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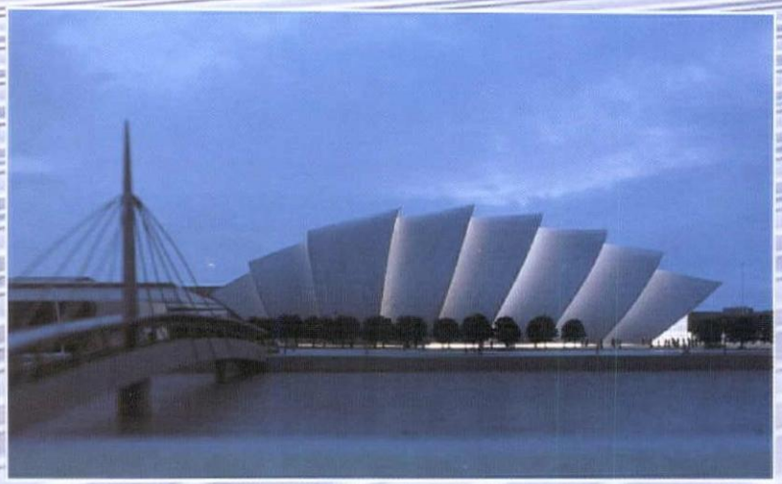
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Piano's pavilion in the landscape (p59)



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Guggenheim Museum, Bilbao, sketch by Frank Gehry (see p30)

BREAKING THE



Cardinal Valenti Gonzaga's bewildering eighteenth-century *galleria*.



The stunning spiral stage set of the New York Guggenheim.

The modern public museum is a descendant of the ancient Greek *museion*, a place dedicated to the Muses, the nine daughters of Zeus and Mnemosyne (or Memory) and so dedicated to artistic creation and memory. Its origins are rooted in the process whereby totems are chosen and protected in primitive societies; beautiful, rare or remarkable objects which may or may not bear some relation to myth.

Art collecting began with the Italian Renaissance, for the Renaissance developed a sense of history and enthusiasm for the products of Classical antiquity. The first setting for the display of antiques was provided by Bramante in the Vatican around the beginning of the sixteenth century. Paintings were also collected by wealthy, private individuals and by the late seventeenth and eighteenth century, proper galleries for paintings had become almost a standardised element of palace planning. Works were hung so closely that their framed areas formed a bewildering pattern, as memorably illustrated by the *galleria* in the villa of Cardinal Valenti Gonzaga painted by Pannini in 1749.

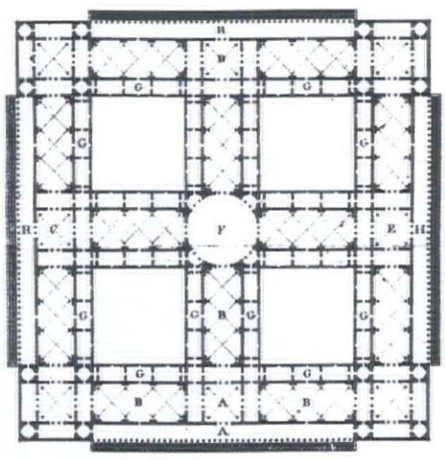
With the beginning of the cautious admission of the public (in Vienna, collections were first opened to the public on Mondays, Wednesdays and Fridays to 'anyone with clean shoes', according to an edict of 1792), exhibition spaces evolved from the secret repository of the private collector's study or nocturnal chamber to the visible and transparent space of the gallery. This evolution was crystallised by Durand in his *Précis de Leçons* of 1802-09, in which the component parts of the Baroque villas and palaces of collectors – galleries, salons, series of rooms, rotundas, courtyards, cupolas, porticoes and ceremonial stairways – were articulated and codified in a coherent architectural typology.

From the first appearance of the public museum in the early nineteenth century, two concepts dominated its form and operation. The first was the attempt to develop the spirit of the Enlightenment, which saw the museum as a focus of instruction and a universal centre of education charged with disseminating academic taste and the new values of progress to the people as a whole. At the same time, a new idea made its appearance; the museum had a duty to preserve and safeguard the nation's antiquities, based on a nostalgic perception and the rise of Romantic taste. The aim was to foster the evocative sensibility of memory and rescue the vestiges of the Middle Ages from destruction.

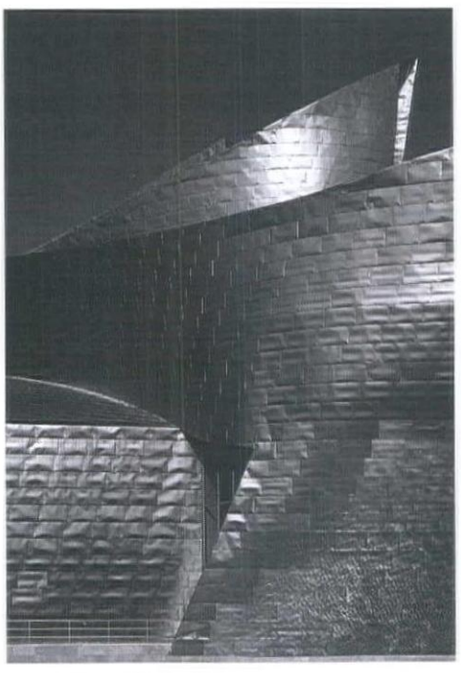
The twentieth century, however, brought new and frequently problematic approaches to both art and architecture. The architects of the Modern Movement responded in various ways to the requirements imposed by new interpretations of works of art, developing notions of circulation, section and increasingly flexible itineraries, as embodied by Le Corbusier's Museum of Unlimited Growth of 1939. Frank Lloyd Wright's Guggenheim Museum in New York was a stunning elaboration on these themes, but also added a central space to provide a constant reference point for the exhibited collection. However, the Guggenheim's spiralling stage set met with an ambivalent response from artists, testifying to the difficult and complex relationship between art and architecture, and artists and architects.

BOX

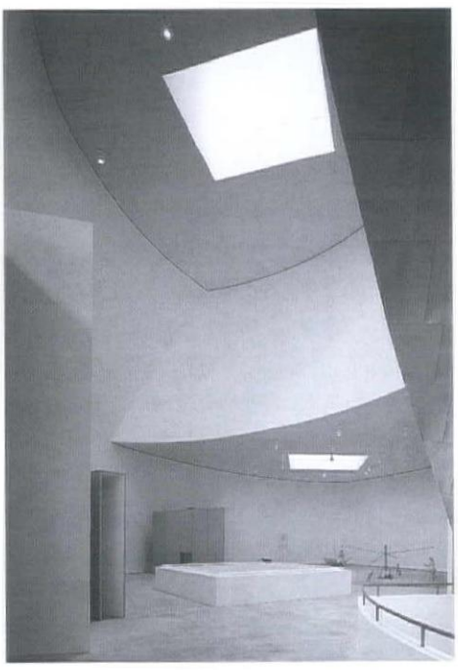
Throughout its 200 year history, the museum has gradually emerged as a distinct and fertile typology. Now, changing cultural, social and economic factors are making pressing new demands on architecture.



Durand's proscription for an ideal museum.



Gehry's Guggenheim in Bilbao ...



... inclusive spaces, both monumental and intimate.

More explicitly, this century has witnessed often violent reactions against the traditional image of the museum as a temple, mocking its power to consecrate art. In 1917, Marcel Duchamp introduced a urinal into a museum, as a protest against the arbitrary judgement to which artworks were subject (if a piece of work was not recognised by a museum, it therefore had no artistic value). In 1960 Jean Tinguely destroyed one of his pieces in the garden of the Museum of Modern Art in New York, in order to 'create a pure myth' and salvage it from the art market.

Many artists have also begun to question the effects of architecture and spatial organisation on the perception of art and reflect on whether the increasingly autonomous nature of their work should automatically be subordinated to the museum context. Some have rejected the institutional confines of the gallery for the freedom of other kinds of spaces: abandoned industrial buildings, bridges, deserts and forests. The limits of the gallery environment are regularly tested by the spatial and sensory tricks of the avant-garde. Joseph Beuys obliterates an exhibition space with a tactile felt installation; Magdelena Jetelova fills marble museum halls with piles of red sand; and videos and other electronic devices ape the banality of modern life. Universal truths have given way to post-modern ironies.

Contemporary museums, it seems, can no longer be judged as architectural frameworks, but on the basis of unity with their contents and even as a catalyst for new art. At Frank Gehry's new Guggenheim Museum in Bilbao (which also expresses another new museum role; that of the public and cultural centre revitalising the city), both Richard Serra and Jenny Holzer have created site-specific works for the new galleries. Gehry's inclusive spaces – ranging from a cavernous, 130m long gallery, to an intimate alcove no bigger than a lift – make each object come alive through complex and unexpected settings, combined with an assured play of light.

The plurality of distinctive spaces conceived in relation to specific art forms could prove a possible solution for major museums in the future. Perhaps for the first time in its 200 year old existence, the museum typology is harking back to the intimate relationship between disciplines that flourished during the Baroque period. It is clear that the traditional gallery box has been broken as changing cultural, social and economic factors make new demands on architecture.

As Thomas Krens, current director of the Guggenheim Foundation observes – 'Art museums are an eighteenth-century populist idea (the encyclopedia), squeezed into a nineteenth-century box (the extended palace), that completes its structural destiny in the twentieth century. That the museums of the future will no longer resemble the familiar institutional and social form that has quietly and persistently evolved over the past 200 years is a foregone conclusion. Those institutions that move to successfully address these fundamental issues ... will be the ones to survive and flourish in the twenty-first century'.*

CATHERINE SLESSOR

* *Guggenheim Magazine*, Fall, 1997, p8.

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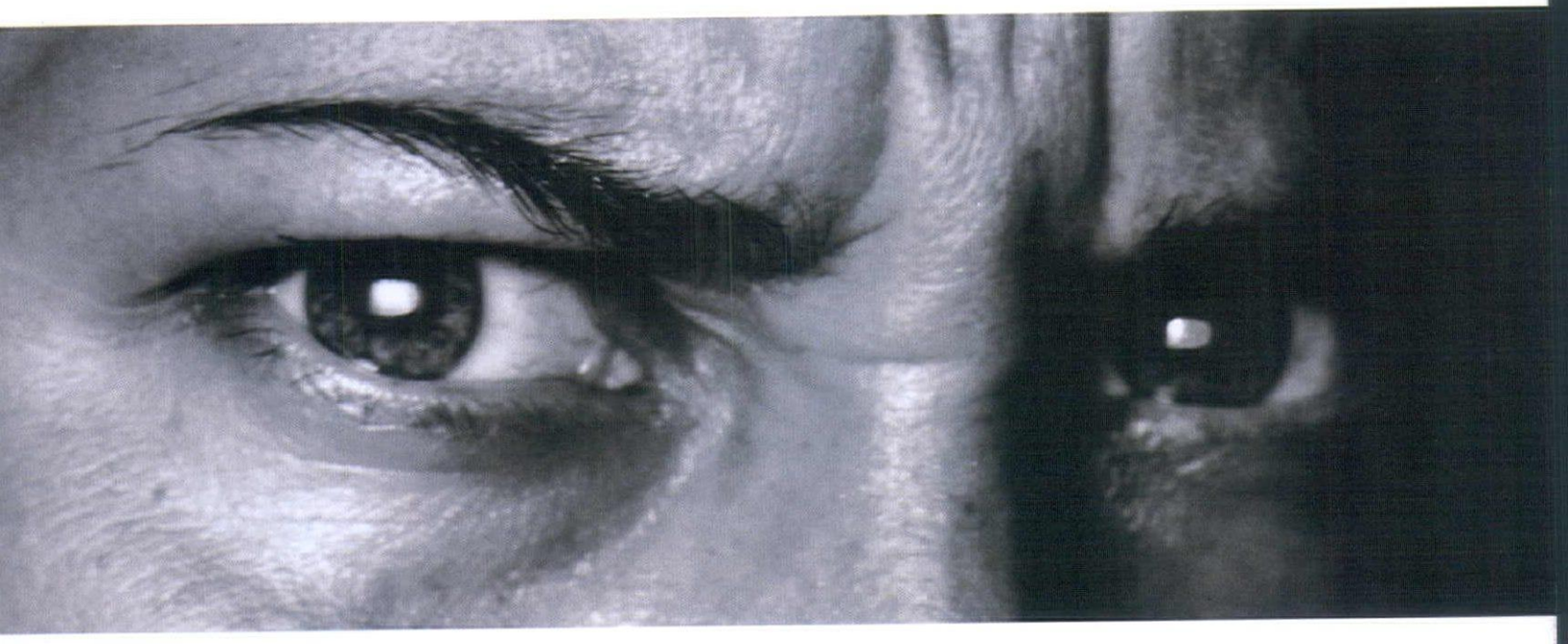
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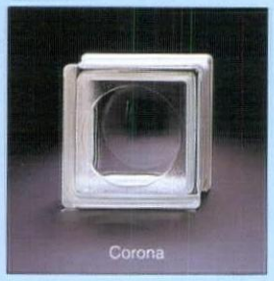
Glass Block

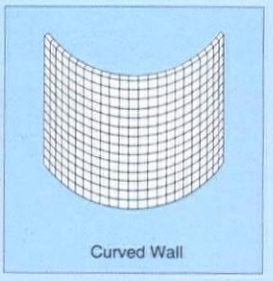
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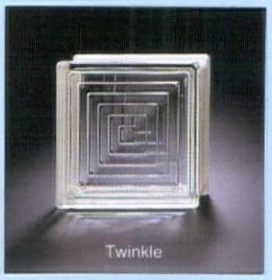
Glass Block-Architecture of Light

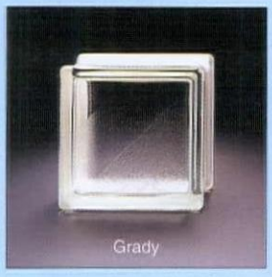

Point

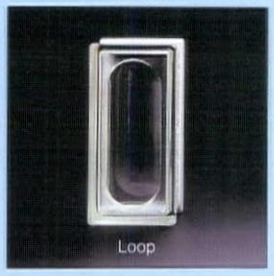

Clear

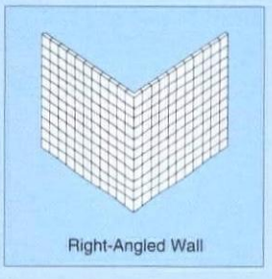

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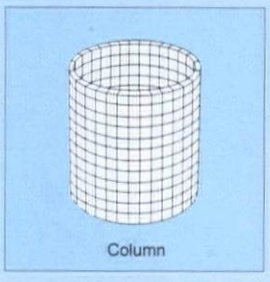

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Right-Angled Wall


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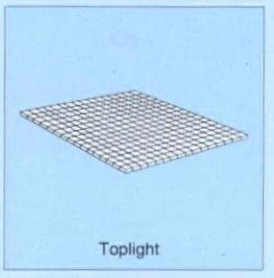

Lateral Rib


Column

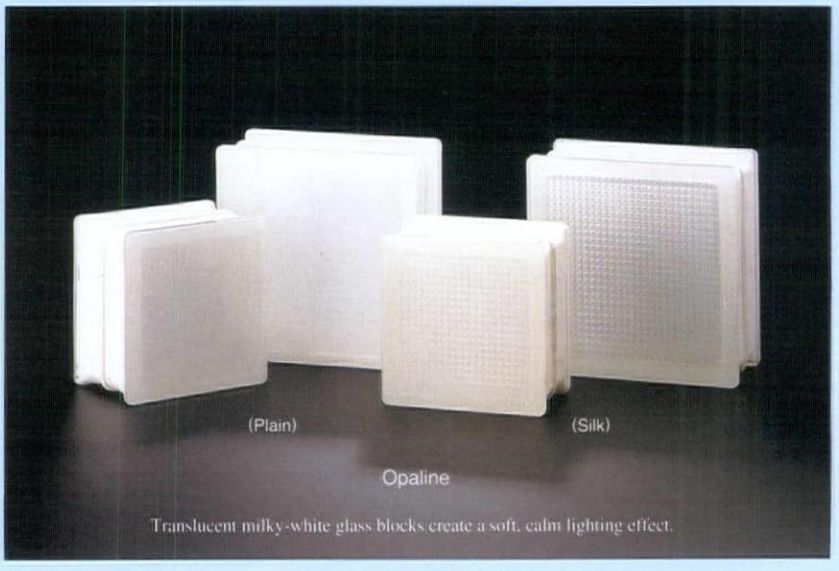

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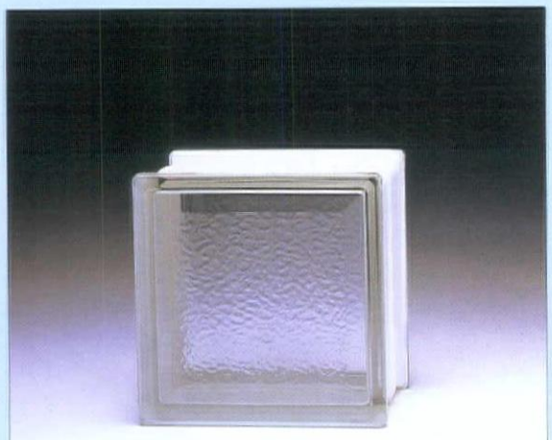
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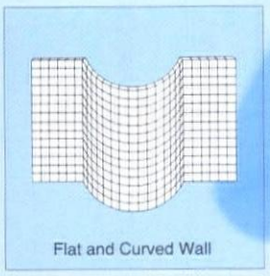
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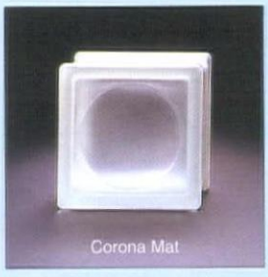
Transparent glass block combines wave patterns on the inner surface, with a smooth, clear outer surface.



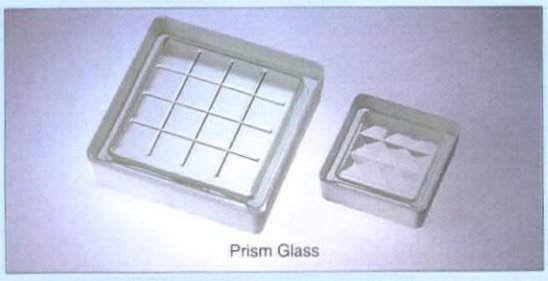
Flat and Curved Wall



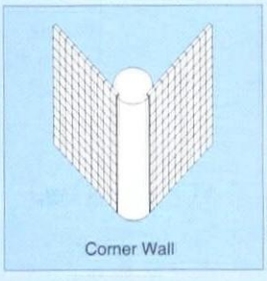
Solar Reflective (Clear)



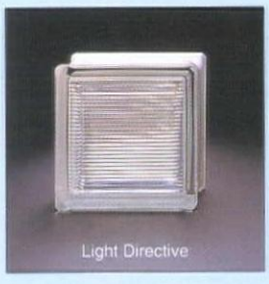
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Prism Glass



Corner Wall



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α-90 Light Directive

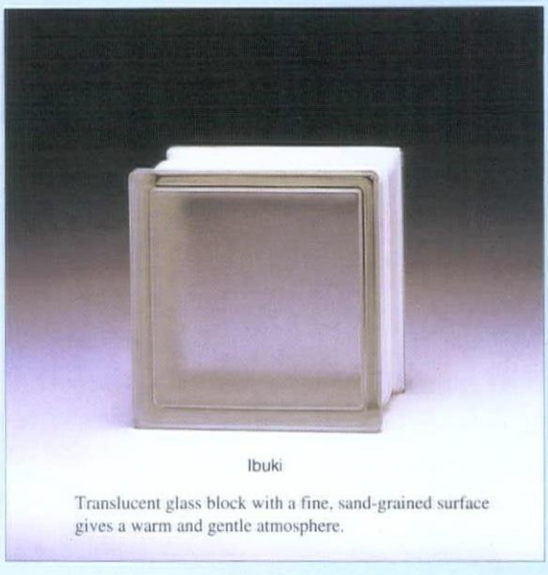


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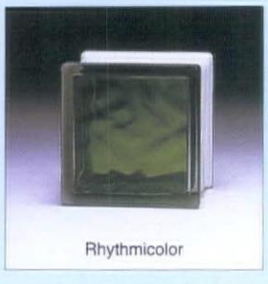
Opt

Triangle Light Directive

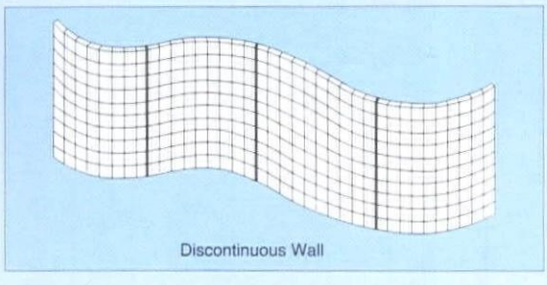


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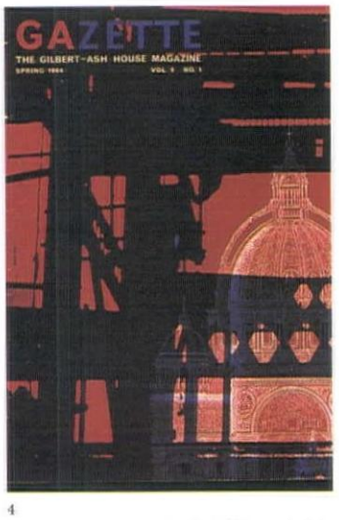
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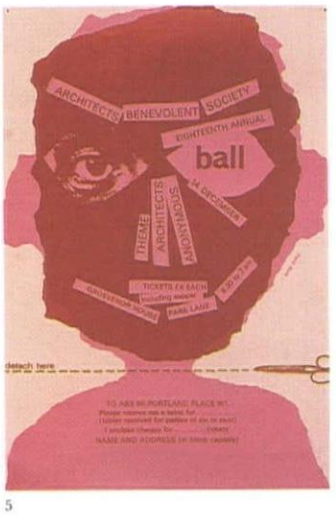
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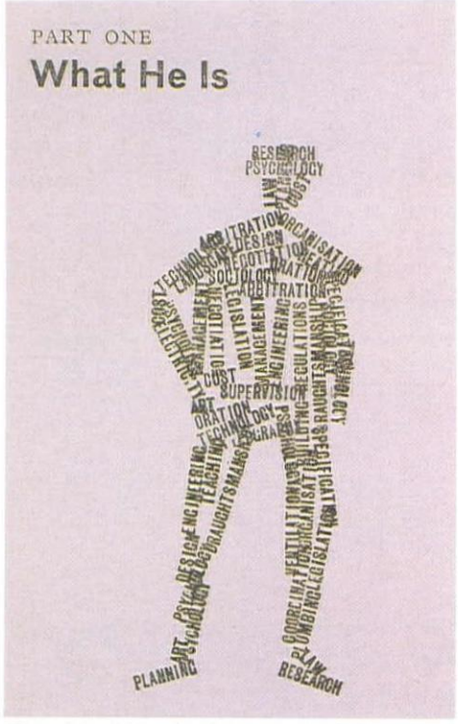


4



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Some of the slides used by David Rock to illustrate his inaugural address to the RIBA. 1 & 4 - Cover designs for the Gilbert-Ash house magazine 'GAzette', dating from the mid 1960s; 2 - Image for the 1984 National Festival of Architecture; 3 - Sketch of the impact of cars on the city; 5 - Invitation design for the Architects' Benevolent Society Ball.



The architect's identity crisis, as seen by Rock.

David Rock gave his inaugural address as president of the Royal Institute of British Architects last month. It was an unusual mix of idealism and pragmatism, and gives hope that the Institute, the oldest and most prestigious association of architects in the world, may be able to meet the new millennium with a renewed sense of commitment to architecture and some hope of expressing it practically. There was a marked contrast with the torpid reign of his predecessor, who seemed mainly concerned with balancing the books. Rock's two year period of office will focus the Institute's energies on 'four themes which the country, as well as the membership, rate as important current concerns'.

Rock's first key issue is the environment: urban design, sustainability, green issues and appropriate technology: 'We have got to get away from architectural object fixation, and get everyone excited about the public realm'. The RIBA, with Terry Farrell leading the initiative, is founding a new Urban Design Alliance between seven organisations. Though Rock did not say so, this could be a very important move at a time when the Royal Town Planning Institute is dominated by people who cannot see and have little concept of urban design.

Based on his own experiences in Ware in Hertfordshire, Rock believes that 'there should be an architect responsible for every town ... looking at the town in a holistic, aware way and making connections with town planning, urban design, funding, development and people's concerns'.

And he promised that the RIBA will campaign 'in favour of brownfield developments. There are many more brownfield sites and buildings available for development than anyone believes. We need to question all the figures'. He called for sampling of 200 sites round the country. 'RIBA members and their colleagues in the Urban Design Alliance could do this quickly. If Government will fund us, we will undertake to produce the figures.'

Rock's second key issue is a review of the processes of procurement of buildings which he

believes have become 'systematised without thought ... for costs'. He attacked competitions and the Private Finance Initiative: 'All this costs money. This is being paid out by the industry, and can only be recouped from other jobs /other clients and/or reducing income to tiny levels'.

'Architects (and to a much smaller extent, other team members) have effectively been funding development in this country. The Americans found out before we did that it doesn't work, and invented the Brooks Method to deal with it.'

Rock wants the RIBA to challenge official policies by re-examining selection processes and questioning the value for money they provide, to investigate the disappearance of the knowledgeable client with the disbanding of public authorities' professional teams. And, controversially, to counter the move towards subsidiarity by questioning whether it is sensible that for instance 'Every headmaster is now a client, and school governors, who have to do the work in their free time, have to commission buildings'.

Rock's third key area of activity is 'culture' – 'linking with other creative skills to provide a holistic approach to design ... We must see the RIBA as an academy of design, which must provide design in the wider sense'. Rock himself is an accomplished draughtsman and graphic artist but he called for architects to regard music and literature, dance, drama, film as well as sculpture and painting as part of their 'mindset'. Such a widening of cultural interest and involvement could not only be good for the art but for practice as well, for 'if we are seen to have wider interests, we will attract and be brought into a greater range of thinking and clients'. The new British government, he pointed out, 'espouses design [and] is funding the Design Council for fashion, product and interior design. Yet architecture is the mother of the arts and we *must* be seen to be part of that. By making architects more aware of their cultural surroundings and broadening our cultural networks we will make architecture better'.

Rock's fourth theme is looking outwards, 'to the work and partnership opportunities of a global community, and learning from other countries' professional experience'. Even under the largely rudderless presidency of Rock's predecessor Owen Luder '20 or so solid proposals' were made and Rock was content to try to expedite these.

'We have', Rock urged,'to meet the challenges and opportunities for the future "head up". We shall be stronger, and better able to do this, by joining hands with others.' He welcomed government Culture Secretary Chris Smith's commitment to improving the standard of public buildings, and drawing on the best advice for generating them and, in Smith's words, getting 'back to the ethos of previous generations when public buildings were a source of pride and exemplars for others to follow. The evidence is that good architecture is alive and well'. 'We must', said Rock 'believe that, and be passionate in the belief.'

There is hope that he may be able to inject some passion into the institute. At least his predecessor (more or less) sorted out the finances which have caused endless unconstructive strife. The profession is more generally prosperous than it has been for a decade (in times of poverty, it tends to turn the institute into a very short-sighted trade union). And the New Labour Government clearly wants to use design to make Britain a better place to live in – though it does not yet have a sure touch, as demonstrated by the recent Anglo-French summit held in a banal American-designed tower in Canary Wharf, London's drear answer to La Defense.

Rock has his moment. He should seize it. P. D.

All change in France

Architects are not household names in France, according to a recent survey in which 996 people were asked (among other things) to name three architects. Le Corbusier was the most frequently cited (18 per cent); Ricardo Bofill came a poor second (4 per cent), followed by I.M. Pei (3 per cent) and Jean Nouvel (2 per cent). Michelangelo, Jules-Hardouin Mansart and Christian de

MIDDLE EAST: CALL FOR SUBMISSIONS

In March next year, The Architectural Review is initiating a major conference on 'Sustainable Architecture for the Middle East'. The conference will examine the kinds of architecture that are economically, culturally and climatically relevant to the Middle East and explore appropriate and sustainable models of development. To coincide with this important event, a special issue of the AR will be devoted to the best recent work in the region. To reflect the diversity of projects currently being undertaken in the Middle East, architects, readers and suppliers are invited to submit examples of work for possible inclusion in the issue.

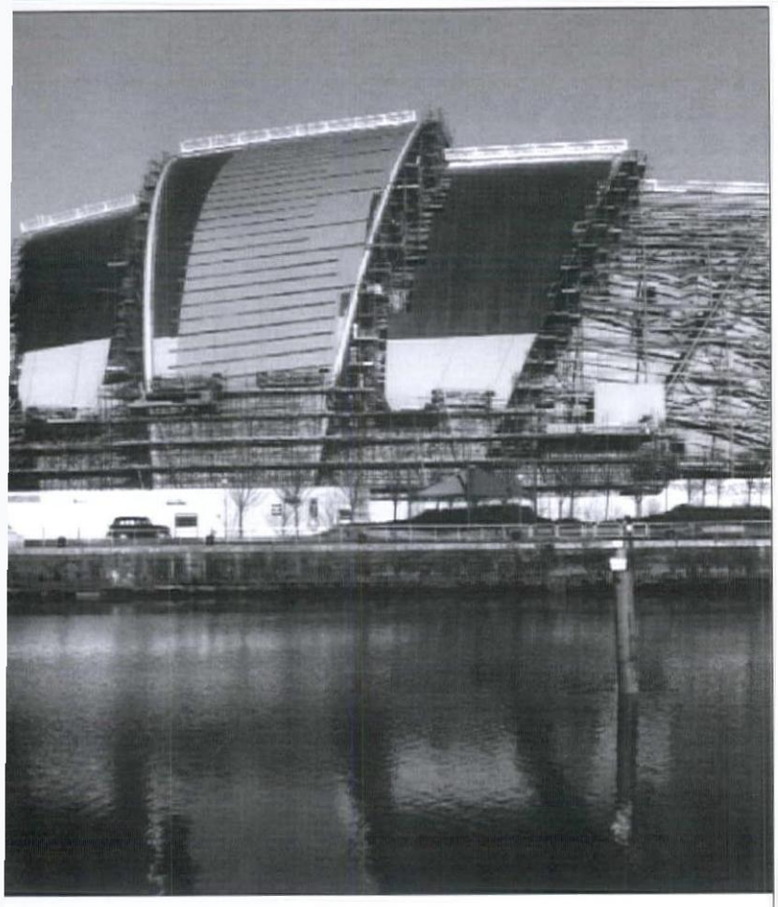
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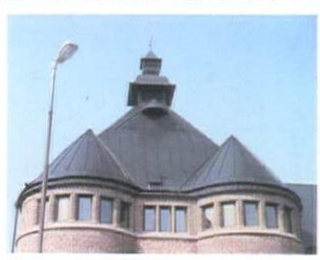
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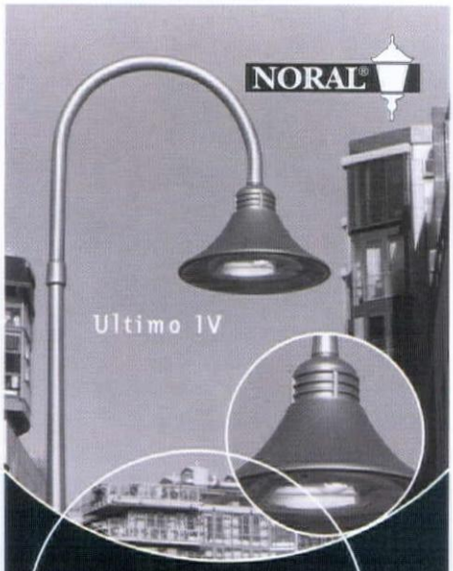


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Portzamparc fielded 1 per cent each, but 70 per cent of those questioned were incapable of naming even one architect, living or dead.

Undertaken for *Le Monde*, the findings of this survey of public attitudes to architecture* were published to herald 'Les Rendez-vous de l'architecture' – a two-day symposium organised by the Culture Ministry which took place on 2 and 3 October at the Grande Halle de La Villette in Paris. In her opening address, Catherine Trautmann made her first major policy statement on architecture since assuming office as Minister of Culture last June. No doubt prompted by the results of *Le Monde*'s survey, she kicked off by outlining the ways the Culture Ministry intends to increase public awareness and appreciation of architecture, starting with school children. The inclusion of architecture in the school syllabus is currently being planned (in conjunction with the education ministry, regional Councils for Architecture, Urbanism and the Environment [CAUE] and architectural students), and the preparation of a range of teaching aids, in the form of manuals, books and CD-ROMs aimed at different age groups, is envisaged.

The Culture Ministry will also encourage international and national exchanges between centres and galleries in the regions where architectural exhibitions and events are held; funds have been earmarked for a new series of books, audio-visual and multi-media material on contemporary architecture and urban design (in conjunction with the Centre National du Livre); and an annual national festival of architecture and the city is planned.

Last but by no means least, the minister announced plans to transform part of Carlu, Boileau & Azéma's Palais de Chaillot (built for the 1937 Paris exhibition) into a national centre for architecture past and present. The new centre will encompass a museum of architecture (to be constituted by expanding the scope of the present museum of French monuments), a multi-media library or médiathèque, a new institute of urban design, the existing post-graduate school specialising in the conservation of historic monuments, and the Institut Français d'Architecture (which is to be transferred to Chaillot and given a new remit). The task of preparing a feasibility study, showing how the new centre could be organised for the benefit of the general public, researchers, professionals and students, has been given to Jean-Louis Cohen (who organised the mammoth Années 1930 exhibition at the Palais de Chaillot earlier this year).

But if recession-stricken architects were hoping for a programme of prestigious new public sector building projects, they were disappointed. The minister urged the profession to move with the times, to respond to new areas of demand and to conquer new markets. The French construction industry's fastest growing area is rehabilitation and improvement, yet over 80 per cent of such work is currently undertaken without any intervention from architects. The government has decided to rehabilitate a million dwellings over the next few years as part of its campaign against homelessness, and the minister is counting on architects to ensure work of real quality is achieved, not 'misery wrapped up in architectural gimmickry'. In future, she said, the vast majority of construction projects in France will entail working with existing buildings – a shift which must be reflected in the training available to architects through continuing professional development (CPD) and to students in full-time architectural education.

Private house building is another area where, she suggested, architects might become more closely involved. At present, structures of less than 170 sq m are exempt from legislation stipulating that architects must be employed for new construction projects. The relevant legislation is to be reviewed, she said, and the 170 sq m exemption clause will be reconsidered. The third major area where the minister urged the profession to become more active is the exportation of French architectural expertise. This sector currently accounts for only 2 per cent of the GNP, and a new organisation – France-Architecture-Export – has been set up to promote its expansion.

Other measures announced by the minister included a review of the role and organisation of the Ordre des Architectes (approximately equivalent to the British ARB), the reform of architectural education (notably by altering the course structure to correspond with graduate and post-graduate courses in other disciplines) and modifications to the rules and running of architectural competitions. Fewer will be held for public sector projects. CHARLOTTE ELLIS

* 'Les Rendez-vous de l'Architecture' special supplement, *Le Monde*, September 1997.

LETTERS

Last word on the first house

SIR: I found it curious that your review of my book *The First House: Myth, Paradigm, and the Task of Architecture* (AR October) was so unwilling to engage the ideas I presented. The review appeared to be more the result of my being caught in the crossfire of a dispute which involves me only through what is a case of mistaken allegiances. There are enough serious ideas in this book for any reviewer to construct a substantial critical position or from which to initiate a topic more to the reviewer's liking. But a review that closes debate by a form of intellectual slur fails to take the role of critic seriously and must be taken as evidence that the reviewer has nothing to say. The published piece was sadly not very interesting nor were its dismissals cleverly argued.



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The risk I took was to make an hypothesis about the continuing role of architecture in the larger world of ideas rather than resorting to irony. While irony rarely forces a point of view and therefore is always above attack, hypotheses, by their very definition, must be vulnerable to challenge. What an opportunity you missed to take on this challenge. Perhaps to compensate for this, I could put on the critical black hat and raise some of the questions that could have been addressed by a more adventuresome critic. A criticism might be constructed as follows: Dripps argues for the central role of the human being as the normative reference by which architecture as well as a larger world is measured and eventually made. But how can this centered subject stand up to the impersonal pressures exerted by an instrumental technology that is rapidly replacing authentic experience with increasingly effective virtual experiences? Shouldn't this same technology offer the means by which people could extend their limited sensual perception in order to continue to make a secure place in the world? And if we think this possible, then the idea of centering itself would seem questionable. In other words it is naive for this author to think that a stable place is even possible in a world destabilised by air travel, television, the Internet and wireless communication. Why not address this emerging condition more on its own terms? This would seem more consistent with the bulk of Vitruvius's book which described the then current state of technology.

As part of the overly extensive notes attempting to link ideas (philosophy, music and literary criticism, etc) to the thesis of the book, Dripps cites Giambattista Vico's myth of the development of human institutions as a later example of Vitruvius's story of the origins of architecture. Beginning with a primitive life not much removed from the other animals in the forest, Vico shows a progression to the clearing, the formation of institutions, the academy and from this point (here we must wonder whether Vico held as lowly a view of the academy as we!) to the inevitable decline as individual self interest becomes a paramount virtue and its defence leads to civil war, destruction of the city and its consumption by the forest which returns to become once again the lair of men. Dripps seems to think that in the late twentieth century we are capable of proceeding with the confidence that both Vitruvius and Vico describe as pertaining to the foundation of the institutions of the public realm when it should be apparent that we have advanced in Vico's cycle to the point where public consensus is neither possible nor even desirable and that our own individual justifications for our actions have become the most reliable guide. But why should we automatically assume this liberation to be a state of decay?

Dripps seems unaware of recent trends in architecture which deliberately avoid figural closure and which dismantle the figure to produce non figural fragments. This production of fragments might be viewed as providing a new ground or 'forest' to replace the literal one whose loss Dripps laments. Perhaps in the future this new ground will become the basis from which a new myth of origins can be generated and which will become the foil for the new clearing and place of public discourse.

There is much more that could be raised by a responsible review. I would only hope that readers might have some curiosity about what could have launched such an angry review and discover for themselves the potential and the problems in this book.

Yours etc

R. D. DRIPPS

Virginia, USA

People person

SIR: The issues raised by the letter from J. A. Voelcker about the absence of people in architectural photographs is important, and is only partially answered by the editor's comments about technical constraints. For the lay public, the visual representation of architecture principally takes two forms: 'artists' impressions' during consultation processes (in which the sun permanently shines down on pretty mannequins carefully arranged in the new development), or expensive photographic essays which concentrate on sightlines, surfaces and unusual configurations of form – with no-one to be seen. Both are rightly regarded with a degree of public cynicism, confirming the suspicion that architects regard people as either puppets or aesthetically intrusive.

It is not surprising that many prefer the photography of the lifestyle magazines and colour supplements where architecture and design are treated as background settings for real people. I was reminded of these problems by the recent media coverage of the closing of the British Library Reading Room. Those photographs or TV film showing Panizzi's great domed room without its readers made it seem ghostly and sepulchral, whereas images of the library with readers browsing, nodding off at their desks or gossiping in the aisles, revealed it to be the enchanted – and deeply human – space it actually was.

Architectural photography which leaves out people is likely to remain an alienated form, only able to attract a professional, technically literate audience. Surely there is room for other genres of photography and forms of representation which reassert the principle that architecture is the pre-eminent way in which we make a home for ourselves in the world. Can we have a more considered, less technocratic, debate about this?

Yours etc

KEN WORPOLE

London, UK

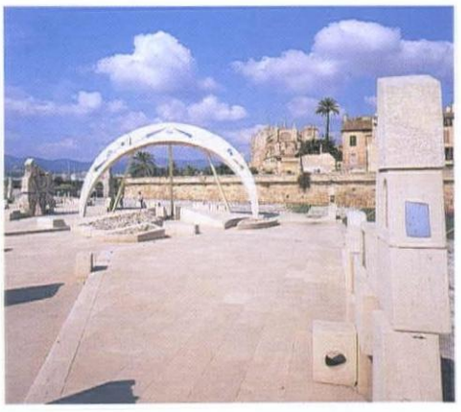
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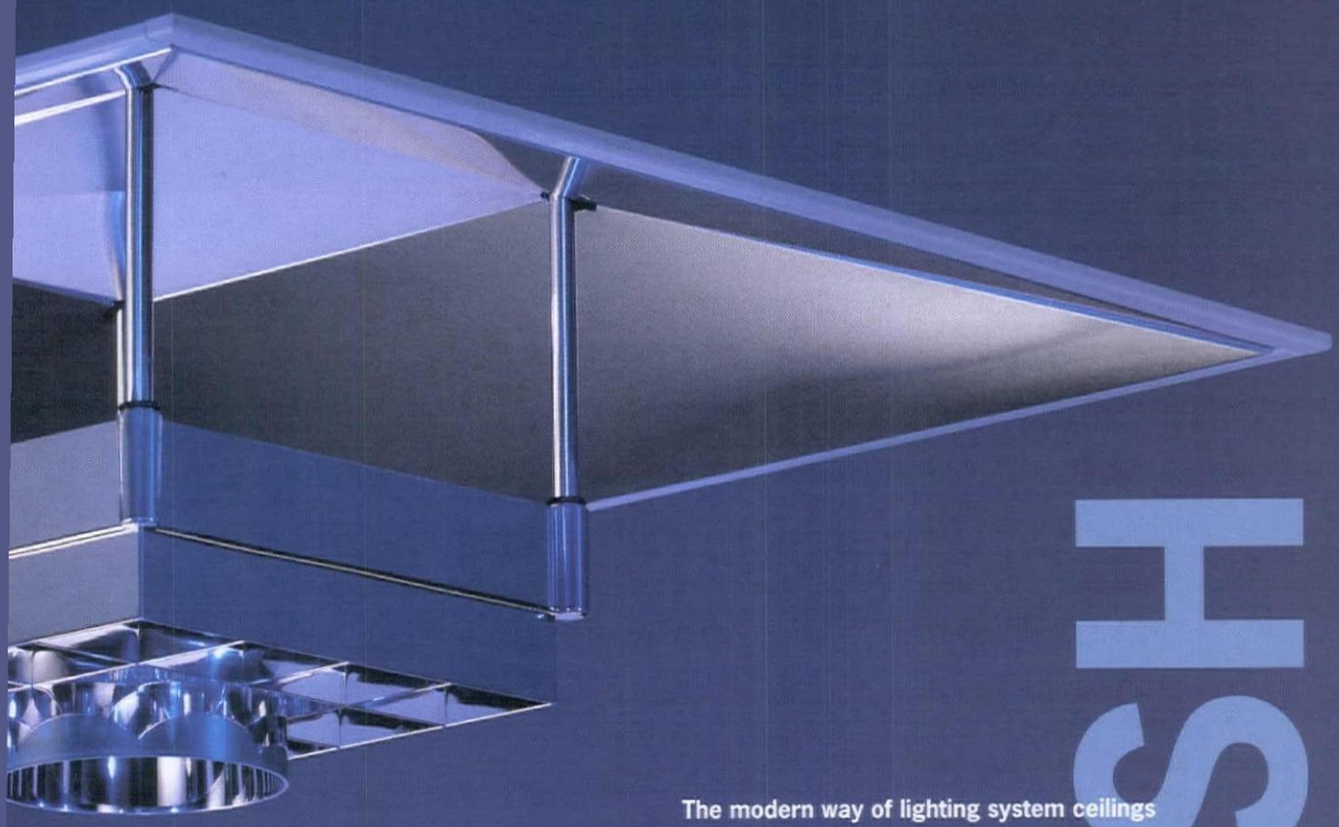
The need to create places in which urban life can be conducted in a civilised and humane manner remains one of the most difficult problems facing architects and urbanists. Contemporary transport systems, new functions and new forms of communication all contrive to prevent us merely copying the past. Yet there is still an urgent need to integrate these factors with the lessons of our ancestors, to generate a new vision of what constitutes a rewarding and successful modern public realm.

To this end we analyse a number of key schemes from around the world in our January issue. Berlin is in the throes of an energetic rebuilding of the former no-man's land between east and west. Renzo Piano's Potsdamer Platz redevelopment forms a key part of this initiative and is examined in detail. In the Portuguese city of Belem, Gregotti Associates' new cultural centre combines materiality and monumentality in a major public building. In Palma, Majorca, a scheme for urban improvements and parks by Pere Nicolau Bover suggests new and inventive ways of treating public space. And in Bilbao, Santiago Calatrava's graceful pedestrian bridge across the River Nervión adds to the life of the city.

Plus a major section of the magazine will be devoted to the results of the Prague Castle competition, an important international competition to find ways of integrating a number of new uses within a delicate historic fabric.

The AR will also look slightly different as we implement a crisp new design, with the aim of gently and tactfully modernising our pages. Start the new year on a fresh footing by obtaining this issue and 11 others by filling in the enclosed subscription form.





