connects the top of the "Acropolis" of Cleveland with the lower level referred to as the Flats. At this transition in elevation, the Entertainment Wheel's podium and monumental stairway will be built to accommodate a 55 foot change in elevation.

Huron Road is a major artery in Downtown Cleveland which has suffered urban blight, but today it is an avenue that is explosive with urban opportunities. Like all major thoroughfares in downtown, images are crucial in identifying geographic locations. For example, the Eiffel Tower in Paris, Trafalgar Square in London, the Trevi Fountain in Rome, The Arch in St. Louis and now, hopefully, the Entertainment Wheel in Cleveland.

It is my belief that the singular image of the Entertainment Wheel will signify the new vision and planning that are representative of Cleveland today, as the city celebrates its 200th birthday. This addition could leave behind it a legacy that demonstrates Cleveland's dedication to business development and a lifestyle oriented to the future. In short the wheel would provide a much needed signature for Cleveland at the end of the twentieth century. □

All photographs by Studio Ivan Nemec

ARCHITECTURE HOUSE

Architecture centres are all the rage in Britain and elsewhere in the world too. Here architect Michael Weindel Freier describes the new "architecture house" he has designed in Stuttgart.

The "Haus der Architekten" is intended to provide a centre for discussions, exhibitions, professional representation and socialism, open not only to professionals but also to the general public.

The plan provides spaces for meetings and exhibitions, as well as offices for the Stuttgart Chamber of Architects and extensive residential accommodation.

The Chamber of Architects has always had its home in the Danneckerstrasse, one of the south easterly hillside terraced streets that overlook the Stuttgart basin. While corresponding to the functional division between Housing, Work and "Events", the three buildings on the landscaped terraced site also match the surrounding area with its massive detached houses. The two buildings on the edge of the site, the Accommodation Block and Administration Block/Chamber of Architects Offices, more particularly reflect

Night shots show West elevation (opposite page), elevation to garden (below left), elevation to Danneckerstrasse (below) and close up of entrance (bottom)

the scale of the neighbourhood. In the middle stands the taller, more distinctive, drum-shaped "Events" building. The space between these main buildings is occupied by the passage from the forecourt to the garden terrace and the transparent foyer built between the Administration and "Events" buildings. In this way the important passage-way to the garden and the view of the Stuttgart skyline from the Danneckerstrasse have been preserved.

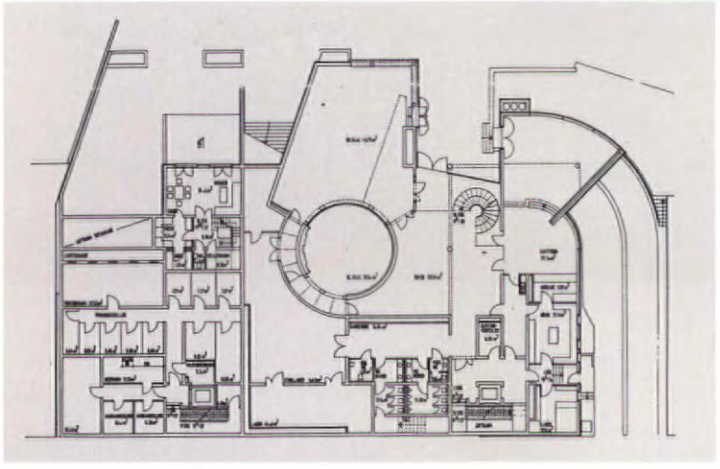
Taking advantage of the steeply-sloping site, the Main Hall, Foyer and Cafeteria, as well as the underground car park (all of which require extensive floor-space) lie below the three buildings, and thus do not encroach upon their status as separate buildings - an important consideration from the planning point of view.

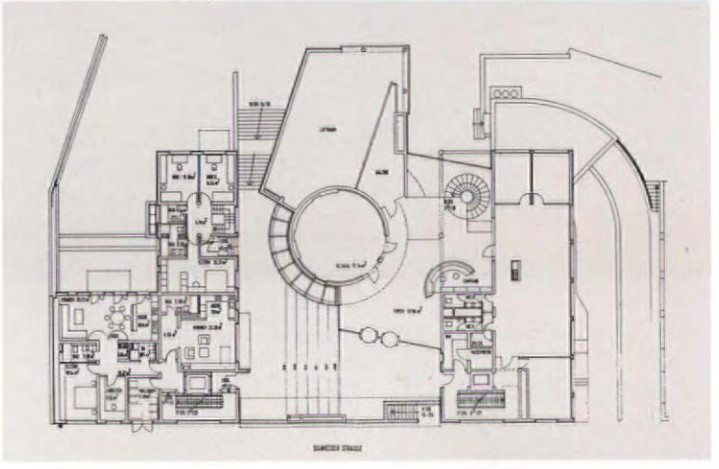
The Administration Block for the Chamber of Architects has four floors on the street side, including a set-back attic floor (rather than the converted roof-spaces of neighbouring buildings), and five floors on the sloping side. The Accommodation Block on the other side is one storey higher, but shares the same structure. Both blocks are linked to the Danneckerstrasse through a small forecourt, which merges almost imperceptibly into the entrance foyer of the main "Events" building. The foyer extends through three floors, and with its extensive glazing it gives the impression of an exterior space, thus increasing the dramatic effect of the three rather more introverted circular "events" spaces, stacked one above the other. The Main Hall, the Garden-Foyer and the Cafeteria are then connected to the magnificent garden (and tea-house!) via large-scale glazing.

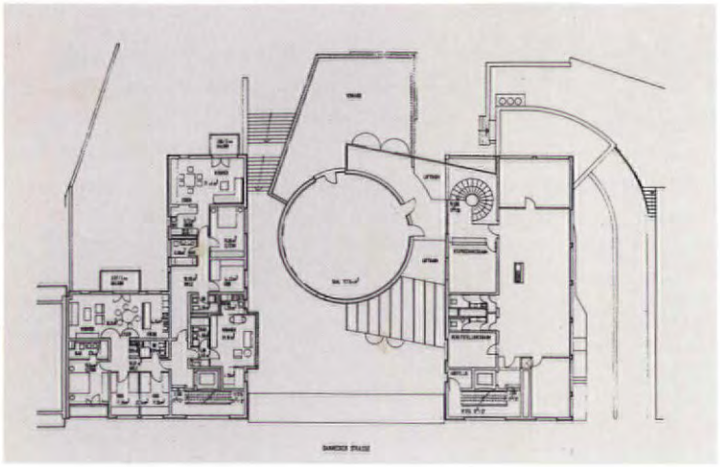
The building material is concrete. With minor exceptions, interior and exterior walls are painted white. Acoustics in the circular rooms have been improved with light-grey acoustic plaster, and other areas have been provided with slit or perforated acoustic panels. The glazed facade is framed with dark grey-blue aluminium sections, only the aluminium foyer studio-glazing sections being left in a natural finish. All steel components, such as the main framework of the studio-glazing, door-frames and the two-storey spiral staircase in the "Events" building have been painted dark grey-blue to contrast with the white walls.

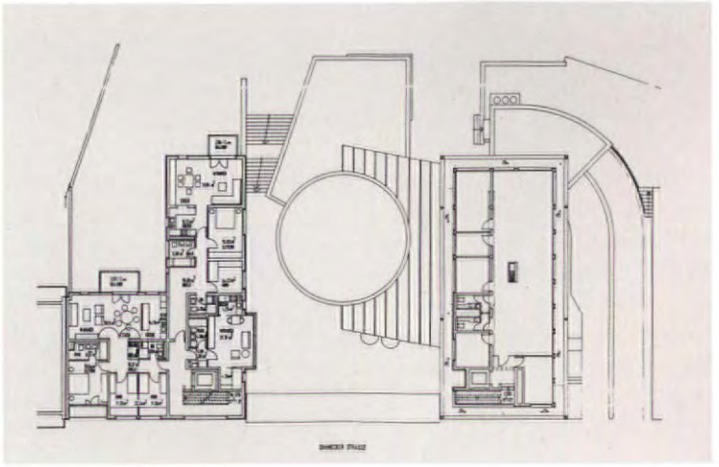
Despite functional division, the "Haus der Architekten" is a complex whole based on the use of clear lines and a restricted range of design techniques. The lively form and colour of the central "Events" building are framed by quieter buildings at the edge of the site, excitement being generated by the clear contrasts between street and garden sides and between open and closed facades. □

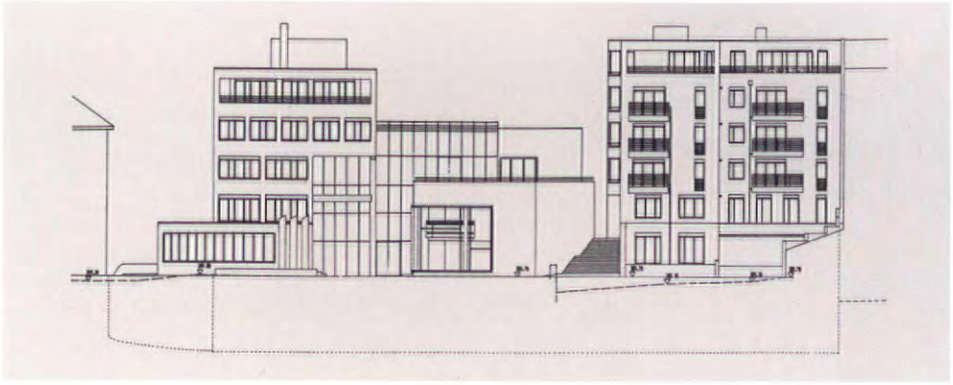
Garden elevation (right) with floor plans (below). Curvilinear and angled elements are contained within an orthogonal whole

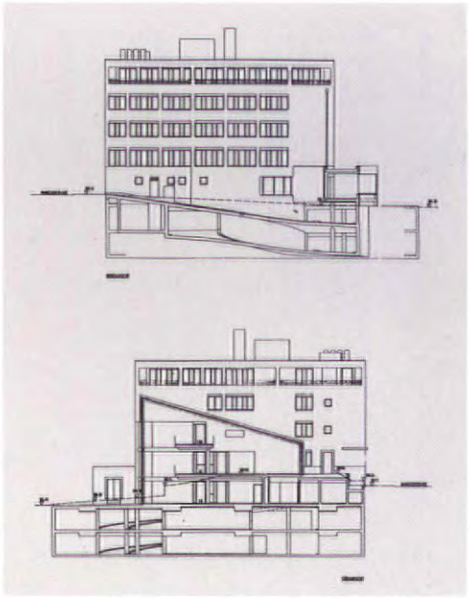


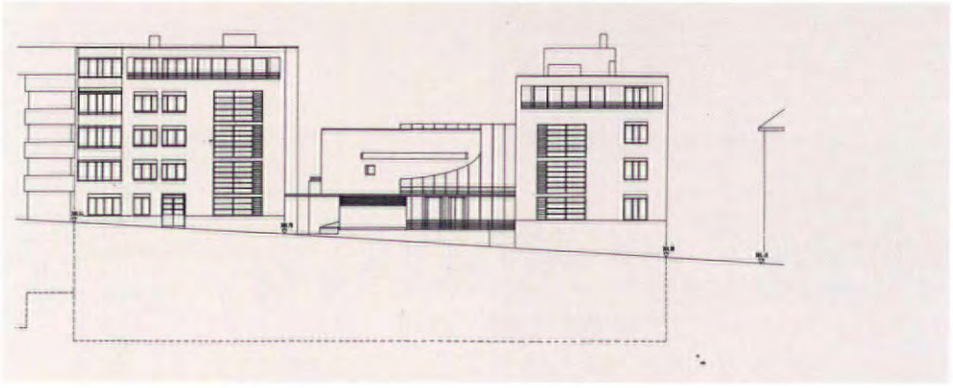


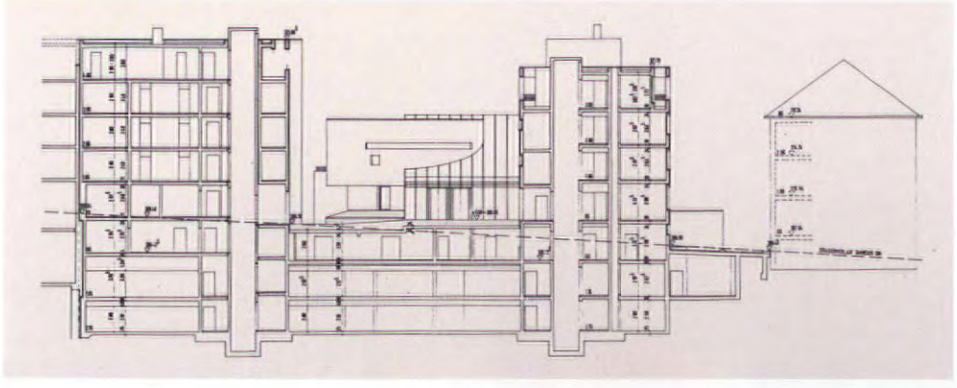












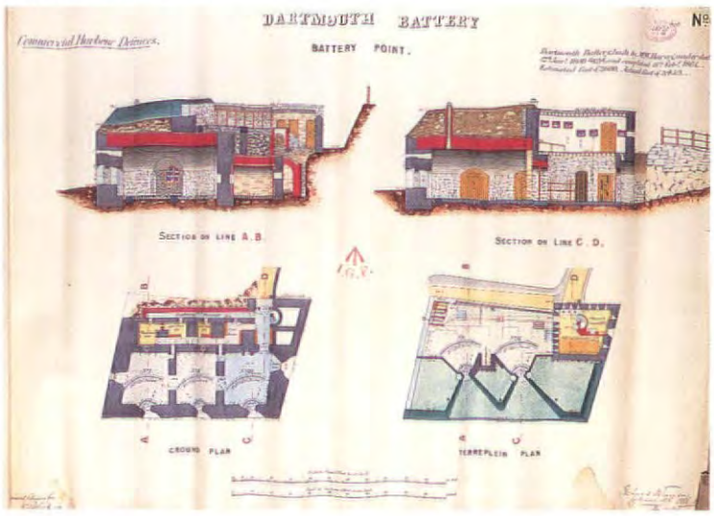
Elevations (left and above) are crisply detailed but less adventurous than plan. Central "event space" is distinctively coloured (bottom). Sections explain relationship to sloping site

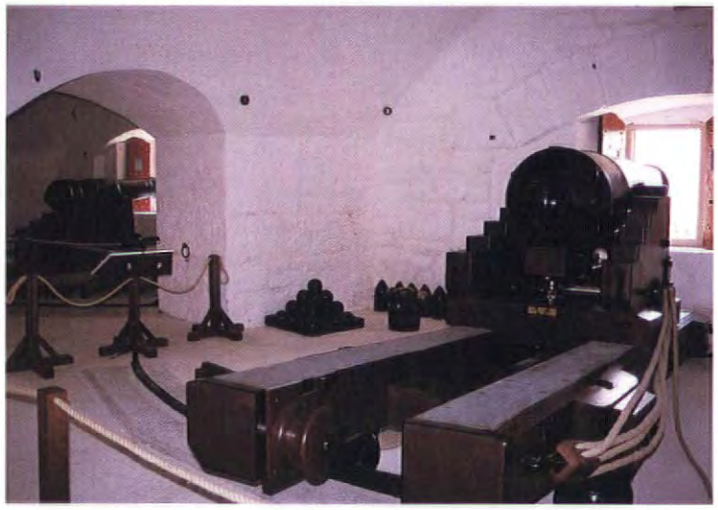
THE GUNS OF NEVER KNOWN

It is clear from looking at the dates of scheduling for ancient monuments that there are trends and that the statutory protection for post-mediaeval sites is more patchy the later the site, which is what you might expect. English Heritage regularly updates these lists and over the past two years its attention has been focused on (amongst other things) coastal fortifications. English Heritage's Richard Linzey reports on the restoration of ancient and modern coastal artillery.

The Fortifications Branch of the War Office was formed in 1860 to administer the design and construction of fortifications and batteries to defend the principal naval stations and fleet anchorages of the United Kingdom. Today many of these sites remain in government Guardianship under the watchful eye of English Heritage whose organisational structure bears a close resemblance to that of its nineteenth century forbear. Overall responsibility for the new fortifications fell to the Inspector General of Fortifications under whose command Royal Artillery and Royal Engineer Officers designed and supervised their erection, ably assisted by consultant civil engineers and armour and ordnance manufacturers. Today the Inspector of Ancient Monuments employs a similar team of experts to ensure the protection of this historic fabric – not against the impact of 64-pound steel shells, but against the ravages of the elements.

Georgian cannon on the Scilly Isles (far left). Cannons at Dartmouth Castle (below left) and original drawings of the 1863 Dartmouth battery with (bottom) the restored interior





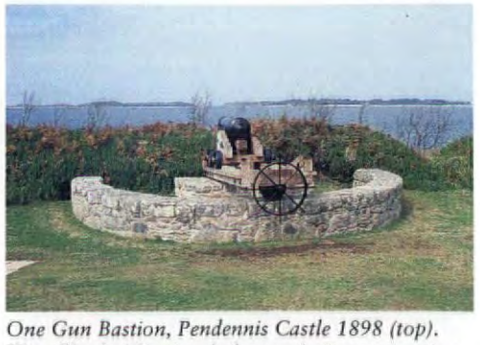
To what end are these structures maintained and why is there a programme for rearming them with proofed ordnance? The expected invasion comes not from the sea but from members of the public visiting their heritage. Today's Inspector has to be able to understand the building fabric under his responsibility, procure its repair and interpretation, and guide its management by a staff of uniformed custodians.

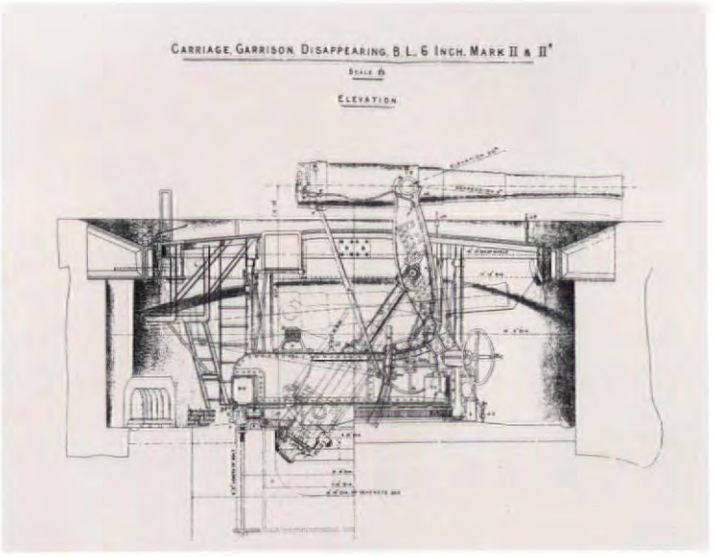
Many of the monuments in Guardianship are coastal fortifications and batteries incorporating almost every advance in coastal defence since the mid-fifteenth century. To assist with the interpretation of these "post-mediaeval" artillery fortifications, the south western region of English Heritage has been particularly diligent in remounting historic ordnance.

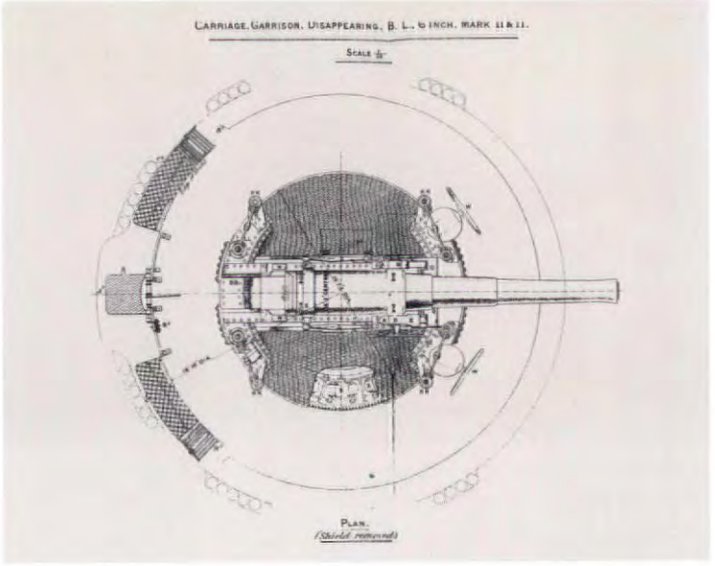
In 1969 the Ministry of Works, a predecessor of English Heritage, arranged for a number of eighteenth century smooth bore cannon to be dug from the Quayside at Dartmouth and displayed on replica carriages in Dartmouth Castle, almost the earliest coastal artillery defences in the British Isles. The carriages were built by the Department of the Environment's Ancient Monuments Workshop in Totnes, Devon. This works soon became renowned for producing wooden carriages for sites both at home and abroad. The first reproduction wooden carriage to be built in this country since the Royal Carriage Department ceased construction in the mid-1880s was of the traversing type, copied from existing carriages. It mounted a 64-pdr cannon which had been rifled in 1874 to fire shells instead of cannon balls. In 1990 this gun was fired to mark the opening to the public of the Victorian Case-mated Battery at Dartmouth.

The discovery of record drawings made in the year of the battery's completion and of the battery record book had made an accurate restoration of the interior possible. The magazines and lighting have been carefully reproduced, making this without a doubt the most complete mid-Victorian coastal battery in the country.

