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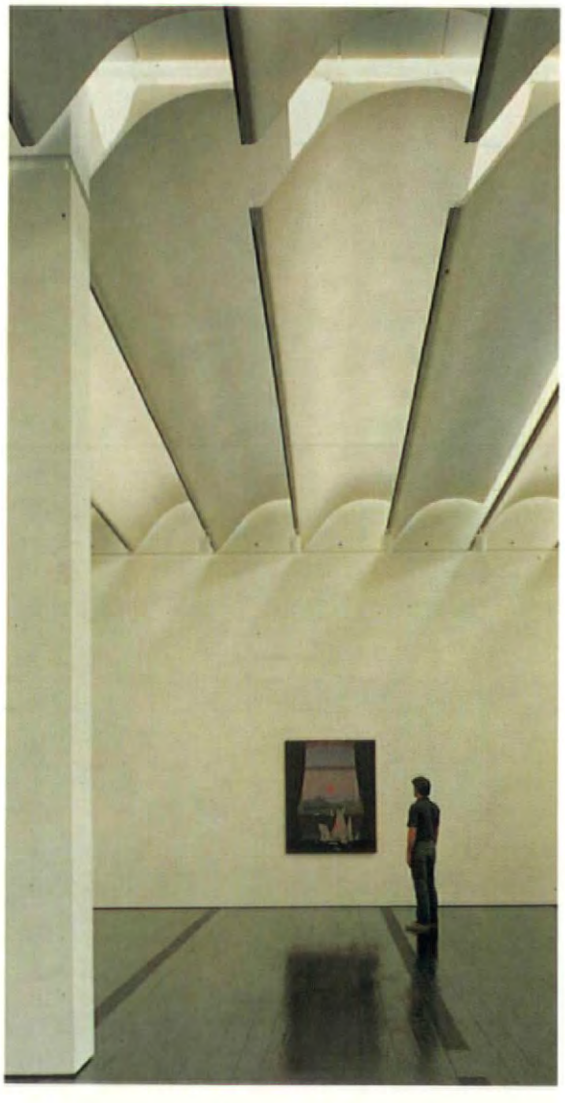

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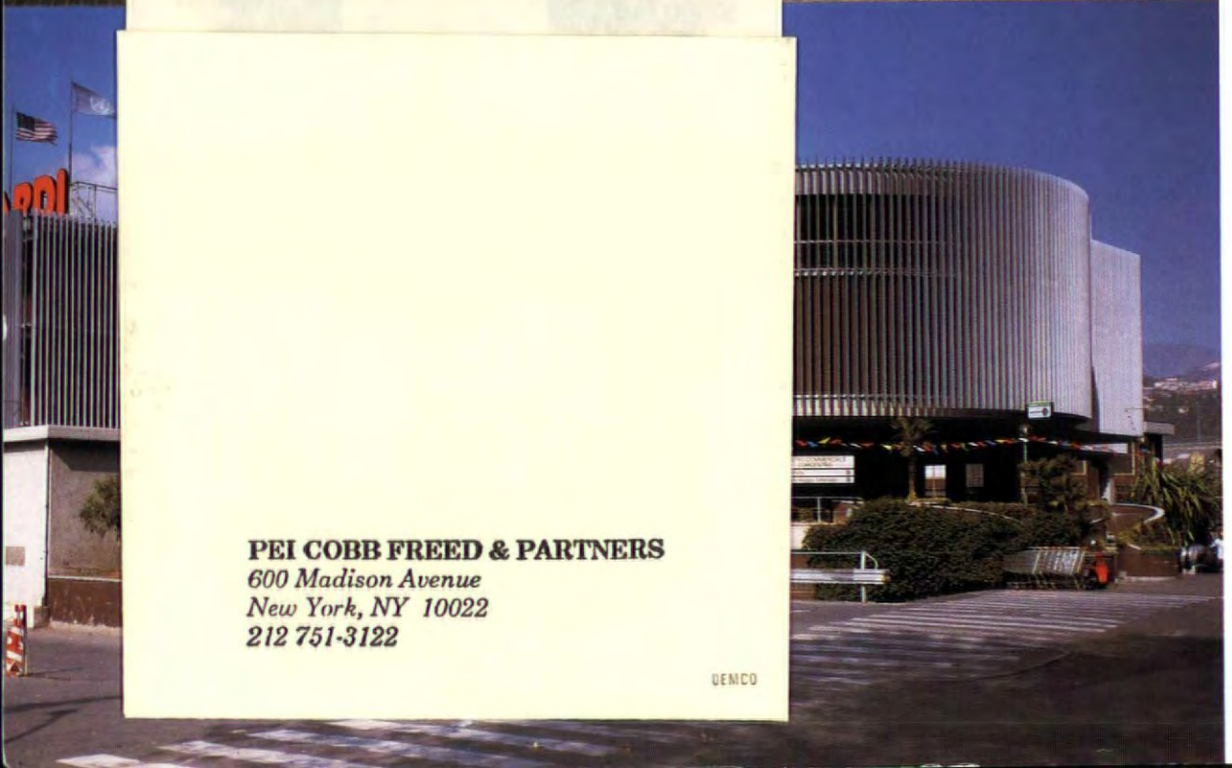

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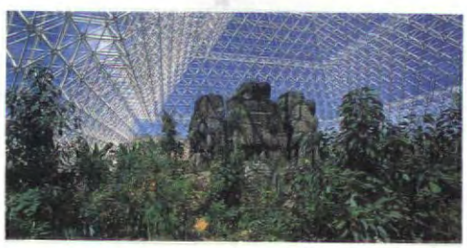

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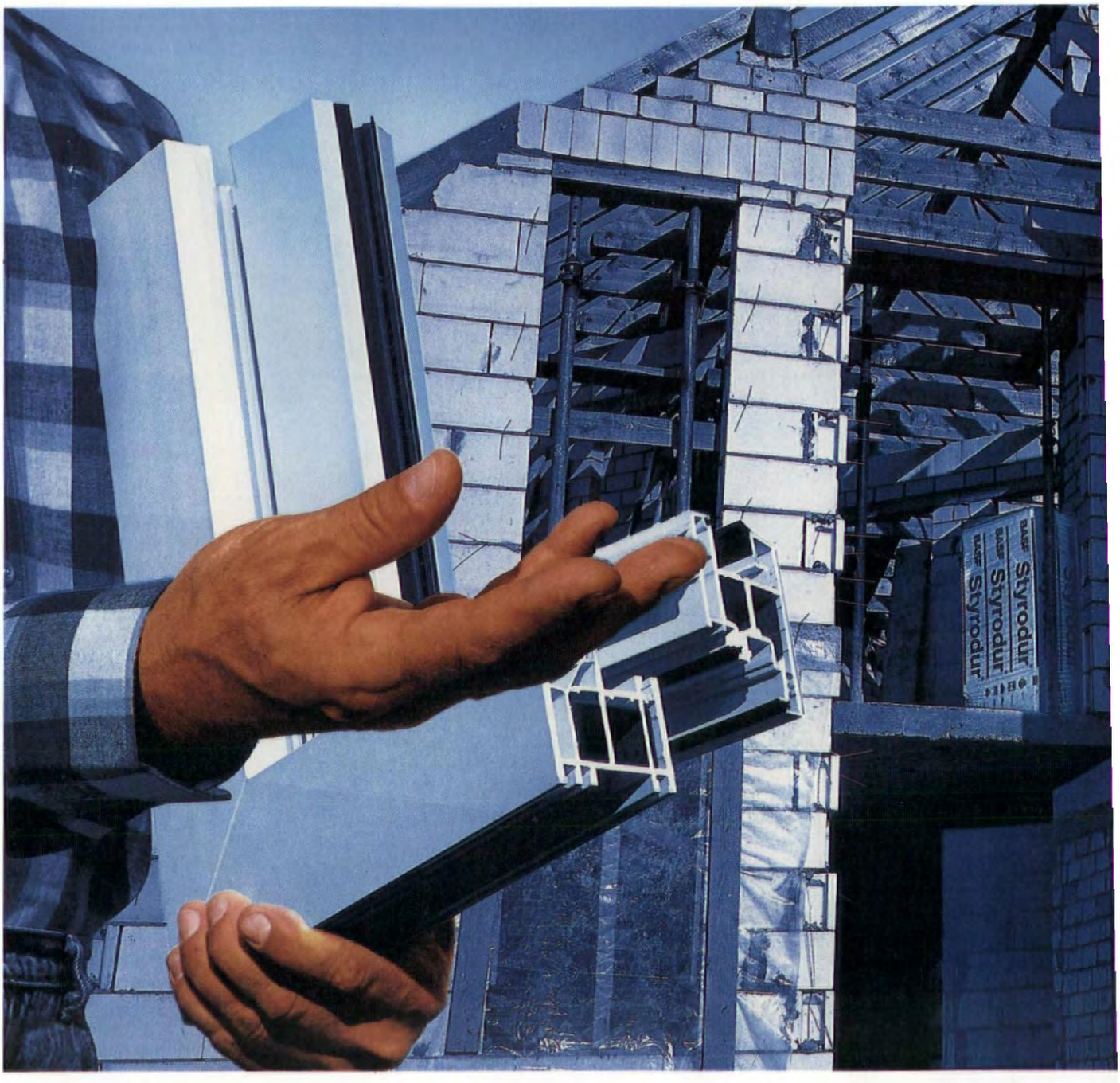

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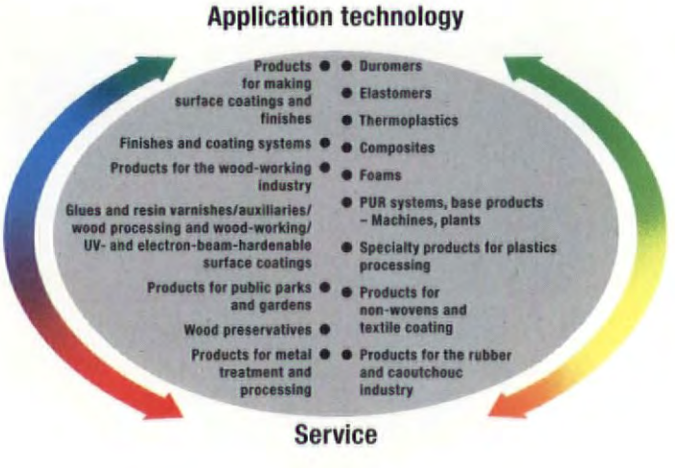

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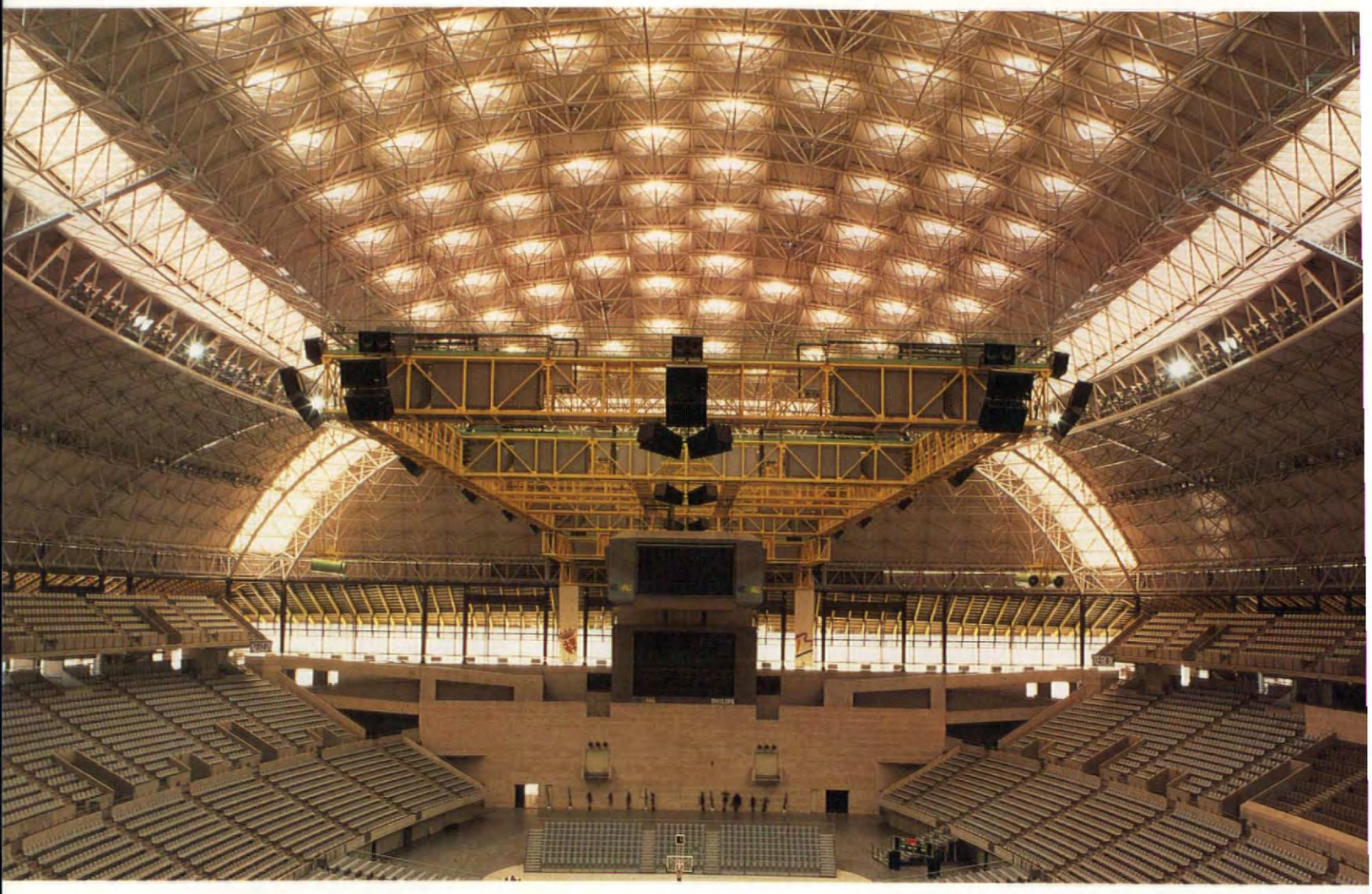

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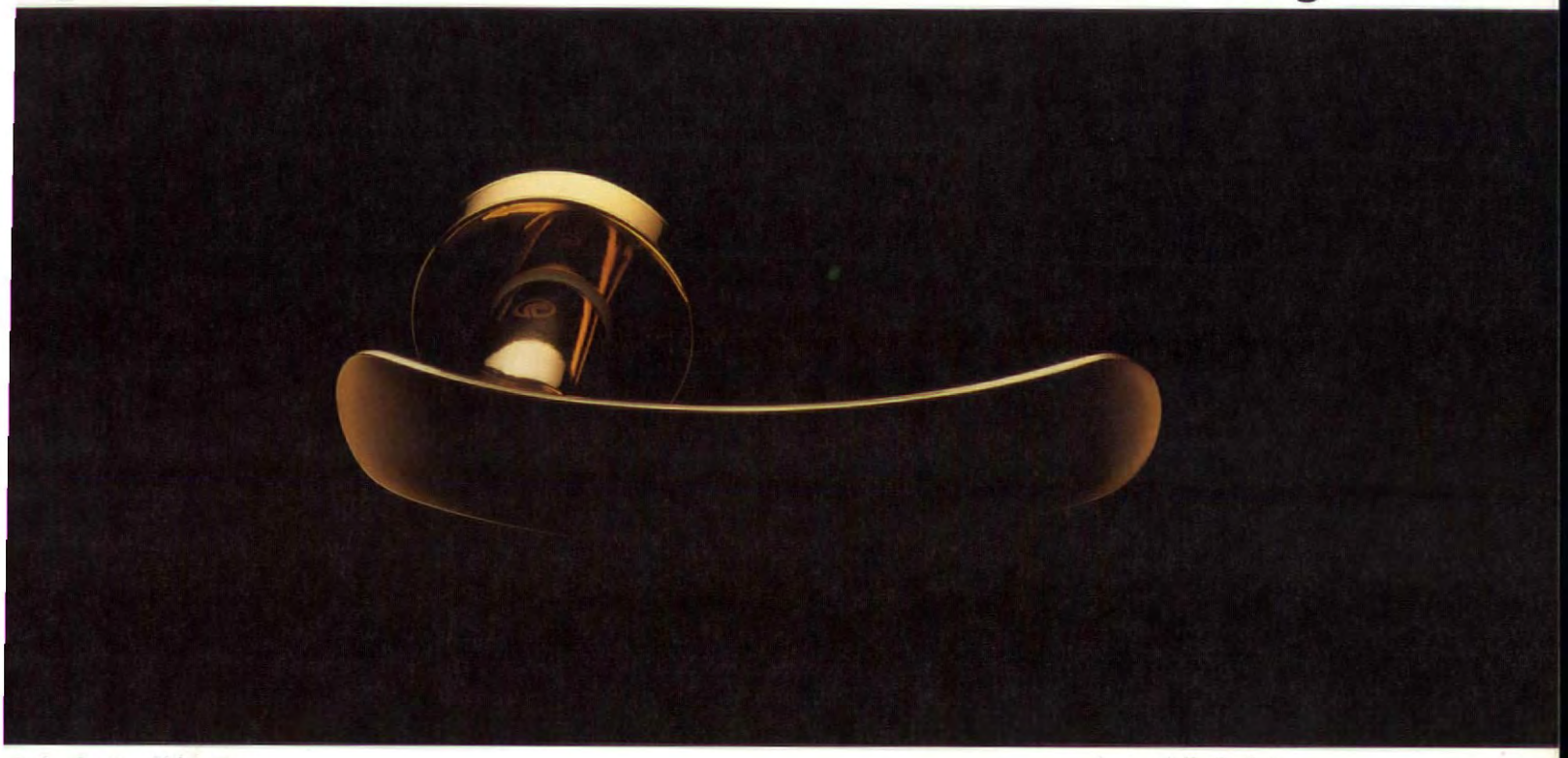

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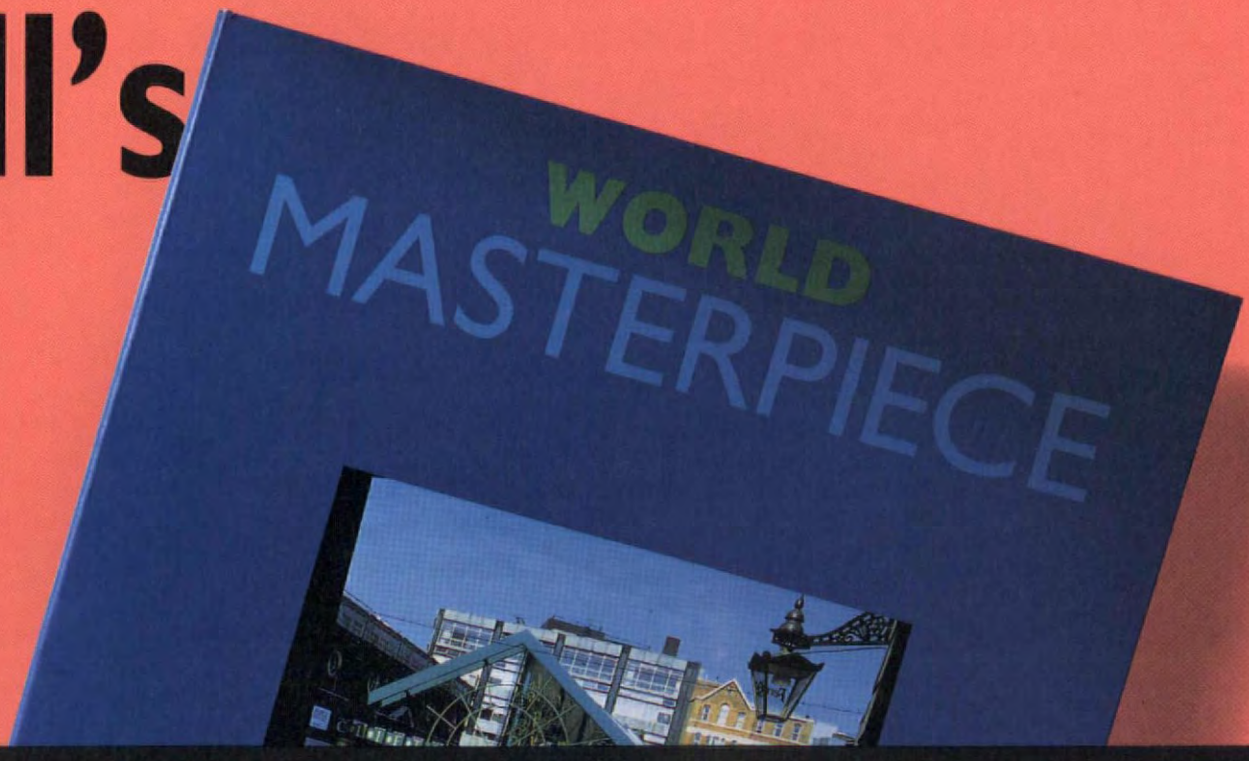

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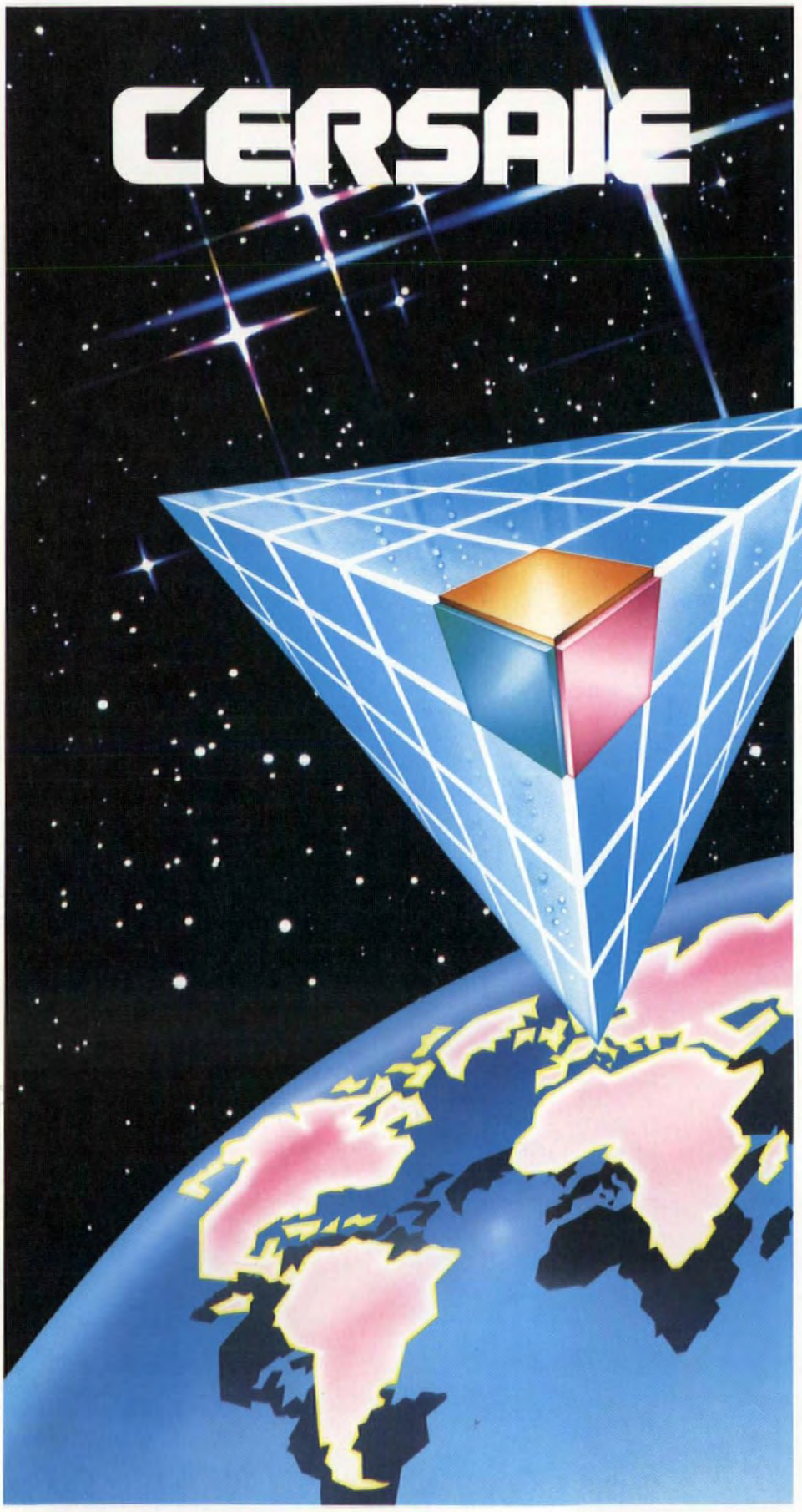

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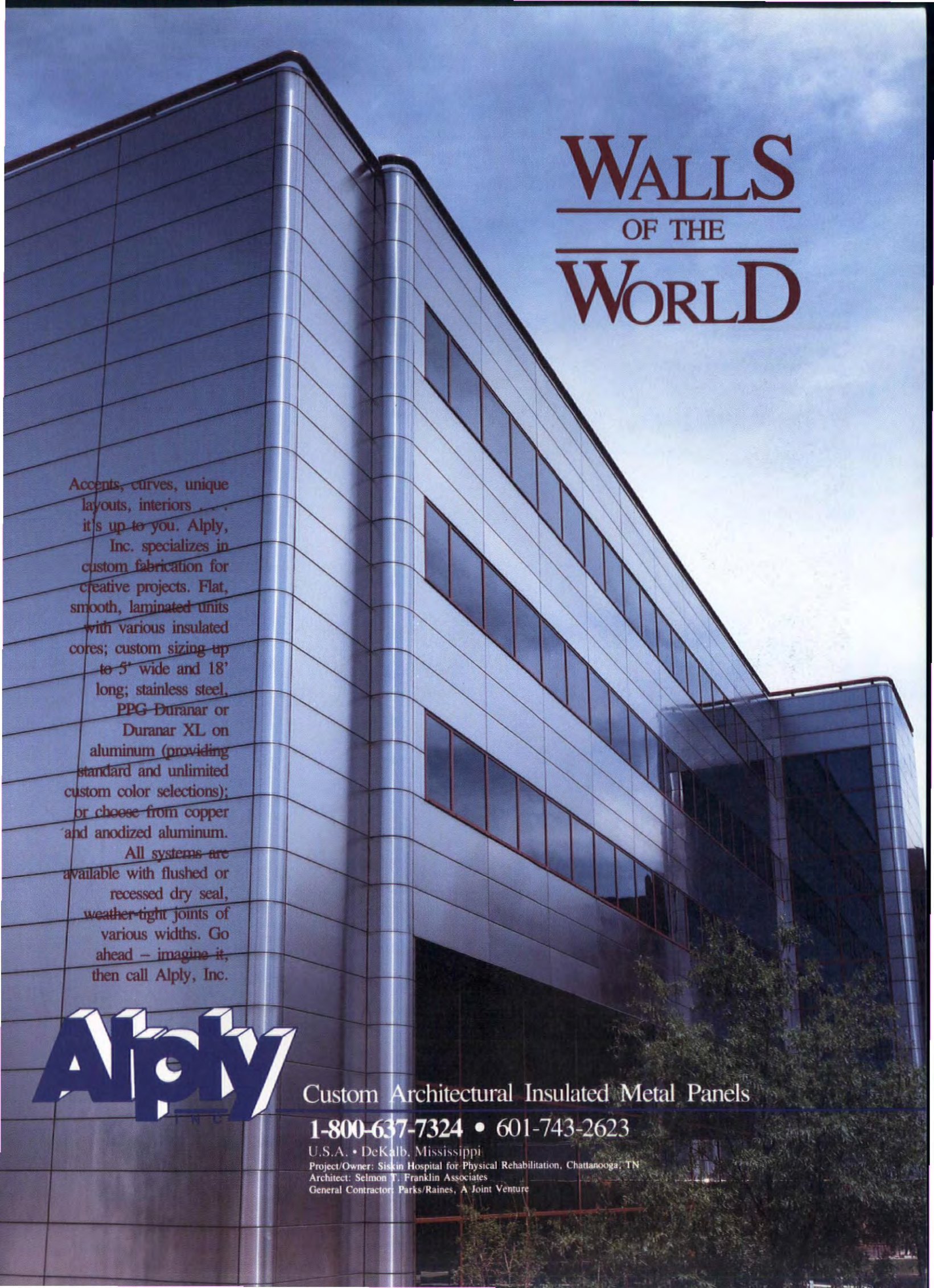
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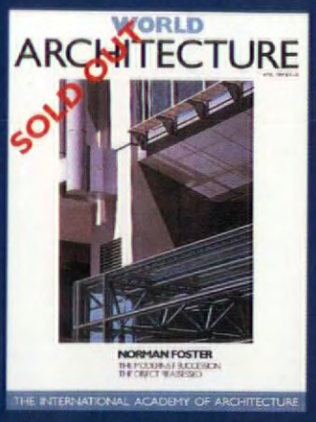

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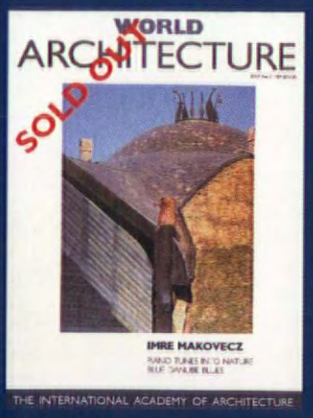

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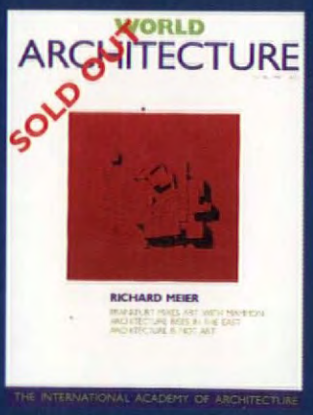

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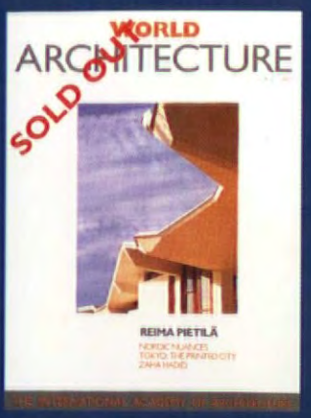

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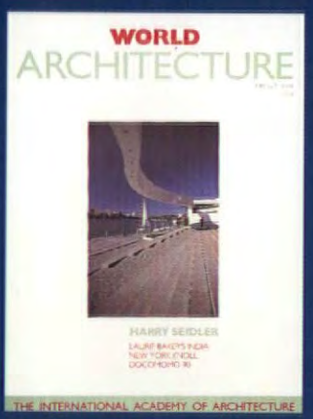

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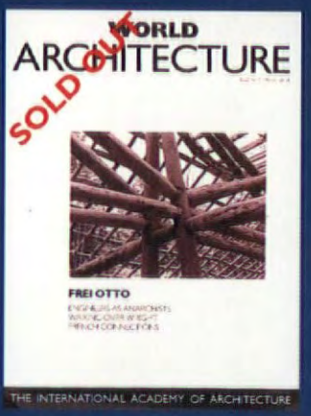

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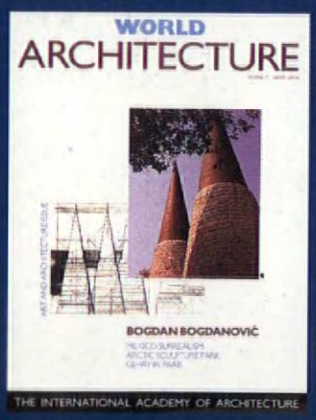

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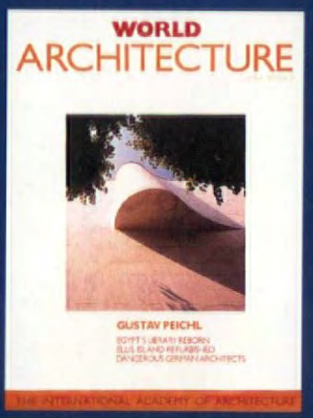

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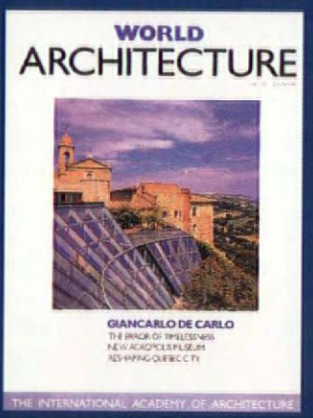

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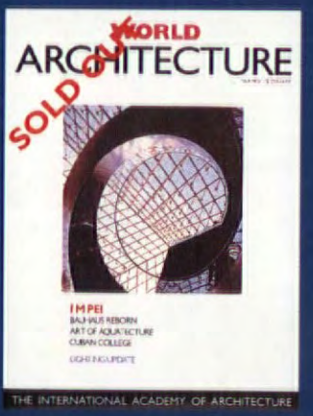

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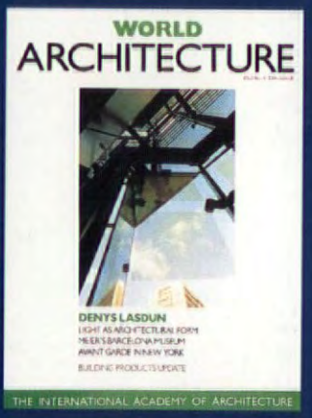

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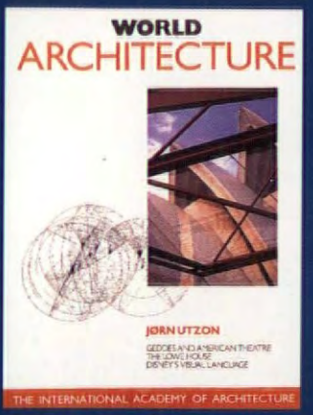

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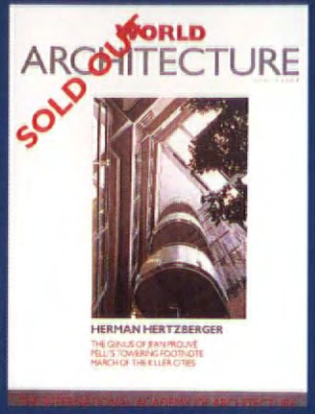

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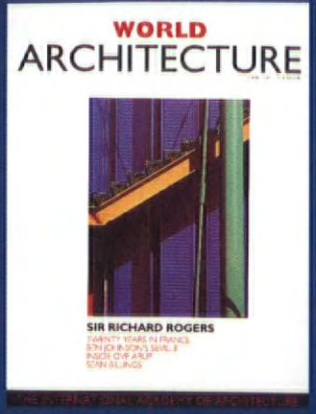

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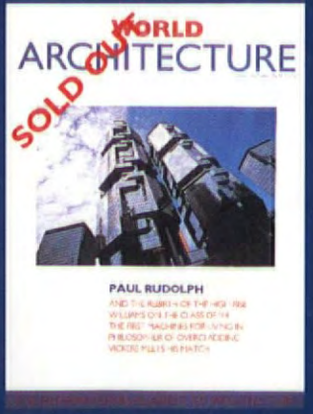

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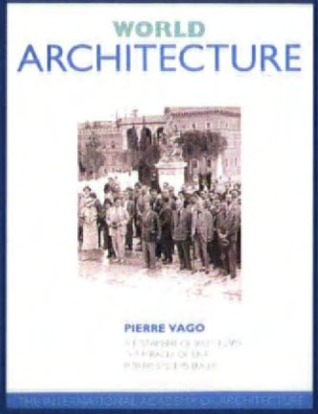

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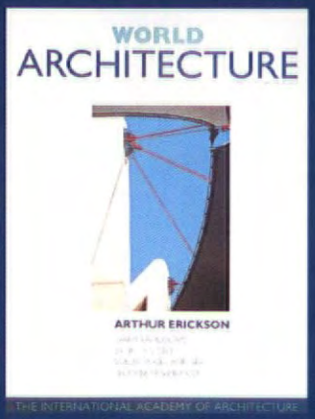

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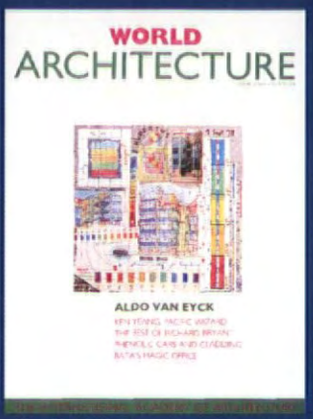

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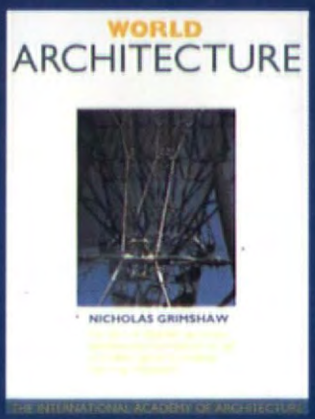

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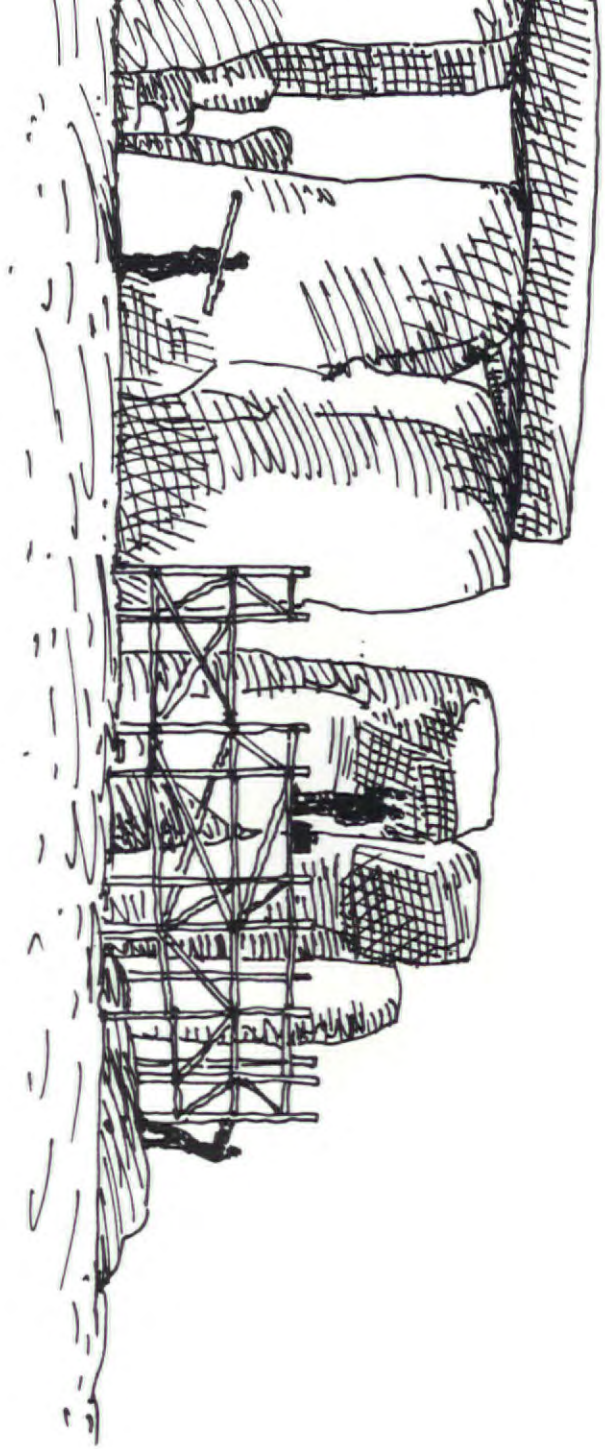

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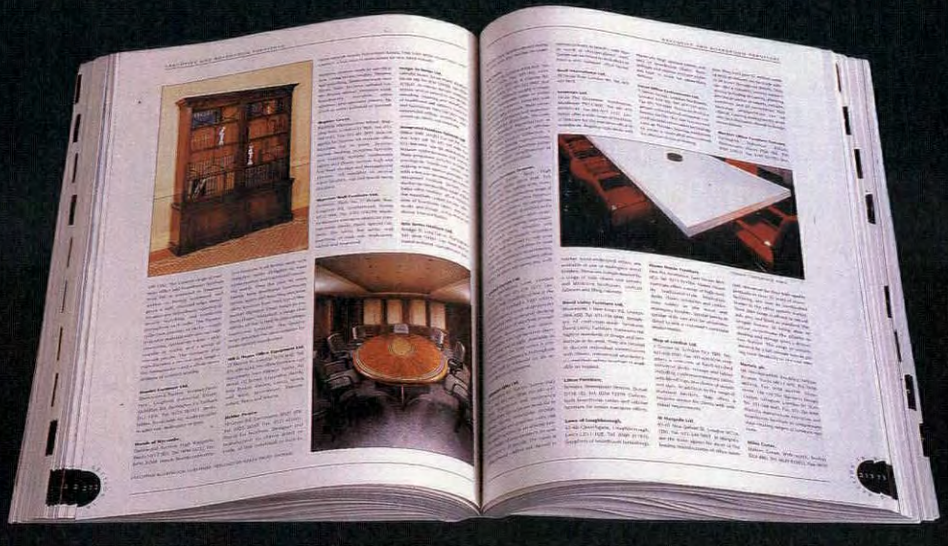

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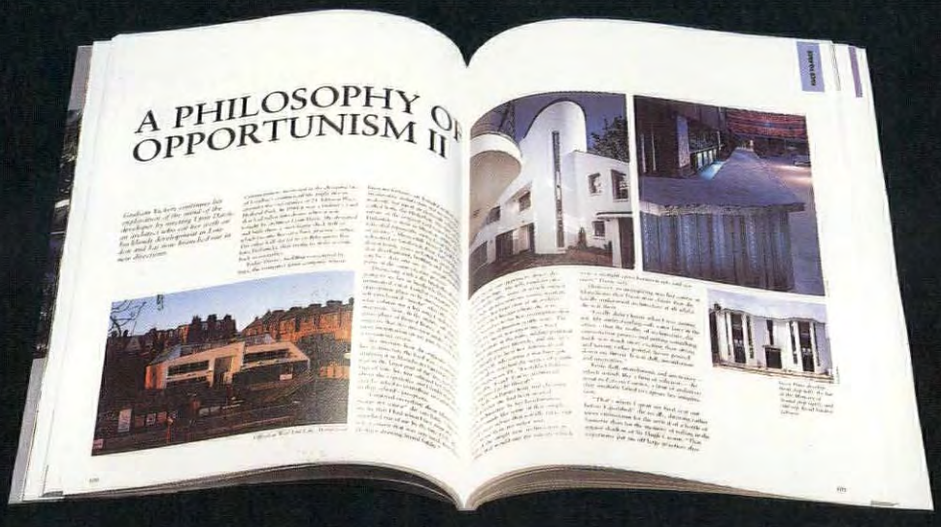

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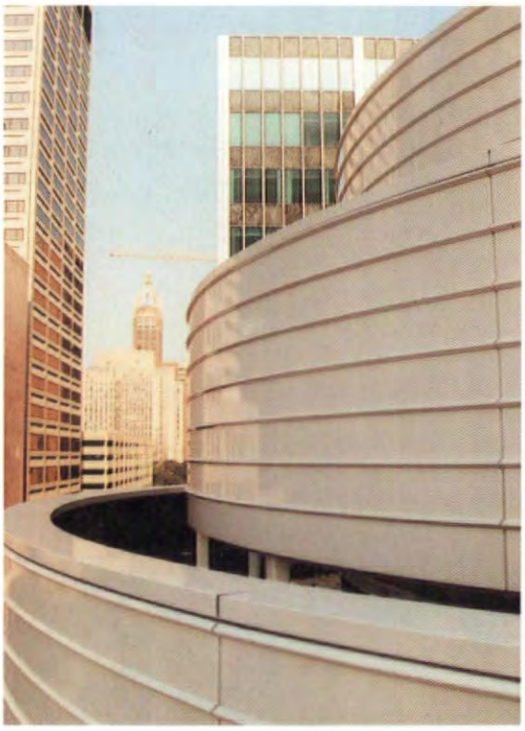

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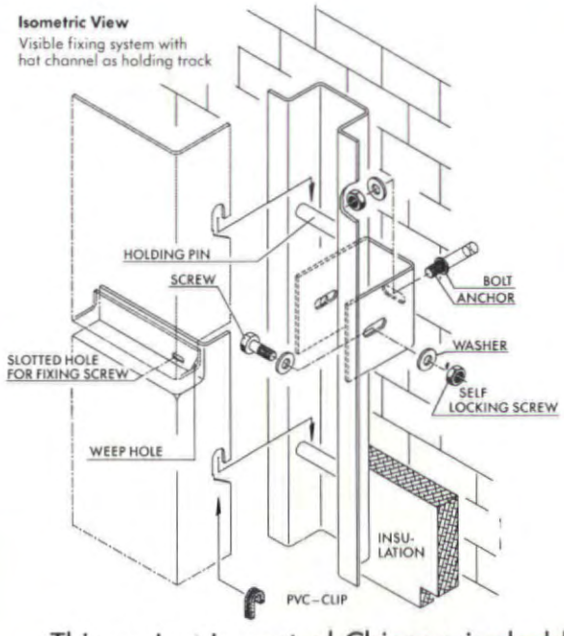

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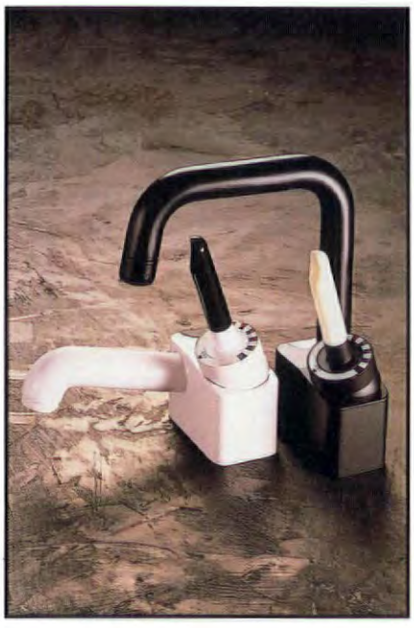
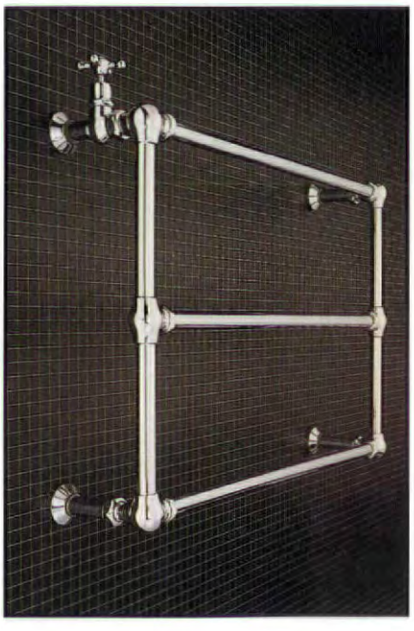


BOX LINE: single handle washbasin mixers (low and high spout) ►

◄ ROMA LINE: widespread washbasin mixer



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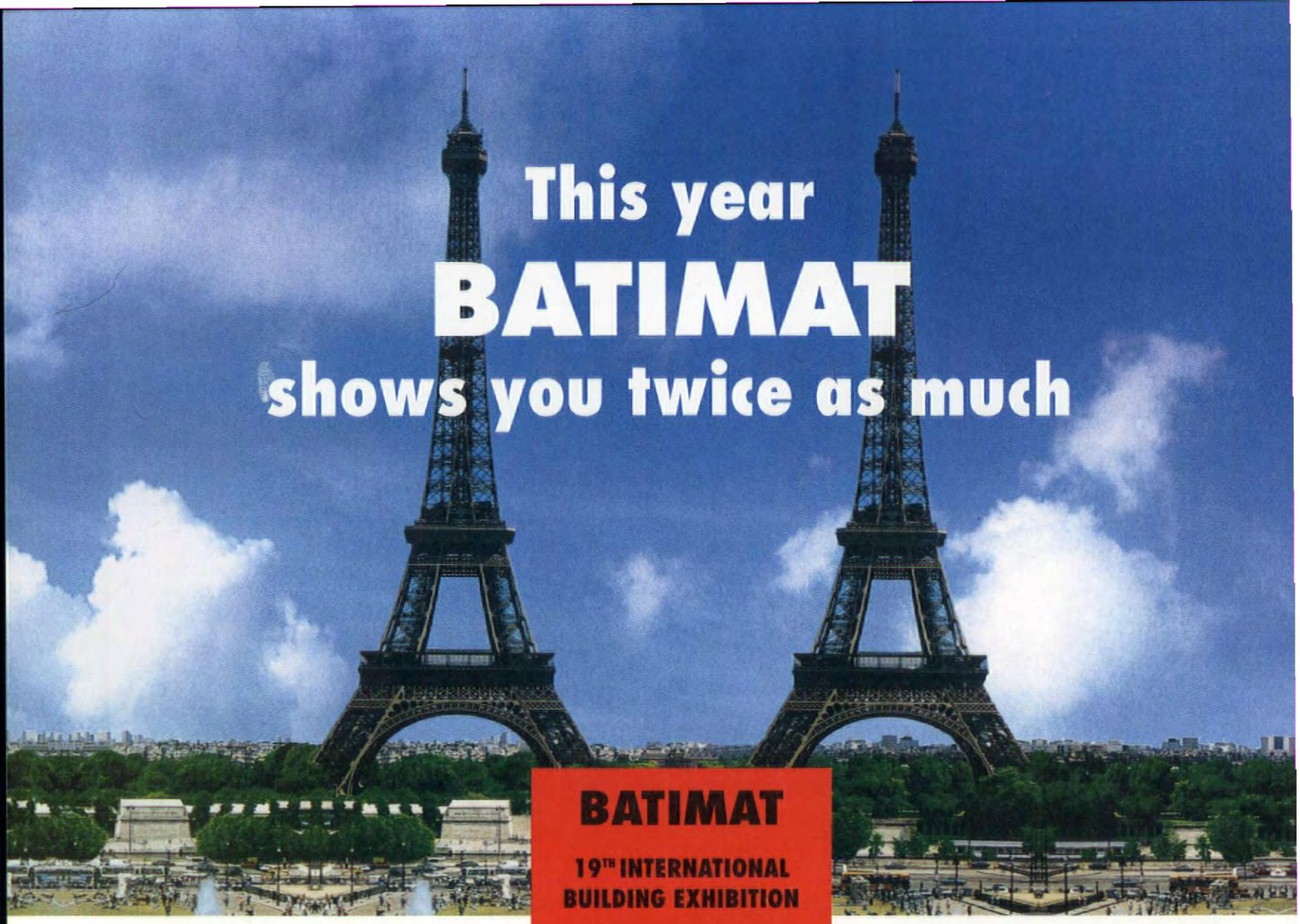

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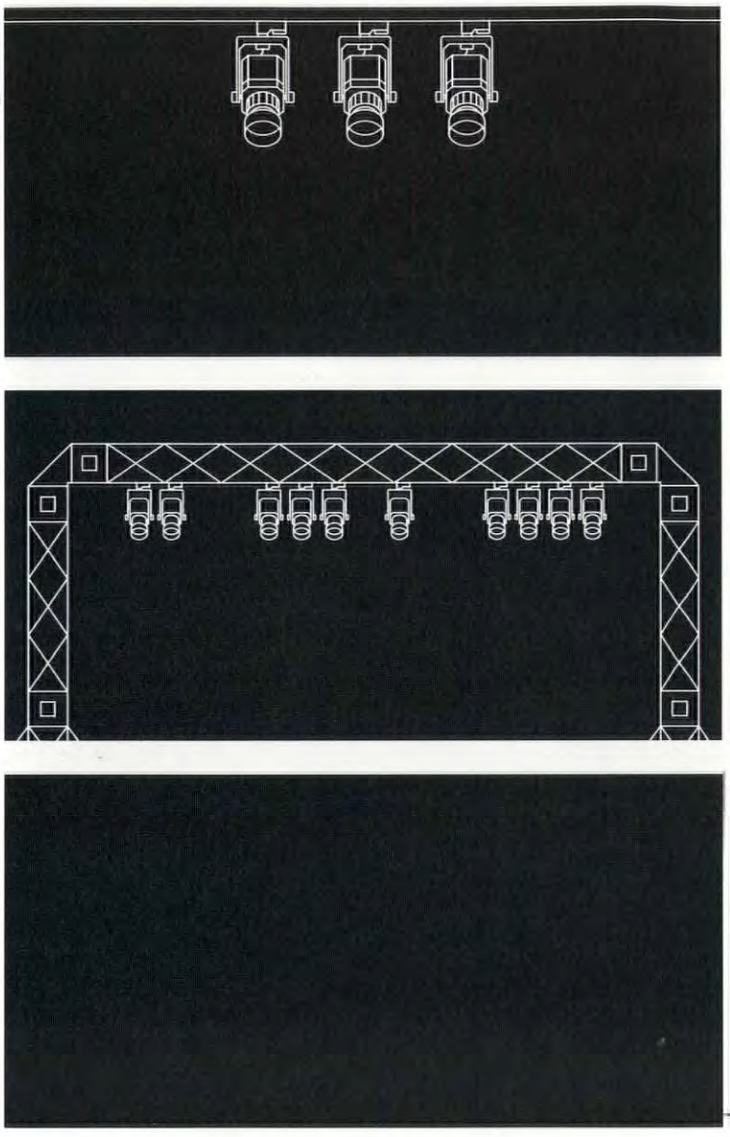

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WORLD ARCHITECTURE

The Architecture of Schizophrenia

It has long been believed that the relationship between human beings and their non-human environment is a crucial indicator of psychological balance. In the last 50 years more and more of this non-human environment has become ephemeralised into images and symbols yet, like architecture, it still remains part of the cumulative realm of man-made structures that can trace its origins back to the pyramids. Today "designing", or organising the non-human environment, is an activity that takes place at every level from the private storage of personal possessions to the public planning of infrastructure. How alarming then that, at all these levels, symptoms reminiscent of a kind of schizophrenia can be discerned.