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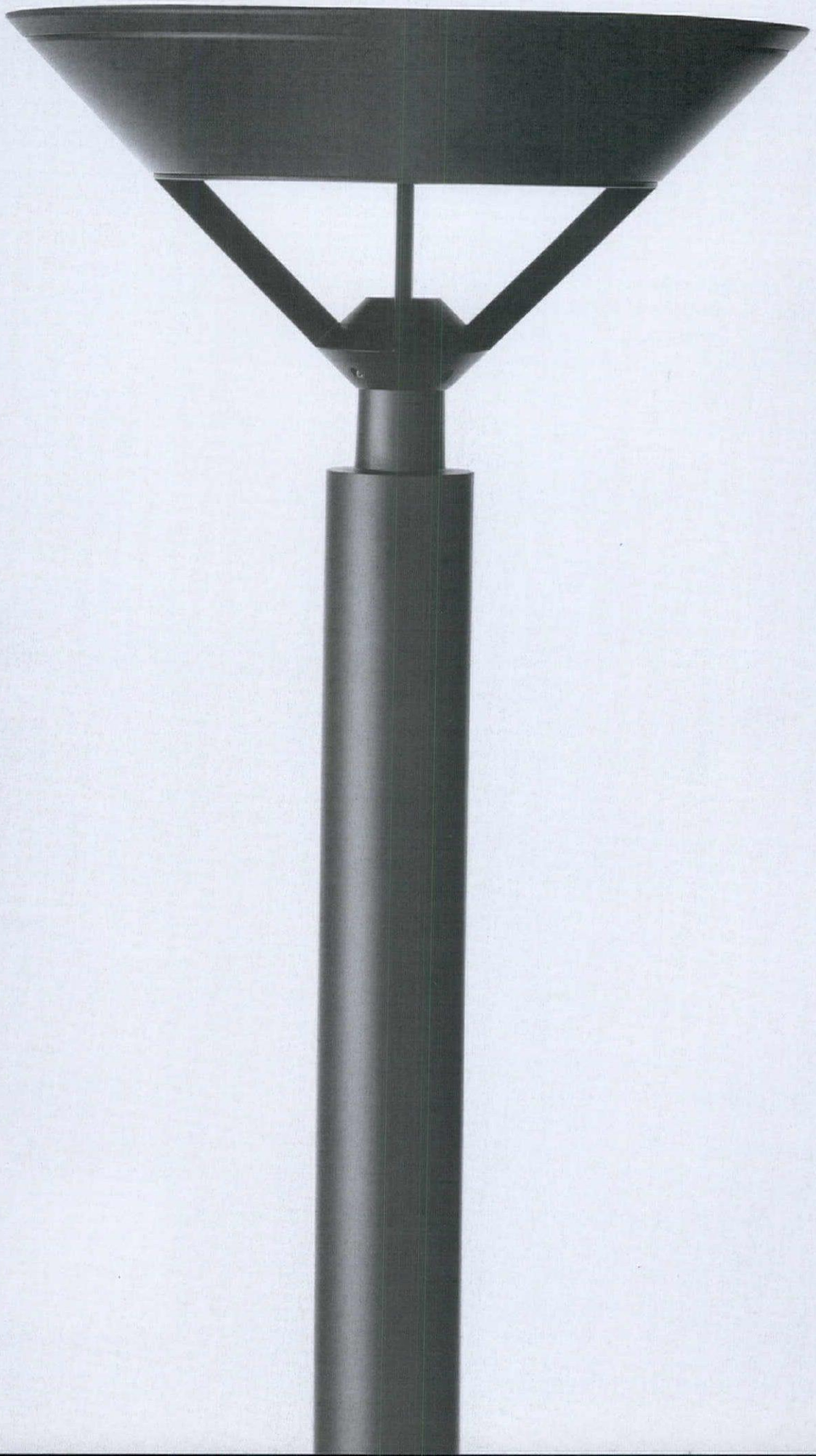
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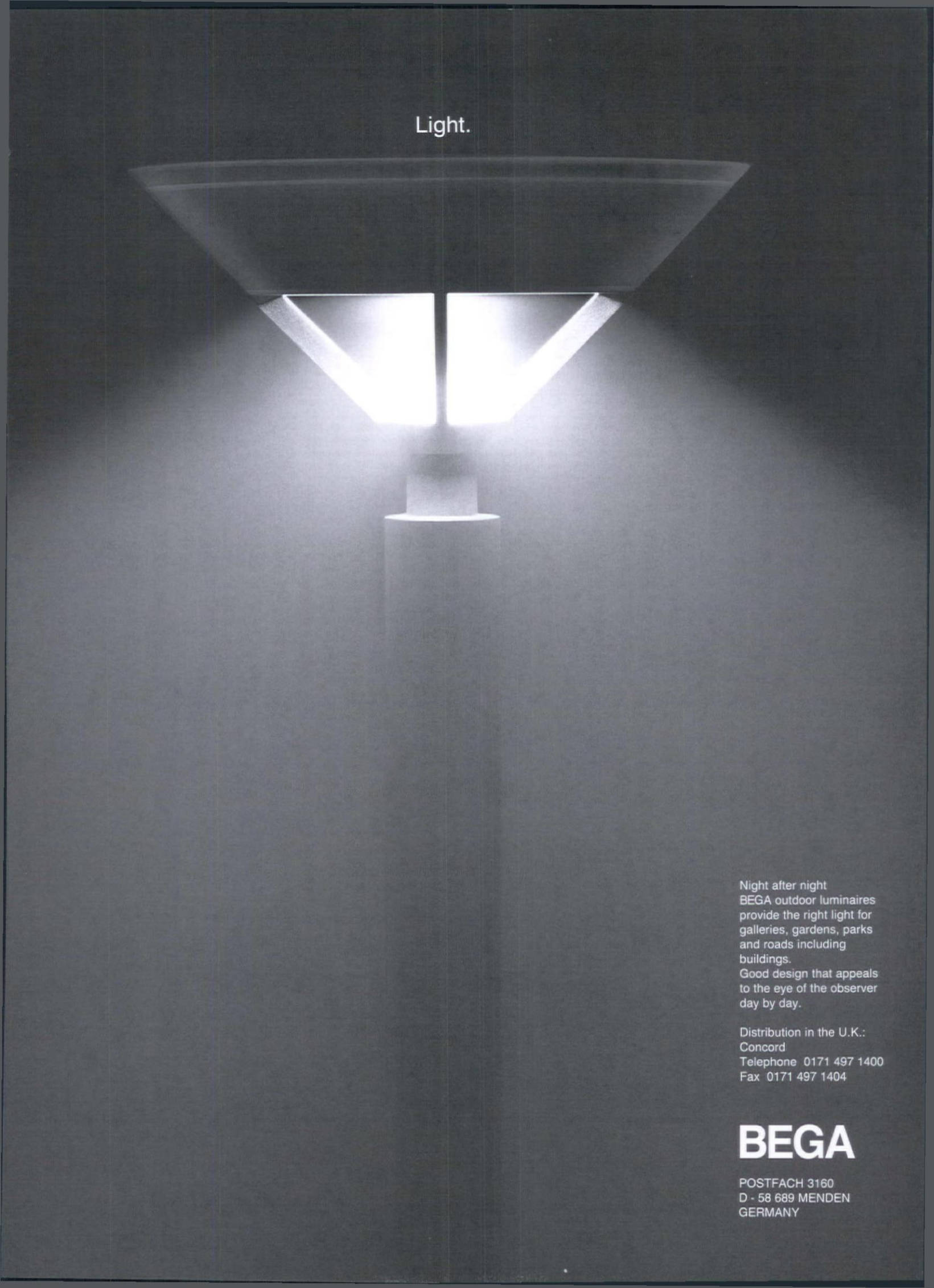
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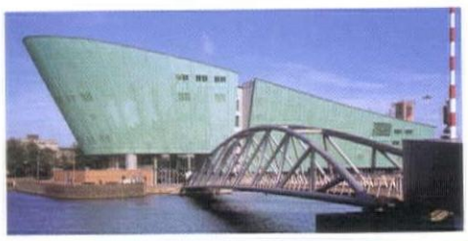
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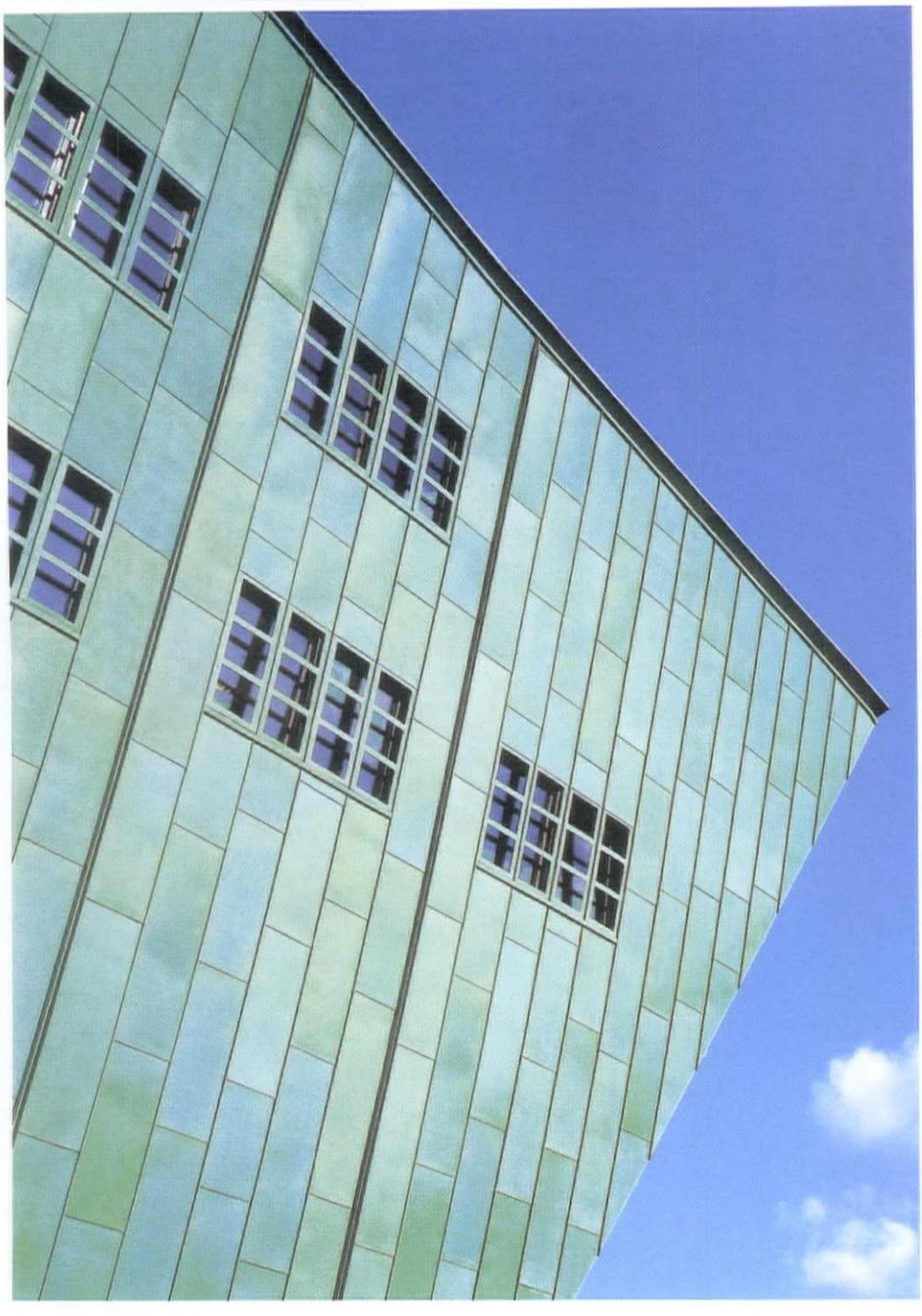
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The London Spanish School is in a Victorian convent, which was purchased and converted 20 years ago by the Vicente Cañada Blanch Foundation to offer full-time bilingual education to children between six and 18. Though there is a big triangular open space behind the dour brick building, the school had no covered sports area, and nowhere for classroom breaks in wet weather. A covered space big enough for five-a-side football was wanted by the client, and the planners required a structure which would relate to the scale and quality of the Portobello Road conservation area.

Dols Wong responded with an elegant wide canopy. It picks up something of the scale of the nineteenth-century terraces and their brick-walled 16 foot wide gardens that define two sides of the playground. The architects and engineers were anxious to make the 17m span as light and slender as possible, but they thought that an all-metal structure might seem harsh against the institutional sub-utilitarian convent building. So they chose to link their slender cylindrical

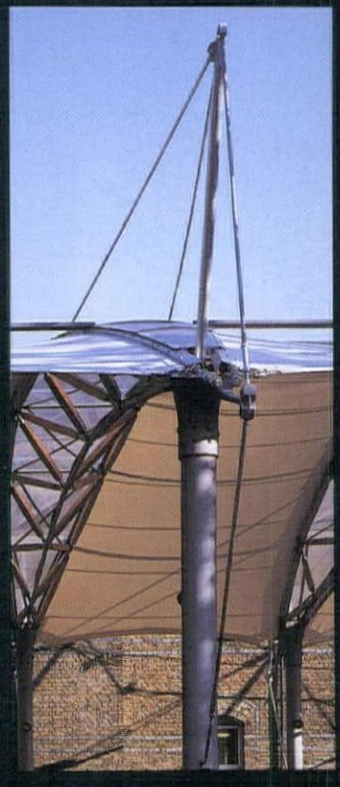


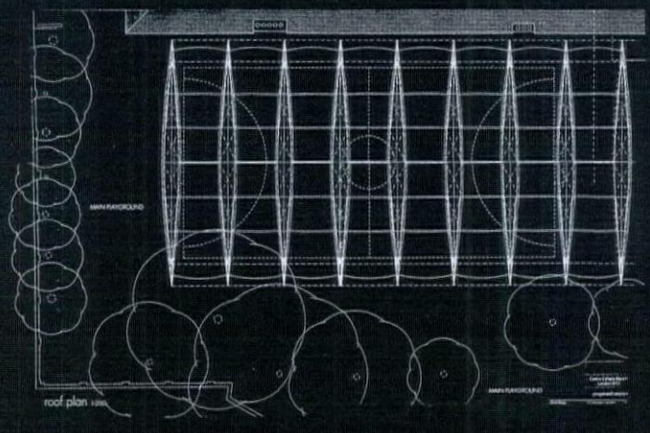
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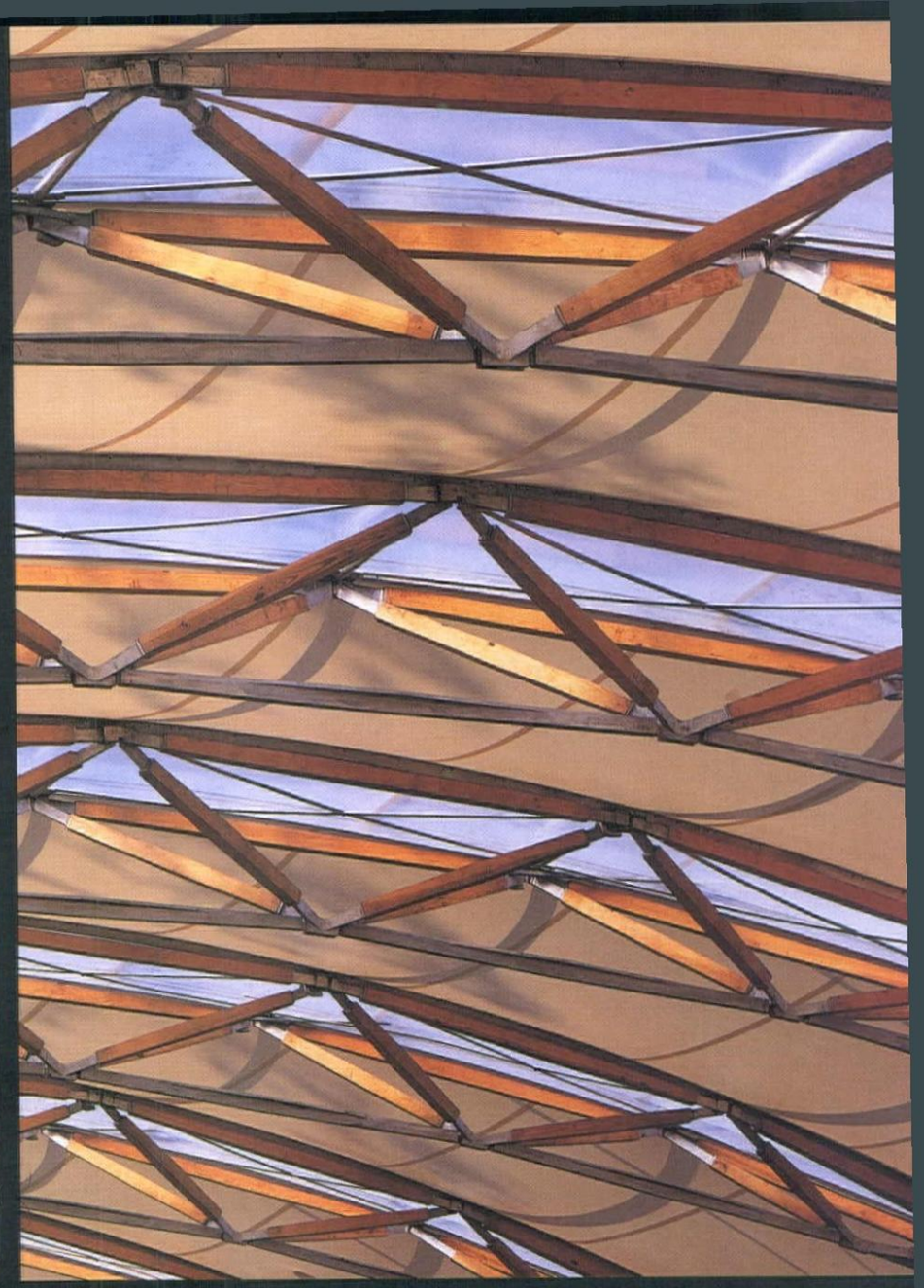
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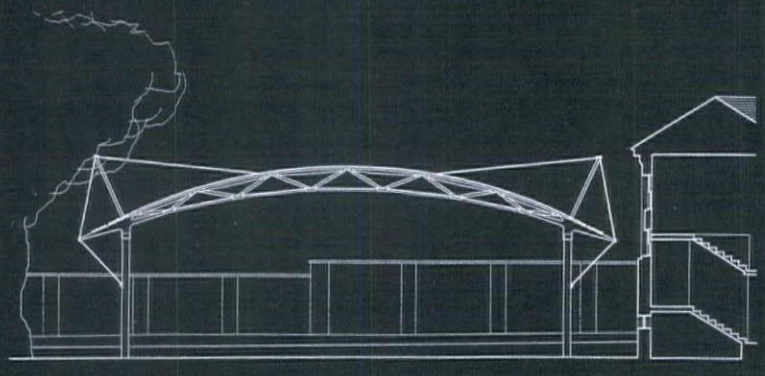


roof plan (scale approx 1:650)





4



cross section

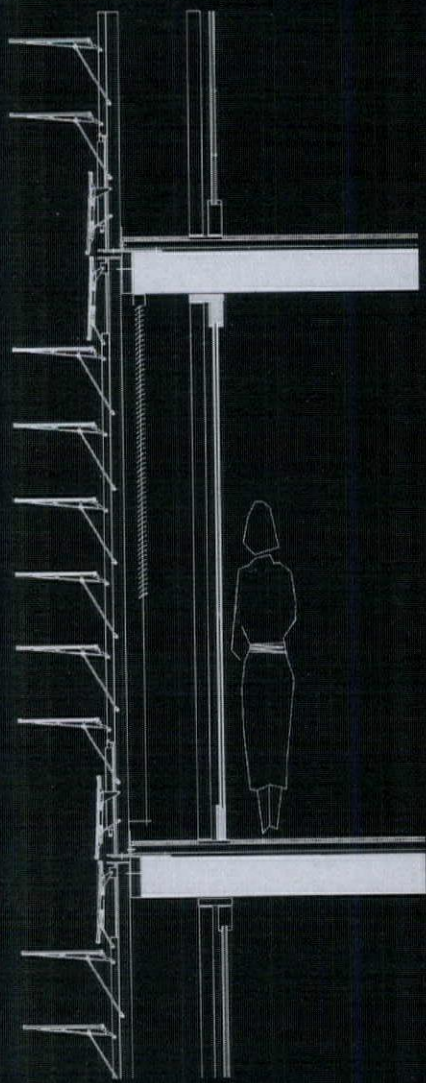
1
The strangely heraldic cast steel column heads which allow post tensioning of whole structure.
2
Column head and canopy detail, showing waterproofing junction between polycarbonate and fabric.
3
Canopy offers covered space for classroom breaks during inclement weather – and for five-a-side football.
4
Wood and aluminium members were used in trusses to lighten and de-mechanise atmosphere: translucent fabric and polycarbonate sheets allow abundant light

steel columns with triangulated timber and aluminium trusses covered by transparent polycarbonate and linked by translucent fabric, creating a gently curving rhythmic shield which transmits a great deal of light and through which you can see trees and sky.

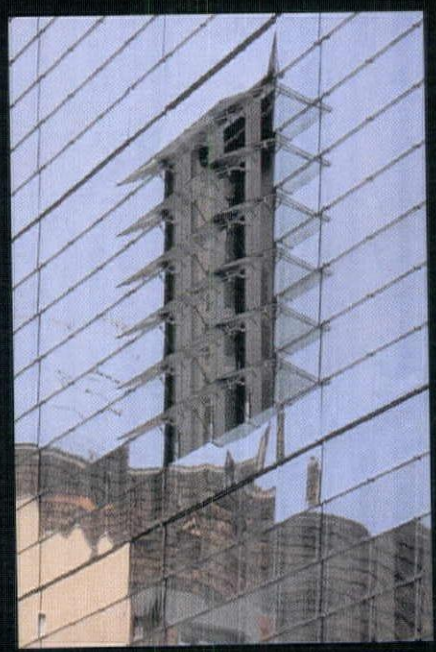
American southern pine was chosen for the slender truss members. They are joined by specially cast aluminium nodes fixed to the wood with pins and glued. Bottom booms are of aluminium pieces, of approximately the same section as the timber ones. Trusses bear onto the 4.8m spaced columns through cast steel heads each of which, like a strange piece of late medieval armour, carries a long spike and elegant tail. In fact, these elements are far from whole structure to be post-tensioned through the rods which add filigree to the two long sides.

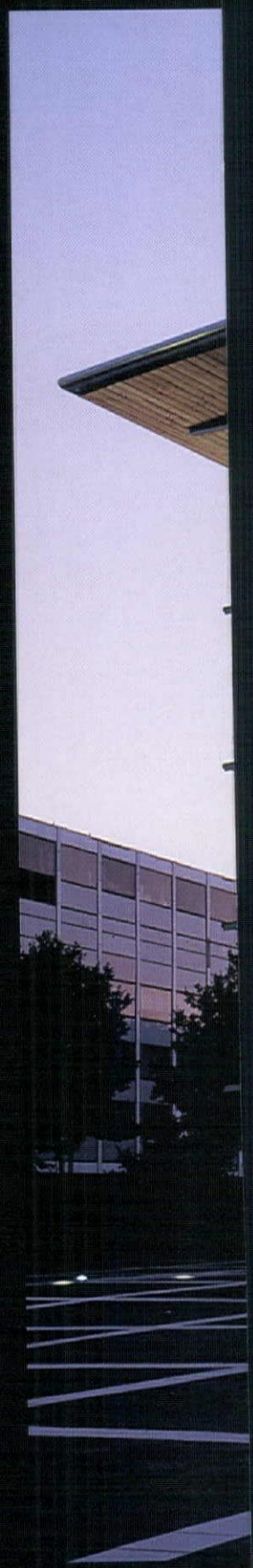
The design shows a most sensitive understanding of materials and place-making. And of organisation too, for the column heads were cast in Sheffield, the aluminium nodes in Huddersfield, both in the north of England. The pine pieces were shaped and joined to the aluminium in France, and the trusses were assembled in industrial Dagenham (east London) before being transported right across the city and craned into position on the very congested site. P.D.

Architects
Dols Wong: Juan Miguel Dols Perelló
Structural engineer
Barton Engineers: Bob Barton









project: Haus am Mir in Gelsenkirchen

facade: php glastec Systeme architect: Hansen + Petersen



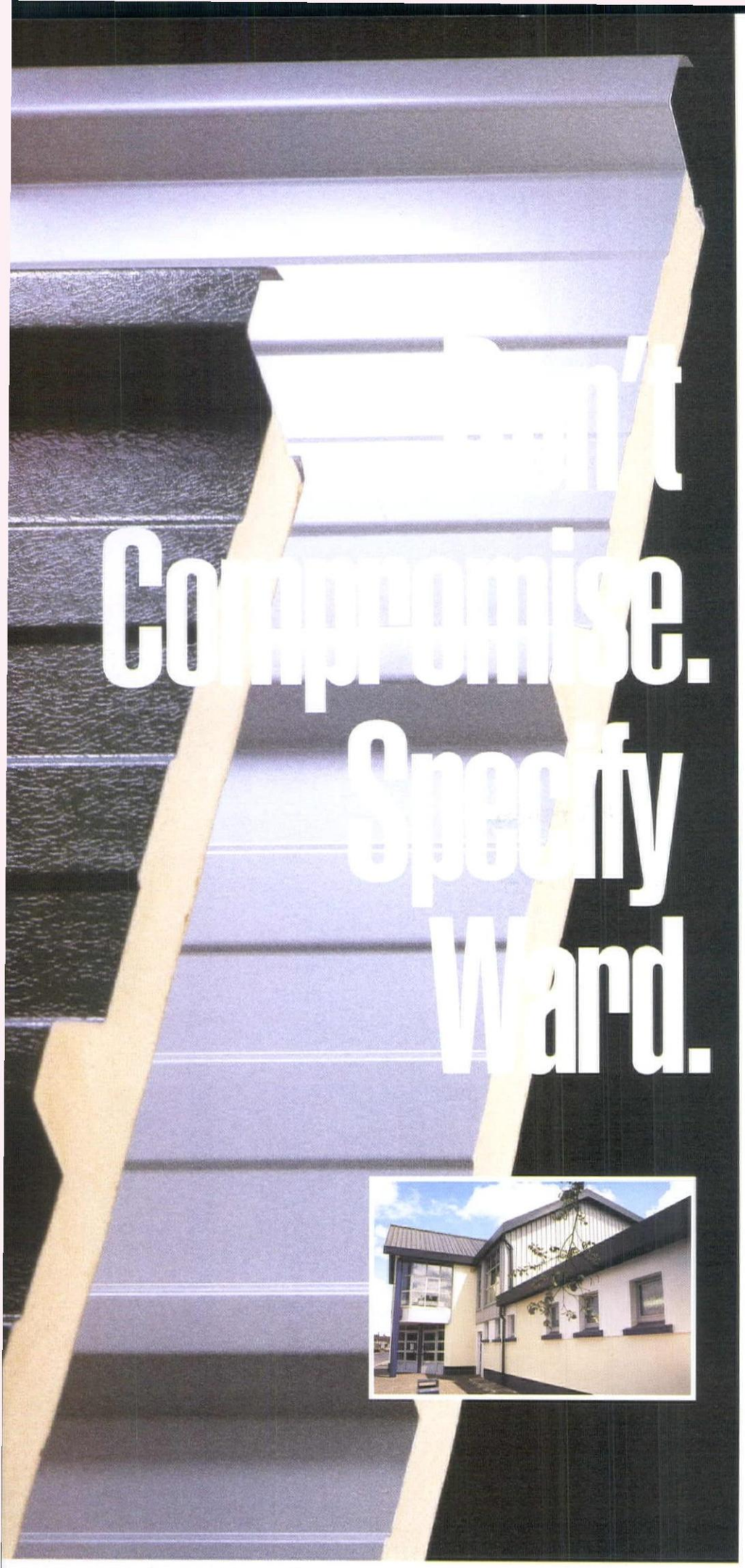
php glastec Systeme

Gesellschaft mbH

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e-mail: php.glastec@t-online.de

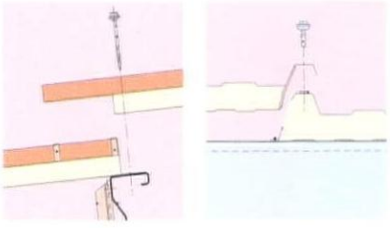
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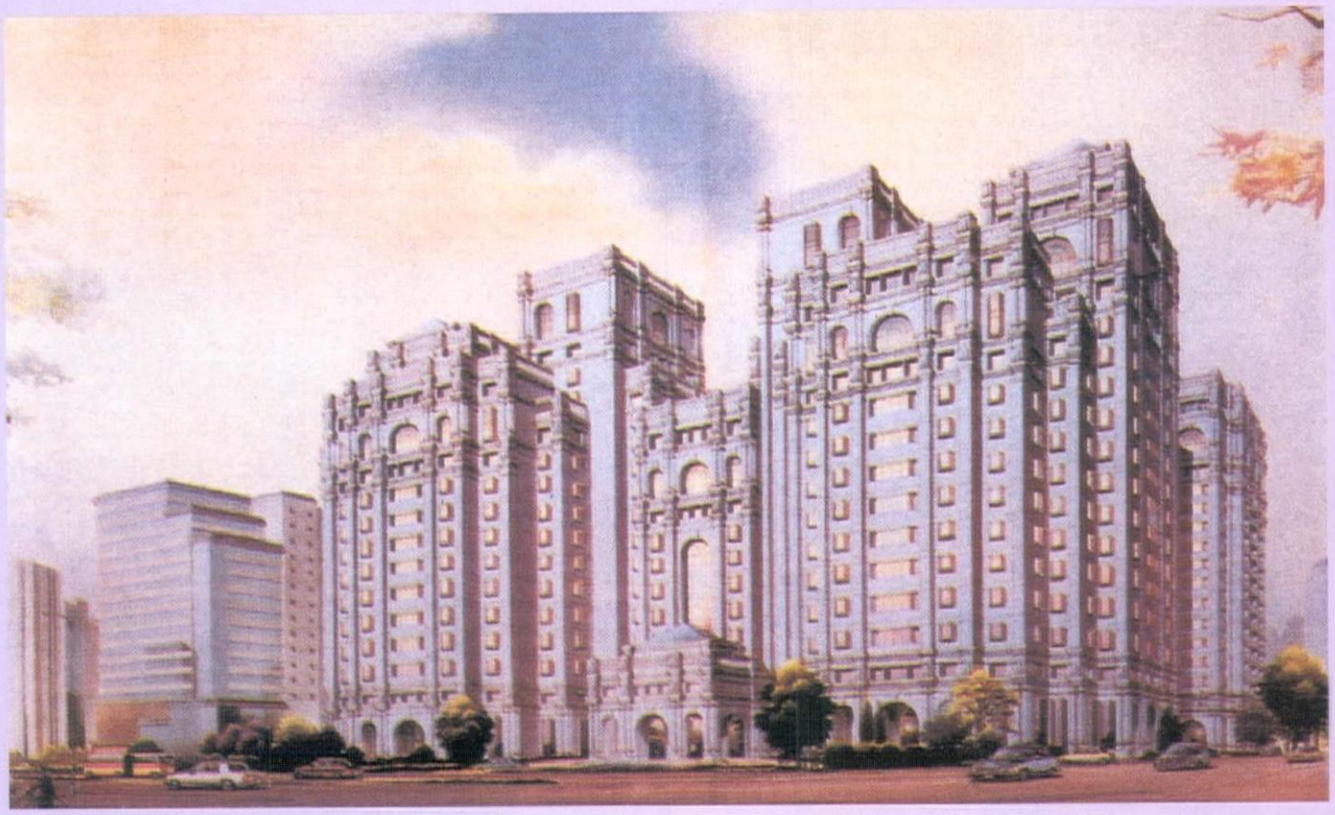
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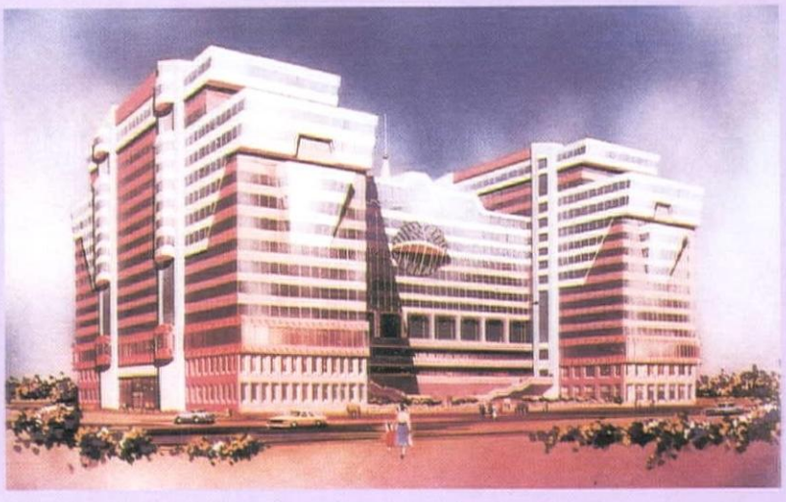
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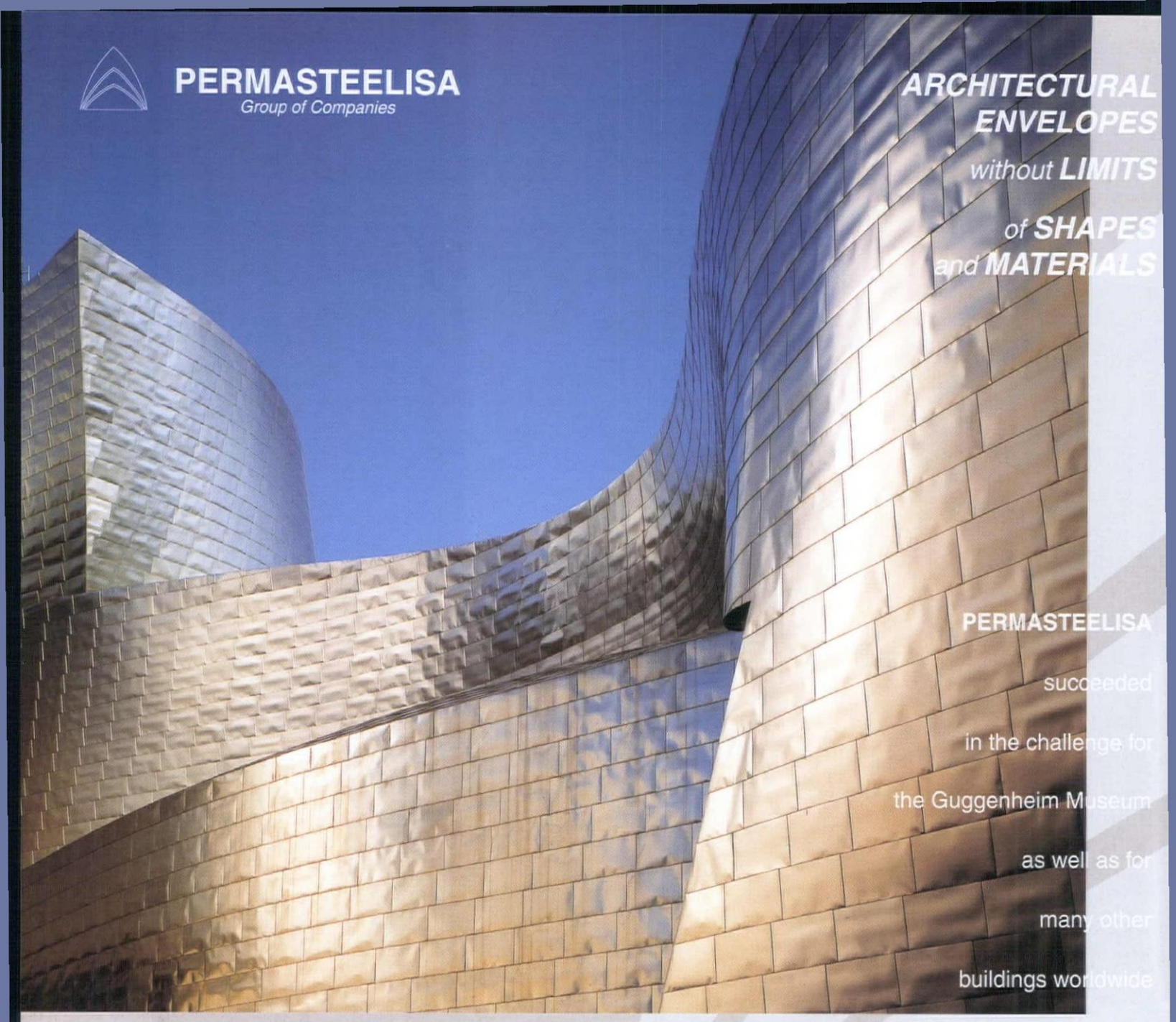


No-one expects that Beijing will not be altered by China's new wealth and importance. But do the new buildings have to be so aggressive and scaleless?

This is the shape of architecture to come in downtown Beijing. Clearly, there has to be a lot of building to transform what has been a city of houses and flats surrounding the imperial centre into a business and administrative focus for the whole Chinese world. But in trying to make a new future for its capital, why does a nation so devoted to its own impressive culture choose second-rate models from abroad and make interpretations of them that are much worse than the originals?

The perspectives are taken from *World Architecture*, published by the Tsinghua University and Beijing Research Institute of Architectural Design, and one of the few ways of keeping in touch with Chinese architecture. The article by Wei Dazhong is about co-operation between local and foreign architects, and though Wei suggests that such buildings 'make the urban scenery rich', he does say that they 'leave some questions'. Indeed they do: not even Michael Graves can have nightmares as bad as the transformation of his Portland building into the even more meaninglessly monumental left-hand one above (unfortunately Wei does not mention who did). Nor, for all his problems with human scale, can poor Terry Farrell have possibly imagined that his stylistic tricks and general celebration of hugeness could have inspired anything quite as gross as the pink offering, right above (by Chung Wah Nan of Hong Kong and a Beijing design bureau).

But one group of original artists must be really happy: Stalin and his architects Iofan, Dushkin and Rudnev, who built the monstrous overblown precast classicism of the Soviet empire, would greatly admire the Taiwanese and local consortium which generated the chilling monstrosity shown top. It promises, after all, to be bigger, more daunting and triumphalist than almost anything they ever managed to build. They must be looking down (or rather up) with much approval. P. D.



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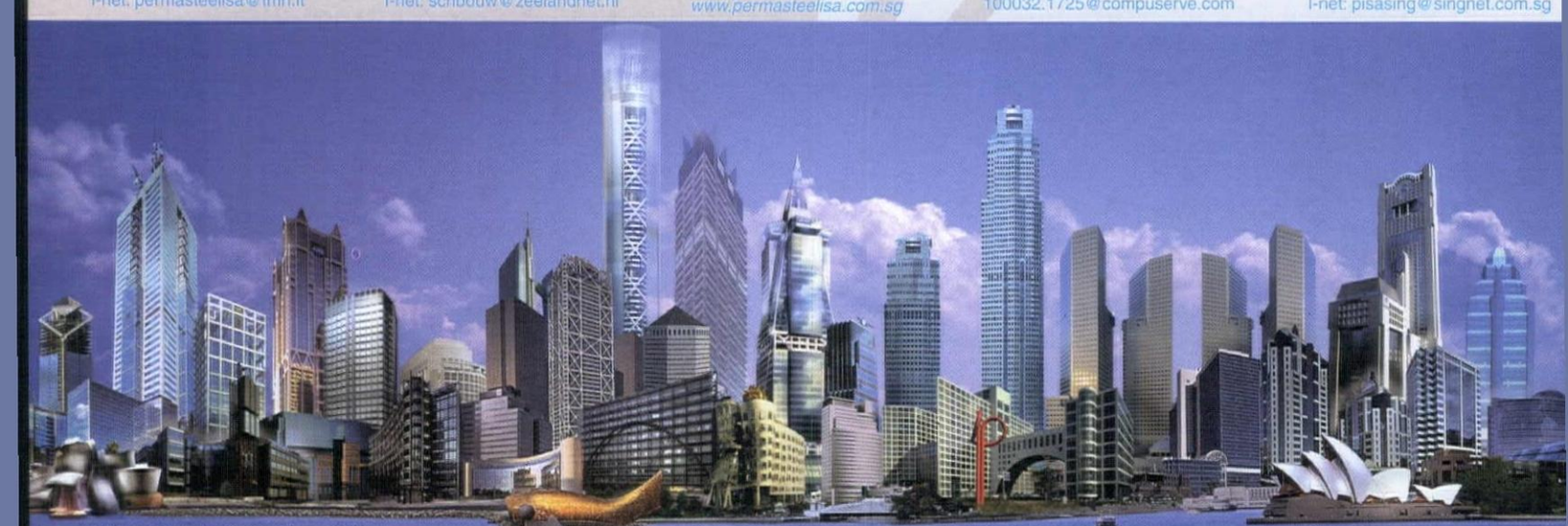
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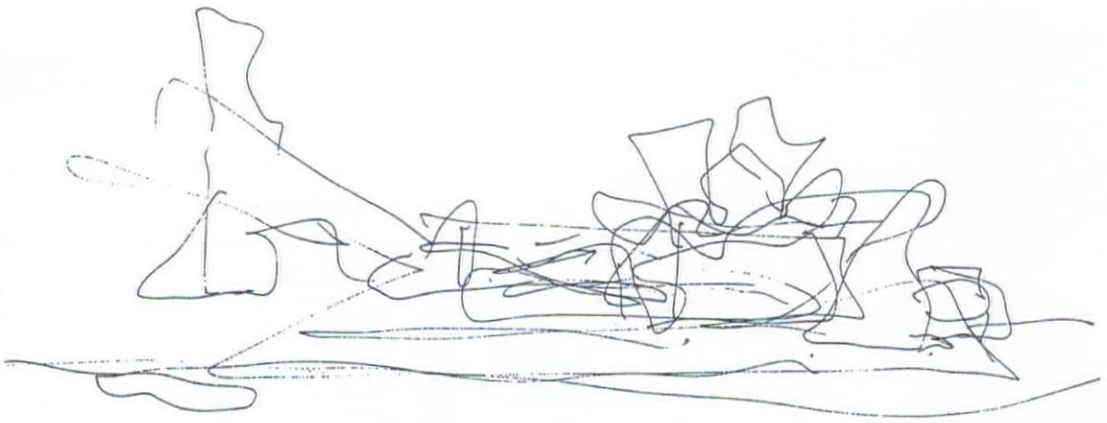
museums

Museums are the theme of this issue, beginning with an extensive analysis of the new Guggenheim Museum in Bilbao (p30), Frank Gehry's spectacular building on the edge of the River Nervión. In Amsterdam, Renzo Piano makes a bold contribution to the urban scene with a new Museum of Science and Technology (p54), which contrasts with his modest yet exquisitely detailed pavilion to house a private art collection in Basle (here and p59). And in Bregenz, Peter Zumthor's new gallery is a triumph of intellect and imagination (p46).



Art gallery, Bilbao, Spain
Architect
Frank O. Gehry & Associates

1
The spectacular titanium-clad volumes languidly scroll along the edge of the River Nervión.
2
The new Guggenheim marks a maturing in scale and execution of Gehry's organically inspired, proto-Cubist form making.

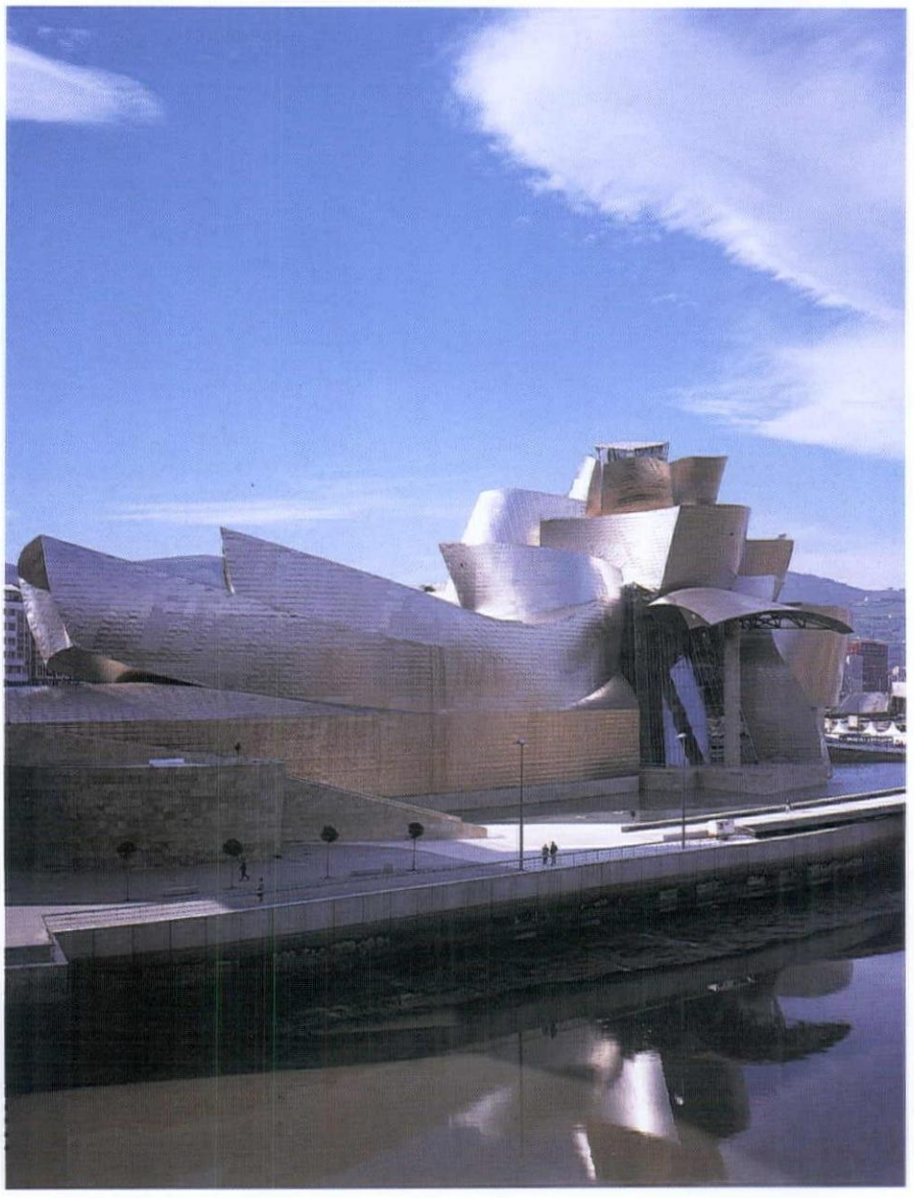


ATLANTIC STAR

Set on the edge of Bilbao's River Nervión, the new Guggenheim Museum is a fantasia of complex, swirling forms and sensuous materiality that responds to an ambitious programme and an industrial urban context.