By far the most time consuming and complex part of the work of EH is the advice and grant aid it gives to owners of scheduled ancient monuments and grade I listed buildings. Atop the garrison on St Mary's in the Isles of Scilly, next to a fine seventeenth century star-shaped fort, are two important coast batteries built in 1902 to mount 6-in calibre breach loading guns. The guns only ever fired in practice twice and by the end of the World War One they had been removed. The batteries themselves remain as evidence of the radical changes which coast artillery underwent between 1880 and 1900. A series of earthen redoubts which were laid siege to during the defence of Plevna in the Russo-Turkish war







One Gun Bastion, Pendennis Castle 1898 (top). King Charles' Bastion before and after restoration (centre) with traversing carriage (above). Drawings (above right) show section and plan of disappearing 6-in gun mounting

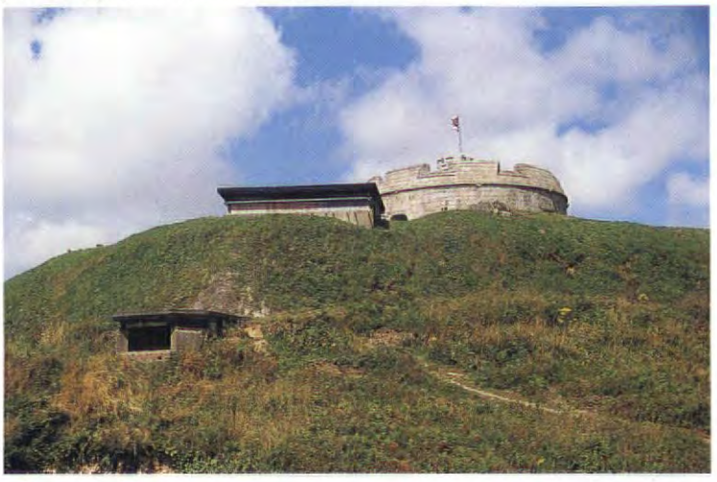
of 1878 acquitted themselves so well that Royal Engineers adopted their low earthen trace and "barbed steel wire entanglements" for permanent fortifications in the UK. A simple and inexpensive management plan was devised by EH Research and Professional Services Group to ensure that the buildings remain sound and that the building user, its second most important asset, is not driven away by unreasonable expectations. Professional advice is sometimes offered in lieu of grant in aid or simply because EH has experience of the repairs involved. EH is currently advising the MOD on the repair of asphalt on the world's first iron sea fort behind the breakwater at Plymouth in Devon.

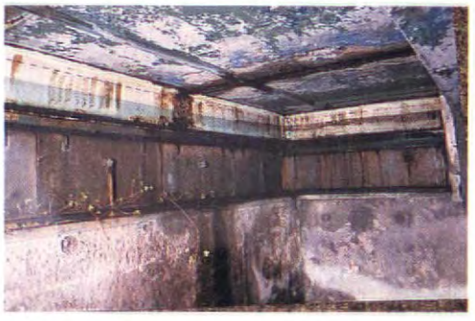
The Plymouth Defences Assessment is being undertaken to inspect and make recommendations for all structures both protected and unprotected to assess their importance, condition and future. These studies throw up many surprises, not least of which is the scale of four centuries of fortifications with each successive phase being built further away from the place they are trying to protect, Devonport Dockyard.

Many of the structures coming to light date from the beginnings of the breech loading era in the mid-nineteenth century to the dissolution of the Coast Artillery Service in 1956. It was relatively new buildings such as these that were demolished by the Ministry of Works in the 1950s in an effort to tidy up older ancient Monument sites. As time draws

Breakwater fort, Plymouth

1942 Battery Observation Post and King Henry Keep at Pendennis castle (below). Bottom row left to right, the reinstated armoured shutters and sashes of the BOP shown closed and open and the interior showing the painted panorama prior to conservation (see text below)





on, however, and the memory of the great wars begins to fade, the importance of these newer structures has come to be appreciated. Recommendations for statutory protection will be made for the finest examples of these in Plymouth; in the meantime those post-1880 buildings which survived the purge of the 1950s are now subject to the same detailed analysis as their Henrician forbears.

At Pendennis Castle, Falmouth, important structures from the breach loading era survive. An emplacement for an Armstrong hydro-pneumatic disappearing gun of 1898 remains in virtually unaltered condition with original fittings and furniture sealed up within its magazines. A more modern gun and proof mounting have been temporarily emplaced here to evoke the spirit of the original mounting. Breaks in the Elizabethan works surrounding the Henrician keep contain posts for range finding instruments from which information on targets could be sent to the guns by electric telegraph.

Below the ramparts lies Half Moon Battery, also built in 1898 for hydro pneumatic guns. After considerable rebuilding in 1912 and 1941 the battery achieved its present form. It is planned to restore the battery to its appearance during World War Two complete with at least one 6-in calibre coast gun and its overhead shield. Attention over the past year has been directed toward the restoration of the World War Two Battery Observation Post or BOP built into the salient of the Elizabethan works above Half Moon Battery. Very complete records of this structure were found, including photographs of every piece of range finding equipment and of the interior. Battery record books have enabled the conservation team to piece together the infrastructure of range finding, telecommunications, coastal artillery searchlights, minefields and shore batteries in 1941 and to compare these findings with the remains of equipment, nail and screw holes and paint within the BOP. A full survey of the interior and exterior surfaces was completed to this level and interior reconstruction drawings were made using the physical and documentary evidence. A perspective artist was then employed to make reconstruction drawings of the BOP. A search of the storerooms at the castle revealed the frame for the windows in the observation slot and sashes from a BOP of similar date at O'Hara's Battery, Gibraltar were copied at Pendennis. The Gibraltar BOP still contained its original Watkins depression position finder enabling a facsimile to be produced.

Of particular concern was the conservation of an 18 foot long panorama of the estuary painted in oils by two royal artillery men on the web of a steel beam over the observation port enabling range finding technicians to quickly assess the range and bearing of a target. Techniques in the stabilisation of mediaeval wall paintings have been employed to refix loose flakes of the Panorama and the use of cathodic protection to prevent further corrosion of the beam is being investigated.

The conservation of the BOP, which is a mere 53 years old, under the same philosophy as the conservation of the Henrician keep may seem an alien idea to some. However, English Heritage is bound by statute to maintain all the sites in its guardianship. But there is more to it than this. The contrast between brutal concrete structures almost accidentally given supreme heritage status by their juxtaposition with powerful masonry and earth forbears is the real value of sites such as Pendennis, and the reason that so much effort is now going into their interpretation as a commentary on post-mediaeval coastal defences of all kinds. □

Editor:
Georgi Stanishev

Hiroshi Nakao. Drawing for Coups de Sond Installation. Projects II-V

Yoshi Yamazaki, a young architectural critic from Waseda University, Tokyo, considers Japanese architecture as consisting of two separate trends: the first, consciously following the progress and, recently, the Westernisation of Japanese culture, and the second based on the Zen-Buddhist concept of space. The enigma of Japanese architectural culture cannot be recognised through the first trend - the fashionable "avant-garde" well known on the covers of international magazines. It should be searched out in the limited but profound circle that follows the "second way" of making architecture. According to Yamazaki this second trend is best represented by the work of Hiroshi Nakao, whose architecture is based on the poetics of the Japanese sense of space.

THE SECOND TREND

in Japanese Architecture and the Poetics of Hiroshi Nakao

This article must not be considered as a criticism of present day Japanese architecture. It is an essay, and as such, it is inconsistent to the extent that life is. That is why I have not attempted to eliminate this inconsistency. I take it as inevitable. It is not my business to analyse results of processes and to connect into a whole image the pieces of time as historians do, to research new fashionable movements as journalists do, or to control the interaction of a lot of materials as designers do. I am an architect and not a craftsman, an engineer, or an artist. Unlike all others, the architect always works alone.

The First Trend - the Closed Circle

Japanese architecture has been developing two different and alternative trends. The first could be described as a closed circle, and the second as an endless desert with nothing ahead or behind. These two trends have run through Japanese design consciousness since ancient times and the first efforts by human beings to form architectural space. In recent times when people have talked about the history and character of Japanese architecture, they have been considering the only reality to be the outcome of the closed circle of development. It could be suggested that Western

All photography in this feature by Nacasa & Partners Inc

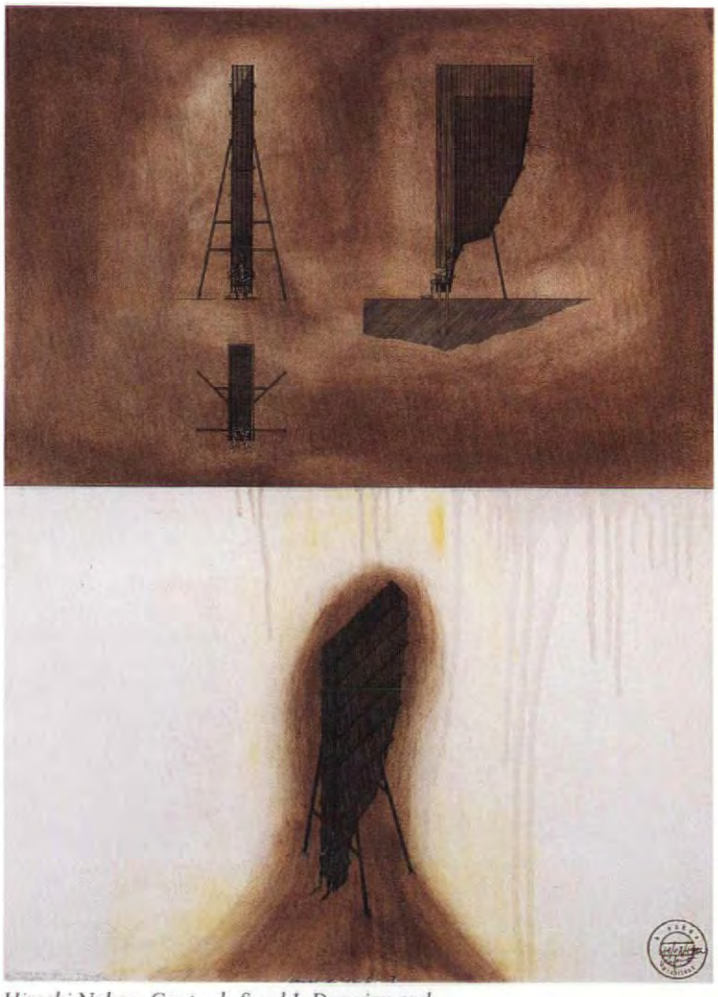
Coups de Sond I-VI
Place a steel ball on a thin rubber surface held taut in all directions, and its weight will push the surface down, slowly creating curvature. Suspend a plumb within space. Measure the depth of the hollow at the same time. Then, determine the point at which shallowness turns into depth using the tactile vibration transmitted on the plumb line. These six models were produced for the five chairs, with a combined height of almost five meters, and one bed. These chairs have the sitting position at the lowest point in the vertical network system and the most forward point in the horizontal system. However, since it is always behind the sitter it does not enter the field of vision. Because, the sitter himself is the plumb hung in the space.
Hiroshi Nakao

culture created this way of looking at things. Since the nineteenth century the Japanese have learned to look on their own culture from the Western point of view, putting themselves into the Western frame of mind and experiencing a closed circle of civilisation and progress in architecture.

What is this closed circle? It is the history of man-made places, of artificial environments and of technological progress. This circle feeds on the myth that architectural space is created by perfect high technology.

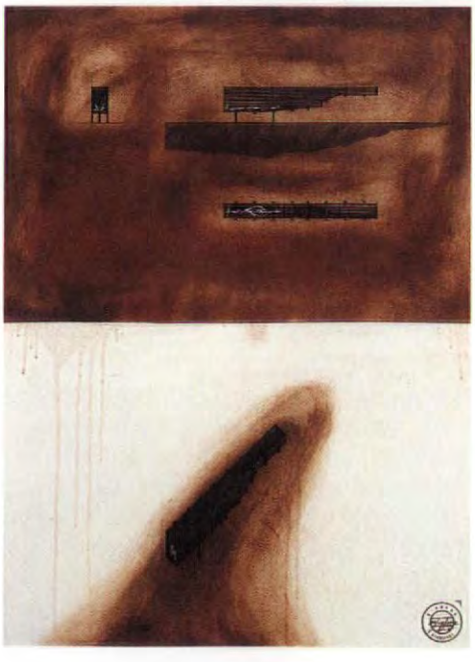
In reality Japanese thought does not hold place to be equivalent to space. Place is produced by material, social and physical requirements and visible forms, so that the place has to be the shelter for protecting the physical body. When most people are building their place, space does not feature in their list of intentions. They think only about keeping and defending their own bodies forever. In this way man can produce only place, but not space and architecture. Most people believe that architecture is created by technology and that architecture is led and governed by the progress of technology. So a closed circle is formed through belief in unconscious technological progress as a mechanism of architectural history. And now, let us define the concept of "space". Space is created by the consciousness of the human being, and this consciousness is the only important element of space. Space is created for the consciousness not for the body. If space alone is made, this does not mean that man can live in it, because it is not for living in. The human being consists of a soul and a body, and the soul inhabits the space while the body lives in a place. So the introduction of consciousness into a place is a way of creating space.

But how can one introduce the poetic consciousness that will convert place into architec-



Hiroshi Nakao. Coups de Sond I. Drawing and installation

Hiroshi Nakao. Drawing for the Coups de Sond VI



ture? There is no answer to this question, and the more one looks for it the further away one becomes from attaining architectural space. The answer may be found only in oneself. If an architect is unable to find this answer, he will not succeed in escaping from the closed circle of the first trend. The inside of this circle is a very comfortable place for architects.

The Second Trend - Invisible to the Naked Eye

The second trend is an endless way without the direction "ahead" or "behind", like a path through a desert which does not turn in a circle. In this trend there is no estimation of progress and development in terms of technology. Nor is this trend related to history or civilisation because it has always existed in human consciousness alone.

There is no history in this trend since architects discovered the technique of how to create space in place. This technique was born through mythology and, unlike technology, it does not undergo changes - it is constant from place to place and from period to period. This technique has to be understood as a means to feel and generate consciousness in space, which is invisible. It cannot be taught by teachers, textbooks, magazines and theories - the only way is to know it for oneself.

Most of Japanese "second trend architecture" does not appear in everyday and ordinary buildings. For example, a lot can be found within the *Chashitu* - the tea pavilion buildings, the Japanese gardens and the Buddhist temples in which physical functions do not have to be taken into account. The only reason for space to be generated in this work is for the consciousness and the soul. Physical distance, time and the body are helpless and impotent in their attempts to create a space where consciousness can enter. This is the most important fact for any architect who understands the architecture of the second trend. Possession or lack of this technique is a simple test by which one may classify architects into the first or the second trends. Technique is not technology.

I suggest that this technique is not a characteristic of Japanese architecture only, but is more or less a universal way of thinking and seeing. It is probably "Human Nature" which cannot be discovered through ethnology, archaeology or history.

Information is the Object "A"

Architecture cannot be created by technology, but technology can assist us in finding the technique of creating space in architecture. Recently, the development of electronics and the use of information processes as comparisons and metaphors has helped people understand the fact that consciousness is something that flies over physical distance and time, without belonging to the physical world. The more technology has rapidly progressed, the greater the value of information has become.

Human consciousness is born through

myth and flying consciousness is its information. But after the development of technology, people started to believe that information was generated by high technological systems. And we started to use information as a useful tool. Today information had already been transformed into the basic object, the object "A", the artificial object, born of Society, not by Nature. By object 'A' is meant the material but invisible object which exists only as a relation between its parts.

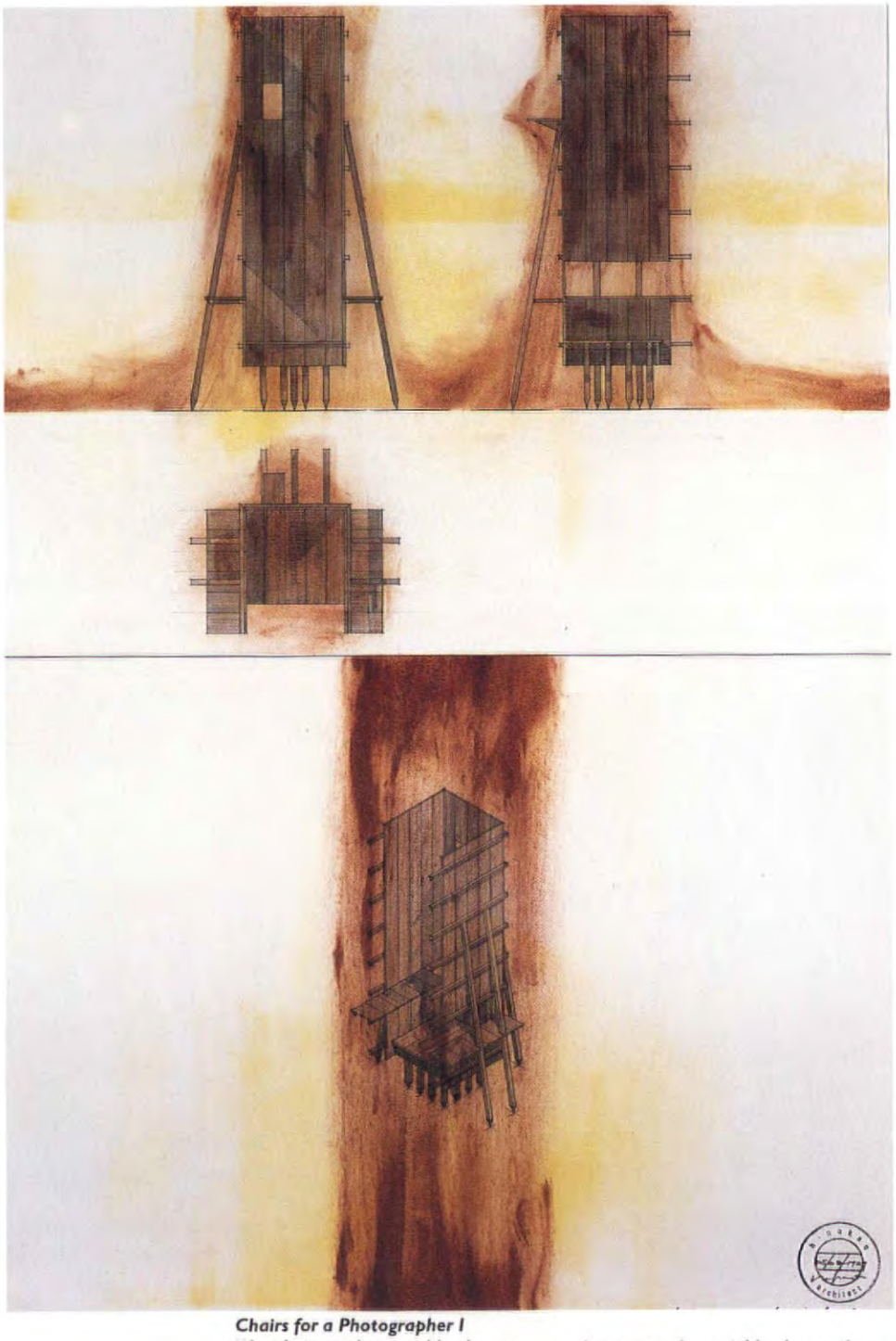
Recently, one has been able to see how new types and streams of "information architecture" are circulating on the contemporary Japanese scene, but this information architecture is unable to replace or be substituted for the invisible expression of human consciousness in Nature. Information as material for architecture can only simulate it. It is only a way of turning architecture on to its first trend and into its closed Circle. This transformation leads to a very dangerous confusion, because information is an invisible object just as consciousness is. It is very difficult to recognise whether an invisible object is natural or not.

Originally, this development of technology and civilisation had a single function, which was to make us aware of what the technique for architecture actually was. But now most architects are continuing to advance in the operation against this function. The consciousness leaps with distance and time. And by this reaction man can be made aware that consciousness is a material to build with. From this material space is created. Space is passionate energy liberated by an action of consciousness. After all, isn't this one of the most important goals of our civilisation - to make us understand such a fact?

The Second Trend in Contemporary Japanese Architecture

The second way of producing design in Japan is by constructing it with the energy of consciousness. If this is given to an architect it means that he has got the technique for making architecture. And only through this second way can the architect confirm the existence of his own body and soul in the world.