Whenever its economic system ceases to expand, our community of nations immediately commences to drown in a sea of unproductive institutions incapable of restoring order. Recession is the word that is used to describe this process and, in a recession, architecture is always the first construction victim. But in the recession that may now be receding, what was it that really brought architecture to a stop? If it was the disorganisation of national economies, then might it not be more useful to redefine recession as a kind of economic schizophrenia? Order and disorder are both matters of perception. If schizophrenia in individuals is characterised by failure to impose order upon the environment, then surely it is something like schizophrenia that attacks economies when they cease to be able to sustain economic life.

The principal legacy of the Modern Movement in architecture and planning was universal acceptance of the idea of imposing order. With its ruthlessly functional system building, allied to the subliminal authority it awarded to all architects by enabling them to design buildings simply by planning the activities that would take place in them, and then putting a "go anywhere" flat roof over the top, modern industrialised construction and Modern design theory made order possible where tradition had been left behind. This capacity to impose order was a great access of privilege for architects, as is evidenced by the way in which even post-Modernists like Leon Krier and Terry Farrell have not relinquished it. But while today urban planning is still accepted as the imposition of order, design is not. As a result, it is only now that we are beginning to understand that freedom from recession – or schizophrenia – depends upon the survival of a concept of order at the most fundamental political, economic and infrastructural level.

Schizophrenia of the economic system means that everything the order of the Modern era made possible is now at risk: organised technological innovation, economies of scale, the globalisation of construction expertise, even the survival of independent professional status itself. Never has it been clearer that order in the built environment depends upon order in world government, and order in the relationship of international markets. Without such order, our highly advanced civilization remains vulnerable to that state of schizophrenic incompetence that we call "recession".

Martin Pawley

THE CREATIVITY OF RENZO PIANO

One day in February 1993 Renzo Piano received an invitation to join the editorial board of a new magazine dealing with intelligent environments. The fax, sent from Tokyo, was typical of the requests to use his name that continually arrive at his offices in Genoa, Paris and Osaka. It would have been easy for him to have accepted the offer and thought no more about it but, alone out of a list of more than 30 world famous artists, thinkers and academics, he turned the invitation down. Why? As he once put it; "Unless you keep very strict control of your own work and your own life, you gradually lose touch with reality. And if that happens, sooner or later somebody will realise that you are no good. When that happens, you are finished." Martin Pawley interviewed Renzo Piano about life, the universe and everything at his Paris office on April 20th 1993.

Renzo Piano, you have been described as an inventor, a tool-maker, an engineer, and a champion of "soft-tech". Which of these is the most accurate description?

Well of course the easy answer is to say "All of them", but I won't say that. For me architecture has been an adventure, a global adventure lasting 30 years, and so, to be honest I can only say that I am an adventurer. Architecture is more than invention, more than tool-making, more than engineering. It is mixing them together, and mixing people together too. I worked for many years with the great engineer Peter Rice, from the time of the Pompidou Centre until the end of his life. Because of this collaboration and this friendship I can really say that I was a part of Peter and Peter was a part of me. This combining of people and things is important. In my work I combine technology with art and art with commerce and law and politics and aesthetics too. Today I am working in New Caledonia and I work with anthropologists and sociologists, historians and ordinary people from local communities. What is the best description for that? Everything in the end works logically towards an unpredictable conclusion. And something that is instinctive in that way must be the work of an artist. This unpredictability at the heart of architecture is in the end the definition of an art.

But if you as an architect are in the end an artist, how do you fit into the history of architecture? Do you feel that you are treading in the footsteps of the Modern pioneers like Le Corbusier or Mies van der Rohe?

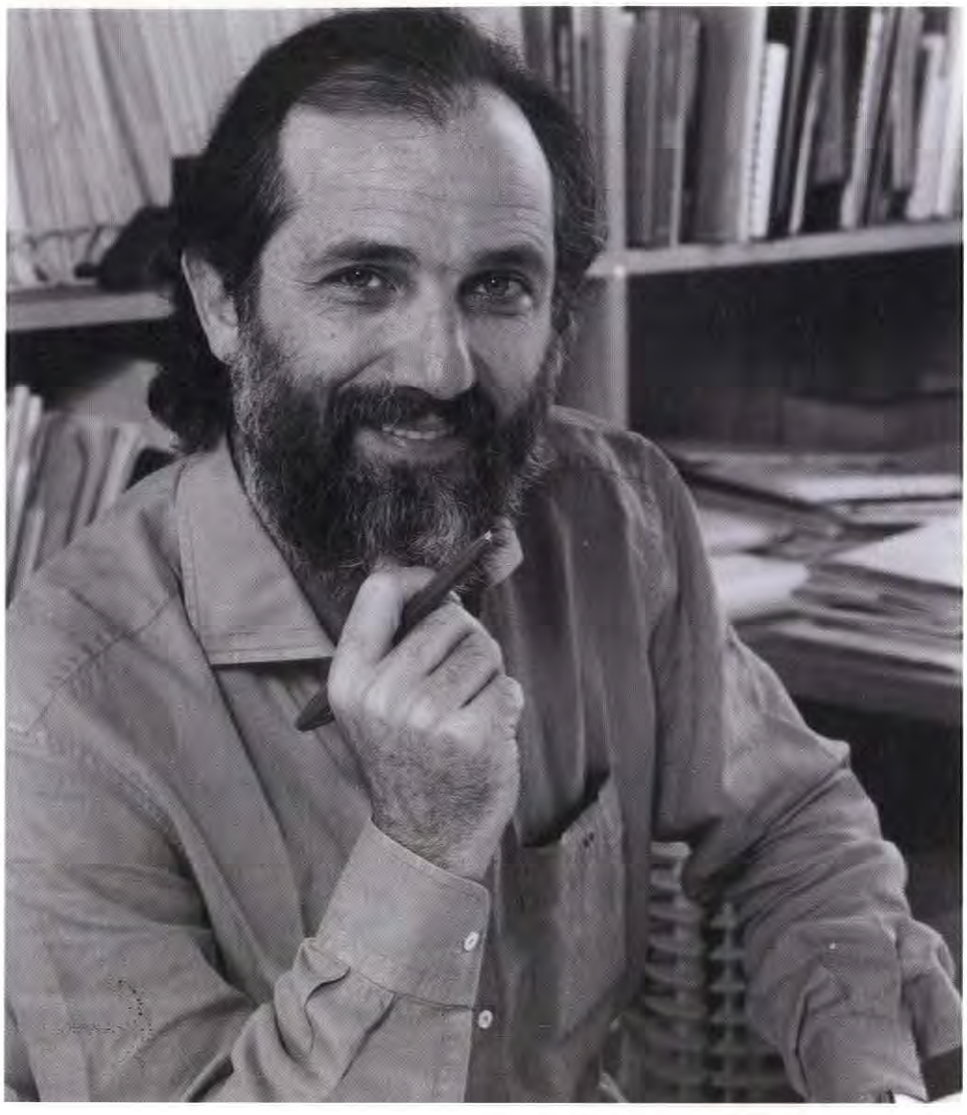
I have the greatest admiration for the work of those men, but I see them as men of the 20th century. I myself belong more to the 19th century and its great engineering tradition. I feel that the quality of lightness, which is so important in my work, had little importance to the great Modern pioneers, but it was very important to the structural engineers of the 19th century. My own work grows out of an interest, a fascination with iron and steel, with riveting and welding. I would like to think of myself as treading in the footprints of Richard Turner, who designed the Palm House at Kew in 1844. He was the first engineer to achieve a long span, naturally-lit structure using wrought iron I-beams welded together. That engineering tradition is the one that most closely leads to my own preoccupations today.

Apart from Jean Prouvé, who else has been a direct influence on your work as a designer? For instance did the projects of Jan Kaplicky influence the design of the Bercy shopping centre?

Influence is not the right word. I think we have to accept that in a way all designing is stealing. I am happy to steal. It is even more honest to say that creation is stealing than to describe it as copying, which is as far as most people will go. As a designer you do no copy, you grab. You take from everywhere. From projects you see, from things you remember, and do not forget the way you leave out the things you have forgotten! Theft and forgetfulness each play a part in designing. The writer Jose Luis Borges once said that making a book is a mixture of remembering and forgetting, and for me designing is like that too. I remember Jan Kaplicky from the Centre Pompidou design team over 20 years ago. Since then I have always followed his work, just as I follow the work of other interesting and creative people. Yes there is something of him in Bercy, but also something of many others too. Only the most uncreative persons in the world can imagine that what they do is original. Everything comes from somewhere. Nothing comes from nowhere. It is the mixture of elements that is important. What is known, what is combined, and how. That is what design is.

As you have become more famous and successful, you seem to have moved away from your original emphasis on light structures and Buckminster Fuller geometry. Is Fuller still an influence on your thinking?

I came to Buckminster Fuller through an admiration for his basic shelter concept. His way of cutting through all unnecessary details and irrelevancies and going straight to the heart of the prob-



lem. The task of the architect is to provide shelter. Fuller took a material and manipulated to provide shelter in the most efficient and cheapest way. Shelter for him was fundamental. He had the right basic attitude: no style - no fashion. Always back to the *real* problem. Also in a way, back to 19th century engineering again. I never met Fuller, but when I was young I carried a copy of The Dymaxion World of Buckminster Fuller by Robert Marks about with me until it literally fell to pieces. In a way it was the same with Pier Luigi Nervi. I never met him either, but I drew from them both. You see, growing up in Genoa I had a very restricted outlook. It was only when I started to travel in my late 20s that I began to understand things. Until then I absorbed ideas through magazines and books, and what I absorbed then I have never forgotten.

Do you believe that a truly glass architecture is possible – that is with glass carrying all loads and absorbing all stresses, so that true transparency could be achieved?

It is a dream of mine that it should be so. The magic of transparency is metaphorical. A combination of transparency and lightness would be of great aesthetic, structural, even social and economic importance. The furniture I designed for Fontana used glass in compression and steel in tension. I have also used structural glass cladding in Switzerland, in the Beyeler Museum. There we have beams of glass with tensile cables, so that the structure itself admits light. In the same way it is possible for all the vertical structural elements of a building to be glass so that it appears to float above the ground, while all horizontal and diagonal stresses are taken by steel cables or rods only 16-25mm thick, so that they are virtually invisible.

What do you think of the refurbishment of giant modern buildings that have outlived their original uses, like the Fiat Lingotto factory in Turin, or Battersea Power Station in London? Is it really worth doing?

Well first of all I must say that I am certain that the decision to refurbish and modify Lingotto was taken on a very commercial basis. The cost will be recouped within 15 years, otherwise it would not have been done at all. Also you have to consider that, as Signor Agnelli of FIAT himself said to me, Lingotto is truly indestructible. It survived heavy bombing during the war and it was so integrated into the city of Turin that it would have been a serious problem to demolish it. Besides, in architectural terms it is a great monument, like a citadel, built out of reinforced concrete on a 6 metre grid with 5 metres from floor to floor. A solid and yet flexible structure, not useless at all. The conversion of it began nearly six years ago and it will be completed in 1994, then we shall see. I think that when all its new uses are in place, the concert hall, the university, the research laboratories, the business starter units, the shops and hotel, it will be a very successful re-use of a great structure.

If you had the opportunity to design your famous 1984 IBM mobile exhibition building again, would you use a flexible architectural fabric instead of rigid polycarbonate?

The design of the IBM exhibition building was dominated by my wish for complete transparency. Every site that the structure was moved to was on grass, in a park, in a city and it was important that that contrast was visible inside and out. I understand what you mean about using a fabric – actually films are better today, they can achieve a higher level of light transmission, though still not complete transparency – but you would need to hold the film in a double-curvature shape for it to be stable. That would have required a very different structure. I wanted a crystalline appearance. The polycarbonate pyramids achieved that.

You seem to have no difficulty in relating historic structures to modern structures. Would you ever go as far as to design a Classical building constructed from advanced technology materials?

I see no problem in combining modern structures with traditional buildings in our old towns centres, provided the grain of the urban tissue is maintained, so that the new blocks are of normal size. I confess that when it comes to the *design* of towns, the Modern movement was not successful. But we have learned now to look again at our old cities, because we realise we Europeans were the best makers of towns since the ancient world, and our old towns have more to teach us than our new ones. Our forefathers achieved harmony, balance and proportion over hundreds of years, they incorporated enormous changes in style and scale. Now it is true that we cannot fit the optimum scale of a modern commercial enterprise into the centre of an old town without destroying it, unless we compromise. What I believe is that we can cut the commercial centre into five or six pieces and retain the old street pattern. That is what we are doing at the Potsdamerplatz in Berlin. That breaks down the scale of our intervention without defeating its object. But that does not mean that we want to imitate Classical buildings using new materials. That seems to me an absurd dream. Why should anyone want to do it?

Do you really believe that social and economic problems can be solved by design?

The day I even begin to doubt it, I will throw myself into the Seine.

THE ORGANIC ARTIST

Renzo Piano was born in Genoa in 1937, into a family of builders. He was attracted to building from childhood and his first employer was his father. From him, Renzo Piano learnt that architecture meant action, it meant "making things".

Thanks to his father's support, Renzo Piano had the opportunity to build small but interesting structures as soon as he graduated. At that time, he designed pieces of architecture, rather than making whole architectural constructions, propelled by his own curiosity and the pleasure of discovering, experimenting and playing with materials. Carla Garbato tells his story.

"Among the architects of the past, the one I feel closest to is Brunelleschi, not only because of the close link he established between his buildings and their surroundings, but also because he designed his tools himself."

This statement is indicative of Renzo Piano's working method: according to him, there is no gap between the creative stage of a project, its implementation and its testing in use - as happened in the past, when architects conceived a project and supervised its construction.

On a more theoretical level, Renzo Piano's *maître à penser* was Jean Prouvé, whom he met in Paris after attending university in Florence and taking his degree at the "Politecnico" in Milan, in 1964.

Jean Prouvé was a very important figure in Piano's life: if his father taught him that architecture was action, Prouvé taught him that it was also philosophy, method and determination, transmitting to him a love for experimenting and researching the use of light structures in architecture.

Renzo Piano's curiosity about the world of construction is shown in the new techniques he applied to lightweight structures and materials from 1964 to 1968, when he carried out his first research studies and built his first experimental structures.

"Architects need to possess scientific competence in materials and to know their transformation potential and behaviour" he says today. In those early years, Renzo Piano experimented in the geometry of shape and studied polyester pyramid shapes, pre-stressed steel structures and reinforced polyester shells. He also set up his first laboratory in Genoa. This was the background to such future projects as the IBM Travelling Exhibition, the sports centre in Ravenna, and the stadium in Bari. Renzo Piano's interest in structural problems is fundamental and experiment will always be at the heart of his design method.

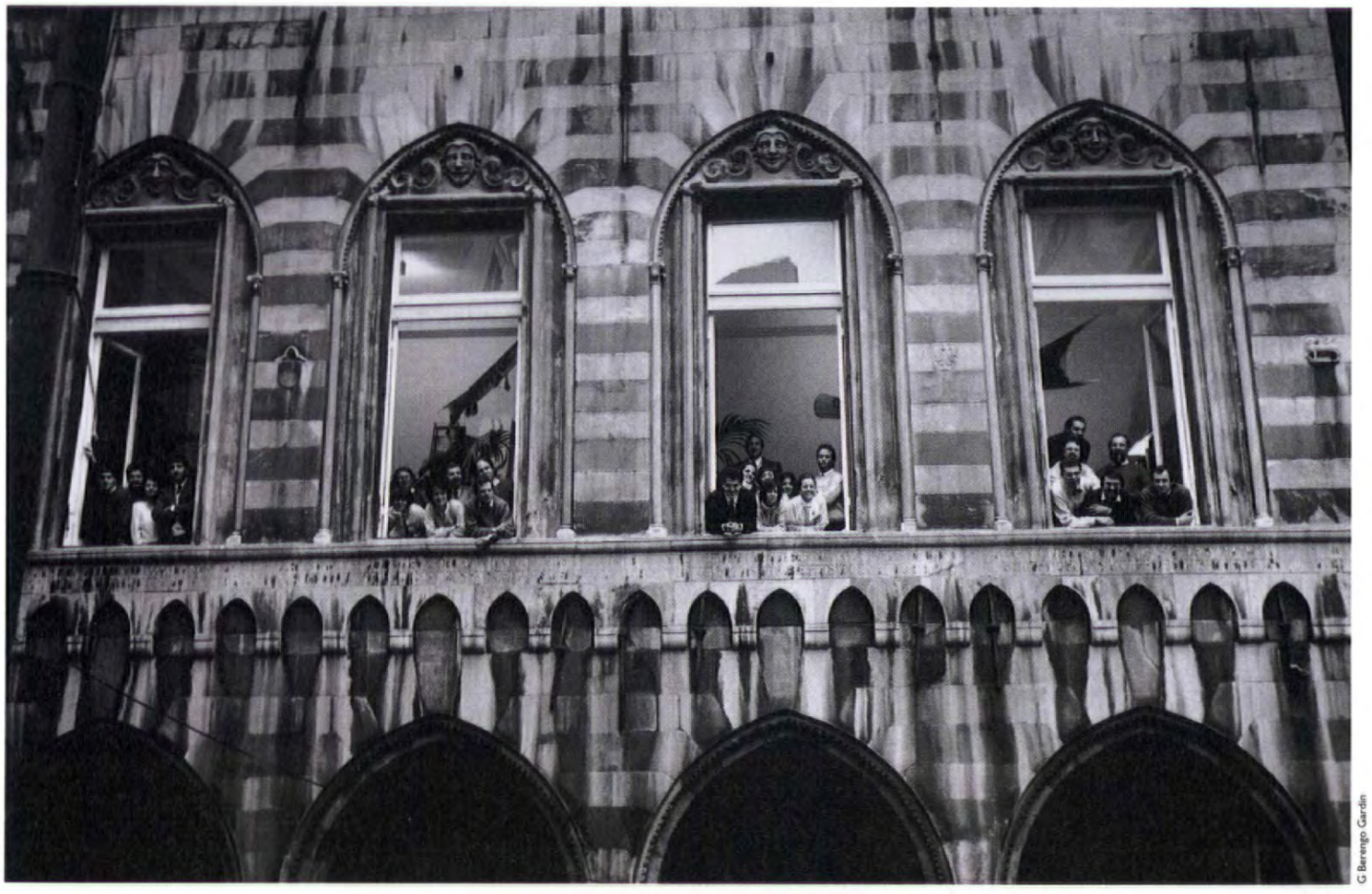
These early structures – which one critic defined as "simple and perfect organic shapes, like rediscovered fossils" – are a testimony to Renzo Piano's refusal to formalise. Instead he believes in technological and experimental studies through which crafts can be mastered.

From 1964 to 1970 Renzo Piano worked with Franco Albini and Louis Kahn. With them, he was able to focus on the role of light in architecture – a non-material element later to become fundamental in his work.

The Renzo Piano-Richard Rogers' partnership started in 1971, at the beginning of the competition for the Centre Georges Pompidou – an adventure shared with Shunji Ishida and Noriaki Okabe, associate architects, and with engineers Peter Rice and Tom Barker from Ove Arup. In those years, Renzo Piano learnt a lot about being an architect: "In this period I had the most extraordinary team-work experience: it was my last experience of "piece by piece" architecture, and also the most intense exercise of determination and professional advancement."

The partnership with Rogers lasted for many

The Piano Building Workshop in Genoa 1992 (below) with the model making shop and Renzo Piano in conference (bottom)



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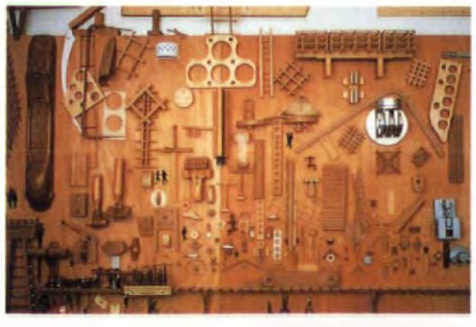


Mauro Vallinotto

years, during which the two architects designed a number of buildings in Italy and in England.

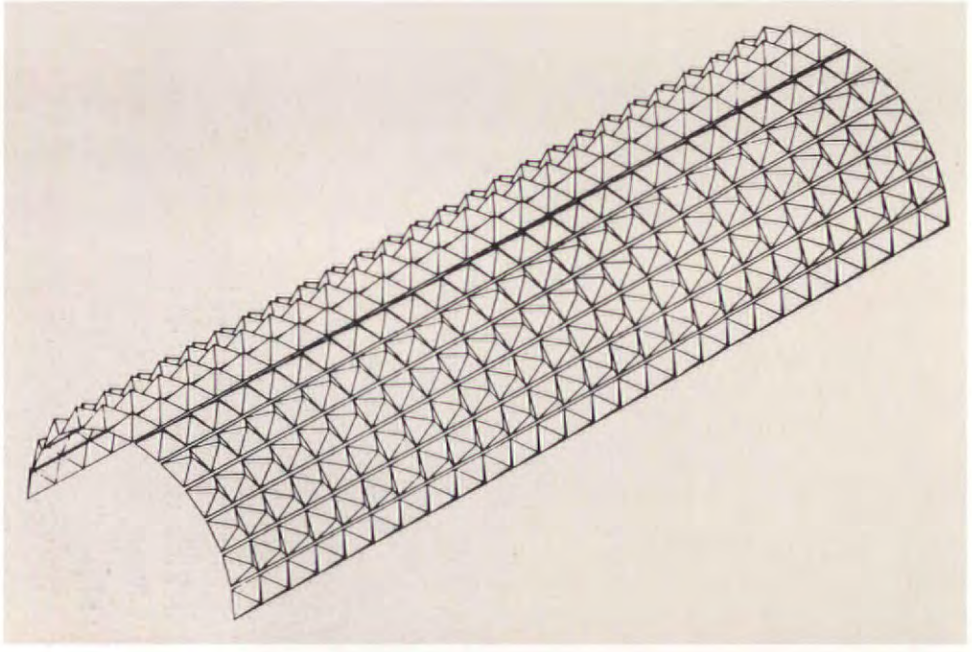
Peter Rice joined Renzo Piano from 1971 to 1980; in the meantime, the team-work with Shunji Ishida, Noriaki Okabe and Tom Barker from Ove Arup continued. In those years a number of experimental projects were carried out, such as an industrial housing system of the evolutionary type, the VSS vehicle for FIAT, a television programme called *The Open Site* and workshops on the refurbishment of old town centres in a number of cities in Italy. This was a period marked mainly by public participation projects. Restoration work in old towns in other Mediterranean countries were also to be carried out in later years, commissioned by UNESCO.

In that period, Renzo Piano introduced the so-called "art of listening", as important in architecture as knowledge of technology, imagination, competence and professional skills.

After 1980 Renzo Piano changed the name of his practice to the Building Workshop, with offices in Genoa. There he worked with Shunji Ishida, Mark Carroll and Renzo Truffelli as associated architects, and Flavio Marano as associated engineer. In Paris he worked with Bernard Plattner and Paul Vincent as associated architects – and, from 1990 – in Osaka too, with Noriaki Okabe as his associated architect for the Kansai airport project.

These were the years of maturity, when all previous experience blended together – the pleasure of working "piece by piece" and designing in detail, the ability to organise a team and cooperate with professionals in other disciplines, the tendency to gain an in-depth understanding of problems in order to solve them.

But above all, at this time, came what Piano called "a fatigue for big projects and the desire to try my strength against another marvellous world: that of human and social relationship". During this



Computer image of IBM mobile exhibition (above), and football stadium at Bari (right)

Shunji Ishida

period, thanks to occasional projects for UNESCO, Piano had numerous experiences of participation, from which he learned a great deal about the art of listening and not mistaking instruments for objects.

The projects carried out in those 10 years were many and diverse: the Menil Museum in Houston; the redevelopment of the Schlumberger sites in Paris; the IBM Travelling Exhibition; the retrospective exhibition of the work of Alexander Calder in Turin; the scenes for the Prometheus opera in Venice. In the IBM Travelling Exhibition, Piano researched new glueing technologies and jointing systems, the key elements in this structure.

The accuracy of detail, the poetry of every component improved with experience; doing and undoing became a kind of approach towards architecture, a slow maturation during a long meditation prior to designing.

The IBM Travelling Exhibition looks like a conservatory and reproduces a perfect microclimate inside. The basic element in the building is an arch consisting of transparent polycarbonate pyramids connected at the base and at the top by means of lamella rods assembled using aluminium joints. The exhibition area is composed of a series of these arches side by side. The elements can be dismantled and the pavilion can be erected in 10 days, like a toy construction set.

If the IBM Travelling Exhibition was the result of research on materials and structure, the museum housing the Menil collection in Houston, is characterised by structure generating internal areas – the result of a new experimentation on the relationship between a project and its surroundings.

Renzo Piano is an architect-engineer, an experimentalist. In this museum he faced the problem – enormously underestimated by architects until then – of natural lighting in areas dedicated to valuable works of art.

He started by designing the roof – focusing on natural light, which is the true "material" of the project. He also tried to enhance its slightest variations in order to emphasize the exhibited artworks to the full. To reach this target, he carried out a long theoretical and practical study, including the setting up of a computer program for the analysis of the relationship between internal and external light.

The result was the realization of the basic element used for the roof – a ferrocement leaf which, multiplied 300 times, hooks onto the supporting structure of steel beams. Thus natural light can filter through, reproducing inside the changes in the weather conditions outside. Within this area, shaped entirely by light, spatial volumes are entirely dematerialized.

Finally, we come to the period from 1983 to date. "I have been pleasurably engaged in mixing together everything that I have learned: the world of scientific learning with humanistic and social culture, combined according to a deeply Italian tradition in which I fully partake. I enjoy the accuracy of high craftsmanship but also, sometimes, of great frugality; the modular and 'by parts' approaches which blend into one organism, seeking its own rapport with historical and natural context. The exploration and research of a language of architecture which culturally pervades and elevates our confused world of science and technology."

The projects of this recent period include the football stadium in Bari; the ocean liner "Cruise Princess"; the underground stations in Genoa; the shopping centre at Paris-Bercy; the IRCAM exten-

sion in Paris; the residential complex in Rue de Meau, Paris; the reconstruction of the old harbour in Genoa for the Columbian Celebrations in 1992, and a research laboratory for the study of natural resources, also in Genoa.

This study-laboratory, carried out in collaboration with UNESCO, is a building made of conventional materials but using sophisticated technologies, where nature is the raw material and architecture the development of a process – the process of building in wood, earth, stone and natural fibres. Despite the use of these materials the main characteristics of the building are transparency and lightness. It is a kind of living being where nature is palpable and the immaterial elements of space – light, air, atmosphere – are vibrant. The references to natural organisms, simple graphics and lightweight natural structures is obvious.

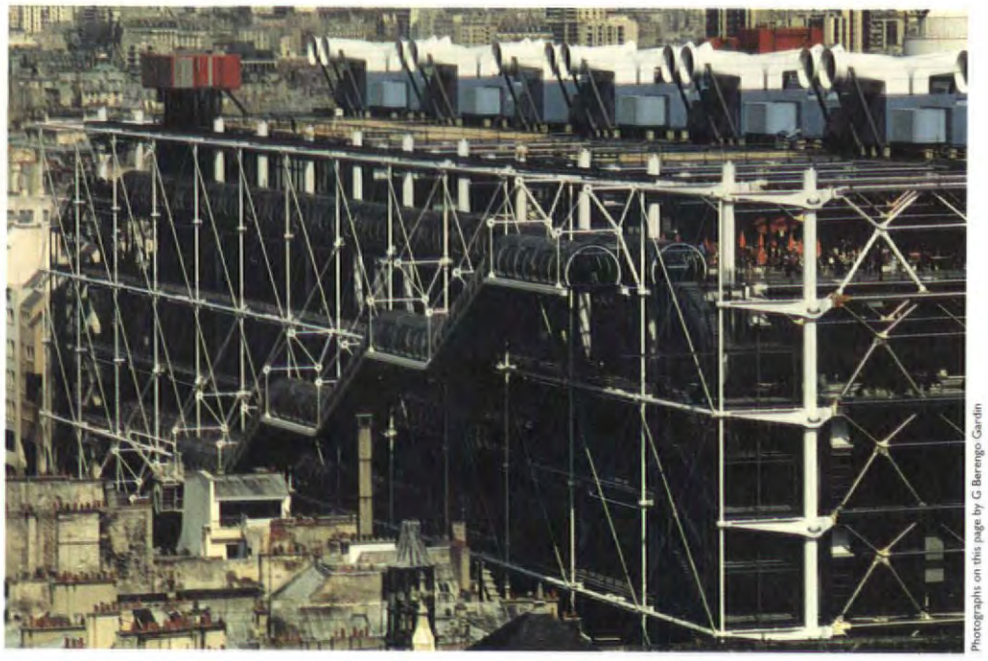
Renzo Piano is presently working on the reconstruction of the FIAT Lingotto industrial complex in Turin; the retrieval of the old fair grounds in Lyon; the international airport in Osaka; the science museum in Amsterdam and the long bridge in Ushibuka, as well as a new project for the new Potsdamer Platz quarter in Berlin.

These projects sum up all his previous experience and perhaps open the way to a new phase. What was originally expressed in fragments is in recent projects expressed by organic volumes. An example is the stadium in Bari, in which 310 reinforced concrete structural elements once assembled form the 26 "petals" composing the stadium.

New architectural patterns also refer to large volumes for single purposes, such as the sports centre in Ravenna, Osaka international airport and the church dedicated to Padre Pio in Puglia. The pilgrimage site, for thousands of visitors, will include a large Liturgical Hall made of stone – the material traditionally used in large churches for its solidity and durability.

Stone is the material to be used for the structure, for the large radial arches supporting the vault. However, this traditional material is modified by contact with different disciplines and modern technologies and here its use has been completely transformed by means of a new, non-linear, calculation system which allows different load tests to be carried out on the arches. Although the area is seismic, the structural efficiency and security of the building have been enhanced even though the stone sections are thinner.

Purpose is emphasized to the point of translating itself into a shape, into a precise and perfectly defined object. Thus the stadium, with the 26 petals forming the structure, becomes a suspended object. Thus too the airport at Kansai evokes a celebration of flight and its shape recalls that of the cockpit of an aircraft.



Photographs on this page by G Berengo Gardin

The Pompidou Centre (above), and fabric enclosures at the 1992 Columbus International Exposition (left)

Renzo Piano has been awarded many prizes and much recognition: the AIA Honorary Fellowship in the USA; the Legion d'Honneur and the Commandeur des Arts et des Lettres in Paris; the RIBA Honorary Fellowship and the RIBA Royal Gold Medal in London; the Cavaliere di Gran Croce in Italy; the honorary PhD at the University of Stuttgart, and the Inamori Foundation Prize in Kyoto.

Many exhibitions have been held in all major cities in Europe, where Renzo Piano has also given lectures. An important exhibition is presently touring the US arousing wide interest, being conceived to provide an exhaustive and in-depth survey of its subjects many projects.

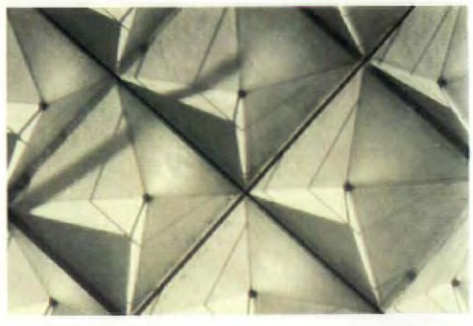
Lightweight Structures 1969-70

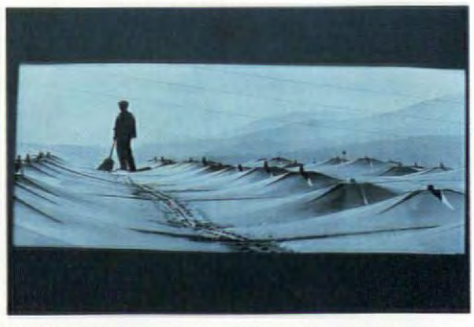
Renzo Piano's earliest completed projects after graduation were various geometrical panel structures of which the plywood lamella woodworking shop, the mobile sulphur extraction enclosure, and the prestressed steel and reinforced polyester Italian Industries Pavilion at Expo '70 in Osaka were the most important. From these and other structures Piano found that in all plastics, and in particular in those mostly used in structural applications – specifically fibreglass reinforced polyester – the ratio between mechanical strength and specific elasticity was such that these plastics could be defined as strong but deformable materials. Reinforced polyester can have half the tensile strength of steel, but with a tendency to deform 15 to 20 times higher than that of steel.

Piano learned that the main problem in the structural use of plastics was not so much their breaking point, but their inherent tendency to deform and thus change their original geometry.

Since then he has noted that plastic applications in those fields where steel, wood or other materials were usually employed have been the subject of many misunderstandings, foremost among which is the copying of structural forms which are typical of materials having lesser cohesion and strength, but higher rigidity.

This has been the cause of many distortions from a critical and formal as well as from a technological and economic point of view.



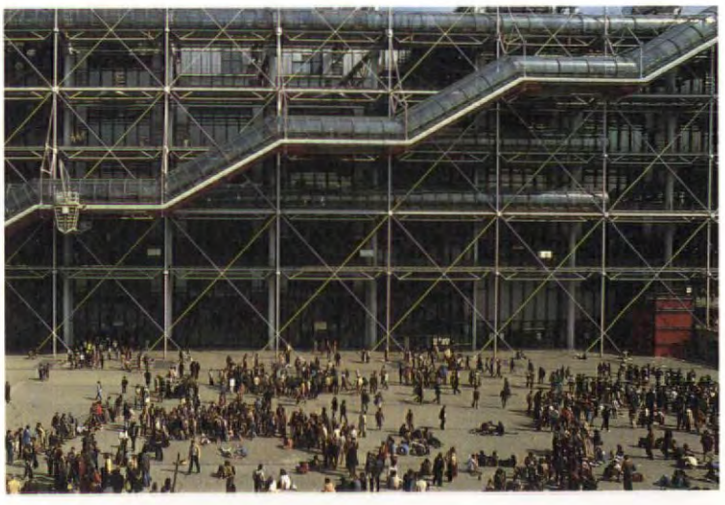


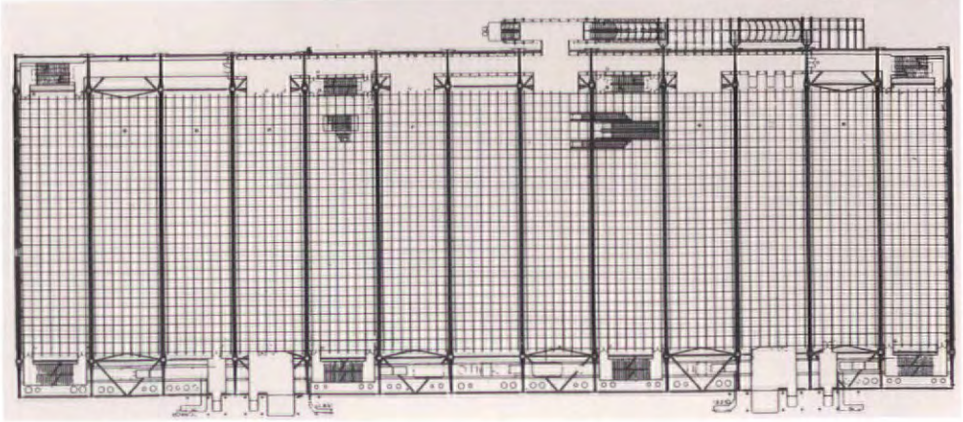
Shell structure study models (top). Woodworking shop, mobile structure for sulphur extraction and reinforced polyester space frames (middle row). First Piano office workshop (left) and prestressed steel and polyester roof (above)

All photographs on this page - BW Archive

Centre Pompidou on completion (below). Plan (bottom) and interior show clear space

All photographs on this page by G. Berengo Gardin





Centre Georges Pompidou, Paris 1971-77

Although breaking with traditional approaches, the Beaubourg is a giant piece of craftsmanship within the great iron and steel tradition of engineering – almost a gigantic prototype, made by hand, piece by piece. New techniques were used much less than the look of the building would suggest. During the erection stage, two trusses, 120 tonnes in weight and 50m long, would arrive from Germany by train every evening. Transport from the railway station to the site would take place at night to keep the risk of accidents to a minimum; along the 1,600m long route, the sewers were reinforced at critical points to withstand the load.

The building consists of five stories, each the size of two football fields. Each storey (7m high, 170m long, 50m wide) is completely free from any structural encumbrance. The building is thus an urban machine; a factory producing information.

An example is the way in which the library function changes over time. At first the library consisted of a million volumes locked up in storerooms. During building works, which lasted six years, this number was reduced until only 500,000 remained, while the rest became microfilms or audiovisuals. Today books can be taken out, consulted or photocopied. Thus, 12,000 people per day use the Beaubourg library which has become a sort of small Open University. There are now 25,000 visitors per day.

According to the idea of Beaubourg as a machine, systems, access and distribution routes were all located outside, visible, readable and immediately identifiable by the public.

If the whole servicing system had been located inside, the space would have lost its flexibility, which is ensured by moving all structural and movement systems outside (lifts, escalators, horizontal galleries) and freeing the interior spaces.

Institute for Acoustic Research (IRCAM), Paris 1973-77

While the Centre Georges Pompidou was being built, a building for musical experimentation and research to form an integral part of the great cultural centre was proposed.

Starting from the scientific principle according to which the earth is the best insulator against noise transmission, it was decided that this centre would be situated underground, creating a pedestrian area in the square which was originally occupied by an old school, thus restoring the urban dignity of the surrounding area.

The main problem, connected to the need for full acoustic insulation right in the middle of a large and noisy city, was only partially solved by the underground location, due to the vibrations generated by underground trains and overhead traffic.

To solve this problem the musical research rooms were mounted on flexible couplings as in cars so as to absorb vibration transmission. For protection against noise created inside the building, rooms were arranged on three levels: those closer to the street level were used for circulation and offices and act as an acoustic absorbing pad between the outside and the deeper level, which is used for musical studies and research.

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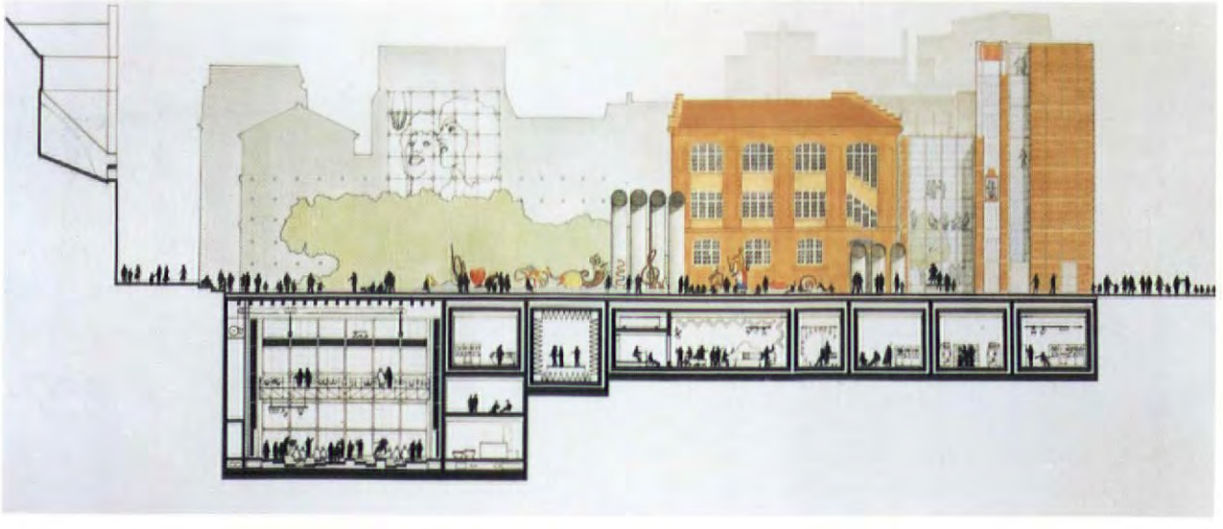
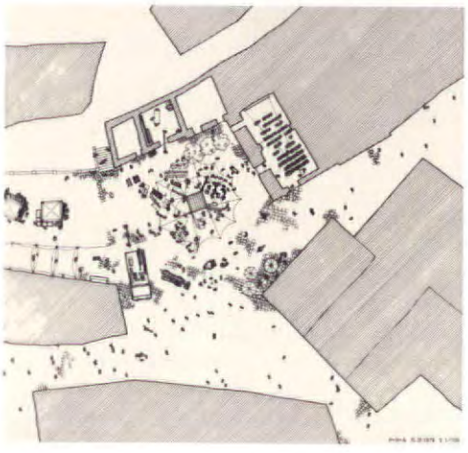
Inside IRCAM (top). Detail of the tower (left) and the tower itself. Section through underground accommodation (below)



Fabric enclosure for public meetings (right and below)



Experimental Urban Restoration, Otranto 1979

The Quarter Workshop, conceived in collaboration with Gianfranco Dioguardi, is a mobile unit for the restoration of buildings in historical centres and the refurbishment of old town centres.

The units first recovery work was carried out at Otranto for UNESCO in association with Peter Rice, followed by Burano Island ,Venice..The Quarter Workshops role is to help adopt new technologies in carrying out traditional restoration works by local people themselves, thus avoiding uprooting them from their houses and at the same time teaching them how to achieve more efficient results. The workshop is organised in a way that makes available necessary technical means directly to small contractors or the people concerned, such as plant for transporting and hoisting materials, mixers, boring machines, glue injectors, and similar equipment that can be easily used by anybody without danger. Records are kept. This is very important because it has a direct impact on social problems. Precious oral traditions were recorded in interviews and television films were made.

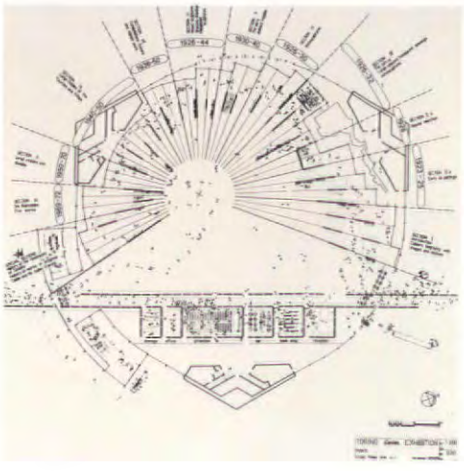
Alexander Calder Exhibition, Turin 1982

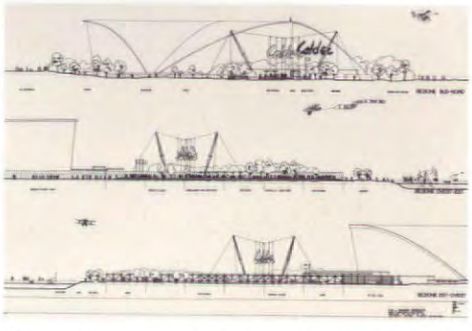
Built for the exhibition Italia '61, the Palazzo a Vela, though never used to house an art exhibition, proved very suitable for the exhibition of Calder's work. The project incorporated Calder's idea of space by operating on the insubstantial elements of architecture, light, air, sound and colours.

The inside of Palazzo a Vela, 30m high, became a constellation of Calder's mobile planetary systems.

The light from the 7,000 sq m glass window was eliminated by means of aluminium panels, dark blue inside and reflective on the outside. This also helped in obtaining a cooler temperature inside the building. A further cooling effect was obtained by the use of fans and by equipping the roof with a water irrigating system. The result of these simple innovations was a drop of 5 to 6 degrees in temperature. The blue colour of the dome and the spotlights in a cool atmosphere helped visitors to concentrate better and in a more relaxed mood on Calder's works of art.

The exhibition layout was a circle divided into each sector corresponding to one of Calder's stories. All sectors converged towards a glistening focus, a star which could be seen from all sides. The purpose of the design of this exhibition was to give visitors the feeling of a festival and make them more at ease in front of works of art.





Plan and images of the Calder exhibition (above)

Renovation of the Schlumberger Factory, Montrouge, France 1981-84

The Schlumberger company, which is now a leader in the development and production of measuring instruments, had their factory built at the beginning of the century. The buildings were erected around a square, covering an area of about 8 hectares.

In order to keep up with new technologies and information the company had to switch from electromechanical work to electronics, and hence from lathes to computers.

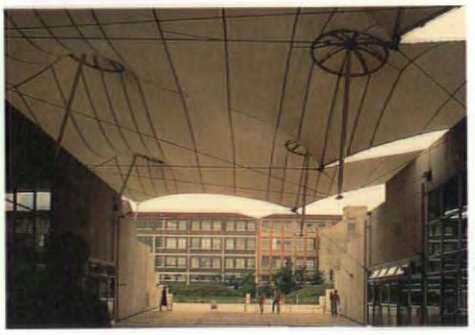
Work had to be thoroughly reorganized and this involved a change in the use and distribution of spaces available in the factory. The new requirements were for smaller and more functional spaces.

The approach was that the factory should be maintained as a link between past and future production. The point was to carry out the renovation work without interfering with the 2,000 employees at work. It was therefore necessary to proceed slowly sector by sector and block by block, keeping up with the contemporary renovation of the company's activities.

The buildings were kept as they were, except for the central blocks, which were pulled down in order to obtain a 20,000 sq m square with trees and a green space open to the public.

The result was that the whole complex of the factory buildings was opened up to the surrounding town with a gratifying effect.

The buildings were preserved from the outside, whilst they were completely modified inside. New spaces were created inside the old structure, capable of meeting modern requirements.



Deidi von Schaewen

Old buildings and new fabric structure (top). Aerial view of approach (below)

Deidi von Schaewen

G Berengo Gardin

Underground Stations, Genoa 1983

Genoa is a city with approximately 800,000 inhabitants, characterised by a high density urban texture and located on a narrow strip of land between the sea and the mountains.

The underground project met transportation requirements along an 8 km line, with 11 stations and a capacity of 25,000 persons/hour in each direction. The line is partly underground, using already existing structures (railway lines and tunnels), and partly of new fly-over construction, over roads and railway lines.

The project is based on the division of the underground system into modular sections, with consequent economies of scale and time.

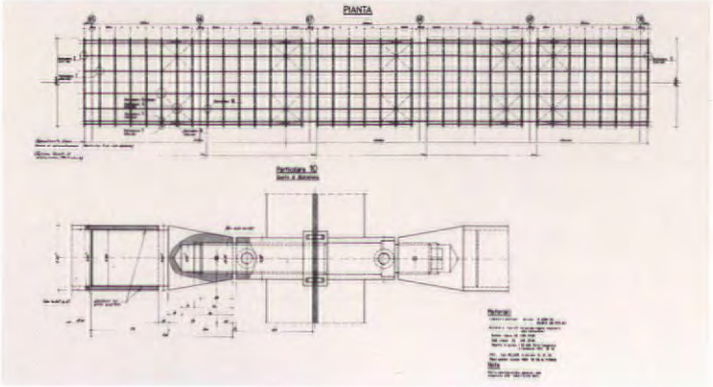
The stations were analysed and divided into individual construction elements, which were then grouped into families according to the relevant function (enclosure, lighting, graphics etc) to obtain a catalogue of all components.

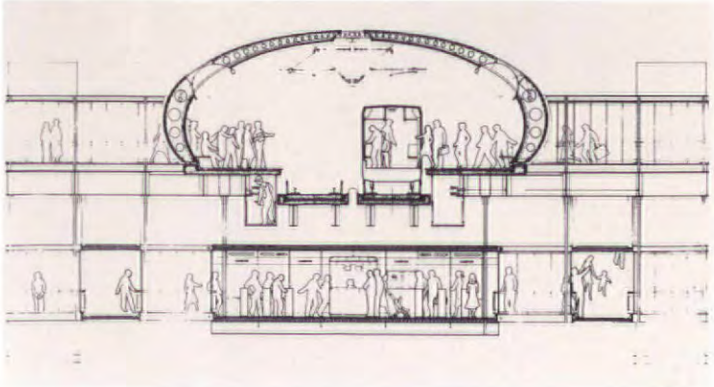
Each station was designed organising these components, easily identified by the users in order to guarantee orientation and public safety. Each station was divided into two parts: the first consisting of railway lines, platforms and access points; the second consisting of street access areas and representing the link between station and city. Each is conditioned by the surrounding urban environment, and influenced by it so that configurations vary from station to station.

G Berengo Gardin

Emanuela Minetti

Light steel framing for station "tunnels" (above and right). Plan (below) and section (below right) show access





Set for the Opera Prometheus, Venice and Milan 1984-85

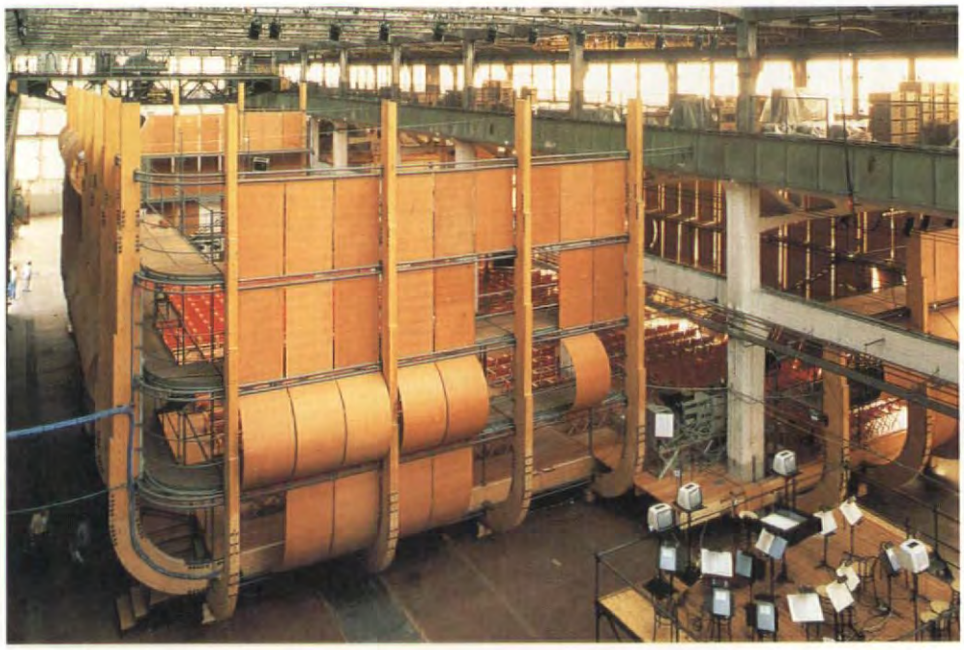
The public (about 400 people) sit at the centre of the structure on specially designed chairs which are partially adjustable to improve the sight lines upwards and sideways. The orchestra players move along the perimeter on three superimposed levels.