Set amid rolling green hills, Bilbao cuts a scabrous dash on Spain's northern Atlantic coastline. The muscular vigour of its architecture reflects the city's success as a nineteenth-century industrialised maritime centre, but in recent years it has been struggling to overcome the narcotic effects of defunct heavy industry and perilous regional politics. Light-years from Fifth Avenue, it seemed an implausible location for the newest and most glamorous satellite of New York's Solomon R. Guggenheim Foundation. Yet for all its apparent geo-cultural dislocation, Frank Gehry's remarkable building forms part of an energetic civic reinvention, fuelled by the Basque Country's highest GNP of any area in Spain (coupled with fiscal autonomy from Madrid) and the Guggenheim Foundation's imperative need to expand and redefine its operations in Europe. As a result, an 'Atlantic axis' of political, economic and cultural collaboration between Bilbao and New York has emerged. The regional Basque administration funded the $100 million project and will make annual contributions to its operating budget. The Guggenheim Foundation will run the museum, providing curatorial expertise as well as the core art collection and programming. Ambitiously conceived as an international centre for modern and contemporary art (much of it European in origin), the new museum complements the existing, smaller Peggy Guggenheim Collection in Venice.

Since it was founded on the banks of the Nervión in 1300 as a trading and fishing port, Bilbao has stubbornly prospered, despite periodic assaults and upheavals. From catastrophic fires of the sixteenth century to Spanish Civil War bombardments (Guernica is just along the coast), the city has become accustomed to rebuilding itself. The nineteenth-century grid of the Ensanche (literally 'broadening') was constructed in the wake of civil wars and its handsome streets on the west bank of the Nervión contain Beaux Arts eclecticism mixed with early excursions into Spanish *Modernista*.



1

At the end of the twentieth century, however, Bilbao's circumstances mirrored those of many other European cities historically reliant on the muscle of industry. The decline of shipbuilding and manufacturing has left large tracts of dereliction, some conspicuously close to the city centre. In 1991 a strategic plan was drawn up to revitalise metropolitan Bilbao, with the aim of precipitating the city into the post-industrial age. Drawing on the experience of Barcelona (another marginalised regional centre which has vigorously and successfully remodelled itself), the plan embraces a range of measures, including modernising transport links, strengthening cultural amenities, promoting training initiatives and general improvements to the urban environment. So far, a new metro system (with stations by Foster and Partners, AR May 1997) has been built, linking the city centre with the suburbs. A graceful new pedestrian bridge designed by Santiago Calatrava spans the Nervión, and a conference and performing arts centre by the Madrid-based partnership of Soriano and Palacios is currently under construction downstream from the Guggenheim. All these major *proyectos* are seen as confident indicators of the latest phase in Bilbao's dogged evolution.

That the Guggenheim came to Spain at all is due to a fortuitous interplay of cultural aspirations and politics. Initial plans to locate the new European outpost in Salzburg fell through because of the demands placed on the city following the collapse of Communism. To the bemusement of the art world, Bilbao proved a willing substitute partner in a delicate transatlantic mating ritual. But the site originally proposed by the city for the new museum – a redundant wine and oil warehouse in the Ensanche – plainly did not suit the scale of the Guggenheim Foundation's ambitions. Instead, a much larger and more prominent site on the edge of the Nervión was selected, the location apparently chanced upon by Guggenheim director Thomas Krens during a morning jog.

In June 1991, just three architects – Gehry, Coop Himmelblau and Arata Isozaki – were invited to compete for the project. Each was given three weeks and one site visit to produce a proposal. Coop Himmelblau's design was a curiously muted amalgamation of translucent cubes; Isozaki opted for a series of inscrutable, free-flowing volumes. The chosen short-list starkly distilled both geographical and architectural diversity (Old World, New World and Pacific Rim). After a breathlessly brief competition, Gehry's New World exuberance won the day.

The Guggenheim Foundation is acutely aware of the power of a building to define an

3
The north elevation swings round the bend in the river. On the opposite bank are the buildings of Bilbao's Deusto University.
4
A riverside promenade is created between the river and a new water garden.
5
The building wraps around the angular bulk of the Puente de Salve, terminating in a 50m high sculptural tower.
6
The conflation of gleaming volumes surreally terminates vistas in the Ensanche.
7
The wafer-thin titanium scales shimmer seductively in the changing light.
8
The massive, warped flanks of the north elevation are reflected in the water garden.

Art gallery, Bilbao, Spain
Architect
Frank O. Gehry & Associates


3

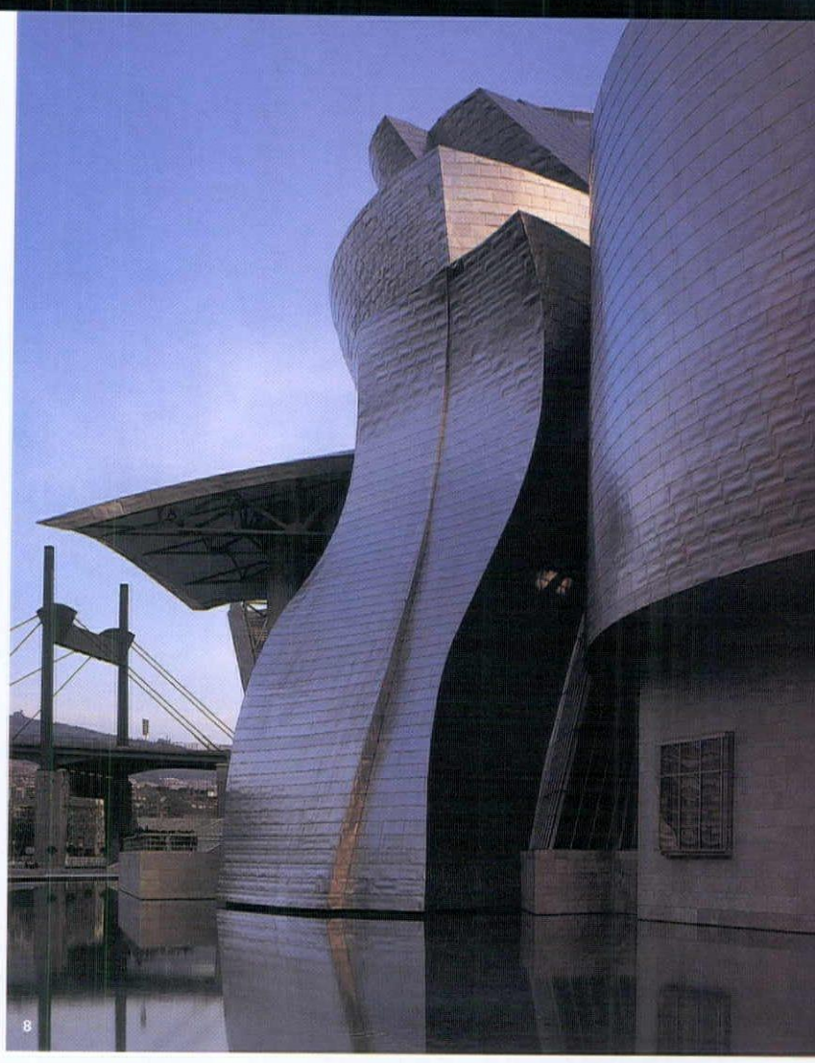

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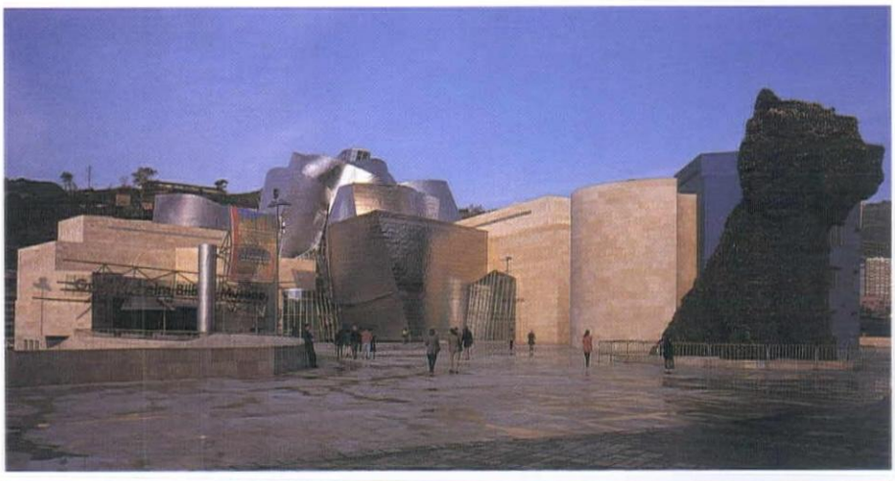
institution. The choice of Frank Gehry signalled an ambition to match (if not supersede) the radical and original qualities that characterised Frank Lloyd Wright's gleaming Expressionist vortex on Fifth Avenue, completed in 1959. Nearly 40 years later, Bilbao now inherits an equally extreme piece of architecture that also, paradoxically, embodies an equally intense search for new forms.

The commission for the Guggenheim represents a maturing, both in scale and execution, of Gehry's compelling, 'computer-assisted Cubism', based on poetically fractured planes and contorted curves. One immediate impression is that remarkably little seems to have changed from the model submitted for the competition. Initially Gehry used sheets of paper rolled and taped by hand to generate form, like a sculptor working clay. As the proposed curves exceeded the capabilities of conventional construction, Gehry turned to CATIA software (developed by the French aeronautical firm Dassault) to translate his concept into a built reality. Essentially, CATIA digitises points on the edges, surfaces and intersections of Gehry's hand-built models to construct on-screen models that could then be manipulated in the manner of animated cartoons. (This and the ingenious processes of construction are described in greater detail by Annette LeCuyer on pp43-45.) The computer has enabled Gehry to generate formal and spatial complexity that would have been inconceivable only a few years ago. The notion that uniqueness is now as economic and easy to achieve as repetition, challenges the simplifying assumptions of Modernism and suggests the potential of a new, post-industrial paradigm based on the enhanced, creative capabilities of electronics rather than mechanics.

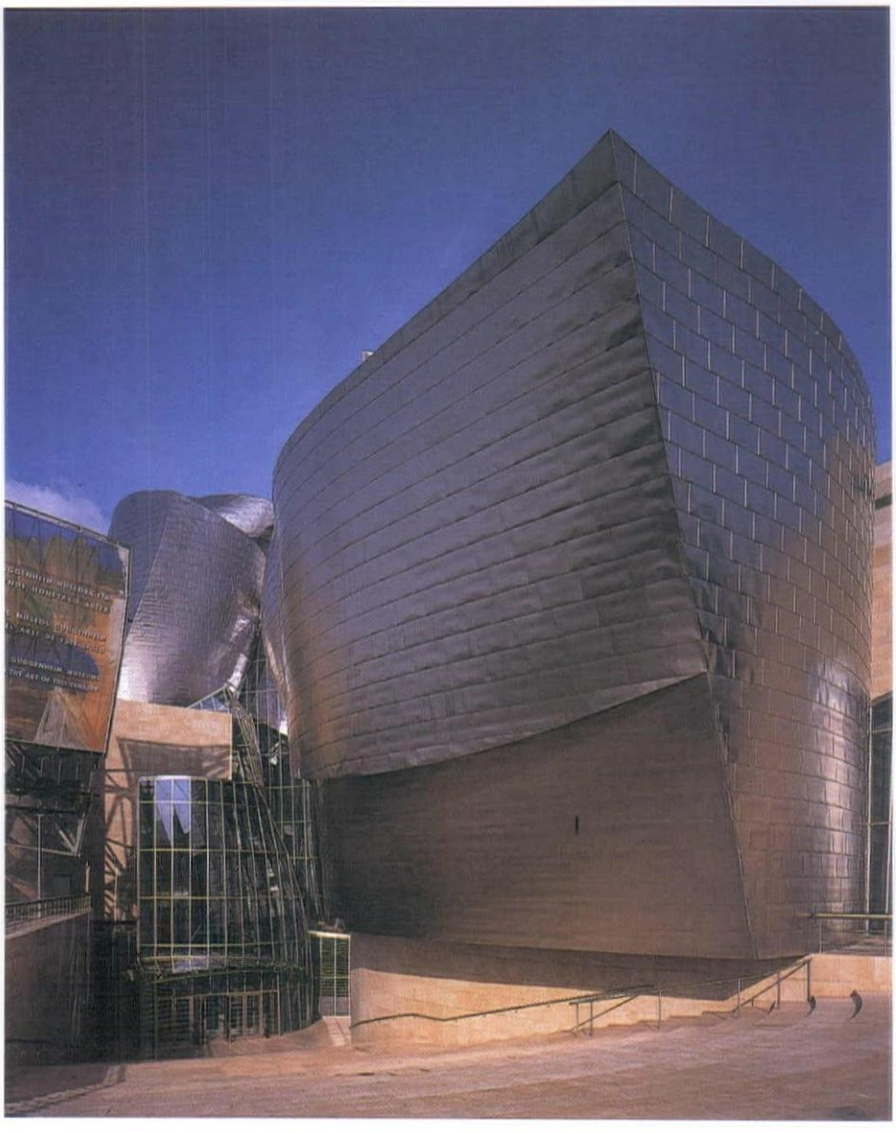
The new museum lies at the centre of a cultural and civic triangle defined by the austere Jesuit Deusto University and wedding cake Neo-Classical city hall (both on the opposite bank of the Nervión) and the Museo de Bellas Artes to the west. The riverside site is on the northern edge of the Ensanche, with a vast container marshalling yard to the west, a road and railway line to the south, the sluggish river to the north and the sweeping concrete structure of the Puente de Salve to the east. The gawky, angular bridge connects the Ensanche with the eastern part of the city. Gehry claimed to savour the raffishness of the context; in particular, the intense proximity of the suburban train line reminded him of the Pergamon Museum in Berlin, where the rattling U-Bahn mingles with contemplation of Classical antiquity. Unlike the Getty on its antiseptic mountain top, the Bilbao Guggenheim makes a tangible physical

Art gallery, Bilbao, Spain
Architect
Frank O. Gehry & Associates

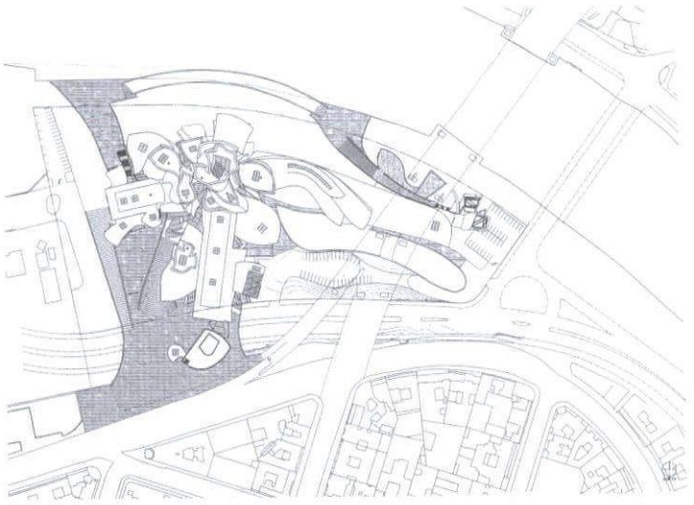
9
The broad entrance plaza, with Jeff Koons' monumental 'Puppy' sculpture. The partly visible cobalt blue volume contains administrative functions.
10
Papally ceremonial stairs lead down to the entrance level.
11
The building's contours match Bilbao's undulating topography.



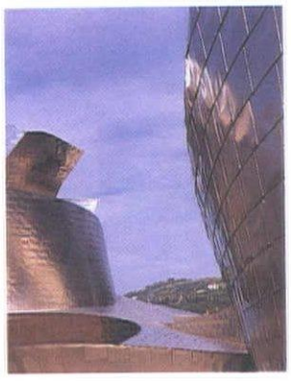
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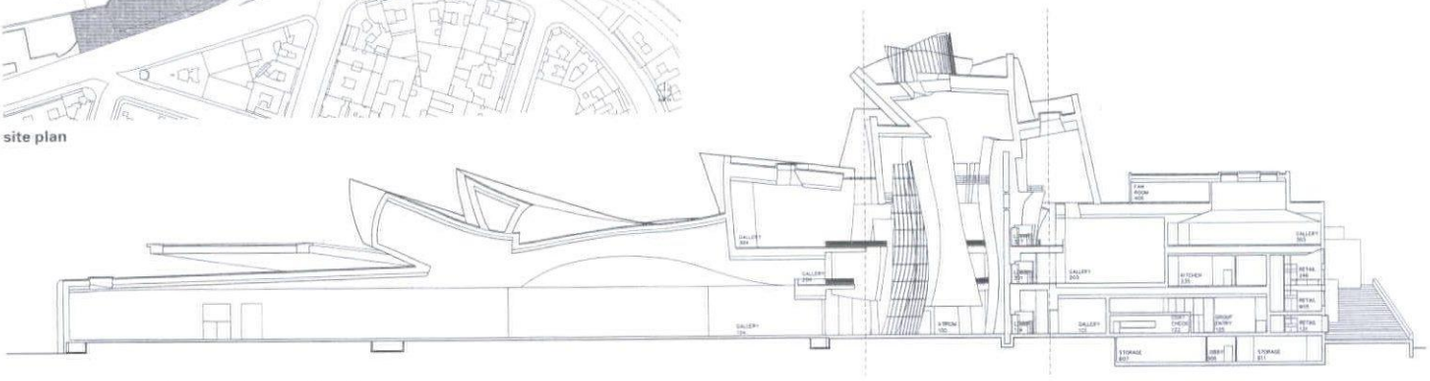
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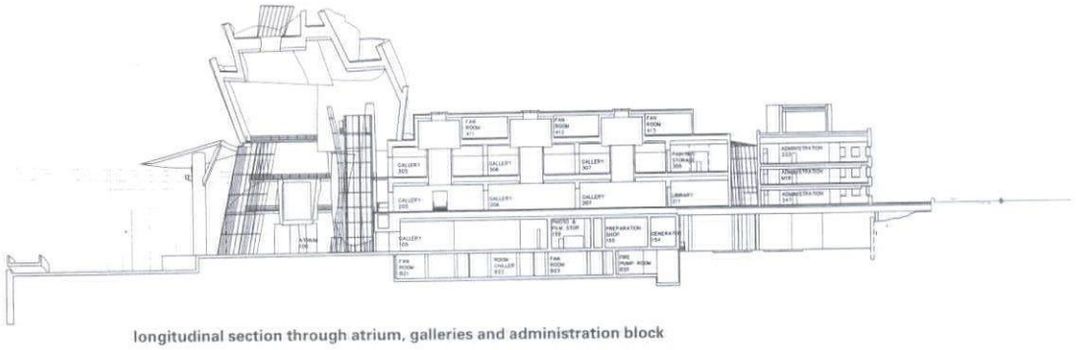
site plan



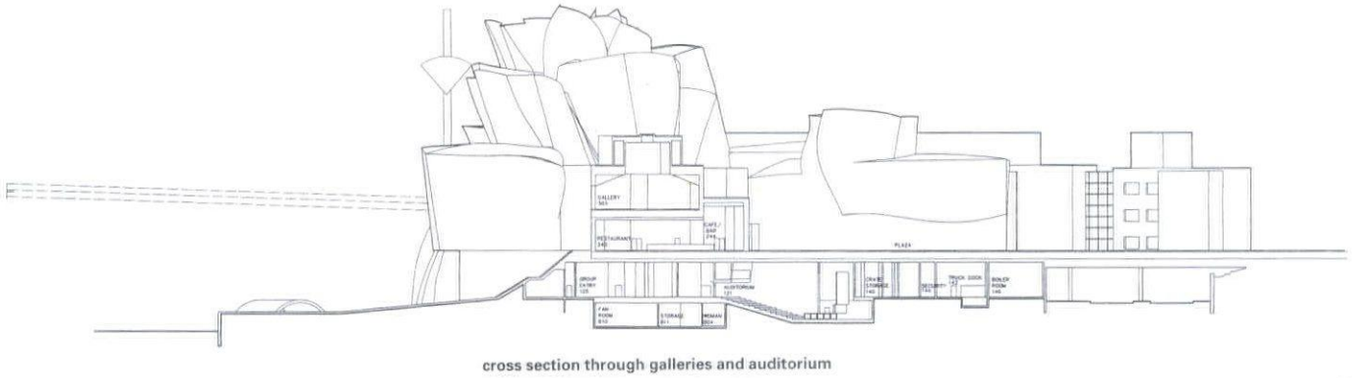
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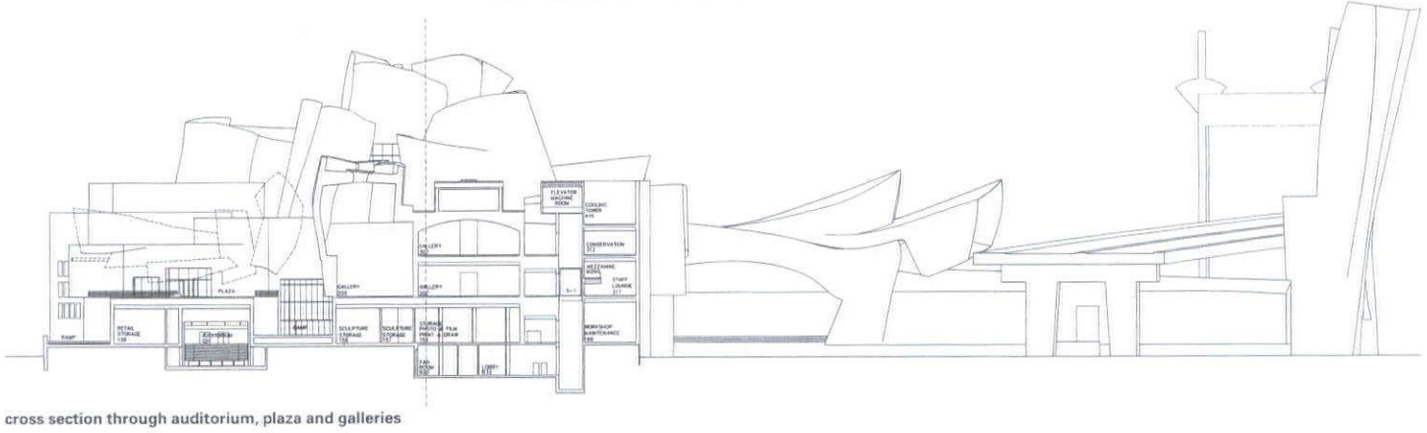
longitudinal section through atrium and 'boat galley'



longitudinal section through atrium, galleries and administration block

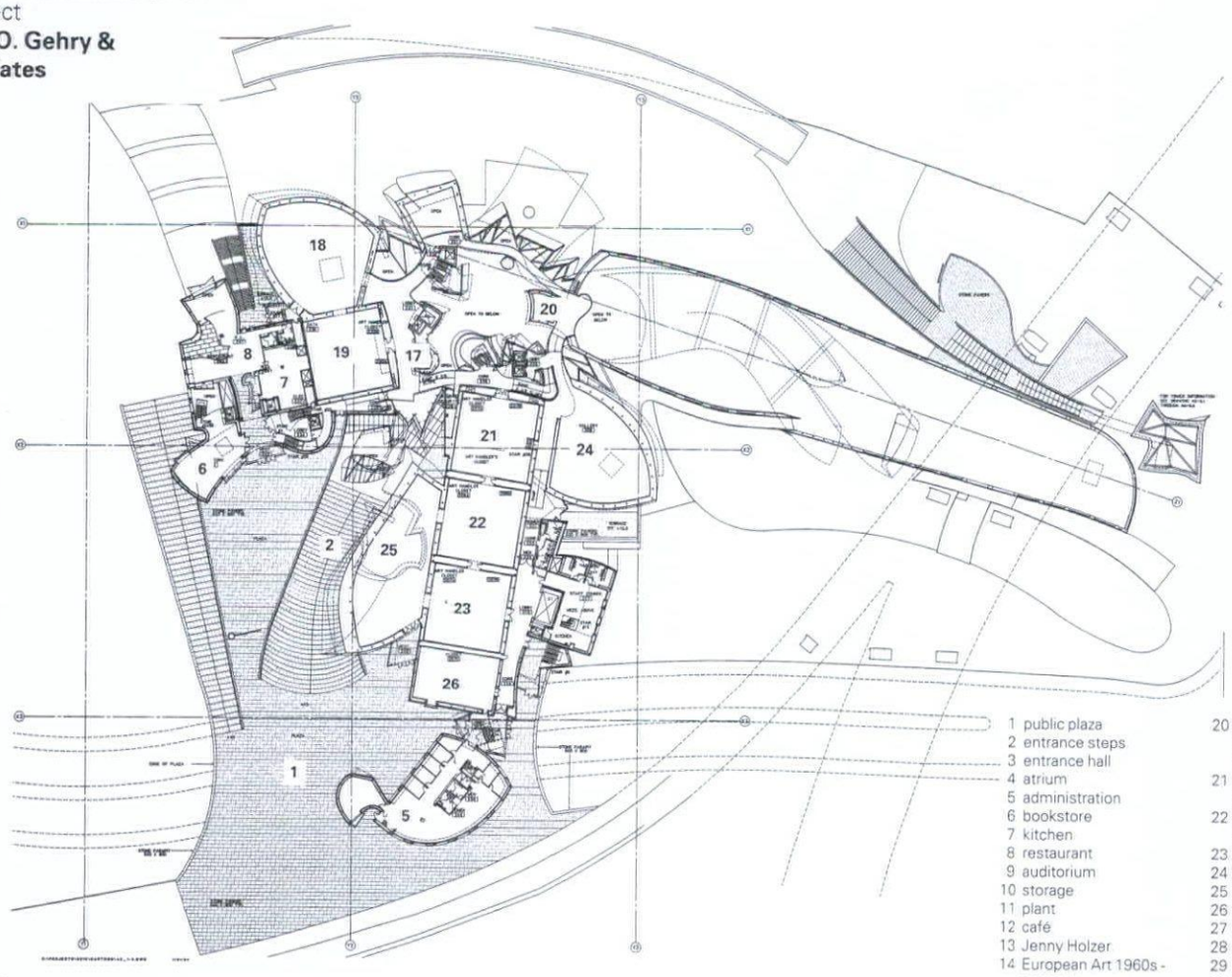


cross section through galleries and auditorium



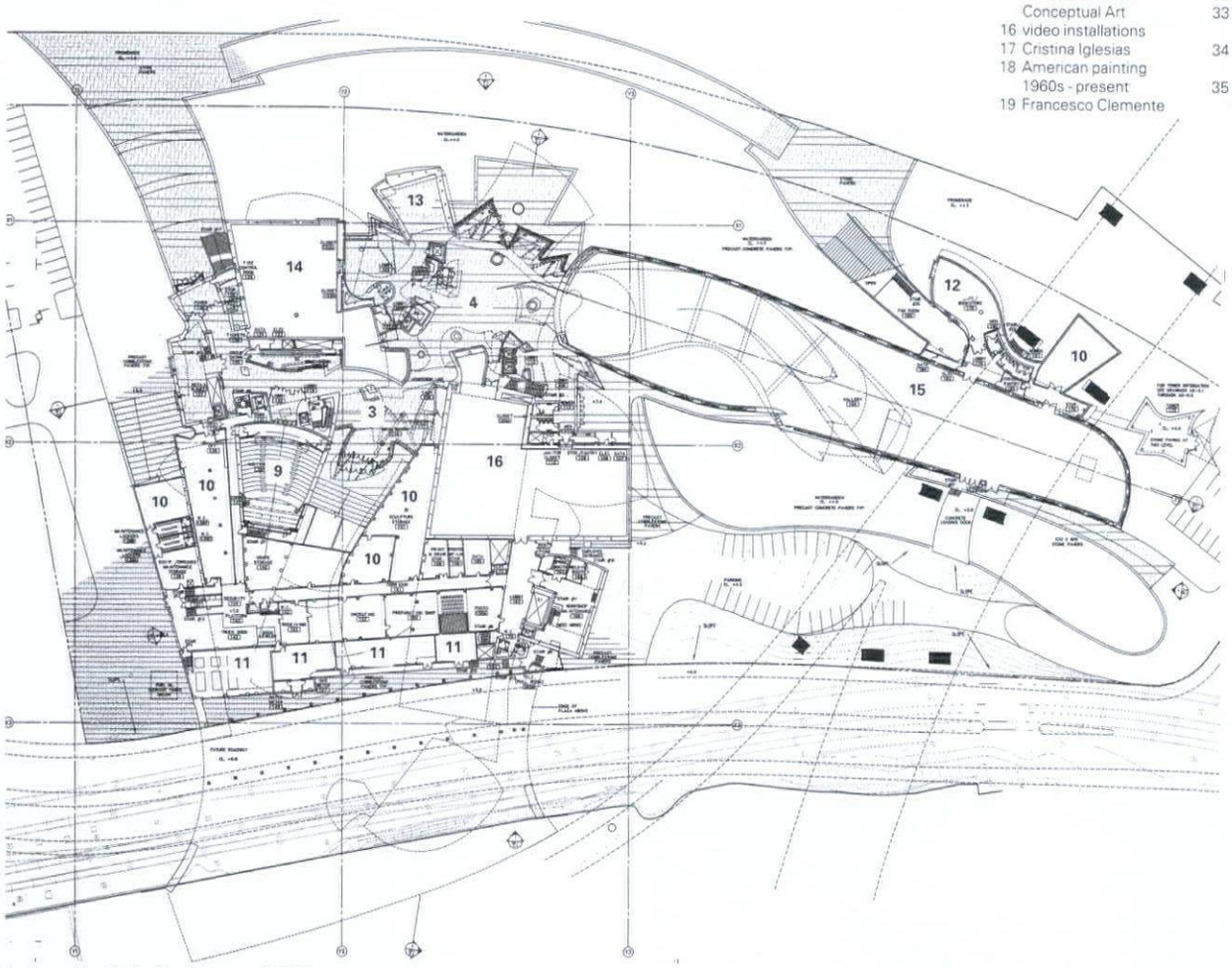
cross section through auditorium, plaza and galleries

Art gallery, Bilbao, Spain
Architect
Frank O. Gehry & Associates

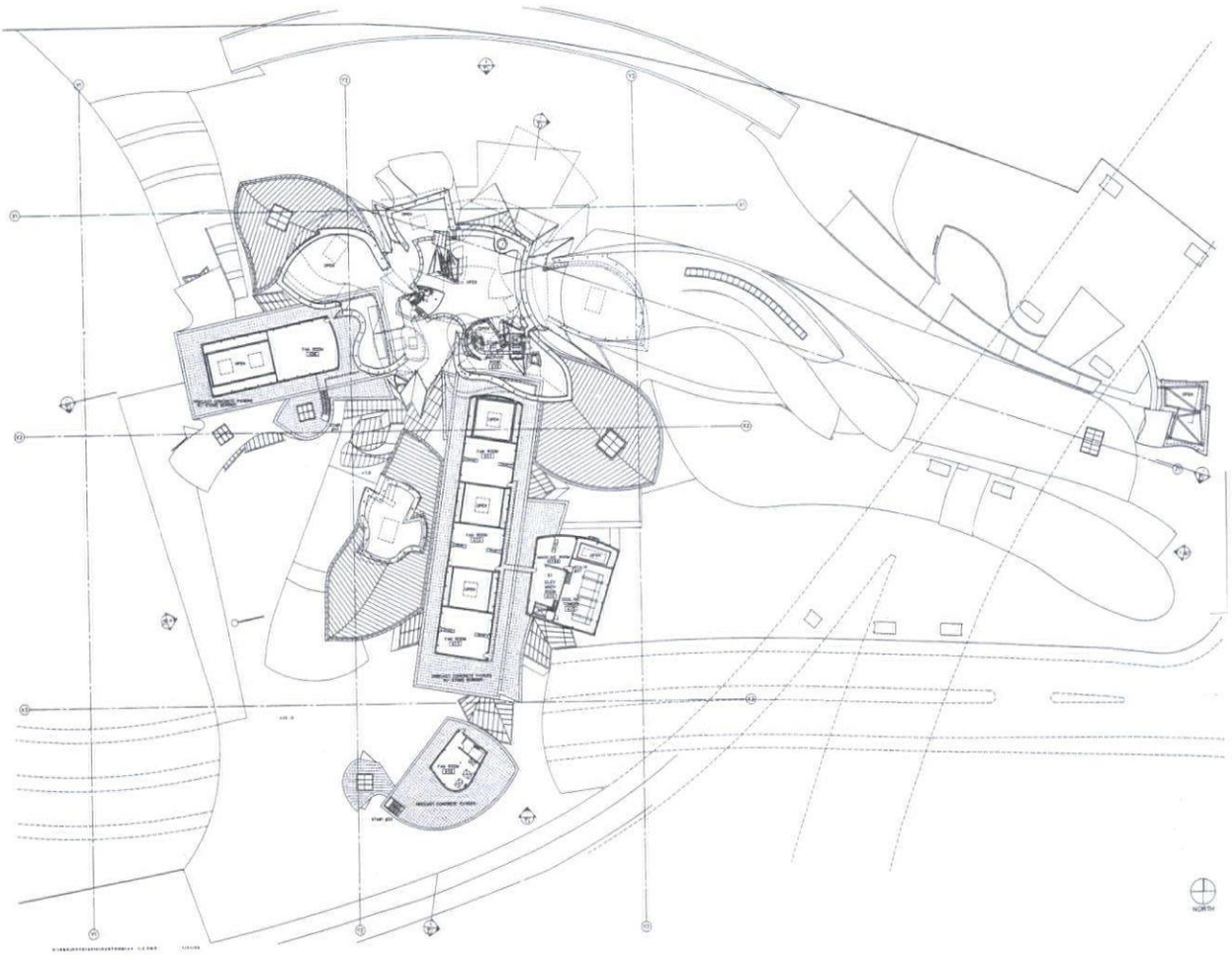


1 public plaza
2 entrance steps
3 entrance hall
4 atrium
5 administration
6 bookstore
7 kitchen
8 restaurant
9 auditorium
10 storage
11 plant
12 café
13 Jenny Holzer
14 European Art 1960s - present
15 American Pop, Minimalism and Conceptual Art
16 video installations
17 Cristina Iglesias
18 American painting 1960s - present
19 Francesco Clemente
20 Works on paper Giacometti, Gorky, Kelly
21 American Abstract Expressionism
22 Eduardo Chillida and Antoni Tàpies
23 Art Informel
24 Sol LeWitt
25 Anselm Kiefer
26 library
27 Juan Muñoz
28 Bruce Nauman
29 Neo-Expressionism
30 Damien Hirst
31 Cubism
32 Expressionism
33 Surrealism and Geometric Abstraction
34 Claes Oldenburg and Coosje van Bruggen
35 conservation department

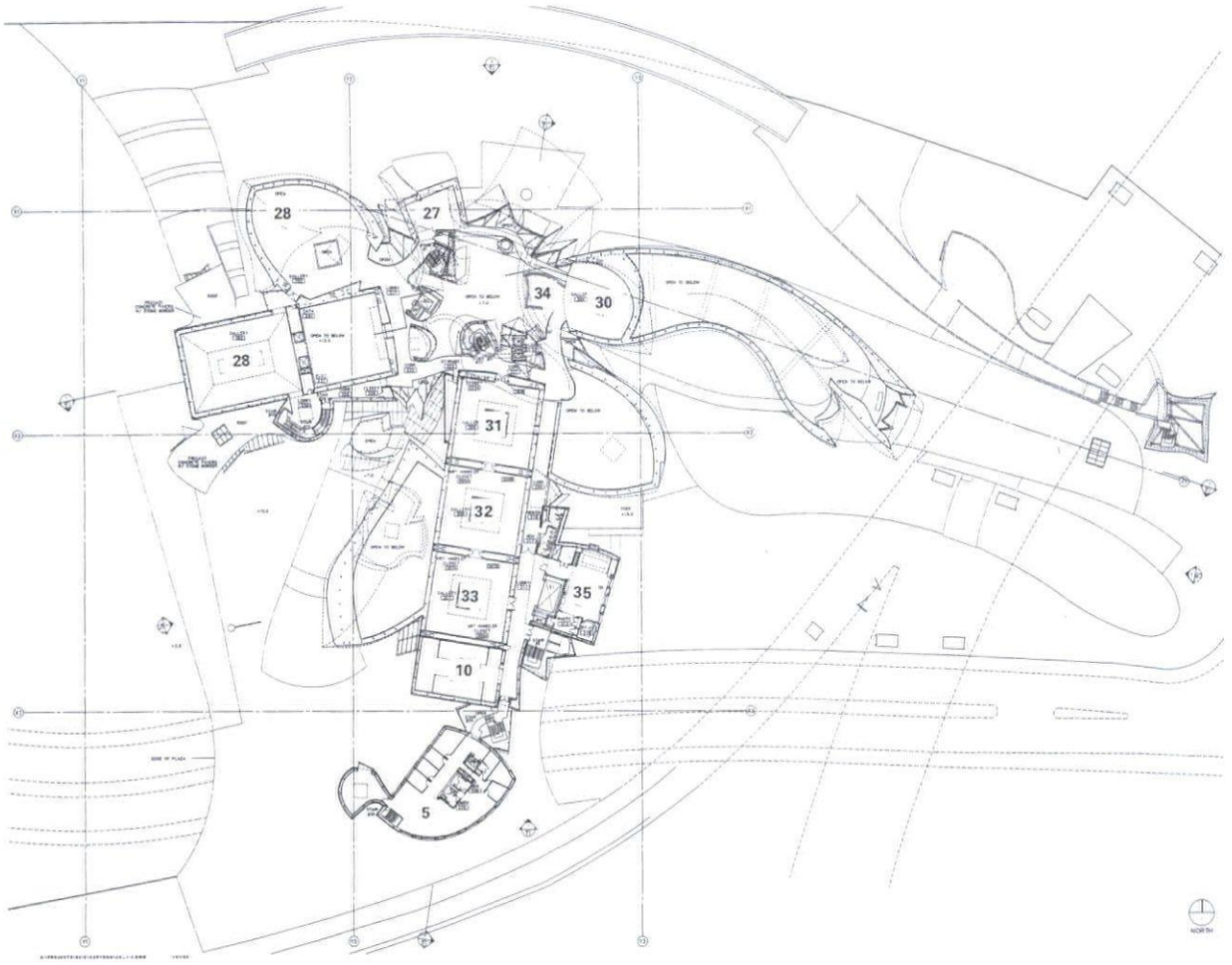
first floor plan



ground floor (entrance level) plan (scale approx 1:3250)



roof plan



second floor plan

connection with the city. The building oozes and extrudes around the Puente de Salve, creates a curved riverside promenade and forms a generous new public plaza on the south side of the site, where the Ensanche grid ends.

The prominence and exposure of the site is curiously well suited to Gehry's architecture, which generally works best on a *tabula rasa*. Bilbao is his biggest stage yet, and it is attacked with an evangelical brio. The building languidly scrolls and coils its way along the riverside, its boggling conflation of titanium-clad forms shimmering serenely like a pile of improbably huge fish or a fractured tinfoil flower. The famous titanium scales (seized upon when a price fluctuation in world markets made titanium briefly affordable) impart an extraordinary lightness and iridescence to the overall composition. Fixing clips make a shallow central dent in each of the very thin (0.38mm) tiles, so that the surface appears rippling and ethereal in the changing light. Like the vast hulls of ships that used to loom over shipbuilding towns, the warped, metallic flanks of the museum surreally terminate vistas in the long straight streets of the Ensanche.

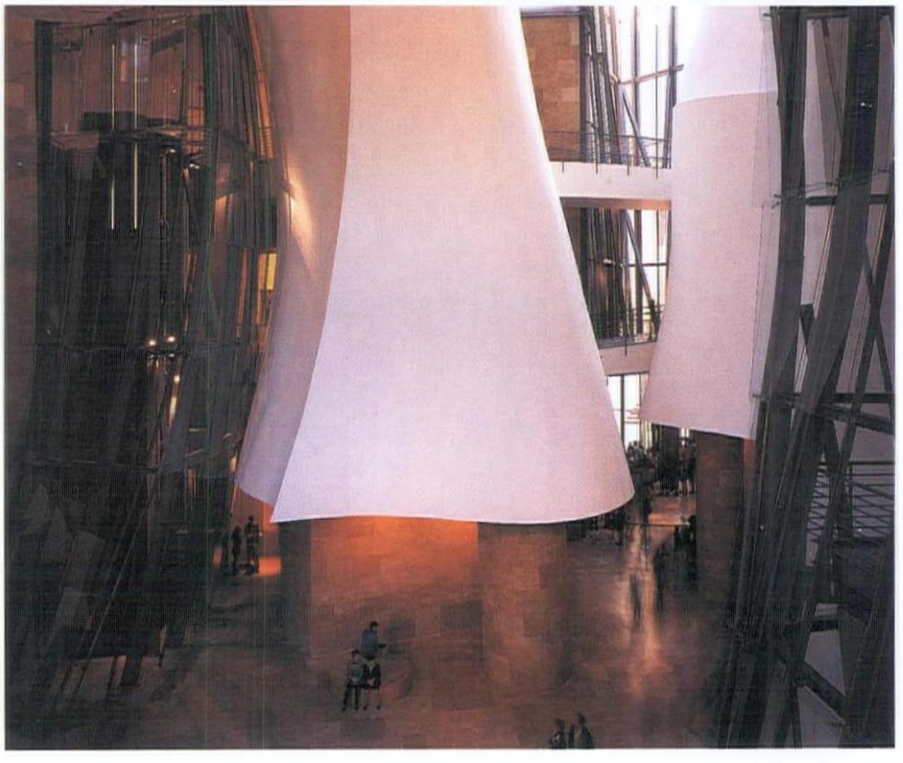
The plaza on the south side acts as a public focus and collection point. Here the titanium is partnered with creamy, ashlared limestone and a discrete cobalt volume which houses administrative functions. (Here too is a rather fatuous piece of topiary shaped like a giant dog, by Jeff Koons, which appears to be a permanent fixture.) Visitors descend a papally ceremonial flight of limestone steps to the entrance, pausing, perhaps, to inquisitively fondle the titanium cladding that comes just within reach. The steps gradually narrow, like a canyon, propelling you into the entrance hall. Dog-legging to the left is a cloakroom, bookshop and 350 seat auditorium; to the right a kind of man-made fissure which leads through to the start of the gallery tour. This momentary compression is quickly followed by release as you enter the atrium, the spectacular fulcrum of Gehry's dervishly whirling volumes. The soaring, 50m high space (one and a half times the height of the rotunda of the Guggenheim Museum in New York) stimulates fanciful free-association – Marilyn Monroe's wind-assisted skirts, the moulded sinews of a Willem de Kooning drawing, an exploded artichoke heart. Light is diffused through slashes of glazing in the inclined walls, casting perpetually changing shadows through the lustrous, luminous, cathedral-like space. On its north side, stone and titanium are peeled away to reveal a soothing water garden, the river and the city framed by the steep hills beyond.

Art gallery, Bilbao, Spain
Architect
Frank O. Gehry & Associates

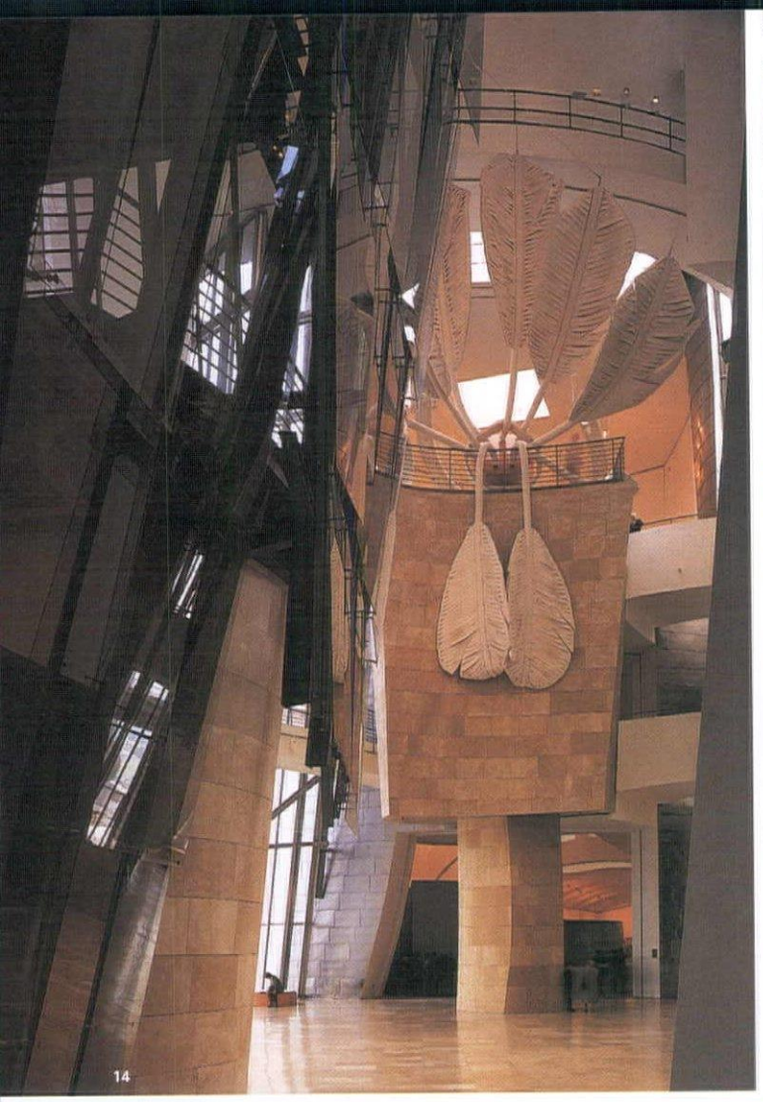
12
Part of the entrance hall.
13
The swirling volumes of the atrium invite fanciful free-association.
14
Claes Oldenburg and Coosje van Bruggen's huge, soft shuttlecock finds a dramatic location in the atrium.
15
The soaring, cathedral-like atrium space forms the building's awe-inspiring fulcrum.
16
Vertiginous walkways link the atrium with the various galleries. On the second floor, the English artist Damien Hirst has been allotted an alcove of his own.