But now, since information started to work as object "A", it is difficult to differentiate between the contemporary young architects, those who belong to this second trend of Japanese architectural tradition, because most

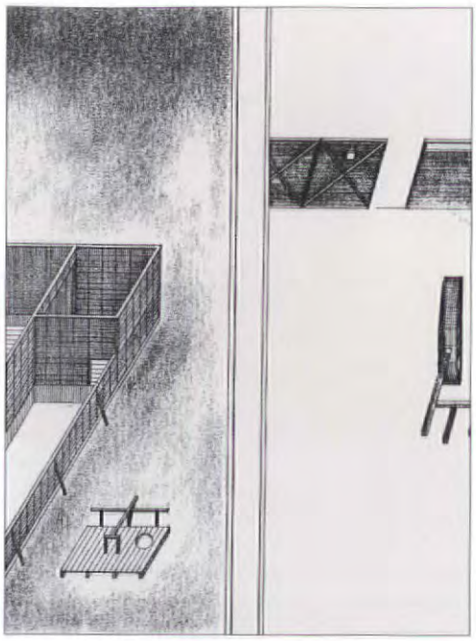


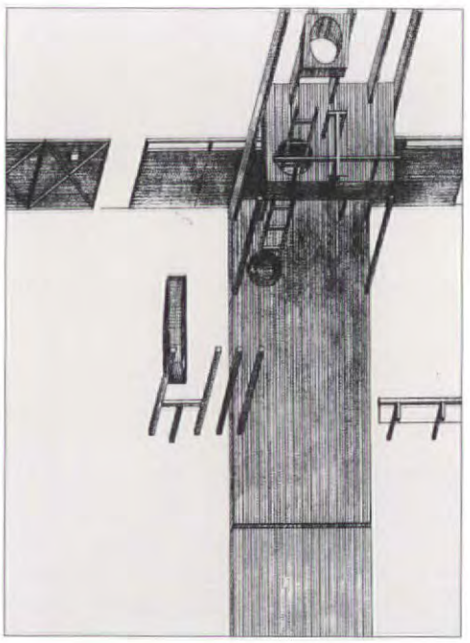
Chairs for a Photographer I

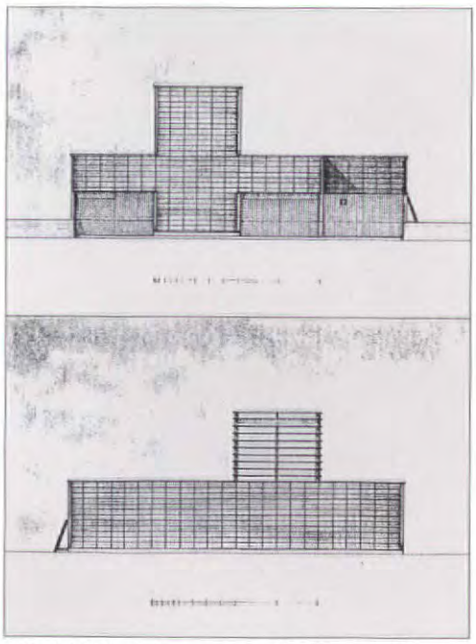
The photographer, just like the gardener, carefully plants the camera. The photographer inserts space or spatial depth in a place. He can freely plant physical depth or shallowness. Unlike the architect, the photographer does not possess plan drawings, so he never dominates the land. Neither can he take possession of landscapes.

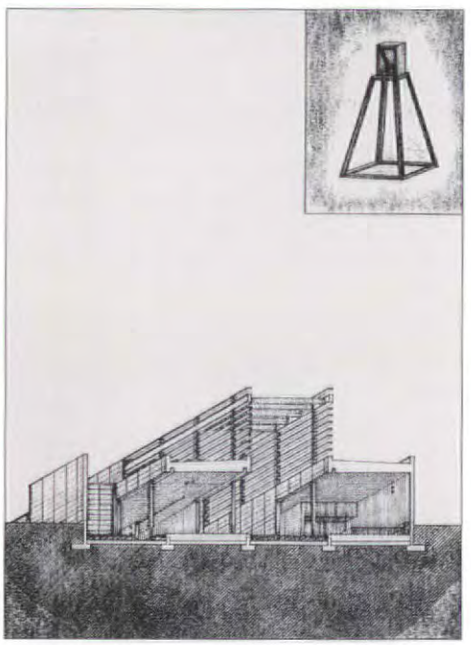
The photographer, like the gardener, can also quickly change the location where he plants the camera by moving closer or further away. By these moves he can make the ground resound, he can confuse distance or eliminate memory traces.

This chair is offered to the photographer who loves darkness perhaps more than light and is an attempt to imitate them. Hiroshi Nakao









Hiroshi Nakao. Drawings for the Weekend House

people, who cannot bear to live alone, tend to be included in larger groups of architects, which tend to create their own strong identity with the power of information which has grown bigger and bigger through high technology. Faced with this situation, the "second way architect", so as not to be considered an outsider, is urged to be involved in bigger groups, such as those that generally belong to the first trend, and experience the closed circle of architectural production. That is why when information became object "A", the architects' intentions became unclear.

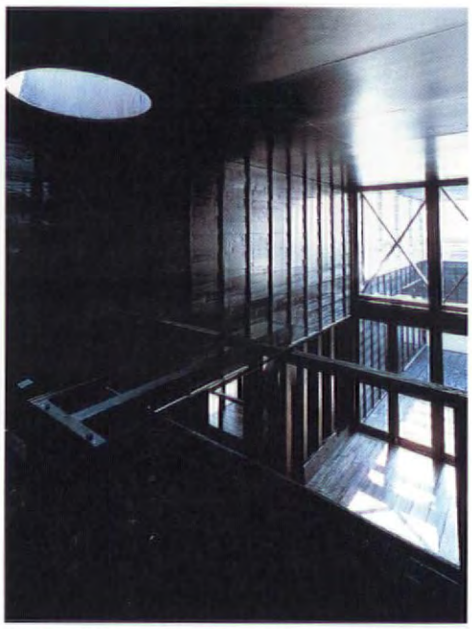
There must be ways to recognise an architect who belongs to the "second trend" and to unveil his hidden will. One of them, for example, is to separate and "hermetize" a closed circle of architects, like a cosmonaut crew in orbit and to get an objective view of the existence and behaviour of this circle. Just the thought of such a situation has made me feel depressed. But the only other method is chance.

At that time I happened to meet architect Hiroshi Nakao, who is one of the few young architects who belong to the "second way" and who works actively today. This contact gave me some light on the future. Nakao showed me how he distinguishes the difference between technique and technology, not only by creating architecture for the consciousness, but by helping to open up the energy that is shut up in the closed circle of the "first way".

Hiroshi Nakao says that to create architecture is to create hollows. He wants to make holes in the closed circle so as to allow the consciousness enclosed in it to see through these holes. To design strange forms looking "avant-garde", using fashionable methods and new technologies is not a problem for Hiroshi Nakao. His only interest is to create spaces by melding the consciousness of human being and natural phenomena. After this, space is born. Places are constructed according to each particular situation and this is the specificity of the architecture created by Nakao's vision. He says that the technique of architecture is to create space with the architect's thought, and that for thousands of years, ever since human beings became conscious, this technique has not changed.

This technique for making architecture has never degenerated and has never been developed, because it does not belong to civilisation. National, ethnological and geographical diversities and identities do not exist for this technique, because it does not belong to culture or history. So, it is meaningless to search for the avant-garde in the history of architecture. Since society in the twentieth century has neglected technique, replacing it with technology, a lot of problems have appeared in the human environment.

According to the vision of Buddhist philosophy, to discover the "second way" is to make yourself empty and according to Nakao, it is to relax and to merge yourself into continuity. □



Weekend House (dark box and bird cage)
Interior and exterior surfaces are all painted black. Black is a delicate colour. Black is not a stoney silence, it is a ceaseless stir. The idea here was to generate a variety of types of darkness, which of course, also means distinct types of brightness.

This small house is a dark box.

There are no openings in the horizontal plane to the exterior. The "openness" of architectural space is not in any way a function of the area of openings to the outside. If "to be opened" requires an infinity of holes generating vibrations in the midst of the configuration of space within flat boards, then this space might be closed, but it does possess its own infinity of holes.

The small house is a bird cage.
Niroshi Nakao

Hiroshi Nakao

1961 Born in Kobe
1985 graduated from Kyoto Institute of Technology
1886-89 studied at Graduate School in Tsukuba University
1992 awarded First prize in the No. 9 "Yoshioka Prize".

Yoshi Yamazaki

1966 Born in Tokyo
1989 graduated from the Graduate School of Waseda University
1990-92 worked in Moscow Institute of Architecture as the national research scholar in the architecture of the USSR.

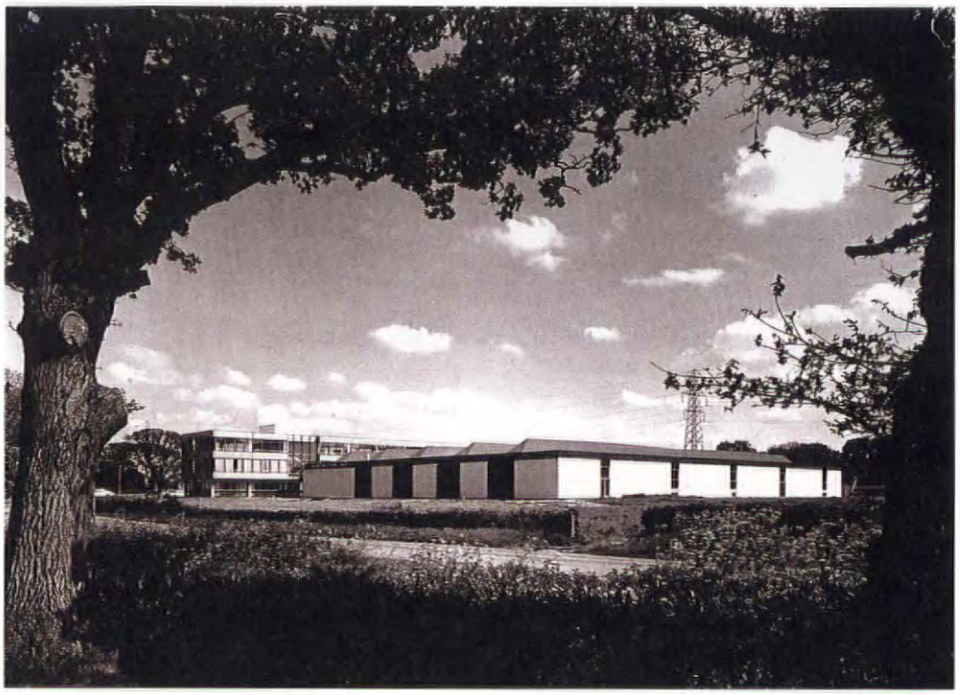
RISING WITH LIVERPOOL

Ormrod and partners is not the largest practice in the North of England but it is one of the most consistently successful, attractive to developers and institutional clients alike. Colin Davies investigates a Liverpool phenomenon.

According to David Stonard, the senior partner of the Liverpool practice Ormrod and Partners, there are two kinds of successful architectural practice: there is the kind that designs innovative works of architecture whether its clients want them or not, and there is the kind that gives its clients what they want. Practices of the first kind become the darlings of the profession, relying on their reputation to attract new clients when the original clients become disgruntled because of delays, overspends and technical failures. Practices of the second kind build relationships of trust with their clients and get the repeat orders.

Ormrod and Partners, as you may have guessed, is a practice of the second kind: clients always come first and architecture of the glossy magazine kind is of secondary importance. Indeed it is hard to get the partners to talk about specifically architectural issues. The conversation is mostly about clients, whether commercial, industrial or institutional – their management styles, production technologies, marketing strategies and so on. The interest is genuine, the knowledge impressive and the enthusiasm infectious. It is easy to see why clients like Abbey National, Plessy, Pilkington's and English Partnership (formerly English Estates) should return again and again to a practice that speaks their language, performs well and doesn't bother them

Ormrod in the 1990s (opposite page), in the 1950s (below left), and for Pilkington's (below)



with architectural or philosophical concerns in which they have no interest.

This doesn't mean, however, that the practice is incapable of producing "glamorous" (a favourite word) buildings when the occasion demands it. The total staff, currently numbering about 40, includes some very talented designers, and when they are matched with the right clients they can produce architecture of real quality. For example, the refurbished and re-structured I M Marsh sports hall, designed by Roy Roberts for the local college of physical education (see *WA* 28), achieves an elegance and simplicity worthy of Foster or Rogers, with its curved aluminium roof supported by slender double masts and tension rods.

The recently completed Technology Centre for English Partnership on the Wavertree Technology Park is another accomplished exercise in the High Tech style, with a logical structure, well integrated services and a care for detail that extends even to the temple-like bin store. The three storey, L shaped building has an externally exposed steel frame supporting the first and second floors, and a pitched roof cantilevered like an umbrella from the central row of double columns. A lift in a frameless glass shaft stands like a campanile by the main entrance at the hinge point of the plan. Services are distributed horizontally in the roof, with vertical ducts placed so as to allow the building to be let piecemeal to small businesses. Paradoxically, however, it seems likely that the very quality of the building will lead to its being altered before it has even been occupied. Its striking image has excited the interest of a big international industrial concern who want it as unified, prestige headquarters. The building's designer, Phil Emsley, has all the quiet obsessiveness of the dedicated architect for whom quality is everything. But for the commercially minded partners, it is the marketing advantage of that striking image that is the real measure of the building's success.

This business-like approach has served Ormrod and Partners well for more than 60 years. The pattern was set by Francis James Massey Ormrod, who founded the practice in 1933 and retired in 1968 to Monte Carlo (where he still lives) having made himself, in David Stonard's words, "seriously rich". His talent was in making and cultivating client contacts, and some of those contacts are still producing work for the practice. Ormrod's successor, Henry Philip Preece, was of like mind and retired in similar circumstances. Stonard and his partners, John Heath and Terry Long, represent the third generation and they intend to continue the tradition.

In Ormrod's time, Liverpool was a thriving industrial city and factories were the staple diet of the practice: big, simple, repetitive buildings, which made very profitable architectural commissions. Since then, the local economy of Liverpool has famously declined, but the practice has managed to thrive nevertheless by the judicious application of the business skills inherited from Ormrod. Nineteen sixty-eight was something of a turning point, when the Abbey National Building Society decided to entrust the practice with the design of most of its high street branches. More than 300 were completed all over the country, culminating in the design of Abbey National's London headquarters in Baker Street. Terry Long reckons that Philip Preece, then the senior partner, might have used this opportunity to take the practice into a different league, transforming a powerful local presence into a national network. But it was not to be. Preece was no empire builder, and the practice remained firmly rooted in Liverpool. The delicate balance between ambition and caution is maintained to this day in the differing personalities of the three partners.

The next turning point was the Toxteth riots of 1981, and in particular the famous visit by Environment Secretary Michael Heseltine which, according to local mythology, began the transformation of Liverpool from an industrial to a post-industrial city. The city's market for architecture shifted from the big, monolithic factories of the '50s and '60s to buildings for education, leisure,

The Business and Technology Centre at Wavertree with (bottom right) a computer graphic of part of the interior

Landscaping at the Plessey Telecommunications, Liverpool (below left and right) with new student housing (bottom left) and the interior of the Abbey National building, London (bottom right)

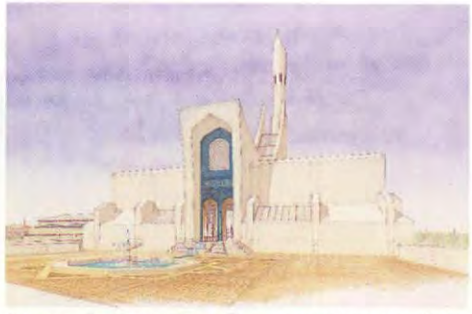
The short stay unit, Liverpool Cardiothoracic Centre (below left and right), mental illness unit Fazakerley Hospital, Liverpool (middle) and Park Lane Hospital, Liverpool (bottom)

health, service industries and small businesses. Ormrod and Partners kept their fingers on the pulse and responded flexibly to the needs of the new clients. A good example of this is their involvement in the Wavertree Technology Park, by far the largest and most successful recent industrial development in the region. Commissioned by Plessy to reorganise, refurbish and landscape their manufacturing plant at Edge Lane, the practice suggested that English Estates, a long standing client, should develop a spare 18-acre plot of land on the site as the first phase of a new technology park. Now, ten years later, the development has expanded onto adjoining derelict land, covers more than 100 acres and is still growing. Ormrod and Partners are the master planners and have also designed most of the buildings, including offices for Barclaycard bringing 1,000 new jobs to the city. These commissions have in turn led to more commissions from the various parties involved. It is this snowball effect, maintained by the client-pleasing principle, that has maintained the practice's workload over the years of local economic decline.

Liverpool may be in decline industrially, but it is rapidly becoming a centre for further and higher education. Ormrod and Partners have not been slow to tap into this new source of work. Liverpool Community College, the poor relation of the two universities, asked the practice to take a strategic look at their various sites around the city with a view to raising the college's profile and improving its image. The resulting feasibility study offered two alternatives, one of which proposed a big "glamorous" new building on the Pierhead, the best site in town. The second alternative was a more modest proposal to link several city centre sites. In the event the college did not adopt either proposal and for once the loss leader feasibility study was not translated into real commissions. But there is a twist to this tale which confirms Ormrod and Partners shrewdness as development strategists. As soon as details of the proposals leaked out, the rival John Moore's University immediately took out development options on the sites.

The practice has no problem with non-traditional building procurement methods. As David Stonard says, they have been doing design and build jobs for decades, ever since the days when they were called package deals. Fee competition is also accepted as an inevitable consequence of a shrinking market and if it seems worthwhile making a nil fee bid in the hope of follow-on work then Stonard has no qualms.

The new competitive climate does, however, have one drawback for a practice like this that relies on continuing relationships



Liverpool community college campus project (left) and winning competition entry for Liverpool mosque (above)

with its clients. Even if the master plan or feasibility study is won in competition, it is unlikely these days that the client will also call for competitive tenders for the design of the individual buildings. The practice is therefore being required to compete to implement its own plan. And there is always the danger that someone else will reap the benefit of speculative design work. In 1987 the practice produced a strategic plan for various leisure developments in the Wirral Docklands, including a new Transport Museum. The Borough Council and Merseyside Development Corporation did not choose to adopt the plan as such, but many of its recommendations are being carried out anyway.

Commercial and industrial projects form the bulk of the practice's workload, but there is also a thriving specialist unit, lead by John Heath, which designs hospitals and health centres, mainly for the local regional health authority. The relationship between this part of the practice and its major client has been, if anything, too successful. The authority is understandably reluctant to give more than a certain percentage of its jobs to a single practice and John Heath is therefore now actively seeking opportunities in the private sector.

Stability and continuity are the keynotes of the internal organisation of the practice. A handsome early nineteenth century terraced house in Rodney Street near the Anglican Cathedral has been the practice's home since just after the war. Staff turnover is low, even by provincial standards. Architects often work on successive jobs for the same clients, building up those relationships of trust upon which the whole enterprise depends. But it seems that, in any case, Liverpool is the kind of city that architects like to live in. There is an architecture school in each of the two universities, attracting students from all over the world, and a good proportion of them decide to stay on. Ormrod and Partners have links with both schools, participating in studio teaching and running CAD courses. No doubt this is motivated by a desire to give something back to the profession, but it also puts them in a good position to spot talent and cream off the best of the graduates. And of course, the universities are also rich potential sources of work.

The practice carries out specialist work of various kinds, including project management, site appraisal and interior design, but it is not multi-disciplinary in the full sense. Quantity surveying is the only major building profession represented on the staff and the quantity surveyors' main job is to free the architects from the drudgery of contract administration, allowing them to concentrate on design. Ormrod and Partners were quick to recognise the potential of CAD, establishing a specialist department in 1984 and becoming a founder member of the AutoCad user group. According to Terry Long, it is hard to assess the precise effect of CAD on efficiency and profitability, but ten years' experience and an impressive array of kit gives the practice a marketable skill which can be offered not just to clients, but to other architects.

Another of the practice's advertised specialities is landscape design. It employs no professional landscape architects and yet is capable of producing work of the highest quality. Walking among the immaculate lawns, carp-stocked pools, and beautifully composed, multi-species shrubberies of Plessey's Edge Lane site, it is clear that this is the work of an unusually knowledgeable and sensitive designer of soft landscaping. That designer turns out to be none other than David Stonard himself. He admits to the authorship rather reluctantly, as if designing gardens were somehow not the kind of activity that the senior partner of a big practice ought to be wasting his time on. He seems to see it as little more than a hobby, though many a less talented landscape architect would make it into a career. For a moment a chink appears in the hard-nosed, commercial facade. This is something done for the love of it. And it shows. □

Factory 2000, Karkkila, Finland 1988

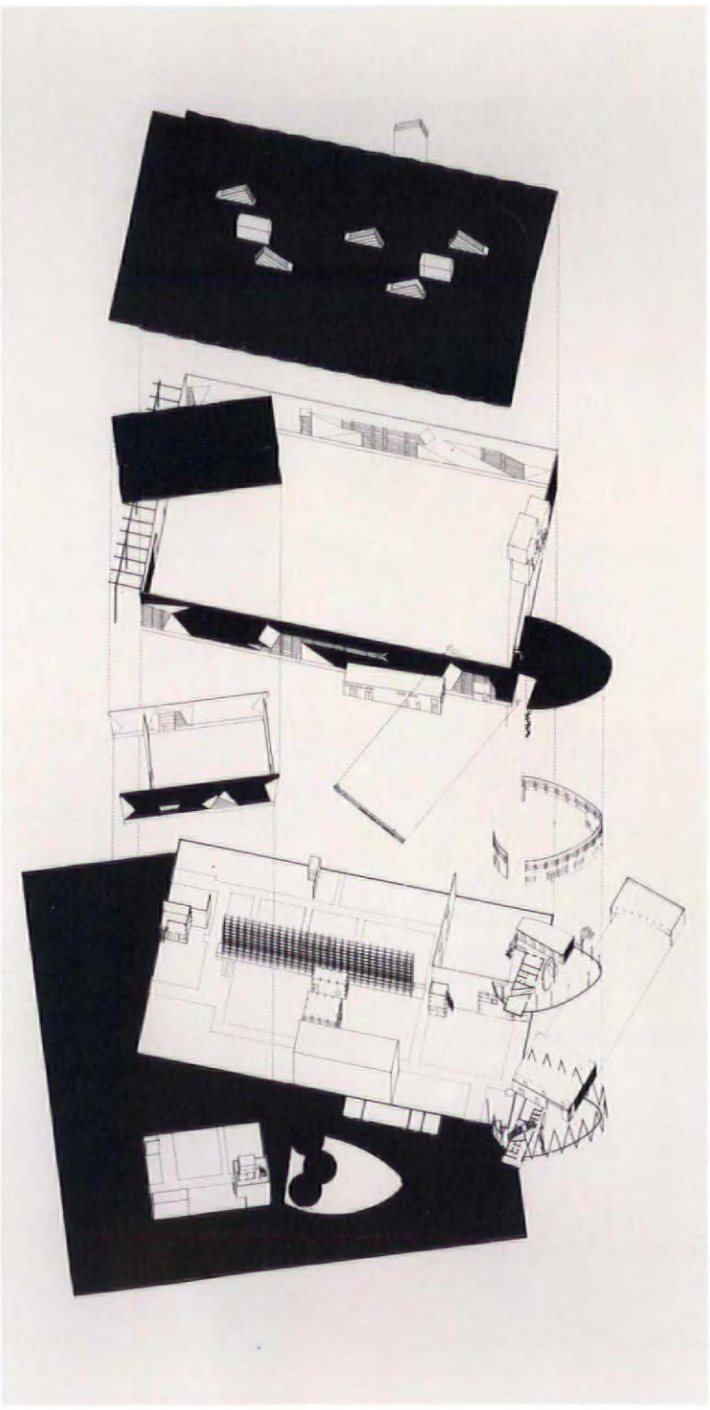
Architect: Kai Wartiainen
Photographer: Jussi Tiainen

The change of ownership of the Hoegfors foundry in 1985 launched several ventures to safeguard the industrial heritage of Karkkila. These included the Hoegfors project implemented jointly by the town of Karkkila and the JOT group, the new owners of the mills. Provincial development funds were made available for the project, a three-year research venture whose purpose was to develop guidelines for the conversion of disused buildings.