The space enclosing the players and audience is designed to act like the sound chest of a huge musical instrument. The "sound box" is made of wood because this material is best suited for such a purpose, as musical instrumental traditions have shown.

By changing the position of the timber panels it is possible to obtain a change in sonority and thus tune-up this huge "instrument" according to the type of music to be played and to the characteristics of the environment.

The fireproof plywood used there is highly suitable for structures where public access in involved.

This huge "music box" was built according to the principles governing musical instruments.However, owing to the different scale adopted here, construction was carried out by using shipbuilding techniques. The "instrument" is in the shape of an upside down rectangular boat, with plywood ribs and laminated planking.



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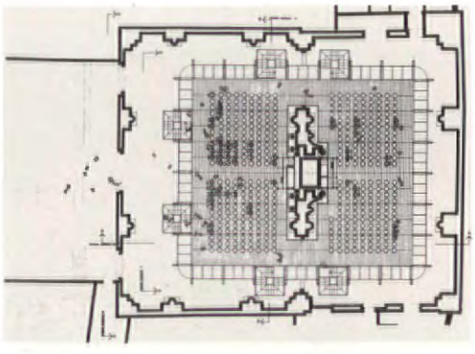
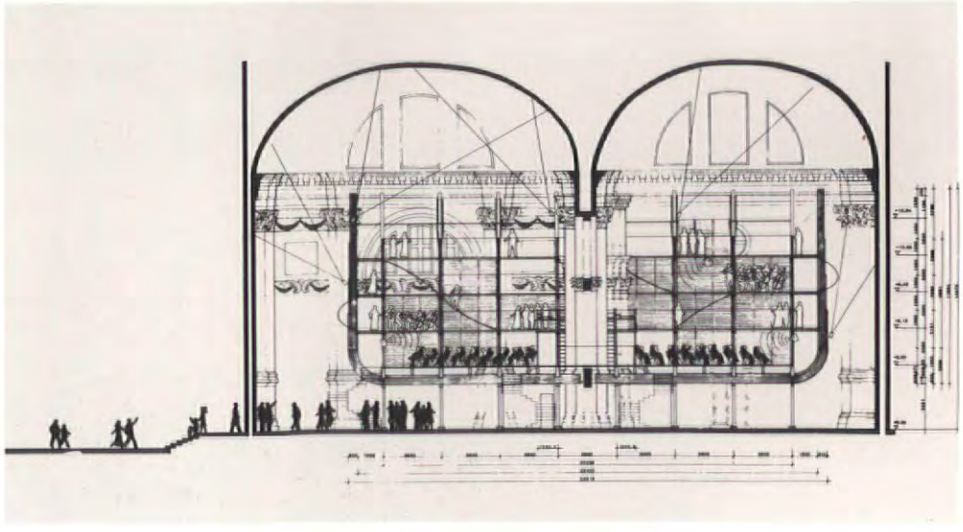
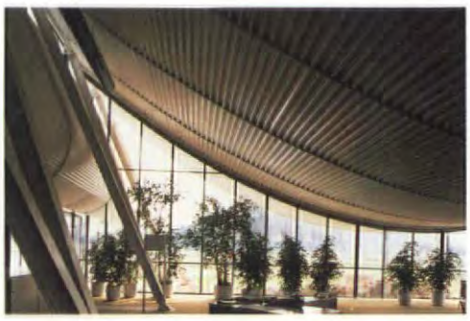
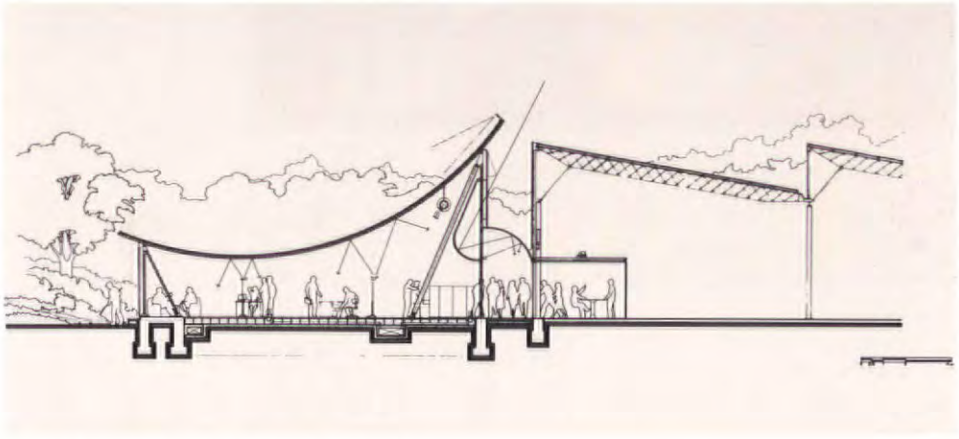
Structure of the great instrument (left and above). Plan and section (below) show shipbuilding methods





Huge sweep of glazing dominates exterior and interior (below). Section shows ingenious bounced daylighting





IBM Travelling Pavilion 1982-86

This travelling pavilion was designed to contain an exhibition of information technology and its applications. The IBM exhibit was shown in 20 parks in as many European cities between 1982 and 1986.

Owing to the fact that it had to travel, the structure was designed as a kit of parts to be easily assembled and disassembled adapting to the different environmental and climatic conditions from town to town. The pavilion consists of a modular sequence of 34 arches forming a transparent tunnel 48m long, 12m wide and 7m high. Each arch is made of 12 polycarbonate pyramids held together by a typical structure made of plywood held together by aluminium joints.

Polycarbonate is the most versatile among plastic materials, but it was especially chosen for this project because of its transparent qualities. Transparency was essential in order to allow contact between the visitors and the surrounding park.

Wood, a material which has always pre-eminently belonged to craftsmen was reinterpreted here in the light of new technologies. Plywood and aluminium were welded together using modern glueing techniques imitating the logic of organic structures found in nature.

The philosophy behind the IBM exhibit was to demonstrate how technologies achieved by the end of this century are capable of being reconciled with nature.

Lowara Office Building, Vicenza 1984-85

The building consists of one single open space with transparent walls allowing an excellent flexibility of use. The idea of creating a single space where all the employees work together is meant to improve interpersonal relationships and overcome any psychological barriers due to specialization or hierarchy.

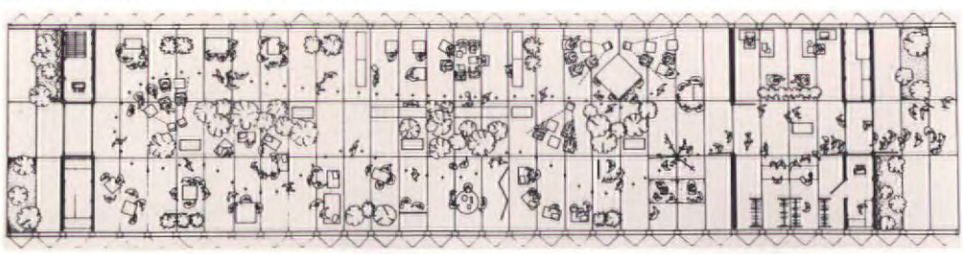
The open space of the office area, covering over 2,000 square metres, has on one side an uninterrupted row of smaller transparent rooms, housing the activities needing isolation, and providing a sound barrier between the offices and the adjoining factory.

The office is covered by a curved roof made of corrugated sheet, sloping from a maximum height of 7.2m down to 2.4m from the ground. It is supported by a structure of V shaped beams 6m apart. The roofing sheets are laid in such a way that a strip of light shows between each one resulting in an effect of lightness. Services are distributed through a raised floor.

The special shape of the roof has been designed in this way in order to provide uniform lighting inside the building. Sunlight enters through the south facing glass wall, then it is reflected by the corrugated panels at the highest point of the roof, thus letting the light reach even remote internal areas, such as the zone between the office-floor and the cellular rooms.

This double reflection natural lighting system is the same as that chosen for the Menil Collection museum in Houston.

Plan and exteriors in York (left) and Paris (right)



Exterior and interior of the gallery (below)

The Menil Collection Museum, Houston 1981-87

Dominique de Menil commissioned Renzo Piano in 1981 to design a new museum in Houston to house the Menil collection, one of the most prestigious collections of Symbolist and Primitive African art in the world.

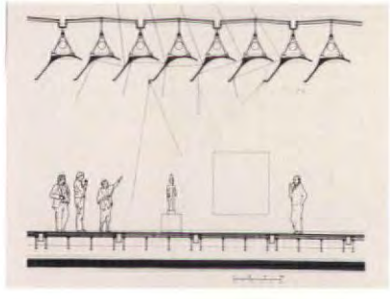
The aim of the design is to realise a space that facilitates a direct and relaxed relationship between viewer and exhibited object, by creating a non-monumental environment of a domestic scale.

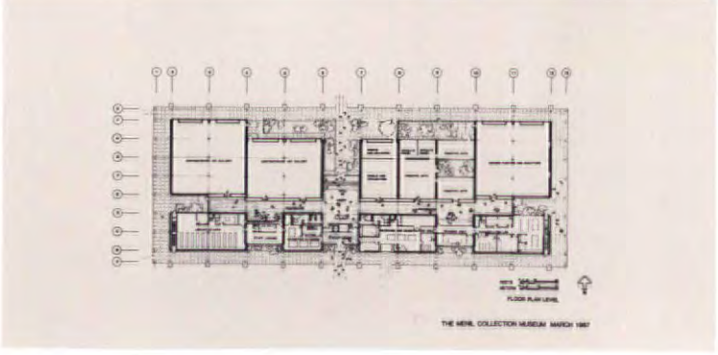
The building stands in a green 19th century residential area of Houston where many of the surrounding buildings are part of the new "museum village", and its low profile and timber surfaces with balloon frame construction integrate the building with its surroundings. The solution to the problem of natural lighting of the exhibition halls constitutes its architectural character: a 25mm ferrocement "leaf" supported by an aluminium structure is repeated 300 times across the top of the building, acting as a filter to solar heat and light. The profile of this element ensures that the works of art displayed are not directly struck by solar rays but allow a mutating light environment that reflects the natural conditions outside.

The museum is organised in two distinct areas: the exhibition halls at ground level where about 200 works of art are displayed (about 1/10th of the Collection) for short periods, and an upper level Treasure House where the rest of the Collection is permanently stored in ideal environmental conditions where they are available to scholars for study purposes.

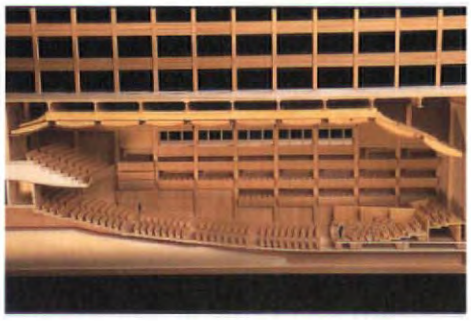
Richard Bryant

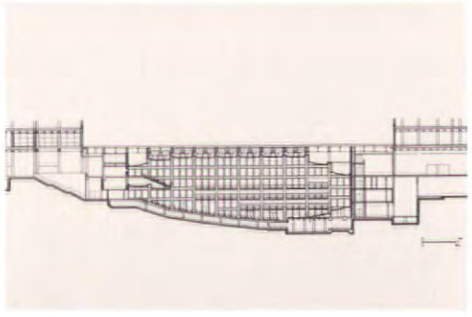
Paul Hester





Detail of ferrocement louvres (above left), building plan (left) and site plan (above)





Aerial view of Lingotto factory (top). Model of concert hall with section (above). Section through entire factory (below) shows penetration of green areas

G Berengo Gardin

Rehabilitation and Conversion of Lingotto Factory, Turin 1985-1994

The Lingotto FIAT factory is both a piece of history and a symbol of Turin, and therefore it will play an important role in the future of the whole city.

After 60 years as a car manufacturing facility, this landmark in the industrialization of Turin will take on a new life as a multifunctional structure where training and enterprise, technological services and exhibition facilities, research and conference activities will take place together and interact.

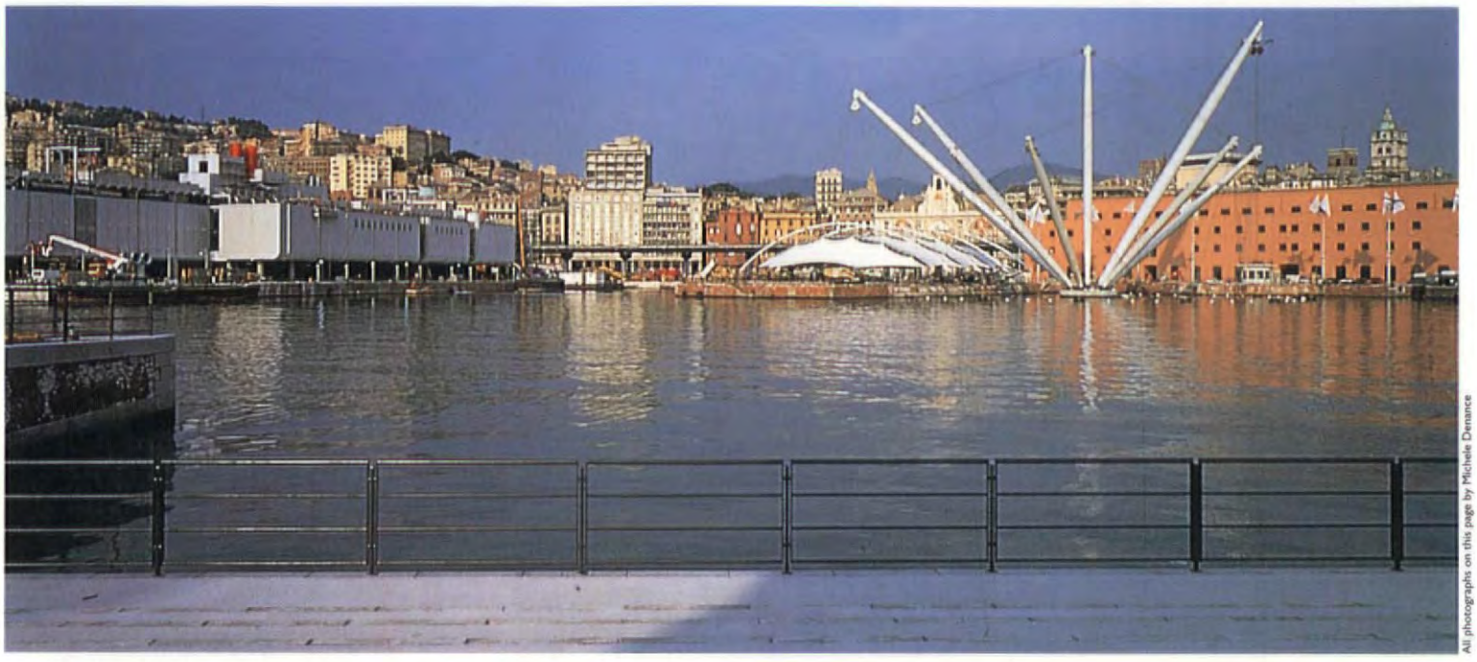
Whatever the new functions for Lingotto, it will maintain its roots in the past. Indeed the common denominator of all its new activities will be the link with the manufacturing idea, not in the traditional sense, but in offering services closely linked with industry.

The scheme envisages a series of structural modifications, designed to establish solid links between the building and the city, nature and work, technology and environment. The original repetitive geometrical structure will be retained, and only incongruous later additions will be cleared away. The south ramp will be freed of all excrescences to become the central axis.

Nature is the physical element that will unify and draw together the urban structure around Lingotto. Living plants will fill the spaces once occupied by industrial plant and railway lines, healing former wounds between the factory and its surroundings. This victory of nature will be underlined by the creation of a pedestrian avenue linking the park to the gardens inside Lingotto.

The main entrance will be on Via Nizza through the present office block, with a slightly raised ramp running from road level to the first floor.

Expo structures



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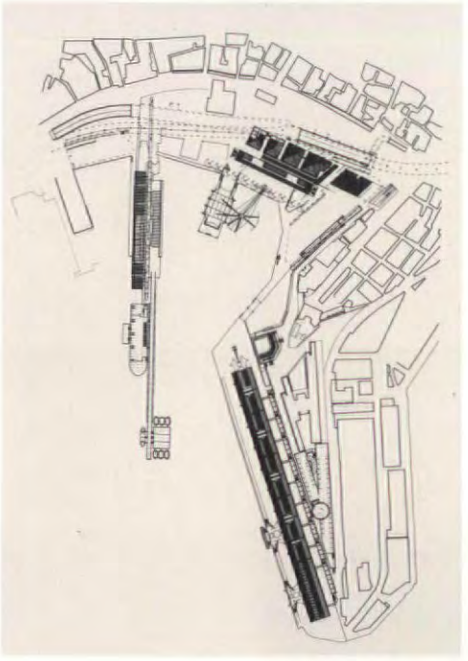
Columbus International Exposition, Genoa 1984-92

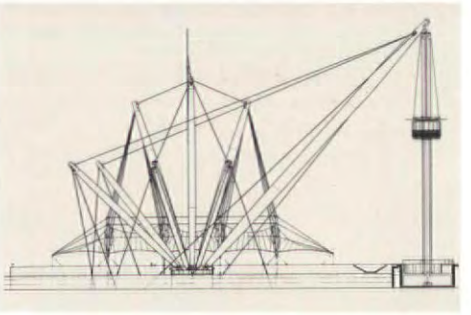
In 1992 an International Exposition took place in Genoa to celebrate the discovery of the Americas by Christopher Columbus. The site for the exposition was a large disused trading area within the old harbour. The site is approximately 50,000 sq m in area.

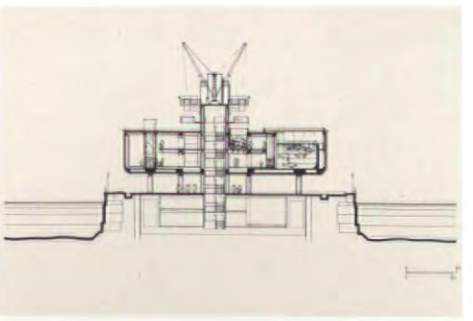
With this project, Renzo Piano took the opportunity to restore the link between the old town of Genoa and the port areas from which it has become separated over time by architectural and physical barriers. The project links past and future, rehabilitating existing structures and designing new buildings.

Now that the 1992 events have come to a close, these spaces will still be used by the city and will be part of a large urban and harbour park. Among the buildings rehabilitated are the Cotton Warehouses, which are housed in 390m long early 19th century structures. These have been fully renovated while preserving the structure and the exteriors. Provision for a conference area has been made inside.

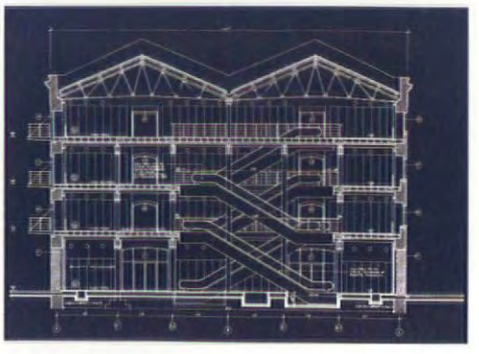
The bonded Warehouses consisting of a mixture of 17th century and 20th century structures was also restored. It is intended that these buildings will house a number of facilities for the city.



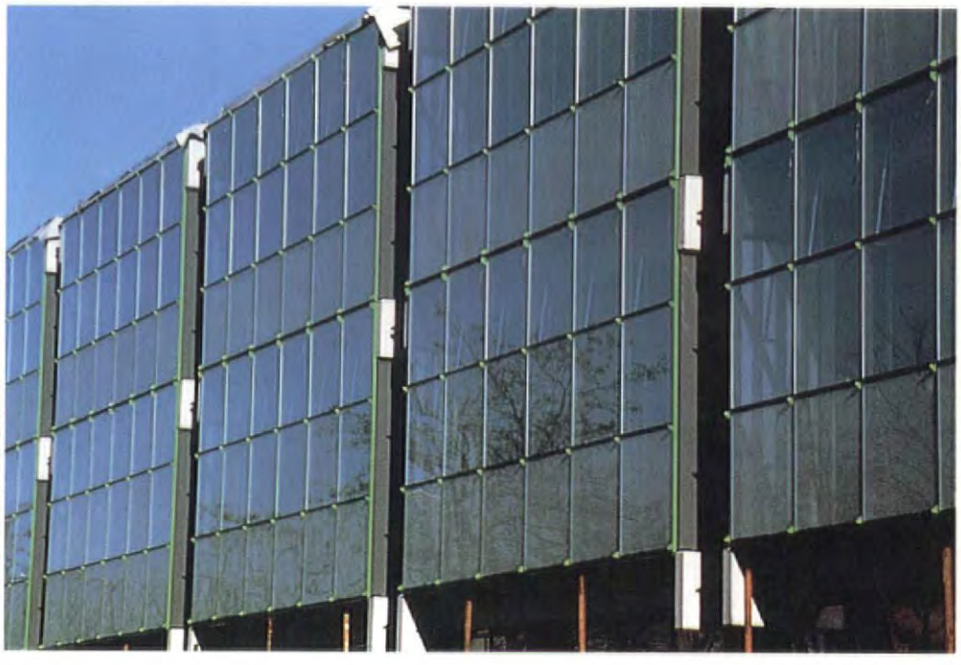




Plan of dock area (above) with drawings of structures and refurbished warehousing (right)



Aluminium curtain walling (below) with details beneath



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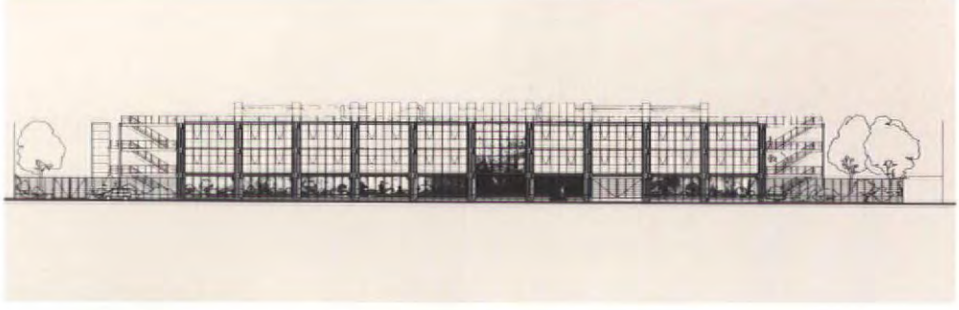


Long section (above) and interior (left) show extent of glazing

Light Alloy Institute Offices, Novara 1985-88

The principle behind the ISML building is based on two well-defined objectives: to produce a highly flexible building, and to create, develop and apply a new aluminium frame facade system.

The first objective was achieved with a structure in reinforced concrete, entirely prefabricated and dry assembled.

Consisting of hollow beams, columns and flooring, the structure permits a good network of integration on a primary grid of 8.40. The hollow columns with a section of 1.20 x 1.20 were cast in one piece. The building shell was completed in a very short time (3 months) The concrete structure is relatively heavy in order to meet the requirements of stability and vibration resistance.

The building is heated and cooled through a pulsed air system. Air is pushed through convector vents located in the ceiling of the central corridor vents with adjustable output and power.

Lighting throughout is integrated into the flooring ribs. As the building is located along an industrial zone road, the ground floor is used for offices only on the courtyard side.

A covered garden extending the length of the ground floor facade creates a visual screen between street and the offices.

The second objective – i.e. the development of a new aluminium frame curtain facade – provided the opportunity to experiment with a new technique of structural glazing in combination with the application of some fundamental principles of a curtain facade.

The facade, with aluminium as its crucial structural element, has to be alive. In addition, it must meet the needs and constraints imposed by the users, environment, climate, and exposure.

Hence, the facade is composed of elements measuring 7.20m x 3.60m, entirely factory assembled and equipped with silicon bonded glass units. These large sub-assemblies are attached to the nosing of the concrete slab which is fitted with an aluminium bar. The curtain wall concept is therefore perfectly illustrated and most of the assembly work takes place at the factory.

Any type of blinds, sun shades or stiffeners may be used both inside and outside. Moulded aluminium stiffeners were chosen for the Novara building.

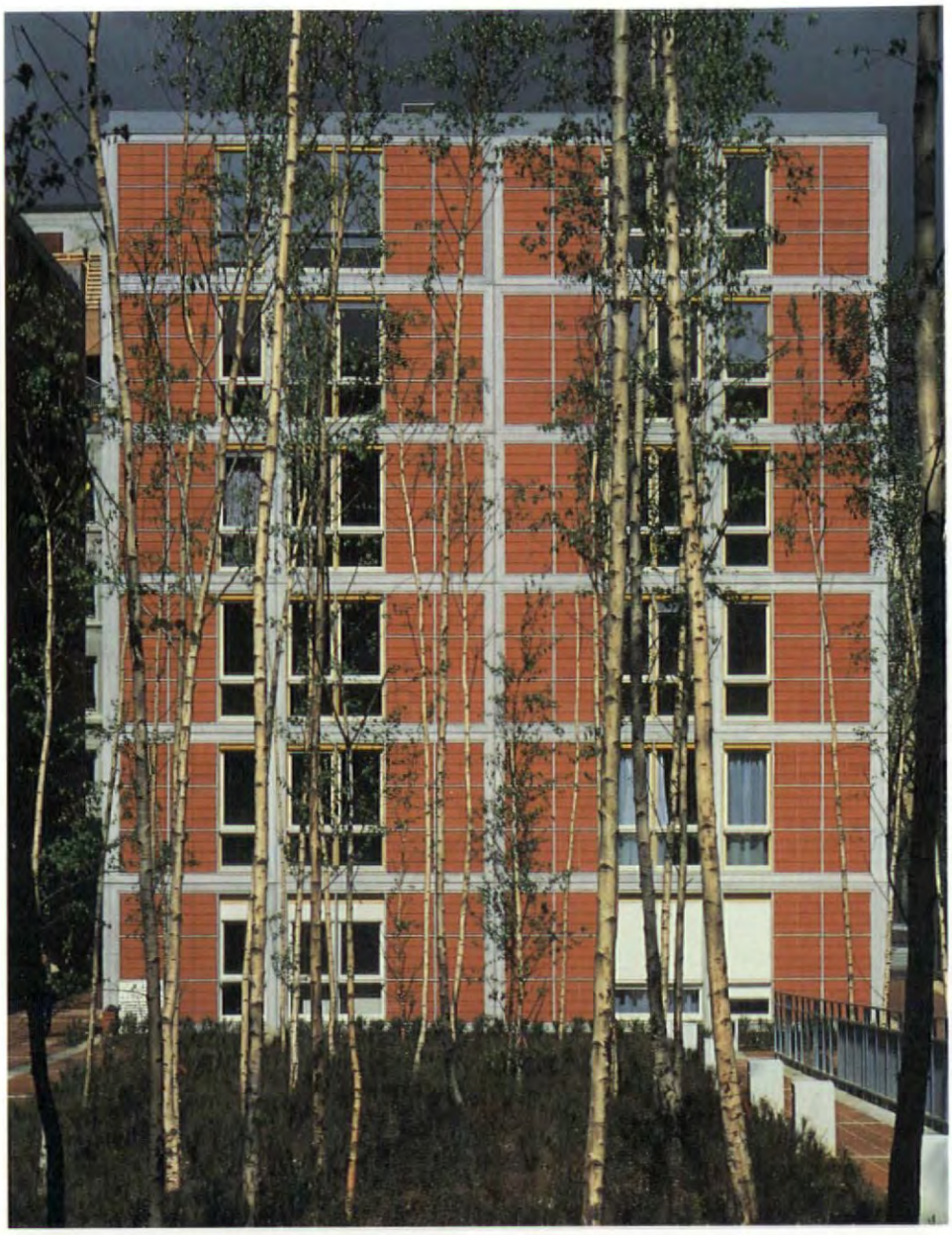
High Rise Courtyard Housing, Paris 1988-91

The buildings, with their rectangular general shape, can be thought of as a mass built to fit into the existing urban fabric, with its centre "carved out" to accommodate an interior green space. Two narrow slots diivide the constructions from the garden. The contrast between the bustle of the street and the calm of the garden creates a surprise for the residents who must walk through the garden to reach their building entrance.

The volumetric diversity of the building results in a wide variety of apartments. However, for the buildings bordering the garden and for the blocks on the east and west separated by the slots, model apartments with fairly neutral and flexible layouts were created. Essentially they comprise a large crosswise room facing north-south with a balcony or winter garden at either end; a conventional "night" area is adjacent. Therefore each of the 220 apartments created has exposures: to the garden and urban neighbourhood..

The facades of the upper stories (levels 2-7), are made of prefabricated GRC elements mounted on a primary frame about 5cm thick and 30cm deep on a 90 x 90 cm grid. The framework is filled either with opaque insulating elements covered in natural tone terracotta or GRC screen elements. In the latter case, the framework is white.

The architectural identity derives from geometrical strictness, unity of materials and the richness of their textures. Glass elements (surface treated to ensure privacy) are fitted in the same frames used for the terracotta.These facades correspond to two-storey apartment-studio workshops.



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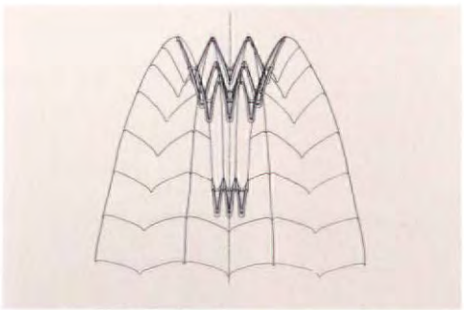
Exterior views (above and left) with elevation and interior detail (below)

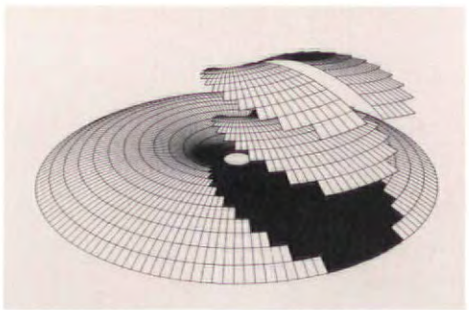
Structural model of shell form

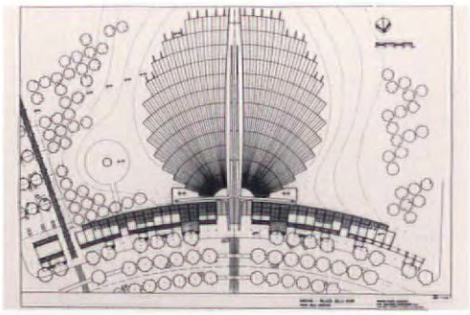
Sports Hall, Ravenna 1986-91

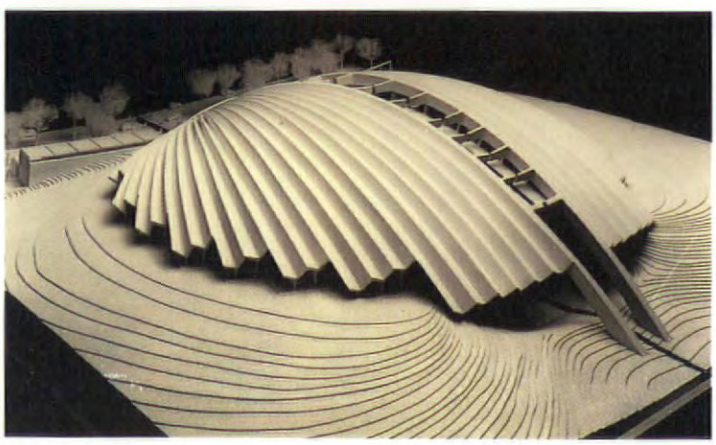
The Sports Hall, seating 5,000 people, was designed as an answer to the manifold requirements of a town with intense sports activities. The facility is highly flexible. It includes an athletics field and can easily adapt to the needs of almost any sport.

The project consists of the sports hall and the surrounding park. The large multi-purpose hall with associated facilities is located in a block which follows the main road and maintains continuity with the surrounding urban fabric. The entrance is located at the junction of these two systems above which rise two large columns that support the covering shell of the hall with steel cables. The roof structure composed of ferrocement modular elements clearly refers to the natural structure of scallop shells. Natural lighting and ventilation are introduced into the building through the central section where the two shell structures come together.

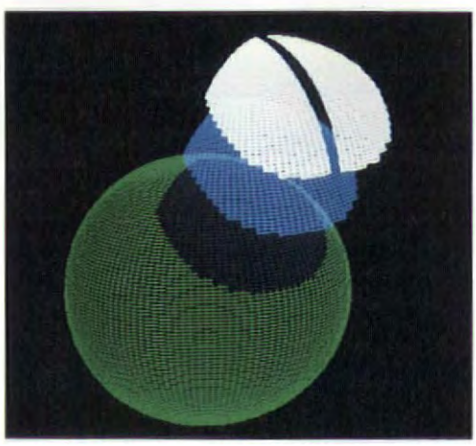








Section through roof vaulting (above left). Segments of doughnut shape and site plan (above). Shell (left) and computer graphic (right)



Natural Materials Research Laboratory, Genoa 1989-91

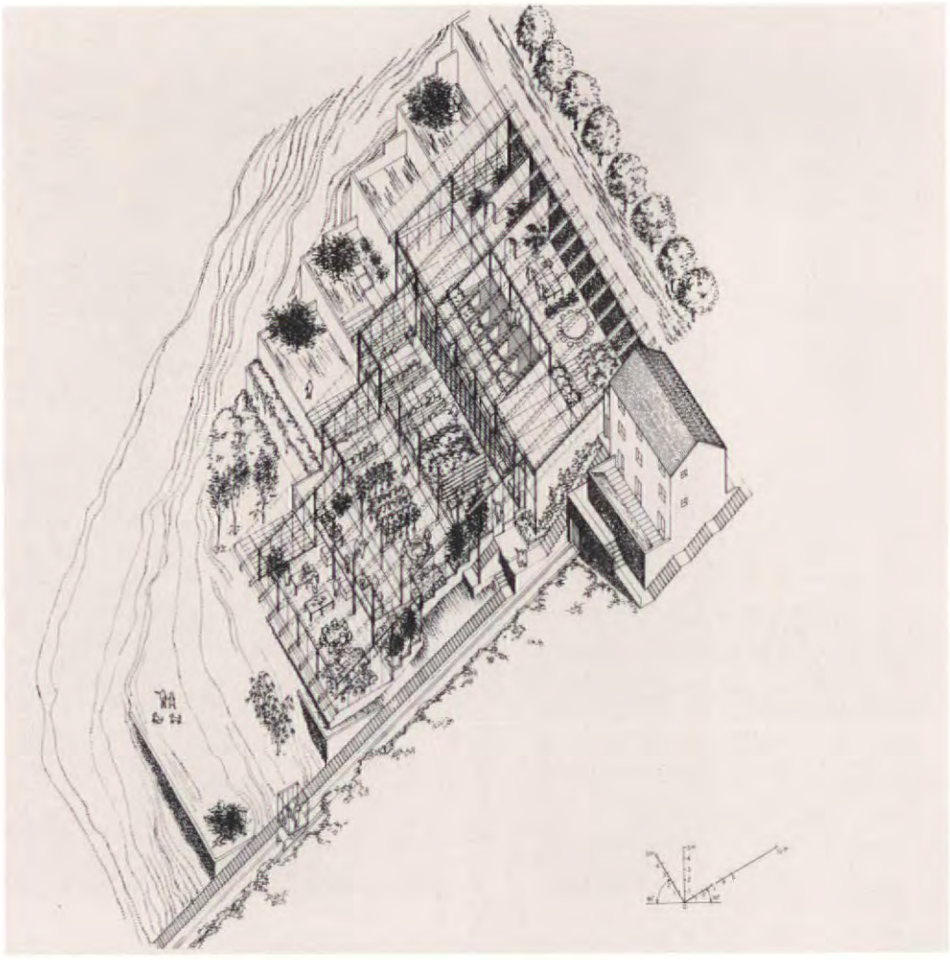
This project for a laboratory where research on natural and traditional materials can take place was supported by UNESCO. It is intended for the study of materials to arrive at possible combinations of anti-seismic lightweight structure: uses of laminated wood, concrete, stone and the re-utilisation of traditional Mediterranean materials in modern building.

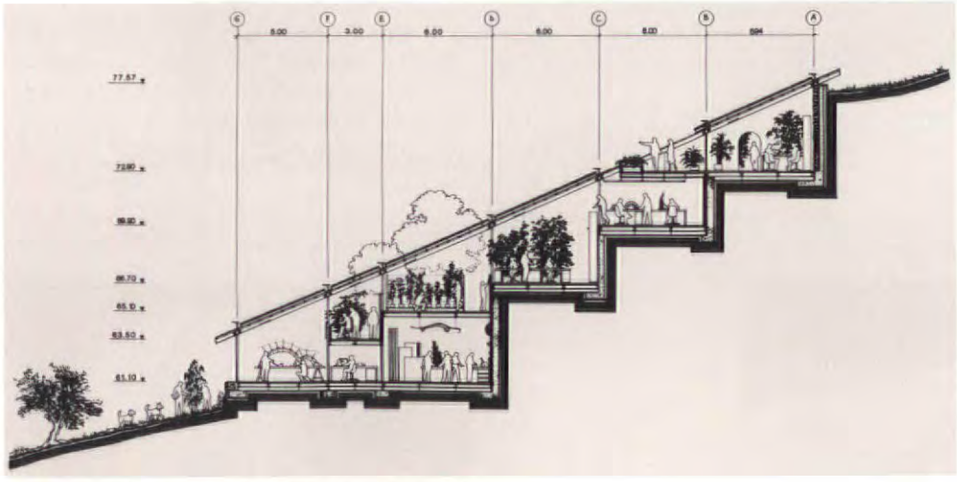
The laboratory building, situated in a beautiful spot on the Ligurian coast is reached by means of a monorail from the coast road. The small complex (1,000 sq m) was built on traditional terraces made by the Ligurian farmers to farm on the steep hills. The transparent sloping roof resembles the wings of a giant butterfly, covering the terraces which continue inside.

The roof structure is made of timber frames infilled with "membranes" of plastic fabrics and films, which were selected for their heat insulation and light filtering properties.

A motor-driven curtain system is controlled by information registered by PhotoElectric Cells. This protects the roof against weather exposure.

The project recalls the traditional farming history of the area, with its terraces, traditional materials and arrangement on various levels, while at the same time being a modern shelter for the protection of the land and work under cover.





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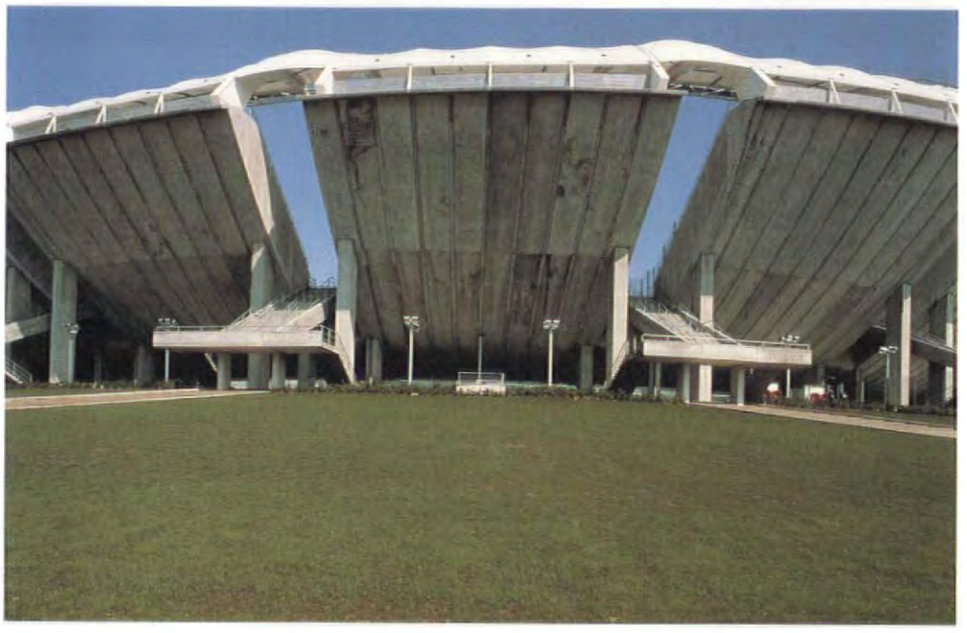
Lightweight structure over terraces (top) is exposed in section (above). Day and night views (right)

Shunji Ishida

Shunji Ishida



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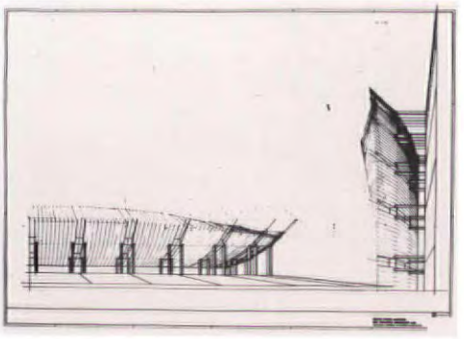


Interiors and exterior of stadium (above) show elegance and size. Drawings (left and below) show derivation of curvature

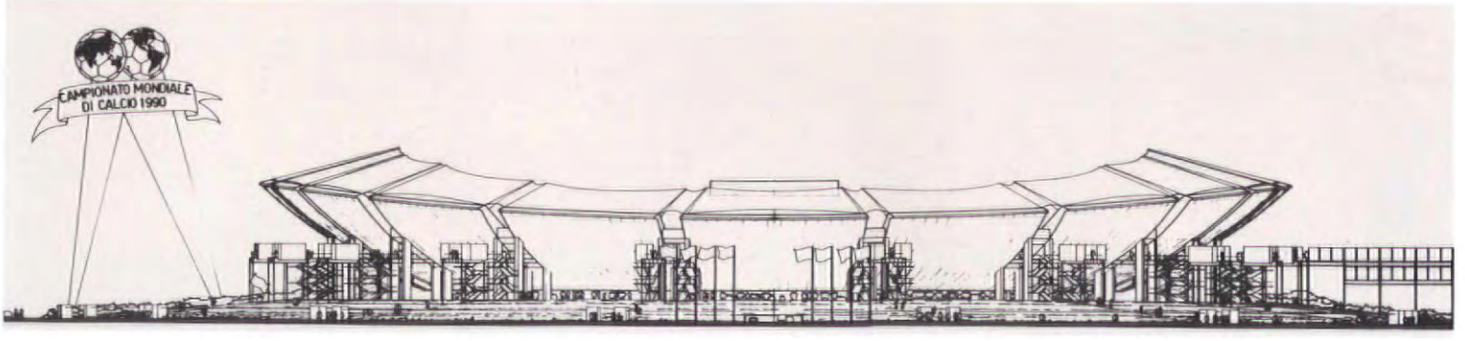
Soccer Stadium, Bari 1987-90

Italy, host to the 1990 World Cup , rebuilt eight stadiums and constructed three new ones in preparation for the event. The S Nicola Football Stadium at Bari was one of the new stadiums.

The site is in the suburbs of the southern Italian City of Bari. The 60,000 capacity stadium sits in the centre of a landscaped bowl looking something like the crater of a volcano, the elevated upper seats rising only 3.6m above ground level, thus minimizing the disturbance to the surrounding scenery. From a distance, the trees on the surrounding earth banks look as if they support the stadium, like a vast flying saucer.

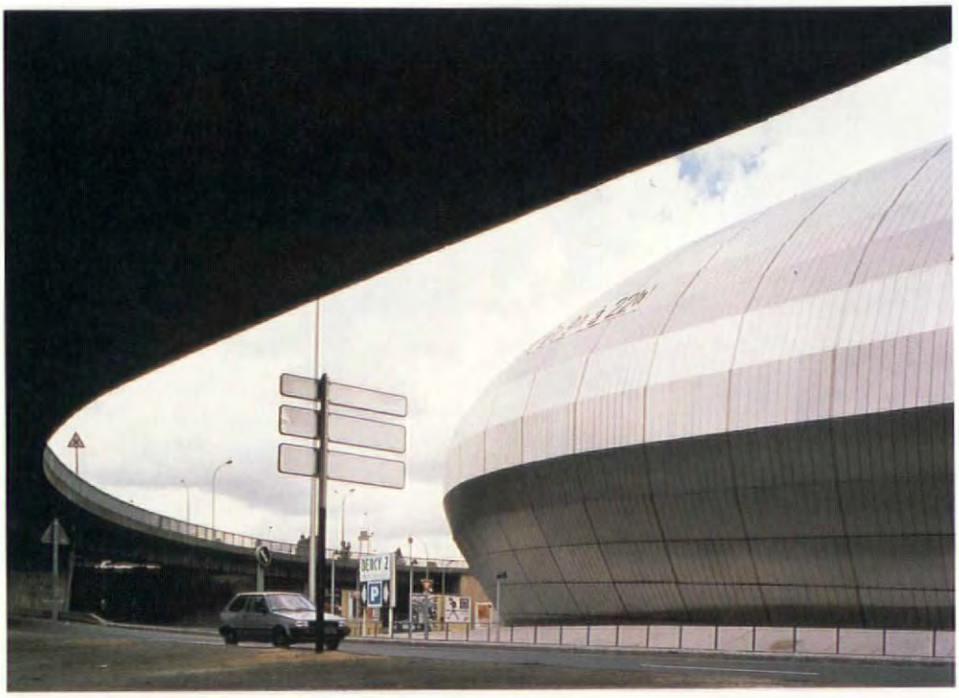
The elliptical arrangement of the spectator seating consists of 310 elegant crescent-shaped pre-fabricated concrete beams, each erected on the site. The upper levels of seating are divided into 26 "petals" so the whole thing looks like a giant flower in full bloom. The slits between the petals give the building a sort of lightness, making the access routes to and from the stadium visually very clear. A computer simulation was used to ensure a 100% field of view from every seating position. The Teflon roof and the lean-to roof were carefully calculated to give spectators protection from the strong sunshine and rain as well as to shelter the playing area from turbulent winds.

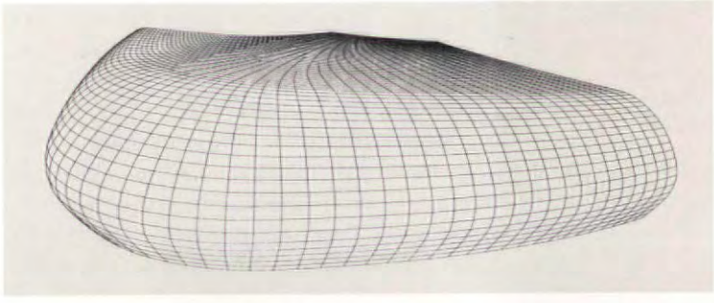
The various service facilities, such as toilets, ticket counters, information desks etc, are laid in a space called the "portico" between the embankment and the spectator seating. The wide space below the seating is used as a passage and escape route in case of an emergency, with dressing rooms, machine rooms etc, leading off the passage. There is no direct route from the parking area to the seating, so spectators must enter and exit through 26 gates after walking through the landscaped slopes. This also provides an ideal area of refuge in case of emergency.

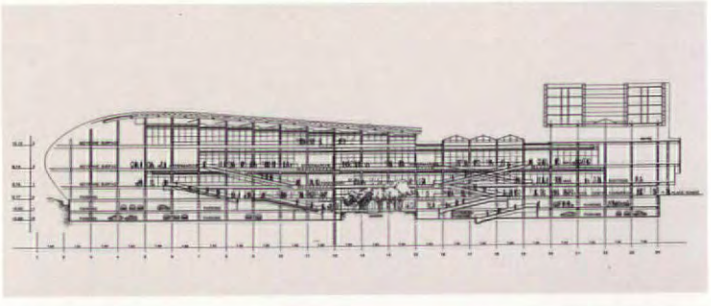


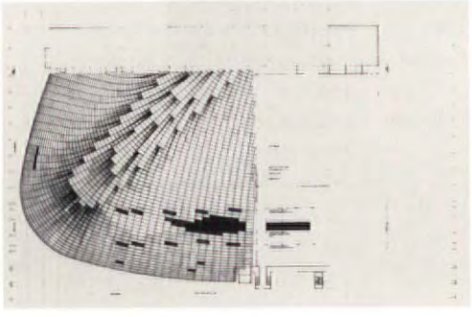
Bercy II Shopping Centre, Paris 1987-90

The shopping centre of Bercy is located on the extreme east of Paris, where the area of Charenton suburbs begins. It is sited at the intersection of the Boulevard Périphérique and A4 motorway. The building fits into an angle and faces in two directions.The form of the building was dictated by two factors: to cope with a megastructure in an area such as the Boulevard Périphérique, and to make the building visually understandable from this major ring road. A form was created whose volume and shape along the curve of the road looked like an airship which may have landed there. Then, searching for something which would make the whole form easily understandable from passing cars and express the building as a precise object, it was decided to clad it in a grid of standardised metal panels.







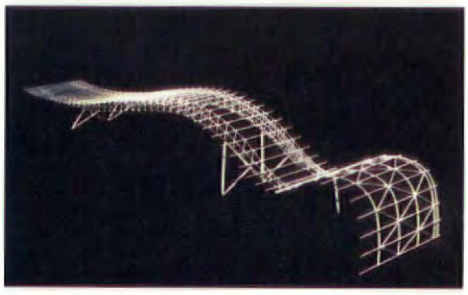


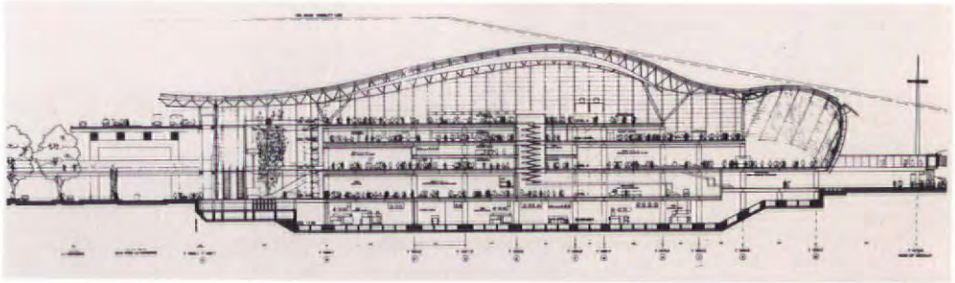
Metal skin of centre (top), computer perspective and roof plan (above), section and aerial view (right)

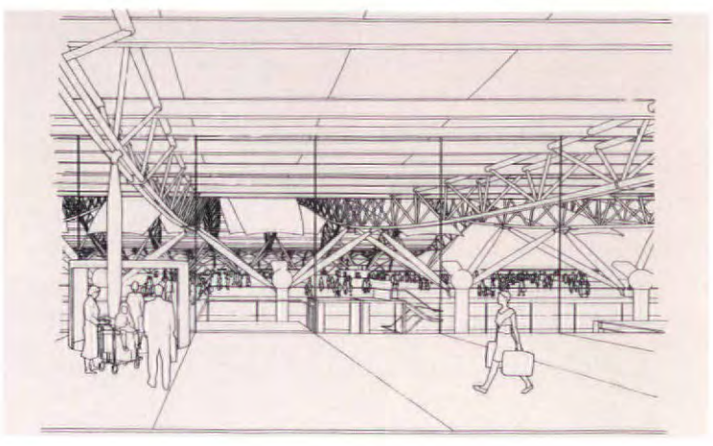
Kansai International Airport, Osaka 1988-1994

On May 24, 1991, construction work began on the Kansai International Airport Passenger Terminal Building on an artificial island in the Osaka Bay. Piano called the day "The beginning of a dream's transformation into shape". This project to build an airport on a large stretch of water is a grand concept for the end of the 20th century. The terminal building will be 1.7km in total length and 300,00 sq m in floor area, forming a place of departure and arrival for 25 million passengers annually. An air terminal is a special place where travel is celebrated, just as railway stations were a century ago. The terminal building design reflects these changes in travel and advancements in technology, particularly aeronautical technology.