12



13



14



15



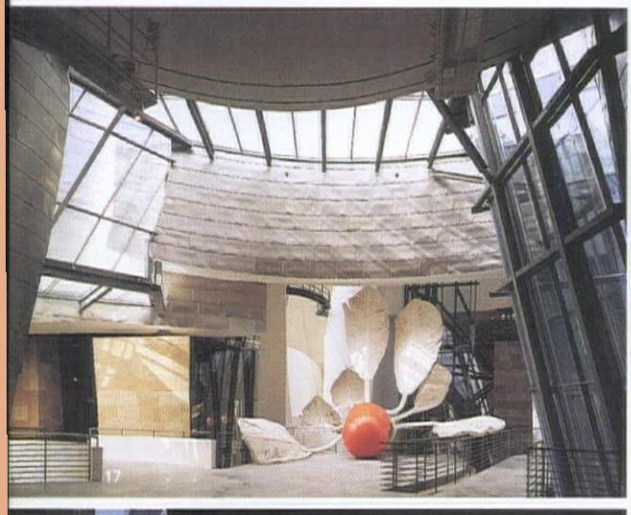
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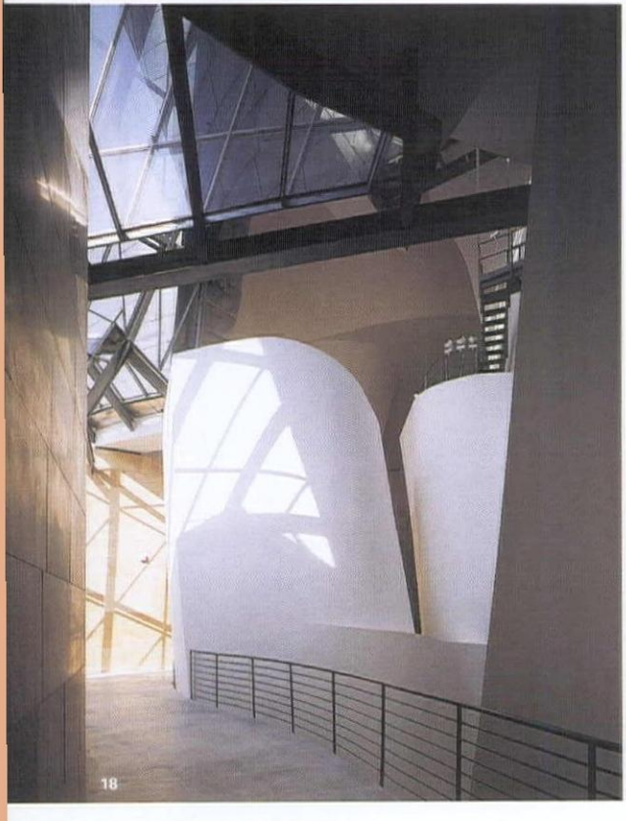
Art gallery, Bilbao, Spain

Architect

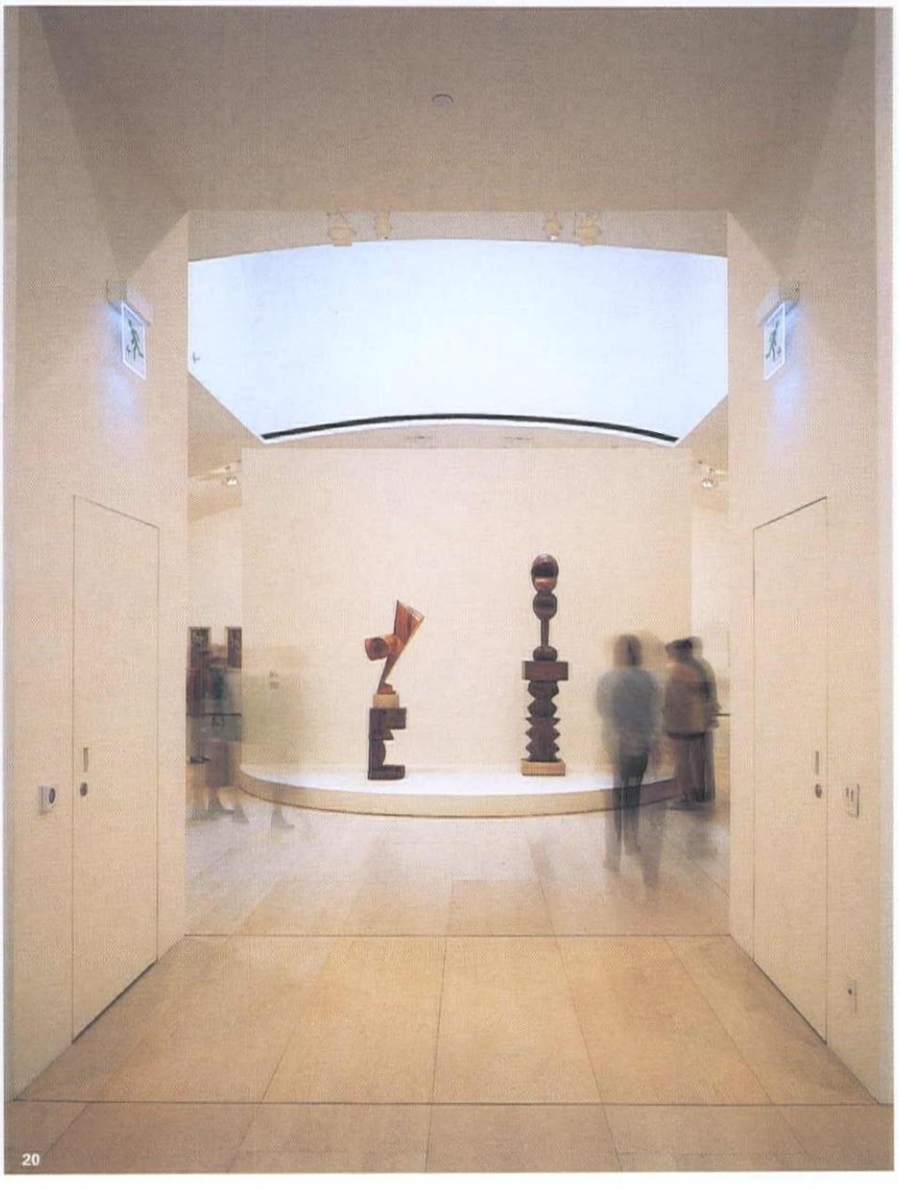
Frank O. Gehry & Associates

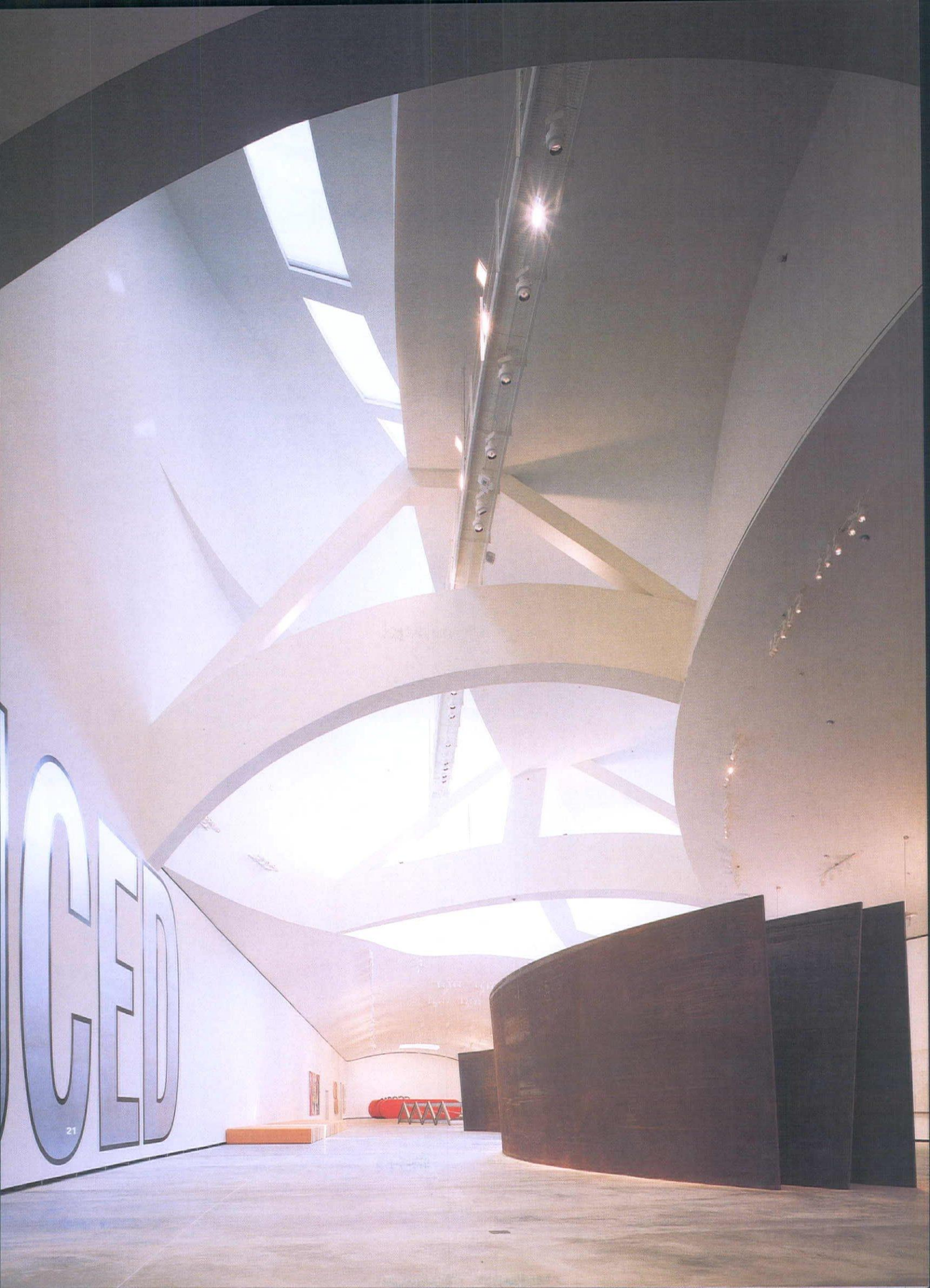
17
The upper part of the atrium. Light diffuses through slashes of glazing.
18
Detail of walkway at upper level.
19
Anselm Kiefer's cavernous, dedicated gallery.
20
Part of the more conventional, orthogonal enfilade of galleries on the first and second floors, with sculpture by Brancusi.
21
The largest gallery on the ground floor is 130m long. The huge, sculptural spaces provide opportunities for collaboration between artists and curators for site-specific works such as Richard Serra's massive 'Snake', two sinuous planes of rusting steel.


17


18


19


20


CED

Despite the wilful complexity and apparent formal chaos, the plan is really quite simple. Twenty one galleries of varying size and configuration are arranged in three storeys around the dramatic, pivotal atrium, so that progress around the building is logical and circuitous, by means of a (frequently uncomfortably vertiginous) network of walkways, stairs and glazed lifts. The vast, often highly sculptural spaces offer provocative creative opportunities for both artists and curators.

The largest of the galleries is a 130m long volume in the form of an upturned hull that extends eastwards towards and under the Puente de la Salve, where it nuzzles a signpost tower that rises above the bridge like a limestone exclamation mark. With its specially reinforced floor, this 'boat gallery' houses a collection of massive Pop and Post-minimalist installations and paintings, among them Richard Serra's monumental 'Snake' a site-specific work consisting of two sinuous, rusted planes of steel 31m long and 4m high.

The smallest gallery is an intimate alcove containing exquisite works on paper by Giacometti, Arshile Gorky and Ellsworth Kelly. On the first and second floors, calm enfilades of conventional orthogonal spaces are variously devoted to the European Avant-Garde and American Abstract Expressionism. Perhaps the most poignant part of the building is the gallery where Picasso's 'Guernica' was supposed to hang; sadly, the painting still languishes in Madrid and instead Sol LeWitt has customised the walls with a jovial mural.

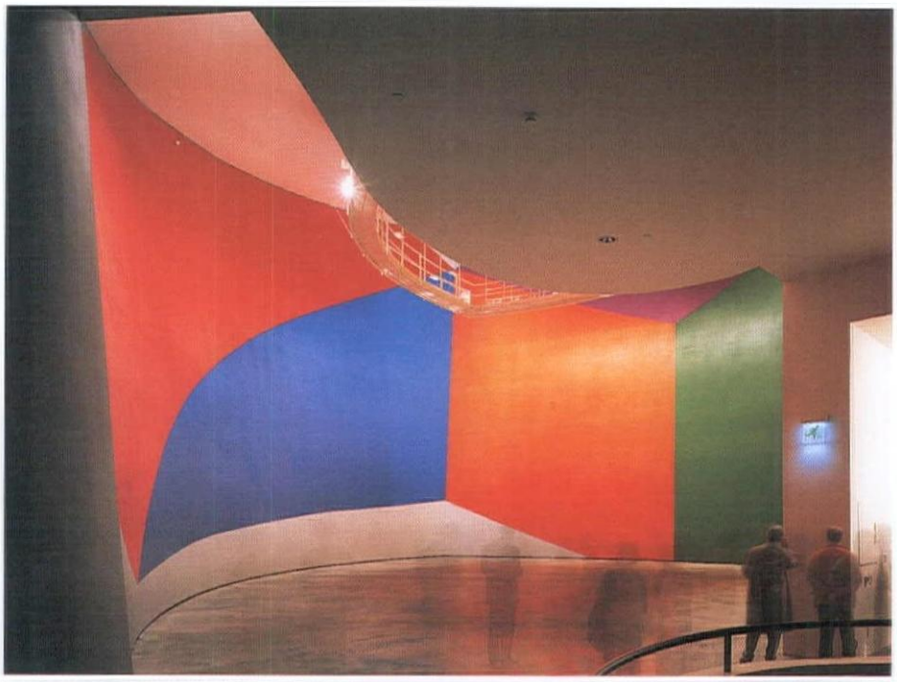
The galleries combine artificial light sources with natural, overhead light. For the permanent collection galleries on the lowest level, this is collected by lightwells rising through the floors above. Generally, the art works benefit greatly from the generosity of the spaces; Anselm Kiefer, for example has a huge, dedicated gallery, which does appropriate justice to his frenzied, ossified paintings, but whether English *enfant terrible* Damien Hirst deserves a nook of his own (at the north-east corner of the atrium on the second floor) is debatable.

However, these are issues of programming and curatorship; the building seems sufficiently accommodating and flexible to assimilate the most perplexing (and invariably large-scale) vacuities of contemporary art. Through its extraordinary formal vigour and material presence, it succeeds in squaring up to both its context and the ambitious mandate of its client, while clearly sustaining a logic and life of its own. The international art world has a new dot on its map and Bilbao has a new Atlantic star. CATHERINE SLESSOR

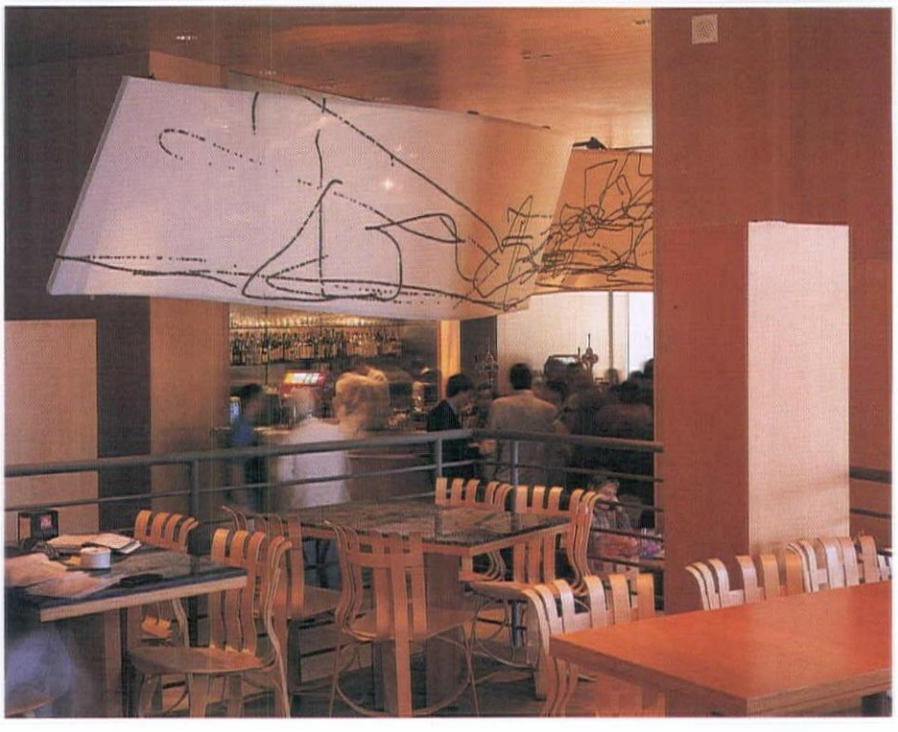
Art gallery, Bilbao, Spain
Architect
Frank O. Gehry & Associates

22
The gallery where Picasso's 'Guernica' was supposed to hang has been customised by a Sol LeWitt mural.
23
The museum restaurant, animated by Gehry's vivid sketches of the Guggenheim and his sensuous bent wood chairs.

Photographs
All photographs by Paul Raftery except
Dennis Gilbert/VIEW 1, 3, 6, 7, 11, 16
Christian Richters 15, 17, 18, 21



22



23

BUILDING BILBAO

Annette LeCuyer describes how Frank Gehry's ingenious appropriation of computer technology made possible the design and construction of the Guggenheim Museum.

Art gallery, Bilbao, Spain
Architect
Frank O. Gehry & Associates

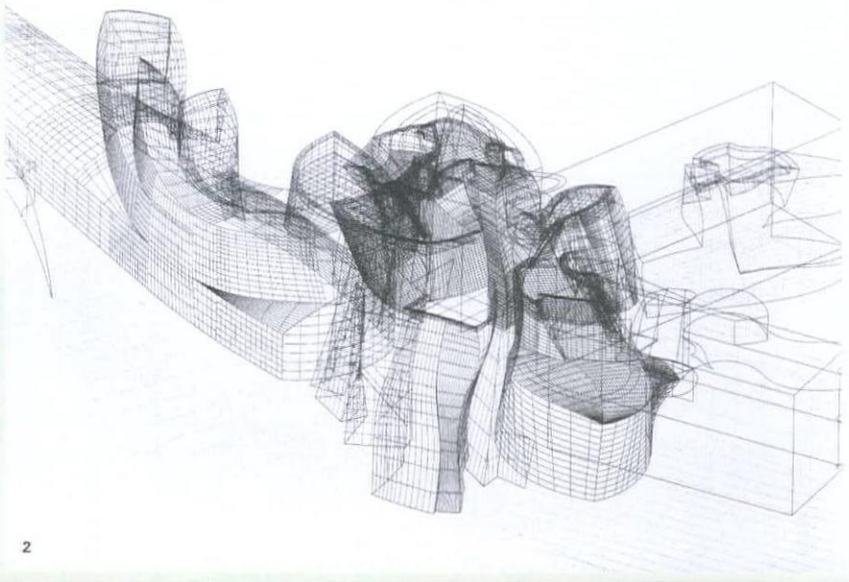
Almost incomprehensible in its Brobdingnagian scale and three-dimensional complexity, the Bilbao Guggenheim goes far beyond the limits of what was formerly understood to be possible in architecture both aesthetically and technically. Like a conjurer, Gehry has built the unbuildable, but, as with any good conjurer's trick, there is an underlying rational explanation. In this case, it is computers. While others rush headlong into virtual space, Gehry's interest in computer technology is solely as a tool for creating real, tactile space. In Gehry's office, the primary purpose of computers is not to design, but to rationalise and make buildable highly intuitive formal concepts.

CATIA, the software developed by the French aerospace manufacturer, Dassault Systems and released to the public 12 years ago, has become Gehry's workhorse. Unlike most architectural software, CATIA is based upon surfaces rather than polygons. For Bilbao, digitising a series of manually made three-dimensional models to generate a continuously curved surface model in CATIA was followed by identifying the control surfaces – or setting out points – for the building. In some places, these became exterior surfaces of metal, glass or stone, and in others interior surfaces of plaster.

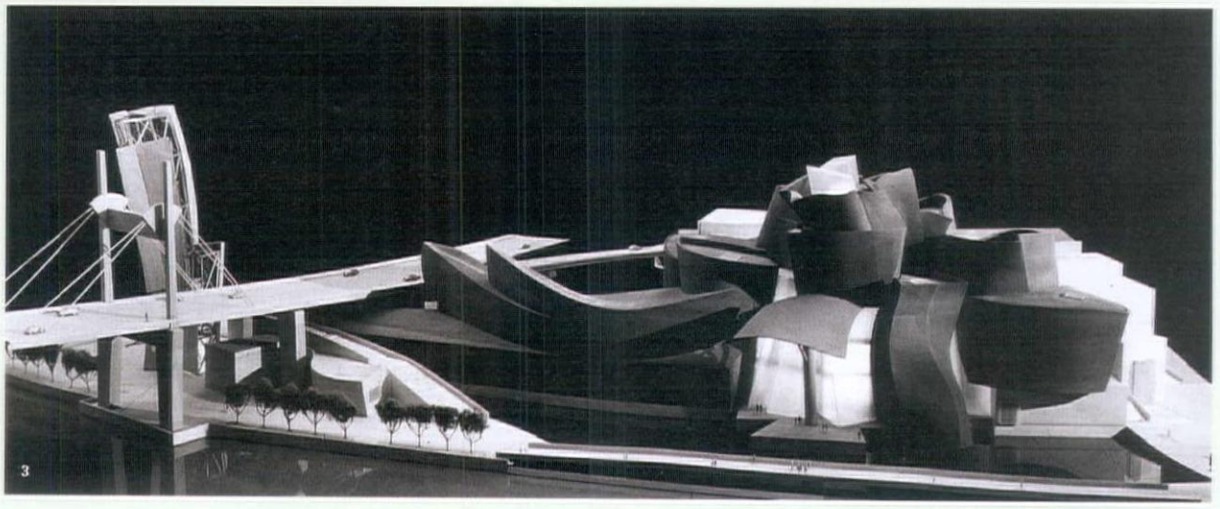
Offsetting from the control surfaces, a structural zone was identified. Within this zone, Hal Iyangar of SOM Chicago generated the structural concept for the building, a braced frame designed to be prefabricated in modular sections and erected with a minimum of shoring. This remarkably straightforward frame is comprised of wide flange sections on a 3 metre grid. With the exception of the cavernous 'boat gallery' and the tower, all members are straight sections, and the geometrical complexity of the overall form is achieved purely in the connections. In a reversal of the normal roles of American architect and structural engineer, SOM positioned all members to plus or minus 300mm, while the

1
Gehry's model workshop.
2
Computer generated image of the building's contorted forms.
3
The competition model of the museum. Remarkably little has changed when compared with the finished building.





2



3

final precise positioning was undertaken by Gehry's office.

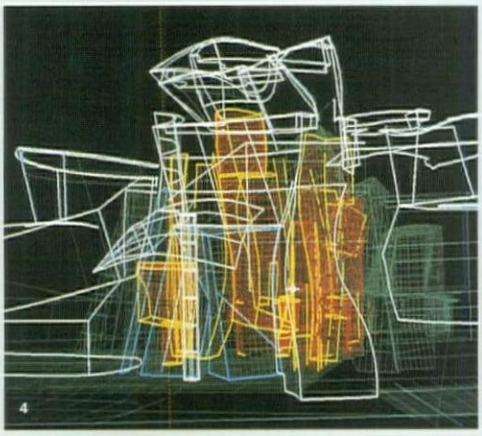
Between the faceted frame of the primary steel and the control surface are two layers of secondary structure. Horizontal ladders of 60mm diameter steel tubes at 3 metre vertical intervals establish the horizontal curvature of the surface. The ladders are split frames straddling the primary structure and are connected to it with a universal joint which allows for fine adjustment in all directions. Vertical curvature is established by the innermost and outermost layers of secondary structure, vertical light gauge steel studs at 600mm centres. All tubes and studs are curved in one or more directions. Wire frames, nodes of intersection, clearances and interferences were developed in CATIA for the control surfaces and all five layers of structure.

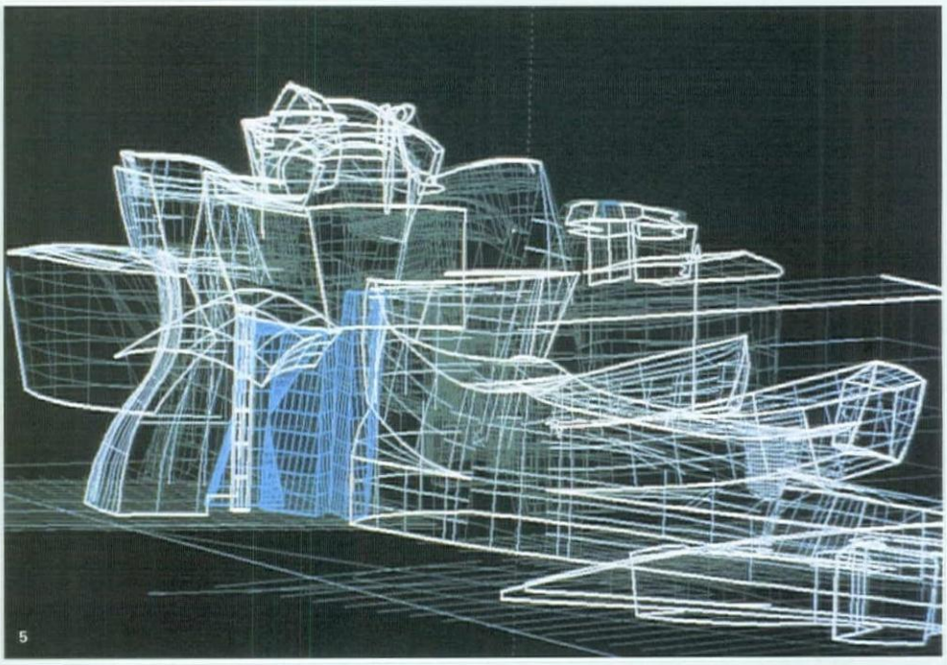
While Gehry's CATIA wire frame for the primary structure precisely located and sized every member, it remained a wire frame. The office had wanted to make full three-dimensional computer models of the structural steel on earlier projects, but had not been able to find the software to make such modelling feasible. However, Urssa, the Spanish steel fabricator, had access to BOCAD, new proprietary software developed for bridge and highway construction and available to only four steel contractors in Europe. Using the wireframe developed in CATIA, BOCAD could generate a comprehensive three-dimensional computer model of the structural steel and, more importantly, could automatically translate the model into either two-dimensional fabrication drawings or computer numerically controlled (CNC) data for the complex end configurations of the steel members. Even though no two pieces of steel in the building are alike – all have unique end cuts – the use of BOCAD ensured that the primary structure was able to be so accurately fabricated that the need for field cutting and welding was virtually eliminated. However, Urssa did have some difficulty with erection, having to double up cranes to push and pull the structural steel into place. With experience gained in Bilbao, Urssa and Gehry now realise that CAD can also be used to rehearse erection in order to improve sequencing and substantially reduce cranage costs.

Gehry's office wryly notes that Bilbao was built without any tape measures. During fabrication, each structural component was bar coded and marked with the nodes of intersection with adjacent layers of structure. On site bar codes were swiped to reveal the coordinates of each piece in the CATIA model. Laser surveying equipment linked to CATIA enabled each piece to be precisely placed in its position as defined by the computer model. This is common practice in the aerospace industry, but relatively new to building. In contrast with the usual procedure of locating secondary structure relative to the primary one, this method avoids the accumulation of tolerances and minimises the need for site measuring and cutting. This same technique was used to place all final finishes in their ideal positions, ensuring that the very high tolerances needed to realise such complex geometries could be achieved.

While tape measures may have been made obsolete at Bilbao, the computer has not yet completely eliminated the need for empirical data. A series of full-scale mock-ups was used to ascertain the extent to which galvanised steel sheet can be subjected to complex curvature without buckling and the precise amount

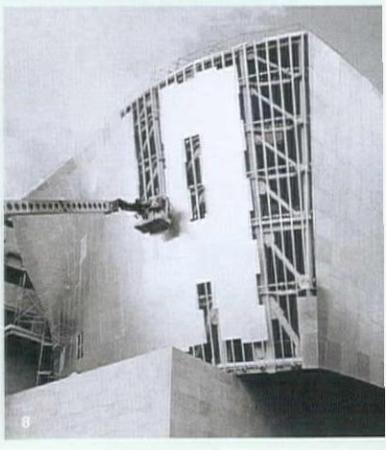
Art gallery, Bilbao, Spain
Architect
Frank O. Gehry & Associates


4


5


6




8

of tolerance in the standing seams. The slight pillow on the surface of the titanium does not represent the gap between the computer model and actual construction, but has been intentionally deployed to soften the appearance of the building; the galvanised substrate is absolutely taut. CATIA was used to rationalise the metal surfaces of the building to conform with the parameters established by the mock-ups so that, even with such complex surfaces, all of the cladding for Bilbao was supplied flat and only four standard panel sizes were needed for 80 per cent of the vast surface area.

Likewise, all the glass in the building is flat but, in this case, complex surfaces are achieved through triangulation. Even with the rationalisation achieved by CATIA, because glass has no capacity to warp and because there is relatively little tolerance in the connections, nearly 70 per cent of the glazed panels are unique sizes. Consequently, at the height of the contract nearly 18 CATIA stations hired from aerospace contractors located near Bilbao were being used to detail the glazing package.

Although the structure and finished surfaces of Bilbao could have been fabricated using numerically controlled machines linked to the CATIA database, Permasteelisa in Italy and most of the Spanish subcontractors opted to fabricate manually. The stone cladding is the only component of the building which was robotically milled. On the basis of extensive full-scale mock-ups for the Disney Concert Hall in Los Angeles, the architects had envisaged the stone for Bilbao being milled in a shop and delivered to site in finished form. Instead, the subcontractor installed a three-axis CNC milling machine on site in a tent. Ironically – and in contrast with the factory based production espoused by the proponents of High Tech – the most technically sophisticated fabrication process took place in situ rather than on the shop floor.

Drawing upon the technology of Spain's aerospace and shipbuilding industries which are centred in the Basque provinces of northern Spain, contractors were adept at using computer based technology for shop drawings, fabrication, and construction and, in some cases, were able to offer far more advanced software than Gehry had employed on previous projects. By bringing the expertise of other industries to bear upon building construction, Gehry's work – and Bilbao in particular – has demonstrated how fruitful the marriage with industry can be, not to produce a standardised product but rather a building that is dazzling in the complexity of its craft.

ANNETTE LECUYER

Architect
Frank O. Gehry & Associates, Santa Monica
Project team
Frank O. Gehry, Randy Jefferson, Vano Haritunians, Douglas Hanson, Edwin Chan, Rich Barrett, Karl Blette, Tomaso Bradshaw, Matt Fineout, Bob Hale, Dave Hardie, Michael Hootman, Grzegorz Kosmal, Naomi Langer, Mchran Mashayekh, Chris Mercier, Brent Miller, David Reddy, Marc Salette, Bruce Shepard, Rick Smith, Eva Sobesky, Derek Soltes, Todd Spiegel, Jeff Wauer, Kristin Woehl
Associate architect and engineer
IDOM
Structural engineer
Skidmore Owings & Merrill
Mechanical engineer
Cosentini Associates
Lighting consultant
Lam Partners
Acoustic consultants
Connant McKay, Ernesto García Vadillo
Exterior envelope
Permasteelisa
Titanium cladding
Timet
Interior lights
Erco, Lledo
Lighting controls
Lutron
Exterior lights
Sill
Photographs
Joshua White 1, 2, 3, 4, 5
Erika Ede 9, 10





4, 5
CATIA generated working models.
6, 7, 8
Cladding sequence. Only four standard panel sizes were needed for 80 per cent of the huge surface area.
9
The complex steel skeleton takes shape.
10
Cladding the north elevation.

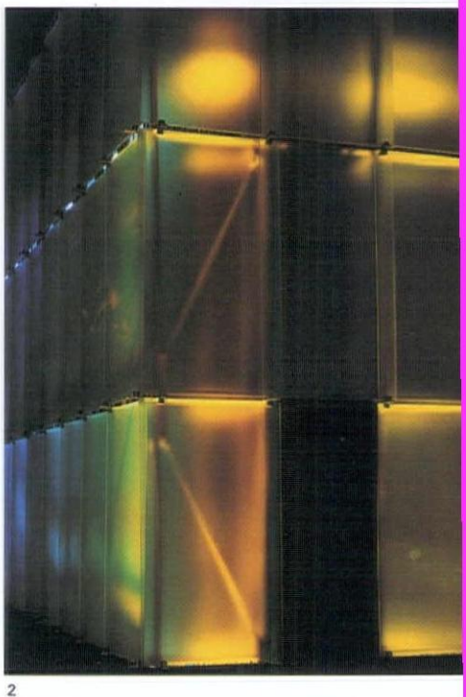


1

Bregenz, the capital of the state of Vorarlberg, is a charming town which dominates the little bit of Austria that comes far enough west to kiss the shores of Lake Constance. Between wooded hills and the water, eighteenth-century houses (perhaps built round much older cores) engage pristine Modern Movement prisms in urbane and decently mannered conversation along a tight net of little streets. Many of the public buildings are on the tree-lined esplanade of the lake-front, and now, between the post office and the Landestheater, there is a new building which at first when you look at it across the water makes you think that your eyes have gone out of focus.

Peter Zumthor's Kunsthaus shimmers grey and misty between the Second Empire pomposity of the post building and the '30s Rationalism of the theatre. From a distance, it is difficult to see quite what is happening. The mysterious 30m high monolith plainly contains an order which can be sensed behind the delicately textured translucent epidermis. Closer examination is not very much more revealing (at least in daytime from the lakeside), but the covering is revealed to be made up of plates of etched glass, each of which slightly overlaps the one below it and its neighbour to the left. Without striving in any sense at zoomorphism, the skin has the elegance and suppleness of a lizard's, but it is an almost transparent tissue which allows the very thin diagonal bracing of its metal supports to add a further layering of detailed patterning in depth before the heavy forms of the interior are dimly perceived. It must be the most elegant rainscreen in the world.

The building is devoted to mystery. You have to search for the entrance, which is finally to be found as a modest range of doors under a porch on the opposite side from the shore, facing a small square, one side of which is largely taken up by a very finely detailed



2

MYSTICAL PRESENCE

This small art museum, proudly taking its place on the shores of Lake Constance, is a triumph of intellect and imagination which, with dignity and grace, offers its galleries for domination by their contents.



47

1
From Lake Constance, the new gallery takes its place urbanely but ethereally between Post Office and the Vorarlberg state theatre.
2,3
At night, the mistiness coalesces into a shining crystal.

Art museum, Bregenz, Austria
Architect
Peter Zumthor

three-storey black building which houses the offices and library of the Kunsthaus. It would look rather sinister were it not for its ample floor-to-ceiling sliding glass windows with their white blinds, and the ground floor café which spreads its tables into the open in clement weather. Sitting at one of these, you suddenly realise that the glass box has taken on another aspect: the diagonals of a stack of long stairs are clearly to be seen through the misty glass.

As you enter the grey building, some things become more clear, others more enigmatic. The double glass wall admits a milky, almost palpable light across the polished concrete floor. Large planes of grey concrete slightly alter the basic square of the plan, defining an implied square within that of the perimeter. Investigation reveals that these thick internal concrete walls are screens for the vertical circulation. The grey plane that faces you past the reception desk as you come in conceals the big service lift. Behind the wall to the right are the passenger lift and the fire escape stairs. And, of course, on the way in you passed the long ceremonial stair, rising straight in three flights to the first of the formal gallery floors.

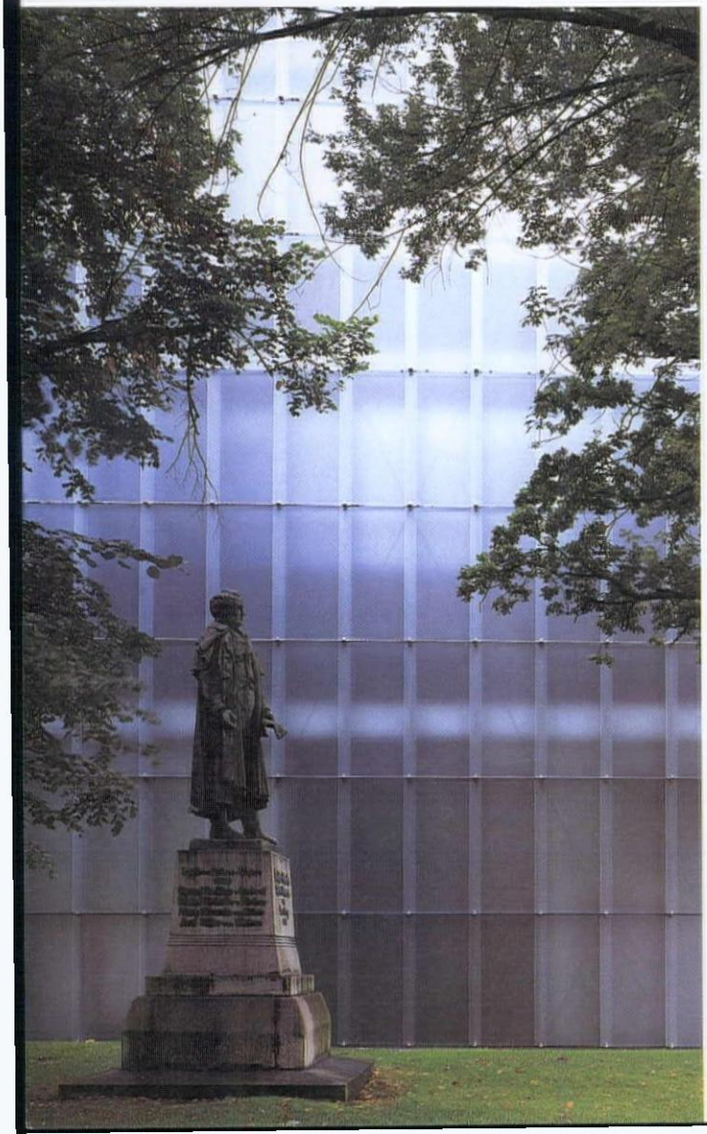
The upper floors are all virtually identical. The three massive concrete planes which define the entrance hall against the translucent outer skin are projected upwards (they are in fact the sole vertical structure), but round them are equally beautifully finished grey in-situ walls which follow the perimeter. You are in a concrete box within a concrete box: usually a recipe for dreariness at best and downright nastiness at worst. Yet here, there is magic. It comes from the ceiling, which is formed of etched glass plates similar to those outside.

Through this grey (and occasionally opalescent) abstracted version of the heavens, the real light of the sky filters round the edges of the space. While the centre of the floor always remains more or less at the same level of luminance, the surrounding zone varies in both intensity and colour temperature as the sun moves round the building and clouds intervene. Nothing could be more reticent than these grey galleries, gently and generously waiting to allow changing art exhibitions to dominate. Yet few visually closed interiors have made such marvellous and ethereal connections with the outside world: here is a calm and very highly abstracted reinterpretation of the mysteries of eighteenth-century Baroque scenografia.

These amazing, though subtle, effects have not happened by accident. Between each glass ceiling and the concrete slab above it is a 2.2m high void which in some ways acts as a

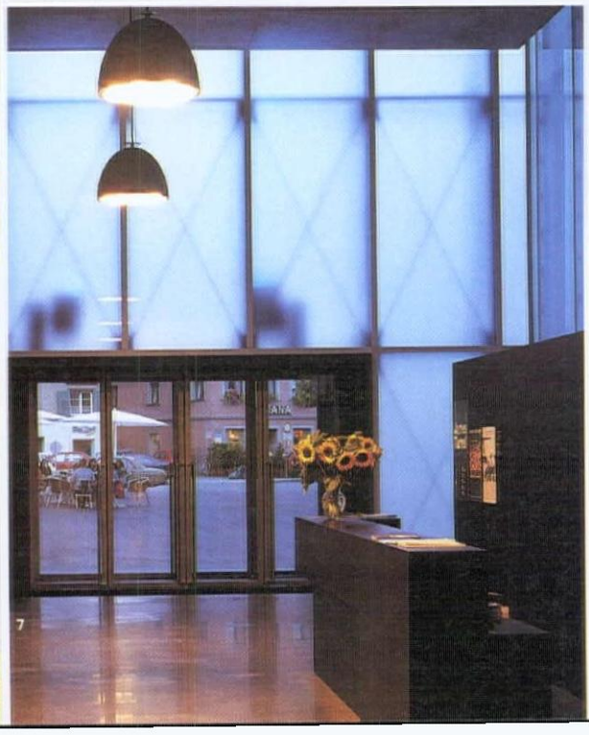
4
The layered epidermis: etched glass, metal framework, inner massive structure.
5
Entrance is modest, but clearly identified by bronze porch.
6
A cultural square has been created, defined by the theatre, gallery and Zumthor's new library/office building, seen here left with café umbrellas.
7
Gallery entrance: ground floor (see 10) has different lighting and finishes (for instance the polished floor) from the galleries above.
8
Void above gallery glass ceiling (right) balances light and temperature.