Finding a new use for old industrial buildings enabled Santasalo-Vaihteet Oy, one of the JOT group companies, to modernise its production. The new production line which makes large cast items doubled the company's capacity in a hall half the size of the previous one.

At the heart of the production process lies the automated high-ceiling warehouse which holds the larger tooling machines. The complex also includes a production facility for servicing worn equipment and an office building adjacent to the great hall.

The offices support three functions on top of one another: a curved 2.9 metre modular row of workstations by the windows; the ancillary room package bisecting it and a low box containing the staff facilities and the statutory fall-out shelters. Each function had its own direction in which it could freely grow and shrink without affecting the others.



Roihupelto Concrete Mixing Plant, Helsinki, Finland 1991

Architect: Kai Wartiainen
Photographer: Jussi Tiainen

The building is situated in an area of heavy traffic, which is why the city planners demanded special architectural features before granting a building permit.

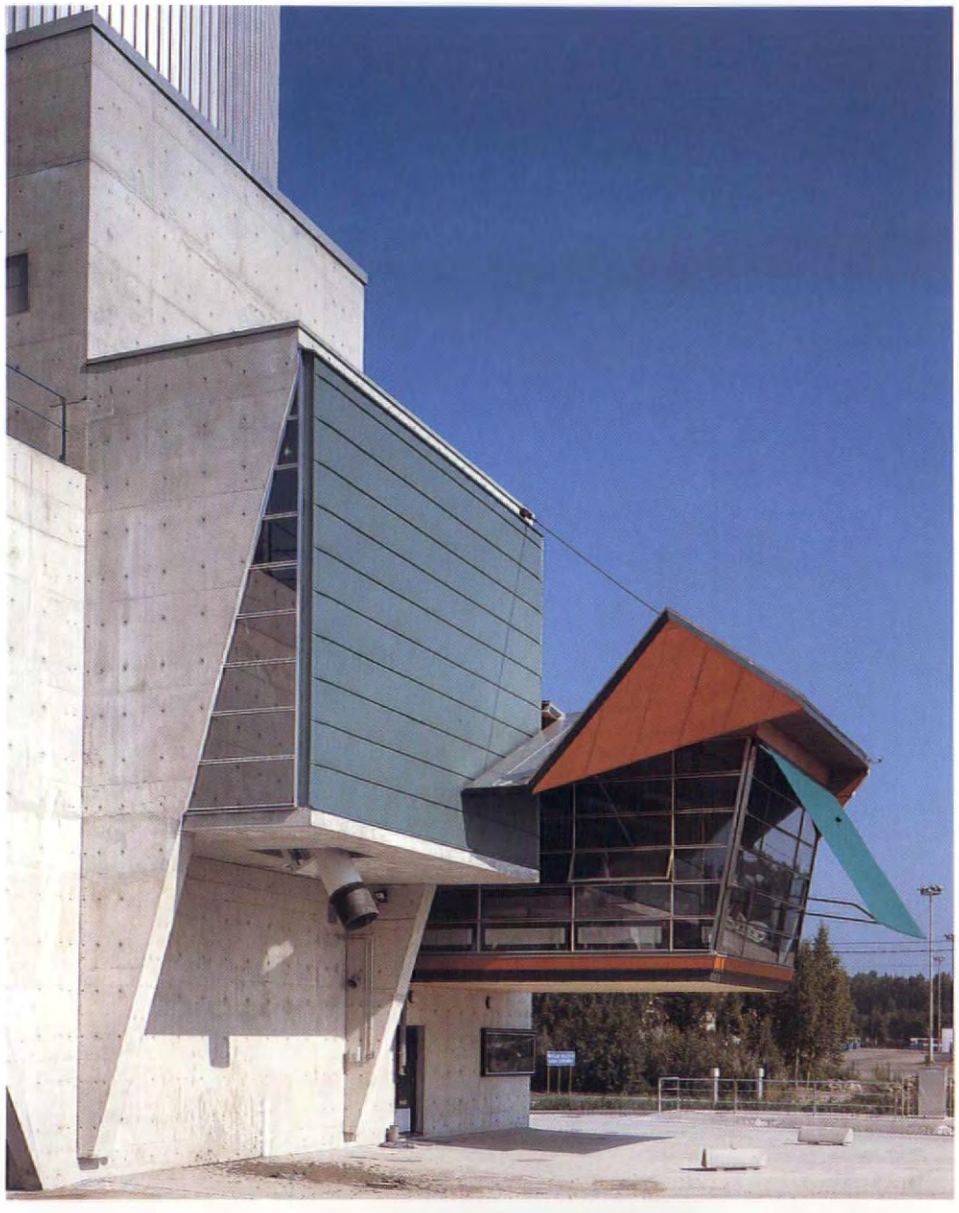
The plot is too small for the plant. It was not possible to build a straight gravel conveyor so it had to be led round the edge of the area. At ground level the building was required to take up a minimum of the plot area so that there is room for heavy duty traffic to manoeuvre.

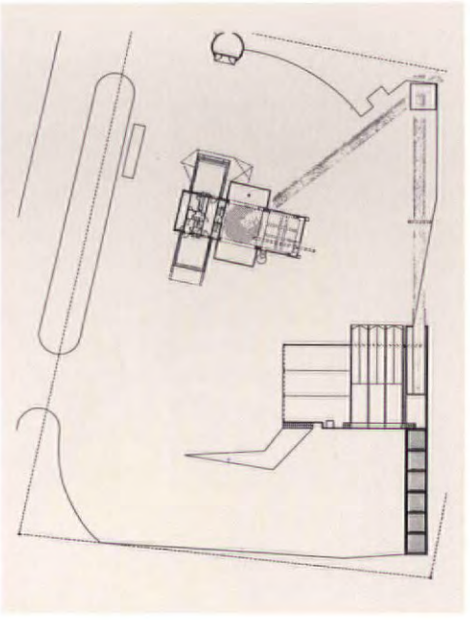
There are residential areas on all sides, which meant that the entire mixing process had to be encapsulated to prevent dust emissions.

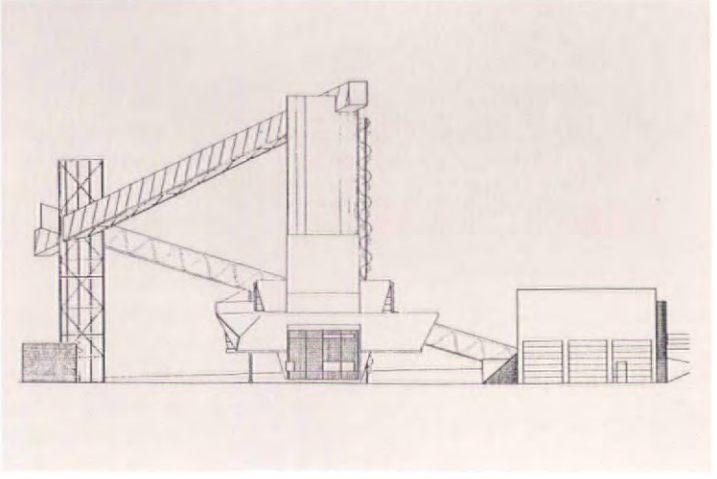
Since the metro lines run nearby, special attention was paid to neatness: trucks are washed indoors so that the process is not visible from the outside. Particular attention was paid to attractive staff facilities and a congenial working environment in order to secure labour availability.

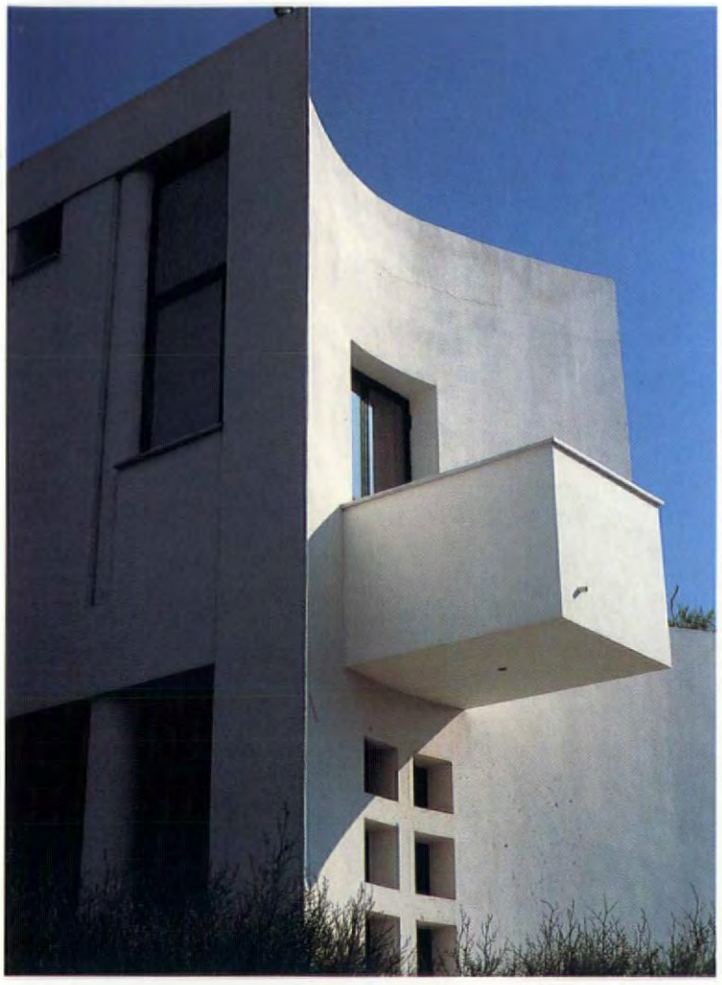
Parlec Concrete commissioned the construction of the building to enhance the status of concrete and to present the range of options offered by ready-mix concrete.

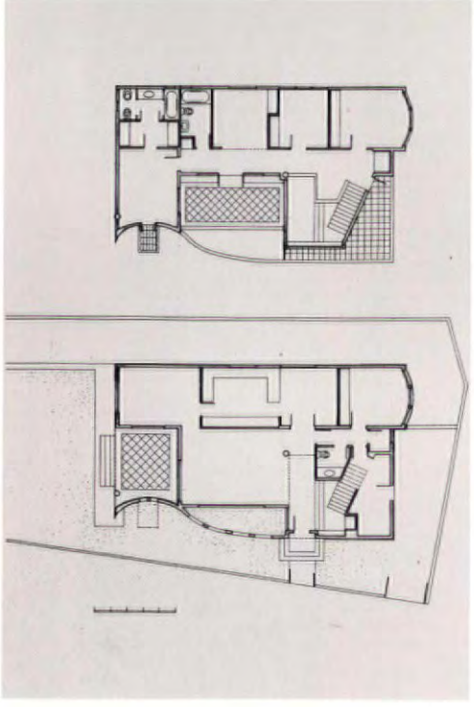
The core of the architectural design is a concrete "anvil", on which various "objects" illustrating parts of the process have been placed. Each is made of suitable material, plastic included. Interaction between the various materials forms the core of the architectural entity.











Two White Houses, Limassol, Cyprus 1992

Architect: Akos Avraam

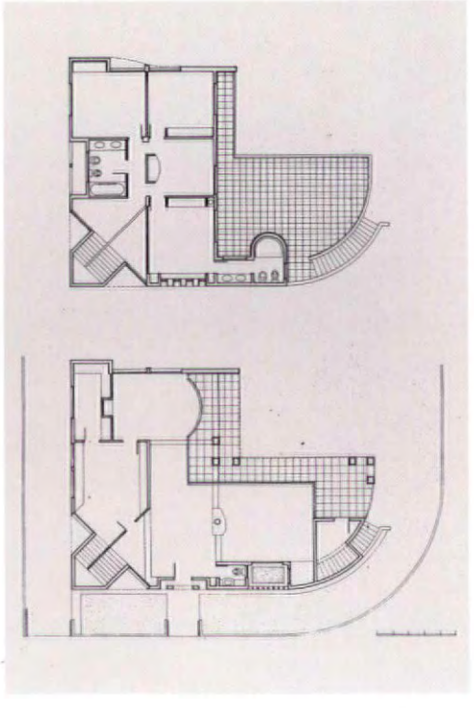
"All houses contain a kitchen, a living room, bedrooms and bathrooms, organised in a more or less similar way" writes Akos Avraam. "I will not bore you with how these areas are placed nor how they are related to each other. Instead I will try to explain the sources of my inspiration by diving into the sea of architectural culture.

"The design of these two houses is inspired by the architecture of the traditional white houses of the Cyclades Islands in the Aegean Sea. A fresh neo-Modern Western wind blows through them, merging with their rich traditional aura and then reaching the island of Cyprus. It stimulates the senses and energises the devices of creation. Light and shadow, wall and window, solid and void, all dance to the rhythm of the Mediterranean waves.

"Obeying no rules and rejecting symmetry, these houses seem to be floating on the ground and the ground seems to be floating through them. Resisting ornament and pure in form they sink in light. They penetrate the blue and sometimes angry dark grey sky and

they make their mark on the surrounding environment. Behind blind solid walls they surprise with inviting openness. Even though dominant as structures they do not dominate their inhabitants but co-exist in absolute harmony. We don't live in houses - we live with them.

"The two houses borrow from each other but each remains unique. Each one of them carries with it ages of historic procedures, all of which are necessary to inject our designs with essence and timeless quality." □



SUBWAY MASTER

Roland Paoletti is the man in charge of architecture on the Jubilee Line extension. Before that he worked on the Hong Kong MTR that turned a Crown colony into a major city. Graham Vickers talks to a man with a surprising past.

Underground railways usually reveal quite a lot about the cities that lie above them. As Paul Goldberger has noted, if Switzerland is where you should immerse yourself in F Scott Fitzgerald and Spain is the best place to absorb Hemingway, then the New York City subway is surely the perfect setting in which to read Dante's Inferno.

Roland Paoletti might agree. His work for Hong Kong's mass transit system won him an international reputation for helping to get underground railways designed and built, but the system itself, he maintains, conferred upon Hong Kong nothing less than a new sense of identity.

"It simply transformed the place" he says. "It turned Hong Kong from being an old fashioned British colony into a great modern city. Not just because of its value as a transport system but because the whole project represented a new and professional way of doing business there. It was a catalyst for the colony".

As an architect working for Palmer & Turner in Hong Kong in the '70s, Paoletti was hired by the newly-formed mass transit company to identify the development potential of the new railway. He eventually oversaw the building of three big depots each incorporating towns holding about 25,000 people. A strictly commercial and utilitarian venture, the Hong Kong transit system was nonetheless created with startling speed, efficiency and dynamism, and Paoletti's work there eventually led to his being invited back to the city in which he was born to oversee the architecture of the Jubilee Line extension.

"The London Underground Project Director's original intention was that I should do it myself and go to other architects for manpower only. But I had already decided before I left Hong Kong to recommend otherwise. I knew what I wanted technically - but stylistically? That was another matter. I felt that I was not equipped to do it, as I would tend towards an Italian solution - I had been away too long. Therefore, I picked architects like Ian Ritchie and Will Alsop, making it clear that it was up to them to tell me what to do."

Paoletti has in fact enjoyed a long and colourful career in architecture, bringing a perspective that is both cultured and expedient to the underground projects he admits are pragmatic by nature. In fact he acknowledges that some people see them as little more than rather basic tunnelling undertakings. Does this bother him?

"You can either do your perfect house or you take the other route where you're in the rough and tumble of things" he says, a touch defensively. "I fell into it by accident, but I wouldn't have stayed if I didn't like it".

Invited to reveal how he accidentally fell, he is inclined to take the picturesque route, recounting stream-of-consciousness episodes in a Joycean fashion that one might be tempted to trace back to an Irish education were it not for the fact that his Jesuit masters apparently excised Joyce from the school curriculum entirely.

"The Jesuits were good but they were also as prejudiced a bunch as you'll ever get – I was never taught about Joyce" he says. "The same went for Gerald Manley Hopkins – he'd been a teacher at the school and we knew one or two of his poems were in the book, but he was hardly mentioned".

Paoletti's Irish education came about because in wartime Britain his Italian parents were considered aliens and given the alternatives of two remote Scottish towns in which to see out the war. After growing up in Peebles, Paoletti was evacuated by plane from bomb-damaged Liverpool to neutral Dublin – the first of many peregrinations for a man who rather gives the impression of being at home everywhere and nowhere.

"It was 1942 and I was put on a de Havilland Dove with all the windows whited out" he recalls. "I remember many of the buildings in Liverpool were still smoking. When we landed in Dublin I was met by a Jesuit scholastic who took me for tea in O'Connell Street above the Carlton cinema. Then we got on an old-fashioned train to the school's local station. I was there for six years."

He went on to Manchester University where he was a contemporary of Sir Norman Foster and where he says he relished the ambience of the university – particularly the dramatic society – and the "effortless sense of culture" that Manchester offered.

"The school of architecture itself was a bit flat" he acknowledges. "Norman complains about that, I know – but I actually believe you tended yourself. In English schools at that time the teachers tended not to be very good. It was because they were professionals." If this sounds like adding paradox to dismissiveness, it turns out that Paoletti is simply making a

comparison with an Italian system that favours great architects as exemplars rather than trained instructors as educators.

"English universities tend to retain their status" he explains. "Fifty years on they will still be the same. But Italian schools of architecture are rather like the medieval schools in that you suddenly get a great man who changes everything. And great men will look for universities to go to".

Despite a few visits to his father's native Tuscany, as a graduate Paoletti had never visited other parts of Italy, and so after Manchester he chose to continue his architectural education in Venice ("I entered the city for the first time the best way – by boat") where an enlightened Sicilian professor brought to the school of architecture a constant stream of the contemporary great and good, including Albini.

"They'd rotate, staying non-stop for about three weeks. I learned a lot there" Paoletti says, going on to describe the remembered qualities of out-of-season Venice ("very lovely although rather cold"), the Venetians ("the impoverished heirs of a great time") and denizens such as Ezra Pound ("a bit of a nut").

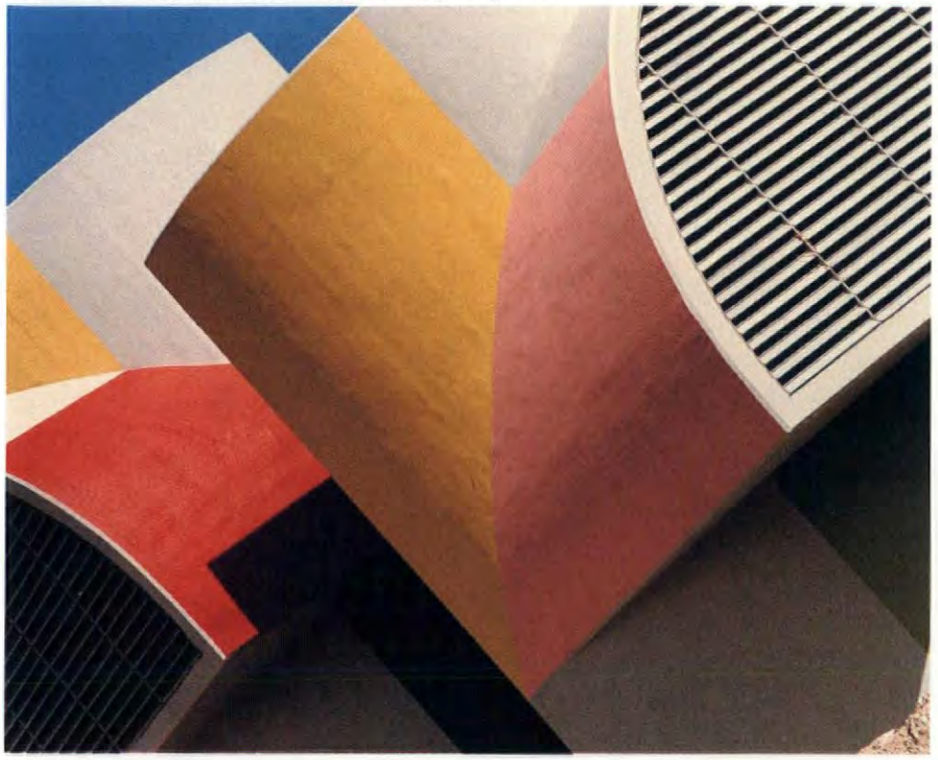
Another distinguished visit during Paoletti's time at Venice was that of Le Corbusier, the event being captured by a local newspaper photographer whose picture shows a lean young Paoletti standing next to a rather frail Corb who had only months to live.

