



THE ARCHITECTURAL REVIEW

ONE HUNDRED YEARS OF EXCELLENCE IN ARCHITECTURE AND DESIGN



STRUCTURAL EXPRESSION Foster's law commission Fruitful Hasegawa

THE ARCHITECTURAL REVIEW

Founded 1896

Published monthly

Emap Construct, 151 Rosebery Avenue,
London EC1R 4QX, UK
Tel: +44 171 505 6725; fax: 171 505 6701

Editor

Peter Davey 171 505 6725

Deputy Editor

Catherine Slessor 171 505 6726

Assistant Editor

Penny McGuire 171 505 6728

Production Editor

Julia Dawson 171 505 6729

Art Editor

Michelle Ashenden 171 505 6727

Editorial Administrator

Lynne Jackson 171 505 6725

Advertisement Manager

Neil Williams 171 505 6735

Deputy Advertisement Manager

Charles Glover 171 505 6736

Publishing Assistant

Sophie Fenlon 171 505 6740

USA Advertising Sales

Midwest: John Maisel

Tel: +1 708 416 0780; fax: 708 416 0793

West Coast: Jim Moreland, Rachel Long

Tel: +1 818 366 8966; fax: 818 366 5057

Japanese Advertising Sales

Eiji Yoshikawa

Tel: +81 3 3327 2688; fax: 3 3327 3010

Italian Advertising Sales

Cesare Fiorucci

Tel: +39 2 58.31.02.19; fax: 2 58.31.57.10

Production

Samantha Walters 171 505 6762

Circulation Marketing Manager

Mike Aplin

Publishing Director

Rowan Crowley

Managing Director

Tim Brooks

The AR welcomes ideas from readers, but
cannot be responsible for unsolicited
manuscripts, photographs, or drawings.

Subscription Rates

UK - £54

UK students - £39

(UK subscribers only can benefit from a
special low subscription rate with The
Architects' Journal - £99 or £78 for students)

Americas - \$85

Americas students - \$65

Rest of World - £64

Rest of World students - £48

Copies are sent surface mail. Airmail rates
on application. American copies
air-speeded to New York.

Please use the order form in this issue to
receive your own copy, or contact our
Subscription Department at Audit
House, Field End Road, Eastcote, Ruislip,
Middlesex, HA4 9BR, UK.

Tel: +44 181 956 3018; fax: 181 956 3020
North, Central and South American
subscribers: please send orders and queries
to Fenner, Reed and Jackson, P.O.Box
754, Manhasset, NY 11030-0754
Tel: +1 516 627 3836; fax: 516 627 1972

Back Issues

For prices, contact CRC. Tel: +44 171 505
6622; fax +44 171 505 6606
Bound volumes (UK only): contact John
Lawrence. Tel: 01234 346692

US Postmaster: The AR (ISSN 0003-861
X) is published monthly for \$85 per year.
Second-class postage paid at Manhasset NY
and additional mailing office.

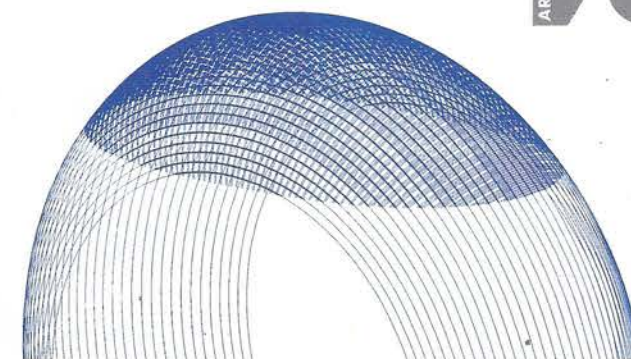
ABC
AUDIT BUREAU OF CIRCULATIONS

ABC BUSINESS PRESS

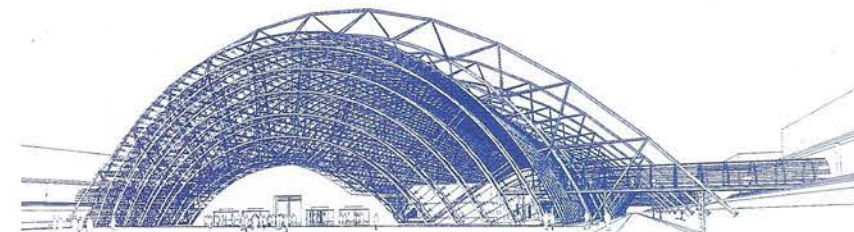
Circulation 20561 (July 1994 - June 1995)