This terminal building will offer the most up-to-date facilities and equipment, and can be considered as a kind of an airplane or glider in itself. While brimming with technology on one hand, the airport offers people the chance to alight on an island full of wild life which coexists in harmony with man. Within the building, the shift from nature on one side to technology on the other side intuitively guides the passengers to their destination.







The artificial island under construction (top). Computer graphics of roof structure and section (above), and interior (right)

Renzo Piano: A Biography

Renzo Piano was born in Genoa on September 4 1937. He graduated from Milan Polytechnic School of Architecture in 1964 and subsequently worked with his father in Genoa. He moved to London in 1965 and collaborated with Z S Makowsky until 1970. He first achieved international prominence for his work in collaboration with Richard Rogers from 1971 to 1977, in particular for the design of the Georges Pompidou Cultural Centre in Paris, which has become one of the landmarks of 20th century architecture.

Renzo Piano also collaborated with Peter Rice (Atelier Piano and Rice) and with Richard Fitzgerald (the design of the Menil Collection in Houston, 1981). Piano's present practice, the Piano Building Workshop in Genoa, has been in existence since 1980.

Selected Projects

1965-70	Early experiments in lightweight structures and research in new materials.
1971-77	Georges Pompidou Cultural Centre, Paris.
1973-77	Institute for Music and Acoustic Research, Paris.
1978-80	Fiat VSS Experimental Vehicle, Turin.
1979	Urban reconstruction, Otranto.
1981-84	Rehabilitation of the Schlumberger Factories, Paris, Montrouge, France
1981-86	The Menil Collection Museum, Houston, USA
1982	Calder Retrospective, Turin.
1982-84	IBM Travelling Pavilion.
1983	Underground Stations, Genoa.
1983-93	Lingotto Rehabilitation programme, Turin.
1983-84	Musical space for opera by Luigi Nono, Venice-Milan.
1984	Columbus International Exposition 1992, Genoa.
1986	Sports Hall, Ravenna, Italy.
1986	Rehabilitation of the Moat, Rhodes, Greece.
1986	Joint Research Programme on Natural Structures, Vesima, Genoa, Italy.
1986	Rehabilitation of the Palladio Basilica and City Hall, Vicenza.
1987	Football Stadium, Bari.
1987	Bercy Shopping centre, Paris.
1987-88	IBM Offices, Pompeii.
1989-94	Kansai International Airport, Osaka.

GLOBAL REVIEW

SOLAR NO FAD

SCIENCE IN ZIMBABWE

HIGH DENSITY LIVING

SHOPPERS' DELIGHT

85 STOREYS HIGH

RETAIL CONNECTIONS

THE INFORMAL BOOM

AIRPORT RETAIL

CHUNNEL VISION

ECOLOGICAL BUILDINGS

It certainly seemed ambitious, and a few years ago it would have seemed unfeasibly cranky, but here it was: the serious suggestion for a "Charter of Florence" in May to set out a new ecologically-motivated architecture, just as CIAM and Le Corbusier's Charter of Athens in 1933 set the philosophical framework for modern urbanism. And following it up in short order: the World Congress of Architects in Chicago in June, discussing "designing for a sustainable future", put out what was billed as a "Declaration of Interdependence". A bandwagon appears to be rolling.

Fifty years after CIAM's mediterranean cruise into Athens (the congress, remember, took place aboard a liner, the Patris II), Florence provided an appropriately exotic location for a new kind of congress, while the Corb role this time round was played by Sir Norman Foster as one of the five joint chairpeople of what, until recently, would have been merely one of those technically-minded conferences on alternative energy issues. The others were Hermann Scheer, Francesca Sartogo, Cesare Boffa and Norbert Kaiser. Over in Chicago, Sir Richard Rogers, Jean Nouvel, Ralph Erskine, Helmut Jahn and others provided the personality interest.

The Florentine conference, Solar Energy in Architecture and Urban Planning, held in mid-May, had high ambitions: to unite all involved in the built environment in an ecologically-minded integration of functions, which was rather the reverse of the popular idea of Corb's city planning matrices with their zonal separations. If all this seemed a lot to demand of a simple technological imperative – namely to reduce emissions of greenhouse gases by making greater use of solar energy, both for heating and cooling – the reason given was that, in the words of Hermann Scheer, president of the "Eurosolar" organisation and conference chairman in Florence, "architecture is an expression of an era and its potential" and that a new architectural culture, technologically-driven but by no means faddish, was emerging from the process. In Chicago, interdependence rather than integration was the word but the message, as we went to press, appeared to be the same.

The cynical, looking at the highly specialised and highly technical sessions planned to take place throughout both conferences, might conclude that the big-name game was merely an attempt to inject some glamour into some otherwise rather workaday proceedings. Nothing gets delegates going more than the concept of an impending global environmental catastrophe that architects, developers and builders must attempt to thwart, yet this was one of the sessions that Foster was due to co-chair, together with his partner in the Microelectric Park project at Duisberg in Germany, Norbert Kaiser of Kaiser Bautechnik. In Chicago, Rogers and his luminous colleagues were due to debate the same issues.

It proves that the notion of low, or no-emissions building is now mainstream, and maybe one of the ideas to emerge from the sessions – that of buildings as active power generators, beyond their own energy requirements – is one that will catch the public imagination.

The fact that the idea of low-energy building is already affecting the appearance of some new architecture is undoubted. Some of this, though, seems to be mere shape-making or political gestur-

ing on an ad-hoc basis, divorced from city planning as a whole. The experience of Expo '92 in Seville – a whole new city built in a natural frying-pan, where attempts at natural climate moderation were not entirely successful, acts as a caution. There will be considerable fallout from Florence with its Charter and Chicago with its Declaration. The reports from both will be required reading for all involved in the design and building businesses.

The Zimbabwe campus

Shopping in Denmark

ZIMBABWE SPENDS

Grandiose public commissions are beginning to emerge again in Africa. Consultants from three continents are to combine to design a new science and technology university in Zimbabwe, where a masterplan has been drawn up for an immense campus in the country's second city, Bulawayo.

The Zimbabwe architects are Mwanuka Mercuri and Associates, in association with UK consultants Tibbalds Monro and New York based Davis Brody. Tibbalds Monro have previously worked for the universities of Kingston, Brunel and Surrey while Davis Brody is experienced in US-style campuses and teaching laboratories.

Such multiple-office working across continents is, according to Chris Colbourne of Tibbalds Monro, something that has only become practicable in recent years with advances in information technology.

The first phase of the scheme alone will total more than 2.2m square feet and will require a dozen contractors on site. It is arranged on a radial plan with a central core of academic buildings, separate zones for circular clusters of student housing and accommodation for staff, a sports complex and (a necessity for most technology-based universities) a "techno park" for businesses that develop a symbiotic relationship with the research facilities.

The student population will start at around 10,000. The formal radial nature of the plan suggests that it could grow into a huge circular student city, given enough time and money. Far from being an impossible dream, it is already happening: the infrastructure is going in as design work continues.

SINGAPORE ROOM

At least one city that has stuck with the notion of state-provided mass housing – Singapore – appears to be doing it rather well, according to Britain's Building and Social Housing Foundation. The Foundation's Diane Diacon, reporting on Singapore's housing, finds that 87 per cent of all citizens now live in a dwelling provided by the housing authority and that, although this is invariably dense high-rise housing, the fact that the homes problem has effectively been beaten over the past 25 years means that the concentration is now on quality rather than just providing shelter.

Diacon found that the space standards in the Singapore flats were considerably better than Britain's once-famous Parker-Morris standards for social housing, which (although always intended to be minimum, not maximum standards) were abandoned in Britain in the early 1980s as being over-generous. Equally impressed by the management of the housing, Diacon concludes: "With the exponential growth and urbanisation of the world's population, the Singaporean example is of global significance. It shows how to organise, administer and construct high quality dwellings in socially cohesive communities at density levels which are some of the highest in the world."

MALL IN DENMARK

This is what an award-winning shopping centre in Denmark looks like: the Slots Arkaderne at Hillerod, which won the European in-town award of the International Council of Shopping Centres this year. Those who think they could do better should note the retail markets to aim for in the rest of the 1990s: not the Scandinavian countries, according to property analyst Harold Couch of Hillier Parker, but Spain, Italy, Portugal and (though less important) Germany and Eastern Europe.

Other commentators prefer south-east Asia as a retailing goldmine. Roy Higgs of America's Development Design Group, speaking at the ICSC conference in April, singled out Hong Kong, Indonesia, Malaysia, Taiwan and the Philippines. Why? because the average GDP growth rate in those countries currently stands at around 7 per cent, compared with a European average of more like 1.4 per cent.

PELLI IN KL

The Malaysian development boom continues apace. The city centre redevelopment of Kuala Lumpur, starting with the headquarters of the state-owned oil company Petronas, shows how global attention – and the concomitant funding – has switched to the once-fringe countries of the Far East.

This is a Reichman-style development but without the Reichmans, following their embarrassment over London's Canary Wharf. The brothers' favourite architect, Cesar Pelli, is designing twin linked 85-storey towers for Petronas. The whole project will cost £1.2 billion, provide 5.4 million square feet of offices, 1.8m square feet of shops, a huge hotel, an immense car park and 50 acres of parkland. Such things do not happen

Pelli's twin towers for KL

in Europe, the United States, Japan or Australia on quite this scale these days.

All this is just the first three years. Over another 15-20 years, the aim is to provide nothing less than the world's largest commercial property development.

The people who have assumed the mantle of the Reichma's Olympia and York are a consortium of interests jointly known as Seri Kuda. Separately, they are Petronas, the Selangor Turf Club (cashing in the awesome land value of their old racecourse), Pacific States Investments and MAI Holdings. Lehrer McGovern Bovis (Malaysia) are project managers.

VIENNA ART

Vienna's MAK – Museum für Angewandte Kunst – has just reopened after radical alterations. Its 11 exhibition rooms aim to show historic items from the collection in a context of change, and to that end artists from Vienna and New York have been creating installations for the objects, so giving a twist to everything from Romanesque Gothic Renaissance through Art Nouveau to the emerging art of East Asia. Those involved in the design of spaces at the MAK include Sepp Müller (a bookshop) and James Wines of SITE (entrance area).

For information on the museum, ring Vienna 712 8000.

RETAIL RETURN

As a pre-eminent trading nation, the Dutch have always been quick to see commercial openings sooner than anyone else. Hardly surprising, then, that one of the major Dutch property companies, Nationale-Nederlanden Real Estate, has entered the market in the United Kingdom looking for shopping centres to buy.

The company has previously bought offices in the UK – as have some of the older, wiser, and less highly-geared UK property companies. The feeling is now that enough cheap office space has been snapped up at the bottom of the recession, and that it is time to turn to retail. Perhaps this feeling has been partly engendered, in the case of Nationale-Nederlanden, by the fact that it has a large, brand new, and (at the time of going to press) completely empty office property in London on its hands, Henrietta House by the internationally-based architecture and design group BDP. Henrietta House was welcomed on completion for its integration of art with architecture, notably in the form of a frieze of reliefs, 1930s-style, along its Portland stone facade. Clearly this cuts little ice in the cut-throat London rental market.

Accordingly Nationale-Nederlanden, part of the vast Dutch banking and insurance conglomerate Internationale Nederlanden Group, which manages £32 billion of properties in all, will be sampling a few of the UK's shopping centres over the next few months. Nothing huge: just a spend of £170m or so. British agents Jones Lang Wootton and Healey and Baker will be advising NN's general manager Roun Barry. Expect to see a pick-up in the value of retail properties, and spin-off interest in new retail developments in the UK, as a result of these market moves and of indicators of strong recovery in the UK economy.

BLACK ECONOMY

As many as 3 per cent of the population of some developing countries is employed – mainly unofficially – in building housing, according to research findings presented to a United Nations conference in Nairobi at the end of April.

The message of the report *Jobs from Housing*, prepared by Cambridge Architectural Research for the UK's Overseas Development Administration, is that there is a bubbling cauldron of potentially wealth-creating activity in third-world countries waiting to be channelled productively.

Current analyses greatly underestimate the employment related to construction activities, by largely ignoring the informal housing sector, the report suggests. Once you take the "black market" in housing into account, almost twice the number of people are involved in this sector than conventional economies would suggest. If the materials and expertise for better housing were more available – and were cheap enough and environmentally sustainable – then the balance of payments in developing countries would benefit greatly.

The report recommends governments and housing organisations to invest in building material production, diversify the range of materials available, remove price controls, encourage entrepreneurs, introduce management contracting and promote organic materials and tree planting.

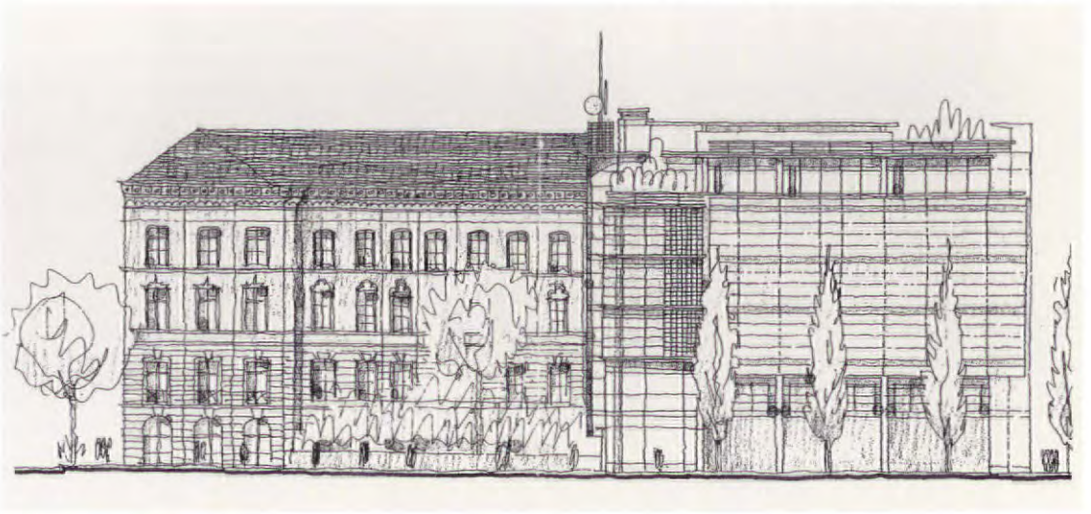
Jobs from housing: employment, building materials and enabling strategies for urban development, by Robin Spence, Jill Wells and Eric Dudley: available from Intermediate Technology Publications, 103-105 Southampton Row, London WC1B 4HH. UK price £10.

ROMANIA

Despite the legacy of the Ceausescu regime, troubles elsewhere in the Balkans are making Romania a possible tip for tourism development in the coming years.

Some business commentators reckon that Romania could take a lot of the tourism now denied the former Yugoslavia: but that there

Fitzroy Robinson's BKD bank project in Budapest



is a chronic shortage of good hotels, built to western standards, in the country. There is only one top-grade hotel, the Inter-Continental, in the capital Bucharest. According to David Chapman of British architects NJSR, a practice from England's north-west now working in Eastern Europe, the real challenge is in the refurbishment of the mass of appalling "three star" hotels, which he feels should be either improved or declassified. Earthquake damage in 1977 and 1990 has also left much work to be done.

Chapman warns potential investors, however: "Local valuations of existing sites and buildings...look to me unrealistically high and unfortunately property will probably be the only thing that the prospective Romanian partner will bring to the conference table."

Despite this, the tourism potential is good, he concludes.

FITZROY IN THE EAST

At the end of the 1970s, the London-based practice Fitzroy Robinson designed an imposing sub-classical City headquarters for the Banque National de Paris (BNP), which like many such financial-quarter buildings tends to get overlooked by the architecture critics. All these years later, the client contact made then has come good in Eastern Europe. Fitzroy Robinson is now to design the new headquarters in Budapest of the BKD Bank, of which BNP is a leading member.

The commission, won against competition from Hungarian, French and German practices, is in association with local architects the Peter Janossy Studio. The relevant man at Fitzroy's international office in Budapest is David Magyar.

The BKD Bank's other shareholders are Dresdner Bank AG and Kereskedelmi ES Hitel Bank. Only two years old and expanding rapidly, the bank felt that inevitable need, as banks do, to have a building that lent them a reassuring air of permanence and stability.

The job is effectively to gut and roof over an existing four-storey late 19th century courtyard building on the corner of Honved utca and Szalay utca, and to add contemporary office space alongside. Fitzroy's architects have found, after years of working in the conservative regime of the City of London, that Hungarian planners find no problem with the juxtaposition of the new and the old. The project is now on site, and others, including a hotel and mixed-use city redevelopment, are in the office's upcoming job bag.

David Magyar in Budapest: (010361) 269 1034.

AIRPORT RETAIL

There was a time when airports were places where planes landed and took off, and that was about it. Today, however, no commercial airport can survive merely on that basis. Airports are now big commercial developments arranged around the runways, both to milk cash from bored passengers and to provide space for businesses wanting good communications and airline-related business.

Accordingly BAA plc, which before privatisation used to be the British Airports Authority, has these days become as much of a developer as an airports manager, and a developer very experienced in both retail and office buildings (another venture – into running airport hotels – has now been hived off). BAA, now a company with international aspirations, has cast its magic wand over an airport in the United States and managed to more than double the amount of money spent there by passengers.

The means for this was simply to regard Pittsburgh Airport as a retailing opportunity and to build a 100,000 square foot airport there, as part of a terminal extension scheme. Obvious, you might think, except that it appears that the Americans, for all that they invented the modern shopping mall, have been slow to apply their principles to airports, which – with their huge number of internal flights – they have tended to regard as being little more than glorified bus stations. British airports are regarded as world leaders in this new diversified field.

Passengers used to spend an average of $2.89 a head in the old Pittsburgh Airport. That has now risen to $6 a head following the completion of the $15m centre. But there's a way to go: the spend per passenger at Heathrow Airport, London, comes to a sobering $30. Even allowing for the fact that people pass through internal airports much quicker than international ones, that is a huge difference between countries.

Unsurprisingly, Pittsburgh is being held up as a shining example in the States, and both BAA and other developers and consultancies are now scouring the continent for more time-expired airports to revive.

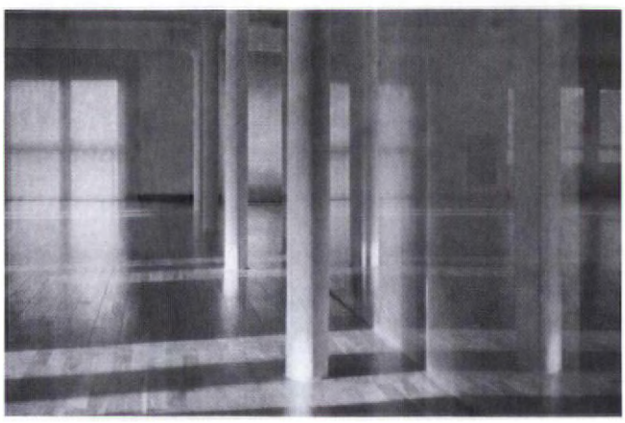
CHUNNEL NEWS

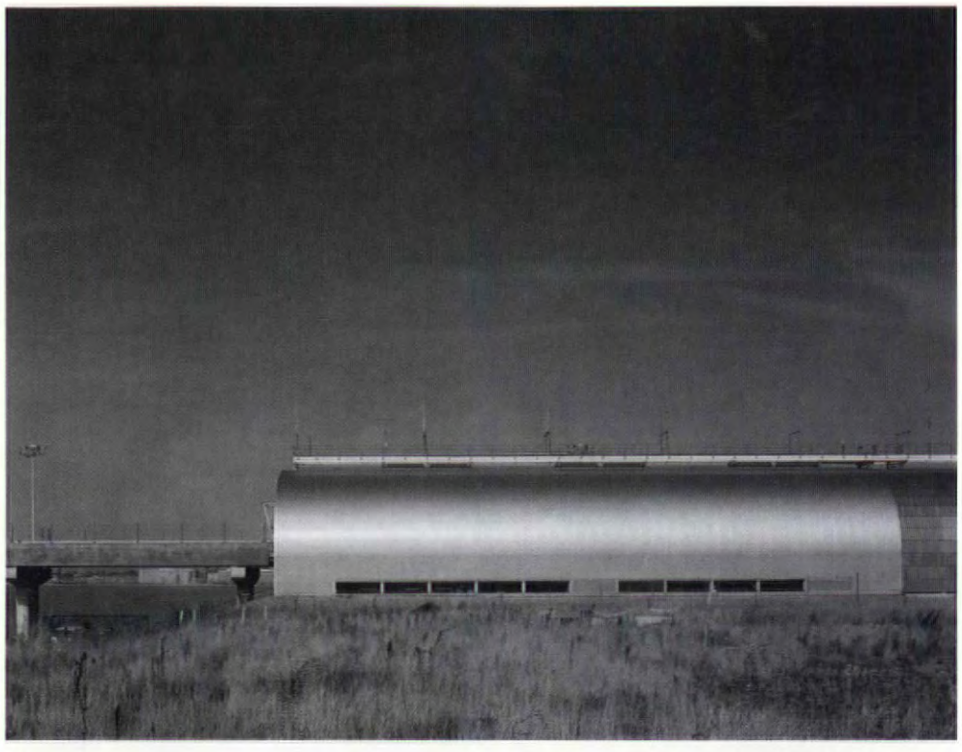
Signs that the Channel Tunnel may be about to open after all comes with some property activity in Brussels and Amsterdam. Sales offices for Eurotunnel's cringingly-named "Le Shuttle" car-carrying service opened in both cities in April, though on shortish leases. Expect more city-centre offices to go the same way as opening dates draw near. A useful contact for these and other Chunnel-related property matters is David Wilson of Eurotunnel Developments Ltd in England (0233) 646555, or Simon O'Reilly of property agents Chesterton Soprec Blumenauer in London, (071) 499 0404.

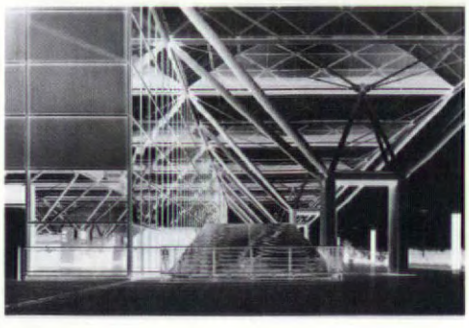
THOMAS & COLLIE

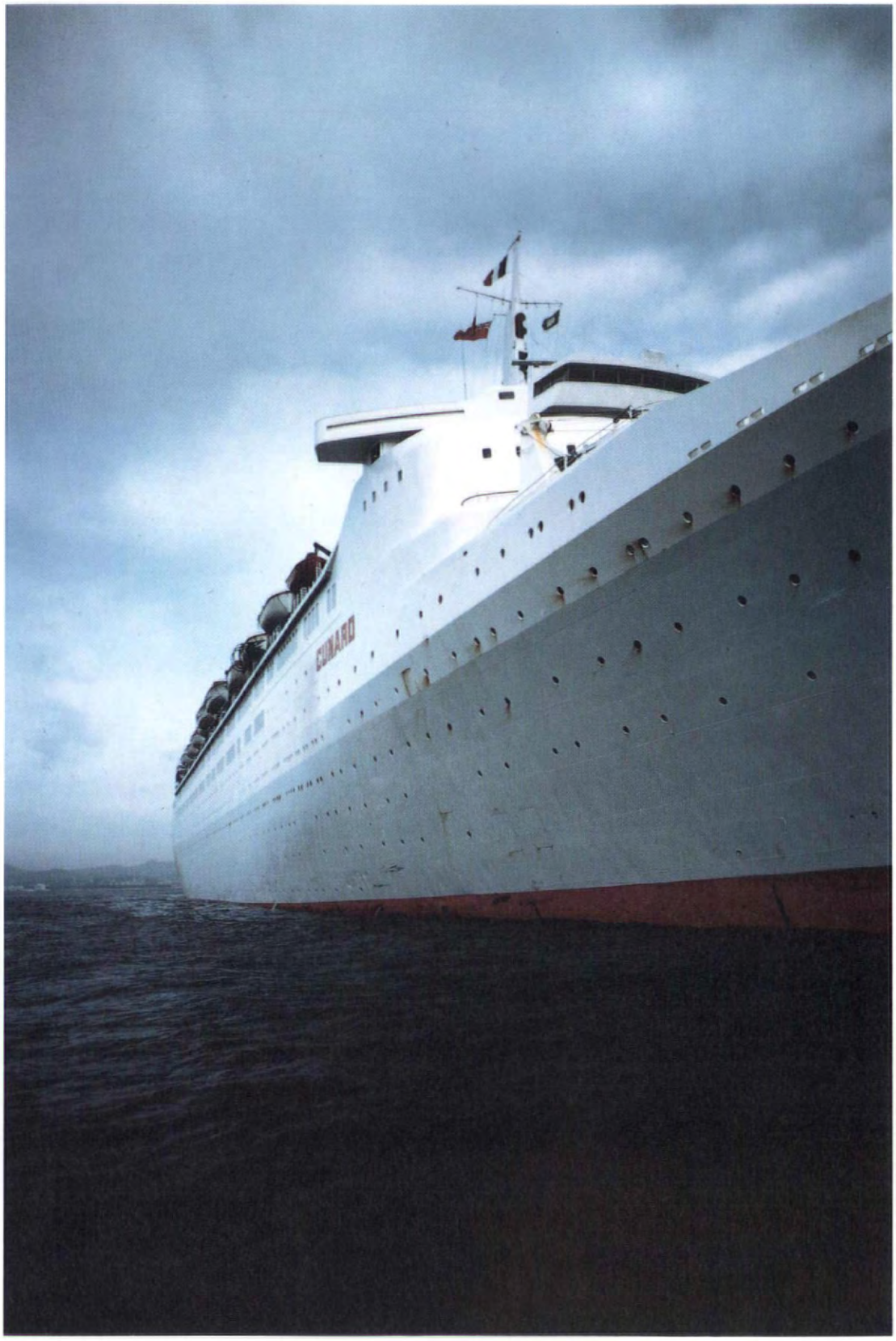
All architecture proposes an effect on the human mind, not merely a service to the human frame.
John Ruskin

Thomas & Collie Associates
081 - 348 1818
071 - 720 9472





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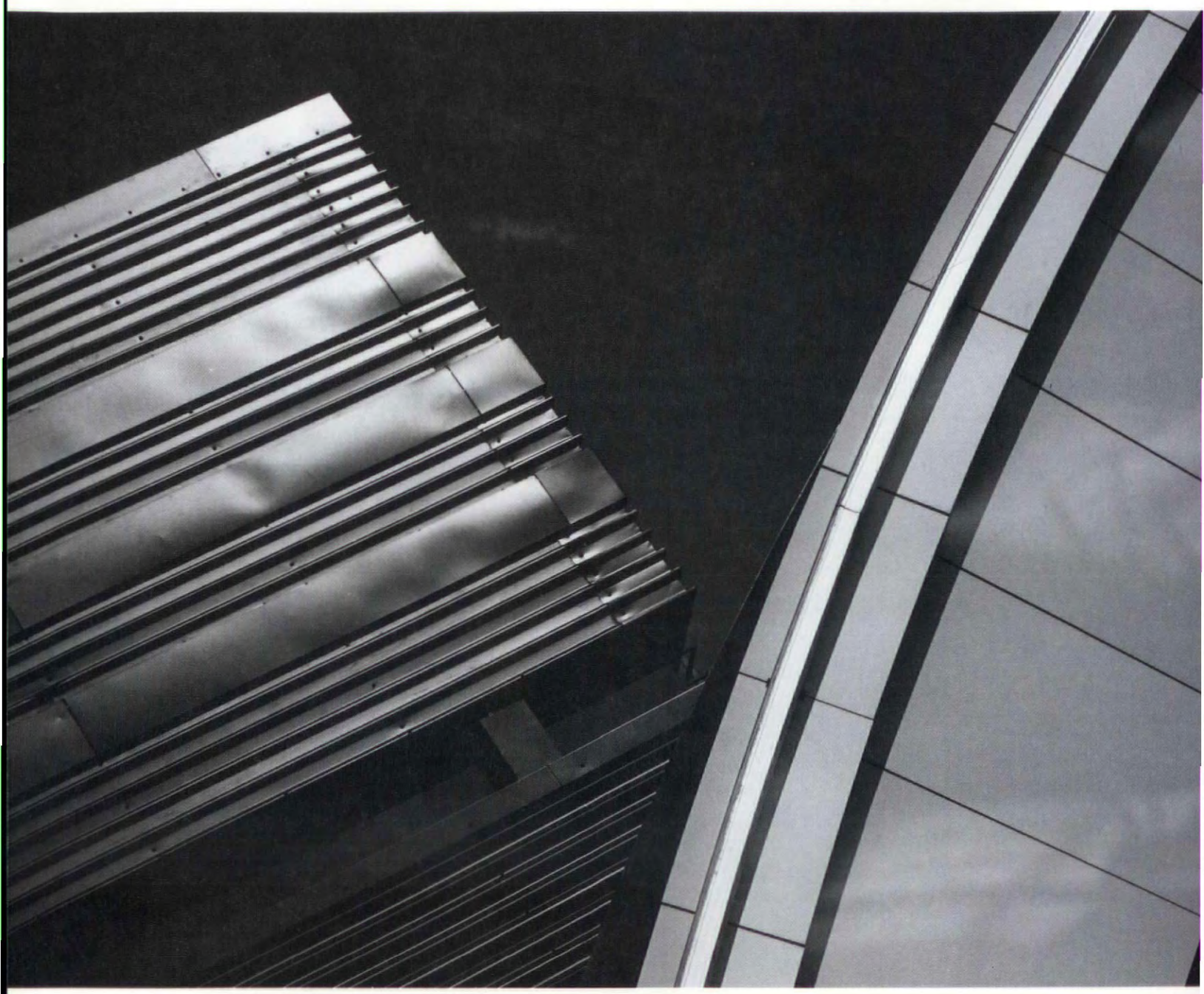
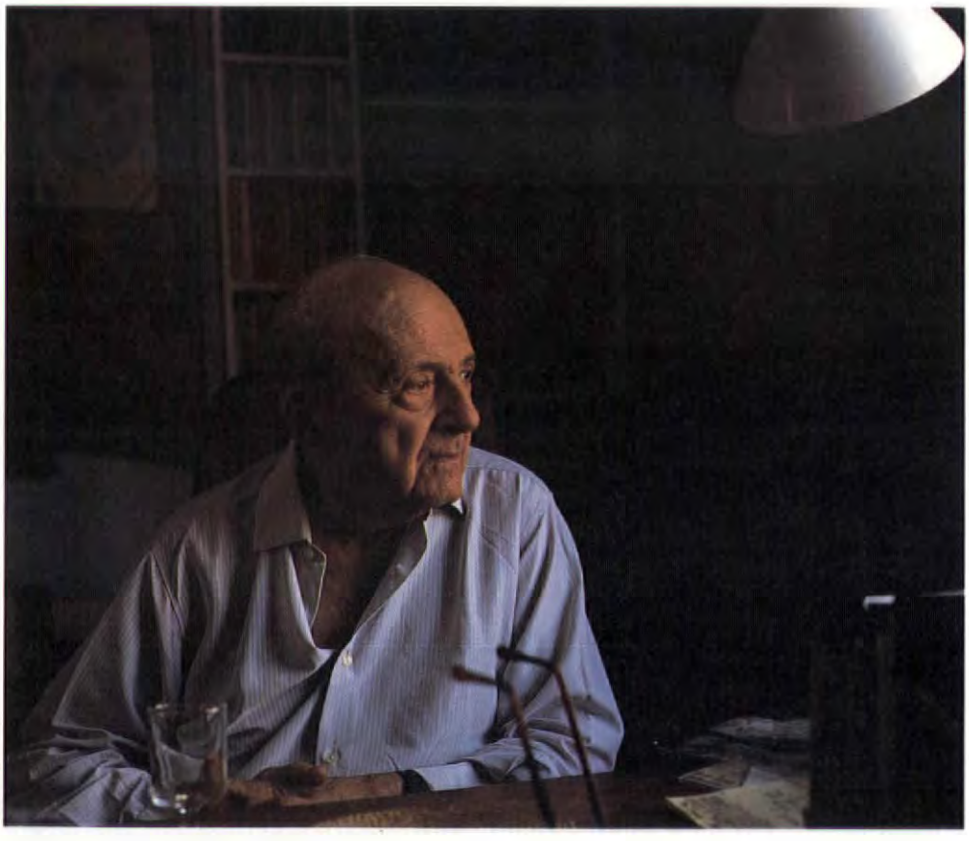


LUBETKIN
THE UNTOLD STORY

Berthold Lubetkin died in October 1990 at the age of 88. All his surviving buildings are Listed and, thanks to an assiduous biographer, his architectural career has already been exhaustively documented. But in addition to the material used in his official biography, the architect left behind him an unpublished autobiographical fragment. In the Spring of 1986 he began dictating a personal memoir to his daughter Sasha. Although this project foundered before completion, the manuscript that remains runs to 14,000 words. It describes episodes in Lubetkin's life from his attendance at the Warsaw Polytechnic in 1923, through his student life in Paris, to his arrival in England and work with Tecton during the 1930s. Bulging with scarcely credible anecdotes, disorganised, scandalous and Quixotic, these endearing extracts from Lubetkin's unpublished memoirs appear by courtesy of Sasha Lubetkin.*

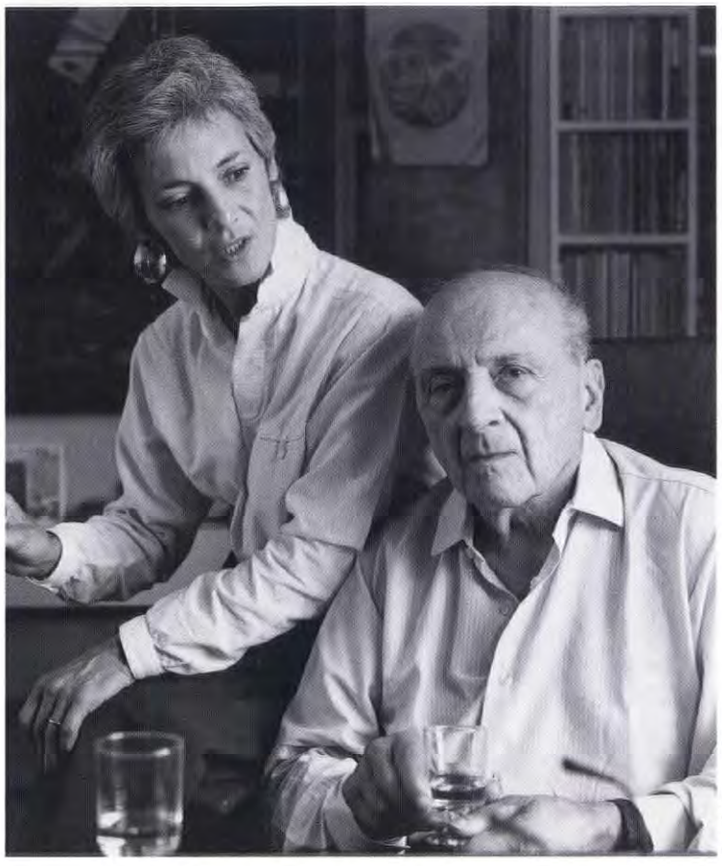


Clare Pawley

1 The architect of the Regent's Park Penguin pool was born in Tiflis in 1901 and studied architecture in Berlin, Warsaw and Paris. All his academic episodes were brief and he never formally qualified as an architect. During 1925 and 1926 he was a student at the Ecole Speciale d'Architecture, Paris.

"Tonton" – Gaston Trelat – the owner and director of the school, son of the Trelat who built Paris Town Hall, dressed from top to toe in jet black even in mid-summer, but always wore white gloves because he had arthritis of the hands and wanted to disguise it. He used to leave his room at precisely 11 o'clock every morning and walk past the atelier just to register his presence, never pausing to look at the work that had been done. One day he met me and said "*M'sieur, vous êtes un Mexicain.*" "*Non, je ne suis pas*" I replied. "*Vous êtes Mexicain. Je peux le dire, moi – je le vois bien.*" And all the time I was at the Ecole Speciale I was assumed to be a Mexican. There was quite a large group of Mexicans there, and Trelat kept pushing me into their company.

The young Berthold with his father in 1907 (left) and with his daughter Sasha, dictating these memoirs in 1986



Clare Pawley

My special friend at the Ecole was a Brazilian by the name of Claude Manuel da Costa, a very talented painter, but a somewhat dubious architect.

On my arrival, in a very severe winter, he conceived the idea of spending some time in Rio de Janeiro because, according to him, the waters of the bay had a magical effect, of which he was in urgent need.

We went to Brest and made an arrangement with the captain of one of the cargo ships: in return for taking us to Rio for a microscopic fare, we would attend to his cargo of 140 cows, feeding and watering them, and sending their dung down to the fish.

On arrival in Rio, we settled in the basement of a house belonging to da Costa's friend on the Isle of Paquetta. We watched as wagon loads of coffee beans were tipped into the bay to form the foundations of a new pier.

I remember the huge meal we ate at a seaside hotel. After dinner, as the height of luxury, we were served cups of Nescafé.

To me Brazil seemed a paradise. But even so we had to eat – and to get food we had to get jobs. I will omit any detailed description of our various attempts to make money, mentioning only one, which consisted of working in a restaurant called "La Vaja". Sited beyond Copacabana, it was a big barn with gates at opposite ends. Diners sat at small tables scattered around the place, leaving a clear passage between the two gates. At midnight I was supposed to chase 60 cows through the restaurant, taking particular care that they should not stray between the tables and cause panic. I am sorry to say that this job lasted only a few days, after which we slipped out of Brazil and found ourselves back at the Ecole Speciale.

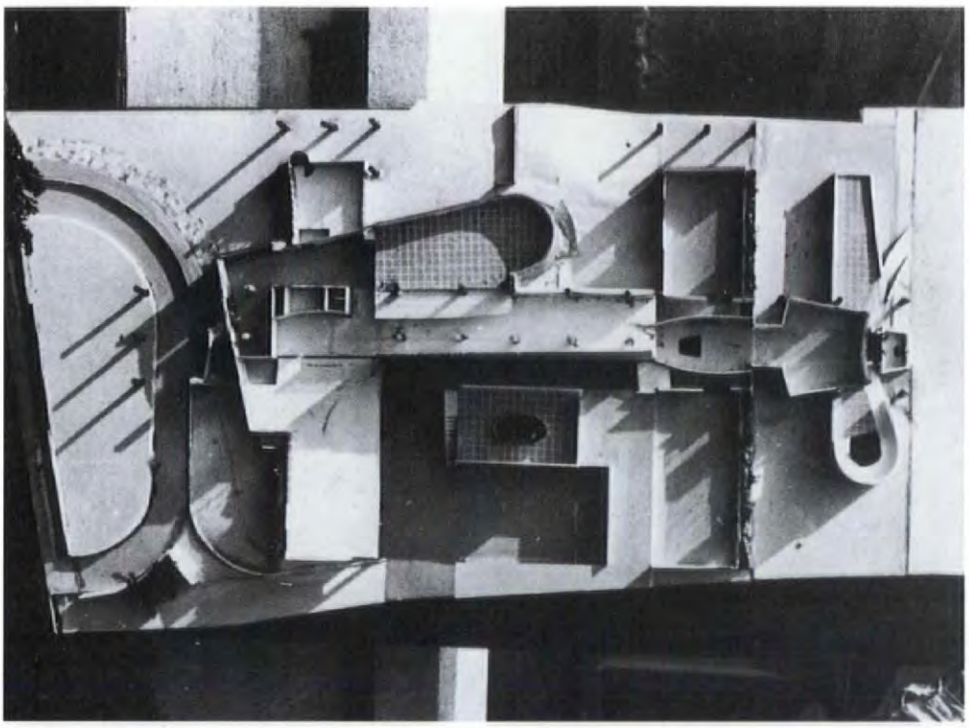
At this time there was a big exhibition in Paris, the *Exposition Coloniale*, and a representative of one of the colonial backwaters – I think it was the Cameroons – called upon M Trelat and asked him whether he could recommend somebody to design a kiosk for the exhibition. Trelat's judgement was conditioned by the exotic nature of the inquirer, and so he directed him to the Mexicans. That's how I got the job. I discussed the project with my old friend Bobka Rodionov. When I found him in the Louvre he was sitting opposite a Velasquez horse drawing, making a copy. In the daytime he imitated Velasquez, and at night he imagined himself a courtier of Philip IV, called Velasquez.

Bobka and I agreed on the design which I had prepared – but now the trouble started. Bobka suggested that the kiosk should be made of cow dung, as, no doubt, it would be in the Cameroons. A lorry delivered the manure to us from a farm in Brie, but it was much too liquid, and refused to coagulate, so finally we agreed that we should use hand-kneaded clay instead. We emptied the superfluous dung onto the exhibition pathway at night and ran away. That was our present to Paris.

In the *quartier* of Vaugirard stood – I believe it still stands – a round building with a pointed spire, and two caryatids with self-satisfied expressions guard the entrance.

Speaking of those caryatids reminds me of the time when I went to the Wroclaw conference with Margaret and Jim Richards after the war. We passed through Warsaw and watched workers picking up bricks from the ruins, and cleaning them up for re-use. The air was filled with the croak of the frogs who lived in the broken drains; apart from that – silence. I remembered how I used to sit study-

A 1938 model of Highpoint One (top) with Highpoint One and Highpoint Two as they are today (bottom)



Valerie Bennett

Valerie Bennett

ing while I was at Warsaw Polytechnic, and gaze at the balcony opposite with its smiling caryatids.

I was dumbfounded when, clambering through the ruins, we found a three-storey fragment of wall, almost the only surviving sign of human habitation in the whole deserted, rubble-covered area. On the third floor there remained a balcony without any floor behind it – and there were the two caryatids with their fantastic smiles.

Vaugirard was full of the sounds from the abattoir du Vaugirard, and the sad queues of cows waiting to be killed, muddy and dejected. It was near here that Alfred Boucher, an obscure sculptor who happened to have been commissioned to produce a bust of the Queen of Romania, decided to use his five-acre site to construct a sort of intellectuals' headquarters – La Rûche. He bought the materials from a demolished international exhibition of 1900, and, together with his brother, knocked them into some kind of shape. One way or another they completed their task, and from then on it was a very popular abode for penurious artists, intellectuals and marginal people of all kinds. Apart from Modigliani, Diego de Rivera, Fernand Léger, it would appear that Lenin and Lunacharsky also stayed there – or so I was told.

2 Lubetkin lived in near-poverty through much of his youth. In Paris he survived on minimal wages paid him by the Soviet Trade Commission. He supplemented this income in various ways, among them establishing a "Diploma Factory" and helping design and operate a mobile Soviet trade pavilion.

My whole stay in Paris was overshadowed by the lack of money. The Soviet Trade Commission was paying me a tiny allowance and occasionally a miserly sum for translation work, just about enough to pay for transport. The reason why I survived was the odd jobs which came my way. One of the mainstays of my existence was Les Halles. I used to arrive there at about midnight to unload the horse-carts which brought vegetables from the outskirts of Paris, and I would build impressive pyramids of cabbages and cauliflowers, interspersed with carrots.

Sometimes, when the delivery was late and it was very cold, I used to slide into the belly of carcasses of meat and sleep there in relative comfort. The main trouble with this system was that it was impossible to change into a decent suit at Les Halles. I remember travelling in my dirty *salopette* to La Motte Piquet Grenelle on the metro opposite two very enthusiastic females who discussed my appearance – as well as my anatomy – in purest Russian. They almost gave up the ghost when, at the station, I apologised in my native tongue.

But casual sources of money were rare and inadequate, and it was because of this that I got into the diploma racket.

A number of Argentinian, Mexican and Spanish students at the Ecole des Beaux-Arts,

Berthold Lubetkin and his wife Margaret Church on the roof of Highpoint II in 1938 (left). More informally in a speedboat (right)

oozing with money, were not particularly anxious to devote themselves to several months' work towards their diplomas. I helped one of them with his diploma, and the rumour spread that there was a diploma factory; a bunch of these students struck a bargain with me. All of them had the same project, an airport for Paris, so, together with a group of colleagues (other needy architectural students), I set to work to design 11 different airports for Paris. My diploma-producing team included six or seven *voyous* from the Beaux Arts and other establishments. We were offered £5,000 per diploma, which was quite a sum in those days, but it meant a hell of a lot of work.

Soon the deadline arrived. On Monday morning the *charette* would come past. This was a platform on wheels, on which all diploma projects had to be loaded to be taken to the Beaux Arts for exhibition.

I spent two nights without going to bed. I was at my wits' end. On the third day I couldn't see in front of me. Madame Lecoeur gave me a couple of pills which she said would wake me up immediately; they were as big as horse boluses. I ate them and straight away lost consciousness. I slept until midnight. Finally Madame Lecoeur ran upstairs where an English painter called Robinson together with Hemingway and his wife Rosie lived. Hemingway came thundering downstairs with a shillelagh and swung it in front of my nose. Somehow or other I woke up and finished and drawing; the *charette* had to wait for half an hour.

Luckily, just as my financial situation was becoming intolerable, the Trade Commission Representation, persuaded by Franz Jourdain, a very prominent left-winger, and General Ignatiev of the Red Army, gave me the contract to help design and equip a mobile exhibition pavilion.

The sketch for this pavilion had already been prepared, but I was responsible for the elaboration and detail as well as the interior.

The first time the mobile pavilion was erected was in Strasbourg, followed by Nantes, Marseilles and Paris. The construction was a very complex affair, because the main beams had to be slotted to fit precisely so that it could be put up and taken down time and again.

Once the pavilion was put together, we had to assemble the exhibits, and that proved more difficult than the architectural side of the job: most of the goods which came to France from Russia were subject to hideously complicated and time-consuming customs restrictions.

I specially remember Strasbourg. Theo van Doesberg was there, completing his Cafe Obette in the place Kleber, which later, during the occupation, the Nazis smeared and daubed with whitewash, calling it degenerate Jewish, Dutch, gypsy art (these terms of opprobrium were interchangeable for them).

The chief exhibition officer at Strasbourg was a Latvian with whom I had a very close working relationship. He was distraught, having just received a letter from his wife somewhere on the mid-Volga, notifying him that their three-year old daughter, Ninel' (Lenin spelt backwards), was gravely affected by lack of fats in her diet. Soon after this letter there arrived huge wooden barrels of salted and unsalted butter for display in our pavilion.

In Bordeaux, underneath the columns of a monument in the town centre, we were very late in completing the erection of the pavilion – and on top of everything I developed an abscess on one of my teeth. My face swelled up, and I sat, completely unapproachable in my agony, on a pile of carpets. Gershelmann, a Latvian German who used to be personal secretary to Foreign Minister Litvinov, was chief exhibition officer, and he tried repeatedly to stir me up because of the imminence of the exhibition-opening. Apparently my only response to his efforts was to threaten to bite him if he didn't leave me alone. In the afternoon, he persuaded me to go for a walk with him along the avenue Louis XV, soothing me with all sorts of stories. We found ourselves, by chance, in front of the entrance to a dentist's surgery. Gershelmann continued with his stories as we went upstairs; I hardly knew where I was.

Once in the dentist's surgery, Gershelmann pointed at a tooth in his mouth, and gave an eloquent gesture denoting extraction. The poor dentist started by refusing, because the tooth was obviously healthy. After a good

half-hour's discussion – which I translated – Gershelmann sat down in the chair and, without anaesthetic, had his tooth removed. Triumphantly he showed it to me to prove how easy it was. Now it was my turn, and I don't need to describe in detail this murderous enterprise. But the pavilion was ready in time for the opening.

I was working on the Soviet pavilion at an international trade exhibition at Bordeaux when I received a dramatic telegram from Bobka requesting my immediate presence in Saint Tropez to save his life and limb. I had to plead eloquently with the exhibition director to let me off for three days, and found myself in St Tropez, where Bobka rented a couple of vaults under the stone quay. He planned to transform them into a night club, and had already issued invitations and details to the public and the press. There were only three days left until it was due to open.

Unfortunately, the total budget for decorating the premises amounted to £50. I think Bobka hoped I might subsidize his endeavour, but I wasn't playing. We scrounged around and collected wooden fish boxes, old barrels and torn fishing nets (the name of the club was to be "The Fishing Net"). For £10 we bought some petrol with which we sprayed the whole interior. Then we lit a match and clamped the doors well shut so that nothing could escape, and we brought in two wheelbarrows full of sand to douse the flames once they had done their work. When the doors were opened, we saw that the old stone vaults were covered with a wonderful pattern of black, brown and – for some reason – green. I didn't stay for the opening: I was needed in Bordeaux.

3 Lubetkin dwelt among artists and intellectuals all his life. In Paris he was part of the great White Russian and Soviet émigré population that was only dispersed by the onset of World War Two.

There were any number of cafes in Paris: la Ruche; la Closerie des Lilas; la Coupole; le Select; le Viking, where the Swedish girls went - one very nice and pretty always said "*Quel fromage*" instead of "*Quel dommage*"; le Jockey, at which I regularly left my watch with the waiter when I hadn't the money to pay my bill, then retrieved it and left it again; le Charleston; le Black Bottom...

At first I frequented the Rotonde, then the Café du Dôme; finally I changed my allegiance to the Lilas.

I parted from the Dôme on account of the following incident.

One Christmas we were sitting in front of braziers at the Dome with Ilya Ehrenburg and his wife Lyubov' Mikhailovna. He had just sold his book "The Love of Anne Grey" and was very rich (or so it seemed to a meat porter like me).

Algerians swarmed round Montparnasse, and, because they had to prove to the police that they were working, they would buy a couple of carpets – from Birmingham, no doubt – and a few ornaments, and would crawl up and down in front of the terraces of the cafes without the slightest hope of selling anything.

Ehrenburg called one of the Algerians over, and, believe it or not, bought everything the man had, carpets, rugs, ornaments and all. The Algerian's face took on an expression of concentrated happiness – the opposite of Munch's picture "The Scream" – a happiness too great to be real.

Last time I saw him, he was dancing, bouncing away along the boulevard Montparnasse, practically flying now that he was released from his burden of rugs and carpets. We never saw him again; we were told that, without his merchandise to protect him, he had died of pneumonia in the winter cold.

The Lilas was full of Russian Constructivists. Gureyevich, who sat all alone in a grey homburg, very pleased with himself, not lending any money or even telling anyone the time; Granovsky, the Montparnasski Cowboy; Volovik, Soutine, Natalia Goncharova, Mikhail Larionov, and an extraordinary-looking chap, incredibly worn-out, seeming to be more than 70 years old, though in fact he was only 25. He said he was the brother of Boris Pasternak, and once or twice he danced the jerky "machine gun dance" between the tables on the terrace.

When Aleksandri Rodchenko and Malevich visited Paris, they were chiefly attracted by a one-legged whore on the Champs Elysees called Marguerite. Very Georg Grosz.

Mayakovsky went straight to the Lilas when he came to Paris because Apollinaire, Jacob and Jarry patronised it; he sat there with his sister-in-law, Elsa Triolet. It was at the Lilas that I got the saying "*Khoroshaya loshad'* White Horse, *na nyom belaya griva i belyi khvost*" (It's a good horse, White Horse: it has a white mane and a white tail).

Another regular at the Lilas was the Russian painter Annenkov; together, he and I organized the "A Vingt-Cinq" group in support of the modern movement in art. We composed a wonderful poster of a tennis-playing girl – the ghost of Suzanne Lenglen or Gorgeous Gussie.