"Le Corbusier came because they'd asked him to design a city hospital" Paoletti remembers. "He didn't answer for six months then said OK, but could he present it to the students at the school of architecture rather than to the hospital? When he came he said that his research showed that in a city hospital, basically two things happened: some people died and the others had serious operations and were out within two weeks. That was what his design was all about. At the top was a very serene place, half-vaults with reflections of clouds projected onto a wall. It was a place to die with dignity, a place for recollection. Then immediately underneath it he made something like a lounge of an ocean liner – armchairs, with views of the lagoon. He told us that this solution was just like everything else that he did, which really was not buildings at all but a way of looking at things".

After Venice Paoletti moved to Rome to work in the office of Pier Luigi Nervi who

Venice 1967. "A lean young Paoletti standing next to a rather frail Corbusier who had only months to live"

Paoletti's colour contribution, air vents on Hong Kong's MTR



was to be a profound influence upon him, both as a humanistic employer – Nervi never believed in overtime, maintaining that people had more important things to do in the evening than work – and as an engineer.

"And Nervi was very much an engineer" Paoletti asserts. "He didn't like architects. 'With architects – suddenly the style changes' he would complain. 'That doesn't happen with engineers'. Nervi was in fact not only an engineer but a design and build contractor".

If Paoletti admired Nervi, the old master clearly had some confidence in Paoletti whom he took along with him to the RIBA in 1968 when he was to receive his Gold Medal.

"I thought I was to be his translator, but when we got there and I asked him what he wanted to say, he simply said 'Look Paoletti, you've been in the office long enough – you know what I think' ."

Among Paoletti's many anecdotes about his time with Nervi, one concerns the master's original intention for the Palazzo dello Sport in Rome. The structure incorporated a movable sunscreen intended to rotate around the circumference of the building. When this device was eventually rejected by the client, Paoletti says that those cancelling it entirely failed to appreciate that the holistic nature of a well-designed building does not allow for piecemeal subtractions or additions.

"It was the same with the Hong Kong bank" he says, recalling that Foster's proposal for an elegant bridge to Statue Square was ditched because a bureaucrat made an issue of comparing the price with one of Hong Kong's standard-issue council footbridges and thereby left the building marooned. Closer to home now Paoletti sees a sudden threat to his North Greenwich station as part of this depressing continuum of official insensitivity to the greater harmony of things.

"North Greenwich is crucial to the Jubilee Line extension" he says fretfully. "It's part of the whole thing."

This leads us onto a touchy subject: Paoletti is very sensitive to criticism that his multi-authored proposals for the Jubilee Line stations reject the perceived benefits of uniform appearance.

"You simply cannot compare today's London Underground to that of Pick and Holden" he protests. "Pick started in 1904 and died in 1940 – and he was involved all that time. His work in the 1930s was an oak grown from an acorn".

Paoletti uses language very precisely, but when making an important point he often seems to feel that precision is not enough, at which point he resorts to repetition. "An oak" he says again, pausing for effect, "grown from an acorn."

He goes on to say benign things about the current leadership of London Underground whilst decrying the appalling mess they inherited.

"I was often in London when I was younger, and the thing I always liked most about it was the Underground. Even in the rundown areas – there was always the underground. The red train with the gold lettering – the big U, the big D and the line underneath. And inside the red and green upholstery. The whole thing held the tunnel together like the light inside a lamp. A light inside a lamp. Then you went up the escalators – some sort of hardwood – with bronze light shining upwards. And the ticketing hall had these great machines like lanterns with 2/6d on them or whatever it was. You put in your heavy money – the place was full of sound and joy. And then, as they modernised this railway, they gradually lost all the old things and there was no one around like Pick to give cultural advice. All the decisions may have been correct in themselves, but, really, it is now the most melancholy thing you can imagine."

"Unfortunately, the Hong Kong stations have declined in the same way from the moment they were opened."

He pauses, as a defending footballer will before looking round to see if he has just scored an own goal, Paoletti was always uneasy about this interview, having prefaced it by arranging a pre-emptive presentation by a somewhat baffled contingent from Foster's. This was apparently intended to show how the constraints of the site, not stylistic capriciousness, largely determine the look of the Canary Wharf station. Now, after delivering a three-and-a quarter-hour monologue, he is worried that I have not asked him enough specific architectural questions. He is, I think, concerned that what he has given me is an elaborate overture to an absent symphony. However, when the letter of complaint comes in, I'll claim that the truth lies in the subtext, that my opening line was meant to alert the reader to this and that, surely, any architect capable of delivering such a warmly evocative description of London Underground's past need offer no further testimonial as to his fitness to shape at least one bit of its future. □

TREMENDOUS CONFIDENCE

John Lautner. *Edited by Frank Escher. Artemis. 288 pp, 550 illustrations. £60.00*

Reviewed by Ronald Green

Of all Frank Lloyd Wright's many apprentices, John Lautner was the most prolific and the most faithful to the master's teachings. In practice from the eve of World War Two until his retirement, Lautner produced a stunning series of organic — he preferred the word "real" — houses, ranging from economy cabins in the hills or desert to apartments and lavish mansions like the Bob Hope House, often associated with celebrity clients drawn towards the architect's individuality and his legendary discretion. With the force of the colour photography in this fine Artemis Edition, together with a lavish use of arcjhitects' plans, a rarity these days, it is possible to see that no other mid-century American architect, with the possible exceptions of Bruce Goff and Herb Greene, ever contrived to make the same productive connection between lavishly radical architectural forms, and deeply conservative clients.

Lautner's first critical success was the Los Angeles house he designed for himself and his family in 1939. Located at Silver Lake, location of the most famous Richard Neutra houses, this small dwelling stood on a 45 degree sloping site with a single beam poured with only $75 worth of concrete. In its early, smog-free days, the house enjoyed a panoramic view over the city to the ocean.

It is interesting to compare this early cantilevered structure with its even more dramatic successor, the famous single column "Chemosphere" house of 1960. This lightweight timber octagon is perched on top of a concrete column on the side of a mountain overlooking Hollywood, its tremendous confidence showing the logical conclusion of tendencies already present in the site and construction of Lautner's own dwelling 20 years before.

Moving in a different direction is the grandiloquent but ill-fated 1979 Bob Hope house in Palm Springs. This immense dwelling for the ageing comedian and his family was originally designed as a concrete shell-structure in collaboration with the famous Mexican engineer Felix Candela, then drastically rebuilt in a simplified form following a serious fire during construction.

There is in all these houses, if not in Lautner's own rather sparse programme notes describing them, something that is totally anticipatory of the 1980s avant-garde. A quarter of a century before Zaha Hadid's Vitra fire station, we see the same unexplained weirdness in the1961 Tolstoy house — unillustrated in its completed form — the enormous Marina View Heights condominium complex, never finished, and the proto-Niemeyer 1973 Arango residence in Acapulco.

NOT JUST A HALL OF MIRRORS

Contemporary Stained Glass. *Andrew Moor. Mitchell Beazley. 144pp. £16.99 (paperback)*

Reviewed by J.C.B.Hymac

At last a book that proves conclusively that there is more to stained glass than News, Weather and Brian Clarke. Cheap and cheerful as it is, this guide to modern stained glass practice serves as a valuable introduction to the unexpected riches of a neglected subject. While Moor's sketchy introduction ducks out of history and concentrates on what might be called the post-ecclesiastical renaissance of the medium in the twentieth century, and thus ignores an important part of the stained glass story, he does point out that stained glass lasts longer than any other artistic medium, and that some of the oldest creative relics in the world are stained glass fragments that have survived without protection for a thousand years and more. By the same token his late starting point gives him a clean break, and from then on, with his wide-ranging choice of artists and examples, he is able to convey more of the extraordinary precision and power of modern stained glass than a less densely illustrated book ever could.

For this reviewer the tremendously powerful images of Ludwig Scaffrath and Hans-Gunther van Look convey a message of writing with light that the trompe l'oeil trick work of Margarethe Keith, or the mechanical patterning of Ed Carpenter cannot equal. But in any case the message of the book is not partisan. If glass cladding has become the commercial norm of the modern world, without coloured glass imagery it is like black and white television. It loses not only true transparency, but most of the potential impact of daylight itself. This was a lesson the medieval stained glass masters understood when they created the tremendous cathedral windows of the Gothic era. Perhaps one benefit of the percent for art movement will be a much greater integration of stained glass with glass cladding, and thus a long overdue increase in the information content of run of the mill commercial buildings. In any case this book is an admirable and cheap way for architects to acquaint themselves with the potential of the medium.

DRIVING UP MARKET

Glyndebourne - Building a Vision. *Marcus Binney and Rosy Runciman. Thames and Hudson. 160pp. £16.95*

Reviewed by Paul A Trigg

Glyndebourne - Building a Vision is a book that announces itself as a celebration of "the unique achievement of its founders, the Christie family, in establishing Glyndebourne in the forefront of the international operatic scene." Up until the late 1980s, however, it was John Christie alone who was acknowledged as the founder of the Glyndebourne Festival. His opera house, which grew and matured like the gardens was, according to this book, on its last legs: "One wonders how such a building, constructed of essentially second-class and second-hand materials remained standing for 60 years."

The rhetoric continues: "How was Glyndebourne to maintain its position and ensure its survival?" George Christie identified "deepening anxiety arising from the relentless and voracious quest for tickets ... In the final analysis the only way out is to have a bigger auditorium." (Rebuild La Scala, extend Covent Garden...) This, we are told, "was a vision of which his father would have been proud, and in his idealistic way he would have said, 'Do the best you can. because I want to give my country a model of perfection'." (John Christie to Carl Ebert 1955: referring to opera production, not theatre construction.)

The book continues to tell the tale of how son George went about his task of building

this state of the art opera house. The proprietorial references irritate: "George Christie's nine architects are all leading figures at particular points of the architectural spectrum." However, the book does go into admirable detail on the structural side of the development, the external brickwork and the joinery of the auditorium - "reclaimed pitch pine" being used throughout. (What is "reclaimed" in the new house was seen as "second-hand" in the old!)

In the section where the building is considered in relation to the landscape, reading between the lines becomes ever more interesting. The flytower, which many consider the ugliest part of the new building had "lopped off a small amount of height ...at my personal request" - George Christie. And the original intention to build the flytower in brick was abandoned "as constructing such a massive tower would greatly lengthen the contract." Christie's chosen architects, Michael and Patty Hopkins, "felt it right that the tower should not be brick, but an extension of the lead roofs ... So lead cladding became very appropriate." Strange that English Heritage had thought a roof of tiles or shingles more becoming. But the boast is made that this is "probably the largest leadwork contract on any postwar building." That the authors see fit to include the voice of one detractor who likened the flytower to a gasworks, gives some sense of balance to what is, basically, a book in praise of George Christie's new Opera House. And there is much to applaud "in" the auditorium, much that the "cooler" opera-goer will appreciate: the comfortable seating, the excellent sight-lines, the improved acoustics.

The special atmosphere is still there, it's just that now the magic circle has been opened to give more people a chance to hear great opera. It is interesting that Hopkins who worked on extending Lord's, the home of cricket, should have redeveloped another English institution, Glyndebourne - the shrine of opera. But for some cricket lovers the best atmosphere is on the village green, and those who miss the old Glyndebourne will find their way to Garsington to begin the cycle again. After all it is there that some of the panelling from John Christie's derelict old building has found a home - reclaiming a vision perhaps.

THE WAGNER YEARS

A Guide to Archigram 1961-74. *Various authors, illustrated throughout, text in German and English. Academy Editions. 448pp. £19.95.*

Reviewed by Paul Jodard

Archigram returns! The Plug-In, Tune-Up, See-Through group from the 1960s and early 1970s are compactly celebrated in a new book of texts and commentaries. The wall-posters, all Cow Gum and Letraset, the collages of Twiggy and Superman, are here too, for Archigram's mission to explain always took a visual form. Some of their Pop glamour is lost, as they are squeezed down on to CD-sized pages, though bulking out to the size of a boxed set of Siegfried and Gotterdammerung.

Just as Wagner tried to create a new bourgeois mythology for nineteenth century Germany, so Archigram set out a radical new agenda for the 1960s. Theirs was to be a world in which everything was electrical, disposable, portable, consumable. Every mention was a manifesto, every competition a call to arms. Chalk, Herron, Cook, Crompton, Greene and Webb cut a swathe through the architectural schools of the time, leaving the Modernists green with anger and their students giddy with delight. As a remedy for the cold grey world of the 1950s Archigram was wonderful: all colour, provocation and Zoom tee shirts.

But it was only a cold remedy, not a cure. The endless fizz of ideas has no core programme that would outlast the exclamation marks. Archigram became trapped inside the plug-in bubble of their own vision, which led on to endless variations on the same themes, only rarely to finished buildings. But because of the poor ability of the English to distinguish genres, Archigram are termed architects, rather than designers or theorists: architects create buildings, designers design them – and stop there. Yet even as radical theorists Archigram became caught up in their own rhetoric. A lot of their proposals raised other questions – particularly about the use of materials and the consumption of energy – that were conveniently ignored, along with the social implications of their proposed world of individual living pods. Take two of their most bizarre proposals, the Rokplug and Logplug. Cunningly disguised as part of the natural landscape, these were actually plug-in terminals for phone, television and oddly, water. Apart from the kitsch – almost Victorian – design connotations of this idea, reminiscent of gaslamps disguised as sunflowers from the Great Exhibition, no consideration was given to the environmental impact of channelling in all these services. And Archigram failed to understand the ways in which technology was moving around them. Ivan Sutherland's key article (*The Ultimate Display*) that set the agenda for Virtual Reality was published in 1965, when the first ARPA network was already running. Miniaturisation was about to create the PC and the portable phone. Any rock or log will do to sit on to use a Powerbook.

This was not merely a wrong guess: Archigram were obsessed with hardware. That it is software that creates choices, that empowers the user, passed them by. The radical ferment stirred up by Archigram stimulated many students, and provoked a debate that cleared some of the stuffiness of Modernism from the air. But the ferment never distilled. Archigram remained lost in their plastic fishtank, plugged into a dated and greedy technology.

MARKINGS OF ORIGINATION

Architecture in Process. *Edited by James Steele. Academy Editions 1994. 144pp, 250 illustrations. £24.95 (hardback), £17.95 (paper).*

Reviewed by Bob Bigg

Architecture in Process sets out to chart the process by which architectural solutions are reached. We are told that the techniques used "range from the extremely unstructured and informal to the rigorous and definitive". However, one begins to wonder if this really means that for some of the projects a full set of images was supplied and for others just a selection of doodles that various architects had ready to hand. Having said that, the book does contain an interesting assortment of images from the likes of Morphosis, Moss and Hasegawa but it is only when covering Will Alsop's Cardiff Barage and Kisho Kurokawa's Wakayama Prefectural Museum that the "process" becomes apparent and one gets an opportunity to follow a project from inception to final, or near final, form. □

ADIEU, WORLD ARCHITECTURE

Pierre Vago became editor of the French bi-monthly l'Architecture d'Aujourd'hui *more than 60 years ago when he was in his early twenties. Ever since then he has been a shrewd commentator on the evolution of architecture and a tireless advocate of international cooperation. In April 1989 he contributed the first Polemic to the first issue of* World Architecture. *Now he pens his last. Adieu, Pierre Vago.*

For the seventh time, Interarch has just taken place in Sofia. These occasions are very different from official Congresses. They are open (without registration fee!) to any architect who believes that he or she has something interesting to say or to show, or who wants to listen to or participate in debates in which only architecture is under discussion. So there's nothing official about it, no delegates or representatives of constituent organisations, no national delegations. A few well-known guests, to open up the sometimes rowdy discussions; I haven't forgotten the violent oratorical duel between Bruno Zevi and some eminent partisan of post-Modernism, or Harry Seidler's passionate and exciting indictment of certain architectural fashions. Among others, this year saw Kurokawa give a fine exposition of his theories, and Gonzalez de Léon presented some of the projects he had recently completed (which brought him a well-deserved Grand Prix awarded by an international jury). Brian Spencer gave a masterly presentation on the development of Frank Lloyd Wright's work, and an overall view of the very uneven work carried out by those who claim to be his followers. A striking contrast: Randall Vosbeck's honest and realistic picture of what is actually being built in the United States, very different from the handful of exceptional projects we see in all the magazines.

In accordance with tradition, Interarch opened with the Ode to Joy from Beethoven's 9th Symphony, and some inevitable speeches, mercifully brief. In the galleries, there were exhibited recent projects sent in by those responsible for them. There is no selection: visitors are left to make up their own minds about the worth of the submissions. But the panoramic view offered by these hundreds of panels (which this year came from 26 countries) is always interesting. And the prizes awarded by the jury drew attention to a certain number of works considered worthy of note. This year, apart from the one awarded to Gonzalez de Léon for his work as a whole, the jury awarded two prizes, one for the Bonn Parliament building designed by Günter Behnisch, and the other for Richard Meier's Getty Center. But other, less well-known architects were also commended, such as Alberto Campo Baesa, who showed two fine projects in Cadiz, the German partnership of Geier and Geier, the Brazilian Fabio Penteado, and the young Vietnamese architect, Le Thi Kim Dung, who was honoured for the second time, on this occasion for a very beautiful design for development of the banks of a lake in Hanoi. In total, more than 450 architects took part in the exhibition, which also included the presentation for the first time of the prize-winning projects from a recent competition for a model "ecological town" to be built on the coast of the Black Sea, a selection of work by 20 young architects and a fine series of drawings of Latin-American squares by Gonzales Claveràn, a symbiosis of the pre-Columbian and Iberian traditions.

At the same time as the Triennale, there also took place the three-yearly meeting of the Assembly of the International Academy of Architecture. Set up seven years ago, it consists of 58 members invited by their peers. It has nothing in common with, is not at all comparable with, the profession's "official" international representative organisations. (Any idea of conflict, competition or confusion is simply out of place.) It has a lightweight organisational structure, a Council of between seven and nine members, a small budget (happily balanced), and above all, plenty of activities.

Among these, one of the most lively is the organisation of Workshops of young architects. These bring together 30 to 40 architects of less than 40 years of age, from different countries – in theory, never more than two or three from the same country – who work together on some "real" topic for two or three weeks, in teams of four or five. The issue is not competition, but the confrontation of ideas, conceptions, methodologies, ways of seeing and resolving a problem. There are neither prizes nor rankings, and participation is free (including board and lodging. Many of these workshops take place in the – ideal – setting of the old monastery of Santo Kyriko, in the Rhodope Mountains, rebuilt and fitted out by the Academy as a centre for creative activity; but Workshops have also been held in France, Russia, Ukraine and Cyprus. The workshop recently held with 60 young architects in Japan was a particular success. Others are being planned.

The Academy's Regional Centres are also beginning to become active. The Moscow Centre has organised a very impressive programme. The Istanbul Centre is planning a series of events beginning next Spring, to be concluded in 1996 within the context of the "Habitat II" conference. I don't want to bore the reader with a long list, but it is good to know that the Academy is doing its work, quietly but effectively, and as constructively as possible.

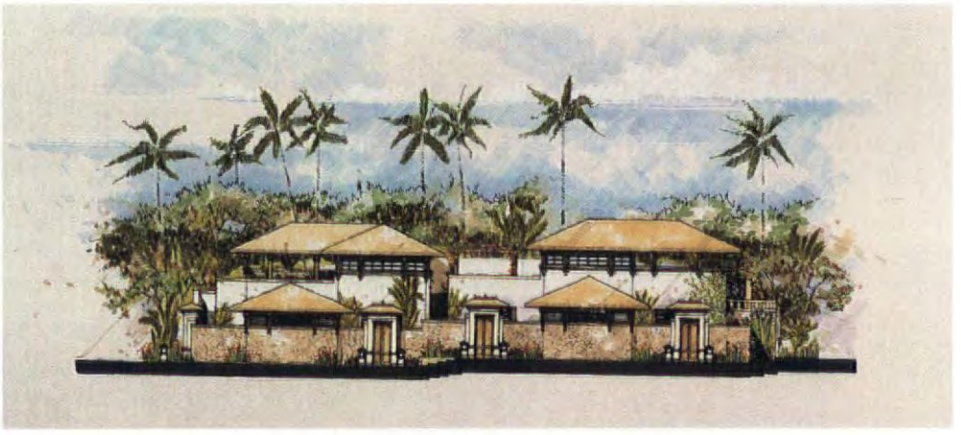
It is interesting to recall that this journal was established a little more than five years ago, as a result of a joint initiative by the Academy and a courageous publisher. It has made its way, developing as it goes, changing in response to the needs of its readership, while still maintaining its standards of quality and the international perspective that justifies its title. I have been happy to have been able to make, from the beginning, my own modest contribution. With this article, this column – though not my sympathies – will come to an end.