4

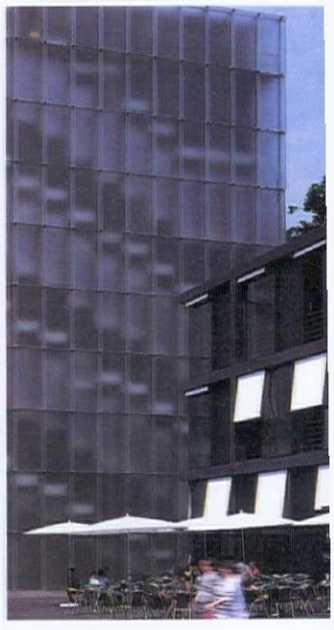


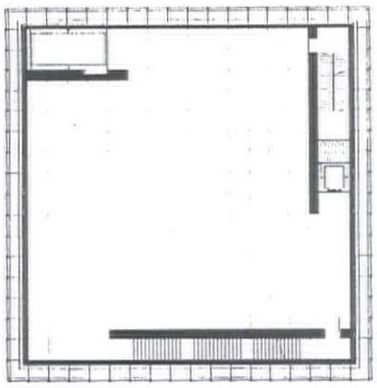
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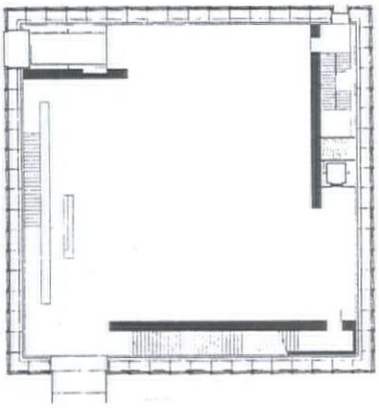


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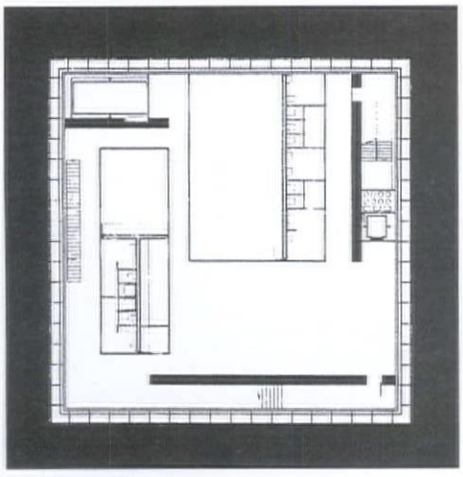




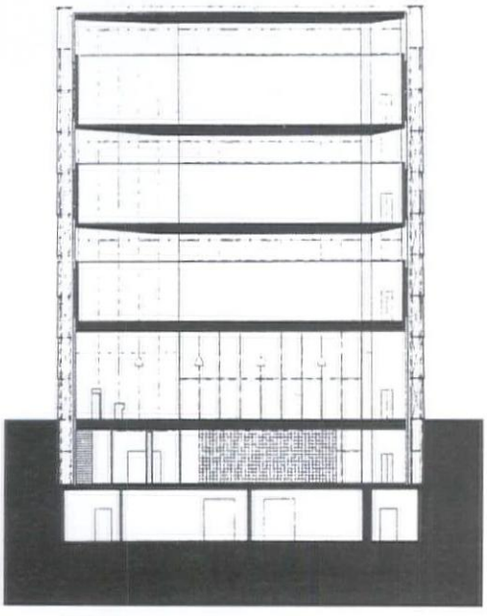
gallery level



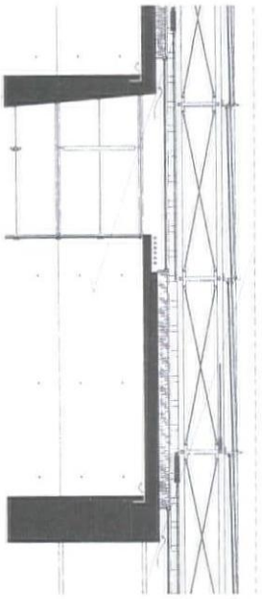
entrance level



basement (scale approx 1:590)

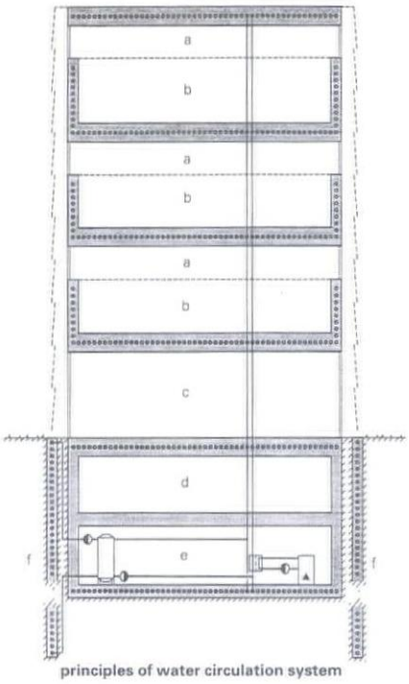


section

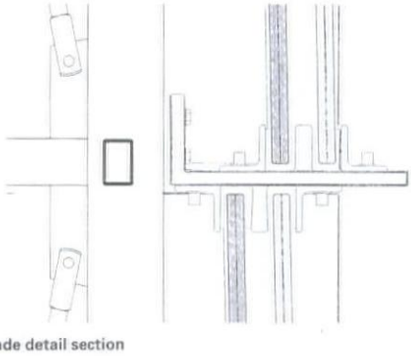


section of facade treatment (scale approx 1:140)

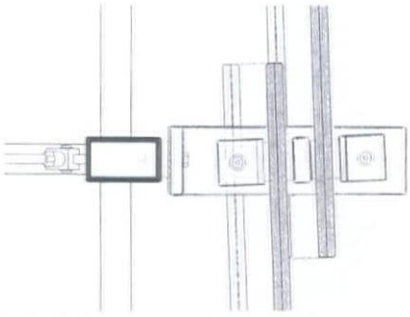
a light and temperature balancing space
b gallery
c entrance hall
d basement
e second basement (plant)
f separate walls connecting to underground stream



principles of water circulation system



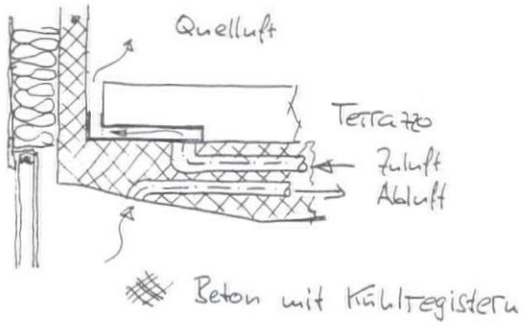
facade detail section



facade detail plan



8

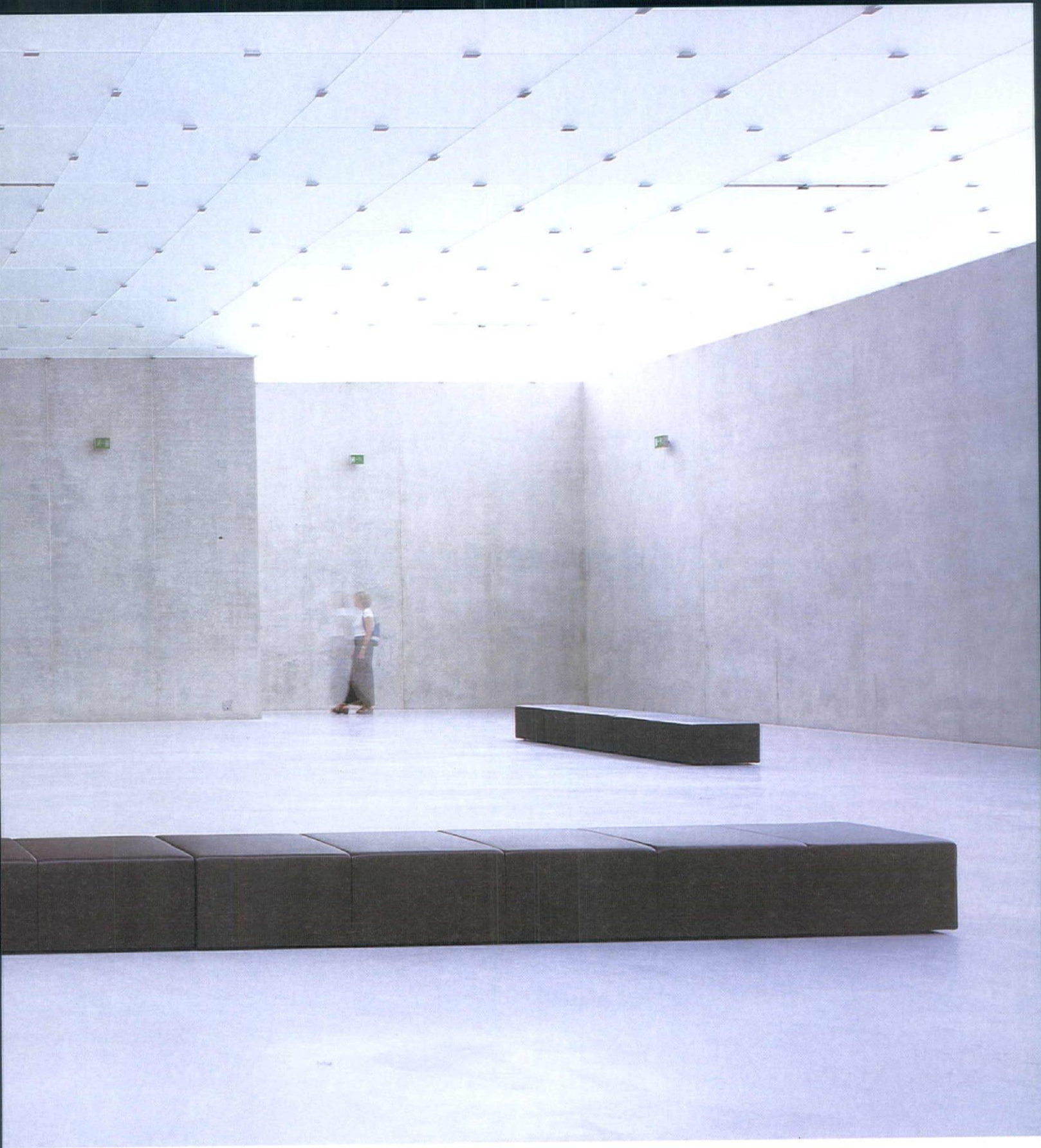


sketch of air handling principles

Art museum, Bregenz, Austria
Architect
Peter Zumthor



9



9
Chastely and undemonstratively waiting for its art: a gallery, lit magically by both day and artificial light through the glass ceiling.

Art museum, Bregenz, Austria
Architect
Peter Zumthor



10



11

plenum for air and light alike. Completely unlike the gallery below, it is fully glazed all round, so it acts as a geometrical device for filtering light which passes through the rainscreen and the inner glass wall. In winter, the whole volume above the glass ceiling can become filled with horizontal sunlight which is diffused downwards with no detrimental effect on the artworks. At the height of summer, the geometry generally prevents serious penetration of the sun's rays, though blinds are automatically lowered over the glass walls if solar intensity becomes too great. (As blinds go down, artificial illumination from lamps under the slab increases, ensuring a more or less constant light level.)

Just as the space above the ceiling modifies light, it balances temperature and humidity. The in-situ floors and tray-walls of the gallery floors are permeated by continuous coils of plastic pipes which convey cooling and heating water as necessary to enhance the natural thermal fly-wheel effect of the massive concrete. Heat is derived when needed from a gas powered boiler. Cooling comes from non-structural side walls sunk 25 metres down to the level of an underground stream, which is of course always at low temperature. Its chill is conveyed up into the bulk of the building through water pumped round embedded pipes like those in the main floors and walls. Automatically regulated mixing of hot and cold in the mass of the building is intended to control the atmosphere of the galleries to within a four degrees Celsius daily fluctuation (in winter between 18 and 22 degrees, and in summer 24 and 28 degrees – the latter at a private view on a hot day). Radiant heating and cooling effects are much enhanced and balanced by a system which delivers fresh air through the concrete to the perimeter of all the floors, while extracting stale air through the base of the same slabs. Compared with ordinary air conditioning, running costs will clearly be less, and capital costs have been estimated to be no more than half those of a conventional system.

None of Zumthor's buildings is the same as another. Think of the differences between the timber church at Sogn Benedetg (AR January 1991), the stone thermal baths at Vals (AR August 1997) and this *tour de force* in glass and concrete. Each shows his profound understanding of materials, perhaps stemming from his apprenticeship as a cabinet-maker. And each demonstrates his mastery of appropriate scale and the mysteries of revealing spaces in light. Here, with his technical colleagues, he has demonstrated an equal command of environmental control. To achieve that, up-to-the-minute theory and control technology is used, yet the Kunsthaus also recalls some of the most basic attributes of architecture: it is a cave (or rather a series of caves) within a tent. Under their sky-like ceilings, its spaces wait, modest yet dignified, for the art to be installed. The building is reticent, yet imbued with gravitas. It is an integrated masterpiece of intellect and imagination.

Architect
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Project leader
Daniel Bosshard
Project leader, administration
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Project team
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Site management
Siegfried Wäger
Structural engineer
Robert Manahl
Daylighting
H. Freymuth
Heating and ventilation
Meierhans & Partner
Electricity and lighting
Ing Gmeiner/Bell
Water supply and drainage
Ing Bohle, Dornbirn
Building physics
Ing F. Stadlin
Photographs
Stefan Müller-Naumann

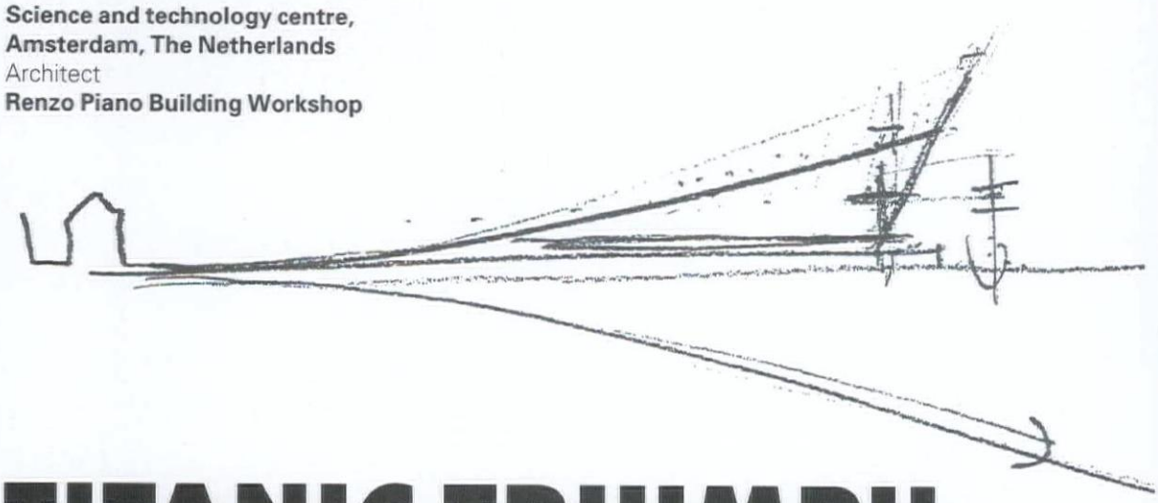


12

10
Ground level with its polished floor and hanging lights.
11
Processional stair to gallery lit by both day and artificial light.
12
Looking up from the basement, glass wall continues to this level, drawing down daylight.

Art museum, Bregenz, Austria
Architect
Peter Zumthor

Science and technology centre, Amsterdam, The Netherlands
Architect
Renzo Piano Building Workshop



TITANIC TRIUMPH

An institution which should make a major contribution to the cultural life of Amsterdam is appropriately housed in a dramatic new waterfront building.

Where a road projects into and dives below the waters of Amsterdam harbour, a ramp and then a roof swoosh up in mirror-image counterpoint; then the space below the roof is wrapped in outward-leaning walls that, following the geometry of the tapering, curving site, sweep round and under the roof's highest point as a curved, ship-like prow. Such was Renzo Piano's sketched response to the challenge of building a museum of science and technology straddling the entrance to the tunnel under the harbour, the only way a site large enough for the 12 000 sq m building could be created close to the old city, the Maritime Museum and the Central Station, 10 minutes' walk to the north-west. The building, clad in green pre-oxidised copper and resembling a sinking ship (hence its nickname, the Titanic), retains all the freshness of the original sketch. And, though the external form clearly came first, Piano has contrived inside an exciting and functionally-convincing spatial sequence that entices visitors through all the exhibition areas that step up diagonally through the building to connect its two main entrances.

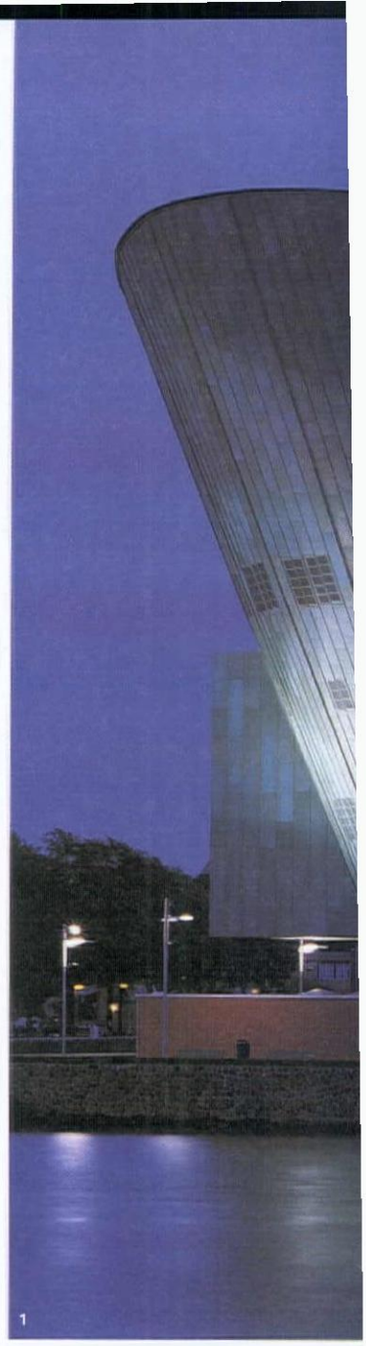
Building and contents form the latest phase of what started at the beginning of the century as a Museum of Labour, with a collection centred on machines of the period and paintings by the industrialist-founder, Herman Heijenbrock. The museum moved periodically and became publicly owned, in its fourth and penultimate manifestation occupying an old school. Sadly, ties with the past have been cut and, instead of showing a rich mix of old and new, all original exhibits have been discarded in favour of contemporary interactive displays.

Some of this change, and more, is signalled in the name, newMetropolis, chosen to convey the institution's role in regenerating the surrounding area, with its accessible rooftop as a central public piazza. The name is also a twist on that of Fritz Lang's famous film, now indicating a positive view of technology – though, ironically, a contrast persists between the gloomy world of machines and the sunny rooftop world of play.

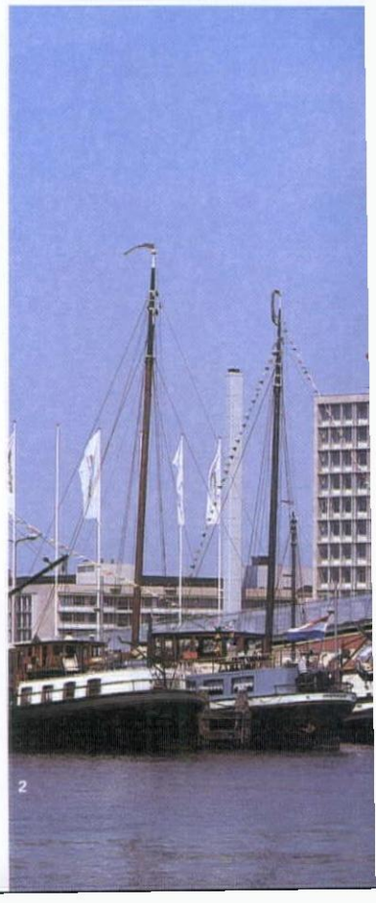
From a distance, the lack of conventional windows and sloping profile give little sense of scale or of the spaces inside. Access from the Central Station is by footbridges across the harbour to where the prow looms 32m high, and from the old city by quays, which flank the sunken road and extend around the site to the lower southern end. From the eastern quay rises the ramp to the roof and upper entrance. Along this quay are moored sailing vessels, exhibits of the nearby Maritime Museum, so making an apt connection between the two institutions. Hence newMetropolis's location aptly conjoins the two technologies in which the Dutch were traditionally expert, water craft and water-related civil engineering.

The hull-like volume of newMetropolis, with its curving, outward-sloping green walls, floats over a transparent ground floor enclosed in floor-to-ceiling glass – except where the shafts of escape stairs are faced in the same brick as the base of the ramp, and the lift shaft that projects forward from and above the south elevation. The main entrance is in this face, off a triangular area connecting west and east quays and visible from the cars below and the old city. Like the rest of the ground floor, the entrance lobby is floored with the same paviours as the quay outside and treated as its inward extension. Beyond the lobby, on the west is an office offering guidance in careers in science and technology. On the east is the workshop, where the behind-the-scene preparation of exhibits is publicly displayed, a trick Piano already used at The Menil Collection (AR March 1987). And in the north is the double-height temporary exhibition area.

Inside the double-height entrance lobby, attention is commanded by the vista that

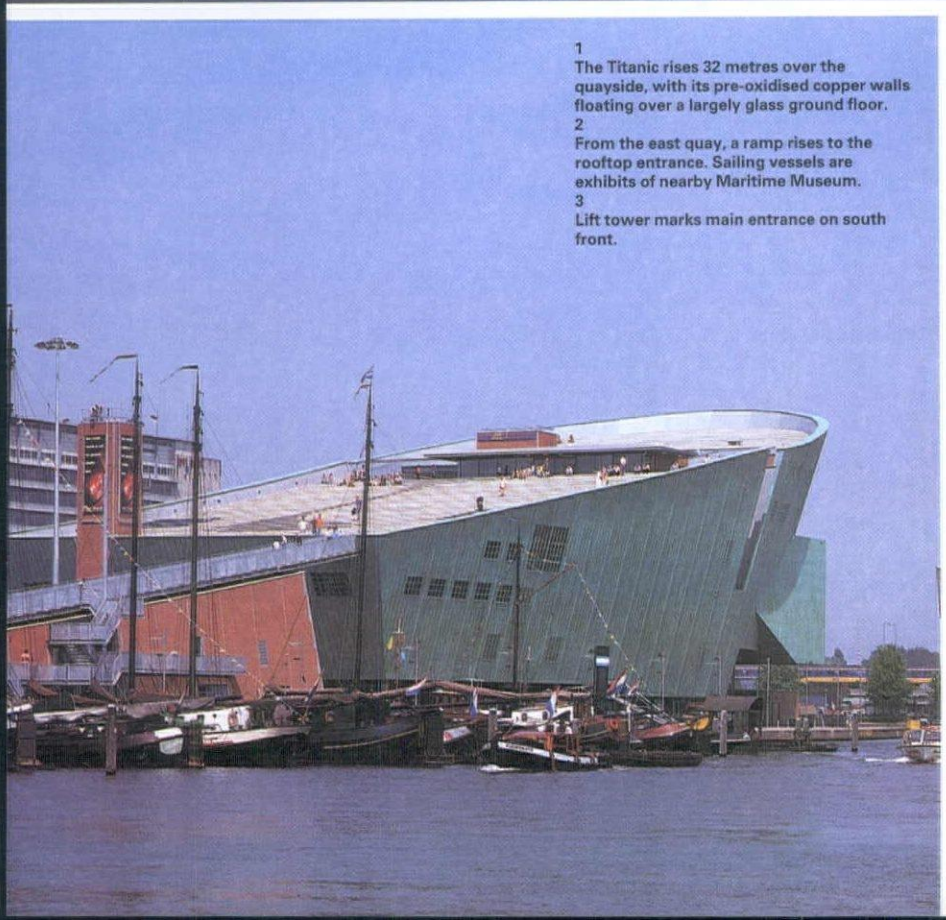


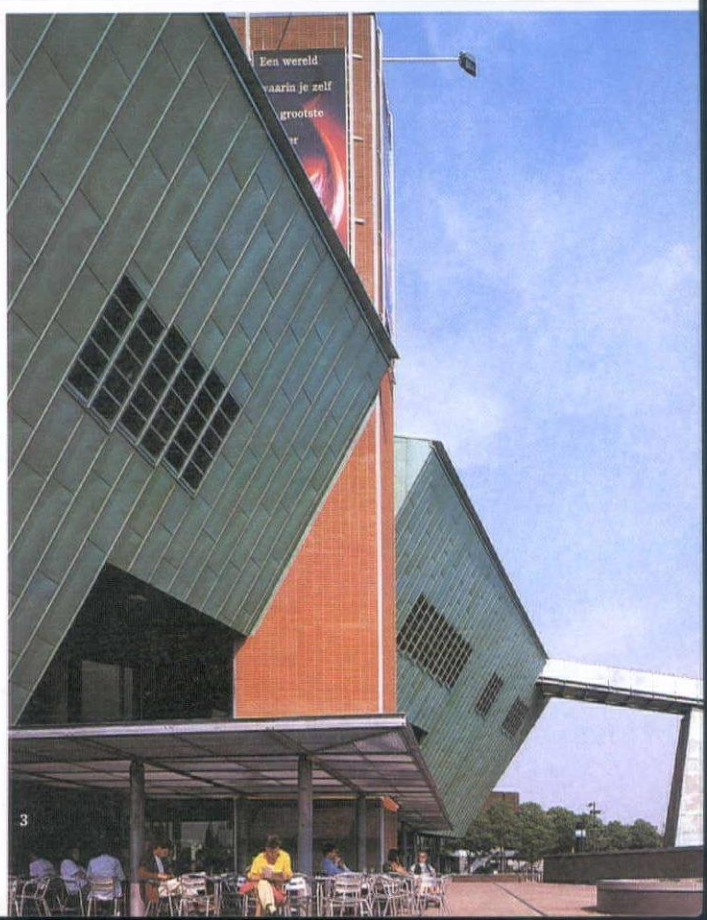
1



2

1
The Titanic rises 32 metres over the quayside, with its pre-oxidised copper walls floating over a largely glass ground floor.
2
From the east quay, a ramp rises to the rooftop entrance. Sailing vessels are exhibits of nearby Maritime Museum.
3
Lift tower marks main entrance on south front.



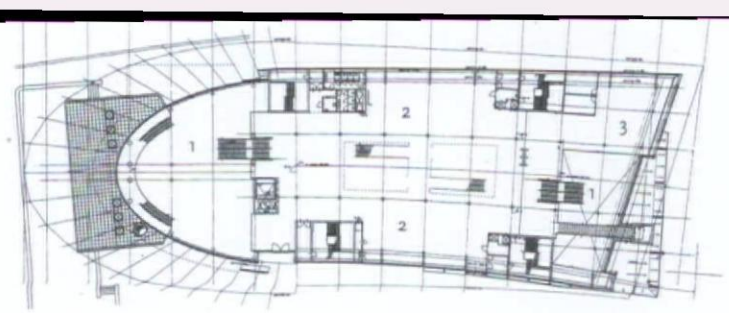


Amsterdam, The Netherlands
Architect
Renzo Piano Building Workshop

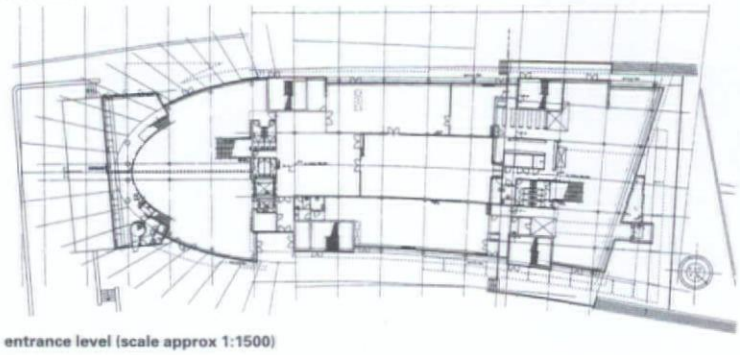
3 children's area
4 general office
5 office
6 meetng
7 foyer
8 pantry
9 lecture
10 cinema
11 store
12 restaurant
13 upper level entrance
14 roof terrace



location plan



first floor



entrance level (scale approx 1:1500)

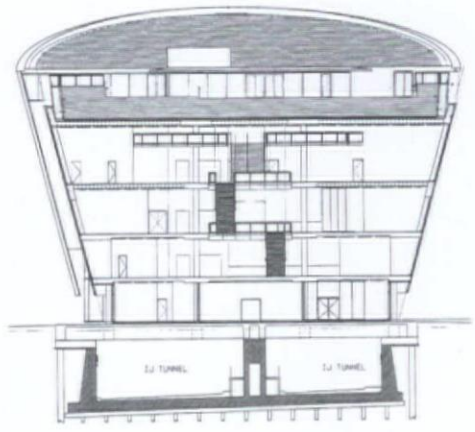
extends ahead and diagonally upwards through the length and height of the building, an effect contrived by the way the stairs and the wells they climb through are aligned and staggered. The result is a dramatic processional route that compels visitors onwards through all four above-ground exhibition levels, which also step diagonally upwards under the roof. This arrangement leaves space at each end for ancillary accommodation.

Over the east side of the entrance lobby is a shop reached from the head of the stair up to the first floor. From the northern end of this floor, stairs descend into the temporary exhibition space to which visitors are drawn by the light entering its tall glass walls. At the second floor's southern end are offices reached by the projecting lift that compositionally stabilises the southern end of the outward-sloping building. At this floor's northern end is a 200-seat cinema/lecture theatre, which projects out from the sloping, curving prow, and a black box theatre for performances with scientific themes. In the prow is a boardroom. Above auditoria and boardroom is the topmost exhibition space. Like boardroom and offices, it has windows jauntily-angled in the sloping walls because they are aligned with the copper panels outside. Other exhibition floors have only a single window each. These look to the old city through a vertical slot up which large exhibits are hoisted to be admitted through the windows.

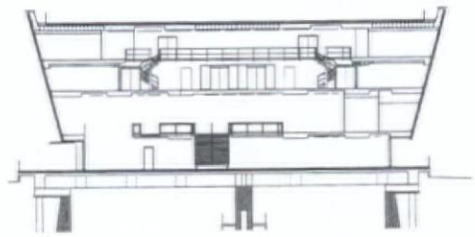
Other than the minimal amount that comes through the windows, exhibition floors have no natural light. Piano's proposed continuous strip of rooflights was vetoed by the client, so that the spot-lit exhibits and their vdu screens can loom enticingly from a soft-lit background. The resulting gloom may not show to best effect the potentially splendid spatial sequence, but the rather fragmenting emphasis on spot-lit displays and vistas draws attention away from the stark and cavernous quality – all that was possible on the budget of 28 million guilders (excluding professional fees).

To make the best of the enforced frugality of material and finish, Piano conceived the interior as that of a 'noble factory', with all materials unfinished and construction straightforwardly expressed: off-shutter concrete columns and ceilings, grey linoleum floors and perforated galvanised steel balustrades and wooden handrails, both unpainted. Unfortunately, the galvanising is uneven in colour and reflectivity and the casting of concrete stairs is far from pristine. Furthermore, the exhibits are designed in a caricature of the sort of high-tech to which Piano's approach is an antithesis. The result is too like a video games emporium. No doubt with time the potential of the spaces will be better understood and the exhibits designed and placed with greater sensitivity, perhaps with banners and other eye-catching devices fluttering down stair wells stressing the spatial continuities and drawing attention away from imperfections.

From the prow-peak exhibition space that terminates the vista from the ground-floor entrance, the route folds back up a final stair to rooftop entrance from which the building can be explored from top downwards. Up here too is a cafeteria, with a sideways (westward) view of the old city, that opens onto a small terrace at the head of the stepping rooftop piazza. The panoramic view southwards from the piazza, the only elevated view of Amsterdam from a public place, contrasts with the introversion of the exhibition spaces and reconnects newMetropolis with city. On the roof is a water cascade that will be joined by mobile sculptures by Shingu (the Japanese sculptor favoured by Piano), the ensemble demonstrating the interactions of sun, wind and water. Until these are installed, the view down the piazza is rather

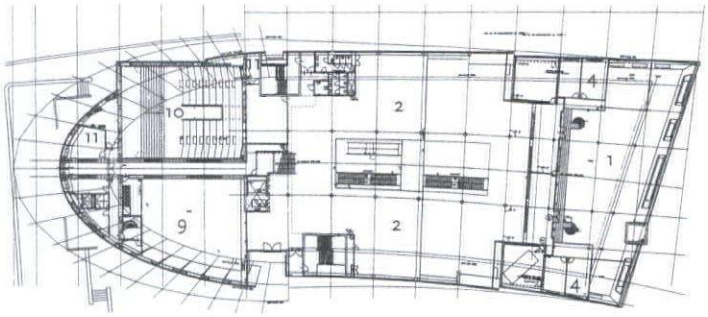


section at north end

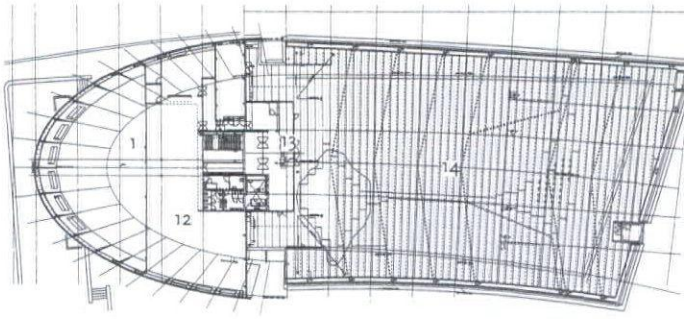


section at south end

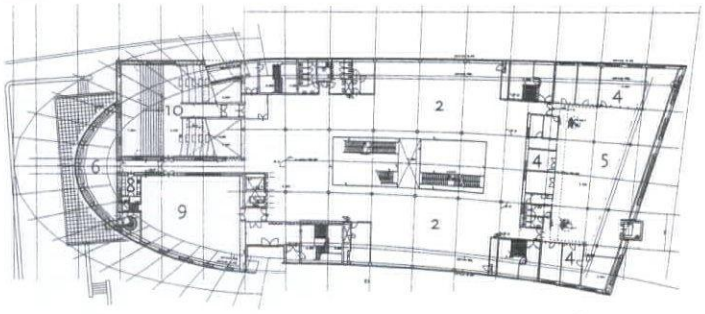




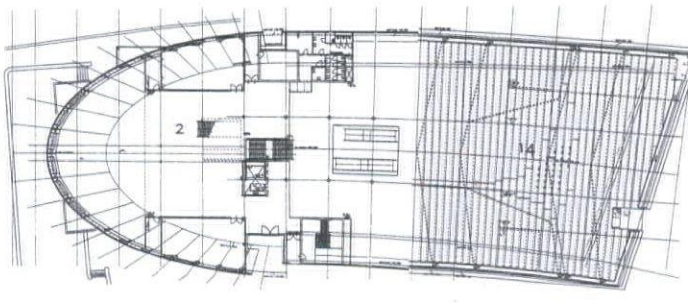
third floor



fifth floor

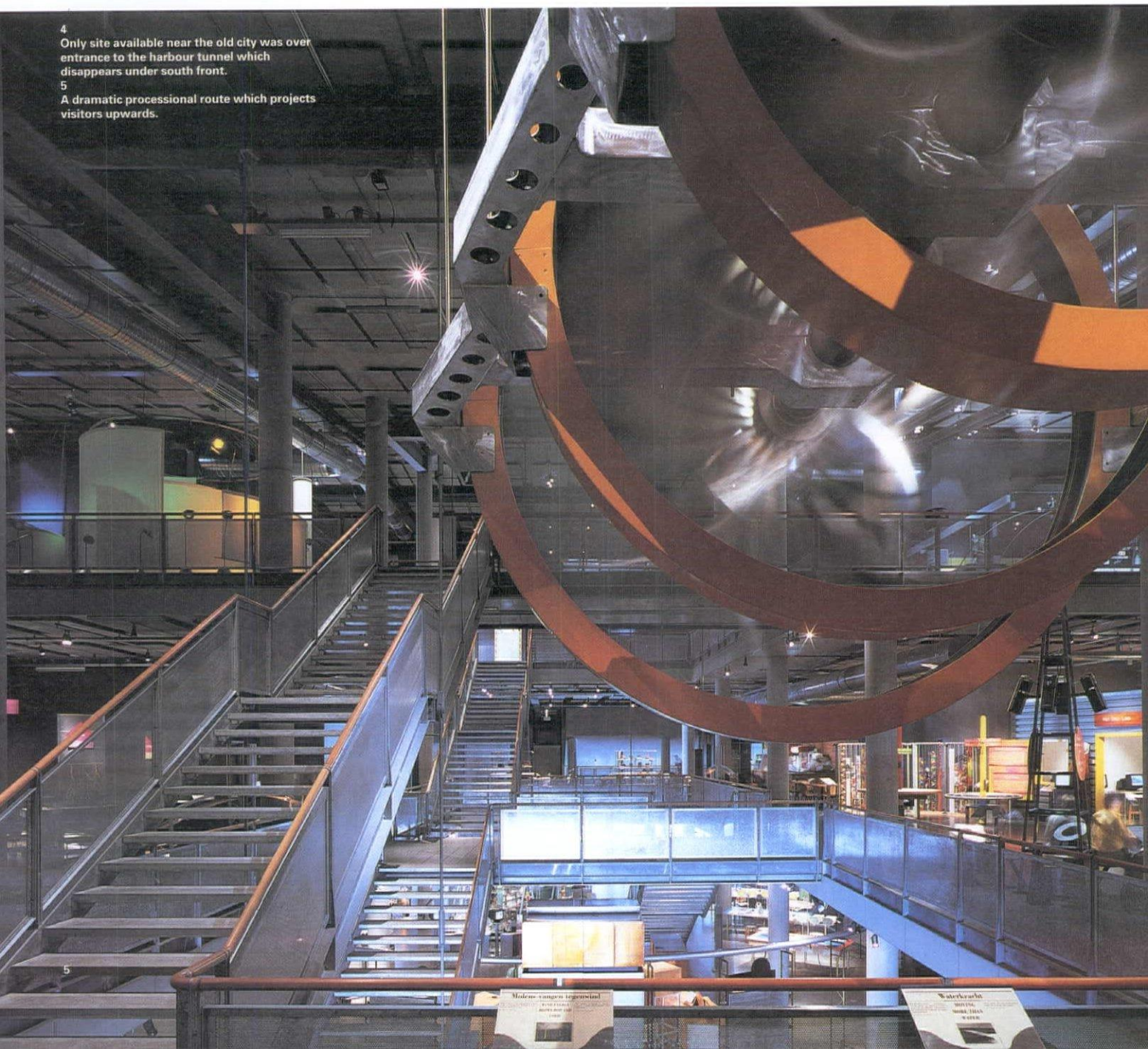


second floor

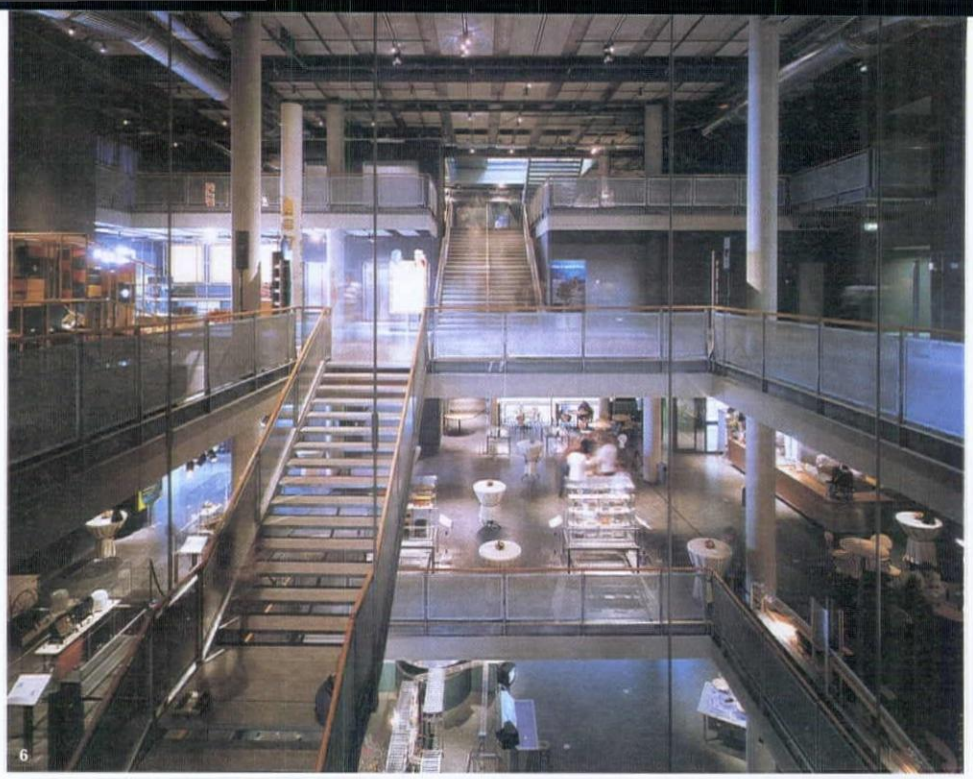


fourth floor

4
Only site available near the old city was over entrance to the harbour tunnel which disappears under south front.
5
A dramatic processional route which projects visitors upwards.



Science and technology centre, Amsterdam, The Netherlands
Architect
Renzo Piano Building Workshop



6
Interior is conceived as a 'noble factory' with all construction exposed.
7
All original exhibits have been discarded in favour of often vulgar interactive displays.
8
The few windows give glimpses of the old city and are canted to align with cladding.

foreshortened, insufficiently compensated for by the too shallow catenary curve of the roof in section.

Already it is easy to imagine that this canted piazza will be thronged by the same children and accompanying adults who now play noisily inside. NewMetropolis has been an immense popular success. But some local architects have whispered that because of the tight budget Amsterdam has only got 'half a Piano'. Such a comment completely misses the point.

Certainly the interior is spartan and the structure an impure composite, the concrete giving way to steel in the prow. Though the design retains the diagrammatic immediacy of the original sketch as well as the spatial flow that came later, not only has the lack of natural light somewhat compromised the spatial promise, but the lack of budget has led to a certain lack of intensity in working the design through. Yet all this is also part of what is so admirable about the work: the degree to which it is a product of, and capitalises on, circumstance. A great Piano virtue is that there is no such thing as a typical Piano building. Each is shaped by place, programme and the balance the budget and decorum allow in mixing imported components with the limited capacities of local construction – as newMetropolis demonstrates perfectly.

PETER BUCHANAN





Architect
Renzo Piano Building Workshop
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with
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Consultants
Ove Arup & Partners (P. Rice, T. Barker, J. Wernick)
Design development 1994-97
O. de Nooyer (associate in charge), J. Backus, A. Hayes, H. Pénaranda, H. Van Der Meys, J. Woltjer
Prepatinated copper cladding
KME
Lighting
iGuzzini (exterior)
Philips (interior)
Photographs
R. Richter/Architekturphoto: 1, 2, 3, 5, 7
Michel Denancé/Archipress: 4, 6, 8

Conceived as an exquisitely detailed pavilion in the landscape, Renzo Piano's museum for a Swiss art collector in the suburbs of Basle is a sensual and material delight.



1

Art gallery, Basle, Switzerland
Architect
Renzo Piano Building Workshop

Ernst Beyeler is an art dealer in Basle who has amassed a formidable and precise collection both of High Modern masterpieces (Mondrian, Picasso, Giacometti) and of Oceanic and African masks, figurines and other tribal objects. These paintings and sculptures have now found a permanent home in Renzo Piano's latest gallery project. The Beyeler Foundation is a custom-made private museum on a pastoral site in the outer suburbs of Basle. Its purpose is not to hawk trinkets or aid mass tourism but rather to shelter and cultivate an appreciation of visual culture. With an existing villa refurbished for use as offices and a café, the new, strikingly tailored 120m long construction is – except for one calm bookshop – dedicated to art alone. Unlike many contemporary cultural projects, Piano's building is focused on the clarity of its interior and the views from there out into the surrounding terrain.

The site is in Riehen, an affluent suburb with still-functioning farmland near the German border (the Vitra compound at Weil-am-Rhein is only a few miles away). The gallery presents a beautiful opaque stone wall to the public road. More flush and toned than the normal local sandstone, this wall of Argentinian porphyry is the

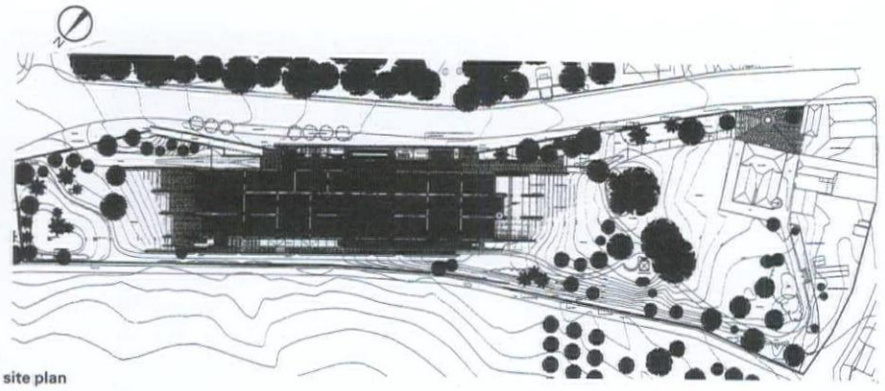
1
The new building connects with its pastoral surroundings. Contemplation of art alternates with contemplation of nature.

PASTORAL PAVILION

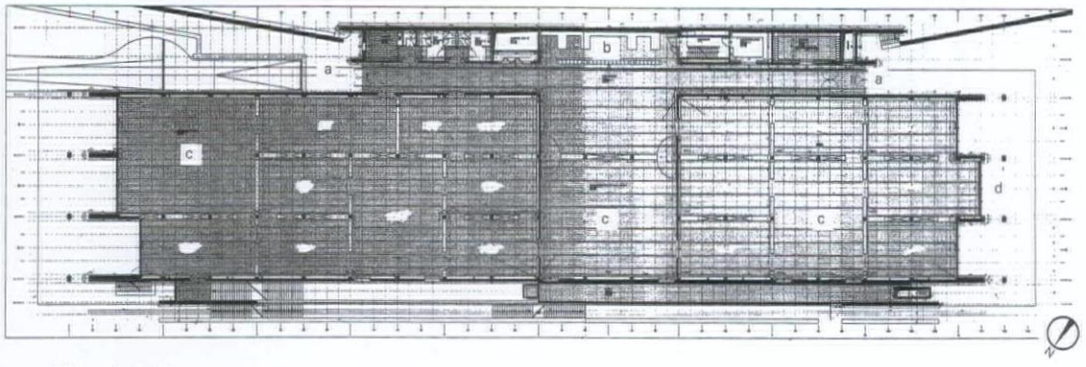
Art gallery, Basle, Switzerland

Architect

Renzo Piano Building Workshop

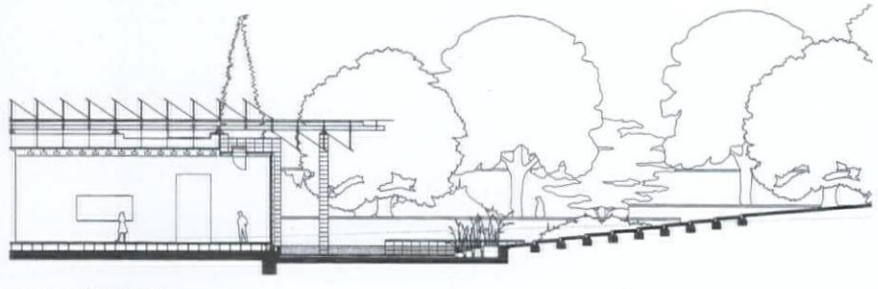


site plan

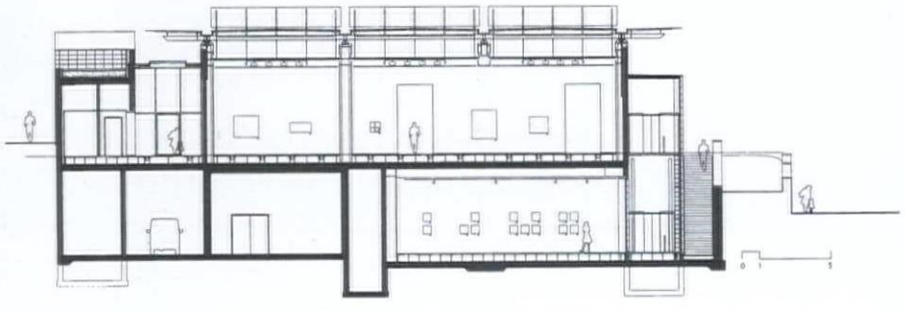


ground floor plan (scale approx 1:1000)

a entrance
b bookshop
c galleries
d pool



part longitudinal section



cross section



2
Detail of the crisp, translucent roof canopy.
3
The pavilion in the landscape.
4
Walls of variegated Argentinian porphyry give the building a powerful elemental quality.
5
The rippling blades of the roof conceal layers of structure and light control devices.
6
The calm, reflecting pool.

first of many parallel walls which give a rhythmic linearity to the museum's siting and internal planning. Visitors enter the property boundary next to the old, *hauslich* villa, wander through its garden, and then turn right to be faced with the short end of Piano's striated structure. Here are the thin ends of his parallel walls, the museum's great overhanging roof filigreed with layers of structure and light control devices, a calm reflecting pool with sparse delicate plantings and then the sheer interstitial walls of shaded glass, so that the view inwards is like an X-ray, cutting through this southerly elevation deep into the gallery space and the precious works of art.

If the walls have an archaic quality – they align themselves in the topography like remnants of some forgotten installation – it is the Beyeler Foundation's roof that brings this architecture right up to date. Towards the road, it peeks above the walls as a suggestive, rippling cornice. Around at the recessed entrance, it becomes an astonishingly crisp canopy, supported on square pillars of stone (where the walls appear to decompose) and floating free as a translucent blade in which the constituent layers are beginning to separate. Its edge is formed from panels of fritted glass held slightly away from each other and resting on a delicate mesh of white steel purlins. These multiple spanning members are recessed and chamfered both inwards and downwards to augment the canopy's lightness. Its undercroft is composed of more densely textured steel trays, held within the structural matrix of the ceiling.