The Closerie des Lilas was situated in a strange quartier. On one hand, the tremendous perspective of the Jardins de Luxembourg with their shimmering waters; on the other, the Observatoire, surrounded by trees for some reason. It wasn't in use, though there were odd people going in and out, students of the Sorbonne, I suppose.

Near the Observatoire lived Anrep, author of the mosaic floor in the National Portrait Gallery in Trafalgar Square. His studio was in Paris, but he was too clever to come to the cafe often: he knew he would only be asked for money. He used to talk endlessly about a tiny piece of marble, and whether or not it was the right colour for an eye.

One of the reasons I patronised the Lilas was the glorious renderings of Chopin which filled the surrounding quartier. The Chopin hero of the day was Orlov, but what I heard near the Observatoire was better: chords dancing, bouncing, escaping. I used to sit for hours at the Lilas listening to the music – and the performance invariably ended with the Russian drinking song "Chizhyk". The pianist was Alyosha Chichkin, who at that time lived opposite the Observatoire. We because very friendly, and I went to stay with him and his wife Pasha in the Hotel Medical off boulevard Arrago, overlooking the Prison de la Santé, where, even then, they used to guillotine malefactors outside, just to teach them...

The Hotel Medical was a big, reinforced concrete structure. On the ground floor lived a Japanese who gave Ju-Jitsu classes on a torn-off mattress.

I spent hours on a number of occasions trying to persuade Alyosha to get a degree from the Conservatoire, but he insisted he had to do it in Russia. He had no money, and had exhausted all sources of credit. I wanted to go back, too, to see how the ice lay on the wells in the country.

So finally we decided that we'd had enough of the west, and were going back to Moscow. The main problem was that there wasn't enough housing in Moscow – people were liv-

Margaret Church with the Lubetkin's Packard in France, 1937. Below the restaurateur M.Laron, who taught Margaret to cook

ing five or six to a room. Alyosha decided that he would go on ahead and pull strings to get us a flat. He took one of my suitcases with him, leaving only one other to make sure that when I followed him, bringing with me his wife and their baby, I would travel light.

We went to the Gare du Nord, half drunk with friendship. That was the very last time I saw or heard of him, although I later went to Moscow specially to find out about him. His name was nowhere to be found, any more than Trotsky's

Chichkin left his pregnant wife in my care. When she had the baby, I spent several days trying to register the name "Maroussia" – in France only saints names were recognized.

Pasha's father was Graf Vladimir Mikhailovich Shubersky, Minister of Finance of the White Army of General Yudenich which during the revolutionary war tried to "liberate" St Petersburg, and of which the principal regiment was called the Black Hussars. He lived at 105 boulevard Exelmans, and I deposited my one suitcase in his attic. The case was full of drawings by Malevich, Tatlin, Elena Popova, Yelena Dexter, Rodchenko, etc.

A post-war sequel...

As soon as the Germans were chased out of Paris, after the war, I obtained a Foreign Office permit to return to France and retrieve my suitcase. Arriving at the Gare St Lazare at 11.00pm, I found few lights on; the metro was shut and taxis were a legend remembered from the good old days.

How was I to get to boulevard Exelmans? In the station waiting room there wasn't even standing room: I have never seen so may people in such a small space. They could not sit down, but stood, in the light of a single bulb, wedged together, holding each other up. Everything smelled of the ersatz coffee which the Germans distributed, and which tasted like iodine with sugar. (When I returned from Paris, Pasha wouldn't come near me for quite a while because she wanted nothing to do with that smell.)

So I couldn't wait. I walked up and down the platform for a while, then ventured down onto the gravel of the railway track itself. In the darkness, I saw on my right a train standing with all its lights out. I opened the door and climbed into a first class compartment. There I went to sleep on the beautiful leather seat. Next morning when I awoke, I nearly went out of my mind. In front of me on the opposite wall of the carriage was a picture of Hitler saluting. For a moment I felt that I was on my to Auschwitz. I had slept in a Nazi armoured train; full of guns and ammunition. It was only a fortnight after the end of the war, and this train had been taken prisoner by the French.

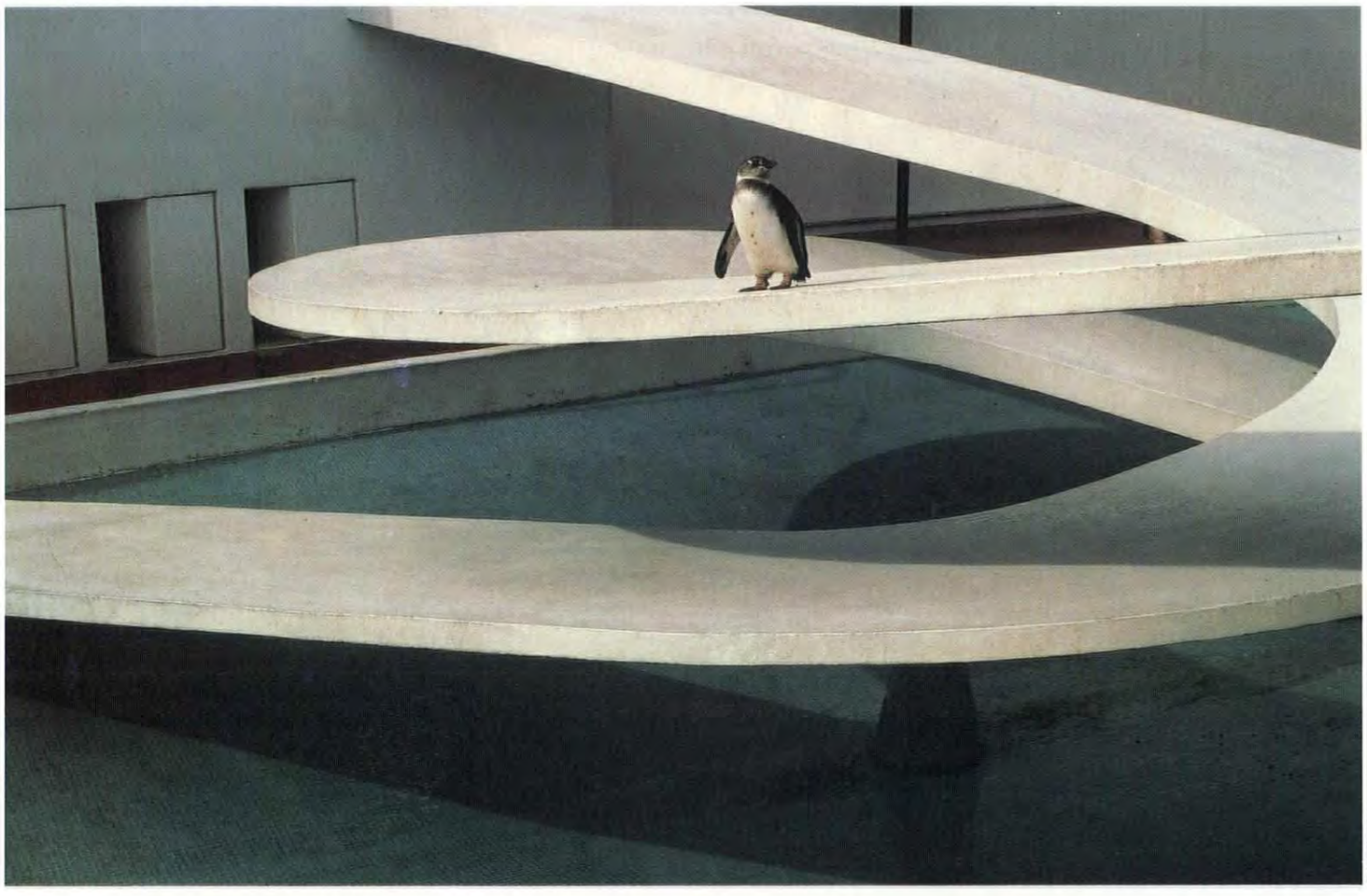
When I finally reached 105 boulevard Exelmans, my suitcase was gone, like Chichkin himself, without trace, never to reappear.

4 *From 1932 Lubetkin shifted his base to London, but he still travelled in France. In 1937 he and his future wife, Margaret Church, travelled with a distinguished companion to the Mediterranean.*

Henry-Russell Hitchcock, the foremost American architectural critic, went through France with us in our Packard. From Toulon we set out on our journey to the ports. In Sisteron, something went wrong with the car engine, and we had to spend the weekend in this enchanted and unreal place.

At 8 o'clock I sat with Russell on the ter-

The celebrated Penguin pool, London Zoo. 1934



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race adjoining the main road; we drank marc, as usual.

The postman brought a packet of letters re-addressed to us by the Grand Hotel in Toulon. Russell opened the large envelope and studied its contents with a great deal of alarm on his face. When I tried to penetrate the mystery by asking him a direct question, I was, to start with, unsuccessful, but under long and persistent cross-questioning he finally explained that this was a letter from Nelson Rockefeller concerning "a change in policy". I learnt that, just recently the committee of the New York Museum of Modern Art had met and decided upon a very fundamental change of policy described in the letter by the committee chairman, Rockefeller.

The letter stated that the international situation had changed, and, with it, most of all, mental attitudes. Until that moment, the museum's policy had consisted of showing how Europeans had taken to modern art and used this as a means of persuading Americans to accept contemporary art too.

It was time, thought the committee, to change this approach, since America had changed its cultural as well as economic and military outlook.

From now on, stated Rockefeller, we have to stress the native American origin of modern art, so as to encourage the artists at home as well as the collecting public. Let Europe imitate us for a while, just as we once imitated them.

In architecture this would inevitably mean that new, modern design would be explained as having descended straight from Frank Lloyd Wright – about the only American innovator. From now on the work of modern architects would be analysed in such a way as to stress its connections with its American origins.

It was pitiful to watch Hitchcock's wilting expression of momentary confusion. He had previously written repeated criticisms of Frank Lloyd Wright, and now he was ordered to turn the tables and glorify him as the precursor of modern architecture.

5 Lubetkin struggled to establish a practice in Paris. In 1927 an important client sought him out. The result was the Lubetkin and Ginsberg apartment building at 25 Avenue de Versailles.

In 1927 I was called to the Hotel Napoleon, just by the Arc de Triomphe, by Monsieur Ginsberg, whose son was studying architecture in Paris. Over lunch he asked my opinion of what he could do to speed up his son's achievement. Since he couldn't help disappointment creeping into his voice, I thought the only way to revivify his son and increase his confidence would be to build; I was staggered when, in reply, he said "Find a site and I will find everything else."

The intensive search started, and we consulted a number of agents when finally we got in touch with an Armenian architect who had just built a block of flats in avenue de Versailles, and recommended a small empty site next to it. The deal was concluded within a month, and we tackled the design.

Various zoo buildings from the 1930s. Clockwise from top left: the restaurant, Dudley, 1937; the Bear ravine, Dudley, 1937; the Gorilla house at London, 1934; the Elephant house at Whipsnade 1935

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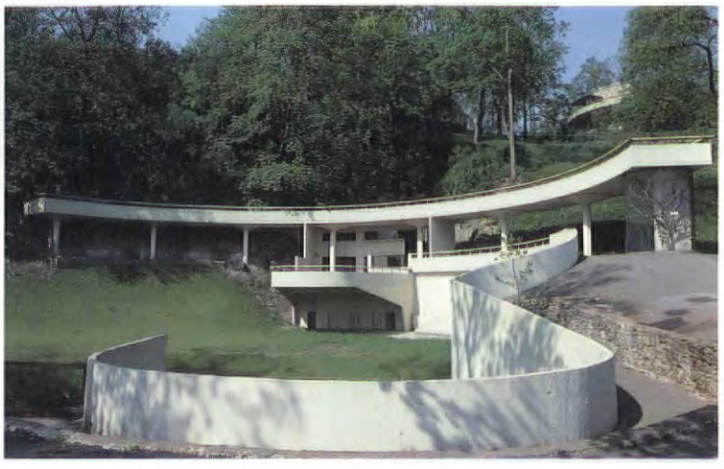

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My office was in rue du Volontaire, in a studio with a balcony where Ginsberg slept usually until about one o'clock, whilst I was working out the project and the details. It was difficult work because I was not aware of special French contractual points, and had no idea about the details supplied by the French building industry. What's more, there were personal conflicts between Ginsberg and me.

Finally, my design prevailed, and we started the long negotiations with the road surveyor who had to make sure the building conformed with the very strict regulations concerning the roof line and the projection thereof. I had the impression that what we did below the roof was entirely up to us, but the roof was part of the street, and thus was fanatically preserved by authority.

One of the reasons why I left Paris was the lack of money. Ginsberg didn't pay me for the avenue de Versailles scheme – he wanted me to stay until the retention period was over, so I was reduced to the absolute minimum.

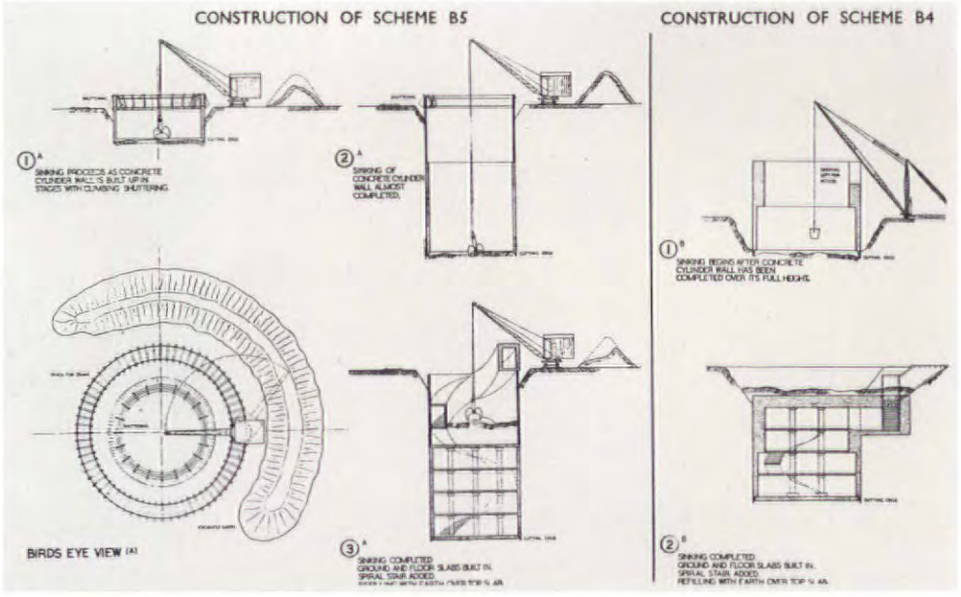
I was living at the Hotel de la Croix Nivers in Vaugirard, and had nothing to eat. Every morning I used to flee the hotel for the bistro opposite to have Bock and coffee, thus avoiding the temptation of the tremendous breakfasts that were served at the hotel. At the end of the week I went downstairs to pay the patron, and he asked how I liked living in his hotel. I told him I thought his hotel was very nice. He said, "There's one thing I don't understand – why don't you have any breakfast? It's included in the price." Meanwhile, my friend, Manya, who had a suite of five rooms at the Hotel Majestique by the Arc de Triomphe, dragged me from Worth to Paquins and all the rue de la Paix establishments, where we were welcomed like royalty, because her husband Ralph Haraia was directly connected with the Egyption court. I wore a *salopette* with nothing underneath, but Manya trusted my taste implicitly, and insisted on my accompanying here on these expeditions: she had to make appearances at court functions, and couldn't wear anything more than once, so we bought at least six dresses at a time. I used to arrive at the Hotel Majestique in my *salopette*, and she sat there like a queen with teams of hairdressers, manicurists and pedicurists doing her up.

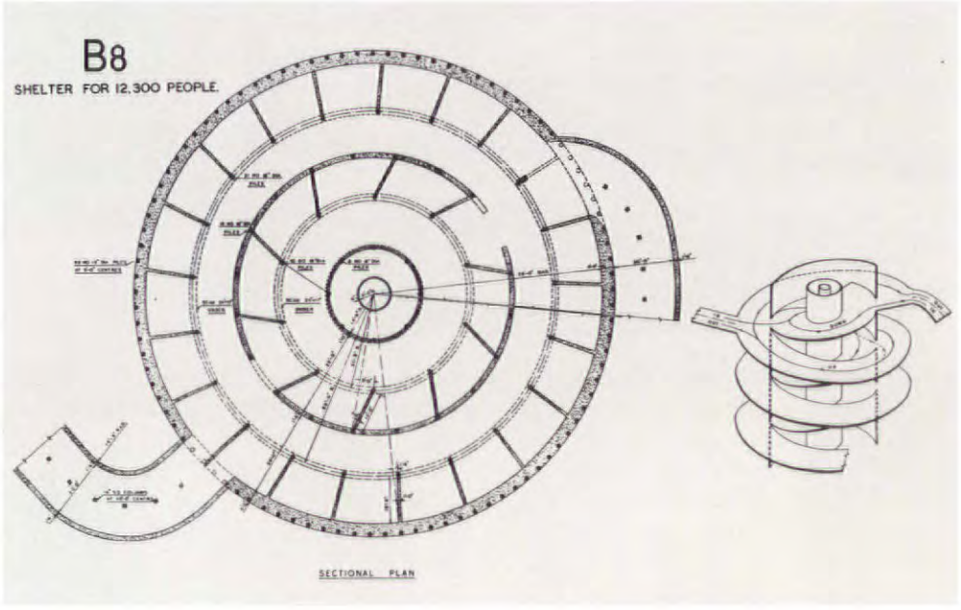
Manya told me that she was planning her escape from the stultifying court life in Egypt, and wanted to build a publishing house. She suggested that if I came to England, I might look for a site and do a sketch scheme for her.

It was at this point that Henri Beraud wrote his poisonous review of the avenue de Versailles scheme: "We French want our capital to be pleasant and pretty, not dressed up in a yum yum cannibal style."

I was about to make the biggest mistake of my life – that of being seduced by the scientific climate of England. I had little hesitation in believing that the future lay in the Island. I knew Kapitsa (who worked in a physics laboratory in Cambridge, photographed the atom, and was then asked by the Soviet government to go home); Le Gros Clark, a specialist in nutrition; Professor Solomon (who stopped the growth of mould on potatoes). It seemed

The proposed deep air raid shelter at Finsbury 1938 showing method of construction (top) and plan and isometric (bottom)





to me that in England people were shooting off in all directions, discovering new worlds, their work to be picked up later by Hogben, Herman Levy, Bernal. There was an optimistic atmosphere, which was ridiculous in a way since the Jarrow marches were happening; this should have moderated my ardour, but it didn't.

One way or another, I arrived here and was introduced to a swaggering architect called Wells Coates, who was in the process of charming the wife of Jack Pritchard in order to obtain her husband's approval of his lousy sketch scheme for the Lawn Road flats. I was also introduced to Clough Williams Ellis.

The Soviet Trade Commission in Paris, with whose permission I had travelled to England, asked me to keep my eyes open for talented young architects to take part in the Palace of Soviets competition, and report back if I found anyone. On arrival in England I spoke tentatively to a Mr MacAlister, President of the RIBA; he immediately broadcast it throughout the profession, and I was embarrassed by the plethora of people expressing interest. De Cronin Hastings wrote a piece of doggerel to Godfrey Samuel about it:

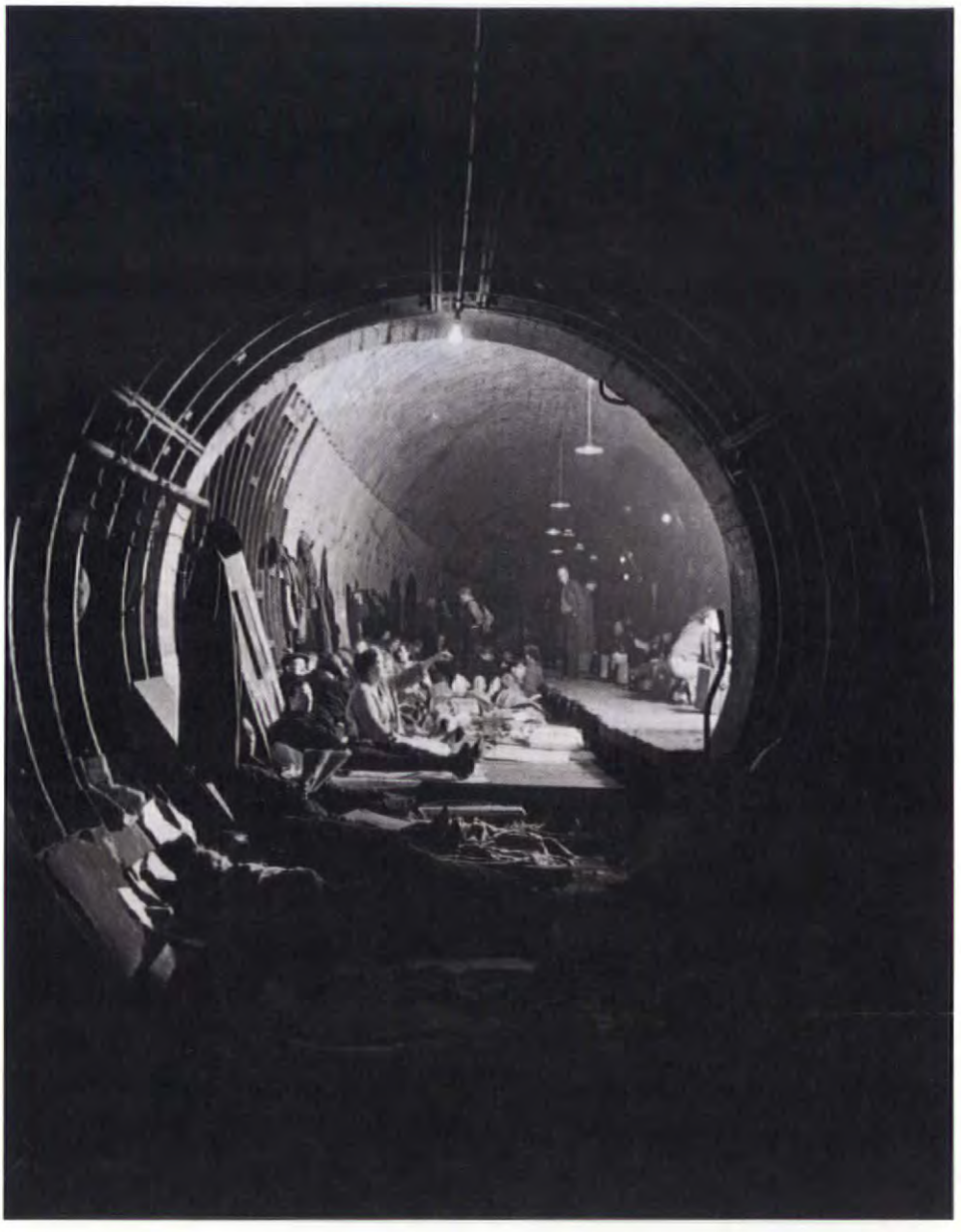
Dear Godfrey, it's very shittish
of Lube to carry out espionage
against the British

MacAlister organised a mad night out on the town at Quaglino's and I was warned that, as the principal guest, I had to wear evening dress. That marked my first visit to the venerable establishment of Moss Bros, one of the central features of the English social scene. I found a tail suit to fit me and hired it, but I was told that I must also have a top hat, like a Bradford millionaire. The trouble was, there wasn't a single one of the right size, so I decided to hold a hat in my hands, and appeared at Quaglino's in that posture, having borrowed a top hat from my future partner, Freddy Skinner, who, bless him, had three Christian names.

The evening was very successful and we drained quite a bit of drink paid for by the members of the RIBA, who, however, thought that this was a good investment. At about 3 o'clock I was so drunk that the only future I could see for myself was in bed. At the cloakroom I got my coat, and then the attendant asked which was my top hat – there were 60 or 70 of them, all identical. Of course I couldn't remember Freddy's initials, and the cloakroom attendant insisted I should try them all on, but, as we know, none of them fitted – to his astonishment. Finally he suggested that I should wait until all the hats had gone except mine. I waited until 5 o'clock before recovering Freddy's hat.

Clough Williams Ellis received me enthusiastically on the recommendation of MacAlister. I was duly impressed by a red velvet rug with golden embroidery around the edges, like a toreador's cloak; he explained that this was an old coronation robe of the ancient Welsh kings (I had no idea that there was such a thing as a Welsh king). He also suggested that I should design a house in Portmerion and call it "The Red Army House". The participation of his wife in all this was very marked, but she didn't think her husband would be fit to compete for the job of designing the Soviet Palace because he would have to go back to Russia and see the site – and the climate was very dubious. He had just submitted a voluminous report on his last visit to Russia saying that Russians should have wooden latches on their doors instead of metal because Russia had such a primitive industry, and wooden door furniture could be made by peasants. This was not very enthusiastically received by the establishment, so Clough gradually subsided into more provincial interests.

How the shelter problem was solved in the end.
The London underground 1941



Lubetkin's first visit to London was in 1929, after the completion of his "yum yum cannibal" Paris apartment building. In the late 1930s Tecton carried out a lot of work for the London Borough of Finsbury which pioneered the construction of the controversial "deep shelters" for protection against air raids.

Hanover Terrace was the first place I lived in when I came to London. Manya's chauffeur, MacDonagh, took me straight to Regent's Park with its splendid terraces. I thought "So this is London". Little did I know of the suburbs... Gradually I began to realise how hierarchical this society was. I remember freezing one day, and ringing for a servant to light my fire. I didn't understand her confusion – it turned out that she was not the one whose duty it was to light fires. I began to develop a very strange idea of what London was about.

I lived in Hanover Terrace for a month, looking for a site for Manya's publishing house. It was then that Solly Zuckerman introduced me to Chalmers Mitchell.

Solly exploited Margaret Gardiner ruthlessly. She used to sit up typing his work until 3 am. Solly and I became very friendly, and one day he said he wanted to ask my advice. He took me to lunch, I was introduced to Lady Reading's daughter. After we left, Solly asked me what I thought of her; I replied that she seemed quite amenable and intelligent. Then Solly told me he wanted to marry her. That was quite a shock to me because I admired Margaret Gardiner's selfless devotion to Solly. But by marrying Lady Reading's daughter Solly jumped up several degrees socially.

He was adviser to the government on armaments. Typically, he knew nothing at all about the subject. He was a *luftmensch*, but, because of his zoological achievements (his book, "*Sprechen zie Tschimpanisch?*"), I kept in touch with him.

When I started to be involved with ARP (Air Raid Precautions) I went to Solly to discuss the problems of expected casualty statistics. He hadn't a clue about the subject, but it didn't take him long to acquire ARP-speak.

He introduced me to Professor Blackett at Manchester University who was doing experiments on atoms. After visiting Professor Blackett we went to the statistics department. It was government policy to disperse people, so that, in the event of a bombing raid, only a few would be killed. They wanted to hush it up, that way no fuss would be made. We, on the other hand, wanted the people to be protected. In Finsbury, Harold Riley was Town Clerk; because of his desire to protect people from air raids he was crucified by the government – chucked out of his job and forbidden ever again to hold municipal office. All this because he had started work on a deep shelter at Busaco Street. Harold Riley was accused of various maladministrations – of giving flats to tenants not on the waiting list (the implication being that he had got money for it). An Inquiry was held in Finsbury into Riley's "maladversions", and during that inquiry, the acting Town Clerk, Arnold James, invented an epic story of how Harold Riley had been piling up money (in reality, he lived in a garret).

Finally they got poor Riley out giving him a tremendous fine, a "surcharge" which municipal officers have to pay for wrong-doing. He became a representative for a bicycle-selling company, demonstrating bikes to children.

We produced a scheme and a book called Planned ARP which we sent to Winston Churchill. We were informed that he had read it, but that "At this time, this book would not be helpful." We didn't give up. We submitted the book to Parliament. I don't remember who our spokesman was: possibly Herbert

A house at Genesta Road Plumstead, 1938 (left).
The staircase at Bevin Court 1952 (right)

Vakerue Bennett

Joe Kerr

Morrison. His question was "Why does the government prefer the theory of dispersal?" (a silly question – the cost was about one fiftieth of what we proposed). We received a very snooty reply, saying words to the effect that "All sorts of people submit fantastic schemes to us in an attempt at self-aggrandisement, and this is one of them." Nonetheless they decided to submit it to one of their plethora of kept advisers – as far as I recall this one was a teacher at Imperial College whose specialism was reinforced concrete. The government said they would abide by his decision.

Sure enough, after a whole month, this expert replied with an argument based on the distance of one shelter from the next, even though this was entirely irrelevant. The tone of his reply was one of rejection, and he chose distribution as the reason because he dared not admit that his judgement was based on considerations of time and money. He made not one single practical criticism of the construction, although there was quite a lot he could have mentioned. The drawings could have been criticised because the detonation slab was of the wrong dimensions and could have resulted in diagonal fracturing of the shelter wall. If Jenkins had pointed this out he would, at least, have been doing his job.

The construction of deep shelters was very ingenious. One placed a concrete cylinder on the surface of the earth, and excavated under it so that it fell into the pit, forming a lining; the first cylinder was followed by a second and a third until the pit reached the required depth.

But government rejected our deep shelters. Years later, Charlie Mason, a surveyor, told us that a small version of our shelter had been built by Winston Churchill in the grounds of Chartwell.

The truth is that the government saw our shelter as being morale-sapping. People would run to the shelters when the sirens sounded – but the government preferred that they should take a fatalistic attitude and carry on with the manufacture of munitions: they promoted the "We can take it" philosophy – and no doubt that is why Churchill won the war.

So the government opted for Anderson and surface shelters, like Arup's Farringdon Road shelter which was hit by a bomb. Ove Arup recommended these reinforced concrete surface shelters, rectangular in shape and divided by brick or concrete walls into small compartments, each taking eight people. This was the theory of dispersal work: if a bomb dropped on the shelter, only a few people would be killed because they were dispersed into separate compartments.

Harold Riley had already authorised us to start building our deep shelter at Busaco Street, when the government cam down on him like a pack of hounds, led by Alderman Simmons

and Dr Katial. Years later, in New Delhi, Katial told me that the whole case against poor Harold Riley was a complete fabrication from start to finish, a deliberate campaign to get rid of him because he had trodden on people's toes. So everyone was happy: the government didn't have deep shelters; Harold Riley was selling bikes and Katial had protested against a dictatorial Town Clerk.

Apart from his marriage plans, one of the reasons why Solly Zuckerman took me to Lady Reading's lunch was to sell her on the idea of deep shelters – she was a very influential woman. Lunch went on for about four hours, and Lady Reading took an intelligent interest in the shelters, but, most important was the side-effect that Solly learnt about the case which until then he had defended without understanding. From then on he became an energetic supporter. He contacted the bureau of statistics, abandoned "*Sprechen zie Tschimpanisch?*" and went for ARP. He did his work by approaching influential people – Le Gros Clark, Professor Blackett and the like. Thus he became an advisor to the government. It was at that juncture that he kicked out Margaret Gardiner, presenting her with the *fait accompli* of his impending marriage to Lady Reading's daughter.

7 Down and out in London. Who invented the name "Tecton"? Setting up another practice with no money, and living by selling kefir.

After I'd failed to find a site for Manya's publishing house, I still hadn't a penny. For a fortnight all I ate was a roll and a pickled cucumber a day. I used to sleep in Red Lion Square in the daytime in the bed of the chap who slept there at night, Moishe Perlman, later to become adviser to Mao Tse Tung. I wanted to stay in England and investigate possibilities.

Then I started to cough badly, and Manya thought it might be tuberculosis, so she put me into the Brompton Hospital, where I had a huge corner room and only £1 in my pocket. While I was incarcerated, Manya introduced me to a friend of hers, Godfrey Samuel, and some students, who suggested that we could try to earn a living together.

I stayed in the Brompton for seven days. The specialist - who looked after the king as well as me - could find nothing wrong, but advised me to rest. The door to the corridor was open and I could see priests with lit candles going to attend to corpses, and it gave me the shivers. So I decided to escape, but they'd kept my clothes downstairs, and wouldn't give them back to me - so I ran down the fire escape in my pyjamas, caught a taxi and arrived at Cannon Lodge in Hampstead, where Manya was living, next door to Daphne du Maurier. I settled there to resume my search for a site.

It was then, too, that we set up Tecton with Godfrey Samuel and the others. Godfrey always said that he was the one who thought up the name "Tecton", although I could swear that I did. If he did invent it, it was the only invention in his whole life. Samuel was preoccupied with an idea which he neither fulfilled nor abandoned: a moving spiral staircase.

I taught Tecton the theory of reinforced concrete. We had no money, and when the gorilla house job came in, the money had to be divided by seven. I brought the job in and designed it, so I felt that I ought to have been allowed enough money on which to survive - but that was not the way things worked out. So I survived chiefly by selling *kefir* with Grishka Sigalin, who came to join me (as if we hadn't already enough people in Tecton!)

I met the three Sigalin brothers during my short stay at Warsaw Polytechnic in 1924. Actually I met only two of them, because the other was still very small - although already dedicated to the family preoccupation: architecture.

Grishka was the middle brother, and we got up to all sorts of pranks together. One particular joke was the leitmotif of our time at the polytechnic: a man with a wooden leg rings at the door of the Italian ambassador, Tomasini. The footman who answers the door says to the ambassador: "There's a man at the door with a wooden leg." Replies Tomasini: "Tell him I don't want one."

When the time came to receive our diplomas, I dressed up in evening dress and hopped into the cab to go to the ceremony. On the way I noticed to my horror that I had a brown sock on my left foot and a black one on my right. So I asked the cab to turn round, and rushed home to change. When I arrived at the ceremony I realized that I was wearing a black sock on my left foot and a brown one on my right. This was due to the effects of Vodka.

As our major project for the diploma, Grishka and I carried out geographical, historical and architectural survey of various provincial Polish settlements. The episode of the bandits at Olkusz in Polish Silesia took place then. One afternoon we went out, then came home because it was too hot. I went to sleep in an empty school building. At night, as we had been warned by the schoolmistress, the bandits came to attack us. Our horses were outside, but each of us had a phoney gun which shot corks full of explosive, which made a hell of a noise when fired, so the person at whom it was directed thought he was dead. But the bandits weren't burglars; there was terrible unemployment in Silesia, so out-of-work miners roamed the countryside looking for people to rob. They saw our laden horses outside and thought they'd fallen in luck.

I got Siglain out of Poland, which he hated, and introduced him to Ginsberg in Paris. For a while he worked there, but I've yet to meet anyone whom Jean Ginsberg paid. Just as he gave me only £100 after avenue de Versailles, so he halved that for poor Sigalin, who didn't have enough money to return to Poland. So I sent him a ticket to come to England. We lived on the third floor of a restaurant owned by an Italian, Mr Chiantor, near where Manya lived in Cannon Place.

We had endless conversations on Hampstead Heath about what to do. He was of the opinion that only Russia could offer the enormous building projects he wanted to undertake, and he never abandoned the hope of going there to take advantage of the Soviet drive to build.

In the meanwhile there was the problem of surviving from day to day. Sigalin's father in Warsaw had a retail shop which sold *kefir*. *Kefir* is a sort of yoghurt which can be more or less strongly fermented, and ranges in strength from a pleasantly sharp drink to a mild laxative depending on its age. *Kefir* is fermented with tiny little mushroom-like organisms collected from the slopes of Mount Kazbek; these mushrooms have to be constantly fed and washed, and then the same supply remains active for months.

Grishka and I looked up "*kefir*" in the London telephone directory, but found no entry under the word. This struck him as a manifestation of provincial innocence. We

decided to do something about it. Gradually, over a period of several weeks, we organised the successful production and distribution of our *kefir*. The culture was sent by Grishka's father. We used to go to Victoria station when the milk churns were delivered from the farms, and bring one churn home to Hampstead. Then we decanted the milk into dozens of little bottles and left it to mature. In Portland Crescent I found a Doctor Gainsborough, chief consultant to two maternity hospitals. We left him a bottle of *kefir* to try - and to cut a long story short, we were soon delivering eight dozen bottles a day to his hospitals. Everybody seemed very pleased with our organisation, and I think the health of English women improved.

Doctor Gainsborough put me in touch with Pilichovsky, an architect of Russian descent who knew a few people. I remember being introduced to him at a party, and he told me that he had a site in Plumstead which he thought would increase in value. I had another way of increasing its value - to build on it (this primitive idea hadn't even entered his speculative brain). And that's how the Genesta Road flats came to be.

I hesitated a long time over having the two tiny cima-shaped balconies of the two adjacent flats so close together, but eventually I realised that the days when you could sit on the balcony were extremely rare, and that they would be used chiefly as a place for storing empty beer crates.

It is one of my principles never to go back and see past jobs, since it is usually very depressing; I have heard reports that the little terrace has been ruined by the addition of artificial keystones, and that there are plaster alsations on the window sills.

I didn't have much more to do with Pilichovsky after Genesta Road - except that he introduced me to a fairly fantastic crowd of LSE students - Shlome Adler, Moishe Perlman, Jack Gaster and Marghanita Laski. I recall long debates between us as to who was going to pay for the coffee. As I've already mentioned, Moishe, who later went on to be Mao's right hand man, had a bed in Red Lion Square which I rented during the day; Jack became the first student ever to read Hittite; Shlome went to America, and was so brilliant that, in spite of being a foreigner, he got a top job in the US Treasury.

In the 1950s I was standing on the corner of Oxford Street and Tottenham Court Road waiting to cross, when I saw Shlome. "Shlome!" I called out. He turned to me, put his finger to his lips enjoining silence, and crossed the street. The lights changed, and I was left on the other side; I have never seen him since.

The first job in Tecton was brought in by the "Piccadilly Highlander", Dugdale: to design a fireplace for Stanley Baldwin. There followed a commission to design and library shed for Lloyd George. After this, the Highlander took to drink and had to leave Tecton. Now started a long period of waiting for work. Silence interrupted only by the munching of dry bread and pickled cucumber, which was all I had to eat. There were also long evenings of drinking beer in Charlotte Street - if anyone bought it for me. We used to have meetings with MARS Group members at the flat of Misha Black the interior designer, in the house in Charlotte Street where Marx lived with his family (although his spirit did not seem to influence the intellectual content of our discussions). As usual we discussed facts, not values.

8 *How the famous zoo buildings came about. Strange practices at the zoo. The building of Highpoint.*

And then Solly Zuckerman got me interested in the zoo. He told me that explorers had captured two small gorillas in the Congo, and that the little creatures were being kept in bamboo cages; new accommodation was urgently needed.

Apart from the general interest of the job, I saw at last the opportunity to design a round building as I'd always wanted to. My design consisted of an outside shell of masonry, one semicircle of which was made of plywood; this could be moved round to close off that half of the enclosure, or opened to give a view of the gorillas. Sir Peter Chalmers Mitchell was in charge. Everything in his office was black - ceiling, plates: everything. He gave me dinner by candlelight, and what I took to be a chunk of salmon turned out to be a python steak.

It was in connection with the gorilla house that I sought Arup's co-operation, because I had already worked with reinforced concrete engineers - Christiania and Nielsen - on a project by Perret in Le Havre.

Arup sent Mr Wolf, his chief designer, to talk to us about the gorilla house. Wolf was a cadaverous, jaundiced-looking Dane in a bowler hat. We told Arup that we wanted a semi-circular shell built within a maximum of 6 months. The accepted way of doing it would have been to build it in rendered brick, but I didn't like that idea because in order to cover a curved brick wall, the rendering would have to be very thick, and would thus be liable to cracking. So I asked whether a method such as that used to construct cooling towers could be devised, building the walls of reinforced concrete.

Arup said that this method of building would mean that, as one layer of shuttering never quite matched with the next, there would be a mark between layers. He suggested that instead of trying unsuccessfully to banish this mark, we should underline it by deliberately making a recess between layers. Thus it was that we made a virtue of necessity, so the gorilla house is striped.

The house was designed with two corridors: one sucking people in, the other disgorging them again. This was the scene of the first conflict in Tecton, especially with Samuel, preoccupied as he was with his moving spiral staircase. I wanted the window in the side of the entrance corridor to be cut on the bias, thus emphasising the pull on the public to enter the gorilla house; Samuel wanted a simple rectangle.

The gorilla house was completed a few days before the six-months time limit. Sadly, though, things did not turn out as we intended. The plywood semi-circle was not electrically-driven as we had planned; in an effort to economise, the zoo council decided that the semi-circle should be moved by two keepers. Only a few months later, one of the keepers was allocated to the butterfly house, and the other decided he'd be damned if he'd move the heavy plywood on his own - so it stayed shut and became a hay store. The gorillas, Mock and Moyna died and were put into the carrion crows' cage...

Some time after the gorilla house, Sir Peter Chalmers Mitchell called me again, and asked whether I was interested in penguins. I believe it was their black coats that endeared these birds to the zoo director.

From then on, there was a running battle with the zoo authorities. Every decision had to be agreed by four separate committees,

Steven and Sasha Lubetkin during the construction of the Busaco Road flats 1950

including such important people as General Allenby, the hero of the 1914 war, who looked at the plans upside-down and didn't notice there was anything untoward. Each of the four committees had to pass the plans, and each was of a different opinion. The keepers adopted another technique. They let everyone do exactly as he pleased, knowing that they would change the whole display on the quiet when no-one was looking.

Because of this chaos, all kinds of absurdities took place.

Very characteristic of the way in which the job was treated by the zoo was the fact that the necessity or desirability of keeping the bulky food near the elephants was never mentioned. In the absence of this proviso, we assumed that, like other animals, the elephants would be fed from a trailer bringing food from a central store. But as soon as the house was built, a hue and cry arose about the absence of a storehouse adjacent to the elephants, although it wasn't easy to see why this would have been advantageous. At any rate, they erected a whole campus outside the elephant house, which lacks systematic and compositional relationship with the four housing bins.

One nice feature of the elephant housing, however, is the decisive line of the roof that suggests the movement of a scythe threatening to cut through the magnificent, woolly vegetation. At either end there are what the Germans call *Offentlichersitzgelegenheit* - benches on which the public can rest once the adventure is over.

Highpoint. . .

When Sigmund Gestetner called us to his office in Australia House, he explained that he wanted to build a block of flats to house his employees, and he wanted it built fairly quickly because the accommodation was needed urgently.

I proposed Highgate because I liked it, and I was living there with Pasha at 11 North Road. The first site we found was in Southwood Lane, and we made a sketch for it. Unfortunately for us, Mills, another architect, managed to grab the site for a client of his, which came to me as a big blow: I had to feed Pasha and Maroussia. In desperation I walked up and down Highgate, trying to find out about people who'd died, in the hope that their houses could be bought and demolished to give us our site. In the course of this pursuit, I found myself in the Two Wrestlers pub, opposite where Highpoint now stands. In the pub they told me that the house opposite belonged to a family the father of which had just died, and that the family had decided to sell up and move to Dorset. Within two weeks the site had been purchased.

I started to sketch the design, and in fact the finished building did not differ much from this initial scheme. Of course I wanted Highpoint to be round, but the site wasn't broad to accommodate a round building. That's where Arup came in. He suggested a monolithic concrete structure with load-bearing walls four inches thick, insulated with cork inside. Exactly how the floors were to be supported was left open, but in order to avoid a visible join between the lifts of shuttering (as was the case with the gorilla house) Arup devised a system of making continuous concrete surfaces by jacking-up the shuttering as concreting proceeded. Construction of this type was to be just a modified version of cooling tower procedures.

It is important to note that this excellent device represents the sum total of Arup's contribution to Highpoint.

With hindsight I think the walls ought to have been five inches thick; this would have saved quite a lot of worry about rusting of the reinforcements, which were too near the surface in four-inch walls.

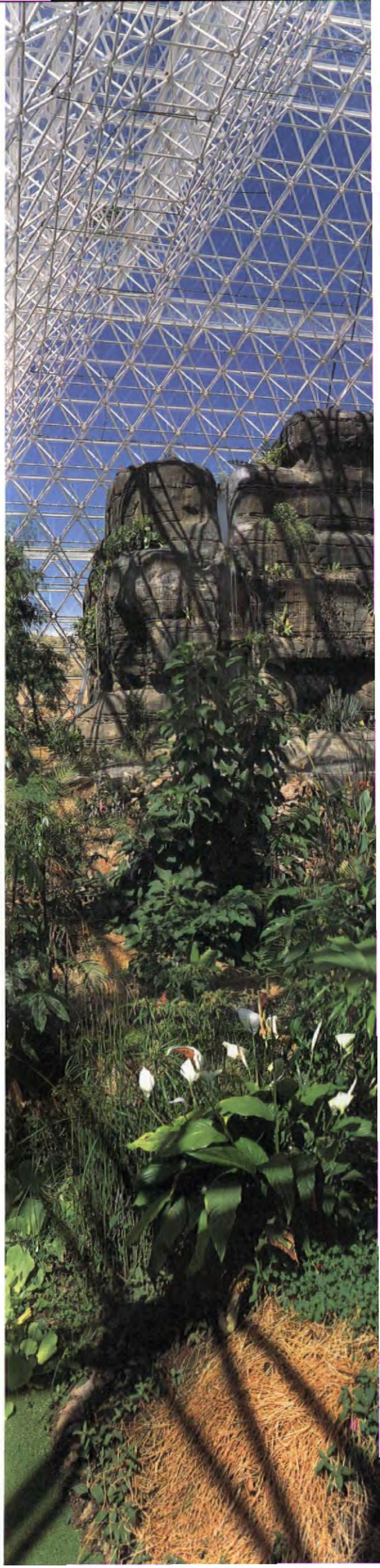
I remember the difficult negotiations with the LCC about this new type of construction. They argued that the LCC was the biggest landlord in the world, and that all their properties were insured at the current building price. If the method we proposed were to be adopted, it would make building so much cheaper that they would have to revise all the mortgages in the London area.

I sat in County Hall in the main conference room, overlooking the river The table seemed infinite, with the Clerk of the council at one end, all the chief officers of County Hall on the two sides and me at the other end watching the motorboats on the river. We won, however, by referring to the Genesta Road scheme we had done with Pilichovsky in Plumstead.

**John Allan. Berthold Lubetkin: architecture and the tradition of progress. 630 pages. RIBA Publications 1992. £60.*

NOAH'S ARCH

Warming his hands by an open fire during a chilly Arizona morning, Phil Hawes seems an unassuming candidate as designer of one of the most sophisticated and complex biospheric systems for ecological study ever built. In his studio, however, Hawes has preoccupied himself with everything from plans for a Martian Village to exploring how expended NASA Space Shuttle external oxygen tanks might be reused in outer space as living and work facilities for bioregenerative laboratory research. His designs for ecological cities suggest the influence of architects as diverse as Antoni Gaudí and American inventor Buckminster Fuller. The temptation is to call these quixotic proposals "visionary". But the future is just down the road, set amongst prickly pear cactus overlooking a desert arroyo, in what used to be Apache badlands. John Taylor tells the story of Biosphere 2. Pictures by Tom Lamb.



Biosphere 2 (left), at night (below) and its environment (bottom)

Known as Biosphere 2 (BS2), this completely enclosed crystalline structure, which is designed as a self-sustaining microcosm of the Earth, is located on a 2,000 acre site in the foothills of the Catalina mountains, 30 miles north of Tucson, Arizona. The concept of the Biosphere – various ecosystems operating in synergetic equilibrium – was first developed in the 1920s by Russian scientist Vladimir Vernadsky. Provided with 30 million dollars in seed capital by a group of venture capitalists led by Texas billionaire Edward Bass, its creators have developed the idea and hope to provide far-ranging environmental lessons for life here on Earth (Biosphere 1), and find applications for the design of space colonies. "We want to blaze the trail for outer space," says Margret Augustine, president and CEO of Space Biosphere Ventures (SBV), the for-profit company sponsoring the endeavour. "The technologies being developed here can be applied in orbital space stations or research bases on the moon or on Mars," she says. SBV intends to begin marketing patented innovations such as its air purification system, integrated pest management techniques, and new crop varieties that may result from the experiment.

Inside Biosphere 2, an ocean and marshes, a rain forest, savannah and desert, covering 1.3 hectares, along with several thousand species of plant and animal life (from Vietnamese pot-bellied pigs to microbes) are enclosed beneath a lattice work of white steel tubing and glass, that reaches a height of 26 metres above the biome floor of the tropical rain forest. Built to last 100 years, the first eight biospherians – four men and four women – ventured into the airtight container almost two years ago. Computer monitoring systems are linked to a net of 3,500 sensors to provide constant information about the environment and control heating, cooling, ventilating, and air, water chemistry and waste recycling systems. SBV will then use this information to create a cybernetic simulation of the system and a database for further study. Although BS2 may tout its "green" message, it is supported by an array of powerful external generators and cooling systems. "If we were to lose the ability to cool," says William Dempster, Director of Engineering, "in half an hour on a sunny day the temperature would quickly rise to about 140 degrees."

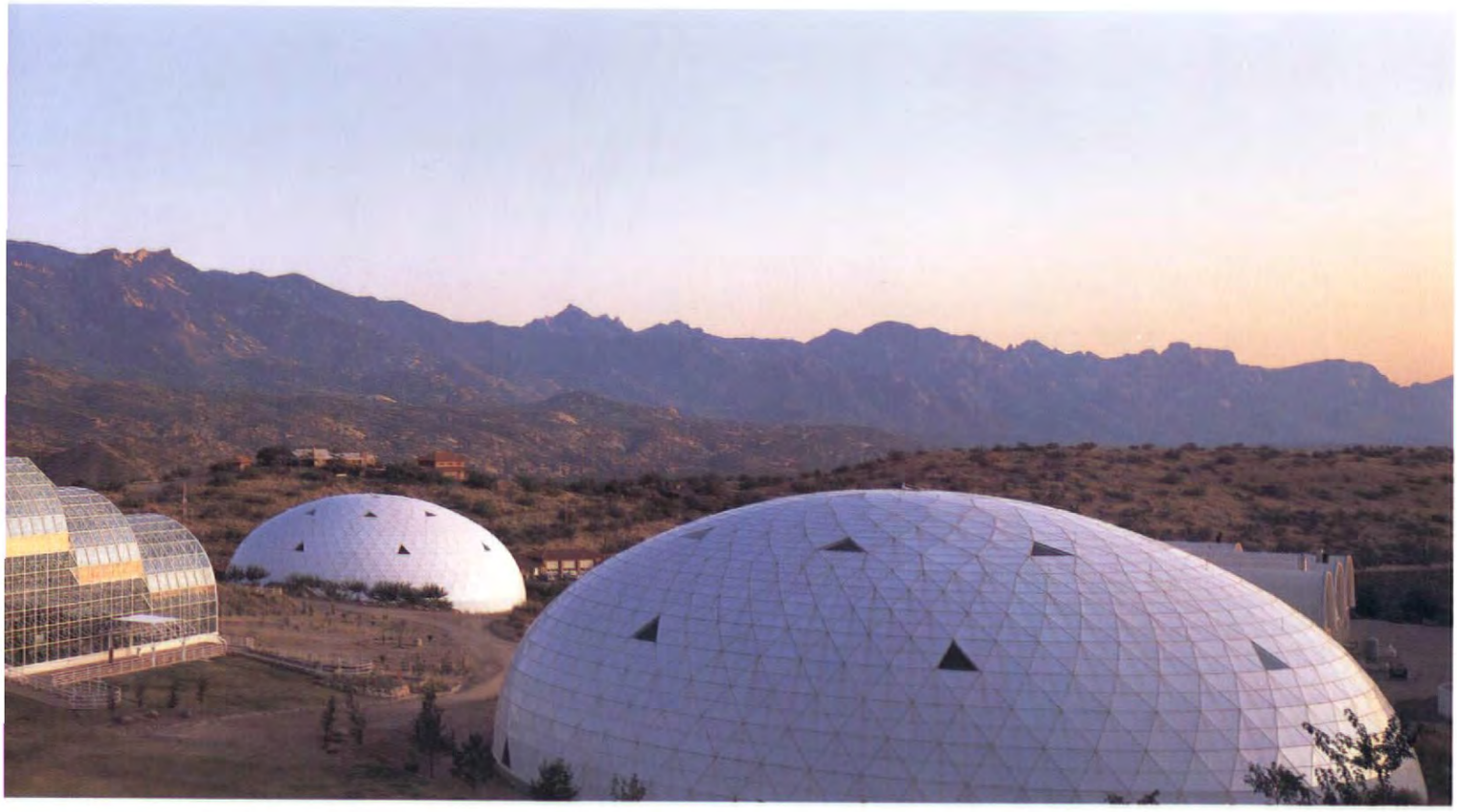
Just outside the Biosphere is "Mission Control," a more conventional white, arcaded two story building, where a full-time team of 20 scientists and technicians monitor events inside BS2. For the past seven years over 200 environmental scientists and naturalists in different terrestrial ecosystems have served as consultants on the project. They have included Ghillean Prance, director of Kew Gardens in London, who designed the rainforest, along with colleagues from the New York Botanical Garden, and Walter Adey, director of the Marine Systems Laboratory at the Smithsonian Institution.