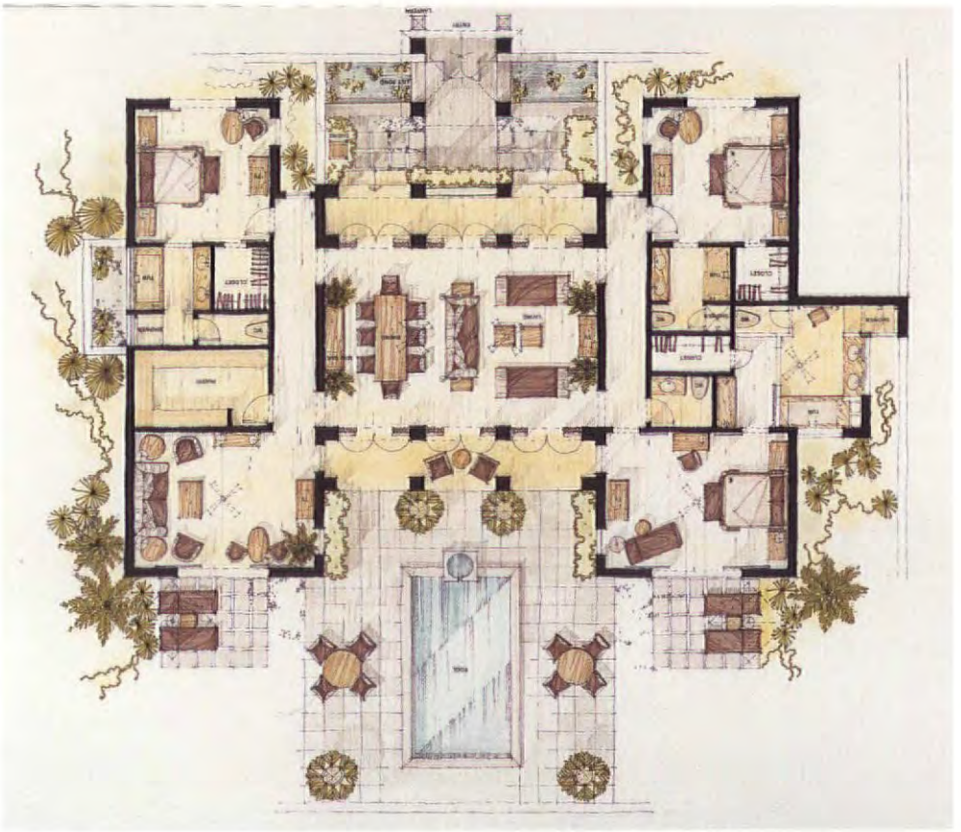
Good luck, *World Architecture*! □

AN HOTEL IN BALI

People who go to Indonesia go to Bali, and now Bali itself is leaping into the mainstream of the late twentieth century with tourist developments that will soon transform and intensify its traditional environment. Los Angeles architects James Northcutt Associates describe how their project for a timeshare hotel is leading the way.

Typical condominium and plan (below) show use of traditional forms





The design concept envisioned by James Northcutt Associates for a tropical luxury resort for the Nusa Dua area of Bali can be best described by one word: sensuous.

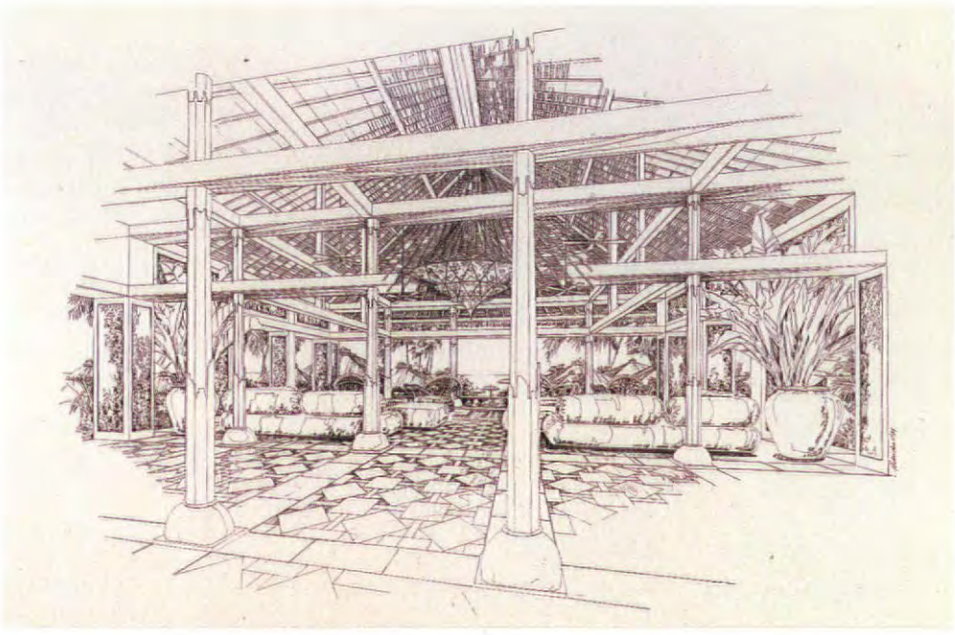
The interior design of such a resort is an important part of the synergistic melding of natural setting, architecture, and human habitation, all contributing to each guest's personal celebration of the senses revived in such a magical destination.

The guest's entire experience should be a thoroughly Balinese experience, evocative of the legendary spiritual harmony with nature perfected in Balinese life. There should be no distraction to the guest from this ideal and all elements of both natural and man-made environment must work to support it.

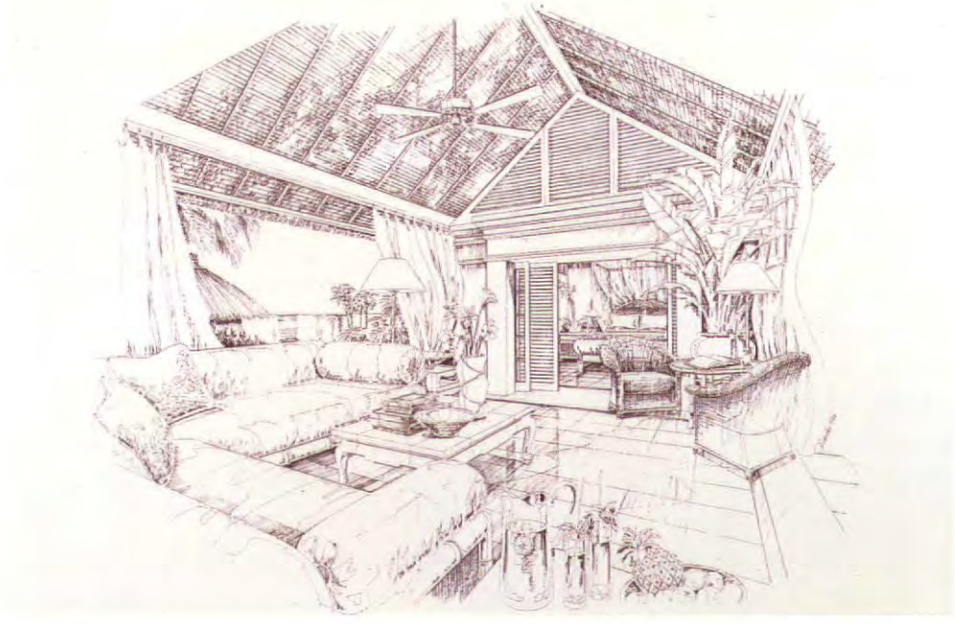
Therefore, architecture should be of the most culturally indigenous nature, capitalising on general island themes, with a Balinese "correctness." The built environment should be subservient to the natural setting, making minimal visual impact in the landscape. Interiors should further that concept by enforcing the discretion of almost invisible spaces which act as protected places from which to perceive the natural setting outside. The guest should be more aware of the progression of daylight to dusk, the rustling of tropical foliage, or the silent lapping of mosquito netting in the breeze, than he is of the room in which he sits to perceive these joys.

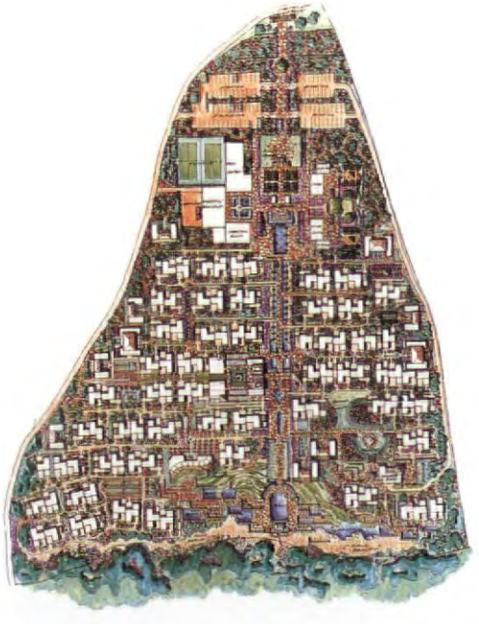
Design should be used to assist in ritualising simple acts such as bathing, napping or reading, elevating them to elegant pursuits of intimate celebration. A spa facility should add both mental and spiritual renewal as well.

The necessary act of eating should in this



Interior perspective sketches (left) show feel of public and private areas. Rear elevation (above) hints at tightly integrated plan (below)





place be woven into a multi-faceted dining experience allowing the guest many options for meals taken in fantasy settings - from private meals in one's bed or on one's terrace, to romantic dalliances in a private pavilion, or group gatherings by torchlight at poolside, etc., etc...

As the body can be renewed through a harmonious and integrated environment supportive of both privacy and human interaction, so too the spirit should be refreshed and stimulated through reflection on artworks singularly displayed within the natural setting. Such artworks, both traditional and contemporary, should be culturally oriented - celebrating the cultural traditions which grace Balinese life. Emphasis should be placed on contemporary objects of art by local artists and craftsmen who can poetically interpret their island experience for the nurturing of visitors.

The many references made heretofore in this statement to "natural settings", "simplicity", etc., may lead one to the assumption that our goal is a rustic or crude setting. On the contrary, our aim is quite the opposite: Webster's definition of the word "elegance" characterises something that is elegant or possessing "...dignified gracefulness or restrained beauty of style...precision, neatness, and simplicity".

The setting we envision is elegant by this definition as combining humanly inspired detail perfected in harmony with a perfectly pristine natural world, a world where human beings interact rather than intrude. A world wherein distraction is removed in order to allow the revelation of simple beauties. A world which is above all, "sensuous". □

HYLAR AWARD 1994

HYLAR INTERNATIONAL AWARD

FOCUS ON COLOUR-COATED EXTERNAL SURFACES

The Hylar International Award was launched in February 1994 to provide an international stage for buildings achieving a striking identity based on the use of long-life PVDF/PVF2-coated steel or aluminium exterior components, such as cladding and roofing.

The Award sought in particular to highlight projects utilising exterior colour coatings to create or to contribute to the total identity of a building, by using them to accentuate or modify form, to delineate functional areas or to adapt and contrast a building with its surroundings.

The competition attracted a large number of high-quality entries from all over the world, with projects submitted from Australia, Austria, Canada, France, Israel, Italy, Japan, Luxembourg, the Netherlands, Singapore, Taiwan, the United Arab Emirates, the United Kingdom and the United States. Entries were accepted directly from architects or indirectly by nomination from profilers and contractors.

The entries were judged in San Francisco at the end of the summer, by an international jury panel of six experts in the field under the chairmanship of Peter Cook, Bartlett Professor of Architecture at University College, London. Other jury members were Michael Davies (UK), Massimiliano Fuksas (Italy), Itsuko Hasegawa (Japan), Michael Rotondi (USA), and Ken Yeang (Malaysia).

The jury looked for entries which demonstrated an optimum combination of aesthetics and functionality, and made awards to winners and runners-up in four different categories of building: monumental, commercial, industrial and residential.

The Hylar International Award is sponsored by Ausimont, a world class manufacturer of advanced fluorochemicals for the construction, automotive and chemical industries and the largest worldwide producer of PVDF resins under the HYLAR 5000 brand name. These resins are incorporated by many leading paint manufacturers worldwide in their own proprietary range of colour coatings, from which architects can make their own selection. These coatings are then specified to manufacturers and suppliers of external systems and extrusions.

PVDF ARCHITECTURAL COATINGS FOR COLOUR FIDELITY & DURABILITY

PVDF polyvinylidene fluoride resin offers the simultaneous advantages of colour fidelity and long-life durability to provide the highest performance coatings for external surfaces of architectural metal.

A unique molecular structure, based on the strength of the carbon-fluorine bond, makes the coatings the most weather-resistant finishes available under all extremes of climatic condition. They are highly resistant to UV radiation, airborne pollutants, salt, wind-driven sand and chemicals.

the jury

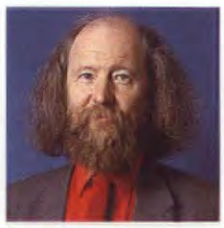
SIX LEADING INTERNATIONAL EXPONENTS OF THE ROLE OF COLOUR IN BUILDING IDENTITY

The 1994 Hylar International Award was judged by a jury featuring six leading names in world architecture, representing a unique combination of talent and a truly international outlook. They combine diverse cultural backgrounds and distinct philosophies, influences, and practical styles of implementation. Each of the jury members is both an accomplished and respected practitioner of architecture, as well as a well-known lecturer and theoriser worldwide. The jury's deliberations were chaired by Peter Cook.

Peter Cook

is a professor and head of the Bartlett School of Architecture at University College, London. He formed the Archigram Group in 1961, and in 1976 established a partnership with Christine Hawley which has been responsible for such projects as the Trondheim City Library, the World Trade Centre in Berlin, and the Expo '90 pavilion in Osaka, Japan.

"Colour is used to draw attention to special parts of a building, and to add to the notion of movement and placement. Colour is able to break out, and isolate an object within a particular context. Objects are artefacts that can be used with a purpose, and leant upon by their creator to convey an idea. Colour codes underscore the graphics and emphasise the shapes and sizes of windows, doors or panels within the overall structure. Even a limited palette of colours gives an immediate idea of the hierarchical position of different sections of a building. Choice of material reflects the physiognomy of the building and its cultural context. The material makes statements about a building's origin and symbolic quality, and about how it might evolve in its new environment, bending, hurting, flaking and changing."



Michael Davies

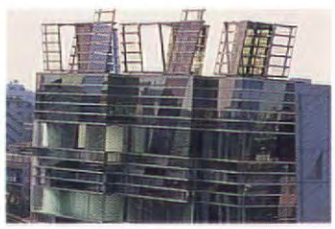
is a founder director of Richard Rogers Architects Ltd. A graduate of the AA and UCLA, he co-founded Chrysalis in Los Angeles in 1969. With Richard Rogers he has worked on such prestigious buildings as the Pompidou Centre, the Institute for Coordination in Acoustics and Music, the Centre Beaubourg in Paris and the Lloyds Insurance headquarters in London.

"Colour is celebrated as an integral part of architecture. We can look at colours for their elemental or compositional value, or just in terms of pure joy. A construction can come to life with the simple use of just a few colours, judiciously placed. Colour can reinforce the shape of a building within its setting. It can accentuate or attenuate borders, edges, proximities, forms. A surface may be broken up by multi-coloured elements deliberately abstracting the form of a building in its setting. In the iconographic use of colour, the shapes or details are enhanced or given dominance by their colouring. Light can also act with colours to produce special effects, highlighting gradation, tonal contrast, subtle blends, visual release, chromatic scintillation or direct impact. The role of colour is to add value to the objects of our everyday lives."

Massimiliano Fuksas

is an architect and town planner, with offices in Rome and Paris. He has carried out visiting professorships in Stuttgart and New York, and in 25 years of practice he has designed nearly 40 executed projects in Italy, France and Germany, with some 20 more under construction or undergoing feasibility studies.

"Light changes colours. Architects have to consider what lighting will be present: daylight, interior roomlight, electric lights, and then choose materials which provide the right effects. We want enamelled materials which catch the light and which can brighten the materials we use. We are seeking a sense of dematerialization, of vibration of materials, and this can be achieved with colours of the right tone. Outdoor colours need to represent an especially wide range of tones. The new mood in architectural design demands new colours, not standard primary colours. Evidently there needs to be further research and collaboration with the chemical industry."



Itsuko Hasegawa

graduated from the Kanto Gakuin University in 1964 and established her own atelier in 1979. She has won numerous major architectural awards and in 1992 became visiting professor at the Harvard University Graduate School of Design.

"I express a new freedom reflecting a 'discreet periodicity' in my architectural design, since I feel that Japanese post-Modern society is entering a new phase of 'bio-history'. Today, I use various contrasting colours, based on artificial pigments, alongside traditional colours based on natural pigments which create a deep and complex colour spectrum. I apply these to exterior facades as well as to simple volumetric shapes. I have recently incorporated screens to play with the effects of light and shade and to combine new and traditional materials on floors, walls and ceiling planes. I am influenced by both the richness and mystery of life and also by the oriental thought which allows both rationalism and irrationalism and generic and specific solutions to coexist."

Ken Yeang

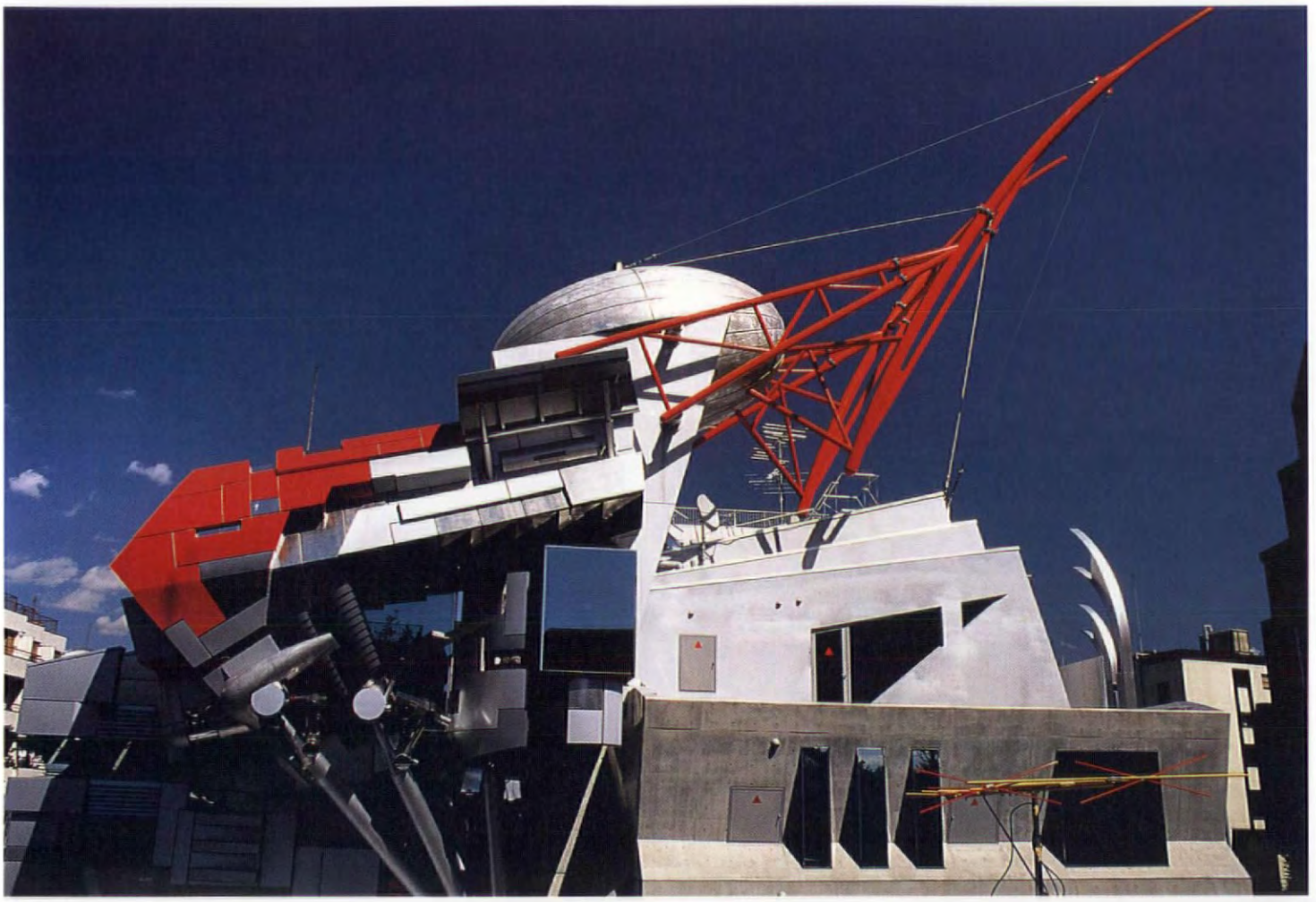
is an architect practising in Asia, who graduated from the Architectural Association School and Cambridge University. In 1976 he co-founded T.R.Hamzah & Yeang, a leading practice in Kuala Lumpur which has helped to create a formidable reputation for Malaysian architects. His recent exhibition in Berlin on bioclimatic skyscrapers underlines his interest in the field.

"Colours reach people differently according to their settings and geography. They can both reflect and influence moods: warm colours can stimulate well-being, while cool colours can calm or depress. I find dark colours imposing and uncomfortable. I sometimes use colours to draw attention to less obvious parts of our skyscrapers, sometimes to show layering, intersecting and superimposition, and always in relation to the sky colour and condition of the locality and its climate. As light in the atmosphere changes, so do different materials, colours and tones. Vegetation is also a crucial building material. Plants and greenery in buildings can provide another range of natural colours, softening the environment while contributing to a cooler and healthier micro-climate."

Michael Rotondi

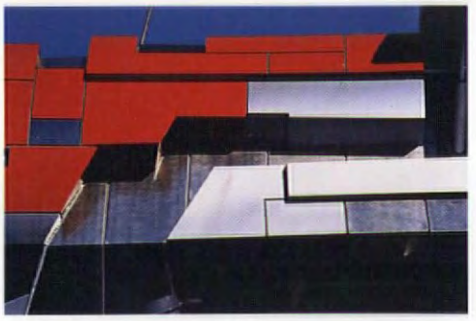
is a practising architect and educator who became faculty chairman of the Southern California Institute of Architecture (SCI-ARC) in 1980. He founded Morphosis in Santa Monica in 1976, and has won 35 major awards in the last 17 years. In 1992 he was the co-recipient of the American Academy and Institute of Arts and Letters Award in Architecture.