© Emap Construct 1996

emap
CONSTRUCT



Belgian toroid by Samyn Associés, p68



Leipzig arches by von Gerkan, Marg & Partners and Ian Ritchie Architects, p74

March 1996 Volume CXIX No 1189

STRUCTURAL EXPRESSION

COMMENT	
4	Culture span Reconciliation of the wonderful potential of the new technologies with humanity's age-old perceptions
PRELIMS	
9	News, exhibitions and letters Pfaffenberg Projects; Happold obituary; millstones and milestones
DESIGN REVIEW	
20	Insect house A tectonically expressive office insertion in the guise of a giant arthropod ANTHONY PEAKE ASSOCIATES
OUTRAGE	
23	University challenged Penitential conditions in provincial universities of Britain DOUGLAS SMITH STIMSON PARTNERSHIP
INTERIOR DESIGN	
25	Sea view Elegant glass and steel house set in the midst of an Australian wilderness LIPPMANN ASSOCIATES
28	Pacific panorama Poetic fusion of light and materiality in a house on the edge of the Pacific Ocean O'HERLIHY + WARNER
THEME	
34	Legal precedent Cambridge Law Faculty, a tactful insertion into a difficult site SIR NORMAN FOSTER & PARTNERS
43	Fruitful synthesis New museum of fruit in Yamanashi fuses nature and technology ITSUKO HASEGAWA
48	Scarpa in the South-West Manipulation of big box at library, Phoenix, Arizona BRUDER/DWL ARCHITECTS
54	Light curve Manchester bridge harnesses two compatible structural systems WHITBY & BIRD
56	Timber connection Bridge in Styrian countryside exploits laminated wood MARCEL MEILI, MARKUS PETER
58	Thunderbirds are go Pedestrian bridge over Humber River, Canada MONTGOMERY & SISAM ARCHITECTS
60	Landmark link This dramatic bridge in Salford forms a significant urban connector SANTIAGO CALATRAVA
62	Sporting stars Two wide-span sports halls for a Graz secondary school VOLKER GIENCKE
65	The genesis of Eden Dramatic centre in Cornwall for the study of plants NICHOLAS GRIMSHAW & PARTNERS
68	Sowing the seeds Bentwood structure for silviculture in a forest clearing in Belgium SAMYN ET ASSOCIES
72	The boot and the lace maker Lille station gives passengers a sense of the excitement of travel SNCF APG
74	Leipzig's luminous vault Glazed shed at Leipzig VON GERKAN, MARG & PARTNERS/IAN RITCHIE ARCHITECTS
78	Spherical interludes Winning proposal for sports arena in Chemnitz PETER KULKA, ULRICH KONIGS
HISTORY	
80	Californian promise Celebration of the post-war building technology of Gordon Drake in the Californian landscape
PRODUCTS SURVEY	
87	External envelope
BOOKS	
96	Reviews About the House; Olmsted's America; Nicholas Grimshaw; Puritan Classicism; and D.S.MacColl
DELIGHT	
98	Turning the corner Small block of flats in Barcelona is 'an authentic sculpture fit to live in' JOSEP MARIA JUJOL
COVER	
Drawing for Chemnitz sports arena proposal by Peter Kulka with Ulrich Königs (pp78-79)	

SCARPA IN THE SOUTH-WEST

This very large library has been built on a relatively low budget, but command of modern technology and understanding of the latest developments in engineering theory allow magic to be made.