The trail that led Phil Hawes, the architect of BS2, to the Biosphere has, in hind-

The Biosphere 2 complex (top) and interior views (below and far right)

sight, been a logical progression. As an architecture student at the University of Illinois, Hawes came under the influence of Frank Lloyd Wright's The Natural House, and set out for Taliesin West to apprentice himself to the master. His drawings and ideas also reflect that of Bruce Goff, Wright's spiritual heir, whom he served as assistant while finishing his degree at the University of Oklahoma. His predecessor's interest in organic architecture – "the architecture of Nature for Nature" – would seem to have found its ultimate conclusion in the Biosphere project, which deftly mixes environment and structure. Biosphere's cousin's – nearby desert neighbours, Taliesin West and Paolo Soleri's aborted Arcosanti – have both been overshadowed by BS2's realization of a "building as organism".

Phil Hawes and his co-designer, Margret Augustine, carefully considered the impact their design would have on the eight individuals sealed inside the structure for a duration of two years. Augustine headed up the design office which would produce the drawings for the project, Synergetic Architecture and Biotechnic Design (Sarbid Ltd), which began



operations in London before moving on site. She and Hawes toured architectural landmarks – the pyramids of Egypt, Chartres Cathedral, the Taj Mahal, Hagia Sophia, and ancient cities – as they grappled with the design for the unprecedented structure. Not only would major technical problems have to be solved, but it was important that the habitat serve both urban and agrarian needs, or in biospherian parlance, the technosphere and the biosphere.

The Biosphere was designed as a microcity, employing an older city's twists and turns, changes in elevation, multiple vistas, and variety of architectural experiences. "It would be difficult to compartmentalize and create different biomes within a large dome structure. You have diversity in ecosystems, and people also need to have diversity," reflects Augustine. The structure is protected on three sides by ridges which form a partial amphitheatre and promenade just above it. Differences in altitude and temperature create convection currents to circulate the air inside the structure. The stepped pyramid at the north end is dominated by a lush Amazonian rain forest filled with 300 species of plants. Solar powered cooling coils over the tropical forest condense water vapour to provide "natural" rainfall. The showers feed a stream that cascades down a waterfall and flows south towards the flood-plain forest and on to a broad vista of high grasses and small trees in the tropical savannah. Scientists selected plants from Africa, Australia, and South America for the biome, insects and hummingbirds help pollinate the plants, and termites assist in decomposing dying plant material. The stream meanders past Mangrove trees to a saltwater marsh (imported from Florida's Everglades, and host to frogs, turtles, and crabs) and into a 10.6 metre deep ocean with its own coral reef and waves – generated mechanically – that can reach as high as 1.2 metres. A thornscrub forest marks the ecotone (transition zone) between the savannah and the coastal fog desert, under the southern pyramid.

To the west, beneath Babylonian inspired vaults, the eight biospherians will cultivate 6/10 of an acre to feed themselves. Using crop rotation and predator insects to avoid pest infestations, about 150 subtropical and warm climate crops will be grown throughout the year.

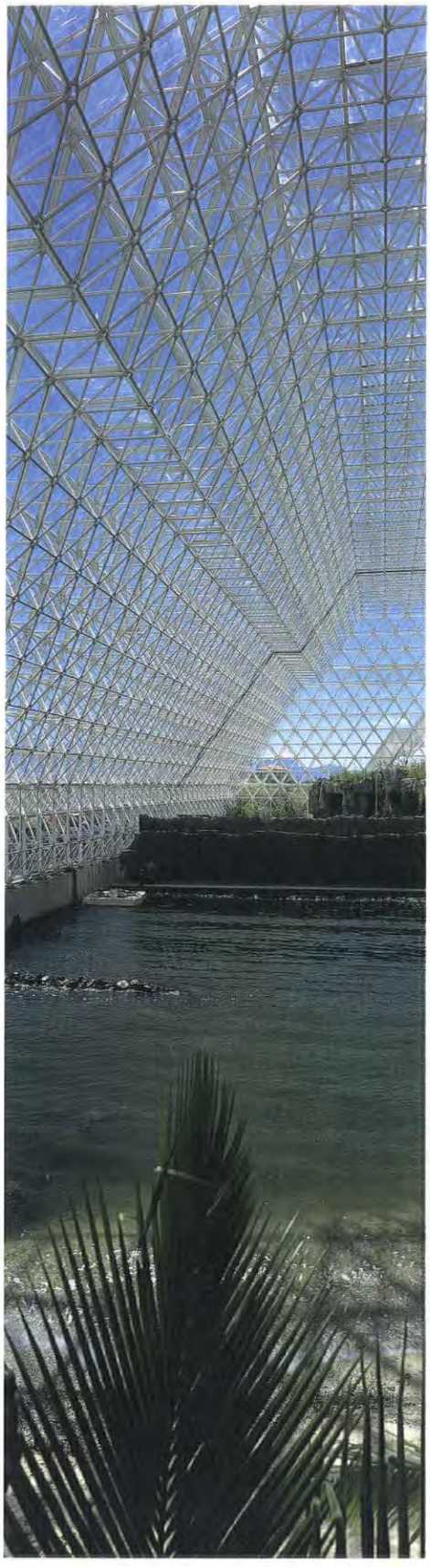
Different climates and landscapes within the Biosphere

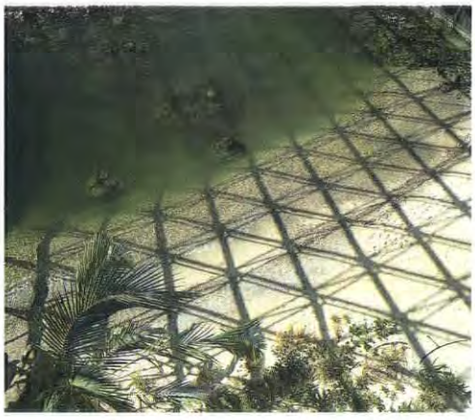
The human habitat, which exemplifies the flexibility of the spaceframe in its sinuous undulations, is 240 feet wide, with a pronounced six storey tower rising above it. The internal stair acts as the habitat's central support structure, and is designed with a 135 pound-per-square-foot-load radial floor system. The biospherians enjoy ten 34 square metre apartments, a common dining hall, recreational facilities, a computer centre, workshops, and library. Along with standard communications with nearby Mission Control, the biospherians are reportedly attempting to build a virtual reality link that could be shared through a Power Glove with signals sent via telephone.

Construction materials were chosen with an eye towards their eco-compatibility. Engineers were banned from using curing compounds in concrete and galvanised steel because potentially dangerous trace elements and metals, such as zinc, could leach out. A high grade stainless steel, known as 6XN, was selected to form the welded pan of BS2's foundation. Comparable to titanium in resistance to corrosion, the steel was further sealed with a layer of epoxy and further protected with concrete. Paints and finishes for the human habitat were required to be non-toxic and were subject to careful atmospheric tests before being installed. Wool took the place of synthetic fibres in carpeting and wall coverings.

The design of the structure called for a leakproof enclosure admitting light for the environment within, but no air, and flexible enough to accommodate the varied building programme. Spaceframe architecture, which up to this point had been applied only to the making of domes, cubes, and simple pyramids, would have to be further enhanced to meet the requirements of BS2's ambitious plan. SBV engaged Pearce Structures, who had developed a new multi-hinge connection system capable of forming long expanses of superstructure into planes, curves, or spheres. Peter Pearce, a former colleague of Buckminster Fuller and a furniture systems designer for Charles Eames, calls the job "more like building a space shuttle than building."

Measuring up to SBV's specifications was not an easy task. The frame would have to resist possible corrosion from potentially high carbon dioxide levels, achieve an air leak rate





The huge vault over the saltwater marsh (left). The view out, and interior climatic scenes

of less than 1% per year (unprecedented for any structure ever built), and avoid all materials containing bio-contaminants (they could wind up in your coffee, given BS2's closed system), or caulks used to seal glass plate and construction fittings that might attract Biosphere's termites (rubbish-processors essential to the soil system).

Pearce's spaceframe was made from single six-foot tubes of grit blasted steel sprayed with molten aluminium and then electrostatically coated with powdered polyester. The result: a virtually unscratchable white, porcelain-like finish. Each end of the spaceframe tubes tapers into three fins. A hole in each fin allows the tubes to be joined with each other to build multiple pyramidic geometry. "In a way, there are no facades to the Biosphere," says Augustine, "it's a kaleidoscope, there's never a front or back to the building."

To achieve an airtight system, another innovation was required. Early in the project, SBV utilised a 17,000 cubic foot scale test module to develop approaches to the problem of sealing BS2's glass roof. In typical practice, glazing is applied to a secondary system of aluminium mullions on top of the space frame. For BS2, however, the double structural layer blocked valuable sunlight that would be critical to intensive agriculture, and worse, the steel frame and aluminium mullions moved at different rates, stressing the glass and producing unacceptably high air leakage. At the suggestion of Hawes and Augustine, Pearce elected to "float" the glass within the spaceframe itself by siliconing it directly to the steel frame. This technique eliminated the need for expansion joints, and leaks between the spaceframe and glass are reduced since they react to expansion more similarly than steel and aluminium. Recently tested by outside consultants, the leak rate is the lowest of any such structure ever built.

The Biosphere and its architecture ambitiously reach for a yet unrealized world of integrated ecological management and balance, towards form that transcends culture and transcends time. Even Hawes resists explaining the affect the building has on the half million visitors the site is drawing each year. "It's like the old Frank Lloyd Wright, Lao Tzu saying – 'The truth of the container is in the volume.'"

CONTRIBUTING TO A CITY

Sir Norman Foster's recently opened Carré d'Art in the centre of the City of Nîmes completes the urban and historic space surrounding the Roman Maison Carrée. This square is variously constituted. The 19th century opera house which was destroyed by fire in 1952, lay immediately next, and to the west of, the Maison Carrée. The buildings enclosing the square to the north and east have been redeveloped. Opposite, the buildings to the south side remain in their original state and express the tight knit character of the grain of the city. Adrian Gale considers the new "weightless" addition to this ancient settlement.

All photographs by James H Morris

Site plan (top) shows Carré d'Art and Maison Carrée in central square. Above, the main entrance

Apart from designing the new Carré d'Art, Sir Norman Foster and Partners has been responsible for redesigning the paving surrounding the Maison Carrée, which was once surrounded by gravel and now floats on stone. A robust Roman object, its importance has been greatly enhanced by the addition of the Carré d'Art. In excavating around the base of the Roman monument, evidence was found of a larger colonnade whose footprint Foster has now stamped onto the new paving pattern. The surface of this earlier floor has now been exposed at the bottom of a rectangular, sump-like pit in front of the stairs leading up to the colonnade, as a further reminder of the passage of time that has elapsed since the Romans established the City.

The general versus the particular

Increasingly, the specialised design of a library, gallery or even an auditorium has become a well tracked subject. There are many models to draw from. The particular requirements are well known and well understood. The design can almost be selected from a catalogue. In such areas of high demand, the design is no longer a topic for innovation. It is the hall or foyer connecting all these specialised spaces that becomes the principal space in the building. This internal, but public world, can be an extension of, and directly related to, the open city spaces outside. Such internal spaces become a roofed pathway in the city. It is the connection between this inner world and the city outside that forms the allegiance of a building to its surroundings.

From the West the stone Maison Carrée and its attenuated companion

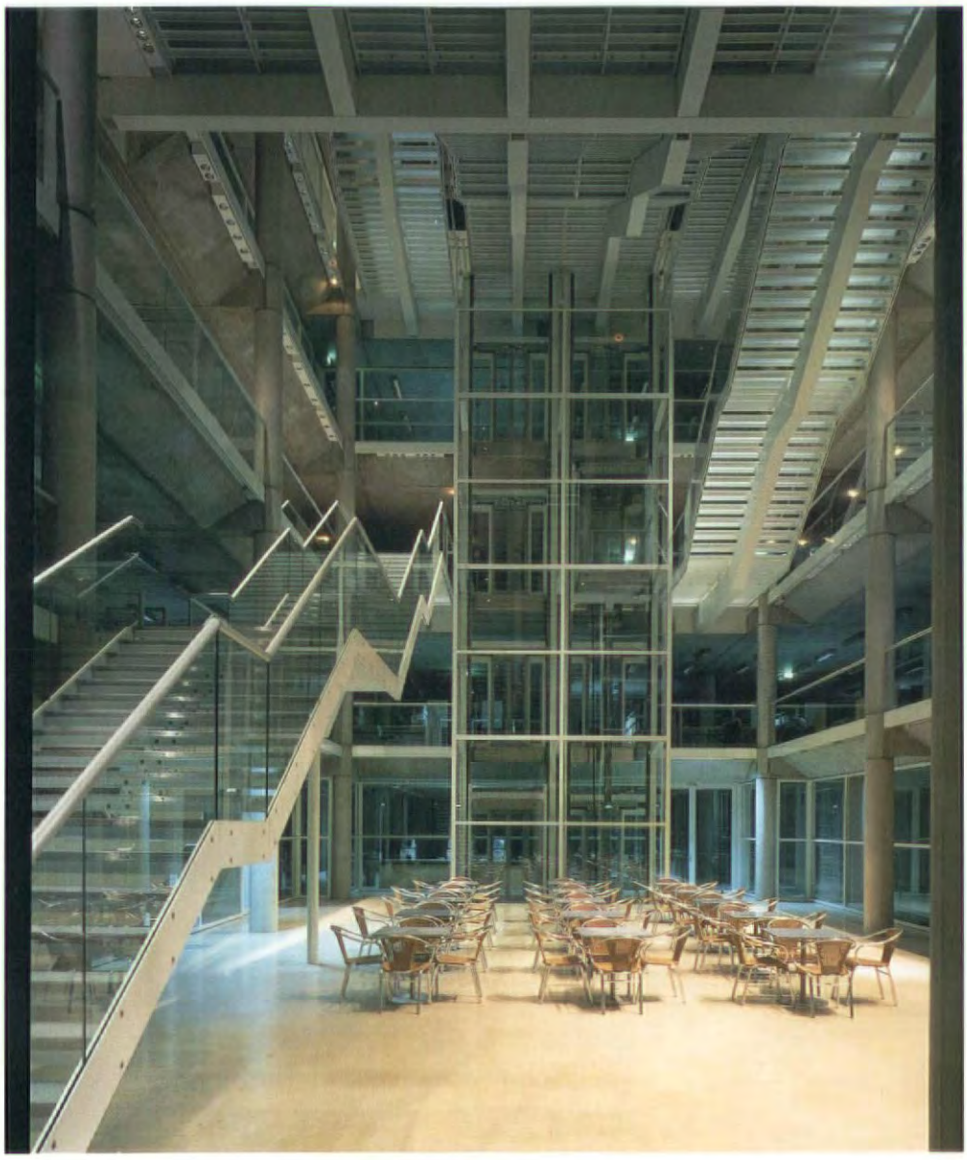
The attention given to such general spaces has established the consistent quality of Foster's work. Repeatedly, the fussiness of the particular is determinedly subjugated and controlled to promote the dominance and calm of the general. Willis Faber Dumas, the Sainsbury Centre, Stansted, the Library at Cranfield, the Sackler Gallery and now Carré d'Art at Nîmes, each in their individual way, are experienced by this major space. The particular is never allowed to invade the general and it is the dominance of the public space that is properly retained in any memory of the building.

A long gestation period

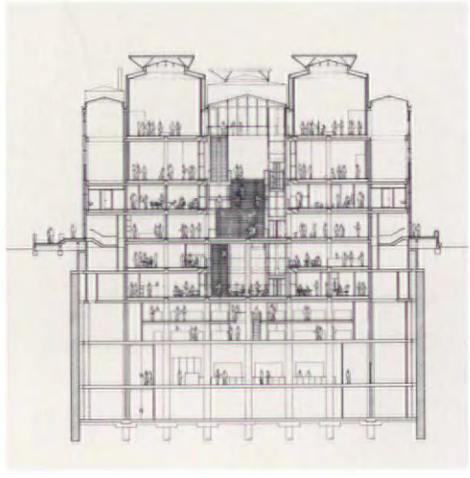
The competition for the Carré d'Art was won in 1984. Although there have been numerous delays in the building programme, the completion has been achieved under budget. The most reported delay in construction was the flood in 1986. With half the accommodation below ground, the excavation through the limestone is as deep as the building is high. When the site was overwhelmed by water the design was altered to establish a ground floor datum well above possible further flood level. Amongst further changes that were made to the original scheme is the one that follows from the recognition of the diagonal circulation route across the site from Rue Victor Hugo to Rue Gaston Boissier. The centralised posture of the building on the axis of the Maison Carrée was skewed by pushing the main entrance, facing the square, off-centre to the south east corner to relate more purposefully to Rue Victor Hugo. Similarly, the rear entrance was re-positioned at the north west corner on Rue Gaston Boissier. However, the alterations this made to the entrances and so the relationship of the building to the city of Nîmes have not been allowed to intervene in the orthogonal regularity of the ground floor plan. There has been no attempt to regard this route as an opportunity to create a disturbance in the regularity of the ground floor. The plan remains in repose.

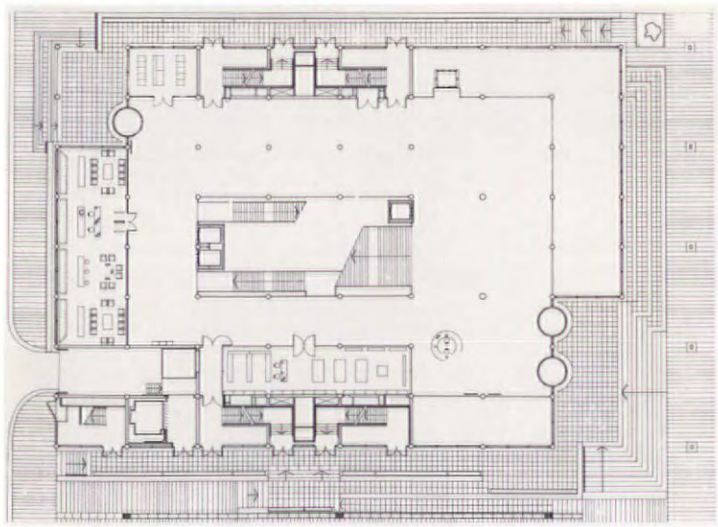
The interior

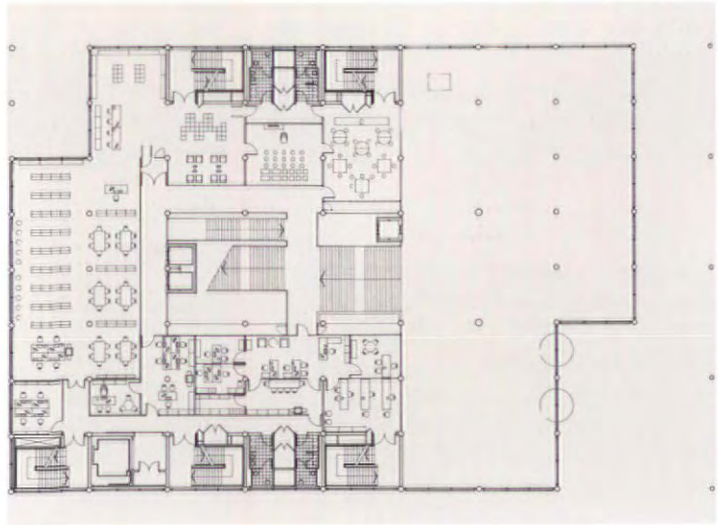
From the raised ground datum, the width of main stair clearly summons visitors upwards through the open well. More subtly signalled, is the lesser flight, tucked back beneath the main stair which leads down to the two library levels beneath. The cascade of stairs leading both upwards and downwards fills both the length and breadth of the well. To allow light down to the lowest public level, the treads and landings are formed of acid etched glass. From beneath looking upwards, footprints dance unnervingly across the glass treads and landings. Ascending or descending from the raised, ground floor datum, the importance and density of stairs becomes reduced as each additional level is reached. The culmination of the upward journey is the reward of the open bar terrace at fourth floor level. Deserved refreshment can be taken sitting on the terrace overlooking the square amongst the feathery foliage of the magnificent Micocoulier that entwines itself in the corner of the building.



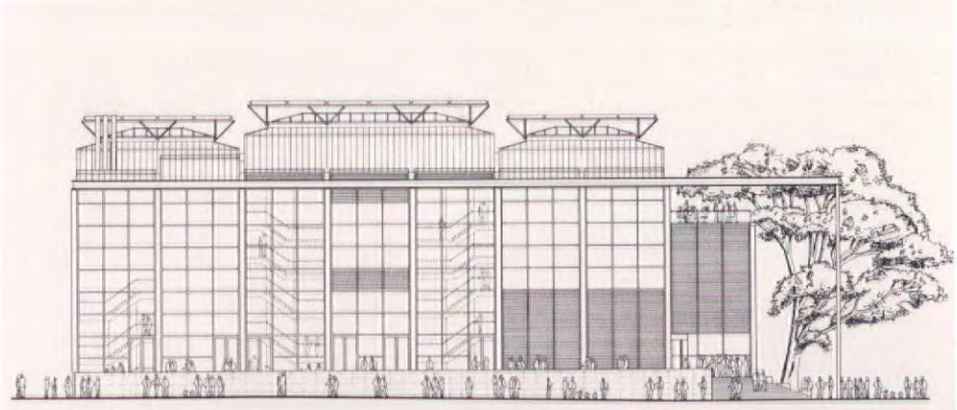
Interior showing glass steps and elevators (left) seen in section below. Main elevation to the West (above). Ground floor and upper Mediatheque plans left and right (bottom)







Elevation (centre) shows surprising height of roof lanterns. Classic relationship (top) is repeated in section (bottom)



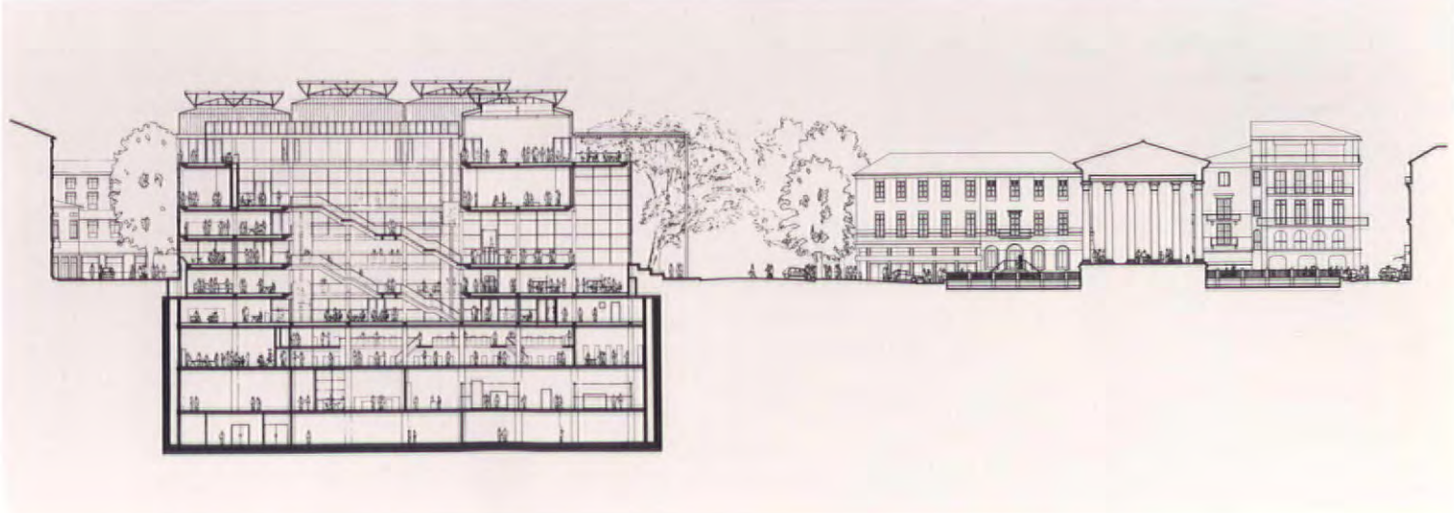
Construction vocabulary

Largely orthodox in its appearance the technology, visible to the eye, breaks no mould nor passes any engineering barriers. Untypically, the floor soffits to each level are unfinished concrete, raw from the formwork. Ductile space for service runs lies above the slab, between upstand beams. An elaborate network of electronic connections serves a sophisticated reference archive of tapes and videos stored deep in the vaults between the public spaces but accessible to viewers and listeners above.

Externally the vocabulary of construction reads predominantly as a filigree of louvres forming an external cloak of protection, so masking the effect of midi sun.

Internally the detailing is clear and restrained. The well-proven vocabulary of construction is consistently minimalist and enjoys itself as it dances from one condition to another. The only blot on this calm is some Heath-Robinson ironmongery that was required to be installed by local authority bureaucracy. Even the Foster ingenuity was no match for the evidently heavy hand of French legislation. The furniture for the building designed by Sir Norman and Sabiha Foster is simple and business-like and makes no claims to draw attention to itself.

The live, louvred sunbreaks to the top floor galleries hover like lids above the roofline. It is only these that appear from a distance as evidence of highly intelligent, advanced technology building whose brittle and fresh appearance is weightless in contrast to its Roman counterpart across the square.



SCULPTURE IN THE DOCK

"... a mighty blow", by Michael Sandle

All photographs by Geoff Beeckman

It was probably inevitable that the Chelsea Harbour Sculpture show, opened by Her Majesty the Queen, should have kicked off with its angriest piece, Michael Sandle's "Fuck the Media: a mighty blow for freedom" – a man smashing a TV set with a sledge hammer – losing the first half of its name and being parked in front of an interior design showroom. But for Catherine Ormell, that was only the beginning of the show's lost opportunities.

Chelsea Harbour drowned in sculptures is a curious sight. Hotel Conrad doorman, Ian Rowland-Hill, not 70 paces away from Sandle's piece, had barely noticed its steel violence, hemmed in as it is by bulky brick vents from the underground car park. When persuaded to take a closer look, he was mystified. "It is very energetic but what's the point?", he asked.

Both visitors to and residents of Chelsea Harbour, a luxury riverside development in west London, will be asking the same question, as this exhibition continues over the next three months.

The 60 sculptures – this is one of Britain's largest ever open air sculpture exhibitions – are crammed into the restaurant and shopping areas and strung out round the periphery of the site.

Famous names abound. There are pieces by Elisabeth Frink, Dhruva Mistry and Glynn Williams among many others. But the impact of this abundance of art is arguable.

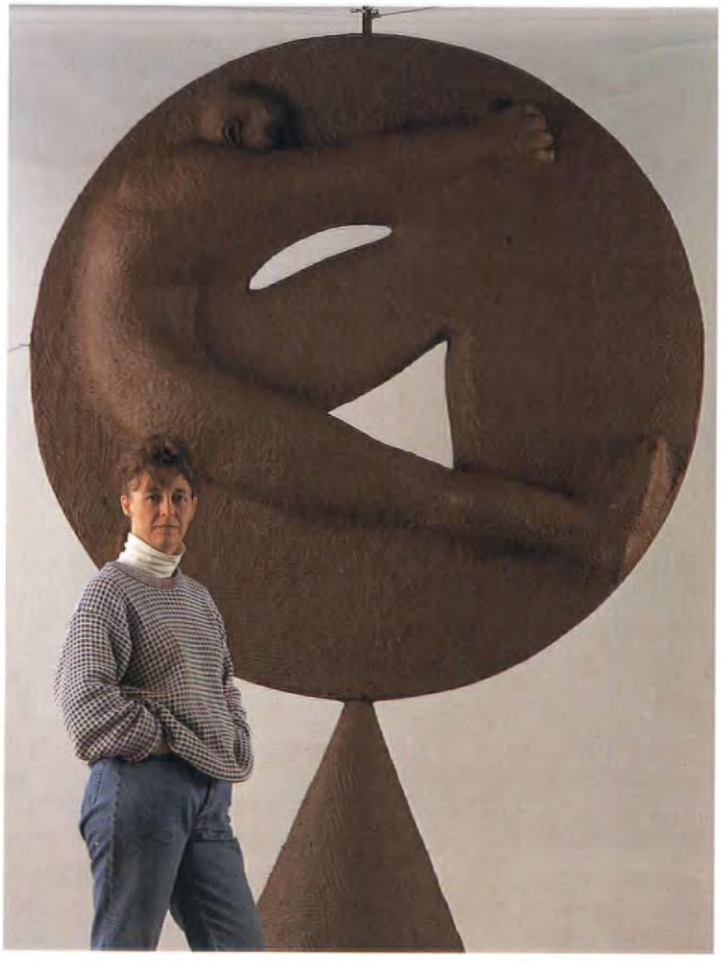
When it was completed in 1987, Chelsea Harbour was the fastest development of its size in Europe. Over 300 apartments and townhouses, 250,000 sq ft of commercial space, a 75 berth marina, and a five star hotel were thrown up in three years. It was the forerunner of a host of fast-track American-style developments in the UK.

In typical '80s fashion, something lucrative was made out of nothing much. What had been an urban wasteland, a former Victorian coal depot, later a British Rail goods yard, was transformed into a £150 million "designer village".

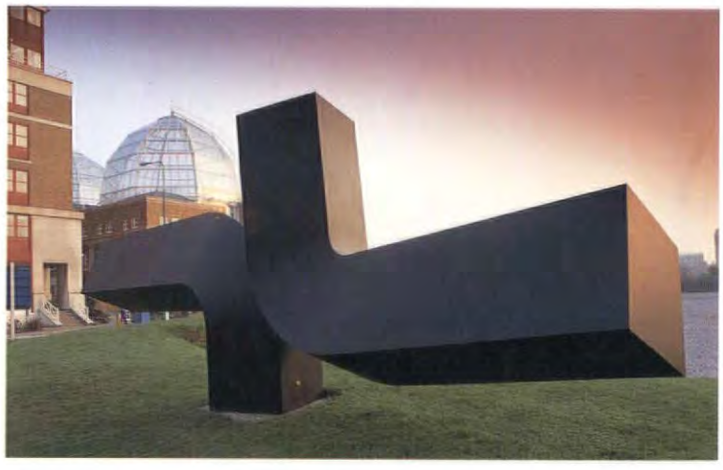
It was designed so fast that the drawings were only just ahead of the construction timetable. Even so, it is remarkable that the architecture manages to be simultaneously both phoney and flash.

Most Londoners know it from afar by its pagoda-ish Belvedere Tower topped with its self-important tide-ball, reporting the condition of the river. Close to Chelsea Harbour, (actually in the rather less glamorous Fulham) is a mass of contradictions.

RBS president Philomena Davidson Davis with "Charioteer"



The late Elizabeth Frink's "Desert Quarter III (below), and Clement Meadmore's "Night and Day" (bottom)



The buildings are big, but the details are busy and the style is confused, both Po Mo and neo-classical. In places, it is so over-designed that balconies, feature windows and ironwork fight for air. Yet other parts, like Chelsea Crescent, one of the residential blocks, are less fancy than the average Novotel.

What is so off-putting about the place is that nothing looks authentic or functional. The marina may be full of boats, but it's so shiny, and neat – no rust, no oily patches – that it's difficult to believe it's a working harbour.

The restaurant complex, Harbour Yard, has the same unreal quality. On the outside it is tricked out in the worst kind of pastiche classicism, bulbous columns and cheap metal windows. Inside it is like an airport lounge with glass pod lifts.

Sculptor David Annesley calls the shopping mall, Chelsea Garden Market, with its white atria and tacky finishes "an upmarket Brent Cross" albeit one that specialises in inessentials, like curtain tassles and ironwork pineapples.

But what is most striking about the place is that all the buildings are so big. The most modest townhouses are four storeys high. Architect Ray Moxley himself admits that the monolithic Hotel Conrad is two storeys too tall. This poses a real problem for the sculpture show, for even large pieces like Reinhard Buxel's Arch tend to lose their impact and end up reduced to garden ornaments.

So what appealed to the organiser Philomena Davidson Davis, President of the Royal Society of British Sculptors, about Chelsea Harbour?

She says she liked the proximity to the Thames and was attracted by the fact that P&O, who are sponsoring the exhibition, could lay on all the facilities needed in one defined place.

P&O not only owns Chelsea Harbour, and the barges needed to transport the pieces to the site, but also the construction firms to pour the concrete for the plinths, and an experienced exhibition team to organise and publicise the venture.

However not all the sculptors invited to take part are so impressed by the logistics that they are blind to the aesthetics. A handful, including Sir Anthony Caro, refused to provide pieces.

But the organisers were undeterred. Davidson Davis wanted to lay on a big show, showing a catholic spread of high quality work. And the selection committee – herself, John Mills, William Pye, Professor Phillip King, Michael Kenny and the art critic of the *Financial Times*, William Packer, were anxious not to show bias in favour of any one idiom.

So the show focuses on no particular style, in no particular order – from figurative to installationist to abstract to avant garde. In the same way the show is neither British nor truly international – for there is only the merest sprinkling of work by overseas artists.

But Davidson Davis sees the lack of any intellectual underpinning, as a virtue. "It is a terribly diverse show and that's deliberate... through the contrast between different pieces we hope to encourage curiosity," she explains.

William Tucker's "Tethys" (top), Tsugumi Ota's "Deucalion and Pyrrah's children" (above) and Kenneth Armitage's "Richmond Oak" (below). All battling with buildings that are too big

"I would like people who are not necessarily familiar with sculpture to come down here, wander around, find some things they like, some things they don't and stop and think I wonder why? I would like the public to understand that sculptors are fun people...."

Davidson Davis was inspired by the popular, rambling, GLC sculpture shows held in the 1950s in London's Holland Park, and later in the 1970s at Battersea.

But the idea does not transfer well from municipal pastures to a plush urban setting. Grass and trees are no competition for big bronzes, but at Chelsea Harbour there is just too much else that is eye-catching. For one thing the architecture throws up all sorts of visual distractions, like those intimate little balconies swathed across the residential blocks, that hint at celebrity lifestyles. The profusion of fussy details steadily chips away at authority and power.

William Tucker's bronze *Tethys*, for example, which just possibly might look rugged in a park, is huddled up close to a metal neo-classicist window, which makes it look pretentious.

Elisabeth Frink's head entitled, Desert *Quartet Three*, mounted perilously on a brick column, faces competition from the street furniture – not only bright blue railings and litter bins, but planters stuffed with Yucca and Hebe.

Elsewhere there are Victwardian street lamps, cute signs shaped like miniature Belvedere towers, and fanciful strings of lights. And that is without considering the genuinely interesting things that might distract you, like the river traffic and the yachts in the marina. It is hardly surprising that a fine bronze by Dhruva Mistry *Diagram of An Object* by the marina, is swamped.

What is wrong with this show, is not the quality of the sculpture, which is often good, but a total lack of awareness and understanding of the relationship between architecture and sculpture.

This is particularly surprising because, in the last few years, there has been a strong movement to analyse what makes sculpture successful in an urban context and to involve sculptors at an early stage in the design process. Broadgate was another fast-track '80s development, but one where the spaces were designed with the sculpture in mind, and the public art there is generally regarded a success.

Almost everywhere but at Chelsea Harbour, the idea that one simply uses sculpture as an afterthought to brighten a dreary corner, or hide an even more awkward one has been discredited.

Sculptors and architects are increasingly aware of the need for sculpture to play off architecture – as with Dhruva Mistry's sculptures at Birmingham's Victoria Square which are grouped like a pyramid to echo the pediments of the nearby buildings.

They know the scale of the piece needs to be just right for the space, and that there needs to be enough space around it. The content and psychology of the work must connect with the language of the architecture. The biggest danger is irrelevance.

But at Chelsea Harbour the organisers did not even consult the project architect Ray Moxley, who actually lives there. But Moxley's reaction is cautious. He says: "I'm interested there should be an exhibition at Chelsea Harbour without my advice being sought. I do think there should have been an architect involved, not necessarily me. The thing is, for sculpture, the spaces are really more important than the buildings."

In practice the matching of sculptures to spaces has largely been left to Davidson Davis, and she argues that it is unfair to measure a temporary exhibition by the standards applied to permanent public art.

As she explains, the show was put together very fast in three months. The committee selected sculptors who supplied pieces which already existed. There wasn't the time or money to commission work for the site. (Although William Pye and John Maine did make their pieces with the exhibition in mind).

She says:"The whole thing has been approached as an exhibition space and not as individual pieces working deliberately with individual buildings. I don't think we can pretend that we deliberately analysed the architecture and chose the pieces accordingly."

However, she still believes the sculpture makes a difference:

"There are certain points around the development where it affects the architecture quite decisively. Take Sandle's piece, the situation between the buildings is right for it because the space is very compressed. It is as though the dynamism and the energy is held within it.

"There are bleak, lost areas at Chelsea Harbour that the sculpture reclaims. It will

On the edge. Dhruva Mistry's "Diagram of an object"

Reinhard Buxel "Gate 1989"

Ben Panting's "Leading Man" (above) and Isaac Witkin's "Hawthorn Tree: variation II" (below)

bounce off scale...something happens between the building and the piece. You do get a juxtaposition."

But the handful of sculptors who were sufficiently interested in the architectural interaction to demand a specific site, chose places as far away from the contemporary architecture as possible.

David Annesley, opted to put his sculpture *Inner Nature*, next to the railway bridge. "It is the right scale, as my piece is quite small", he says, "The sculpture is white so it should read very strongly against the dark, gritty bridge."

John Maine, a sculptor who believes in integrating sculpture with its surroundings, designed his piece Observatory, a stone segment, specially for the exhibition. He chose a site with the Lots Road Power Station in the background. "It is such a powerful, exciting building. You also get glimpses of the river from the site. I want my piece to be a still centre, marking the twisting passage of the river."

Chelsea Harbour badly needs more people milling about purposefully in its sanitary spaces. Despite being fully let, it has an empty, draughty atmosphere. The sculpture show drags them in, and in that sense it is already an environmental success.

And the exhibition does have its moments. Glynn Williams' massive hands at the entrance, are a powerful welcome. Daniel Pontoreau's *Tendre vers le vide*, a huge hunk of stone with a long ladder attached, stretching up to the sky, looks intriguing.

But it is disappointing that there is nothing which challenges either the architecture or the residents. The four letter word has been deleted from Sandle's entry in the catalogue. The cheekiest piece is William Pye's overflowing skip, a water sculpture.

Perhaps fewer pieces which were wittier or more quizzical could have gently sent up the architecture? Perhaps not. It is doubtful whether sculpture here could ever really work. The architectural language is too busy and muddled, the street furniture too intrusive.

In the end the exhibition drives home the point that sculpture in an inappropriate urban space can look ridiculous. If people walk round sculptures, brush past them, eyes down, it does not mean that they are indifferent numbskulls, or culturally intimidated. Watch their faces, ask them what they think. You will find that they are embarrassed for the sculptor – that he or she has the nerve to put something so inappropriate, so expensive, so attention-seeking in their path and expects them to like it.

Robin Barton

Jamie Troughton (left) and John McAslan

TENTATIVE EXPERIMENTS WITH MODERNISM

It is tempting to see Troughton McAslan as the archetypal young London Practice of the 1980s. Their substantial body of work seems to reflect the preoccupations of a decade in which old manufacturing premises metamorphosed almost as fast as Big Bang office blocks sprang up from the London Docklands mud, writes Graham Vickers.

St. Catherine's College, Kyogo, Japan

The practice's 1984 transformation of a North London car showroom into design company offices was in the vanguard of numerous such exercises. Five years later their facility for Apple Computers at Stockley Park bore witness both to their own maturing skills and to what seemed like a new phase of economic optimism in Britain. In the intervening years they had built riverside apartments, converted a 3,000 square metres warehouse into headquarters for a design group and created several notable urban office schemes. There seemed to be nothing for which this busy young practice was not prepared. However, like many others, what they were not prepared for was the sudden downturn of work of the early '90s.

John McAslan and Jamie Troughton had formed their practice in 1983 in confident spirit. Troughton had previously worked for Foster Associates and both had worked at Richard Rogers & Partners. This pedigree – combined with some admittedly seductive evidence – seems to have prompted a number of critiques of their work which cast them as cerebral young men plotting their own stylistic development with infinite precision and care. As McAslan will admit, this was hardly the case.

"In the '80s we were so busy that there was no time to learn" he says. "And we imagined that it would never end. Maybe we should have searched that much harder for

solutions to some of the earlier projects, but basically there just wasn't time".

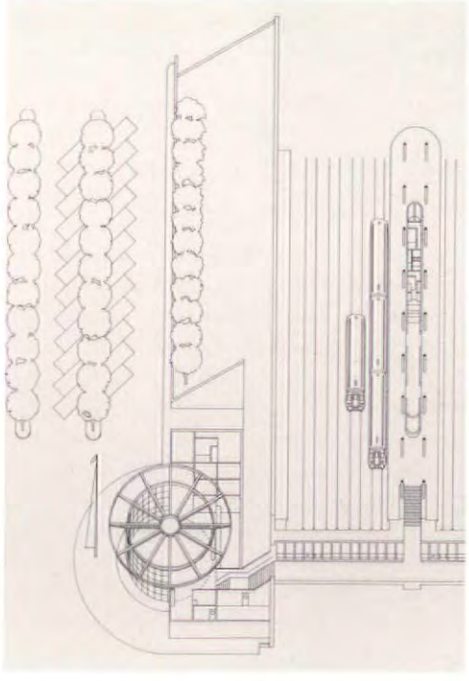
At their Notting Hill Gate office in West London, Troughton now specialises in business strategy and engineering, while McAslan is the design specialist and spokesman for the practice. McAslan's candour is at times startling. He appears to have no interest in projecting false images of buoyancy when in fact tough economic realities have obliged the practice to look very hard at itself.

"In a funny kind of way, with less work I think there's a better opportunity for us to develop greater consistency" McAslan says in one of his more positive moments. "You have more time and a greater desire to make schemes perfect within the limitations. Much as I admire Foster and Rogers, our own interests have never been mainstream to such practices" he adds. "Whilst it's interesting to plot the way our own work has evolved and changed over the past 10 years, sometimes I worry that the exercise reveals a problem of inconsistency. I hope that isn't the case – I hope it's just been a process of finding our direction".

Their 1990 phased refurbishment of Redhill Station shows them at their most allusive. Charles Holden's Arnos Grove underground station building is quite literally evoked by a circular steel and glass ticket hall that nonetheless manages to stop short of pastiche whilst lending a touch of distinction to what was previously a seedy suburban railway station. McAslan calls it "a good little scheme".

In 1992 the Rosebery Avenue and Hardwick Street scheme in London was the practice's first significant office development on an urban site, and it involved a more complex set of problems. New offices on Rosebery Avenue had to relate to three existing linked buildings on Hardwick Street. These buildings had to be refurbished and partially reconstructed for light industrial use, lettable either as separate units or to a single occupier. Meanwhile the new building responded to an awkward site by tucking services into residual spaces and creating more natural office spaces. The old and new buildings enclose an open, planted courtyard and Troughton McAslan's overall solution has been to create a logical and consistent new site out of what had been an untidy urban leftover.

Adaptive use is a recurring theme in Troughton McAslan's work – alongside what



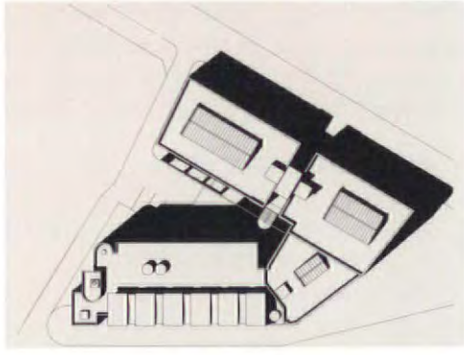
Redhill station 1990. The drum an echo of Charles Holden, the glass an earnest of things to come

McAslan in typically self-deprecating mood will call "flamboyantly high-tech inspired things with a bit of Otto Wagner thrown in".

He adds "Personally I'm still very interested in working with old buildings, and that's reflected in some of our newer work such as the pavilion at Bexhill".

The Grade 1 listed De La Warr Pavilion at Bexhill-on-Sea was designed by Eric Mendel-

Rosebery Avenue & Hardwick Street. A mixture of new build and remodelling on a tricky site



sohn and Serge Chermayeff as an entertainments building in an age when entertainments were rather different from those of today. Troughton McAslan have been appointed by the Pavilion Trust to prepare a Stage One report for its refurbishment. Fifty years of decline have had a deleterious effect upon the interior of the 1935 building and finding ways of recreating it as a relevant facility for the future is likely to prove a challenge.

Such challenges – another includes a recent study of Frank Lloyd Wright's buildings at Florida Southern College and the decay of the concrete block work there – are in no way peripheral interests for the practice.

"In fact they're quite central to the way I'd like to see aspects of our work developing" says McAslan. "That Frank Lloyd Wright project is one we're making out of nothing. Five years ago it wouldn't have entered my mind to try to make a project out of that".

This is one of the crucial shifts within the practice since the good times stopped rolling.

"We now have a project development part of the office" says McAslan, "and the aim is to create two or three project proposals a week. On that basis we've been looking at the possibility of refurbishing another Mendelsohn building, this time in Luckenwalde. I'm giving a talk in Berlin where I'll meet the mayor – that again is a project I've invented. Then there's a research project I've begun which is looking at industrial buildings here".

This kind of imaginative opportunism did not come naturally to a practice which was virtually turning away work for the best part of a decade, but McAslan at least seems to have become fascinated with the enforced change of working habit.

"I went to Twickenham for a rugby match not long ago" he says. "I noticed that there was a small temporary pedestrian bridge across the car park. I subsequently contacted Twickenham and presented a little scheme for a bridge. Now a year ago I'd never have considered doing that. Maybe some practices have always done it, but we hadn't".

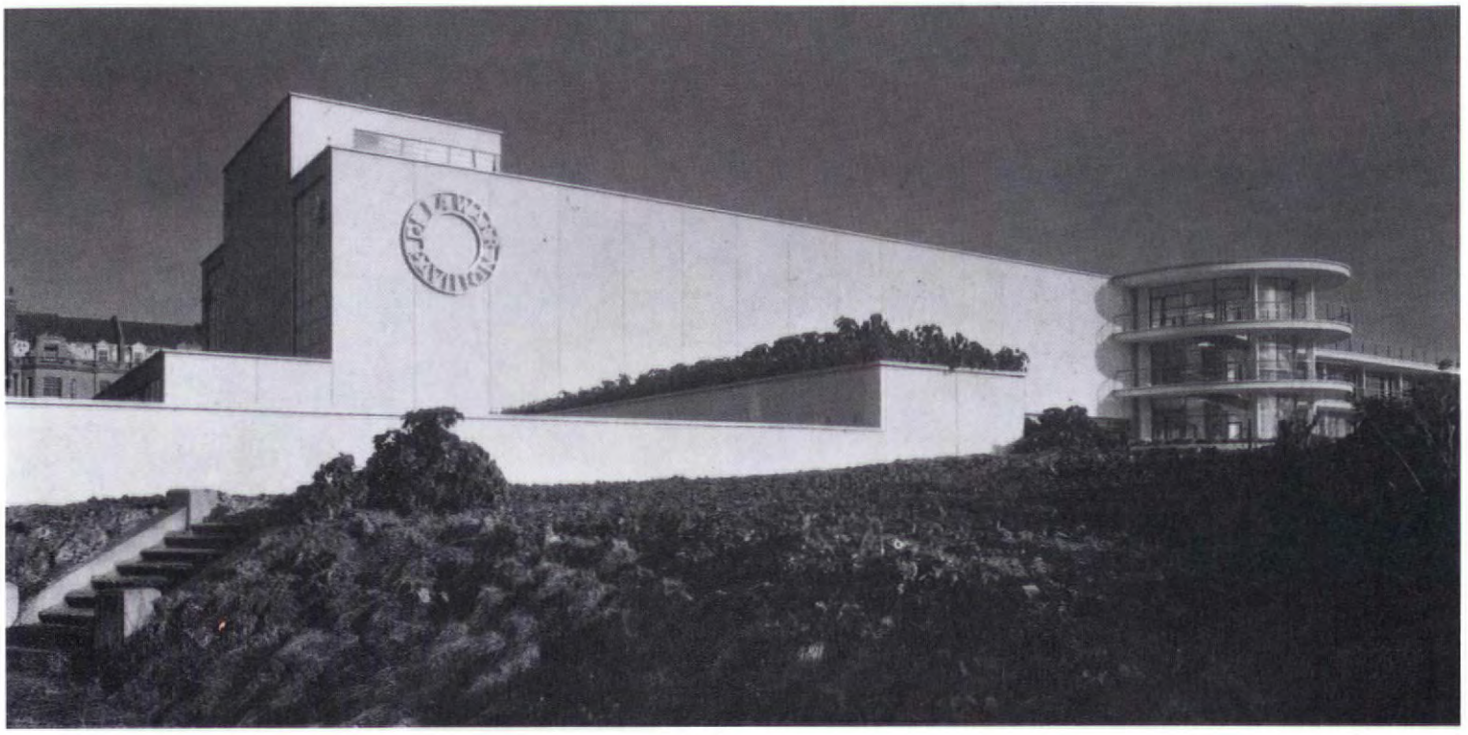
The practice is currently about 14-strong and has to bring in a big fee income every month but McAslan eschews the option of saving money by hiring students.

"We couldn't do that" he maintains. "It's an attitude to work. I enjoy the excitement of getting the job but I also very much enjoy having good people with an agreed approach who can go away and develop it. There's a shorthand in the studio – not a style, but a way of getting on with it – and that's the advantage of having a stable core of people".

However McAslan would not be McAslan if he did not follow up the advantages with a catalogue of the drawbacks.

"One problem is that it's sometimes hard to assert the sort of authority I would like when the workers are of a similar age" (McAslan was born in 1954, Troughton in 1950).

"Sometimes I get tired of the full and frank exchanges" he says wryly. "Another frustration is that nobody other than Jamie or I brings in work. I believe that an architect of around 35 must be in the position to sense opportunities. Or have we pulverised these



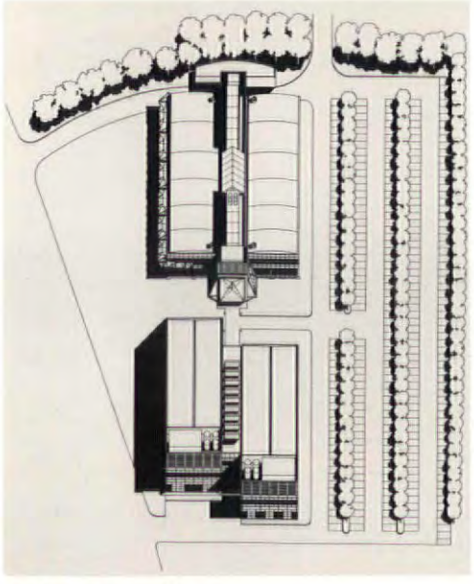
The De la Warr pavilion (above) with Frank Lloyd Wright's Florida Southern College (left and below)

people so much? Don't they have that heightened sense of opportunity that you find in other professions?"

McAslan's assiduous attempts to take frankness to the point of shooting himself in the foot have to be balanced against some serious work that many practices would give their eye teeth to gain.