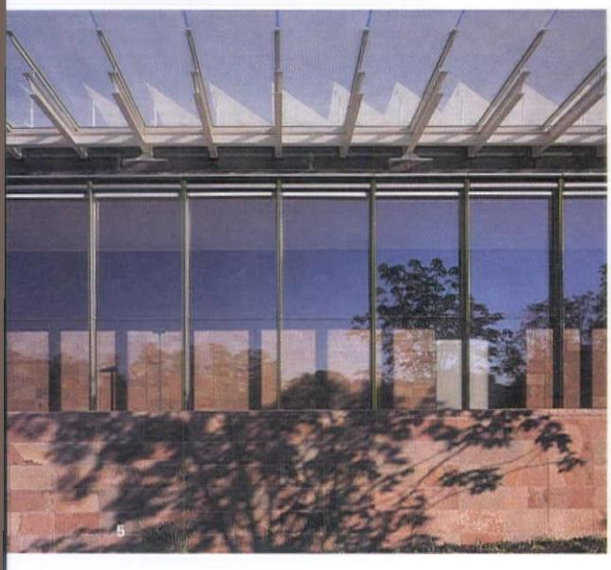
Inside the museum, the red porphyry walls change to



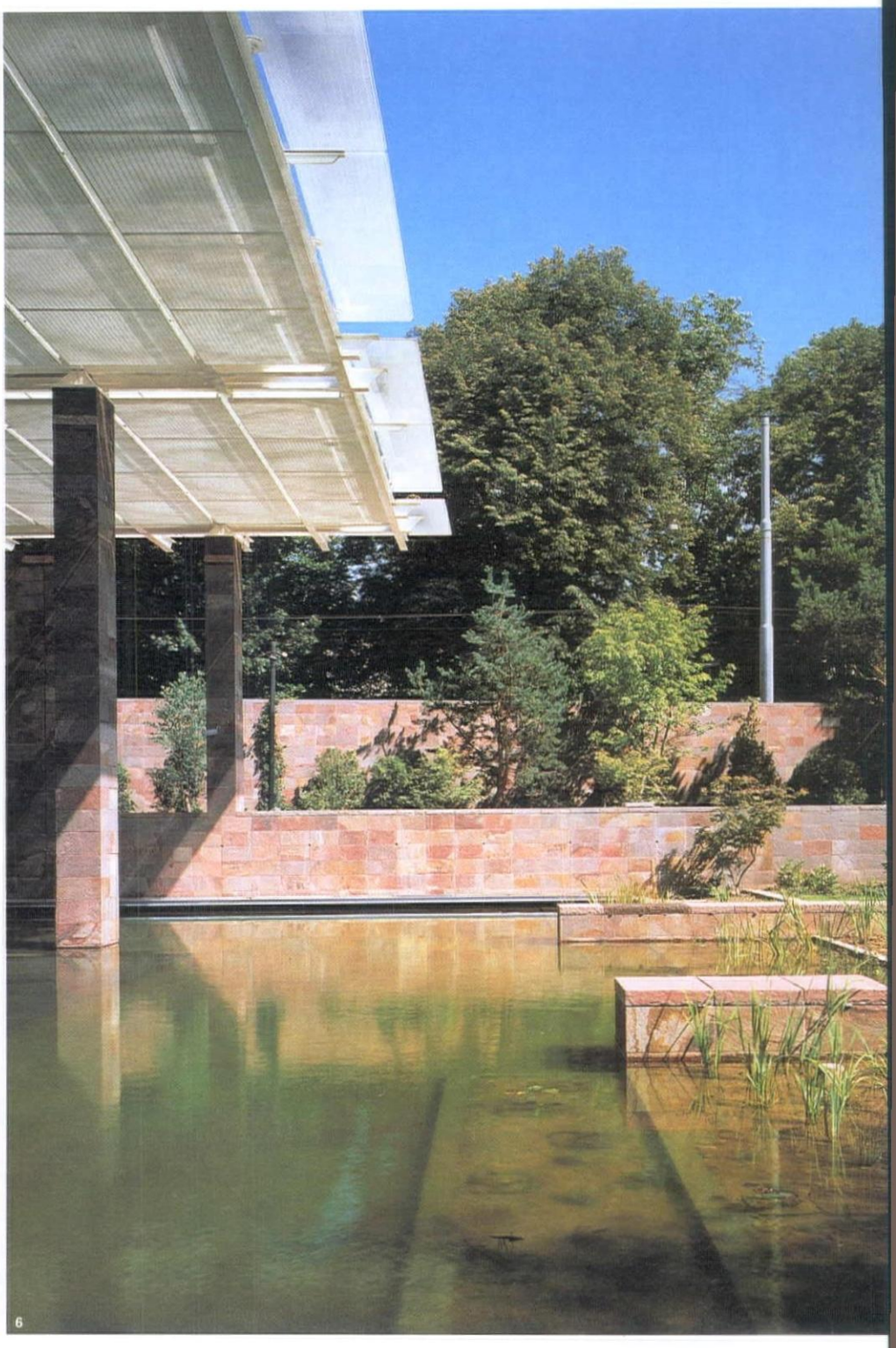
3



4



5



6

homogeneous white surfaces. These are in fact vertical sandwiches of gypsum board, mute screens within which the building's services are gathered. Indeed, all principal horizontal and vertical planes are hollow in order to accommodate service management. Even the emergency signage, the bane of so many institutions, is placed discreetly in the jambs of openings from one gallery space to the next. There is a continuous raised oak floor throughout the museum with inset parallel strips for air circulation. Five metres above, the great white ceiling sails as a constant datum. Above this again, the shadows or ghosts of the building's structural and technical apparatus are apparent. Through the perforated steel trays, you get a sense of the 1500mm-deep luminous stratum within which small but dense operable louvres are topped by an imperceptibly raking roof of structural glass. On top of this, in turn, is a battery of in-situ white glass louvres tilted southwards.

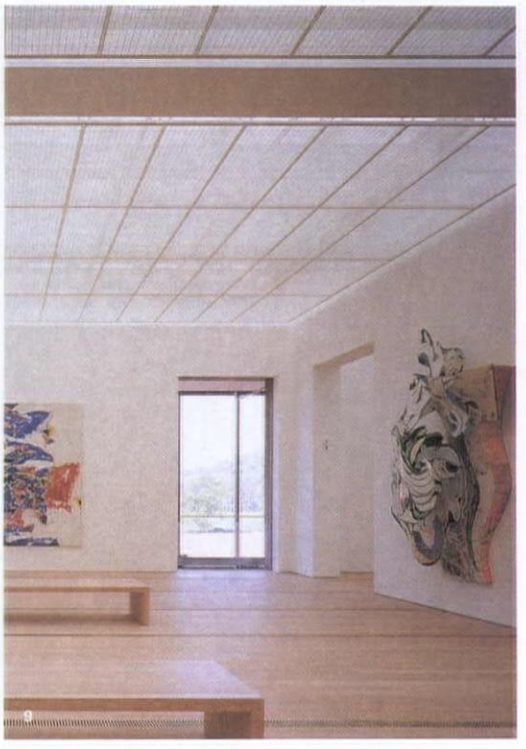
To move through this newest gallery by Piano is a sensual delight. The natural light is perfect; vivid but not too strong, and a little idiosyncratic. The visitor's progression is from one chamber to the next: where openings are deliberately off-axis and where there are neither doors nor door frames. So there are no distractions from the art itself. With the roadside linear strip devoted to secondary functions such as lavatories and the bookshop, the museum proper spreads out through three parallel zones of space. With the light above being the primary element, movement works both towards the building's 'open' short ends (where the canopy shelters



Art gallery, Basle, Switzerland
Architect
Renzo Piano Building Workshop

7
The delicately illuminated galleries. Ernst Beyeler's collection combines High Modern masterpieces with tribal artefacts.
8
The galleries connect with the surrounding landscape.
9
The minimal interiors offer little distraction from the art.
10
Giacometti sculptures poised in a beautifully judged synthesis of light, materiality and landscape.





intimate gardens) and, perpendicularly, out into a fifth zone. This takes the form of an excavated slot, splendidly glazed along most of its 100 metre-or-so length, which gives access to the temporary galleries below.

There is in the Beyeler that distillation of engineering and industrial design strategies always associated with Piano's work. There is of course the memory of Louis Kahn, that master's separation of served and servant spaces but also, most curiously perhaps, his eye for massiveness and for ruins. The Beyeler's walls are close to picturesque (the columns are concrete shafts wrapped in stone) – from outside, they and the complex, repetitive canopy look uncomfortably like certain 30-year-old projects of Edward Durrell Stone.

Inside, protected between its flanks, such symbolisms dissipate. It is when one comes through or looks into the attenuated west-facing volume (part-geological traverse, part-classical loggia, part-deck of an ocean-going liner), that the museum's themes are reunited. There, Piano's concerns for fabrication attuned to the social and to nature return with the bucolic prospect of Riehen's preserved meadowland. The Beyeler Collection has found a wonderful home.

RAYMUND RYAN

Architect
Renzo Piano Building Workshop
Project team
Renzo Piano, Bernard Plattner, Loïc Couton, William Mathews, Ronnie Self, Pascal Hendier
Associate architects
Burckhardt, Hugo Lipp
Structural engineer
Ove Arup & Partners
Photographs
All photographs by Christian Richters except no 6 which is by Michel Denancé/Archipress



ART UNDERGROUND

In the heart of Oslo, the planners require new buildings to contain cultural uses: these galleries are an undemonstrative and dignified addition to the city's business district.

Astrup-Fearnley Museum of Modern Art, Oslo, Norway
Architect
LPO arkitektur & design

The Astrup-Fearnley Museum of Modern Art in Oslo forms part of the office building designed by LPO arkitektur & design for the Astrup-Fearnley shipbroking and banking group. The building, distinguished by the decorative glazed brickwork on its exterior, is in a historically important area of Oslo near the Akershus castle; and the immensely civilised arrangement, whereby business sponsors culture, was here given impetus by the planners' demand that the new offices should make a manifest cultural contribution to the city. The owner of Astrup-Fearnley has an abiding interest in post-war art and a fine collection: a new modern art gallery seemed the obvious contribution to make. The museum is open to the public and has its own separate entrance; exhibitions of important works are held three times a year, but there are also smaller more intimate exhibitions.

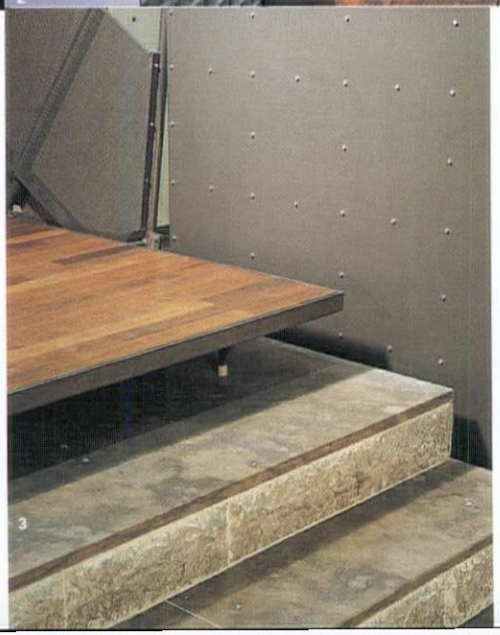
Given part of the ground floor and basement, and a small part of the first floor of the building, the architects were asked to create a gallery that could provide about 300m of exhibition space, ample storage, and an appropriate backdrop for modern art.

The museum is located in the north-west corner of the office block, its northerly wall following the curve of a ramp to a basement car park. It is divided into a series of galleries mainly distributed over the basement, with offices being allocated smaller premises on the first floor. In section, it can be seen how the levels are stepped down from the offices over the entrance; and both plans and sections reveal the clever horizontal and vertical layering of space which provides surfaces, distances and volumetric drama.

Entrance on the west is appropriately sculptural, through a handsome double-height portal flanked by huge steel sheets. Though it does contain one of the museum's more intimate rooms,







1
Museum has own entrance, set in the side of the office block.
2
Toplit entrance throws light down to main gallery floor in basement. First floor office gallery can be seen left.
3
Materials are limited to stone, metal and timber; detailing has Scandinavian precision and elegance.
4
The curve of the Kiefer room is dictated by the car-park ramp through the wall, but it is turned to dramatic effect by Kiefer's majestic 'The High Priestess', the only permanent exhibit.



Astrup-Fearnley Museum of Modern Art, Oslo, Norway
Architect
LPO arkitektur & design

the ground floor mainly acts as an access deck, a double-height toplit link between the main galleries in the basement and the offices above. The deck is cut away creating voids and bringing light into the basement. Such volumetric jugglings and wells of light animate what might have been an oppressive subterranean space.

The basement is an orderly complex of galleries of various sizes, a workshop and stores, ranged around the edges of a long central gallery. This runs the width of the museum, from the southern boundary with the underground car park to the great curving wall on the north. Contraction and expansion of space laterally and vertically has been skilfully handled. Sequences of space and perspective could have felt busy but do not; on the contrary, they provide the setting – the distances and angles – for calm contemplation of the works. The most dramatic space, entered through slots cut into the wall at the north-eastern end of the long gallery, was created for the only permanent exhibit, a post-holocaust bookshelf by Anselm Kiefer and entitled 'The High Priestess'. A huge and sombre object, it provides a vision of forceful gloom set as it has been against the grey concrete surface of the curved wall rising unrelieved 9m high.

Museum lighting with spotlights and wall-washers supplements daylight. As to finishes and materials, LPO's palette is severe: wood, metal and stone. A sense of unity is maintained by using Portuguese sandstone for the floors throughout the basement, while upper levels are floored with woodblock. Walls are lined with a combination of MDF and plasterboard which accepts fixings for hanging paintings. Surfaces are simply painted and repainted when exhibitions change. P.M.

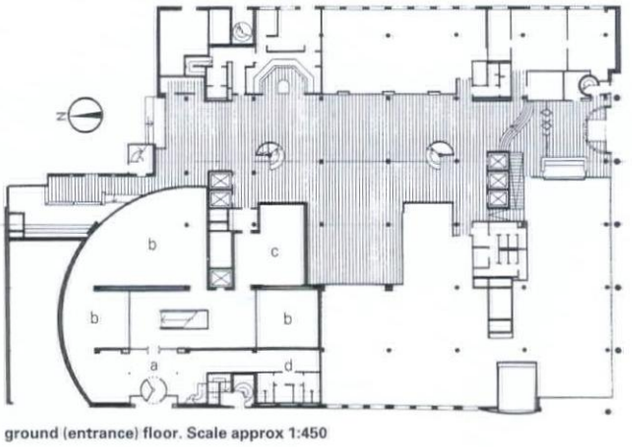
Architects
LPO arkitektur & design
Project architects
Lars Haukeland, Ola Aasness, Jørn Olav Ask, Torbjørn Bentsen, Karl Christiansen, Nina Dillingøen, Liv Fjerdingrein, Gry Holter
Photographs
Christoffersen

5
Open stair links entrance and galleries.
6
Most galleries are arranged enfilade to give maximum flexibility in arranging changing exhibitions.

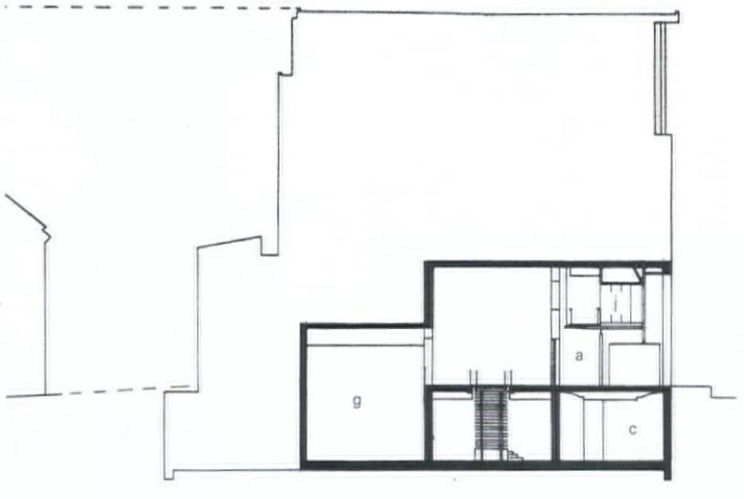




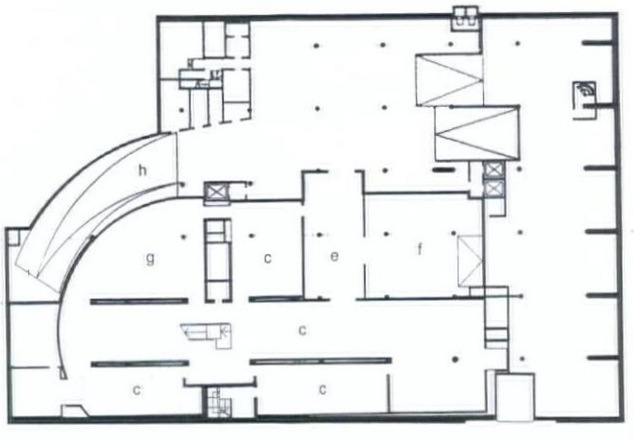
a entrance
b void
c gallery
d lavatories
e workshop
f store
g Kiefer room
h car park ramp
j office



ground (entrance) floor. Scale approx 1:450



east-west section



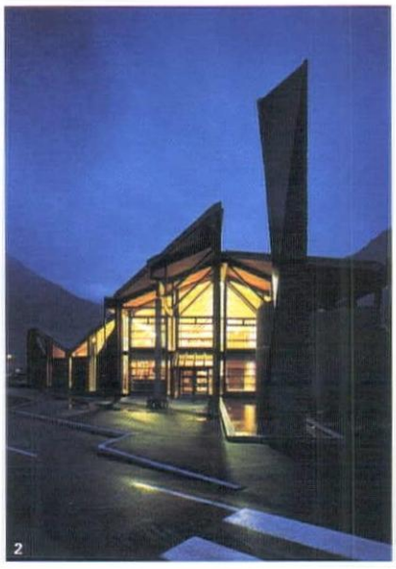
basement (gallery) floor

NATURE STUDY

An interpretation centre for one of the most remarkable ecological and topographic areas of the world robustly reinterprets traditional materials and Modern spatial sensibility.



Nature centre, Hardangervidda, Øvre Eidfjord, Norway
Architect
Lund & Slaatto



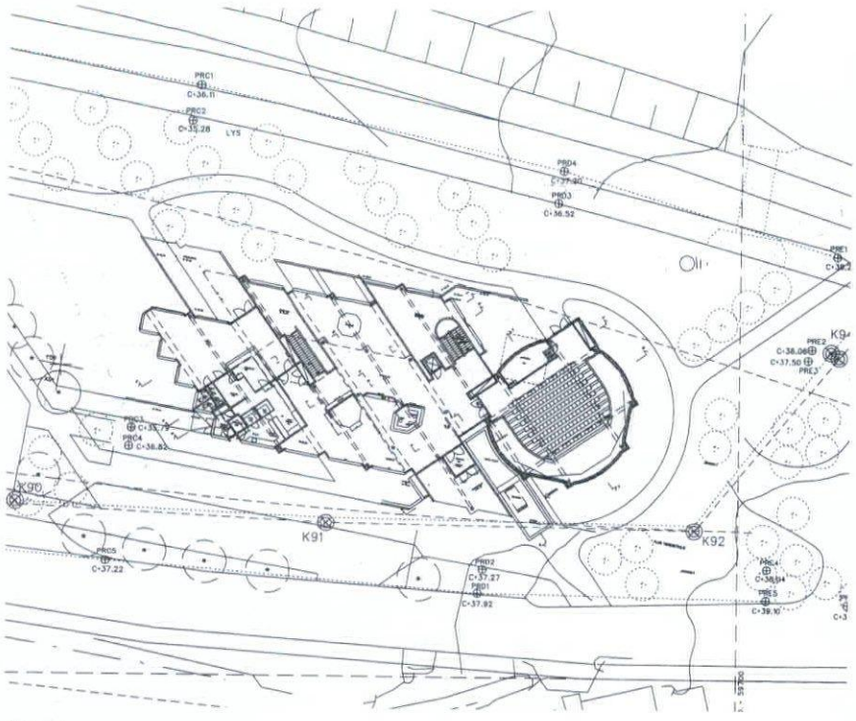
1
Mighty roaring Vøringsfoss, where a river pours 182m over the cliff from the plateau into the valley. The museum is intended to explain the natural and human ecologies of the amazing topography.
2,3
The museum is anchored by the in-situ drum of the Omnimax theatre and signalled by Jon Gundersen's twisting pylon of local stone.

Hardangerfjord wanders deep into the south-west Norwegian massif following the track of the great glacier that wormed and gnawed its way downwards from the high land to the sea. The huge mass of frozen water is still up there waiting for the next ice age so that it can descend again to chew its old track even more deeply. The area ranges from the mountains, through the Hardangervidda (the great glaciated plateau which dominates the region) down to the floor of the valley and the astonishing sea-inlet. Because of its remoteness, western orientation and inaccessibility, the area was one of those which were never very deeply influenced by the Danes in their glum 400 year rule of the country; its culture, nature and topography were regarded as touchstones when Norway began to re-invent its national identity in the nineteenth century.

The Hardangervidda Natursenter, as its name suggests, is set up to interpret all the different ecologies and reflect on the traditions of the great valley. It sits on the fertile flat land near the fjord at the edge of the little settlement of Øvre Eidfjord where the hills, though steep, are rounded and covered with scrubby trees. But only a little further into the massif, the valley sides become much more severe, streams pour vertically over their rocky rims, and at the Vøringsfoss a whole river roars down over a cliff with awesome sublimity.

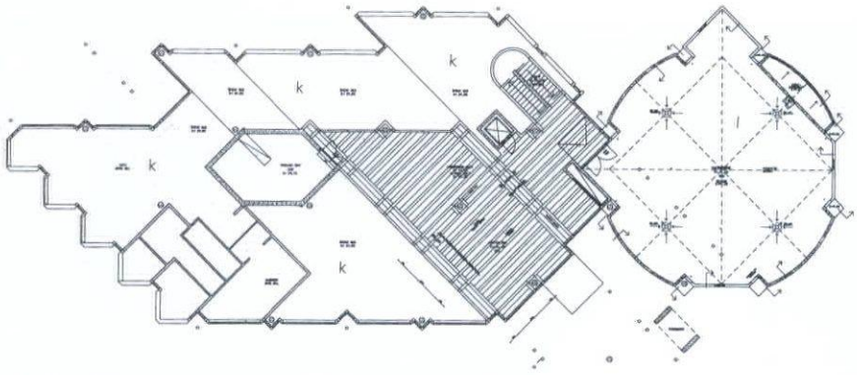
The building is intended to be tough like its surroundings. It is anchored by the dark in-situ rotunda which contains an Omnimax. From this grow the



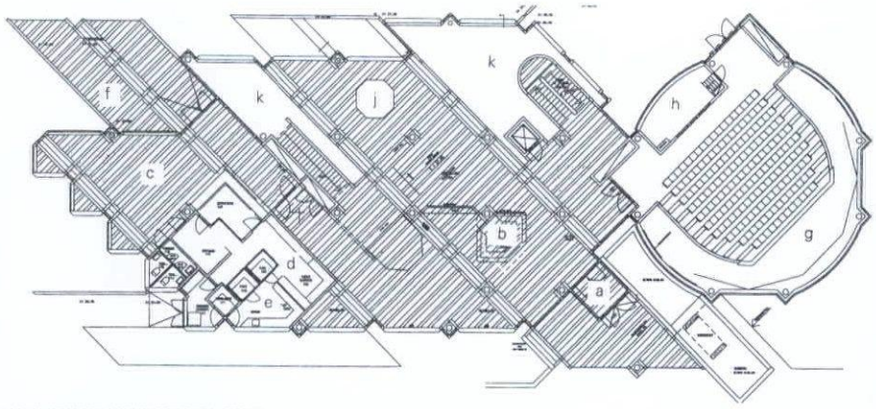


site plan

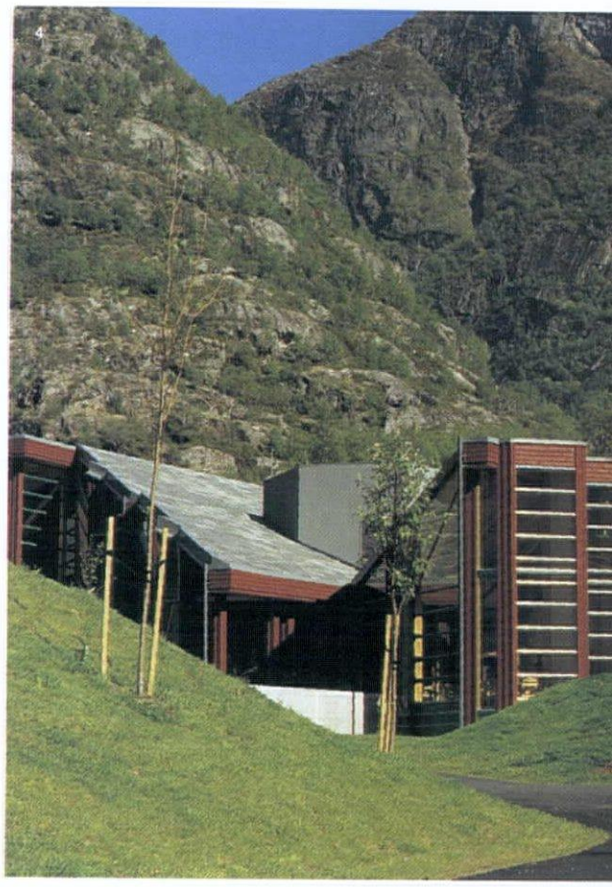
a porch
b tickets
c café
d hot kitchen
e cold kitchen
f deck
g Omnimax
h projection
j upper aquarium
k void
l roof terrace

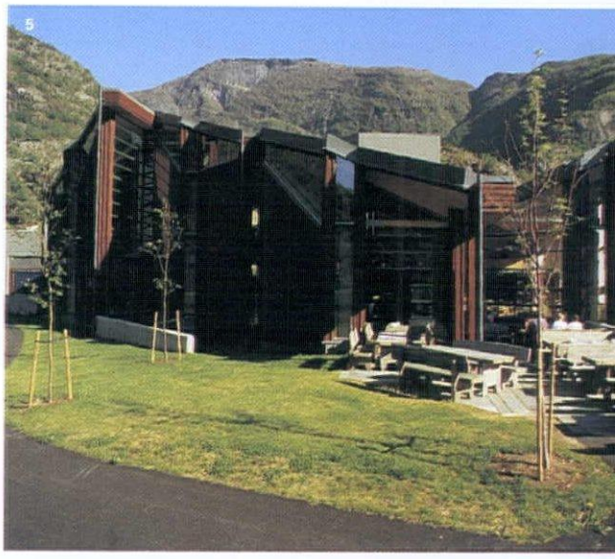


mezzanine plan



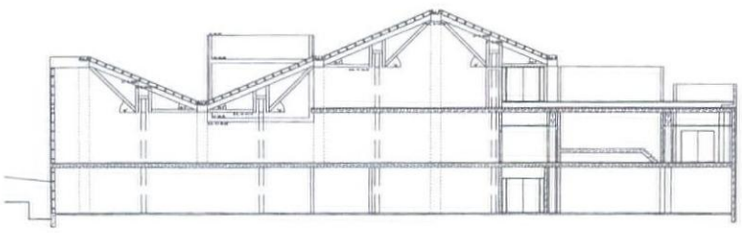
entrance level plan (scale approx 1:550)







Nature centre, Hardangervidda, Øvre Eidfjord, Norway
Architect
Lund & Slaatto



section

4
From west, faceted bay draws sunlight into café.
5,6
Café and its terrace, which opens out to magnificent views of the fjord.
7,8
The galleries (which have been fitted out by another architect) have a strong structural discipline, but are loose enough in organisation to offer opportunities for display of virtually any kind of object.

Architect
Lund & Slaatto: Kjell Lund, Inge Ormhaug
Landscape
Hindhamar-Sundt-Thomassen
Exhibition architect
Expology v/Alex Arnfinsen

exhibition areas of the museum, arranged in aisles which echo the direction of the valley flow down to the fjord, setting up a main axis diagonal to the road. Round concrete columns carry long laminated timber beams which set up the basic thrust of the building. Bearing on this primary structure, the inverted trusses of the roof are used to enclose the aisles.

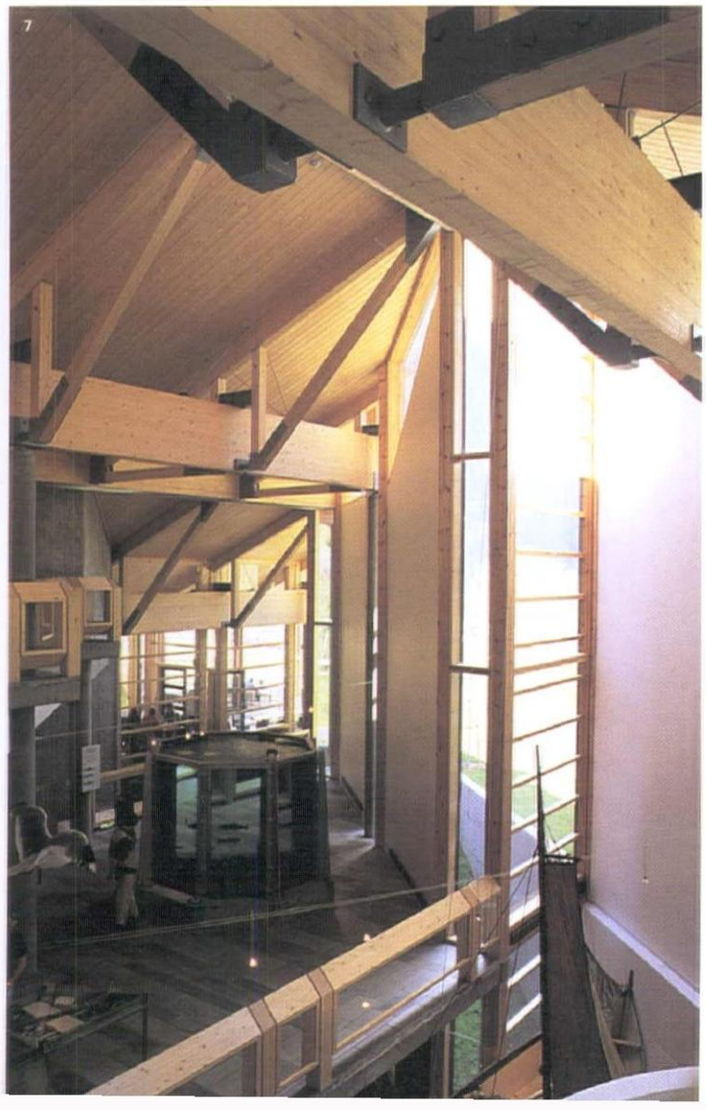
Externally, the building reinterprets aspects of local building tradition, with heavy diagonally laid slates on the roofs and ruddy timber cladding stained in a variant of the immemorial oxblood of southern Norwegian agricultural buildings. Yet of course, this is no pastiche. The structure is allowed to emerge at the entrance to form a huge porch which is signalled from the road by a 12 metre high twisting pylon of local stone by Jon Gundersen. Along the sides, the building is allowed to speak of its structure, with the form of the trusses expressed and their diagonals carried on into the cladding.

Internally, the aisles are not separated by walls and offer a volume, triple height in places, which offers many opportunities for display. The initial arrangement, by Alex Arnfinsen, roughly follows the nature of the topography it attempts to describe, with fresh and salt water aquaria in the lowest (partly underground) floor, plateau fauna and flora rising to those of the mountains on the entrance and mezzanine levels.

Doubtless, displays will change over time as our perceptions of the natural world alter, but the building with its generous adaptable spaces and serene views over to the fjord will be able to accommodate almost anything that successive curators want to put into it. HENRY MILES









Picture Book Museum, Oshima-Machi, Japan
Architect
Itsuko Hasegawa

1
The illuminated east elevation reveals the museum's interior life.
2
West elevation. The skewed rectangular volume is articulated with horizontal slivers of glazing.
3
A curved path nuzzles up to the east elevation, bringing visitors up to a *piano nobile* entrance level. The building is set in a landscaped park.

1

PICTURE FRAME

The town of Oshima in Toyama prefecture is noted for the Japanese culture of *ehon* or 'picture books'. In the past, the town hosted numerous conferences and workshops devoted to the subject, and now has a permanent forum for these activities, designed by Itsuko Hasegawa. The building combines traditional museological functions with facilities which enable visitors to create their own picture books. This public participation forms a key element of the museum's programme.

The new three-storey building is located in a sprawling park on the edge of Oshima. The site is divided into three parts by existing pathways, creating three distinctive hummocks which appear more prominent in the surrounding flat terrain. The museum is sited on the largest of these hills. It takes the form of a fashionably skewed rectangular volume nuzzled by a curved metal ramp that connects the three hills and winds past a series of slightly bizarre land sculptures. (These include the 'arch of wind', a skeletal metal arch adorned with lollipops of perforated mesh.) The ramp sweeps visitors in to the *piano nobile* entrance level, conceived as an extension of the park.

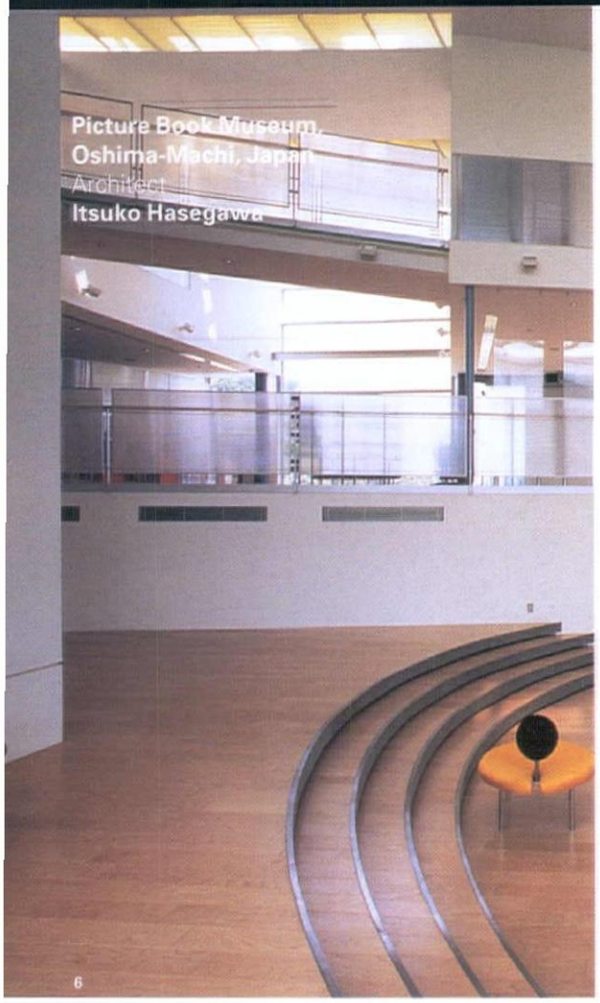
The *piano nobile* consists of a loose amalgamation of spaces, including an oval-shaped library and informal performance area. Their fluid interpenetration suggests animation and accessibility. Rather than providing rigidly functional spaces, Hasegawa celebrates the potential of impromptu events and unpremeditated happenings. The composition is anchored at one end by the orthogonal bulk of a small public theatre. A curved staircase winds ceremonially upwards to the first floor, which houses computer workshops and offices. These cellular, trapezoidal volumes are attached like beads to a circulation spine that diagonally bisects the rectangular plan, adding a further layer of


2


3

Picture Book Museum, Oshima-Machi, Japan

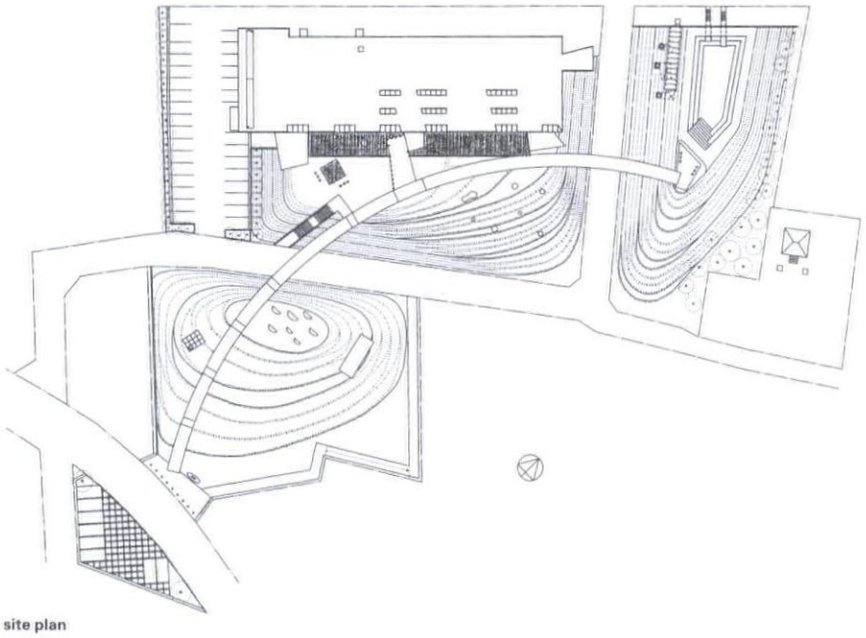
Architect
Itsuko Hasegawa



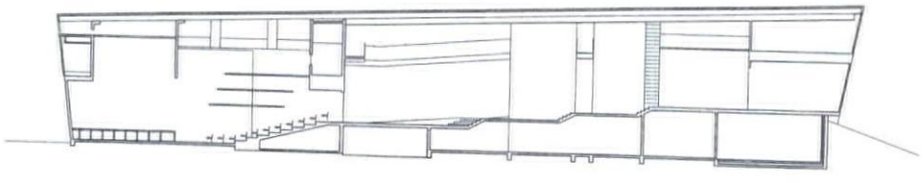




6
Part of the informal performance space.
7
The library is enclosed and defined by a translucent screen.
8
One of the computer workshops on the upper floor.
9
The performance space, animated by the gently diffused play of light.



site plan



longitudinal section

spatial complexity. Below the entrance level are the Stygian book stacks, storage and plant rooms and a breakout space for the theatre.

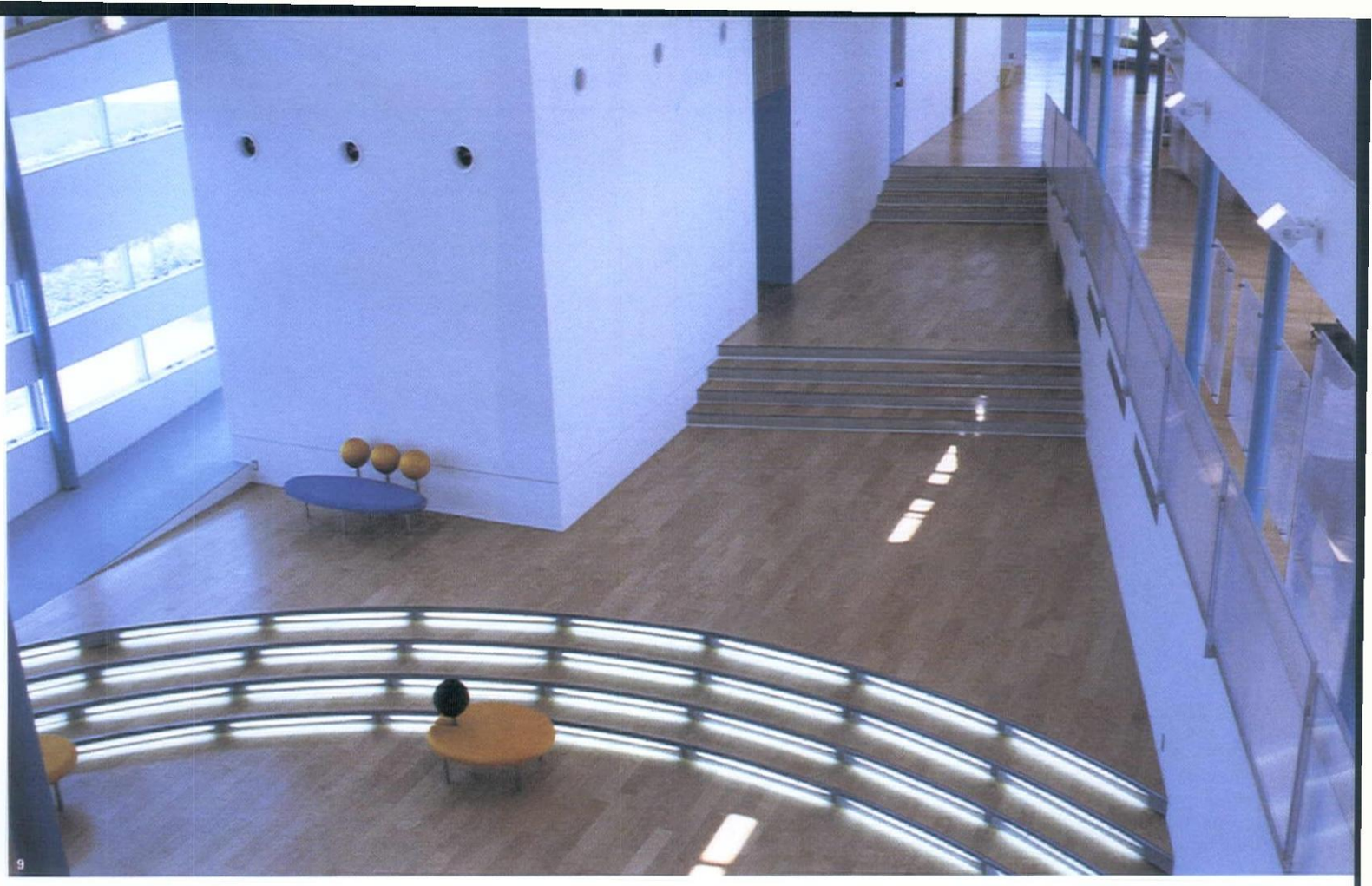
The picture book museum continues Hasegawa's experiments with the filtration and diffusion of light through the building's external skin. However, unlike the Sumida Cultural Centre in Tokyo, for example (AR September 1995), there is no need to screen out the blare of a hostile city. Here, horizontal slivers of clear and translucent glazing alternate with crisp, profiled metal panels. On the eastern entrance elevation, larger areas of clear glass reveal the building's interior life, encouraging visitors to explore. Light gently diffuses through the generous public spaces enlivening activities within; the elliptical library is enclosed by an ingenious translucent screen, which allows light to penetrate, but also preserves a degree of privacy. Cartoon-like furniture in



Combining elegant materiality and a fluid handling of space, Itsuko Hasegawa's Picture Book Museum at Oshima in the Toyama prefecture of Japan conveys a spirit of lively animation and public accessibility.

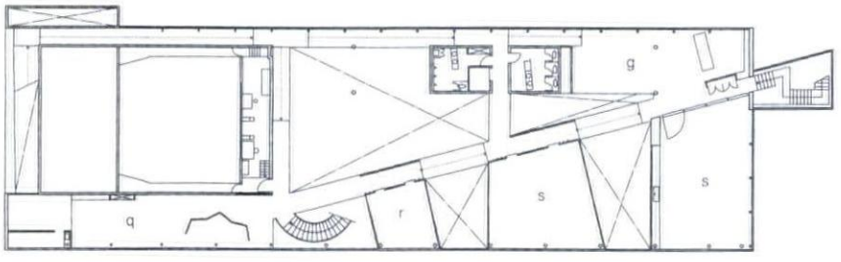


4
Clear and translucent glazing alternates with crisply detailed metal panels.
5
The park contains curious land sculptures such as the 'arch of wind'.

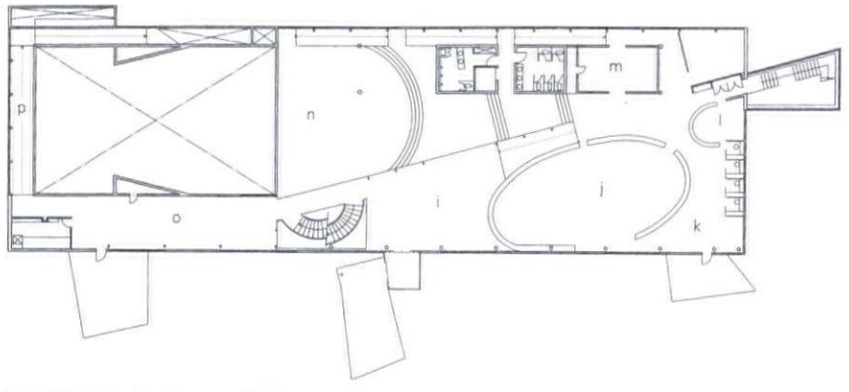


bold primary colours adds cheer to the ethereal play of space and light. Although this is one of Hasegawa's more modest buildings, it embodies an elegant material presence coupled with an adept handling of space. The early playfulness of the Shonandai Cultural Centre (AR August 1990) has matured into a refined yet humane sensibility.

PHOEBE CHOW

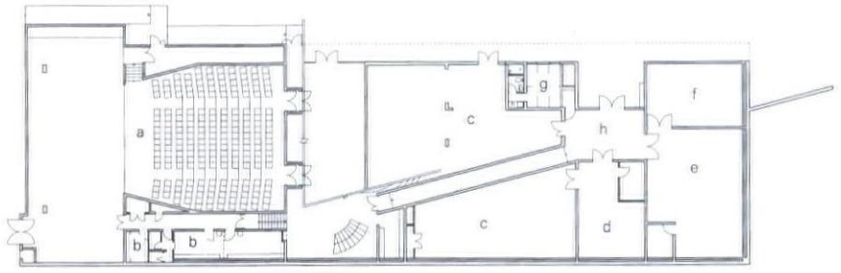


first floor plan

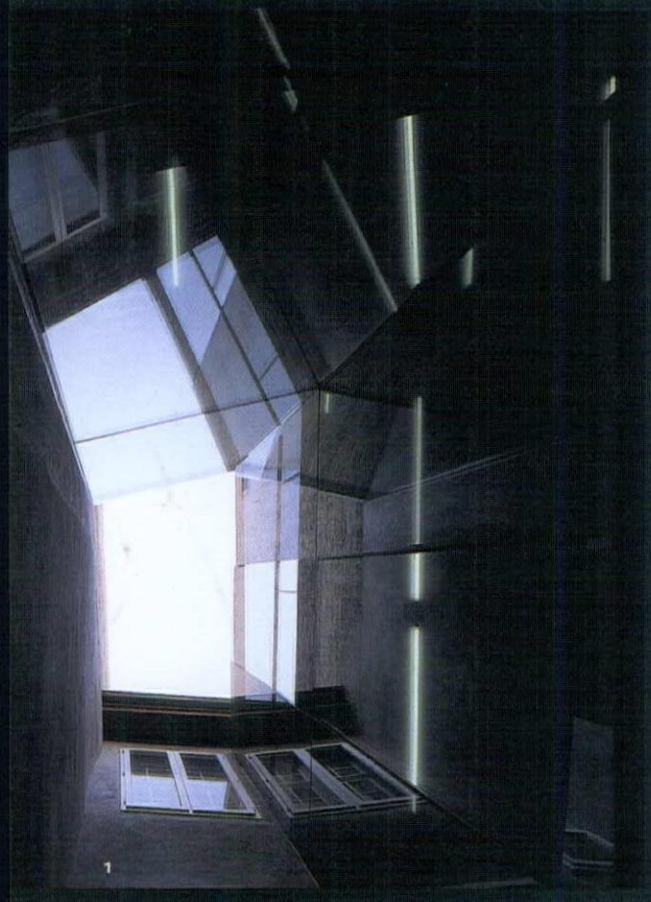


ground floor plan (scale approx 1:500)

a theatre
b backstage facilities
c storage
d stacks
e machine room
f electrical room
g lounge
h staff entrance
i entrance hall
j library
k reading area
l children's area
m exhibition room
n performance space
o café
p gallery
q staff room
r meeting room
s workshops



basement plan





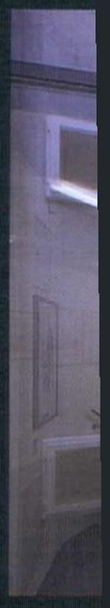
Caricature and Cartoon Museum, Basle, Switzerland
Architect
Herzog & de Meuron

1
The enigmatic void of the courtyard between the existing house and the new extension.
2
The glazed skin subtly distorts and layers reflections.