"Over the last four years my increasing knowledge of colour use systems has changed the way in which I use colour on projects. In recent history, colour has been used as a visual system tied to the intellect. In longer term history, colour has been part of a much broader system of knowledge and experience based on mythology. Colour is tied to spiritual practice as part of everyday life. Colour is the evidence of energy being present in both the natural and physical world, as well as the spiritual world. Indigenous societies make no distinction between the two. Today, all practices are merging into one: symbolic, practical, psychological and spiritual. One of my current projects with American Indians is teaching me how to broaden my perceptions of the meaning of colour, and its role in helping to integrate all modes of experience."



Aoyama Technical College, Shibuya, Tokyo, Japan

Architect:	Makoto Sei Watanabe, Sumida, Tokyo
Paint company:	Dainippon Ink & Chemicals
Paint:	DIC Fluor S
Panel profiler:	Fuji Sash, Tokyo

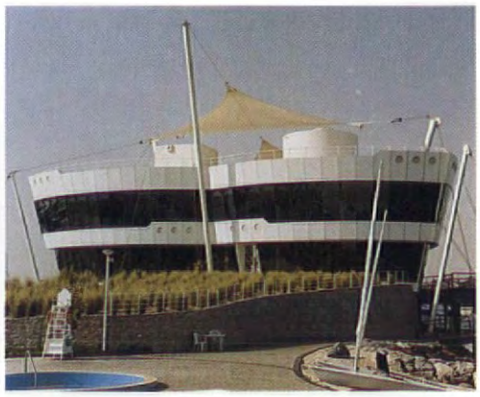


Set in the sprawling and chaotic suburb of Shibuya, the Aoyama Technical College was designed on the principle of self-organisation and organic growth, in which each building somehow responds to its neighbours and to the overall urban milieu. While this principle exists, it tends to be unconscious: the college therefore aims to discover practical principles for establishing a new order for Tokyo's architecture. Its many individual parts - columns, water tanks, lightning rods, joints - seemingly give it its own momentum for harmonious, coordinated growth. The tolerance of chaos brings about a new order.

Dubai Creek Golf & Yacht Club, United Arab Emirates

Architect:	Godwin Austen Johnson, Dubai
Paint company:	PPG
Paint:	Duranar
Panel profiler:	Aluminium & Light Industries Co., Sharjah

The clubhouse was conceived to reflect aspects of Dubai's heritage. Inspired by the traditional lateen-rigged Arab dhow under full sail, the project takes advantage of the club's location on the banks of a natural waterway. Seen from any angle, the building echoes the lines of a wind-filled sail. The choice of colour for the external faces of the main aluminium window frames was based upon the overall philosophy of the concrete sails appearing to float above the blue of the sea and the sky.



Dwelling, Schutterstraat, Delft, Netherlands

Architect:	Cepezed BV, Delft
Paint company:	Becker
Paint:	Beckrifluor
Panel profiler:	Woluega Panelen BV, Woluega

Schutterstraat is an experiment designed to recreate the atmosphere of traditional street facades in Dutch towns, which were formed by similar but non-identical gables. Here, each plot was developed by a private client using his own architect, chosen from an approved shortlist. The prefabricated design of the house fits in with traditional brick facades, and retains the scale and detail. The frame comprises hot rolled steel profiles and tubes, the floors are steel/anhydrite and the cladding features sandwich panels and glass.

Immeuble polyfonctionnel, U.A.P. - AGF, Suresnes, France

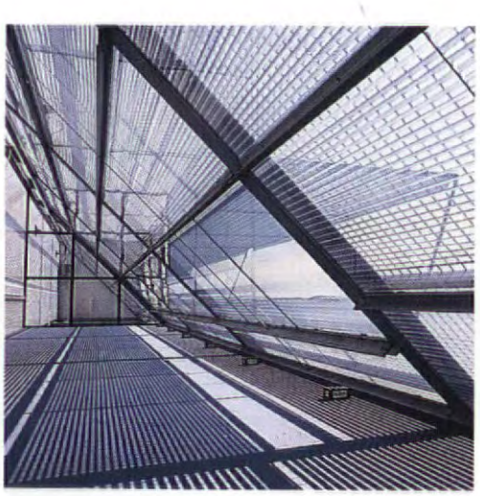
Architect:	Dubosc-Landowski, Issy-Les-Moulineaux
Paint company:	PPG
Paint:	Duranar
Panel profiler:	Haironville SA

This multifunctional building, which consists of accommodation, shops, offices and underground car parks, makes extensive use of metal in its construction. The use of the metallic skeletal structure allows the building to be adapted to take account of future evolution in its use. The arched roof elements contribute to the comfort and space of the upper floors, while the exterior is designed to give rhythm to the facades.

Pavilion, Hoek van Holland, Netherlands

Architect:	Cepezed BV, Delft
Paint company:	Becker
Paint:	Beckrifluor
Panel profiler:	J.J.Krens BV, Emmeloord

For the entrance to the port of Rotterdam, a large waterway centre is planned which will contain shops, dwellings, a hotel and a marina. The town's council therefore commissioned the Pavilion to house a 5-year exhibition about the radar guidance system, a restaurant and a small office for the planning department. The building serves as both a wind-screen and viewing theatre, as well as a point of recognition for shipping. The frame is in galvanised steel with glazed parts glued onto the steel. The diagonally placed steel grids serve as sun- and wind-screens without impeding the panorama.



Gare en barrière du Bignon, France

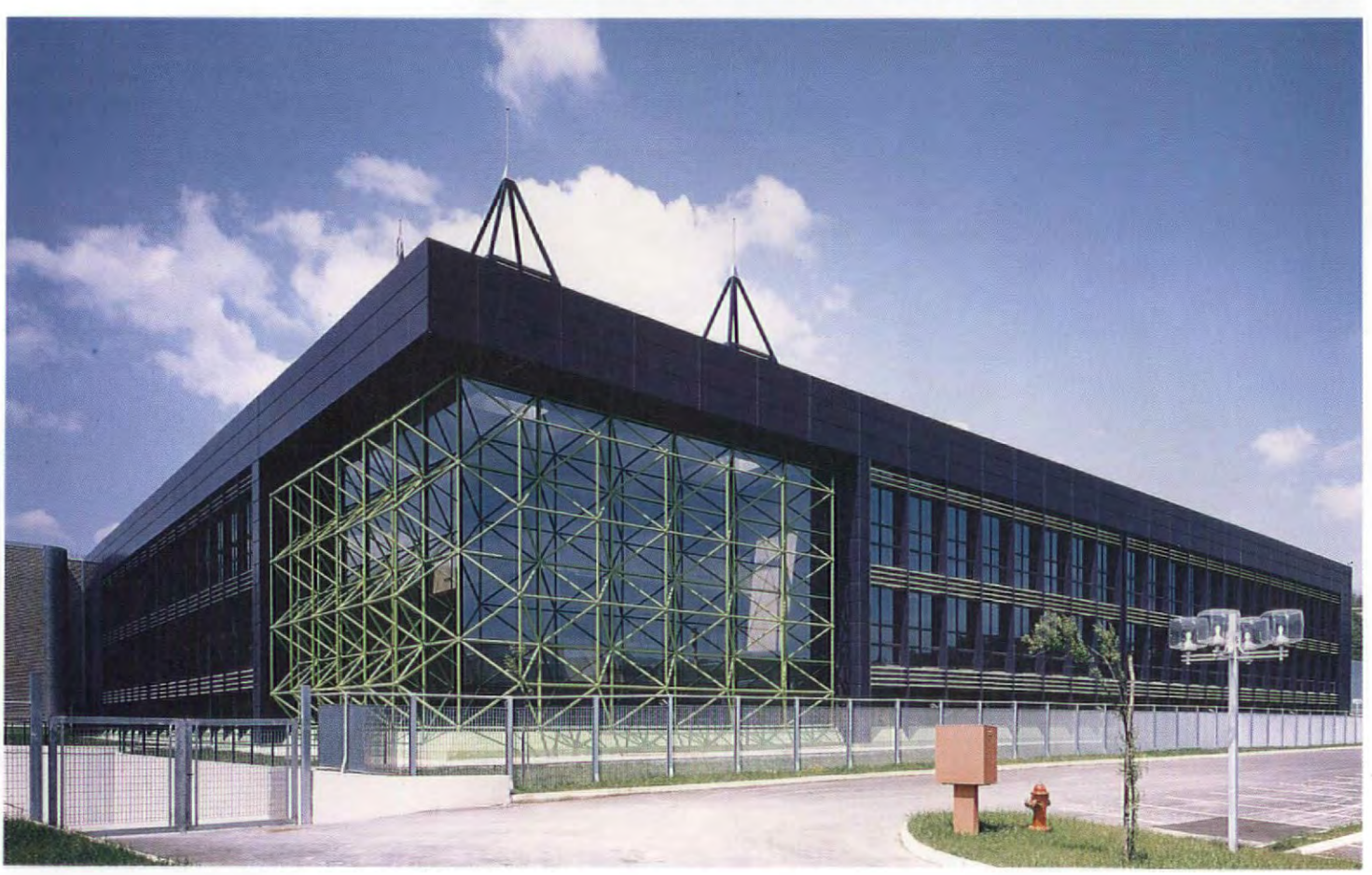
Architect:	SCPA Beguin et Macchini, Paris
Paint company:	PPG
Paint:	Duranar Light blue
Panel profiler:	Pechiney Batiment Coulommiers

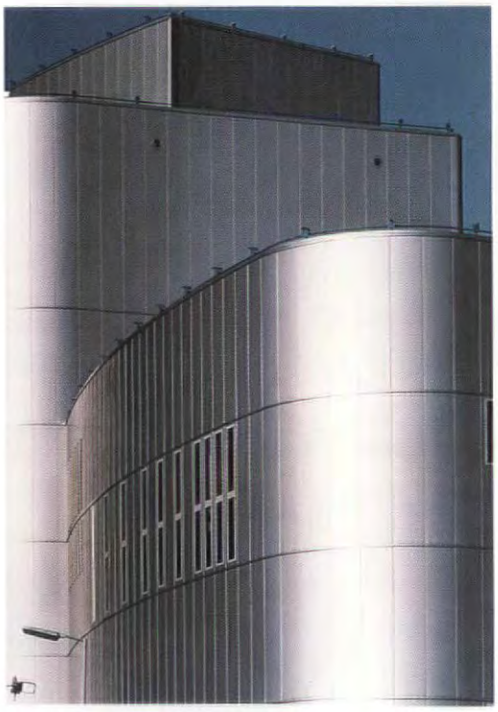
The Bignon toll booth is located on the Nantes-Niort highway. For durability and ease of maintenance, aluminium was chosen for the canopy and the building, which was conceived as a modular construction. Blue-grey paint was chosen for the frames and panels as well as for all of the metallic coatings. The paint's metallic reflection was in harmony with the oceanic character of the area, with the closeness of the sea and the reflection of sky and clouds. The paint also offers excellent resistance to oxidation due to saline corrosion, and harmful road chemicals.

Centro per le Tecnologie Informatiche e la Comunicazione, Prata, Italy

Architect:	Raffaele Troncone Architetto, Avellino
Paint company:	PPG
Paint:	Duranar
Panel profiler:	Buiatti SpA, Paderno Dugnano

The centre comprises an R&D department with 350 employees. There are three main buildings, covering production, research and technology. The building was conceived as a university campus, with terraces, green spaces, fountains and a strong correlation between external and internal visual aspects. The use of colour in the external aluminium cladding panels reflects the colours of the company's logo, with dark blue panelling offset against the greenery of the surrounding spaces.





Flue-gas Cleaner, AVI Brielselaan, Rotterdam, Netherlands

Architect:	Ingenieurs en Architectenbureau G.W. Rotterdam
Paint company:	Mehnert & Veeck
Paint:	Hoesch Pladur 3-layer
Panel profiler:	Hoesch Siegerlandwerke, Siegen

A central design feature of this gas-cleaning and water-purifying installation situated between Rotterdam harbour and the residential quarter, was the changing shape and character of shadows created by the revolving sunlight. Facades with rounded corners accentuate the incidence of light, while flat panels with their own pattern of shadows emphasise the overall effect. This treatment provides a dynamism for an otherwise vast and static building, while bringing it into harmony with its environment.

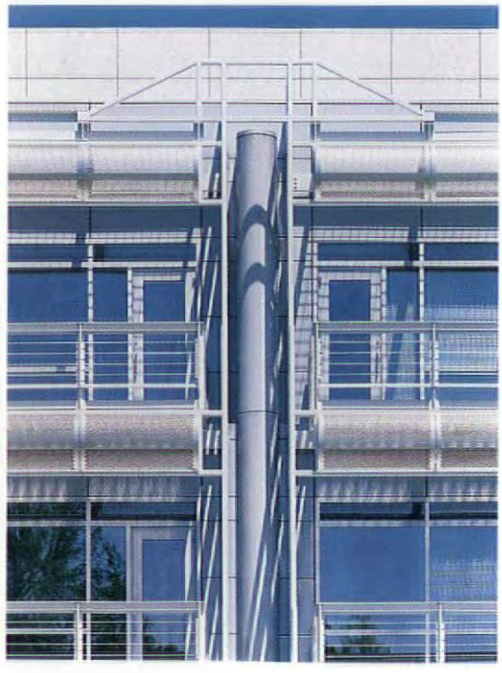
highly commended

commercial

World Headquarters, International Association of Machinists & Aerospace Workers, Upper Marlboro, Maryland, USA

Architect:	Al/Boggs, Washington
Paint company:	PPG
Paint:	Duranar XL
Panel profiler:	H.H.Robertson, Pittsburgh

This 125,000 square foot facility houses educational, legal, executive and administrative offices as well as specialised support services. The raw steel and aluminium of the building deliberately reflect aircraft components themselves: the building was designed as "a machine in the garden". The composite honeycomb core panels were chosen for their flat, non-"oil can" appearance and precision lamination. The metallic based paint finish gives a brilliant reflective quality and resists long-term environmental degradation.



industrial

Observatoire de l'Environnement, Station d'Epuration, Maisons Laffitte, France

Architect:	Brangier & Primard Arch. DPLG, Paris
Paint company:	Mehnert & Veeck
Paint:	PVDF
Panel profiler:	VAW Alu Form System, Bonn

The coating for the aluminium structure of the water purification centre at Achères had to be extremely resistant to the humidity and corrosive atmosphere of the site. The colour and brightness of the building evoke the contrasting effect between metal and stone and allow reflections of sun and clouds to play on the building, modifying its aspect during the course of the day.

industrial

British Gas Research Centre, Loughborough, UK

Architect:	DGI International & Leonard Manasseh Partnership
Paint company:	PPG
Paint:	Duranar
Panel profiler:	H.H.Robertson, South Wirral

The centre comprises five buildings covering 44 acres within a parkland site of 200 acres. The materials used reflect energy efficiency considerations, coupled with the need for longevity. The external appearances of each of the buildings reflect their functions. Industrial and experimental work, for instance, is best accommodated within lightly clad buildings, where the cladding can be changed or modified with relative ease.

ROOM *for* IDEAS

Excellent prospects for an individual outlook. The cleverly thougth-out VS-T2000 modular design dividing wall system permits individual adjustment to the purpose of the room. The partitions offer a timeless elegance, which results in functional design combined with optical charm. Moreover, even if the room function changes, economic and simple alternation and reuse means that the individuality of the system is retained.

VOEST-ALPINE INTERIOR SYSTEMS

Production and Sales Austria:
VOEST-ALPINE
Krems Finaltechnik
Ges.m.b.H.,
P.O. Box 42,
Schmidhüttenstraße 5,
A-3500 Krems,
Tel.: (0 27 32) 885-506, 540,
Fax: (0 27 32) 885-628

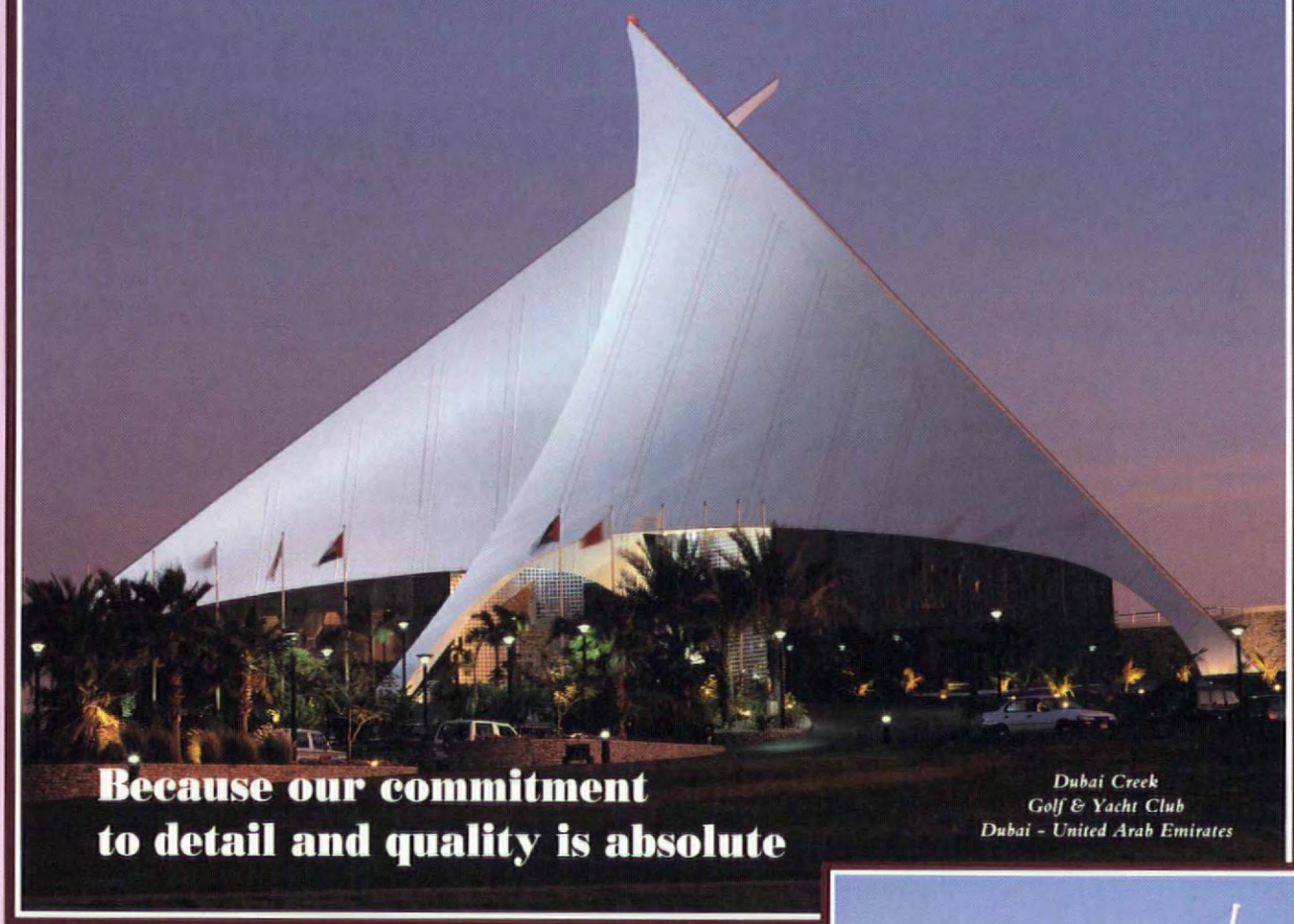
Sales Germany:
VOEST-ALPINE GmbH,
Sales Stuttgart:
Tel.: (0 711) 79 77 077,
Sales Berlin:
Tel.: (030) 66 45 094

Sales Switzerland:
VOEST-ALPINE AG,
Tel.: 01/318 65 50

Sales Spain:
VOEST-ALPINE
Española S.A.,
Tel.: 1/555 1927

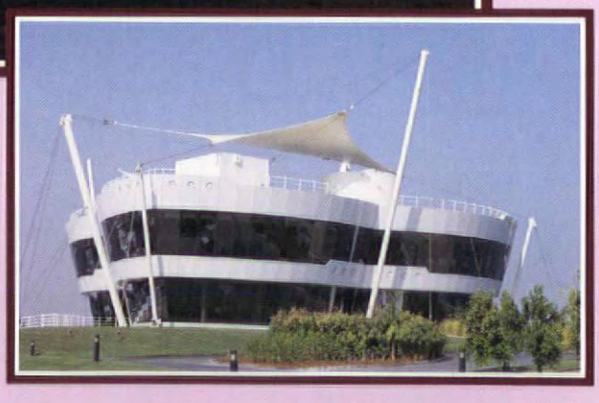
Sales France:
C.M.F.
Tel.: (1)4946082

Our achievements are monumental



Because our commitment to detail and quality is absolute

Dubai Creek
Golf & Yacht Club
Dubai - United Arab Emirates

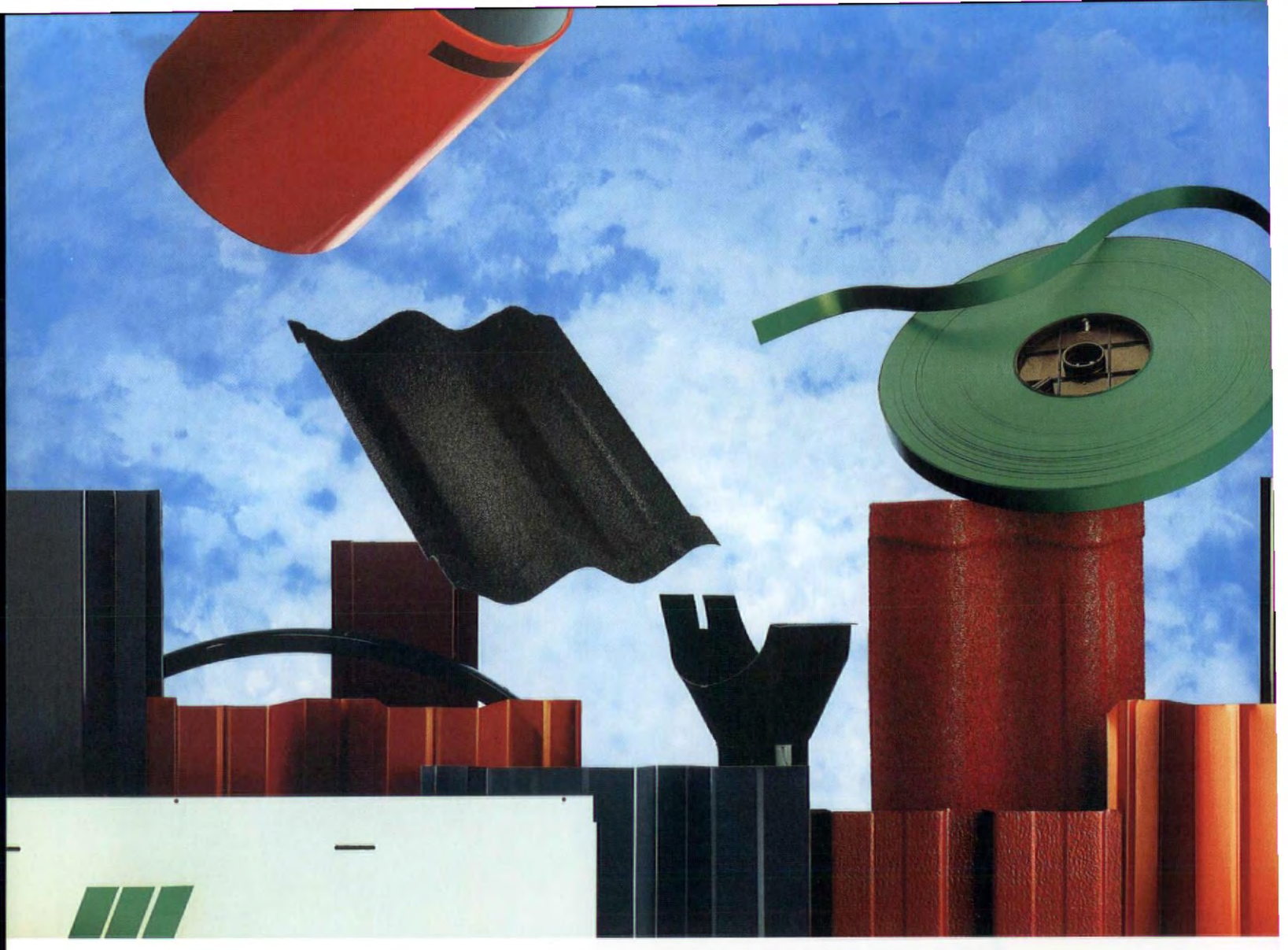


For close on two decades now, ALICO has been consolidating on its reputation for unrivalled quality in material standards, workmanship and delivery schedules .... not just in the U.A.E., but across the globe — in the U.K., Egypt, Saudi Arabia, Oman, Kuwait, Qatar, Bahrain, Pakistan, India, Nepal, Malaysia, Singapore and Brunei.
The tradition continues ....