St Catherine's College in Kyogo, Japan, is the first ever international outpost of Oxford University. Located on a wooded hillside, it overlooks Osaka Bay and presented Troughton McAslan with the difficult task of re-inventing a traditional Oxford College whose original was itself a 1960s building by Arne Jacobsen and therefore already something of a mixed metaphor. The 1991 building pleased McAslan, by and large, although the clock tower – a weary capitulation to the client's desire to have something "traditional"

Peter Cook



Apple computer offices, Stockley Park 1989

– still causes him pain. So too did a subsequent competition for new residential accommodation for the original St Catherine's College in Oxford.

"Having built St Catherine's College in Japan and having produced a masterplan, we were still thrown into an open unpaid competition with five architects pitched against each other, which I felt was pretty insulting. How depressing! We did a scheme but we did it half-heartedly – and at that point I thought we will never do that again".

Instead of entering competitions, the practice now channels funds into its own project development department.

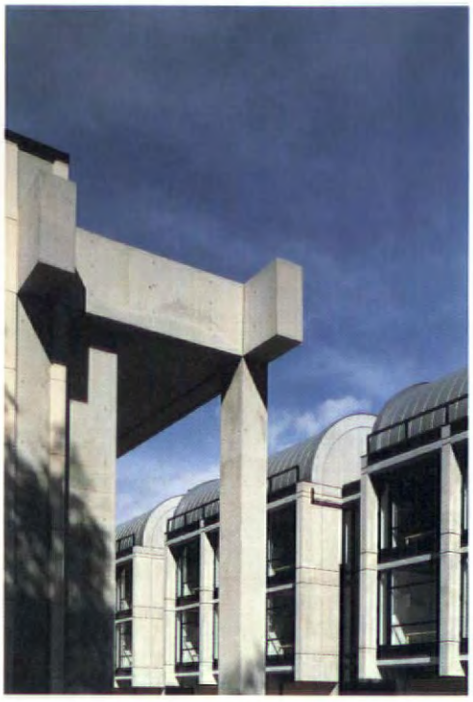
"I just don't know how some practices can afford to fund that sort of competition work" McAslan says. "We've established a fund for between 40 and 100 little schemes. You could do maybe three open competitions for that, with far less chance of success."

When required to McAslan can trace the practice's development through its "high-tech" period (1984-86) into what he calls "tentative experiments with modernism" (1986-88) on to "a more direct modernist vocabulary". What is more, these are perfectly plausible categories, but they can sound like post-rationalisation and there is no mistaking that the most significant stylistic shift for Troughton McAslan has been the systemic restructuring of its own working practices to adapt to a very different commercial climate from that in which it was formed. McAslan has no doubts that their success in doing so is largely due to his partner.

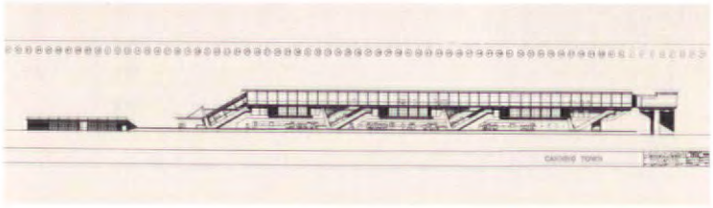
"One of Jamie's skills has been to be tough enough and clear enough to cut our costs by about half in the past nine months" he says. "It's a whole new way of thinking for me. Now if I give a talk, I'm going to charge for it. Instead of sending out 10 transparencies to be copied when someone asks for them, I just don't do it. And I know now that I'll never go back to the way we did it before, even when the good times return. Because I think this approach also forces you to be more effective as an architect. You then know how much you can spend, how many people can work on a project – and we've learned never again to fund other projects with big payers".

Having been selected as architects for two new stations on the proposed London Jubilee Line underground extension, and with a range of self-generated schemes in hand Troughton McAslan look likely to survive and prosper.

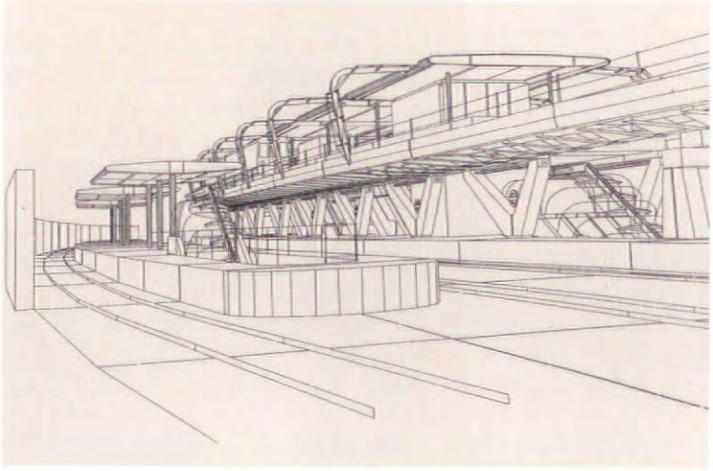
"I hope that our work has integrity" McAslan says. "I think it has – but our approach is changing as we enter into our 40s. We're now much more aware of how we manage the practice and how best to develop in the directions we want to go". □



Hiroyuki Hirai



St. Catherine's College, Kyogo (above). Canning Town station on the London Underground Jubilee line (left and below left). The only English architects at Canary Wharf (below)

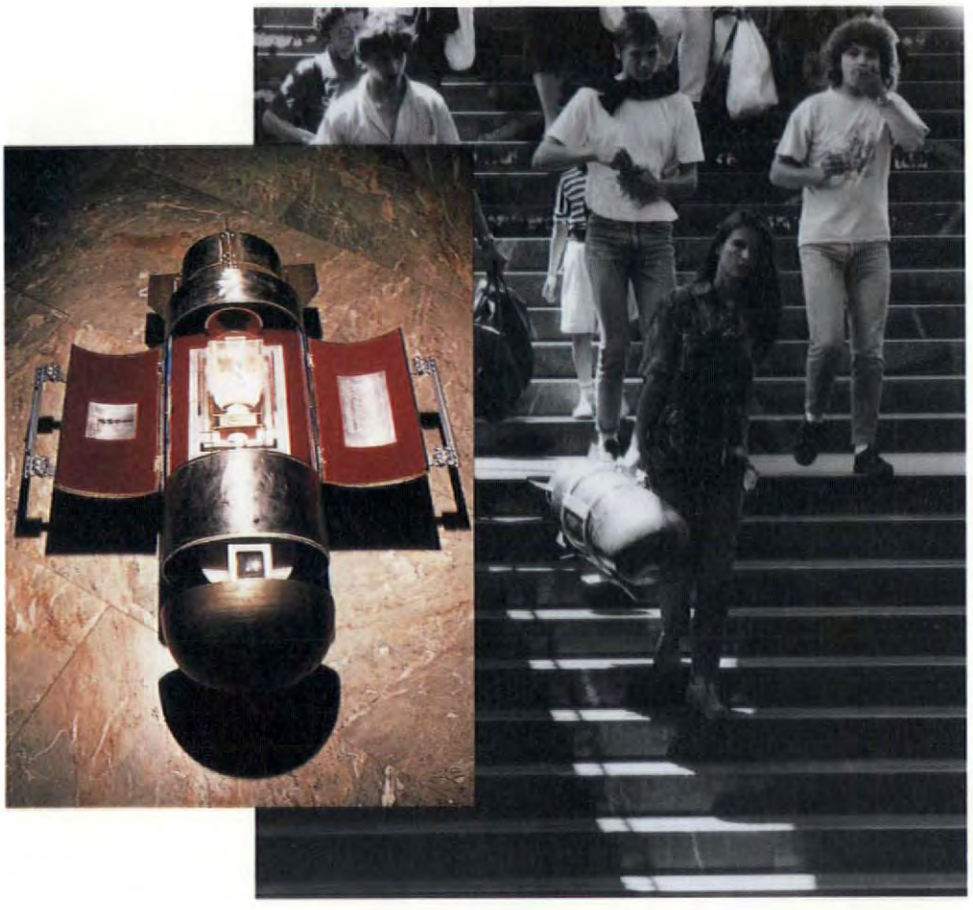


INTERNATIONAL FORUM OF YOUNG ARCHITECTS PUBLICATION

The International Forum of Young Architects is a worldwide organisation aiming at stimulation of avant-garde trends, conceptions and projects in architecture.

Editor/Design
Georgi Stanishev
Concept
Sebastian Wagner
Helen Landers
Photography
Sebastian Wagner
Samo Cafnik
Raoul Pantaleo
Mark Orme

Left: This "bomb" was received as a contribution to the "House of Culture" issue of Utopica *from Samo Cafnik, Ljubljana. It is actually a portfolio containing the stage design for a theatreplay, carried around Europe as a promotion.*
Below: A fragment of video installation by M.L.Delendi and S.Wagner



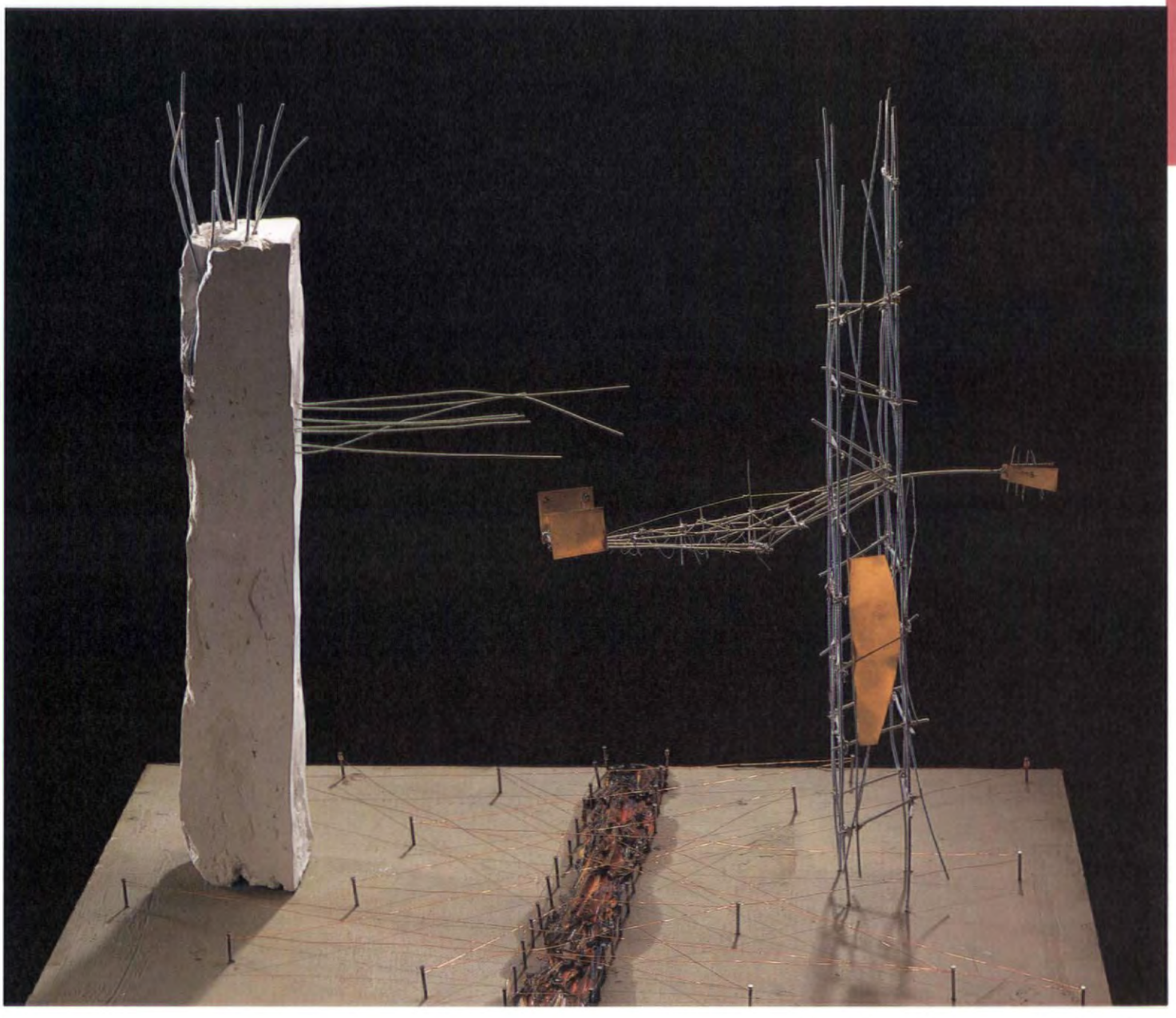
UTOPICA

Intercultural Circle of Young Architects

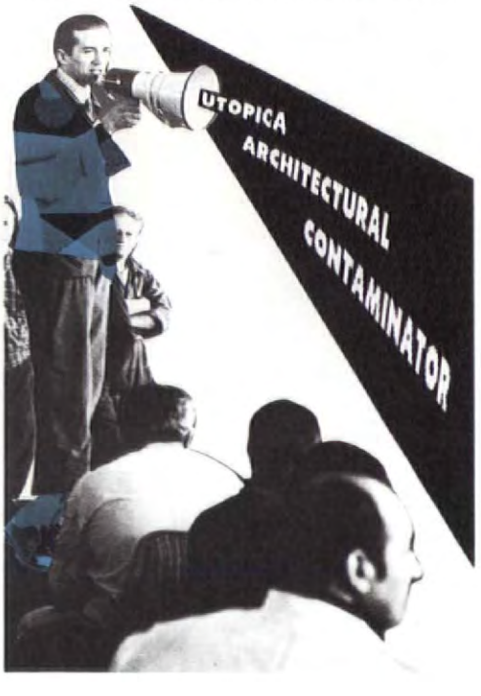
Whenever we think that poetics is the relevant condition in the creation of form, we become blind. Today each domestic universe inside national, geographical, ideological islands, narrows our perception of reality by a familiarity, which prevents us from peceiving a wider understanding of the borders we live in. Our intention is to overcome these barriers through a direct and practical experience, in order to shape appropriate parameters for understanding our present condition on the unpredictable basis of European common space.

Our identity is then no longer a geographical or political space but the praxis of this "inter-islands" communication, promotion and distribution through operative contacts all over East and West. In this way UTOPICA is a space to test our skill in translating being into the creation of form: in architecture, art, communication, design. Thus UTOPICA is more than a network, it is a common European ground for the exploration of contemporary architectural ideas through the medium of workshops, projects and publications.

UTOPICA is a cultural project started by an international group of young achitects and students. Organized as a cultural association, it provides a network for all those who are interested on the processes of creating form and achitecture. Through its publications UTOPICA *magazine,* Der Bullet *bulletin, and* Protopics, *it sets up an international dialogue between authors and the editing team, which is responsible for coordinating each research prompted by the Association. Here, in the form of fragmented dissections of various UTOPICA projects, Sebastian Wagner, one of the conceptual leaders presents its professional ideology.*



Above: "The First Conversation of the Devices", a conceptual model for the Gorizia and Nova Gorizia project by Tower 151 Architects, Europan 1991.
Below: Title page, Utopica 4, "Private Investigation"



UTOPICA Magazine

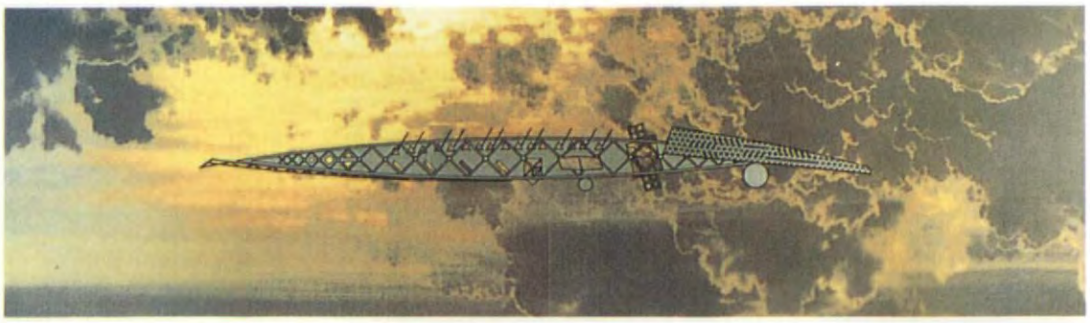
The main permanent publication - our modest *UTOPICA* magazine, currently researches the marginal aspects of architecture, society, freedom, devoting each issue to specific subject:

Issue one - Utopia and the City - explores the current issues of the urban environment, the contemporary theories that determine its structure, planning and use. In issue two we took this analysis further, measuring our own responses as to how the city is inhabited, rather than merely used. U2 also investigates this relationship to oppose and compare the issues of the individual in the natural environment as opposed to the urban.

Our next blockbuster, U3, tests the territories of our existence between these polarities, i.e. it became an examination of the fringes of life that infect and influence the stability of its centre. U4 - which was sold out before publication - researched the private domain, exploring how the thoughts and ideas of one individual may infect another and how they find their expression through realised work. The projected U5 - House of Culture - is going to be a challenge to test ourselves: where can the iconography of our own local and regional cultural conditions be successfully used to communicate elsewhere and so disturb the borders of our European nationality?

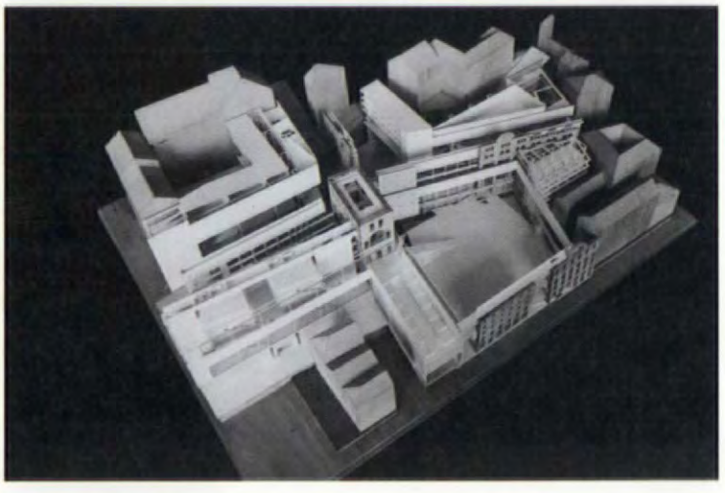
UTOPICA Projects and Actions

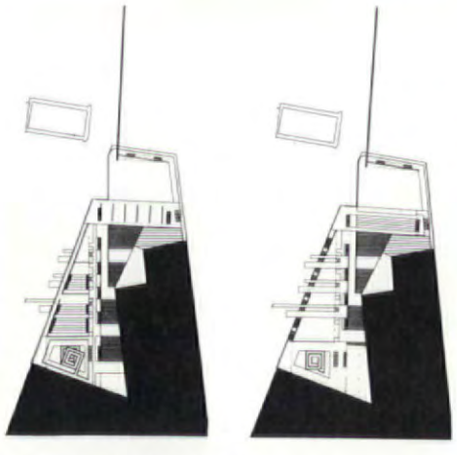
The other function of UTOPICA is to give space for permanent architectural experimentation in workshops, projects, forums, competitions, and exhibitions. The following fragmentary description aims to outline the field of our possibilities and interests through tracing the history of some of the actions and projects, made by the gung-ho young architects of the UTOPICA circle.



Ein Hause fur Architekten, Germany
A conceptual design for a House for Architects by Berndt Wolfgang Meckelein is a poetic expression of the UTOPICA's most liberated flights of creative Utopianism.

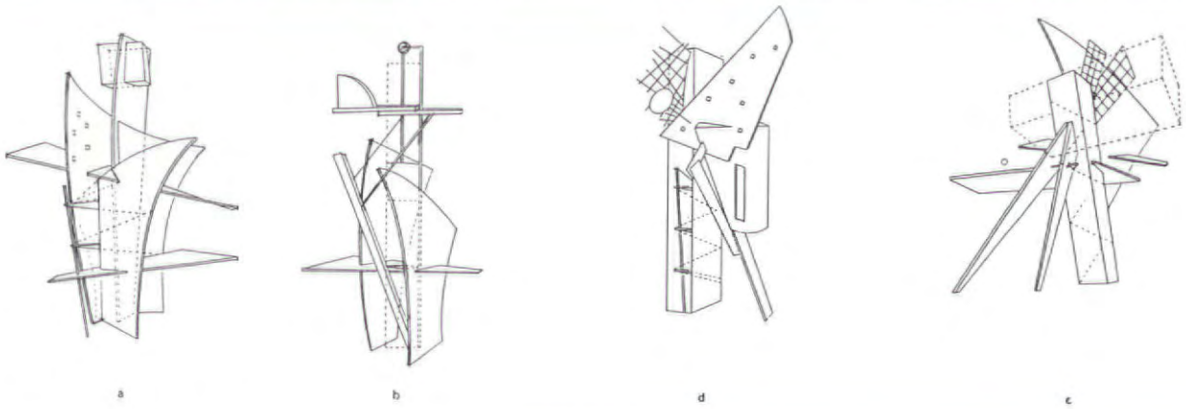
Pelestrina, Italy
Pellestrina is an island between Venice and the Adriatic sea. The boat is a boundary between water and land. The island is an abstract place, isolated from the reality, the boat is the place of experience, a travel without movement. Clear images, basic colours, essential volumes, single words and symbols are the elements for the participants - a starting point for the culture of differences.





Top: "Eine Haus Fur Architekten" by Bernd Meckelein.
Above: Pelestrina - Boat on the border by Carmine Rapa.
Right: Lisbon project by Mark Orme, Sebastian Wagner

Lisbon, Portugal
On the 25th August 1988 parts of the Chiado quarter and the Baixa, which represent the cultural centre of Lisbon, burnt down. Due to exploding gas tanks, flammable plastic and timber construction of the interiors of the buildings the fire was able to destroy the place very quickly. The UTOPICA-Lisboa team came together one month after the fire to propose different ideas produced by young architects from all over Europe, developing unique spatial forms of individual structures taken from various sectional axes of the city. What intially looks like an abstract composition, is presented in a model as a thoroughly realized project. The theatre uses a square floor plan to transform the audience area into a modern arena. The cinema area is defined by a deep stairwell. Surrounded by high walls, these creations resemble modern Piranesian visions.



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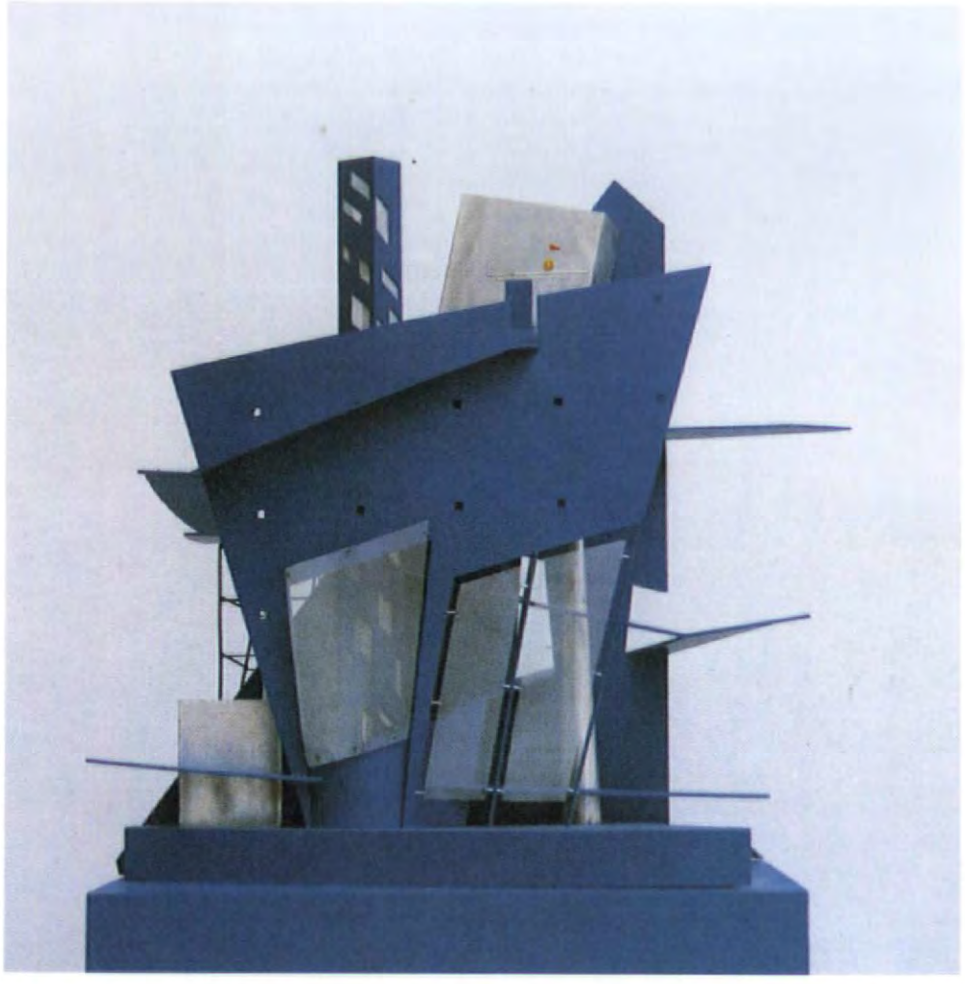
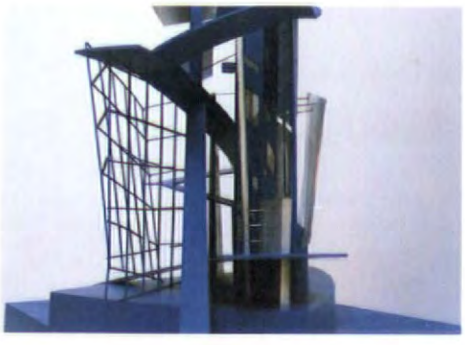
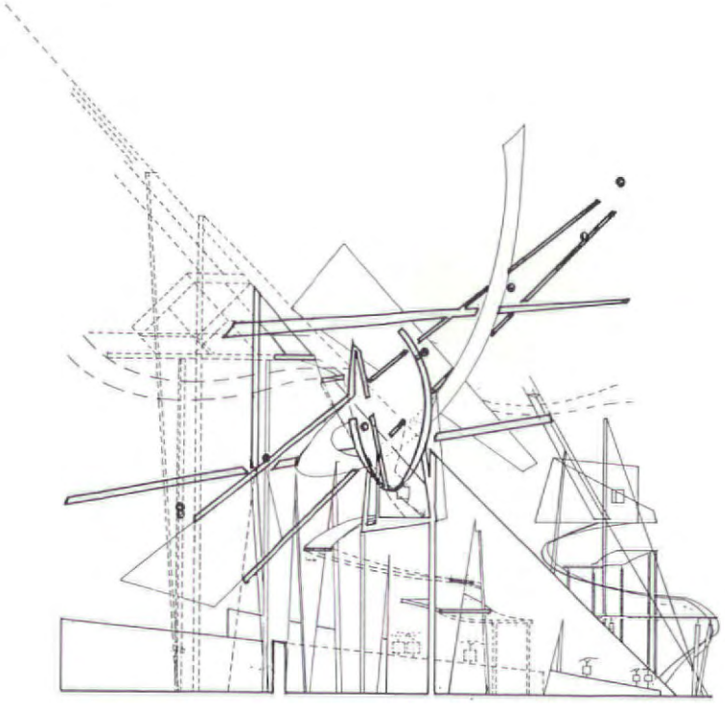
Cet Etrange Objet de Revolucion, France
This project made by Metrete Ahnfeldt-Mollerup and Thomas Viesner, represents a monument marking the two hundredth anniversary of the French Revolution. At one time the visitor will have the opportunity to contemplate the past event and, through the exposure of daily life throughout the world, to be aware of the global interdependence of our time. The idea of the project is to put up towers throughout the world and a Mother-tower in the Parc de la Villette in Paris. Each tower will be equipped with a videocamera and a videomonitor. By constant simultaneous satellite transmissions, it will be possible to show fragments of everyday life in or around the towers 24 hours a day. Entering the Mothertower the visitor will be confronted with monitors, transmitting from the other towers of the network. The smaller towers all over the globe will display the life of Paris.



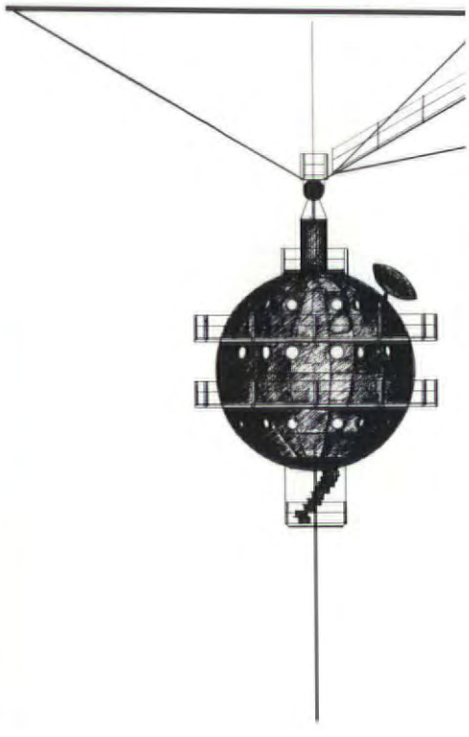




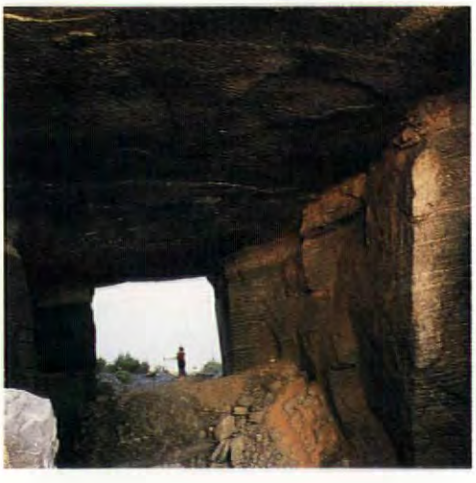
Tvistein, Norway
What made the 24 hours unusual was that everyone, including the organising committee, had to do without words or written language! Every kind of communication had to be via drawings or body language. The meals were an important part of these hours. They were luxurious and out of scale for the otherwise primitive accommodation. They were meant to comfort and smooth the absence of fellowship through language, and create social relationship without words. The idea was to remove expected things and add the unexpected ones.

Top: Tvistein. Prosjektene og Menneskene by Suna Cenholt, Lene Dammand Jensen. Above: Cornwall. Ritual circle, by Sebastian Wagner

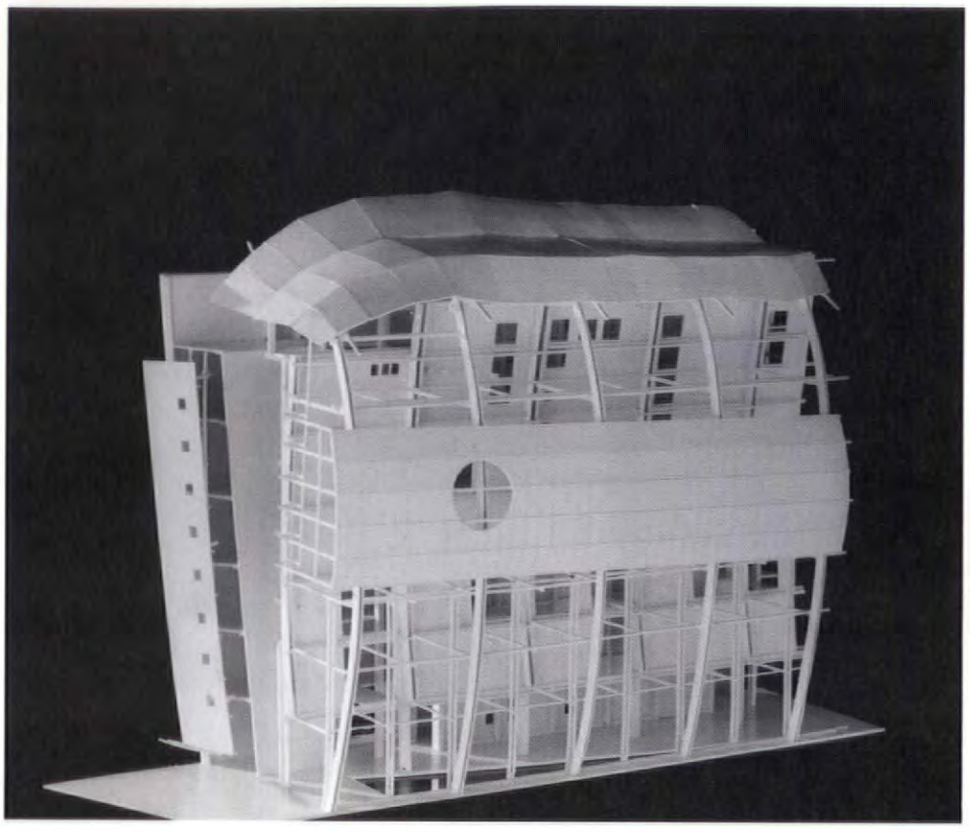
Cornwall: "Amnesia Express", England
A workshop to test the urban condition in the natural setting of the rocky coastal environment of Cornwall. It was an experiment to test the combination of ideas described in two and three dimensional form.

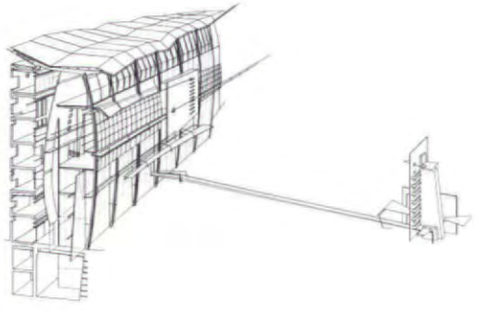


Below and right: Palmeria - Research station, by Sebastian Wagner

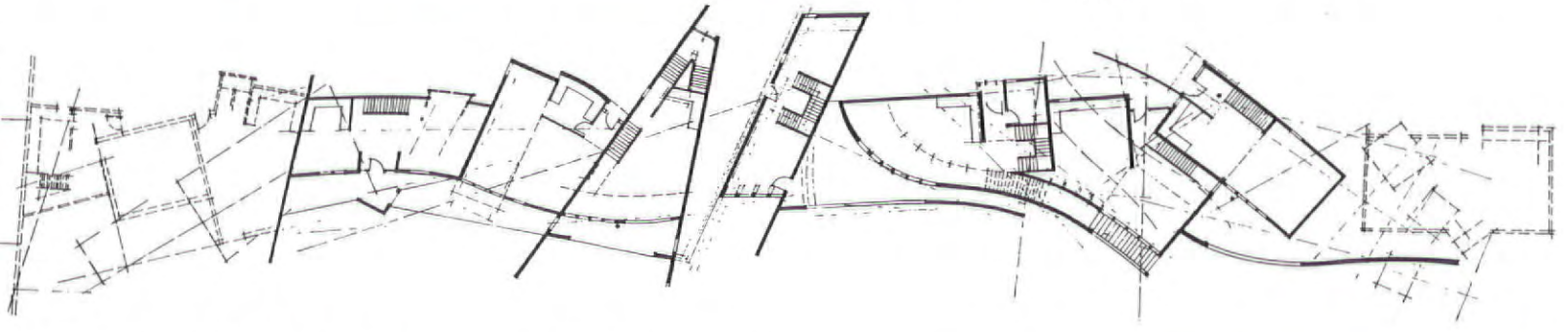


Isola Palmaria, Italy
Due to its landscape presence, its historical past, its climatic conditions, its ecological qualities, its social and economic structures in the process of change and its characteristic beauty, this island is the ideal place to become the European Island of Culture and Science, with an influence far beyond its regional limits. An island that, starting from its own problems and those of its geographical region of Italy, is a stimulation and an incentive for innovative creativity. In autumn 1992 the UTOPICA Association undertook to develop a masterplan for the island.





Below: Plan of the Border Line Building. Loretta Gentilini, Helen Landers, Mark Orme, Andrew Yeoman



Gorizia and Nova Gorizia, Croatia

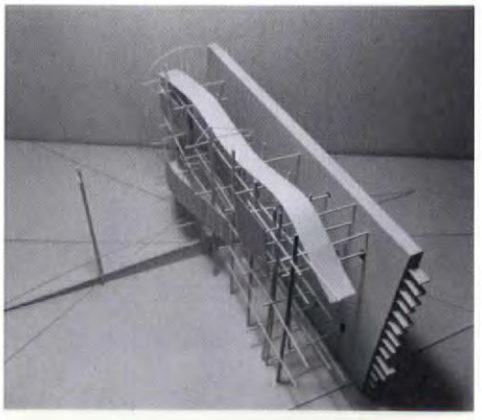
The town of Gorizia, having been split in two by political developments, has grown into two distinct entities: old Gorizia in Italy, and Nova Gorizia in Croatia, Yugoslavia. The programme required a coherent urban development across the border, a leftover area which has remained uninhabited, a naked line on the map. The project by Tower 151 Architects - Andrew Yeoman, Mark Orme, Helen Landers, Loretta Gentilini - occupies the border with buildings: an information centre and a library surrounding a social gathering space at the intersection of the two cultures. The proposal envisages a mixed urban neighborhood and a nine-hectare park with housing, shops, offices, and workshops inhabited by artisans, intellectuals and public administrators. To provide an adequate strategy for the 20th century city, which is challenged by history both politically and geographically, we choose to dismantle the "dormitory" elements of the suburbs and the outer regions of the city environs and create catalysts to emancipate the machine of the city. The border becomes a key link in the transmogrification, suggesting that the line drawn by the cartographers is objective, has mass and space and can be both crossed and occupied.

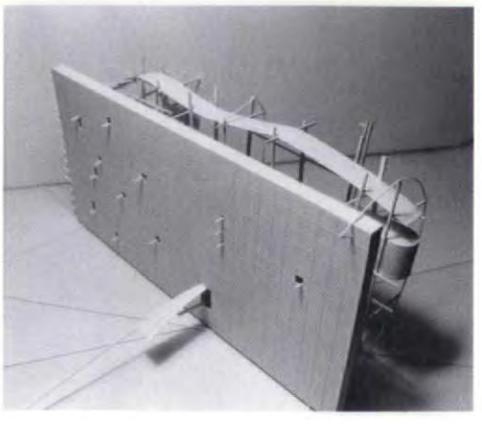
Utopic Tendencies

As seen, the maginal issues raised through the work of UTOPICA are being progressed through a variety of concrete actions and projects.

In forthcoming issues UTOPICA continues to research the marginalities of intercultural communication in Europe and their architectural shapes. Thus, the conception of the House of Culture is currently pursued though the development of ideas about the embassy in the new city of Berlin as a depositor of national and cultural identity.

The effectiveness of our own intercultural communication is continually tested through the remit of our joint projects. As we work in different countries of Europe, the critical edge employed has a firm grounding in the experimentation of our common past. Thus through each of its actions UTOPICA is permanently proving itself as a surface of the cross dialogues between our diversities aimed at a common multicultural result. □





Office Building, Ionia, Athens

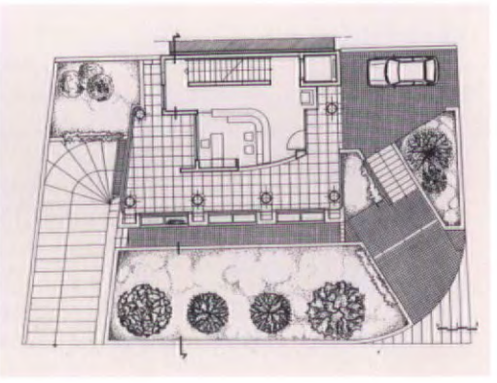
Architects: Jean Haskaris, Athanasios Hatzilakos, Theodosios Tsimpos, Costas Vardakos, 1992

This 600 square metre office building was designed by a group of young and prosperous Greek architects. Far from the non-traditions of cosmopolitan Athens, the building stands as a piece of alien, almost North-European, influence - a foreign guest in a typical Mediterranean suburbia. Yet there are several hints of a Greek touch.

The entrance floor with the lobby divides the building into two office spaces: three floors up and one down. This latter floor shapes a strong basement, a stylobate in the classical sense, creating a platform on which the stylos - black cylindrical columns - each stand on an individual pedestral. The pedestals are pushed down by the columns as if in response to the extreme weight of the building. With typical Greek wit this trick communicates the same principle as the classical entasis.

The colonnade of the ground floor works in a different way, being a part of a system of black elements reflecting the modernistic aspirations of the authors. Thus the fragment of a curtain wall, together with the columns is a piece of the "skin and bones" architecture, whose nudity is discretely hidden by the brick box walls thus adding some puritanical flavor to the building. The front brick wall with its square windows looks very ordinary, so ordinary, as to remind one of the intentional ordinariness of Robert Venturi's work. Similarly, this wall has its independent life as a typical Decorated Shed, separated from the body of the building. But here again in a typically Greek metaphoric shift this brick wall shed shows itself as a sliding device, exhibitionistically semi-openended so as to unveil the non-existing charms of modernity.

The building could be in London or Copenhagen or Philadelphia, but in the context of Athens it clearly reflects the intention to insert in a Greek way the international neo-Modernist tradition into the Greek cultural and architectural landscape as if repeating the process of its Europeanisation by the avant-garde influences of the first half of the century.



STANDING ALONE AGAINST THE MODERNS

Leon Krier: architecture and urban design.
Edited by Richard Economakis. Academy Editions. 312 pages. £49.50

Review by Ronald Green

Today Leon Krier's critique of the principles of the Modern Movement, together with his beautifully rendered urban design projects, have earned him a reputation as one of the foremost theorists of the Classical Revival school. But underlying his apparently effortless success is a massive quantity of early creative work that was for years unrecognised and even scorned.

Rather than being interrupted during the 1950s and 1960s by Modernism, Krier argues, the history of urbanism has undergone an extraordinarily steady evolution over the last six centuries. The debate dealing with modern space and Le Corbusier's notion of the *rapprochement des objets* was a long standing obsession for the architect of Chandigarh and La Tourette, which Peter Smithson had already begun to oppose in 1957, taking the side of the German archaeologists against, first of all, Choisy and the hypothesis of an intentional disorder linking the Parthenon, the Erechtheion, the statue of Athena Promachos and the Propylaea of Mnesicles, then against all those who, after the war, attempted to establish a rapport between these models of open composition and the efforts of Le Corbusier to connect elements which had been exploited only in a serial manner. To complicate this already multifaceted picture, Team Ten went to work in a completely different direction: within a universe in which the automobile and communications networks assumed a more important role than that which they played at the beginning of the century. In their view buildings should have been scattered, even managing to wander, in the midst of networks whose tentacular forms they imitated, but without ever determining the nature of the interstitial space between the network scales.

The rejection of a composed space, completed by Gehry, Siza and many others, in favour of a reconciliation of objects, constitutes a decisive key for the comprehension of the postwar period. Only in the last few years has it been realised that Krier's determination in calling for an amalgam of pre-industrial and post-industrial vernacular models to form the basis of a root and branch reconstruction of the old European cities – engulfed by Team Ten-style peripheral development and out of town commerce as they are – is the only way forward for an architectural culture heroically determined to cling to the Fine Art value system of the past.

It is this realisation, more than any other, that has enabled Leon Krier to attract a large cross section of support within the architectural profession – itself threatened by its own kind of marginalisation under the impact of the vast new international information economy that sees the great "treasure house" cities of the old world as nothing other than more or less inefficient business terminals in an object-orientated global communications network.

In a factitious way the sheer mass and weight of this sumptuous volume explain how, aided only by his sharp tongue and seductive pencil, Krier overcame all the obstacles thrown in his path by fate and the academic system to seize the opportunity to plan the Seaside vacation community in Florida; masterplan the Prince of Wales's new model village at Dorchester, and not only become a future monarch's leading architectural adviser but, through this one celebrity connection, make his wisdom and genius available to all Europe's ancient cities.

AMERICAN DREAMERS

The American Houses of Robert M Stern.
Introduction by Clive Aslet. Rizzoli. 256 pages. £50
Stephen Wiltshire's American Dream.
Text by Margaret Hewson. Michael Joseph. 144 pages. £16.95

Review by Paul Jodard

Some years ago a friend in New York invited me to a lecture. The occasion was the foundation of a new study centre for American architecture at Columbus University, made possible through a generous endowment from a former pupil. The alumnus in question had made the fortune in question through retail developments up and down the East Coast, and the evening was full of sonorous references to the "shopping mall as icon of postwar American living" and suchlike. Vincent Scully's lecture was a lot better as oratory, but it was marred by a mix-up over the slide projectors. Each time Professor Scully said "on my left" the image duly appeared on his right, and so on. Eventually Scully proposed abandoning the illustrations whereupon someone got up from the front row of the audience, walked down the central aisle to the projectors, and turned each of them 25 degrees inwards. Scully forced a smile. "Ladies and gentlemen," he said, "that was Robert Stern. His trick with the projectors is like his buildings - it looked really clever until you saw just how simple it was."

Robert Stern's American Houses offers a panorama of this clever simplicity in a survey of thirty-one private houses built or designed by him. They are presented in lifeless drawings and unpeopled, tasteful photographs, which, like the houses themselves, are monuments to elegant consumption. In his introduction, Stern declines allegiance to any one school of architecture, citing Jefferson as a model for a truly American style, and seeking "a new-old architecture that avoids the pitfalls of a too simple, revivalist archaeology and a too simple exhibitionistic pursuit of originality". In this Stern claims he "depends on the inspiration, knowledge and especially the dreams of his clients". This purposeless approach to achitecture defines, par excellence, the country house architect as decorator to the rich. Clive Aslet's chatty introduction enthuses about Stern's gusto and open ear to his client's wishes: I particularly liked the three workstation kitchen, so husband and wife can work alongside cook for that special dinner party, and the steel-lined anti-kidnap room though whether it has room for cook as well we are not told. Stern has indeed an eye for hsitorical detail ("there was talk of Borromini" over one house, according to Aslet) and the occasional *jeu d'esprit* is still to be found, such as in the round window in the entrance gable at Farm Neck, or the Palladian iconoclasm of the East Quoque beach house, or the metal palm trees in the pool room at Llewellyn Court. Citing what looks like Oscar Wilde's tomb in Père Lachaise in the

Berthold Lubetkin in 1938

same house where the Archbishop of New Jersey had recently died, is delightfully daring. But the overall effect is one of overloaded architecture, repetitive in motifs, overflowing and disjointed, ruled by the client's whim rather than the architect's vision. The most interesting houses, sadly, are the earliest ones, or the town houses where the site has provided a constraint. Vincent Scully's lecture, rescued by Stern's simple gesture, concerned the American roots of American architecture, and, in turn, Stern claims here to be giving form to American dreams. But to do that successfully requires will as well as wishful thinking.

Stephen Wiltshire is another American dreamer. The new book by this sixteen-year-old architectural artist records three visits to the USA. His innate gift, the ability to capture rapidly and accurately both the form and the details of a building, remains astonishing, even if the drawings look more finished than his work of a few years ago. The loss of a certain naive charm is replaced by assurance, and a new use of colour, not always well served by the publishers who have often cropped signatures and bled out details and skylines. The effervescent narrative, by Margaret Hewson, highlights some of the pleasures and problems faced: how do you persuade a sceptical, bored security guard at the Carbon and Carbide building that all this English kid wants to do is draw the interior, after all! But the text also shows up a tension between artists and client. If the brief was to draw the buildings of America, what Stephen clearly much preferred was the life of the streets, particularly the classic cars, which are rendered with a tremendous energy and affection. Unlike the illustrations in Stern's book, which are, with one exception, resolutely devoid of human life, the best illustrations show America as an inhabited space. These two books show alternative perspectives on America, one from street level, one from the fenced-off eyries of the rich. Like Scully's misaligned projectors, neither offers a total view.

LITTLE AND LARGE

Lubetkin and Tecton: an architectural study. *By Malcolm Reading and Peter Coe. Triangle Architectural Publishing. 190pp. £19.95.*

Review by Ronald Green

For a man born in the second year of the present century, who virtually retired from architectural practice in the 1950s, Berthold Lubetkin is remarkable in his power to exert more fascination after his death than he did while he was still alive. In addition to John Allan's mammoth biography*, privately printed collections of his writings and transcripts of his lectures continue to circulate, and the demand for them increases. Malcolm Reading and Peter Coe's small but authoritative book represents a sort of half way house between these two poles of Lubetkiniana: better organised than the Samizdat writings of the architect himself, but in most ways unequal to Allan's monster work, not least in the matter of profusion of illustrations. Nonetheless, at a price less than one third of that of the authorised biography, this book represents a necessary investment.

The early chapters provide a very readable and objective account of the confusingly undocumented peripatetic life of the architect of the famous Penguin Pool. If there is a general weakness, it is the same as Allan's – a grim determination to maintain a level of seriousness about life, the universe and everything that the architect himself did not generally convey to those he met.

An interesting insight that emerges from the book is the way that critics and commentators have tended to judge the pre-war housing schemes for Finsbury Council by Lubetkin and Tecton on the basis of their belated post-war realization. In fact, as Reading and Coe point out, projects like the Busaco Street flats (completed as the Priory Green Estate by Skinner and Bailey after Tecton's dissolution), were actually far more advanced in their 1937 incarnation. Like Finsbury Health Centre, with its pioneer service ducts and open planning, Lubetkin's pre-war mass housing boasted very high amenity standards. At Busaco Street, high-density, subsidised slum-clearance council flats, costed well within current limits, were intended to have individual entrances from lifts and stairwells; to be equipped with Garchey water-born waste disposal systems; separate bathrooms and WCs; central heating; a communal laundry, nursery and clinic. Beneath the extensive green area between the long four and eight storey blocks, there was also to have been a deep spiral underground car park that would have served as an air raid shelter in the event of war. When this scheme was finally built, virtually all these features were abandoned for reasons of cost. It is in such details that the reader begins to see the sources of the disillusion that led Lubetkin to abandon the practice of architecture in disgust.

Although the idea of Lubetkin as a theorist of reason and objectivity is not really reconcilable with the work of Lubetkin the architect, there is a poignancy in the failure of the cash-strapped, post-war Socialist utopia to match up to Lubetkin's reasonable expectations of it. Perhaps his finest monument in this regard is his recorded opposition, late in his life, to the extravagant Listing of his surviving buildings. This he opposed, as Reading and Coe point out, because the buildings were crying out for a world that had never come into being.

**John Allan. Berthold Lubetkin: architecture and the tradition of progress. RIBA Publications. 600pp.£60.00.*

THE PACIFIC RIM MAY NOT BE WHERE IT'S AT

Sir,

We refer to Graham Vickers' article on Ken Yeang and your leader on the subject of development in the Far East (WA 21/22). In our experience many unwise generalizations are made about the economic value of the scale of development in this area, as well as the benefits of the globalization of construction activity that it is supposed to illustrate.

The crucial issue is not whether international construction projects generate money and jobs (which they certainly do), but whether the money and jobs they generate are truly ADDITIONAL to those generated within the economies of the host countries. Our view is that the macroeconomic impact of this extra expenditure may, apart from some short term effects, actually displace indigenous development activity. Thus, despite the scale of commercial and industrial development taking place, we may not be seeing a net gain to national economies of the countries of the Pacific Rim at all.

In the present state of economic data from the region, it is in fact impossible to say whether a globalised construction industry – of which a globalised architectural profession is of course an important part – is beneficial to host countries or not. In this sense London's Docklands may be more than a monument to development without infrastructure. Its fate may be the precursor of other "empty" developments which carry no indigenous economic benefit. That, as we have seen, has to be supplied afterwards by host governments to an extent which was never foreseen.

Jorge Poblete Gres
Development Econometric Systems
Lausanne

EFFECT OF INFORMATION FACADES

Sir,

I am interested in the article on glass facades in your issue of January 1993. It seems to me that discussion of this problem of evolution is proceeding in a very shortsighted way. At a very important conference on the subject of information-carrying facades that was held here in Koln last year there were very many speakers with ideas for facade prisms and lasers to throw daylight laterally into building interiors. But in the conference session entitled "Facades as information carriers" there was no understanding of the enormous potentials here.

Important issues for the new architecture are arising because of the new capacity to annihilate physical form by means of electronic images. This goes far beyond what is now done with advertising and small public information gestures like showing the time and the temperature.