Since its foundation in 1976, Basle's Caricature and Cartoon Museum has occupied a centuries-old row house in the medieval fabric of St Alban. The building is a flush, four-storey, 6m wide structure with small, deeply-cut window openings typical of the neighbourhood. In its south-facing rear yard, nestling against opaque boundary walls, Herzog & de Meuron have intervened with a radically different language. The sunny facade of the older building remains intact but the new insertion looks back with a sheer flank of butt-jointed glass. Linked to the building by a glazed bridge at upper floor levels, this startling intervention between new and existing elements creates an enigmatic void open to the sky.

The ground floor of the front house is now a flexible open space for reception and orientation with secondary items (entry porch, information desk, kitchenette, pre-existing internal stairs) arranged empirically along one side. Upstairs are the curators' offices and a library with timber-panelled sides – a true cabinet. Across the bridge, the museum's new structure has three almost identical levels of exhibition space with an open staircase running up against the party wall, a basement for storage and an escape door onto an adjoining property. Off the upper gallery, a thin terrace faces south. There, the 'new' roof is clad in traditional clay tiles, merging into the old fabric of St Alban. A window offers a spyhole view through the entire site.

Herzog & de Meuron's interior is neutral in the extreme: grey floors, white walls, a clinical environment in which to mount changing displays. The extraordinary part is the glass wall floating beyond the floor plate (in the gap, a black horizontal frame connects back to the concrete). The ground floor has double doors underneath the connecting bridge and the first floor extends without any doors or subframe into the glazed connector. From the top floor, a panel swings in from a ramped passage open to the air, but with high sides of three glass sheets each. Rather than constructing traditional punctured fenestration or an orthodox curtain wall, the architects worked with vitreous membranes with little visible means of support; conceptually, almost absent surfaces. Close to or at their maximum feasible size for fabrication, these sheets of glass are not identical. Within the courtyard, the footbridge is slightly off-centre so that peripheral planes differ in width.



The new north elevation is not unlike a triptych. From where the bridge connector is received by the galleries, the enclosing planes of glass angle outward in plan, generating strange reflections and layerings of view. This sense of the new insertion as a complex lantern or hall of mirrors is intensified by the use of glass with different transparency or reflectivity values. The bridge piece, whose soffit is also glazed, is clad vertically in alternate dark and clear panels, reacting with the north elevation to create an atmosphere of kinetic intrigue.

RAYMUND RYAN

Architect
Herzog & de Meuron
Project team
Jacques Herzog, Pierre de Meuron, Yvonne Rudolf, Mario Meier, Philippe Petignat
Structural engineer
Helmut Pauli
Electrical engineer
Kelplan
Photographs
Christian Richters

POINTS OF VIEW

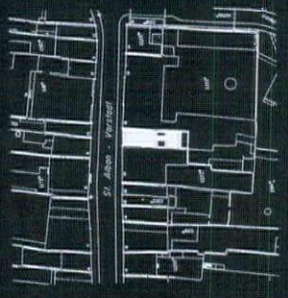
Influenced by the pavilions of American sculptor Dan Graham, Herzog & de Meuron's jewel-like Cartoon Museum in Basle is a witty and intriguing spatial conundrum.





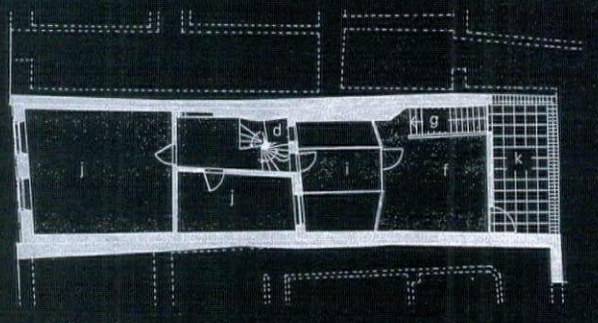


3
Galleries are clinically neutral boxes, with a bald concrete staircase in one corner.
4
Detail of the glazed link with the existing medieval row house.
5
The bridge link is clad in alternating dark and clear glazed panels.

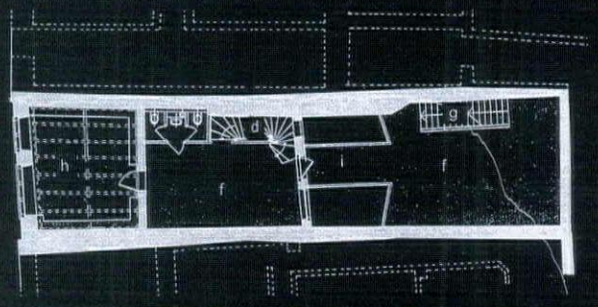


site plan

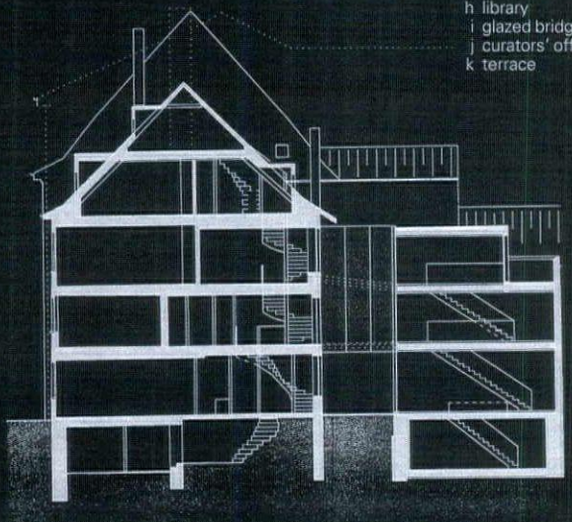
a entrance porch
b information desk
c kitchen
d existing staircase
e courtyard
f exhibition space
g new staircase
h library
i glazed bridge
j curators' offices
k terrace



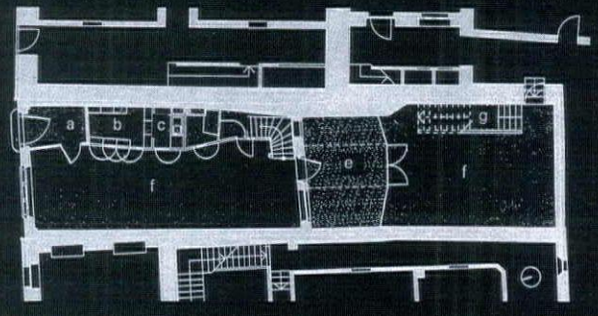
second floor plan



first floor plan



longitudinal section



ground floor plan (scale approx 1:350)

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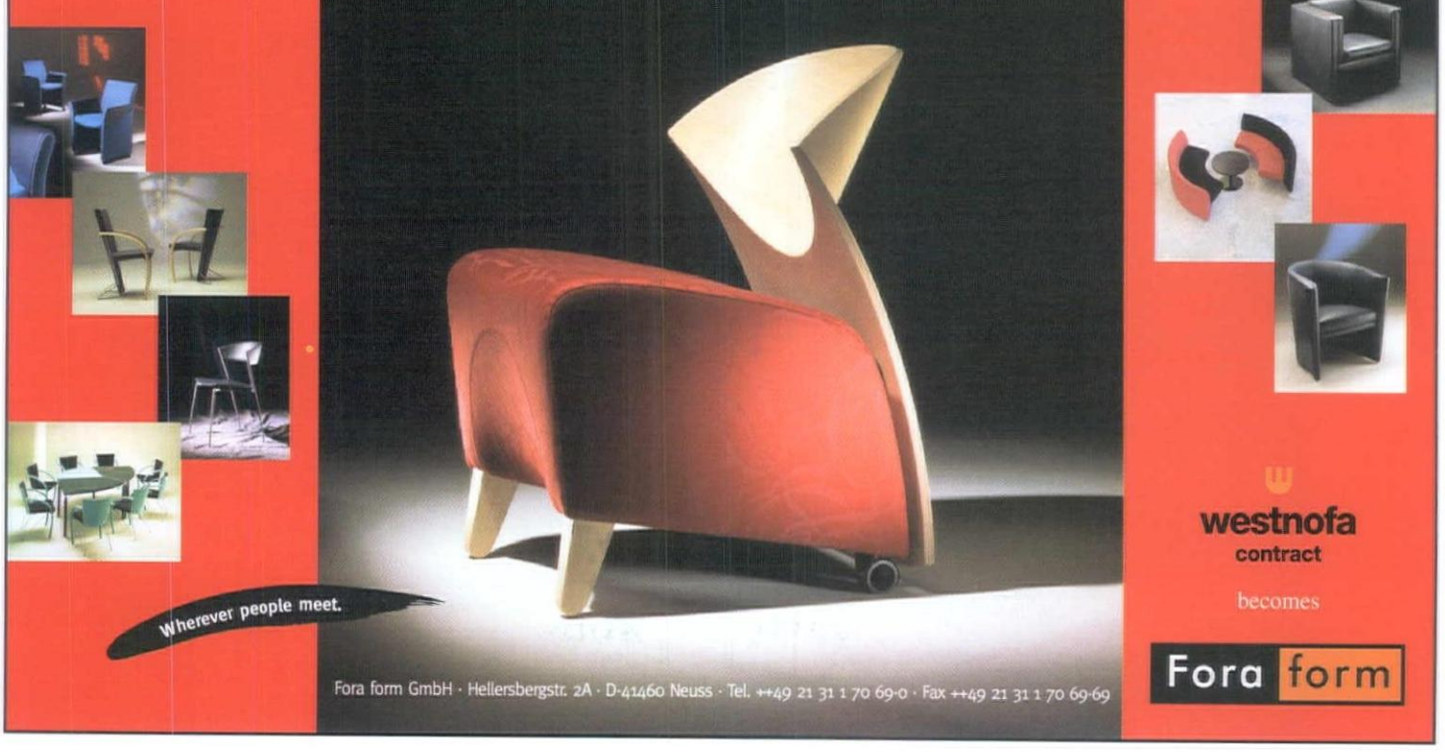
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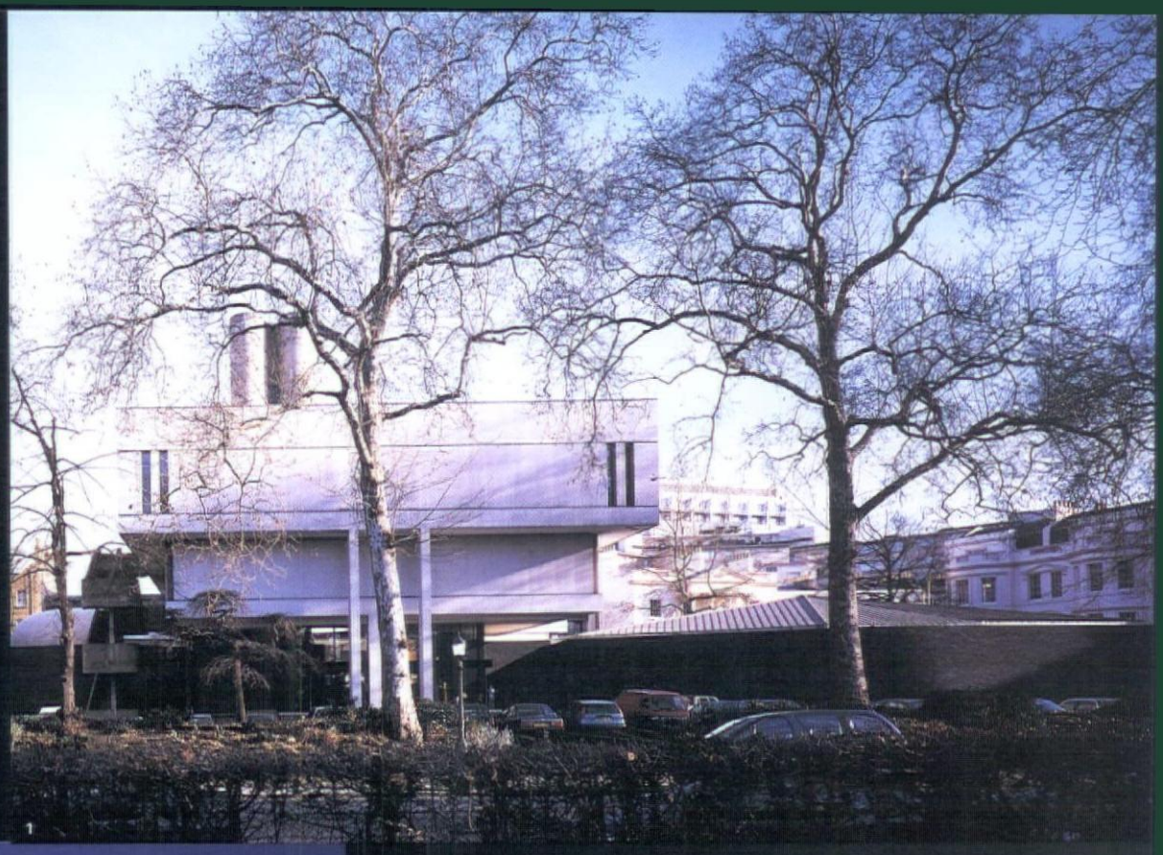


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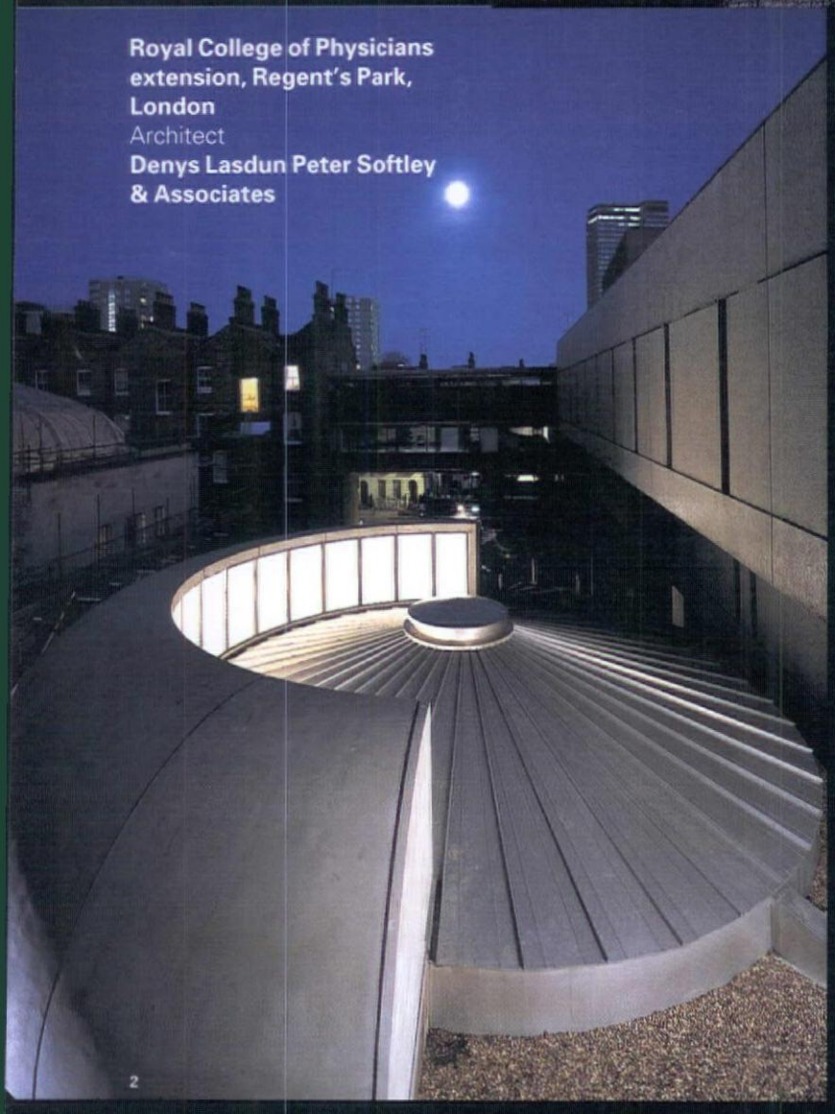
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ID INTERIOR DESIGN



Denys Lasdun's Royal College of Physicians was seen as a masterpiece when it was completed three decades ago. Now he has added to it with equal inventive assurance.

Royal College of Physicians extension, Regent's Park, London
Architect
Denys Lasdun Peter Softley & Associates



Medical mores

As soon as Denys Lasdun's Royal College of Physicians was completed in 1964, it was recognised as a masterpiece – but a difficult one (AR April 1965). Pevsner called it Post Modern long before the term came into common usage, and indeed it was dramatically different from the austere, utilitarian versions of Modernism that had dominated most of Europe since the end of the War.

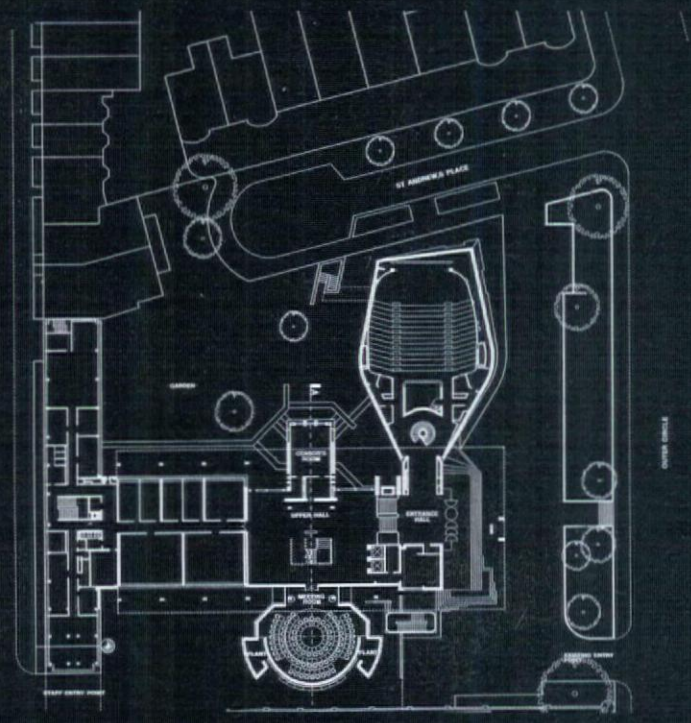
The site was a particularly sensitive one in a corner of Regent's Park among the Nash terraces (it had been occupied by buildings bombed flat during the War). The building was one of Lasdun's first experiments with what he calls 'levels of raised ground': the base was in very dark blue Baggeridge facing bricks and the upper levels in concrete and mosaic similar to early nineteenth-century pale classical stucco – a reversal of the nineteenth-century colour pattern in which dark bluish slates top the ivory of Nash's walls.

Internally, the building combined the ceremonial places required by a 450 year old institution with a Modern sense of fluid space. In particular, the handling of the triple-height central hall with its great stair that winds up to the galleries is a masterpiece which links the major volumes, yet is open to the garden and allows casual encounters as well as formal processions.

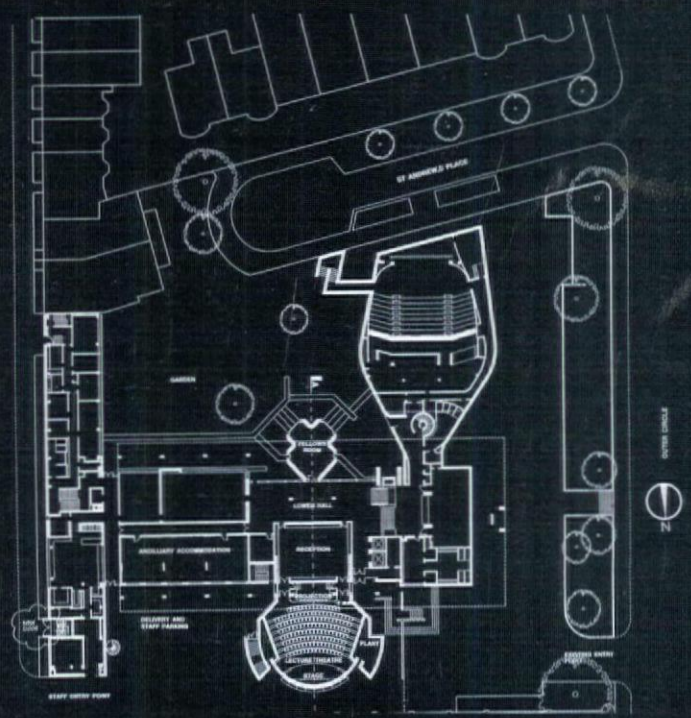
Two or three years ago, the Physicians decided to extend their building; they wanted to have more talks and discussions. So they turned to the architect who had done so well three decades before and asked him to provide a new meeting room and an additional lecture theatre.

The obvious place in which an extension could be made was in the comparatively narrow gap between the College and the sandstone High Victorian terrace to the north. From the first, Lasdun had thought of the dark brick layer as malleable. Unlike the much more pure forms floating above, the base was allowed to flow out into, for instance, the battered, irregular form of the lecture theatre. Now it flows out again to form the base of the apse-like extension. The whole new piece is partly hidden from the Outer Circle road by the drama of the original free-standing concrete fire stairs, but

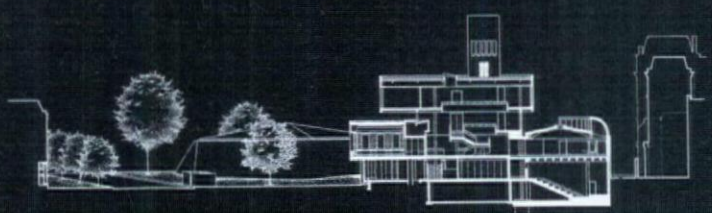
1
The College, from the Outer Ring, with the organic form of the lecture theatre right, and the new extension glimpsed behind fire-escape left.
2
Clerestory of the extension which throws light down the apsidal wall of the meeting room.



entrance level



lower level (scale approx 1:1100)



south/north section

Royal College of Physicians extension, Regent's Park, London

Architect
Denys Lasdun Peter Softley & Associates

3,4
Meeting room: Soane saucer with structure articulated engages with luminous apse.
5
Old rectangular lecture room, holds part of College's collection of historic artefacts, and is now antechamber ...
6
...for new small theatre.

you can discern that over the heavy brick base there is a curving pale smooth concrete hood.

In plan, the logical place for the addition was opposite the Censors' Room. This is one of the main events in the building's life, the place where applicants for membership of the College are given their final viva before being admitted. It is lined by original Spanish oak panelling designed by Robert Hooke for the 675 Physicians' house, and it projects over the intense little garden (which Lasdun created to the south when neighbouring buildings were acquired by the College after his main building was finished). By placing the new meeting room exactly across the hall from the Censors' Room, Lasdun has set up another axis in counterpoint to the main thrust from the entrance to the great stair. But counterpoint is only partial, for the structural planes of the stair interpose themselves, and make the connection virtual rather than directly functional (the uses of the spaces are completely different).

The location of the addition also allows the old rectangular lecture room on the lowest floor to become the antechamber for the new small lecture theatre. It has been lined with glass cases which display part of the College's collection of historical medical equipment. The new theatre with its raked seating is clearly a great improvement on the old lecture room, both in convenience and numbers of people who can be accommodated. It is well made, but is not much more distinguished than many others.

The new meeting room above it is another matter. This is a major space and some of the College's most important decisions are taken in it. It is approached straight from the hall with no intervening lobby, and at first, its very enclosure is something of a shock. The hall opens to light of sky and garden. The meeting room is almost totally self-contained (though there are a couple of slit windows). Its main volume-defining device is a shallow saucer ceiling, which echoes the curve of the apse and creates a space in which furniture can be arranged in several layouts, from U-shaped to concentric. Unlike Soane, Lasdun has chosen to express his saucer's structure: precast concrete beams radiate from a central ring and carry a thin in-situ shell; a ring beam contains the beams' outward thrusts.

All this works clearly and well, but the real power of the room comes from the contrast between the saucer and the apse. The curved back wall is awash with light from the curved precast hoods which you first glimpse from the outside. Now their meaning becomes clear as they pour daylight into the rim of the space, illuminating chairman and senior members of the meeting with gentle theatricality.

There is always some degree of contrast between the light of the sky (even sometimes a little sunlight) and the artificial up-lighters that make the dome luminous (because of the nature of film, the difference between the two forms of lighting is perhaps exaggerated in these pictures). But there is a sense of warm containment under the saucer – and one of release and expansion at the back. The new space is completely unlike the others in the College, but it is a proper complement to them, and it convincingly adds to Lasdun's aim of making his building a bit of city with a roof on. P. D.

Architect
Denys Lasdun Peter Softley & Associates
Structural engineer
Ove Arup & Partners
Quantity surveyor
Widnell
Carpets
Brintons
Light fittings
Kreon UK
Photographs
Niall Clutton



3



5



6



4



Film process

The lower levels of a century-old industrial building in central Copenhagen have been genially and dramatically transformed into a museum of cinematographic history.

The sophisticated and vigorous contributions by Nielsen, Nielsen & Nielsen to Denmark's evolving city and landscape have included the landmark Architects' House in Copenhagen (AR December 1996), and the office building for the Danish Gymnastic and Athletic Associations (DGI) in Vingsted, south Jutland (AR April 1997). Once again in Copenhagen, the architects have converted two floors of a city block into Filmhuset (the film house). Their attack on the amorphous space has been bold, and the result is a dynamic addition to the internal cultural life of Copenhagen.

The Gutenberghus complex is externally apparently homogeneous, but in fact consists of buildings from two different periods linked, and one of the architects' aims was to tie the interior spaces together vertically and horizontally. The scheme occupies the ground floor and basement of the block, and these were stripped out to leave the structure exposed and to form two clear irregular rectangles of space.

The core of the Filmhuset is a curving monolithic zinc-clad structure which contains two cinemas, one above the other, together providing 318 seats. It rises from the basement through an elliptical hole cut into the ground floor near the main entrance, and is reached by bridges spanning the encircling void (to open up the basement to daylight, the floor stops short of the cinema monolith). To the left of the main entrance, the glass face of a huge clock inset into the floor allows yet more light into the basement.

Ancillary spaces fitted around the cinema on the ground floor include a café to the right of the main entrance furnished with silvery Toledo café chairs.

At the back are a bookshop, a gallery and a little children's cinema set alongside an internal







1
The Gutenberghus; two old buildings linked to form a small city block.
2
Gallery of antique film equipment: like all ground floor spaces (except the cinema), this has a floor of bilinga, and an expanded metal gridded ceiling.
3
The clock in one corner of the ground floor which can be seen by looking up from the lower level.
4
One of the bridges which gives access to upper cinema across void.
5
The zinc-clad monolith which contains the two cinemas rising from the polished concrete of the basement floor, in which are set uplighters emphasising the big silvery presence.



Museum of cinematography,
Copenhagen, Denmark
Architect
Nielsen, Nielsen & Nielsen

court. The loose arrangement of the various different spaces allows for alteration; the gallery for instance can be expanded or reduced as necessary. Downstairs is a video library and bar, with the rest of the basement being mostly devoted to storage and service.

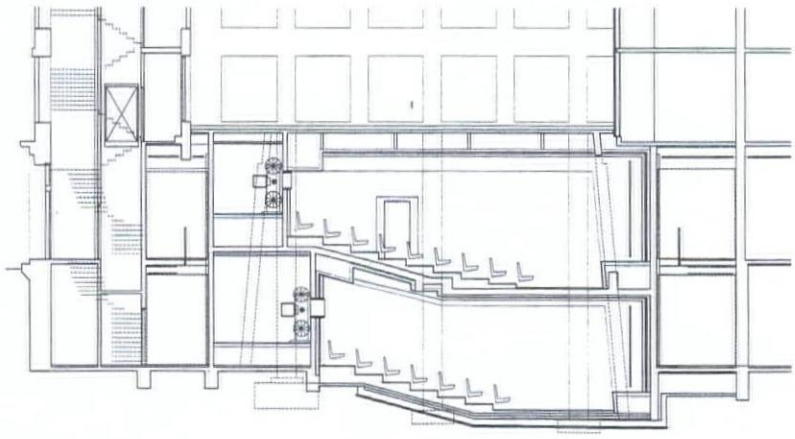
Materials and finishes are generally austere, contributing to the subdued silvery coloured ambiance. External cladding of the concrete and steel monolith is acid-treated waxed zinc panels; internally, the wall is a shell made of a combination of plasterboard and steel acoustic panels.

The ground floor is covered with handsome wooden boards, while downstairs the floor is of polished concrete. The suspended ceiling system of metal coffers and expanded metal grills is designed to accept downlights and suspended beams for mounting theatrical lighting. P.M.

6
Upper cinema. Lower one is similar, but its ceiling follows the floor rake of this one.
7
Café looks out over busy street.
8
Slots round part of perimeter of ground floor throw light down basement walls.

Architect
Nielsen, Nielsen & Nielsen:
Lars Frank Nielsen, Kim Herforth Nielsen, Mette Jerl Jensen, Hans Vogel, Ole Holst, Helge Skovsted
Consulting engineer
Søren Jensen
Photographs
Finn Christoffersen

Museum of cinemat
Copenhagen, Denm
Architect
Nielsen, Nielsen & N



a enti
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section through cinemas



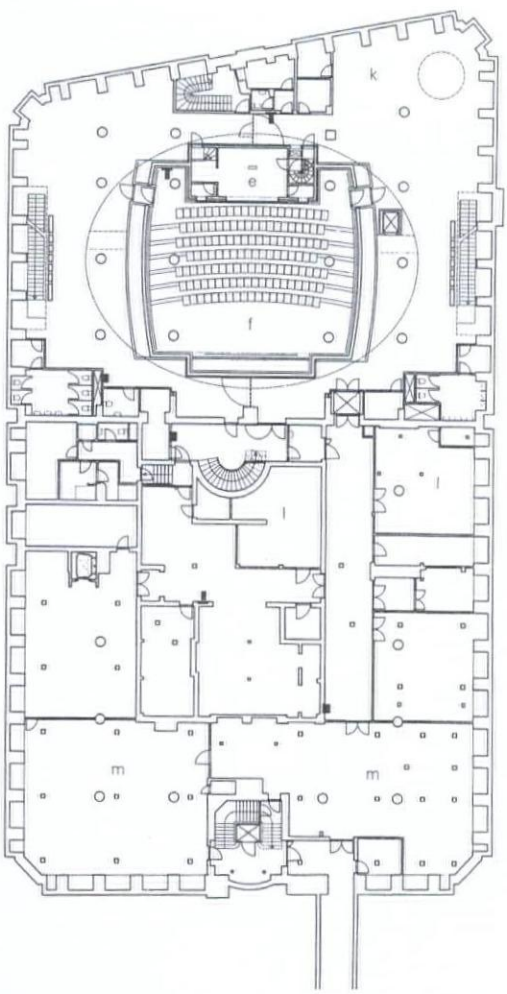
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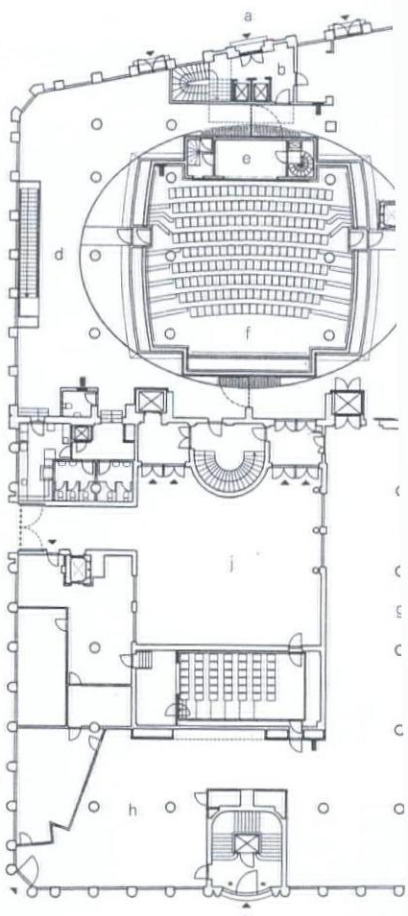
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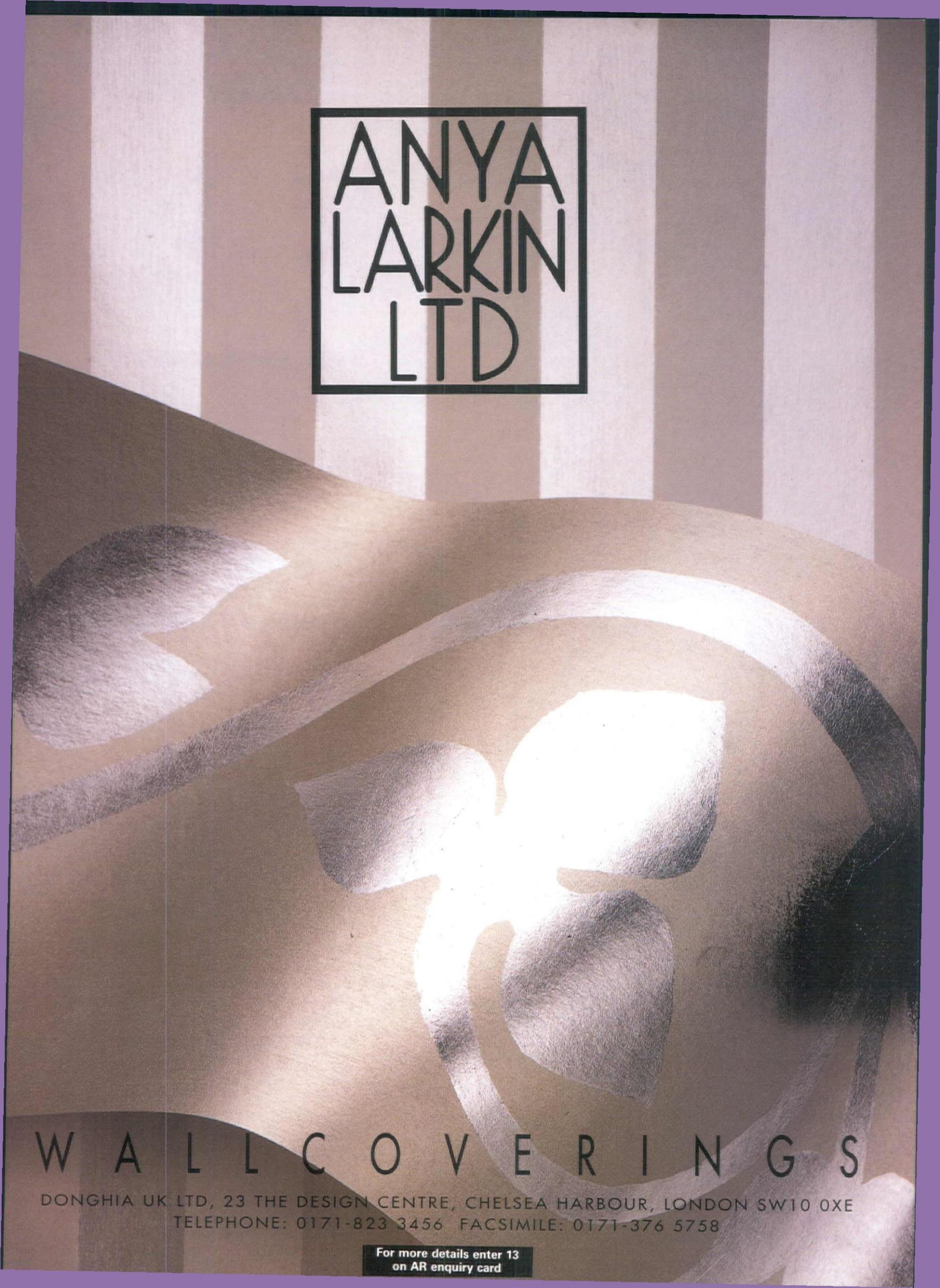
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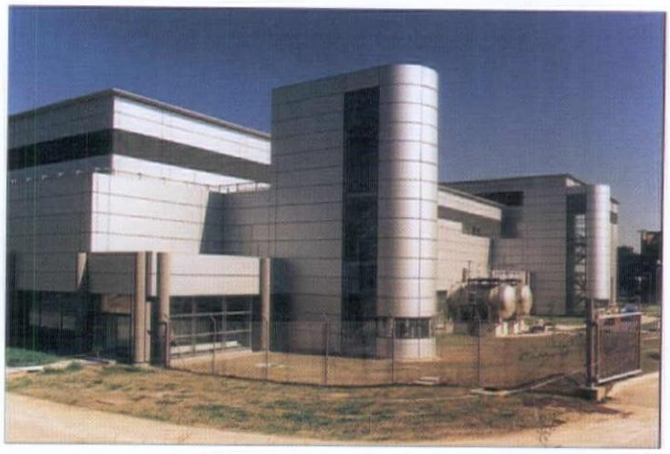
basement plan (scale approx 1:300)

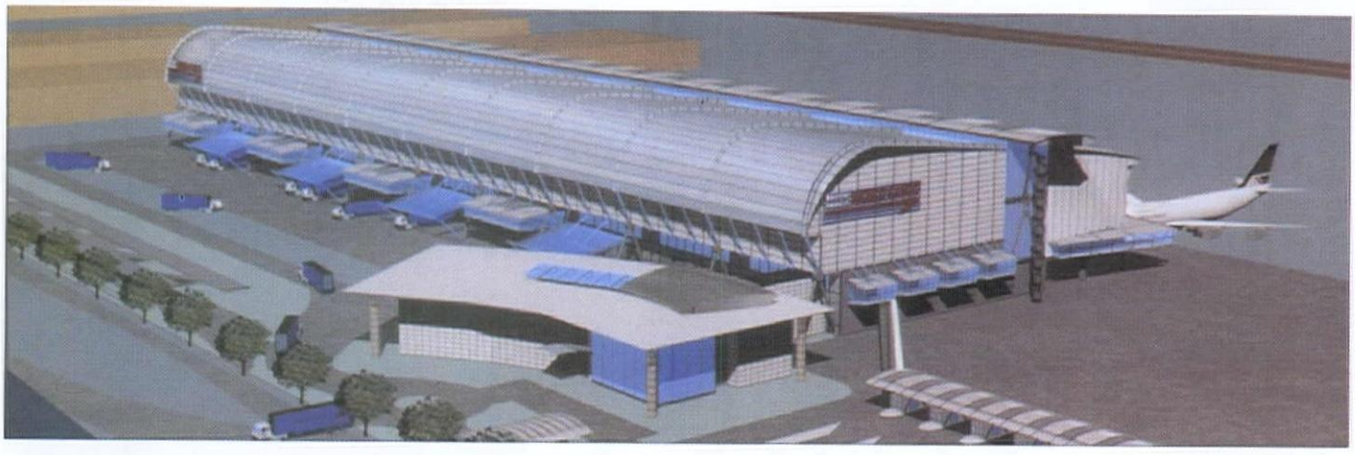


ground floor plan


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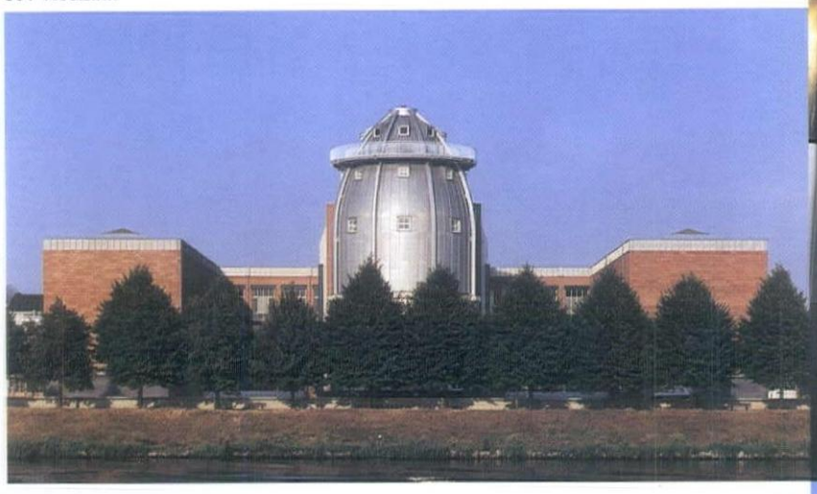
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502 Rimex Metals



Exterior envelope

501
The Bonnefanten Museum, designed by Aldo Rossi with Barbieri and da Pozzo, stands on the bank of the River Meuse in Maastricht. It is dominated by a tower with a tapering dome clad in zinc-titanium from NedZink and installed by means of a vertical roll cap system.

NedZink
Tel: +31 495 455700
Fax: +31 495 455790

502
Rimex Metals supplied its textured stainless steel cladding in blue pearl for the facade of the Swatch Timeship store, designed by Pentagram Design, in New York. The material can be used internally as well as externally, and there is a wide range of colours and textures.

Rimex Metals
Tel: +44 181 804 0633
Fax: +44 181 804 7275

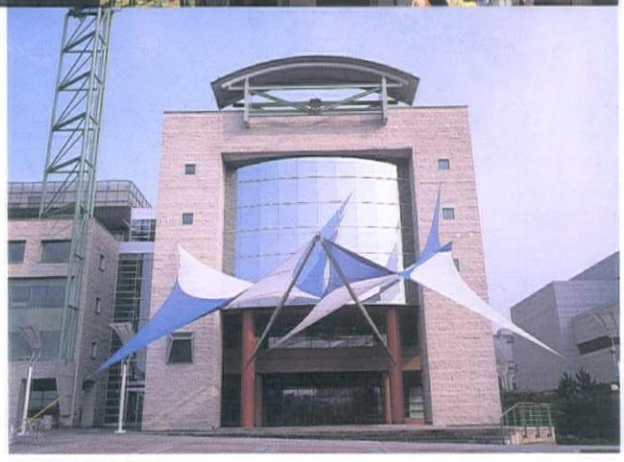
503
'Fishtailing over Ottawa' is a tensioned fabric structure fixed to the facade of the Ottawa-Carleton Center in the Canadian capital, its design the result of a collaboration between Duvall Design, suppliers of tension structures, and Transformit. Two 200m sq fabric structures, supported by two large suspended steel beams, designed by GRC Architects of Ottawa, provide shade for performers and a focus for the Festival Plaza.

Duvall Design
Tel: +1 207 596 7940
Fax: +1 207 596 7832

504
Büro Kuschel + Reinke, Hamburg, specified Forster's stainless steel systems for curtain walling and windows in their design of the atrium of the Spreebogen office building at Berlin-Alt Moabit. Their design uses curved sections obtained with the Forster presto system in polished stainless steel.

Hermann Forster
Tel: +41 71 447 41 41
Fax: +41 71 447 44 78

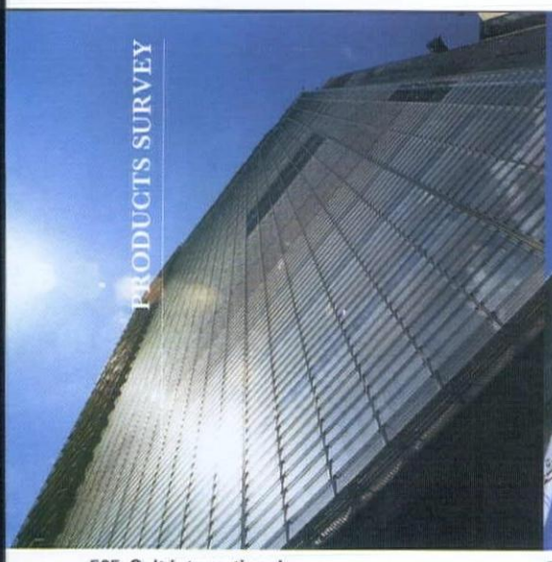
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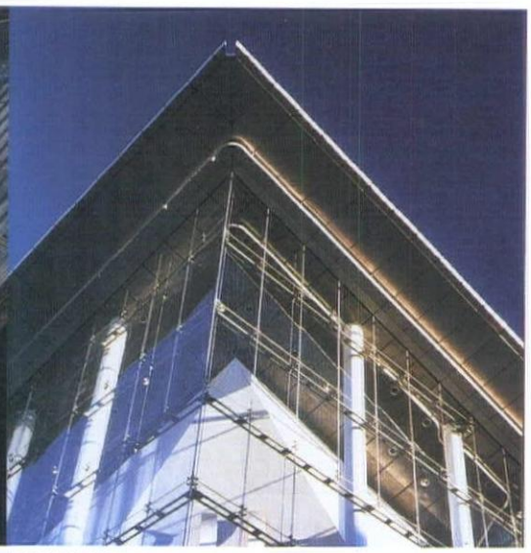
503 Duvall Design

504 Hermann Forster

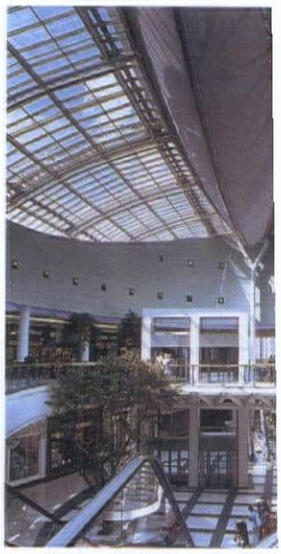




505 Colt International



506 MAG Hansen



507 Heywood Williams Architec

505
Colt International designed and installed an innovative glass louvre system on two facades of the Daimler-Benz building on Potsdamer Platz, Berlin, being reconstructed by Renzo Piano. The louvre system, like a glass curtain applied to the south-east and south-west facing facades, reduces energy consumption. The louvres, which open and close automatically in response to temperature and sunlight, are mounted on upstands and fastened to dog-legged castings so that they overlap. The system is mounted 500mm away from the side of the building to allow room for a glass walkway for cleaning and maintenance.