ALICO *On Time - Every time*

PVDF or Powder Coated Curtain Walls ■ Structural Glazing ■ Aluminium Doors & Windows ■ Alicore Honeycomb Panels ■ Glass Balustrades in Stainless Steel, Brass and Aluminium

ALUMINIUM AND LIGHT INDUSTRIES CO. LTD.
H.O. P.O. Box 6011, Sharjah - U.A.E. Tel: +971 6 339178, +971 6 339186
Fax: +971 6 330750, Tlx: 68492 ALICO EM



Build the future with coil coated sheet!

Thanks to Becker Industrial Coatings' paint systems, industry can build much of today's indoor and outdoor environments from coil coated products. And contribute to a cleaner world, too!

Beckers | **Becker Industrial Coatings**

Sweden
Becker Industrifärg AB
Tel +46 8 590 790 00
Fax +46 8 591 169 49

England
Becker Industrial Coatings
Tel +44 514 864 221
Fax +44 514 860 389

Germany
Becker Industrielack GmbH
Tel +49 213 350 10
Fax +49 213 350 12 89

France
Becker Industrie SA
Tel +33 779 670 50
Fax +33 779 670 70

Italy
Tego Becker Srl
Tel +39 371 475 015
Fax +39 371 475 051

Colour in all confidence

You can now specify architectural coatings for exterior metal building components from a vast range of colours with the assurance that they will maintain their colour fidelity and film integrity for decades. Choose from custom colours, bright colours, metallic and mica effects.

PPG Duranar® coating systems meet or exceed all common specifications and are applied by approved coil or spray applicators to both steel and aluminium. Duranar® PVDF systems provide UV, corrosion, chemical and abrasion resistance.

Our advisory staff in every region of the world are ready to discuss colour scheme feasibility and provide technical advice for complete peace of mind.

Duranar® coating systems

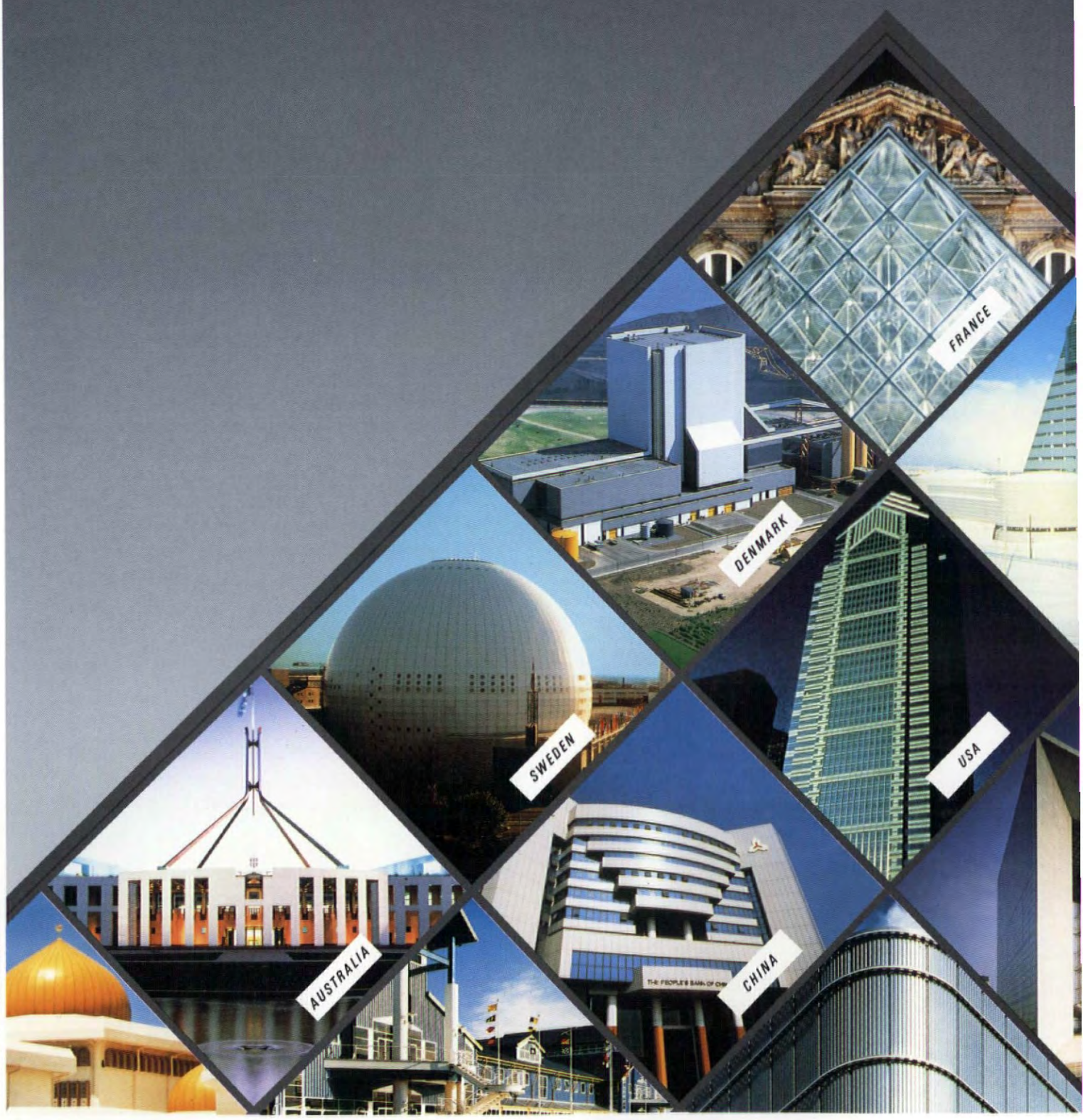
PPG

● **Europe** PPG Industries France B.P.6 Route d'Estreux 59990 Saultain France Phone: (33) 27 14 96 63 ● **USA** PPG Industries 125 Colfax Street Springdale, PA 15144 USA Phone: (412) 274 38 40 ● **Asia/Pacific** PPG Industries Asia/Pacific Ltd Takanawa Court, 5th Floor 13-1, Takanawa 3-chome Minato-Ku, Tokyo 108 Japan Phone: (81) 3 32 80 2851 ●

KYNAR 500®

PVF_2/PVDF

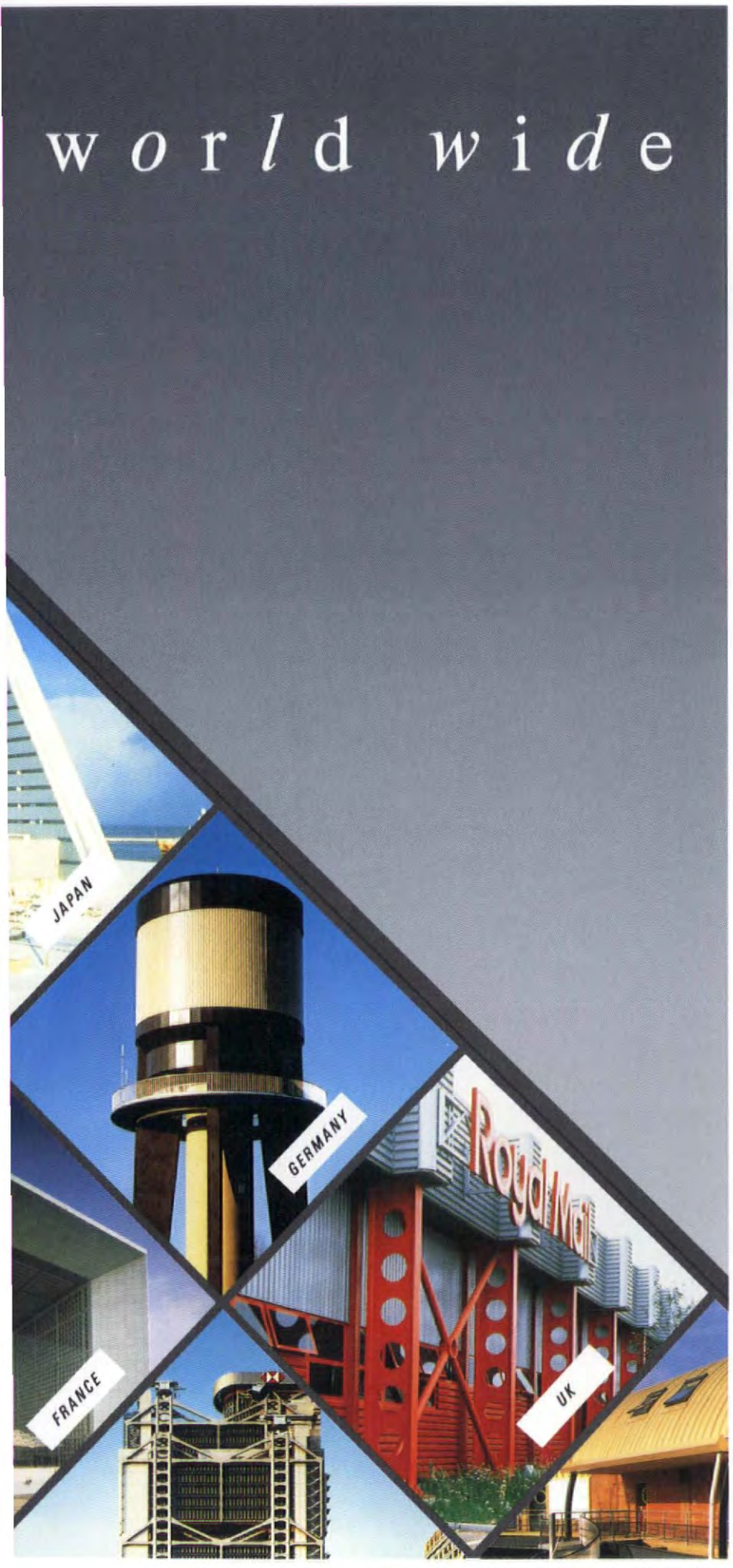
Freedom of design-



SAATCHI & SAATCHI GLOBAL COMMUNICATION

Elf Atochem UK Ltd - Colthrop Way - Thatcham - Newbury - Berkshire RG 13 4LW. Tel.: 0635 870000 - Fax: 0635 861212
Head Office: 4, cours Michelet - Cedex 42 - 92091 Paris-La Défense 10 (France) - Tel.: (1) 49 00 80 80 - Fax: (1) 49 00 83 96

for architectural coatings



Kynar 500® is a registered trademark of Elf Atochem

Since the earliest civilisations, architects have been inspired by the pyramid. As the world's leading Polyvinylidene Fluoride (PVF_2/PVDF) producer, Elf Atochem has also adopted the pyramid to promote KYNAR 500® architectural coatings.

The evolution of new design and construction methods have required the development of innovative and flexible building materials. Precoated metals and metallic structures provide architects with the ultimate design freedom. High performance KYNAR 500® based coatings have a proven world-wide experience of almost 30 years, offering lasting colours, long term durability and minimum maintenance. Irrespective of how adventurous your future projects may be, specify KYNAR 500® from Elf Atochem. You will be rewarded with a high quality result and complete Freedom of Design.

For further information, please contact

David Nightingale:

Telephone: 0635 870075

Fax: 0635 861212

elf atochem

ATO

THE KEY TO THE CHALLENGE

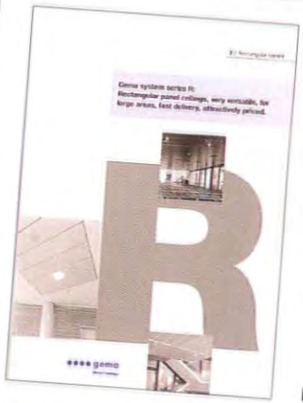
WORLD ARCHITECTURE

ADVERTISERS INDEX

READER REPLY		PAGE
1	Alico	127
2	Beckers Industrifarg ab	128
3	Bridgefield	24
4	Elf Atochem	130&131
5	Focchi Services srl	2&3
6	Forbo Krommenie bv	23
7	Fujitsu	16
8	Geberit Interna Ag.	6&7
9	Gema Metalldecken Ag.	19
10	Graphisoft	4&5
11	Grundfos a/s	14
12	Hoesch Building Systems	OBC
13	IEZ Ag.	8–10
14	John Patsilades	11
15	Junckers Industries a/s	IFC
16	Nippon Electric Glass	15
17	Niro Ceramic sa	Insert
18	Oikos srl.	17
19	Pillar Naco Industries Europe srl.	13
20	PPG	129
21	Rautaruukki	12
22	Reed Midem	20
23	Robers Leuchten	22
24	Tema Lamper a/s	21
25	Teräselementi Oy	18
26	Voest Alpine Final Tecnil Krems	126

Brochure Showcase

To obtain your free copies of the brochures shown on these pages, circle the appropriate numbers on the reader reply card.



Gema Rectangular Panel Metal Ceilings

Rectangular panel ceiling systems are eminently suitable for large ceiling areas, corridors or canopies. The individual panels can be conveniently removed without problems at any time, thus providing access to the ceiling cavity.

In renovation, interior finishing projects or in other cases which require the urgent installation of a metal ceiling, Gema can serve you very promptly with a line of standard products. For more detailed information call Gema Metal Ceilings, Switzerland, phone (+41) 71/326 326.

Reply number 40

Zoeftig & Company Ltd

From its beginnings in 1969, Zoeftig & Company is now firmly established as one of the most innovative and consistently high-quality furniture manufacturers in Britain today.

Design quality and awareness have always been trademarks at Zoeftig so it's natural that, at a time when industry is becoming more aware of its image and the public are demanding higher standards from its living environment, Zoeftig should be going from strength to strength.

Zoeftig can offer the customer the choice of either their existing range of furniture or any specific design requirements which can be put into manufacturing terms. The flexibility is there to supply a customer's needs from the smallest order to the largest contract.

Zoeftig now have a permanent showroom in Rotterdam in collaboration with the Dutch Company Hulst and an agent in Germany.

Reply number 44

MSP/Guy Linking

Architectural ties and supports from MSP McCalls Special Products, manufacturers of threaded bar systems, is now offering a range of small diameter stainless steel high tensile cable and tie rods.

The stainless steel tensioners and terminations were developed by Guy Linking Ltd and complement MSP's own range of Macalloy 460 tension components in larger diameters. They are designed to suit a variety of applications, including structural ties, hangers and bracing, glass curtain wall supports, membrane roof and canopy supports, and balustrading. A broad and comprehensive range of diameters of stainless steel cable and bar are available in various strengths.

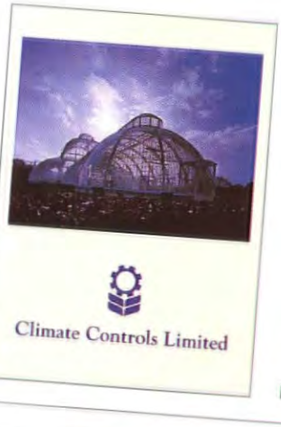
Reply number 41

Thorn Lighting

A new 260 page book from Thorn Lighting contains many examples of Thorn's approach to lighting people and places. Samples of recent installations and an exciting architectural product selection are set out in a way that makes your choice of design and lighting product as easy as possible.

Telephone or fax Thorn's Brochureline now: Tel: 081-967 6300 Fax: 081-967 6343

Reply number 45



Climate Controls Limited

Climate Controls specialise in the design, manufacture and installation of ventilation systems for use in naturally ventilated buildings. Our systems have been installed in a wide variety of architectural situations ranging from hot-houses to railway stations. To ensure optimum performance without compromise, all systems are individually tailored to meet the required design brief.

Reply number 42

Vescom B.V.

Vescom has introduced a new collection of vinyl wallcovering: collection 36 "TACOMA".

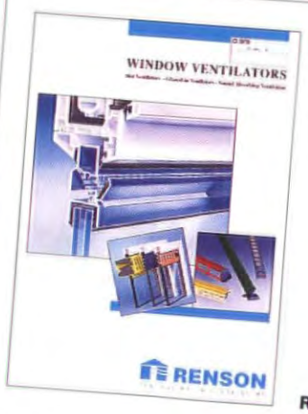
A truly project oriented, contract wallcovering offering excellent scope for colour co-ordination.

TACOMA is a fabric backed vinyl wallcovering on a 100% woven cotton backing. Width 130 cm.

Weight 350 g/m2. Fire rated to CLASS 1 and CLASS 0.

The TACOMA design is available in 68 colourways ex stock.

Reply number 46



Renson

Renson, Europe's leading manufacturer of natural ventilation products offer an extensive range of slot, glazed-in and sound absorbing ventilators. Contact Renson UK on Tel: 0788 546378.

Reply number 43

Thermoscreens Ltd

Air Curtain Protection

Thermoscreen air curtains have been developed specifically to improve customer comfort and environment in retail and commercial buildings. Thermoscreens provide a comprehensive range of warm and ambient air barriers to suit a wide variety of applications. Thermoscreen units can be fitted with electric heating or low pressure hot water coils. Our high performance range is particularly suited to industrial and commercial doorways, giving a high level of protection.

Reply number 47

For information on how your company can benefit from the World Architecture Brochure Showcase, telephone +44 (0) 71 383 5757

Hylar International Award 1994

Hoesch Building Systems:

We offer the complete solution. Hoesch building systems in roof, wall and ceiling set new standards for modern industrial architecture, as they combine efficient building methods with superior design. An example: the Roteb incineration plant, Rotterdam, Netherlands with Hoesch isowand integral®, our high-grade wall panel, got the Hylar International Award 1994.

Hoesch Siegerlandwerke GmbH is part of the Krupp-Hoesch Group, a worldwide family of companies employing some 75.000 people.

Hoesch commenced large scale production of the isowand insulated panel in 1968. Today, more than 25 million square metres of isowand wall and isodach roof panels have proven themselves on all types of buildings throughout the world. In the intervening 26 years, Hoesch have been at the forefront of research and development in the field of insulated panel design and manufacture.

The Product Range today includes:

Hoesch Clip Roof omega®
Colour effects

Hoesch Arched Roof
Architecture full of swing

Hoesch isodach integral®
High-grade roof panel

Hoesch isodach®
Insulated composite roof panels

Hoesch isowand integral®
High-grade insulated wall panels with concealed fixing

Hoesch isowand®
Standard insulated wall panels

Hoesch isowand NB; Hoesch isowand W 60/W 90
Insulated wall panels, non-combustible

Hoesch Profile TRP 200
Long-span deep profile

Hoesch Liner Tray
The universal wall system

Hoesch Trapezoidal Profiles
Wide range roof and wall profiles

Please contact:
Hoesch Siegerlandwerke GmbH
Geisweider Straße 13, D-57078 Siegen, Germany
Telefon (0271) 808-1371, Telefax (0271) 808-1399

HOESCH SIEGERLANDWERKE