Computer generated laser and projection equipment can transform the real urban environment into a virtual environment with the consequent annihilation of the reasons for permanent physical forms. The "intelligent facade" has a crucial role to play in this drama, which is certain to lead to conflict between planners, architects, developers, advisory bodies and the public. In this conflict architectural design as a purely physical, permanent phenomenon is certain to be left far behind.

This is as important in artistic and cultural terms as the advent of moving pictures was to photography, and the advent of photography was to the history of painting. I think that architects, theorists and writers should give more thought to these matters and, when conferences on cladding and information are held, these revolutionary changes should not be ignored, but explored to their fullest potentials.

Yours faithfully,
Hannes Pohl
Beldamstrasse 7
Koln
Germany

RENAISSANCE "JUST LIKE OLD COMPUTERS"

Sir,

I hope it will not upset your editorial policy if a simple computer wacko like myself puts a spoke in the wheel of architectural criticism. After reading a few issues of your beautiful but brainless magazine it occurs to me that a lot of the quarrelling amongst architects and critics about old buildings versus new architecture, and new buildings that look old, versus old buildings that look new (I consulted your DOCOMOMO outfit about that one), could be settled if a simple hierarchy of buildings were adopted like that used in the computer industry.

Although the first commercial computer only appeared 30 years ago, computer technology has already gone at high speed through ages and styles much like those experienced by architecture since the Renaissance. The difference is that, in the world of computers, there is a universally accepted line of progress in terms of size, speed and memory capacity that determines what is "state of the art" and what is not. In the world of computers there is always a place for old computer technology, simply because it is the repository of data that can only be accessed by means of it. As though, in fact, old computers, or tape drives, had to be kept because what had been stored in them was valuable. Nobody has a problem with this. In fact retired computer people are often the best means to access lost data because they often have collections of old equipment – and of course have the old know-how – to do the job.

Now with buildings there is no such justification for keeping old examples. I suppose there are "building museums", but nobody ever says the reason to refurbish old buildings is because they are needed for museums. Unlike old computers, old buildings are deemed to have a value in themselves. Businesses in our old towns and cities are even compelled to use old computers – I mean old buildings – because they are not allowed to use new ones. That is what "planning", which is not known in computerland, has done for you architects.

So what is the answer? Treat old buildings as a means of access to old activities, instead of as objects of value in themselves, just as old computers are means of access to old information and not really objects of value in themselves. That way the rationale for new buildings – new building = new activity – will be as clear as the rationale for clearing old buildings (old activities) off most city sites. Of course I live in an old house myself, but then, so do most architects, I'm told.

Yours faithfully,
Adrian Booth
Cambridge

Letters should be addressed to the Editor, World Architecture, Halpern House, 301-305 Euston Road, London NW1 3SS, England Fax: 071 383 3181

THE GODS ARE WEARY

What happens to all the organisations, committees, working groups, networks and teams formed to promote this, or prevent that, in architecture? Pierre Vago wonders about this, and remembers Carl Auböck too.

The African and Crimean Gallery, Versailles

Bruno Zevi, who has been the inspiration and driving force behind the Comité International de la Critique Architecturale (CICA) for so long, has resigned his chairmanship after 10 years.

The CICA is in fact an organisation with no organisation. It has no formal structure, its Statutes are either not known or ignored, it has no head office, no money, no budget and no staff. However, it has had its hours of glory and has inspired hope, perhaps even unduly so on occasions.

Kenneth Frampton will be taking over as torchbearer and we can only hope that he will succeed in breathing new life into the dying embers of this unique "organisation". Today, more than ever before, there is a need and a very definite role for a body such as the CICA. But it cannot continue to rely upon the energy and goodwill of one man, however generous. The CICA was created in response to a specific need and should ensure that this need is met. It has achieved some very creditable results over the years. So let us wish it every success as a new chapter in its history begins in Chicago under extremely difficult conditions.

Death of a valued friend and colleague

In February of this year, Carl Auböck died in his native city of Vienna. At the age of 69, he was as enthusiastic and dynamic as ever and was still leading an extremely active life.

He was someone who lived life to the full. As an architect, he was particularly involved in the field of social environment. As a designer, he was responsible for many of the designs that we see (without realising it) on tables and in kitchens everywhere. As an urban planner, he worked for the United Nations Industrial Development Organisation (UNIDO) on a number of projects in Brazil, India, Indonesia and Korea. As a lecturer, he taught generations of young architects to respect the codes of ethics and modernism to which he himself adhered. He was a man of culture who had a cosmopolitan view of the world. He was chairman of the International Council of Societies of Industrial Design (ICSID) and the ephemeral Collège des Délégués of the UIA (Union Internationale d'Architectes) before being elected to the Conseil de l'Académie International d'Architecture and becoming a member of the Editorial Board of the present journal.

I was fortunate enough to meet Carl Auböck on a number of occasions and to work with him on several projects, in particular the interesting experimental project for the Mexican town of Coatzacoalcos which was unfortunately never realised. I admired his many human qualities, his straightforwardness, his efficiency, his courtesy and his sense of humour.

I would like to offer my deepest sympathy to his wife Justine, his daughter Maria (who has already made a name for herself in the field of landscaping), his son who is following in his father's footsteps, and to his many friends throughout the world.

UIA Congress

Last month the 18th Congress of the UIA was held in Chicago. This year's Congress differed from the 17 previous Congresses held since 1948 in that it was held in conjunction with a number of other events. The most important of these – at least in terms of the number of participants – was the Convention of the American Institute of Architects.

MUNICH ORDER CENTER (M.O.C.)

The new headquarters of the permanent exhibition of winter sport fashion, recently built in Munich.

This type of façade architecture, up till now appreciated particularly in the Southern areas of Europe, has recently had great success also in Germany. We are talking of NACO sunbreaker, which represents not only an advanced architectonic solution with strong aesthetic effect; the use of the NACO sunbreaker offers further decisive advantages in managerial savings.

The rightness of this assertion is proven by the new M.O.C. headquarters, recently finished in the centre of Munich upon projects of the architects Murphy and Jahn from Chicago. This structure completely made of steel and glass is the centre of the European fashion producers.

About 2200 m3 of NACO sunblades give an aesthetic touch to the whole building, absorbs 80% of the heat of the sunrays and offer at the same time the desired shade. Approximately 130 silver varnished aluminium blades, more than 3200 mm long, were assembled at site and mounted with a crane.

The NACO company with headquarters in Salerno and offices in Rome and Milan, is

part of the English RTZ Pillar Group (with about 180,000 collaborators worldwide) and represented in Germany by Gerhard Pflittner, Maulbronn (Pforzheim). It is known on the German window- and façade market particularly for its shuttermechanisms for moveable aluminium-, timber- and PVC blades.

NACO sunbreakers were introduced in Germany only two years ago during "Bau 91" at Munich and since then this type of façade architecture seems to have growing success with designers and architects as Mr Pflittner points out. More and more buildings such as schools, banks, administration centres, supermarkets and wintergardens are equipped with NACO sunbreakers with fixed or moveable blades. According to Mr Pflittner, the architects pretend diversified solutions: some ask for protection against the sunrays, other stress the aesthetic aspect of the sunblades.

The NACO Management and its Director, C P Maron in Rome are particularly proud of the latest object recently completed: the M.O.C. projected by the architects Murphy and Jahn from Chicago, famous also for the tower at the Frankfurt Fair. At this year's second largest building site in Munich after airport II, 126 fixed NACO sunblades have been installed; exact calculations of the effects of the sun consented the choice of fixed blades instead of moveable ones.

The elliptically shaped ALCAN aluminium blades were pressfolded in the NACO factory at Salerno and assembled on site by Erhard Brandl from Eitensheim, assisted by a NACO working team (for orders beyond 500 m2 in fact NACO offers the mounting of the blades). An interesting point is the timing for the M.O.C.: it took only three months from the beginning of production to the final stage of mounting.

Sunblades offered by NACO range from 15 to 21, 30 and 45 cm width and the colour scale now comprises amongst white, silver and medium bronze in translucid also brown. The frames can be supplied in steel or aluminium; brackets, cover plates etc are part of the NACO sunbreaker system. □

BOON EDAM - THE COMPANY

***Boon Edam** produced the first Tourniket in 1903 and with this design largely abolished traditional production methods. Since that time Boon Edam has progressed purposefully; developing on the foundation of its inventiveness and know-how, to become one of the world's foremost trendsetters in the field of entrance technology.*

The headoffice of the company is established in Edam/Holland. Over 60% of the company's turnover is generated by exports. At the moment Boon Edam employs 240 persons at the headoffice in Edam and worldwide approximately 350 persons, with associated companies in the USA, **Boon Edam Inc,** the United Kingdom, **Boon Edam Ltd,** Germany, **Boon Edam GmbH** and Japan, **Boon Tajima Corp.** Furthermore the company is represented in 30 other countries by dealers. In 1991 Boon Edam was rewarded for this international reputation by receiving the "Koning Willem I Plaquette for Export".

Working together with Boon Edam virtually any form of entrance design and construction can be undertaken combining the very best of the qualities found in the various door configurations. The company offers the benefits of its long experience to specifiers, operates its own installation teams and provides a full back-up maintenance service.

The fact that the Steigenberger Hotel in Hamburg have selected Boon Edam revolving doors for their entrance,

proves they have chosen for the best.

BOON EDAM develops, produces and installs revolving doors according to the highest quality standards (Tüv, Qualicoat, Syntha Pulvin, CEN, ISO-9001, British Standard and IEE). Apart from being representative, offering a large capacity and a high reliability our entrances provide optimum safety. We can offer a standard door, but we are specialised in delivering doors tailormade. For these reasons more and more architects choose for BOON EDAM. What are you waiting for??

BOON EDAM
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BOON EDAM
SUPERIOR QUALITY

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THE PRODUCTS

Boon Edam develops, produces and installs revolving doors in more than 300 possible design variations. The current range of products covers revolving doors from 1.6m to 6m diameter and security doors based on the revolving door and a single person access booth, together with a range of lowlevel turnstiles.

The **advantages** of revolving doors are that there is no direct connection between the inside and outside of the building, reducing energy consumption, cutting out draughts and minimising noise pollution.

But why revolving doors of **Boon Edam**?
A Boon Edam revolving door:

- is tailormade
- can be stopped manually
- is exceptional safe
- is userfriendly
- is an international accepted panic exit
- can be used manully in case of power failure
- is easy to clean
- is very reliable and needs less maintenance.

All Boon Edam revolving doors have a common basic range of options which can be divided into the following segments: canopy, door leaves, outer drum finished and sensors.

For these reasons more and more architects choose for the revolving doors of Boon Edam.

Boon Edam has made a specialism out of entrance technology.

The fact that Nissan Europe in Amsterdam have selected Boon Edam revolving doors for their entrance, proves they have chosen for the best.

BOON EDAM develops, produces and installs revolving doors according to the highest quality standards (Tüv, Qualicoat, Syntha Pulvin, CEN, ISO-9001, British Standard and IEE). Apart from being representative, offering a large capacity and a high reliability our entrances provide optimum safety. We can offer a standard door, but we are specialised in delivering doors tailormade. For these reasons more and more architects choose for BOON EDAM. What are you waiting for??

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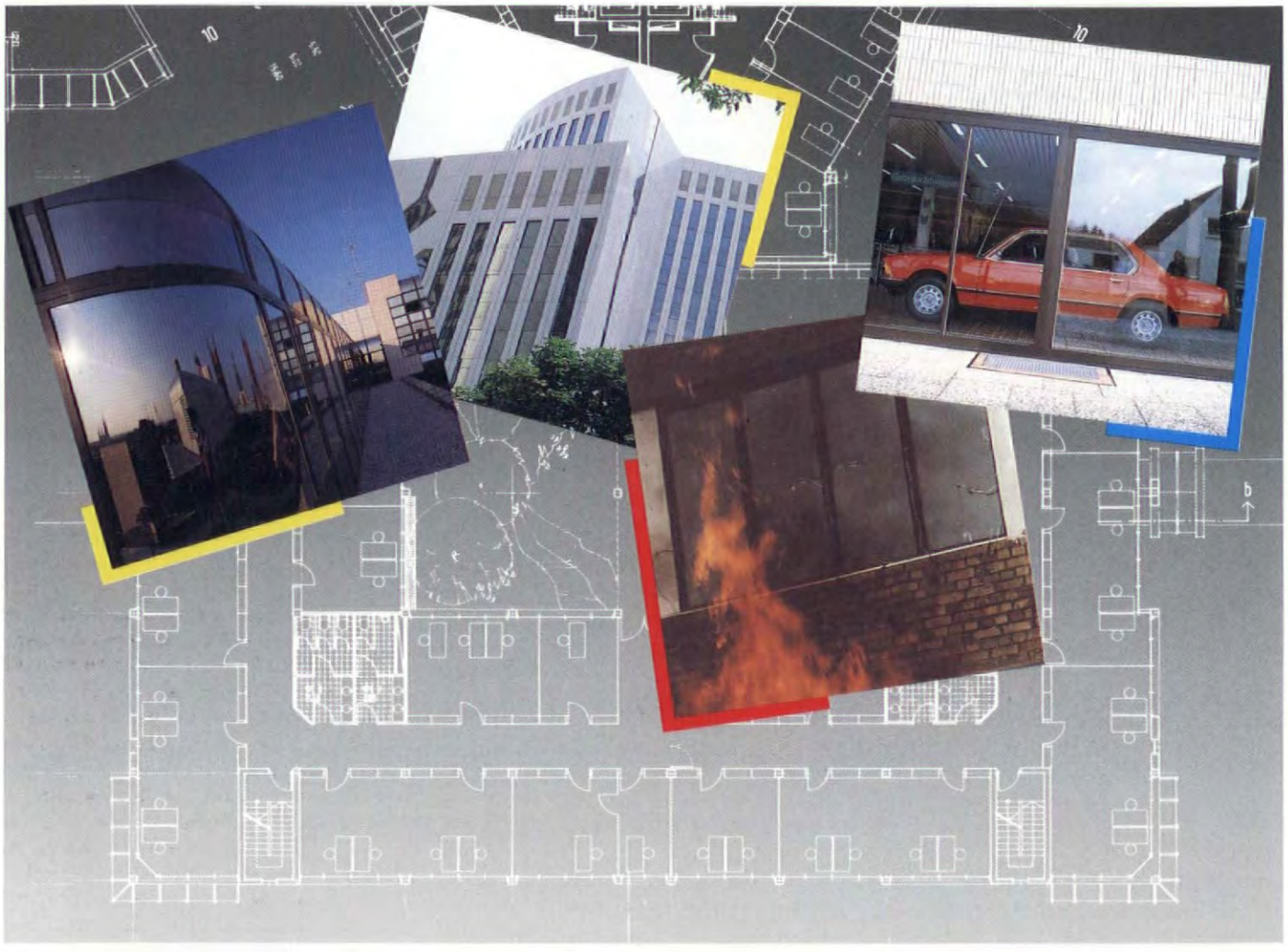
Special applications call for special glass ... and Schott



These days there are many architectural applications where any old glass just won't do. If the application is special, the glass must be special too. And SCHOTT, Europe's leading manufacturer of special glass, has three architectural glasses that are really very special.

IROX® is a reflective solar control glass. Its surface coating is beautifully uniform and everything is reflected in it in its natural colour over the whole face of the building. Windows and spandrels alike. That's a special feature of IROX. Also the coating is fired on to give it outstanding weathering properties. In fact IROX solar control glass looks so good on the outside that it would be easy to forget that it lowers air conditioning costs, creates a pleasant environment inside the building and lets people inside see the outside world in its natural colours.

PYRAN® is a fire-resisting glass that allows architects to give free rein to their imagination while still complying with the requirements of fire protection. PYRAN provides transparency with no wires attached. Even when there's a fire. It's been tested to various national standards and achieved fire ratings from 30 minutes to over two hours. All with one thickness. 6.5 mm. So PYRAN's the answer both for looks and fire resistance.

AMIRAN® non-reflecting shop window glass opens shoppers' eyes to window displays. Now they can actually see the goods without having to dodge the reflections. Large areas can be glazed and reflections cut to less than 1%. Designers can forget about complicated and costly ways to combat reflections. AMIRAN does it for them. And it's available now.

IROX, PYRAN, AMIRAN – three special glasses for three special applications.

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Optics Division – Flat Glass Sales
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Tel: (0 61 31) 66 42 65

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INVISIBLE SAFETY

There can be few of us who at some time have not passed a shop window and found to our annoyance that the display through the glass was barely discernible whilst the shop on the other side of the road was clearly reflected in the shop window. Shoppers are particularly irritated by these reflections in conventional shop window glass when the sun is shining and they can scarcely make out the goods on display, especially in very deep display shop windows.

This is due to a physical phenomenon in which each surface of a glass pane reflects 4 per cent of the light striking it. This means that the reflection is 8 per cent from single glazing and as much as 15 per cent from double glazing. This phenomenon is particularly striking in the case of car showrooms, furniture shops, clothing shops and department stores with large expanses of glass. Even the most imaginative display with attractive, eye-catching shop window decoration loses its effect when one is separated from it by a dazzling pane of glass. The "Visual Merchandising" concept making the shopper want to reach out and touch the display fails to reach the passer-by. "Amiran" goes a long way towards eliminating this nuisance since the new shop window glass overcomes this mirror effect almost completely by reducing the reflection in the glass from 8 to less than 1 per cent. Thin interference coatings superimposed one on top of another on both surfaces of the glass are responsible for this.

Who benefits from "Amiran"?

"Amiran" allows the architect a free hand in planning the shop window installation since he can dispense with structural measures such as overhangs in the building facade or canopies, and even awning where these serve merely to reduce the amount of reflection. The interior designer and window dresser can also use less powerful artificial lighting. In the past interior lighting had to provide a high degree of illumination in order to suppress the reflection in the glass.

The trend in merchandising in the 90s is not simply to display goods but to create "experience areas" by means of attractive presentations and exclusive decoration. "Amiran" contributes to this by allowing the ideas of the shop window designer to appeal directly to the customer. The gaze of the passer-by is drawn to the display and his or her interest awakened: clearly a good start to promoting sales. Since, moreover, the higher UV absorption of the glass delays any fading of the goods, materials sensitive to light remain colour-fast longer and can therefore remain in the shop window for longer periods of time. The non-reflecting glass also offers the shop owner a considerable saving on energy costs. The higher light transmission through "Amiran" shop windows means that less powerful lighting is required, bringing considerable reductions in regular electricity costs.

The atmosphere created by the display now appeals directly to the passer-by since the glass is no longer something that gets in the way. The goods on display look close enough to touch. Even items towards the back of the shop window are more clearly visible, encouraging the window-shopper to actually come into the shop.

Protection against break-in

In shops with more valuable goods on display there is another important consideration, that of security. By coating "Amiran" on just one side it can also be made up into laminated safety glass, thereby also affording protection against break-in, armed attack and the risk of injury from broken glass. It is even possible to dispense with steel security grilles since this glass can be made to comply with all security classifications, including those with alarm systems, right through to bullet-resistant glazing which meets DIN standard 52290. On laminated safety glasses the non-reflective effect is achieved by applying special coating to all surfaces in contact with the air whilst omitting these from glass surfaces in contact with the interlayer. Laminated safety glasses made up with "Amiran" are available from authorised manufacturers in Germany and elsewhere in Europe in all standard thicknesses and sizes of up to 3.60 m x 2.65 m.

Other applications

Non-reflecting glass is advisable wherever reflections in glass panes tend to restrict visibility. In addition to shop windows and outdoor display cases, other conceivable applications include large display boards protected by glass, eg at airports, railway stations and sports stadia. "Amiran" glazing could be used to advantage in traffic control rooms, industrial crane cabs or lock control stations, observation units in hospitals, sports arenas and factories and could well be fitted in tower or terrace restaurants which at night would then afford a dazzlefree view. Another possible use might be on new filling station petrol pumps with fluorescent displays, since when exposed to the sun these are highly reflective and "Amiran" on a grey absorption glass increases the contrast.

Amiran non-reflective glass in restaurant offers less glare, more view

When the architects at the firm of Louis Owen Inc, began designing the Palisade Restaurant at Elliott Bay Marina near Seattle, Washington, they had a rare opportunity to capitalize on the restaurant's scenic Elliott Bay location.

The 13,000 square-foot elliptical structure offers a sweeping 180-degree view that includes the Seattle cityscape, Harbor Island, Mount Ranier and the Olympic Peninsula across Puget Sound.

"You can see some wonderful sunsets from there," says Gary Dethlefs, owner of the design firm.

Palisade's unique view might easily be lost on the 300 or so restaurant patrons were it not for a new type of window glass that reduces reflected light to less than 1 per cent. (Normal glass reflects from 8 to 15 per cent of incident light, depending if it is single or double glazed.)

"There were several conflicting design considerations." Dethlefs said, "We had to provide enough light to dramatize the restaurant's rich wood and stone interior, but doing so would have resulted in so much reflection from the perimeter windows that the view would have been ruined."

Dethlefs turned to a new product, Amiran® non-reflective glass, that was introduced by Schott Corporation specifically for installations where glare could be a problem.

As a test, Dethlefs ordered a four-foot square of the glass, put it in a frame and toted it off to various waterside locations to judge its effect on ambient reflections. "We were knocked out by it," Dethlefs said. "It was just amazing."

Convinced that Amiran would solve the reflection problem, they ordered 36 of the panels from Schott Corporation. The panels measure approximately 4 x 9 feet in size and were installed completely around the 175-foot perimeter of the dining area.

"The results were stunning," said Rich Komen, Chairman of Restaurants Unlimited, owner of Palisade. "Palisade is a very special restaurant. The setting on Elliott Bay Marina and the attendant view at night are an incredibly important part of making the restaurant experience special. So is the interior lighting. The only way we could have it both ways to eliminate reflections, and the Amiran worked exceptionally well."

Amiran non-reflective glass has enhanced the daytime appearance of the restaurant as well. Sitting adjacent to a 1,200-slip marina, the first view of the restaurant for many visitors is from the water. With ordinary glass, reflected glare would completely obscure any view into the restaurant, but Amiran effectively "opens up" the restaurant and welcomes people in.

In addition to offering architects new design freedom from concerns over reflected glare, Amiran non-reflective glass is well suited to retail and showroom applications in numerous situations, including high-end apparel boutiques, home furnishings stores, art galleries, jewellery shops, furriers and automotive dealerships. Other applications include museums, fine restaurants and hotels...wherever a view unobstructed by reflected light is a primary concern.

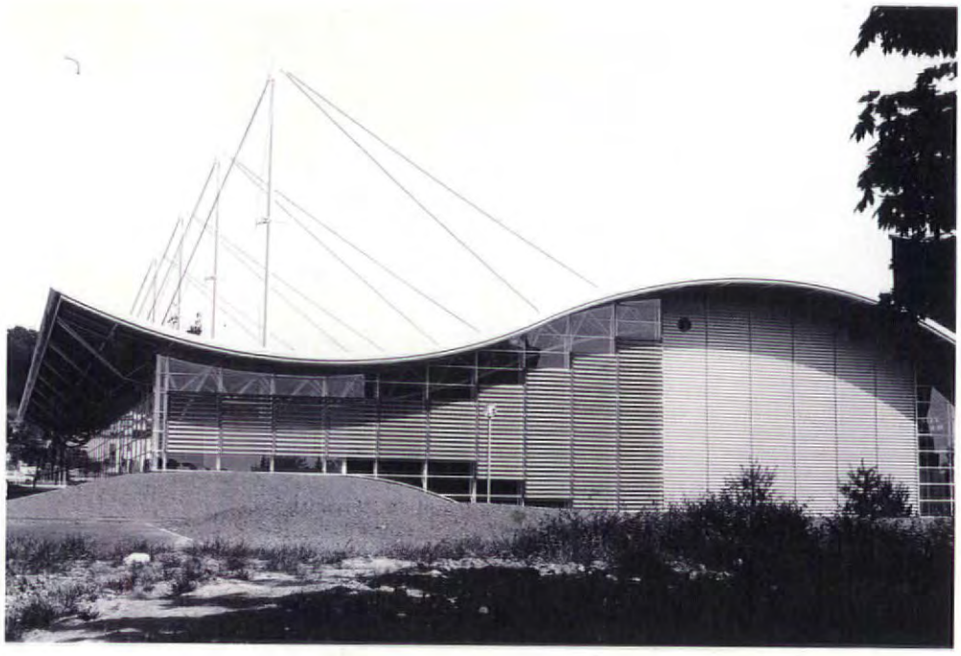
Produced by applying a multiple-layer interference system to flat glass, Amiran non-reflective glass is weather resistant and available in a range of thicknesses and sizes up to 10.14 ft by 6.1 feet, in thicknesses of 5/32-, 3/16-, 1/4-, 5/16-, and 3/8-inches. It can even be made into laminated safety glass if necessary. Available from stock, order lead time for Amiran non-reflective glass is approximately two week. □

Amiran shop window glass from Schott is non-reflective and therefore ideal for shop window and display environments. Shown here are three different applications – the ground floor of a car showroom in Hamburg, at street level for the Rosenthal studio in Vienna and for a restaurant in Seattle with panoramic views over looking the harbour.

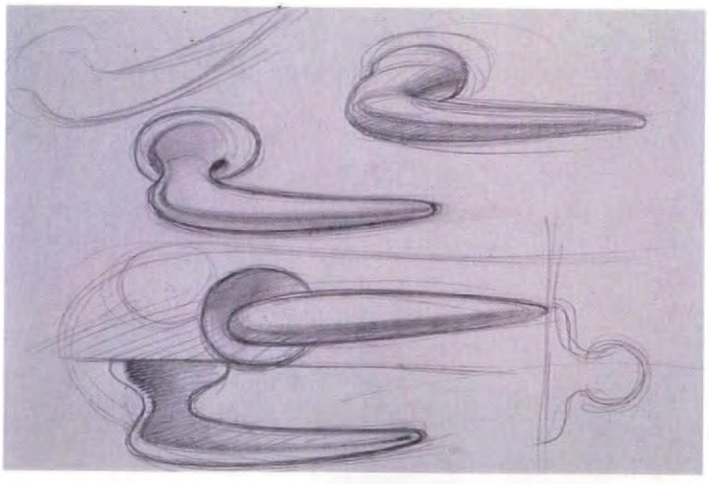
K Plus low emissivity insulation glass from Flachglas AG has been used in double glazed units for a private residence in Central Germany.

Security doors from Tonali provide a solution for premises requiring secure access control. The Priora EM24 (far left) features curved glass doors and the Priora Top is a double-door design.

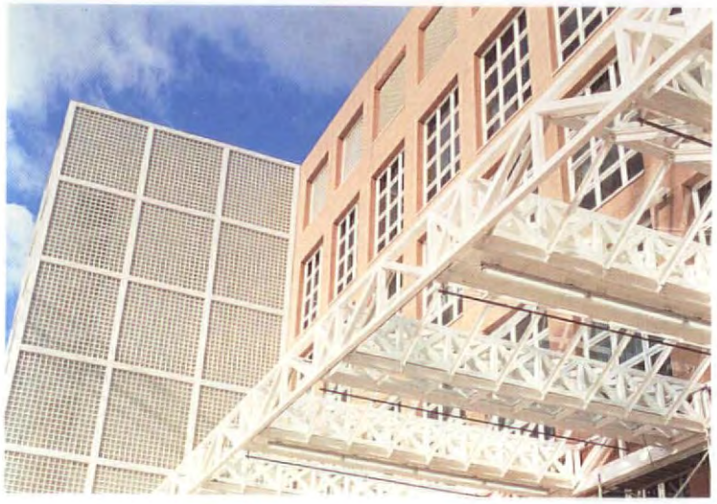
Delphina, designed by Massimo Iosa Ghini for Olivari, is a new collection of door and window furniture. The handles are produced in brass with a polished, matt black or matt chrome finish. The collection also includes an accompanying coat hook (below).

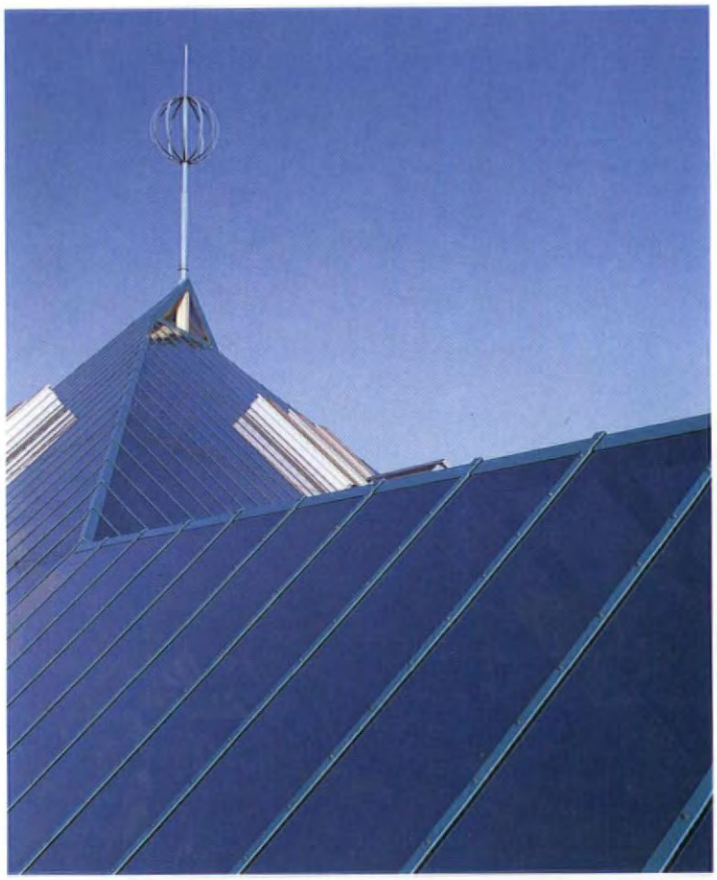


A new sports centre in France, designed by architect Richard Plottier, uses the Naco sunbreaker system to absorb solar heat. The sunblades may be either fixed or moveable and are available in various widths.



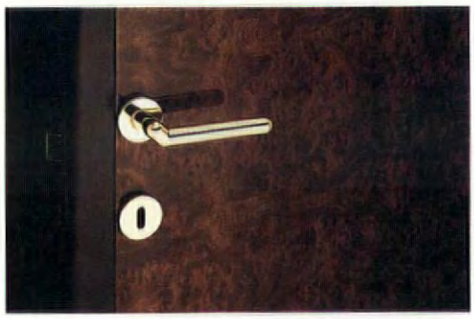
Solaris glass blocks from Westerwald Glasstein GmbH have been used in three environment sensitive situations. The style of the new administration in Reutlingen (right) sits happily next to the older style of architecture, while at a new factory premises near Frankfurt airport, the glass blocks provide an industrial feel. A further innovative use is the new Hotel Arcade situated on a harbourfront. Here the wave-like structure of the facade images the neighbouring water.





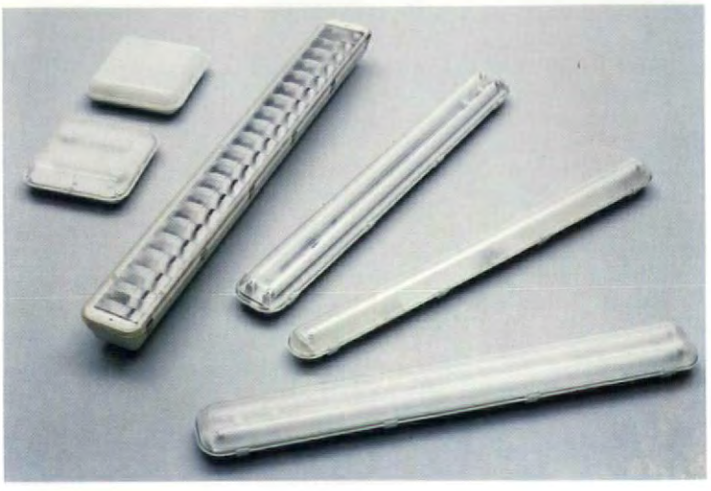
The Compact System HCS from Hoppe is a system of door handles and decorative roses. Installation has been simplified with the use of a revolutionary key system.

Recent constructions in glass by Dutch company Bik include a roof structure and partition at the Bergen Museum (above), curtain walling and a lift shaft for a refurbished apartment building, and a coloured glass pyramid roof for a new shopping centre in Julianadorp.



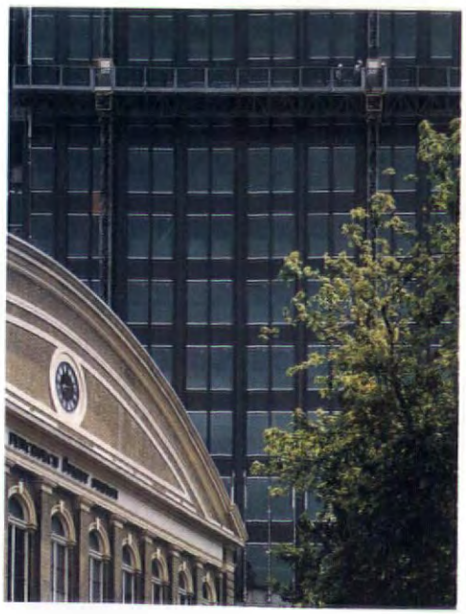
Linea Zarina from the Forges range by Valli & Valli (above), features angular designs manufactured in nickel alloy and finished in gold plate, chrome and black.

Philips lighting has introduced Pacific, a new waterproof luminaire. Designed for industrial applications, it uses a system of clips for mounting directly to the ceiling surface, allowing quick and easy installation.



Curtain walling from Don Reynolds Facades has been specified for the new Great Northern Centre in Belfast pictured below. A key feature was the inclusion of their sightline window which has no visible external framework.

For fire protection and impact safety, Pyroswiss glass from Temperit offers high strength performance and good visual qualities. Recent exterior facade applications include Berlin Technical University (right), the Broadgate Development in London (far right) and the Olympia Tower in Barcelona.



Recent projects incorporating curtainwall systems from Kawneer UK include the Series 1200 slimline system at 66 Buckingham Gate in London (above) and aluminium systems for a glazed atrium at Saltire Court in Edinburgh (left). The Series 1600 system was chosen for the refurbishment of London House (far left) to complement the design details of the original facade.

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ARCHITECTURAL COATINGS **ELF ATOCHEM UK LTD,** Colthrop Way, Thatcham, Newbury, Berks RG13 4LW, UK. Tel: 0635 870000. Fax: 0635 861212. Contact: Mr David Nightingale.	KYNAR 500® PVF2/PVDF based architectural coatings provide industrial and commercial buildings with a durable finish of outstanding quality. Thirty years of proven performance shows that KYNAR 500 coatings offer exceptional resistance to colour change, ultra-violet and environmental attack.	KYNAR 500® based coatings are supplied worldwide through selected licensees. Suitable for use on steel or aluminium building products, KYNAR 500 is factory applied by coil coaters and metal section producers using spray or powder coating techniques followed by stoving. A list of product suppliers and technical information is available from Elf Atochem UK Ltd.
CONSTRUCTION AND PROJECT MANAGEMENT **OBAYASHI EUROPE BV,** 25-28 Old Burlington St, London W1X 1LP, UK. Tel: +44 71 434 9595. Fax: +44 71 494 3249. Contact: Mr H Nakamura.	Obayashi Europe BV have completed numerous projects in five different countries, matching the needs of our clients with the skills and know how of local construction industries to produce state-of-the-art, high quality structures all completed on time and within budget. Our skills and experience span the entire spectrum of construction and development work from preliminary planning and design stages through to development, construction, completion and follow-up.	Obayashi Europe BV is the European subsidiary of the Obayashi Corporation and one of the five top Japanese companies, with offices situated in: London, Paris, Amsterdam, Brussels and Madrid. In Europe, our work consists of construction, project management, engineering, property development and real estate. We are committed to working in close harmony with local architectural, engineering and construction firms acting as a bridge by which the local construction industries of our host countries work on projects for our Japanese clients.
ENVIRONMENTAL DRAINAGE **ECLIPSE ENVIROMARK LTD,** Crowther House, Crowther Industrial Estate, Washington, Newcastle-upon-Tyne NE38 0AB, UK. Tel: 091-416 6666. Fax: 091-416 9999. Contact: Mr W G Clark.	Product range includes drainage gullies, channel, push fit pipe systems, also corner protection, grease traps, catering equipment and a specialist stainless fabrication service. The development and design of our products will include the best features of traditional drainage with up-to-date designs to ensure compliance with any future EEC regulations which may be imposed.	Eclipse Enviromark are leading manufacturers and suppliers of stainless steel architectural products to industry. Our high quality products are supplied to construction, chemical, catering, food processing, pharmaceutical industries internationally. The company specialise in hygienic drainage systems for the food and health industries and also a pipe system for both domestic and industrial water and waste applications.
FABRIC STRUCTURES **CLYDE CANVAS GOODS & STRUCTURES LTD,** Wharton Rd, Winsford, Cheshire CW7 3BY, UK. Tel: 0606 594224. Fax: 0606 592379.	The company specialises in the design, fabrication and installation of tensile, air supported and frame supported fabric structures, most of which are designed for specific projects. Alternatively, structures can be made to clients own specifications. Installation or dismantling operations require very little site time and are normally carried out by the company's own installation team.	Clycan have successfully provided many designs of fabric structures throughout the UK and overseas. We were also happy to provide structures for Eurodisneyland, Paris and for Spanish Expo '92 in Seville.
LIGHTING CONSULTANTS AND MANUFACTURERS **BBI LIGHTING,** 23 Parkside, Coventry, West Midlands CV1 2NE, UK. Tel: +44 203 551444. Fax: +44 203 525862. Telex: 8813271 GECOMS E32	BBI Lighting product range includes luminaires for internal and external, commercial, industrial and decorative, underwater and hazardous area, column and bollard amenity lighting, low energy and LV downlighters, emergency lighting, fluorescent, surface and recessed modulars. Together with a design and manufacturing facility for 'special' luminaires to architects or engineers design concept.	BBI Lighting are fully co-ordinated lighting consultants, suppliers and manufacturers of all types of luminaires. With our own in-house design and manufacturing base as well as representing in the United Kingdom a number of reputable continental lighting manufacturers, we are able to supply luminaires for any lighting concept or design.
TORNADO LIGHTING & DESIGN LTD, 2 Stable Yard, Danemere St, Putney, London SW15 1LT, UK. Tel: +44 81 788 2324. Fax: +44 81 785 7017.	Tornado Lighting specialise in the design and manufacture of a wide range of plaster luminaires, offering a variety of light sources from metal halide, compact fluorescent to low voltage. With Tornado, the emphasis is always firmly on quality and achieving the highest standards in both design and finish. Each luminaire is hand finished to ensure sharp line definition and uniformity. Our standard of service is equally high. As a company we are always happy to listen to specifiers special requirements, making every effort to cater to them whenever possible. Tornado Lighting manufacture exclusively in the UK.	With our new range of plaster low voltage downlighters Tornado are successfully moving into the overseas market, catering for the individual needs of the architect and designer.
LIGHTING SOLUTIONS **ZUMTOBEL LIGHTING SYSTEMS LTD,** Unit 5 The Argent Centre, Pump Lane, Hayes, Middlesex UB3 3BL, UK. Tel: +44 81 573 3556. Fax: +44 81 573 3560.	Zumtobel's corporate goal has always been to create better light for the user, to design light that blends harmoniously with the architecture and is tailored to the needs of the interior and the application. By maintaining an ongoing dialogue with our customers we research and develop innovative lighting solutions devoted to the practical needs of the user combining increasingly convenient installation, applications-based lighting engineering and attractive design.	For more than 40 years Zumtobel have worked exclusively with light. Zumtobel research, develop, and manufacture lighting systems for a wide variety of industrial, commercial and architectural installations to the highest quality levels and with the style to match, while being economical and healthy to use.

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TEXTILE CONSTRUCTION **CANOBBIO SPA,** Via Spartaco 23, 20135 Milano, Italy. Tel: +39 2 55188168. Fax: +39 2 55183182. Contact: Aldo Aresi, Carlo Vannelli.	Textile constructions with covering membranes in polyester fabric and glass tissue with PVC and PTFE coating. The load-bearing structures are of steel, aluminium or lamenated wood. They are especially used to cover big areas but are versatile in use and are suitable for all requirements.	The firm Canobbio SpA was founded in 1926 and with over 60 years experience it has gained a high technological know-how all over the world in the field of tensioned structures. Its planners can resolve any problem concerning the covering of large or small permanent or temporary areas with tensioned structures.
TEXTILE STRUCTURES **CARL NOLTE GmbH & CO, CREATIVE ARCHITECTURE,** PO Box 1563, Am Eggenkamp 14, D-4402 Greven 1, Germany. Tel: +49 2571 16-0. Fax: +49 2571 3300. Contact: Klaus Gipperich.	The applications of textile roofing are almost unlimited, they may take the form of canopies, coverings to exhibition areas, gangways, sport or training facilities, sales areas and open air stages. The properties of textile structures are: exceptional shapes, translucence of membrane, wide variety of colour schemes, low weight.	Decades of experience in the design, manufacture and assembly of textile structures guarantee the high quality standards of Carl Nolte's textile structures. This has been demonstrated in over 1300 projects worldwide. During all these projects, cooperation and communication with the customer were of paramount importance for us. Challenge us.
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TUBULAR STRUCTURES **BRITISH STEEL GENERAL STEELS WELDED TUBES DIVISION,** PO Box 101, Weldon Rd, Corby, Northants NW17 1UA, UK. Tel: 0536 402121. Fax: 0536 404005.	This tube is used extensively in construction – inside, outside, above and below ground. Hot formed structural hollow sections, in particular, are building a fine reputation among architects and construction engineers who appreciate the smooth lines and inherent strength of the product, allowing wide spans and compact designs.	British Steel Welded Tubes – The Tubemasters – have been supplying world markets for more than a century, and today are Europe's leading manufacturer of electrically welded steel tube.
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WORLD ARCHITECTURE, Halpern House, 301-305 Euston Rd, London NW1 3SS, UK. Tel: +44 71 383 5757. Fax: +44 71 383 3181. Contact: Dennis Sheehan.	Professional Services and Products Directory	For information on how your organisation can be included in the Professional Services and Products Directory from issue 22, March 1993, call World Architecture, the magazine for the very best in global architecture.

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Geoform

Unique patented techniques, developed in Britain, have created totally new design horizons in both the use of and applications for postformed laminates and veneers. The Geoform system allows forming of laminates at any angle, on to any convex profile, whether of uniform or tapered section, simplifying the manufacture of splayed fascias, octagonal columns, pyramids and many other sections previously either difficult or impossible to produce. Applications range from fast food counters, retail displays and column casings to washroom cubicles and vanitory units.

Reply number 30

Cubiform

The Colourmatch Cubicle system can achieve each client's exact requirements by offering an infinite combination of laminates, panels, colours, styles and specification levels. Quality fabrication combined with personal attention to detail, backed by years of experience results in tailor-made components at competitive prices programmed to meet the most urgent delivery requirements.

The techniques of Geoform Postforming, developed by Cubiform, provides an endless variety of profiles and sections for cubicle pilasters, vanitory unit tops, duct panels and pelmets.

Reply number 34

Schindler

Schindler specialise in vertical transport passenger and goods transportation, designing, planning and supplying lift installations.

Schindler produce many kinds of different lifts: standard single four passenger lifts or multi-configuration lift groupings: small service lifts and large hydraulic goods lifts: bed lifts, vehicle lifts and panorama lifts that tastefully compliment the architectural design of a building.

The range of application is equally wide, extending from apartment blocks to hotels, from office and administration buildings to hospitals, from department stores to factories, from major airports to television towers, dams and ships.

Reply number 31

Kirkstone

An illustrated portfolio is the theme of Kirkstone's latest brochure. A unique volcanic stone quarried in Cumbria, Kirkstone is dense, durable, and extremely versatile. Produced as thin as 10mm for a 300mm square tile and in a maximum slab size of 1800 x 900mm this light sea green stone is available in a choice of four surface textures including non-skid. Well known as a tough and attractive flooring and cladding material Kirkstone is now specified for worksurfaces of all kinds and an ever increasing range of architectural detail.

Reply number 35

Stone Panels

Stone Panels has pioneered the unique manufacturing process that has established us as the worlds first and largest panel manufacturer.

Ultra-Lite consists of a natural stone veneer, bonded to a high strength aluminium core. A fibre reinforced epoxy membrane makes the panels totally resistant to water penetration.

Combining the natural beauty of stone with aerospace technology allows Ultra-Lite to be used in applications that were normally considered weight or cost prohibitive.

Ultra-Lite has undergone every conceivable test, and projects worldwide testify to Stone Panels performance and endurance.

Reply number 32

Tornado

Tornado's new Softform low-voltage recessed lighting has been created especially to bring a softer, more sculptured look to downlighting.

The smooth plaster cowlings are moulded to the highest standards and once fixed they need not be removed for relamping due to our unique easy-access chassis unit.

To achieve directional flexibility within the Softform range Tornado Lighting have utilised the directional lamp from G E Lighting's new Halogens range, allowing full 360 degree movement within each fitting.

Reply number 36

Eclipse

Stainless Steel Drainage System

Eclipse Enviromark provides a complete stainless system for drainage, gullies and channel to suit all floor finishes. Traps to ensure easy cleaning systems. Pipework with pushfit joints for easy fitting. A fabrication facility is available for stainless products. Products include grease traps, corner protection, catering equipment. Pipework system is available for above and below ground applications gullies for commercial and industrial usage.

Reply number 33

Exterior Profiles

Exterior Profiles are a national external envelope contractor who are proud to be associated with some of the most high profile projects undertaken in recent years.

The range and diversity of Exterior Profile's capabilities are exemplified in the company's philosophy of overcoming the difficulties on-site on the drawing board. Our in-house drawing office enables full responsibility to be taken for the design development of architectural concepts, thereby helping to achieve the performance specification within the budget constraints whilst maintaining the design integrity.

Reply number 37

For information on how your company can benefit from the World Architecture Brochure Showcase, telephone +44 (0) 71 383 5757 or circle Reply number 62.

Brochure Showcase 2

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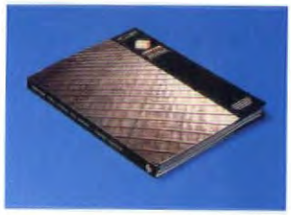


Eurocom
A Design Handbook for Traditional Sheet Metal Roofing

The lack of well-defined standards and codes of practice is no longer a difficulty with the 100 page document published by Eurocom Enterprise Limited.

All aspects of the adaptation of the traditional craft to modern building designs re-approached, together with a complete detailer.

The particular metal featured is the successful Uginox AME, termed stainless steel, developed to give a pewter weathered appearance to a marine grade stainless steel.

Reply number 38

Wade
Featured in this brochure are floral patterned gratings and tree grilles of nickel bronze, and gratings and channel of stainless steel.
Wade drainage products are manufactured under a Quality Management System which complies with ISO9002.

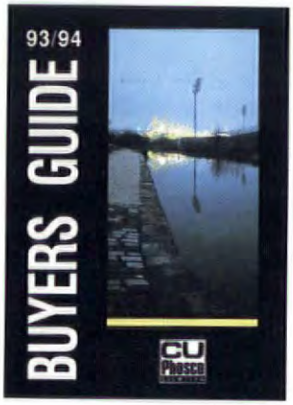
Reply number 42

R Glazzard
Architectural Structures
R Glazzard (Dudley) Limited have produced a brochure illustrating their range of involvements with specialised architectural steelwork, staircases and balustrading.

A full in-house service embracing design, costing, surveying, tech drafting, manufacturing and erecting of purpose-made metalworks is offered to the construction industry.

"Our only limitation is your imagination"

Reply number 39



CU Lighting
112 pages of ideas for outdoor lighting in urban and rural public areas. Included are lanterns traditional and modern. Columns in steel, aluminium and concrete; high masts up to 50 metres; floodlights up to 2K Watt; bollards; benches and litter bins (Victor Stanley).

CU Phosco are able to provide a complete service from the design of lighting schemes to provide guaranteed lighting levels. All products are manufactured with the highest quality materials to British and European standards. Designs are tested in our BSI registered lighting laboratory. Quality Assurance to BS 5750 is operated within the company.

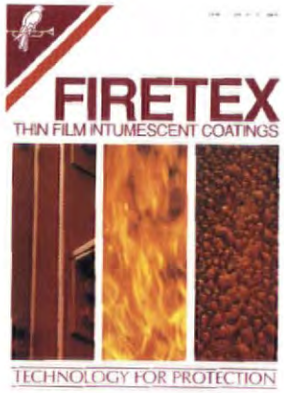
Reply number 43

W&J Leigh
High Performance Masonry Coatings
Over 50 years of experience and continual research and development give the Arpax range its unique long term protection properties with proven durability well in excess of 10 years.

The coatings offer excellent weather proofing, colour retention and alkali resistance properties, with low carbon dioxide permeability.

This new Arpax range offers a wide choice of colours in textured, sheen and matt finishes to suit every type of building and environment.

Reply number 40



W&J Leigh
Every Second Counts
Firetex M70/M71 thin film intumescent coating gives up to 2 hours fire protection for structural steel, when tested to BS476 Part 21: 1987.

Firetex is Certfire approved.

Fast application by airless spray, of relatively low film thicknesses, with minimum disruption to other trades, saves contract time.

Firetex makes every second count – not only in fire protection but also in contract performance.

Reply number 13

Bushboard Parker
Bushboard, the pioneers of 'Fast-Track' washroom installations, offer a product of unrivalled choice, flexibility and value in BB1 Plus – the best, and best known washroom finishing system on the market.

Design options have now been extended – enabling over 100 colourways to be achieved.

The BB1 Plus system combines the style and quality appropriate to a prestige building or refurbishment project with the benefit of speed, economy and immediate availability.

Reply number 41

Bushboard Parker
Profiles
Purpose-made for use in leisure facilities where attractive appearance cannot be sacrificed in favour of physical durability. Profiles leisure cubicles feature a wide range of colourways and fascia shapes, the whole system manufactured in compact grade solid laminate.

Complementary products include WC cubicles, shower options and a full range of ducting and vanitory units, for use in virtually any environment.

Panels to BSEN4381 with a 10 year guarantee.

Reply number 45

For information on how your company can benefit from the World Architecture Brochure Showcase, telephone +44 (0) 71 383 5757 or circle Reply number 62.

WORLD ARCHITECTURE

ADVERTISERS INDEX

We believe colour is the spice of design.

NTT Shinagawa Twins Building, Tokyo*

NEOPARIÉS

Durability is an integral characteristic of Neopariés, the result of a new technology applied to crystallized glass by Nippon Electric Glass Co., Ltd. Neopariés has the beauty and depth of glass, resists acid 13 times better than granite, and with zero percent water absorption, it is impervious to freeze damage. But what about colour? Isn't that what architects and customers anguish over most? Neopariés is available in black, white and fourteen colours in between to satisfy every whim, fulfil every dream. So the next time you choose panels for your building project, be they perfectly flat or gracefully curved, you'll surely look for panels that are durable. But don't forget the spice — colour. Choose Neopariés, the innovative building material that gives you a choice.

**A joint project by the following construction companies: Taisei, Kajima, Shimizu, Obayashi, Hazama, Toda, Kyoritsu and Ando.*
Neopariés colour: Grey (586) Design: NTT

Nippon Electric Glass Co., Ltd.
Building Material Division, 1-14, Miyahara 4-chome Yodogawa-ku, Osaka 532 Japan

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1230AA Loosdrecht Netherlands
Tel: 02158 3051 Fax: 02158 6296

Functional Architecture.

Spanning space and heights. – O&K/KONE passenger transport systems are more than functional building elements. They direct the flow of passengers and contribute towards architectonics. Escalators, autowalks and lifts by O&K and KONE are a safe and comfortable way to travel for customers and personnel, visitors and guests, tenants and tourists. Outstanding design and technical quality have made O&K and KONE trademarks known throughout the world.

Escalators and autowalks from O&K/KONE. In more than 80 countries worldwide. No.1 in Europe.

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D-45506 Hattingen, Germany
Fax (23 24) 20 52 15, Telex 8 229 971

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