Colt International
Tel: +44 1705 451111
Fax: +44 1705 454220

506
Bridgewater Hall, Manchester, by RHWL Partnership, stands on a newly created land near Rochdale Canal. The architects specified MAG's Thermestra structural glazing for the glass prow and entrance. Thermestra Series 10/6 uses glass processed by MAG's sister company, Hensen Glass, with a supporting framework of fine steel rod rigging system hung from the roof steelwork. Individual 12mm toughened glass sheets are connected to vertical stainless steel tie rods. The glazing is windbraced by cast wishbone-shaped connectors to horizontal trusses fixed back to the main foyer columns. Thermestra was also used for the back of the building and artist's entrance. MAG designed and installed glazed acoustic reflectors in the 2400 seat auditorium.

MAG Hansen
Tel: +44 113 2555111
Fax: +44 113 2551946

507
Heywood Williams Architectural provided the glass 'surfboard' roof over the atrium of White Rose Shopping Centre, by Building Design Partnership, Sheffield. The architects used the Concept DMI service in which the manufacturers designed, made and installed the Modular 70 Roof Glazing, creating a new knuckle joint to improve the lightness and airiness of the roof. HWA's systems include windows, doors, curtain walling, atrium glazing and rainscreen cladding for a wide range of buildings.

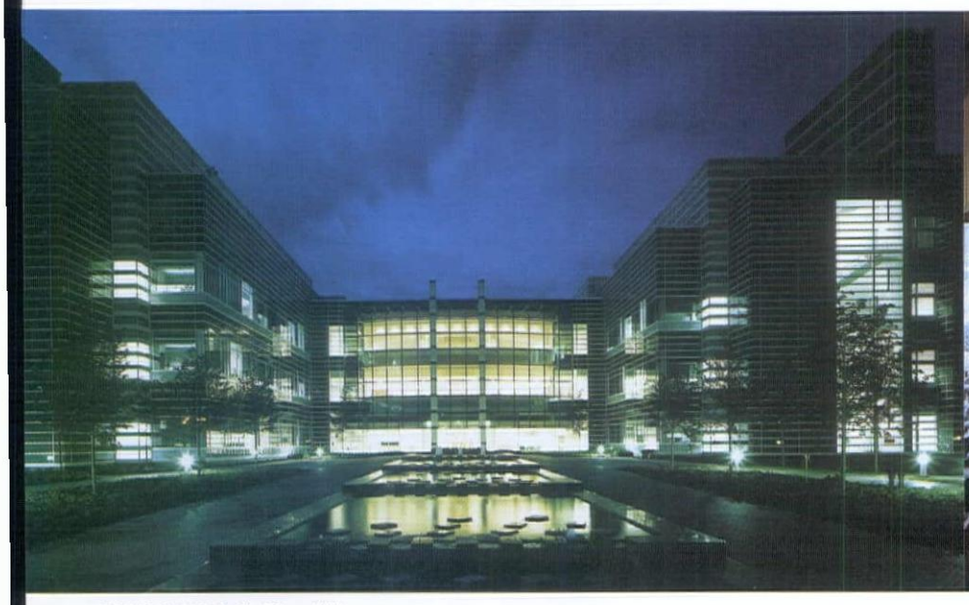
Heywood Williams Architectural
Tel: +44 1484 717677
Fax: +44 1484 400148

508
AMEC Design & Management specified Saint-Gobain's glass for curtain walling SmithKline Beecham's science complex at Harlow. The firm supplied double-glazed units consisting of an outer pane of 6mm toughened Parsol Green and an inner pane of toughened clear Planilux. The former element provides shading and passive solar control to offices around the perimeter. Spandrel panels are made of the same outer pane but have a 6mm Emalit Permawal inner one. Horizontal banding consists of clear and opaque panels: the former with an outer pane of printed Screen-Lite glass and an inner one of clear Planilux, the latter with a dark grey inner pane.

Saint-Gobain Glass UK
Tel/Fax: +44 1753 810505

509
In their design of the Royal Box Enclosure in the refurbished West Stand at Twickenham, Ward McHugh Associates specified Jandor Hansen for security glazing. The firm supplied and installed glazed entrance doors and double-glazed fire resistant screens along the middle section of the West Stand. Polyester powder coated profiled steel sections are 2mm thick and have a half hour fire rating.

Jandor-Hansen
Tel: +44 181 998 4321
Fax: +44 181 991 1374



508 Saint-Gobain Glass UK



509 Jandor-Hansen

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510
The sports hall for the Jewish Society in Berlin, by Golan & Zarech,will be lit by four glass cones on the roof formed by Finnish firm, Tambest, out of 12 bent insulating glass units. The upper diameter of each cone is 650mm, the lower one 3000mm; it widens more than 2m over a distance of 4m so manufacture required exact calculations.

Tambest
Tel: +358 3 363 4000
Fax: +358 3 356 1135

511
The Country Club and Sanctuary Health Spa at Oasis Forest in the Lake District National Park, designed by HMA (Architects), has a roof of curved and tapered Kal-Zip aluminium sheets finished in olive green from Kelsey Roofing Industries. They supply liquid membranes and coatings, single ply membranes, and claddings, and metal roofing.

Kelsey Roofing Industries
Tel: +44 1924 263033
Fax: +44 1924 263113

512
Hoogovens Aluminium Building Systems manufactured and supplied secretly fixed Kal-Zip aluminium standing seam roofing for the Motherwell Heritage Centre. The building was designed for North Lanarkshire Council by Edinburgh architects, Andrew Merrylees, Grierson & Robertson. The main part of the centre is C-shaped on plan with a continuous sweeping roof stepped back to accommodate first floor windows. Grainger Building Services set out the complex roof geometry on AutoCad. Kal-Zip sheets were supplied in Kal-Lolor, PVDF coated to match the building's natural sandstone masonry. Thermal specifications were met by using a vapour control layer with insulation over steel liner sheets. Kal-Form aluminium flashings were installed at eaves, soffits, welded soakers and gutters.

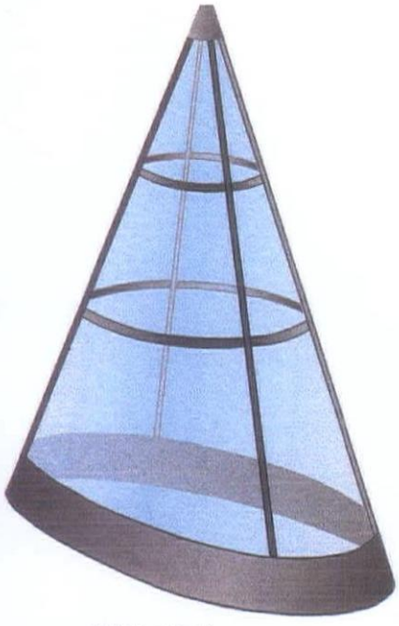
Hoogovens Aluminium Building Systems
Tel: +44 1942 295500
Fax: +44 1942 272136

513
Since 1986 when the bioclimatic greenhouse of the City of Sciences and Industry of La Villette in Paris was built, Eiffel has been developing structural glazing systems using suspended and stiffened glass. Designed for single glazing, the systems can now accommodate insulating glass. The technology has produced the transparent, economic structure of many important buildings, such as the greenhouses of Cévennes, Parc André Citroën, Paris, by Patrick Berger.

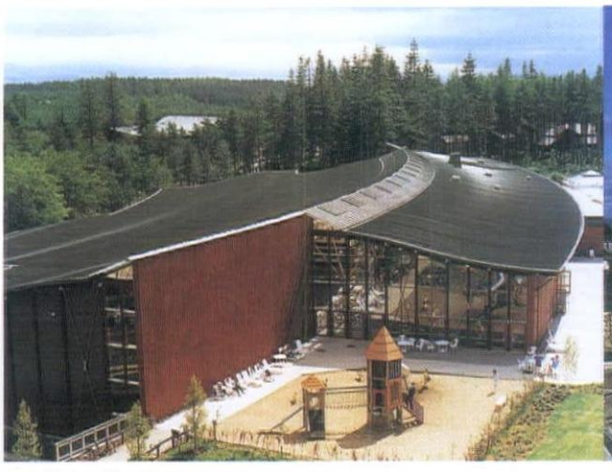
Eiffel Construction Metallique
Tel: +33 1 46 14 40 00
Fax: +33 1 46 14 40 18

514
In the design of an extension for Sondershausen School, Germany, Architekt Geer specified Glötzer Glasbau's steel and glass system for the building's 600 sq m suspended glass facade.

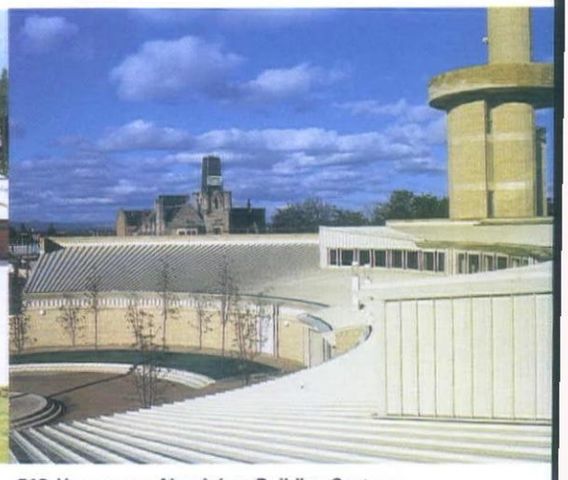
Glötzer Glasbau
Tel: +49 5321 3734-0
Fax: +495321 373430



510 Tambest



511 Kelsey Roofing Industries



512 Hoogovens Aluminium Building Systems

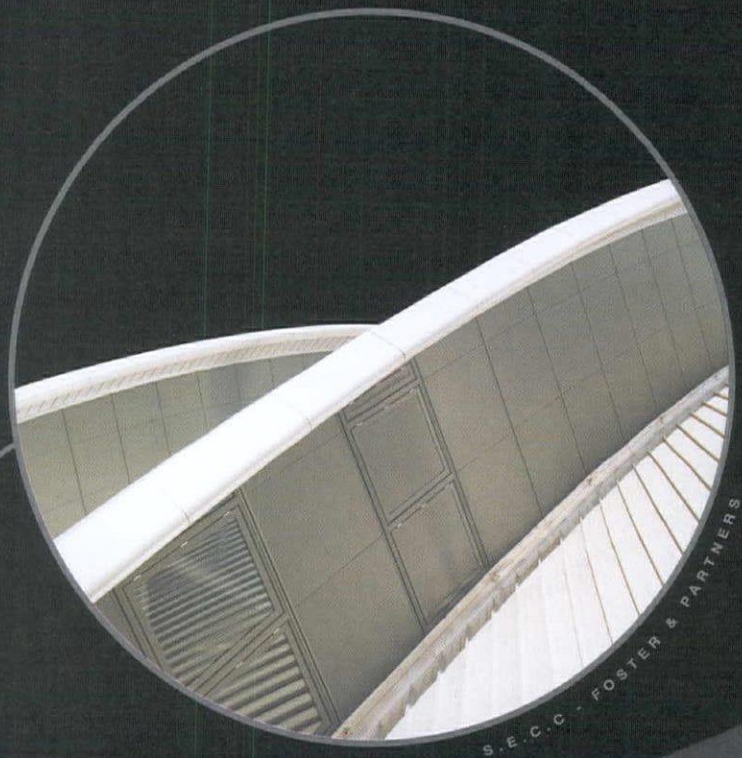


513 Eiffel Construction Metallique

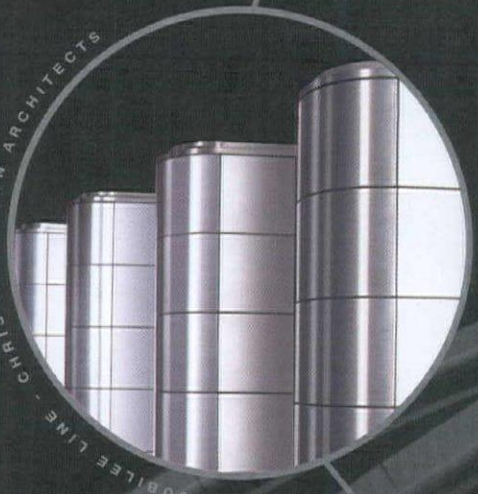


514 Glötzer Glasbau

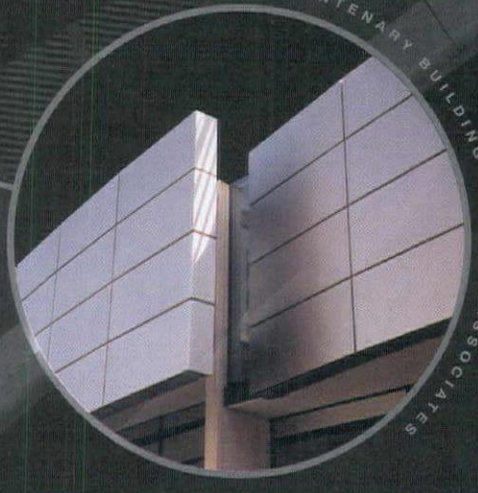
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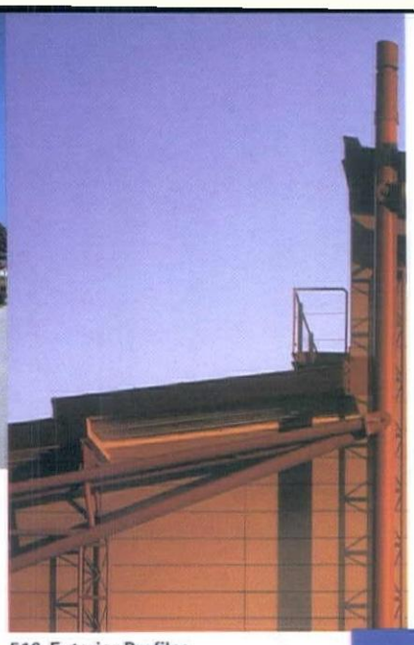
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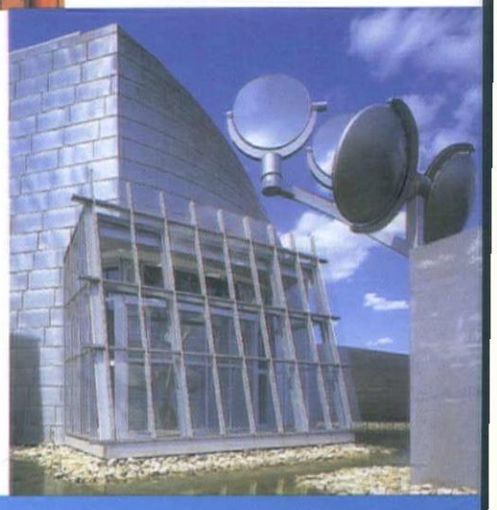
515 **Partek Paroc**



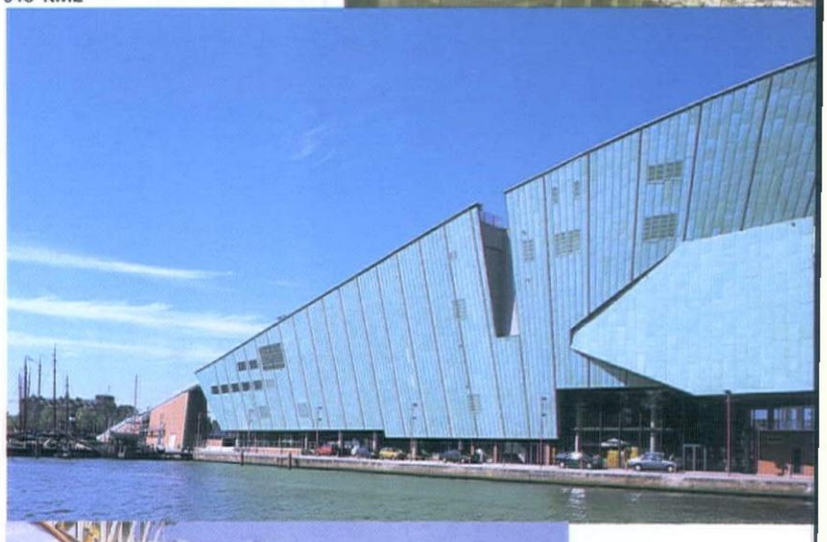
516 **Exterior Profiles**

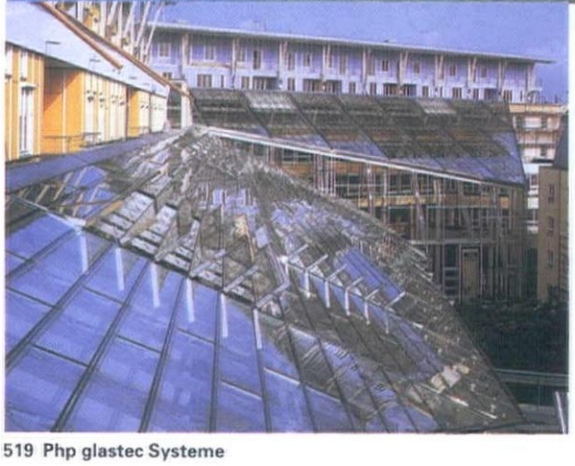


517 **Rheinzink**



518 **KME**





519 **Php glastec Systeme**

515
In their design of the new Mercedes Benz manufacturing plant in Stuttgart, Germany, the architects, Bauabteilung Werk Unterturkheim, specified vertically mounted Paroc fireproof panels, from Partek Paroc, for cladding the exterior of the building. The 1200mm wide composite sandwich panels have a core of structural rock wool covered on both sides with colour coated steel sheets. They conform to the architects' requirements for panels that were flat and quickly installed, as well as to necessary standards of wind loading capacity and thermal insulation.

Partek Paroc
Tel: +358 20 455 6555
Fax: +358 20 455 6523

516
Exterior Profiles supplied the external envelope for The Cambridge Design Group's building for RAF Alconbury. The firm installed its profiled steel roof and Erstepaneel rainscreen cladding systems, internal profiled sheet cladding, and gargoyle rainwater details. Erstepaneel is one of a range of systems developed by Exterior Profiles, that includes Epsteel wall framing and Epsicon structurally bonded glazing.

Exterior Profiles
Tel: +44 1582 456595
Fax: +44 1582 452128

517
Rheinzink's zinc shingling was specified by Frank O. Gehry & Associates for cladding part of the EFI Energie-Forum-Innovation building at Bad Oeynhausen, Germany. The special tiles, measuring 600x1200mm and 1.0mm thick, have a bright rolled finish. Supervising architect for the building was Architekt AKNW H Rullkötter and the sheet metal contractor was H.O. Hartmann.

Rheinzink
Tel: +49 2363 6050
Fax: +49 2363 605 215

518
The New Metropolis science and technology centre, designed by Renzo Piano Building Workshop, rises above the water in Amsterdam docks. Its great prow has been sheathed in TECU-Patina copper cladding from KME. The copper sheets have been given the characteristic green patina of copper by means of a special process and the patina will thicken and strengthen under the effects of weathering. Photo: Michel Denancé/ Archipress

KME
Tel: +49 541 321 4335
Fax: +49 541 321 40 30

519
Php glastec Systeme provided the hydraulically operated glass roof for Joachim Eble's mixed development at Nuremberg, Germany (AR July 1997). The roof covers the south-facing green foyer and its centrally or individually regulated mechanism opens it up and adjusts roller blinds for summer ventilation and shading. Photo: Günther Schmidt

Php glastec Systeme
Tel: +49 8191 91980
Fax: +49 8191 9198 20

If you would like to obtain more information on these products, please enter the relevant numbers (**501** etc.) on the reader enquiry card at the front of this issue.

Publications of the year





Le Corbusier: architecte/artiste

London: Fondation Le Corbusier and Infinitum Publications. £79.

The best architectural CD of any kind so far. More complete than the Oeuvre Complète. Reviewed below.

Tadao Ando: the Colours of Light

By Tom Heneghan. London: Phaidon Press. £60.

Masterful layout, brilliant photographs, and a sensitive introduction allow Ando's buildings to speak from the page. 'The potency of Ando's architecture lies in the fact that it is simultaneously silent, fearless, dramatic, daring and bold. In this book, every page raises your level of consciousness'. Reviewed by Gabriele Bramante in May.

A Critic Writes: Essays by Reyner Banham

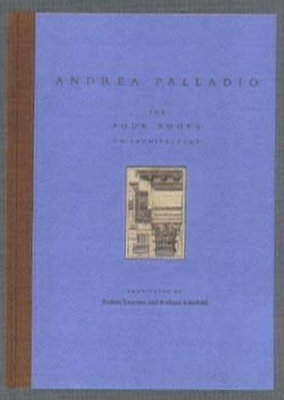
Edited by Mary Banham, Paul Barker, Sutherland Lyall, Cedric Price. Berkeley: University of California Press. $39.95.

The pick of the great critic's writings from his days as staffman on the AR to the American years. 'There is a breath of fresh air running through Banham's writings that is a tonic in these post-Thatcher times ... Modern architecture and advancing technology are seen as great liberators, with infinite possibilities for bettering the human condition.' Reviewed by John Winter in May.

The Skyscraper Bioclimatically Considered

By Ken Yeang. London: Academy Editions. £29.95.

A primer of the new green consciousness applied to tall buildings. Deals with topics as diverse as sway and wind driven air movements in buildings. The book challengingly asks 'to what extent can a building in the hot moist tropics be designed so that natural ventilation can replace air conditioning?' And it suggests some of the answers. Reviewed by Max Fordham in August.



Andrea Palladio: the Four Books on Architecture

Translated by Robert Tavernor and Richard Schofield. London: MIT Press. £42.50.

The first accurate translation of one of the most influential books on architecture ever published. Reviewed by Bruce Boucher in this issue (below).

Electronic genius

LE CORBUSIER: ARCHITECTE/ARTISTE
London: Fondation Le Corbusier and Infinitum Publications. 1997. £79. The CD can be ordered in the normal way or at www.infinitum.co.uk.

Le Corbusier: architecte/artiste is by far the best piece of electronic publishing I have come across. Most others: for instance CD encyclopedias, or even *The Works of John Ruskin* (AR May 1997), are digitised books incorporating clever search engines.

The Corb CD makes much fuller use of the possibilities of the medium. It contains information on about 200 architectural and planning projects (all the well known ones, and many more), revealed in old and new photographs and drawings; the most famous buildings are shown in models, sketches, details and working drawings as well as presentation ones. A special little scale emerges for measuring the most important drawings. There is a copious collection of his artworks of all periods, from painting and sculpture to tapestries. The drawings section alone ranges over sketchbooks, travel notes, landscapes and even a section on 'females' (though it leaves out the really rude ones).

Corb speaks to us in interviews on the Marseilles Unité and ideas on the relationship of art and architecture, illustrated with stills and transcriptions. His writings are covered by a chronological list of his books, with synopses of contents and his cover designs; a selection of his letters is quite brief but includes some of the key illustrated ones, to Perret for instance, and to his mother on her 80th birthday (translations are provided). There is a biography in note form (with many pictures from family albums), and a 'chronological diagram' that lets you scan his life and see main works in different art forms. Text can be chosen in English or French.

Collections can be called up singly or interactively. You might want to look at La Tourette, or to find out what paintings and urban plans Corb was making in 1922, or to see from site photographs how his construction changed between the Villa Schwob in 1916 and Ronchamps in 1951. This is a truly post-modern device which responds to the multi-dimensionality of truth: the facts are there, it is up to you to weave your own story with them.

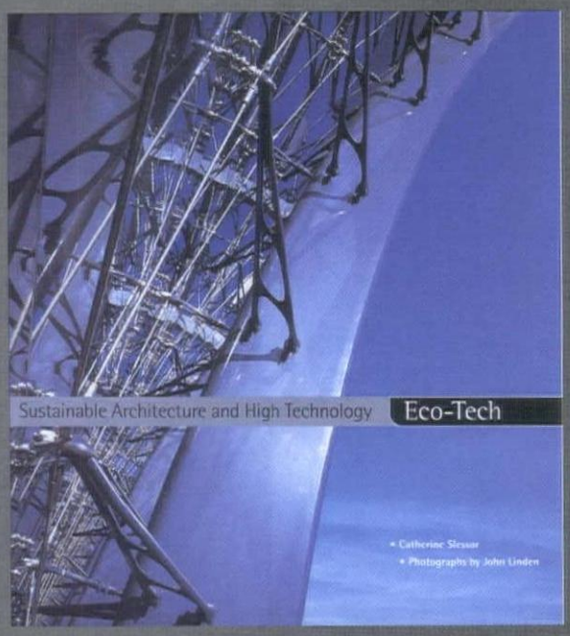
Your tale will not be complete. The disk holds many images, but not every document in the Fondation Le Corbusier can be shown. More importantly, there is very little on the furniture and other design works, and only synopses of the books. A future edition should contain key chapters of these (surely it would not take up a vast amount of space to reproduce even the whole of *Vers une architecture*). But this splendid CD should not be marked down because some things are omitted. It is an amazing achievement, and deserves to be developed, not just in a second edition, but for other great architects: Aalto, Michelangelo and Soane might start. P.D.

Palladian quartet

ANDREA PALLADIO: THE FOUR BOOKS ON ARCHITECTURE
Translated by Robert Tavernor and Richard Schofield. London: The MIT Press. 1997. £42.50.

Andrea Palladio's *I Quattro Libri* is undoubtedly one of the most influential books ever published on architecture. While the book exists in dozens

The Le Corbusier CD-ROM was the AR's choice of the best publication of 1997 (from books reviewed or received during the year). And we recommend other outstanding publications which will make excellent seasonal presents.



Eco-Tech: Sustainable Architecture and High Technology

By Catherine Slessor. Photographs by John Linden. London: Thames & Hudson. £29.95.

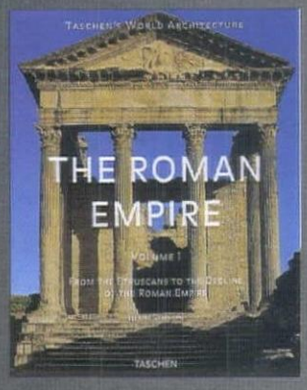
A new sensibility relates technology to ecological concern. Reviewed by Colin Davies below.



The Renzo Piano Logbook

By Renzo Piano. London: Thames and Hudson. £16.95

The short Piano: world's favourite architect gives guided tour of own work. Reviewed below.



Taschen's World Architecture

Cologne: Benedikt Taschen. Volumes at £16.99 each.

'Taschen proposes to do nothing less than cover all architecture from its origins in the Far East, Egypt and the Pre-Columbian Americas to today's puzzling scene in 40 volumes' The prose may be glib and unscholarly, the drawings flashy, but the books are 'well illustrated, decently bound and incredibly cheap.' Reviewed in April.

Thirteen Ways: Theoretical Investigations in Architecture

By Robert Harbison. London: MIT Press. £12.95.

From Constantinople's walls to Corb's Paris Plan Voisin to Welsh Border castles, Harbison generates a surrealist collage of placemaking. 'There is more poetic truth in this agile prose, these vivid metaphorical descriptions and surprising juxtapositions than any amount of scholarly research could possibly unearth.' Reviewed by Colin Davies in October.

of formats from facsimiles and pirated editions to translations in most European languages, it is baffling that we have had to wait so long for an accurate English edition.

Of course there has been a paperback edition of Isaac Ware's 1738 translation on the market for 30 years, but anyone who uses it soon realises that Ware was an earnest but hardly meticulous translator of Palladio's prose. At times Ware seems uncertain of Palladio's meaning, and his outmoded terminology renders the original text opaque. In addition, his plates are engravings after Palladio's woodcuts, grouped together and consequently lacking the careful relationship between word and image found in the original.

Now Robert Tavernor and Richard Schofield have righted these wrongs and have recreated Palladio's original layout as well as translating his text into modern, comprehensible English. The text is buttressed by a short introduction and a sensible number of end notes, together with an extremely useful glossary of technical terms. This new *Four Books on Architecture* will prove an indispensable aid for those wishing to consult Palladio in English. BRUCE BOUCHER

Renaissance man redivivus

THE RENZO PIANO LOGBOOK
By Renzo Piano (foreword by Kenneth Frampton). London: Thames and Hudson. 1997. £16.95.

The *Logbook* is the short Piano, which you must get if you cannot afford the money or space for Peter Buchanan's *oeuvre complète* (AR July 1995), the fourth volume of which is in production. If you want to study a building in detail, Buchanan is essential, but the *Logbook* gives a comprehensive picture of all the work, with images chosen by the architect to emphasise what he thinks are the most important aspects of each job.

It is in a sense an illustrated autobiography, for Piano describes the 50 or so projects, and writes essays at beginning and end. He seems to be the modern parallel of a Renaissance *uomo universale* like Francesco di Giorgio: a humanist, thirsty for knowledge, very practical, charming, sometimes arrogant, able to command yet learn from technique, highly imaginative and varied in output.

History and nature, says Piano, are the two 'contexts in which architecture has its roots'. Yet the architect must have 'a taste for exploration, for being on the edge, an unwillingness to accept things as they appear to be'. As the *Logbook* shows, Piano accepts the dual role with courage and continuous invention. P.D.

Greening technology

ECO-TECH: SUSTAINABLE ARCHITECTURE AND HIGH TECHNOLOGY
By Catherine Slessor with photographs by John Linden. London: Thames & Hudson. 1997. £29.95.

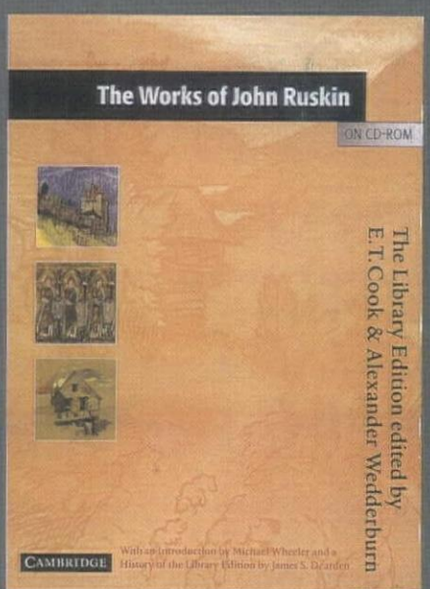
Ten years ago, I wrote that High-Tech – that almost exclusively British architecture of expressive steel structures, kit-of-parts metal cladding systems and inside-out mechanical services installations – had finally exhausted itself.

I was wrong, of course, as this collection of 40 important new, mostly European buildings amply demonstrates. All that has happened is that High-Tech has grown up and found a new job to do. It has changed its name to Eco-Tech, and applies its technical skills to worthy causes like energy saving, urban renewal and even monumental symbolism.

The Works of John Ruskin on CD Rom

Edited by E. T. Cook and Alexander Wedderburn. Cambridge: Cambridge University Press for the Ruskin Foundation. £450.

Ruskin made electronically searchable. A brilliant translation of the 39 volumes of the great Victorian sage's complete works onto one CD ROM; all the words are there, and so are the pictures, though the latter are not so well handled. 'The books are still needed, but they have been marvellously complemented and interpreted'. Reviewed in May.



Josip Plecnik: an architect of Prague Castle

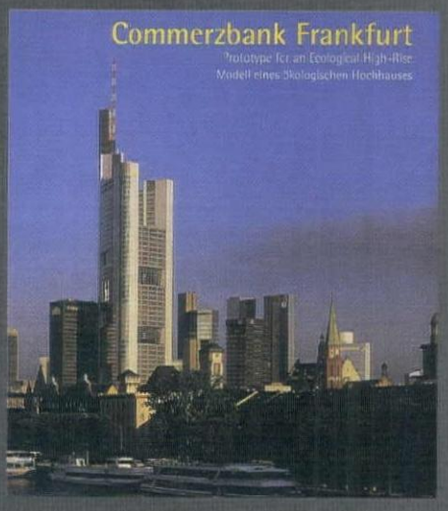
Prague Castle Administration. £55.

The re-appraisal of Plecnik proceeds apace. This book is one of the instruments of rehabilitation. 'It is sumptuous and immensely covetable; many of Plecnik's exquisite drawings for his beautifully crafted interventions are illustrated, together with superb photographs' and penetrating essays. Reviewed by Gavin Stamp in November.

Art and Ideas

London: Phaidon Press. Volumes at £16.99 each.

A series as ambitious as Taschen's which tries to relate all the arts (including architecture) to the general cultural (and to some extent political) climates in which they flourished. Standards vary, and in some volumes, the endeavour is beyond achievement (for instance the attempt to compress the whole of the development of the Islamic arts into one volume). But architecture is usually well handled and, unusually for books of this kind, good drawings of key buildings are included, as well as excellent photographs.
To be reviewed shortly.



Commerzbank Frankfurt: Prototype for an Ecological High Rise

By Colin Davies and Ian Lambot, Haslemere: Watermark Publications (UK) Ltd with Birkhäuser Verlag: Basel, Boston, Berlin. £49.

A prototype of towers to come? Detailed analysis of construction and working of landmarks. Text in English and German. Reviewed below.

I might reasonably argue that buildings like Hopkins' brick and concrete Inland Revenue Headquarters, Piano's monumental precast-concrete-clad Cy Twombly Gallery, or Miralles' Scharoun-like Alicante Gymnasium are not really High-Tech according to the strict definition, but there is no doubt that most of these buildings share a certain constructive sensibility and owe an obvious debt to High-Tech. The typical building types are similar too: airports, railway stations, museums, factories and exhibition halls predominate, with no housing schemes unless you count the apartments in Piano's Cité International in Lyons. What is more, certain architects, Grimshaw, for example, have unaccountably not noticed that High-Tech is dead, and have continued to develop the style in increasingly futuristic buildings like the Western Morning News Headquarters and the RAC Regional Control Centre in Bristol.

Despite its title, this book is not really about sustainable architecture in the full sense. Any thorough study of that topic would include a fuller account of less visible technologies such as automatic building management systems, computational fluid dynamic analysis, the harnessing of thermal capacity and the whole question of embodied energy. This is a book about Architecture, not Technology, which might also be said of most of the buildings. The photographs are seductive, the text is well crafted, and the drawings are excellent. COLIN DAVIES

Ecological high

COMMERZBANK FRANKFURT: PROTOTYPE FOR AN ECOLOGICAL HIGH RISE

By Colin Davies and Ian Lambot. Haslemere: Watermark Publications (UK) Ltd, with Basel, Boston, Berlin: Birkhäuser. 1997. £49.

This book tells the story of the design and construction of Europe's tallest building. Beautifully produced and illustrated, it tells the tale well, although, personally, I would have liked more details.

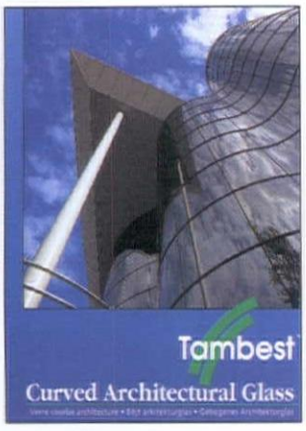
Less famous and less dramatic structurally than the Hong Kong tower, Foster's Commerzbank makes breakthroughs in different directions – for meeting German demands that people work near windows and for building a tall tower with natural ventilation.

The building is hollowed out to give internal gardens several floors high, and by placing vertical structure at the corners of the triangular plan the spaces are column-free. Now the placing of gardens-in-the-air has a good pedigree in modern architecture, from Le Corbusier's Immeubles-villas of 1922 to Seidler's Capita Centre of 1989. At Frankfurt the gardens serve socially to unite a 'village' of offices, staff-wise to give people an outlook and environmentally as thermal buffers, encouraging the use of opening windows.

The Empire State Building had double hung sash windows, but with the arrival of economical air-conditioning towers became sealed. Here we have a re-introduction of opening windows, and, for half of the year, when the weather is benign, occupants can operate them, with consequent savings in energy costs – but not in capital costs because mechanical ventilation has to be provided for extreme weather. But how welcome to see environmental concern moving away from its usual low-tech image.

The tower is wonderful. It deserves an urban presence at ground level. I was disappointed to see that it is in a backland site surrounded by buildings of conventional scale. But in the long view it is truly heroic. JOHN WINTER

Specifier's information



900 on AR enquiry card

Tambest Oy

Specialists in glass bending since 1984 Tambest currently features the following range of products: curved multi-functional insulating glass, curved laminated safety glass including impact-resistant, burglar-proof and bullet proof curves up to the thickness of 33mm (C3 SA). New forms such as conically and spherically bent glass are also included in the Tambest range.

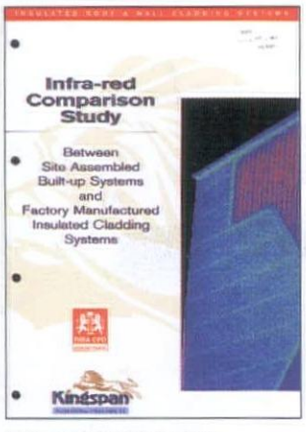
For more information please contact Mrs Paivi Kanerva, telephone: +358 3 3634 000 fax +358 3 3561 135 or P.O. Box 15, FIN-33700 Finland.



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Firestore - A one stop shop

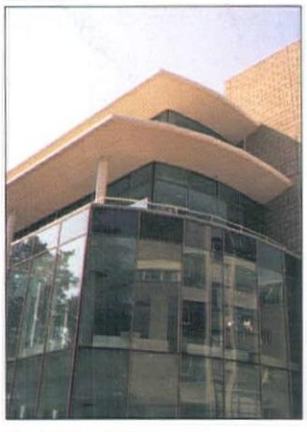
This information manual from 'Firestore', the fire protection division of Leigh's Paints describes one of the most comprehensive ranges of passive fire protection and fire stopping materials available from a single highly experience source. Intumescent coatings, mastics, pipe collars, mortars and slabs, fire pillows and intumescent strips for fire doors and glazed areas. All products comply with the relevant British Standards and are covered in helpful illustrated detail. Firestore is represented by a dedicated team of sales engineers nationwide, to assist on fire protection, backed by the division's 'technology for protection.' For more information contact W&J Leigh, Tel: 01204 521771 Fax: 01204 382115.



902 on AR enquiry card

Kingspan Building Products

Kingspan have published a 20 page infra-red comparison study. The study compares the installed performance of various site assembled built up cladding systems with factory manufactured insulated roof and wall cladding systems and is a valuable piece of **CPD MATERIAL** which has been successfully assessed by the **RIBA CPD PROVIDERS NETWORK**.
It clearly identifies major performance defects within the construction of the roof and walls of buildings inspected and provides a clear visual report and description of the defects found.
For further information please contact Alan Murtagh, tel 01352 716149 fax 01352 716161.

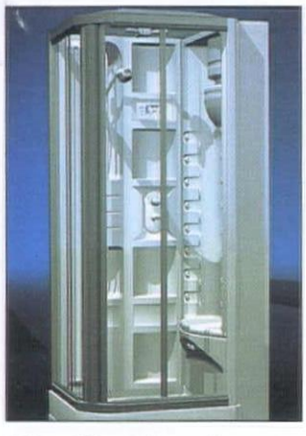


903 on AR enquiry card

Lignacite in a class of its own

The University of Luton has a new extension to its Learning Resource Centre, designed by architects The Charter Partnership in Bedford.
A special shotblasted pigmented white dense concrete block was chosen, as the colour and texture of the block had to blend with a nearby chequered stone and flint listed church without being overwhelming. This was achieved using a specially designed product by Lignacite. Constructed by Bickerton Group plc the building was handed over in June this year in preparation for the new term.

For more information telephone 01842 810678 or fax 01842 814602.



904 on AR enquiry card

Jacuzzi UK

Jacuzzi UK Ltd unveils the J-Dream Flexa. J-Flexa is flexible, offering a multitude of features to meet a range of personal needs. Users may enjoy an overhead rotating shower which releases a spiral of cascading water. Individuals may adjust the speed and pitch of the water being released. A second shower option includes a height-adjustable, multi-function, hand-held shower. Variable turbo body massage jets coupled with fixed back massage jets offer stimulating hydrotherapy. The company plans to unveil a variety of square and round designs with additional features, such as UV sun lamps and telephones, in 1998. For further information, contact Jacuzzi UK Ltd tel: 0171 409 1779.



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Technocover

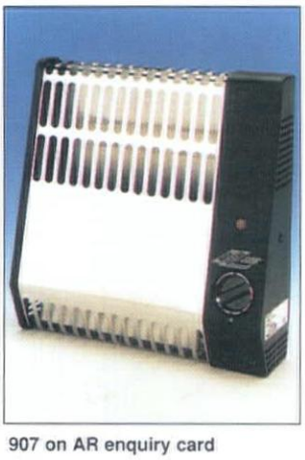
Technocover, the designers, manufacturers and fitters of high quality access covers and associated products, is now supplying, free of charge, an 86-page ring binder Working Manual and CAD disks for all its' products. The manual contains its' Solo-Lift range of upstand and solid top hinged and assisted covers that comply with HSE requirements for manual handling.



906 on AR enquiry card

Reynaers Systems

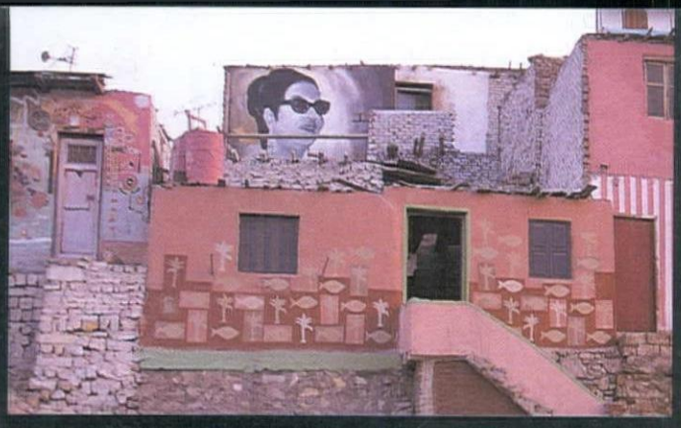
Many hotels built in the early 1960's are undergoing refurbishment and the introduction of the Reynaers Thermo System 57 aluminium section has proved extremely popular in such projects. The appearance of the bevelled edge Reynaers TS57 renovation section lends itself to the period, allowing the architect to create a sympathetic design utilising the very latest in modern thermally broken window and door systems. The combination of latest technology door and window systems, such as TS57, afford greater thermal efficiency and reduced maintenance while helping to recreate the traditional style and elegance of a building. For more information tel:0121 4281133 fax:0121 4282363



907 on AR enquiry card

Bush Nelson

The new Frostwatcher model 520 from Bush Nelson is a light and compact convector heater designed to provide background heat in areas susceptible to damage by frost. Attractively finished in stainless steel, the Frostwatcher has been specially designed to provide small amounts of heat to protect against damage from frost and damp in many applications including out buildings, workshops, storage rooms, greenhouses, conservatories and roof spaces. For safety it features a totally enclosed element, a built in thermostat, a power-on light, an adjustable temperature control and a safety overheat cut-out. For more information please telephone: 01293 547361.





Photographs by Eleanor Curtis



Drawing inspiration from the decorative traditions of the Egyptian south, this Cairo squatter community has enlivened and dignified their bleak surroundings.

Since Egypt's post-revolutionary years of the 1950s witnessed a rush to the streets from the fields, various Nile communities from Upper Egypt fled to the ever expanding city of Cairo in search of the better life. With no place to put themselves, illegal squatter settlements grew as the *felaheen* (farmers) built shanty structures out of the mud available on empty plots. Today, there are estimated to be 80 informal squatter settlements sitting on valuable city land.

Kom el-khorab now boasts a population of over 7000 and an informal economy based on pottery and stone crushing. South of Old Cairo, reaching up to the remains of the original seventh-century city wall of Fustat, this community of *fochareen* (potters) has built up a labyrinth of houses, *midans* (piazzas), studios and kilns over the past 40 years. Improvising with local sandstone and home-made bricks, the potters have built their community into and around the limestone cliffs, the natural topography and materials lending themselves readily to such rapid structural growth. Some dwellings have been attached to the underhangs of the natural limestone formation while others were haphazardly put together using whatever materials were available – some walls were constructed using pottery shards as bricks.

As city planners recently discovered while formulating their plans to run a major road through the area, informal settlements never make it onto the official maps of Cairo. Being an obstruction to the city's road plans, Kom el-khorab was destined to be bulldozed.

Led by local artist Hamdi Attia – winner of the Golden Lion prize at the 1995 Venice Biennale – artists with studios in the area armed themselves with rollers and brushes transforming the outer walls into colourful murals. Taking inspiration from the Eygptian south, where women would often paint houses, a collaborative effort was made to colour these houses with positive images of Upper Egyptian life, using motifs and abstractions of animals, birds, trees, moons and stars. Even a strong grey-toned mural of the head of Umm el-Kulthoum (a national music heroine) can be seen peering between the more rustic depictions.

Since the painting of the murals a year ago and with phases two and three scheduled to smarten up the *midans* inside the settlement, city planners have cancelled the proposed road project. Egypt's Ministry of Culture has also expressed some interest by subsidising phase two with brushes and paints for the artists. The attention has not only increased optimism among locals for improved living conditions, but has also generated a sense of pride about their homes and community . Perhaps the government will soon allow them to enter the twenty-first century with electricity and safe running water. ELEANOR CURTIS