Like Antoine Predock (AR February 1996 p64), Will Bruder has a talent for making buildings that work well when seen from motorways, as well as by people who approach them on foot. And, like Predock, he is not afraid of translating the great and mighty forms of the natural landscape of the American South-West into his buildings. His Phoenix central library (designed with DWL Architects) takes, he says, at least part of its inspiration from the mesas of Monument Valley. Though it is set in the middle of the city on Central Avenue, its shape does, close up, almost seem to rival those of the (much more pointy) mountains that can be seen all round on the fringe of the plain.

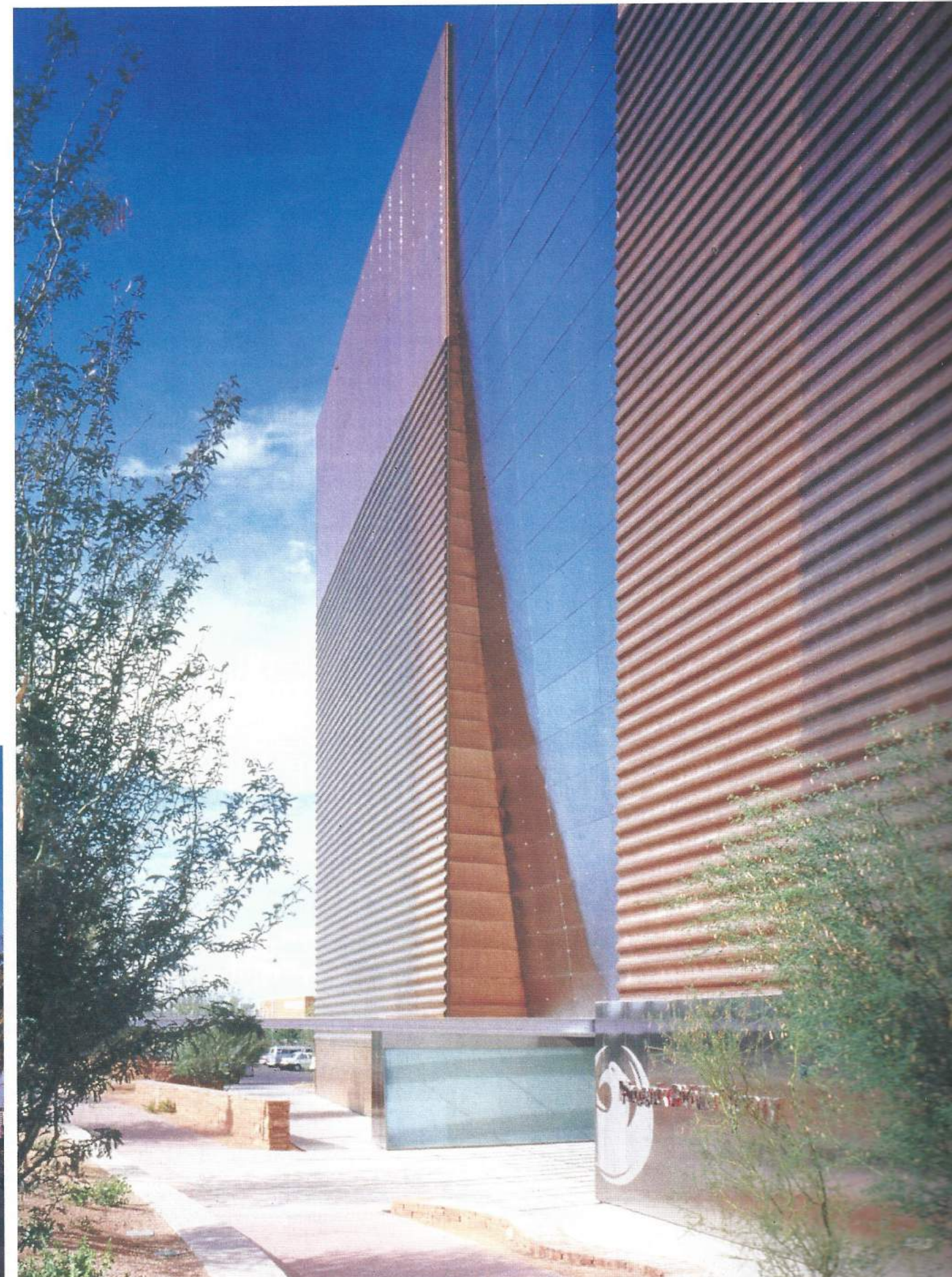
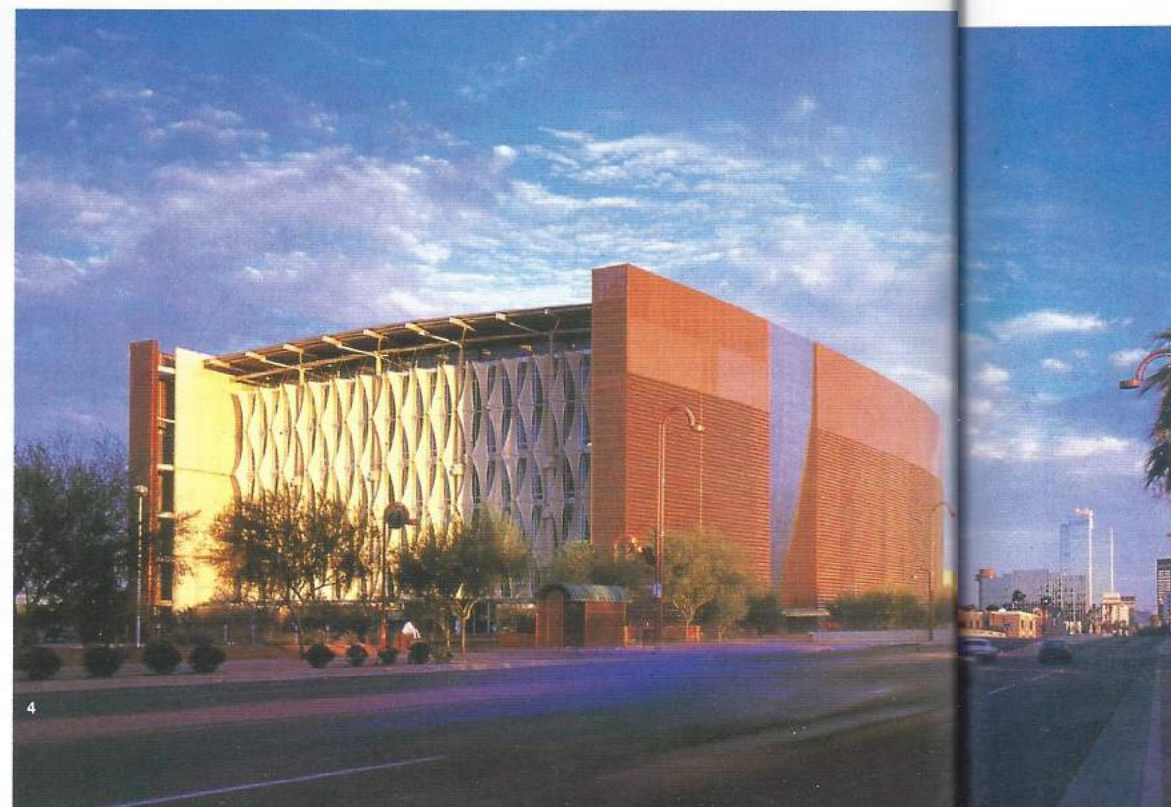
That the library has such presence is largely due to its bulk. Fundamentally, the building is a five-storey sealed box with very large floor-plates (90 m x 60 m); it is big, but is saved from being a monolith by dextrous manipulation of the basic box and its surfaces. To east and west of the basically rectangular floor are thin service zones that have outer walls curved in plan and which project beyond the plane of the north wall to help shade its glass face; the walls of these zones are clad in copper sheets, both flat and corrugated. Bruder calls the resulting smooth brown curved forms that flank the body of the building 'saddlebags'.

Yet the consciously atavistic terminology and choice of models, which project a kind of South-West, homely cheerfulness onto the building, cannot conceal an acute architectural intelligence at work. Bruder, who did not

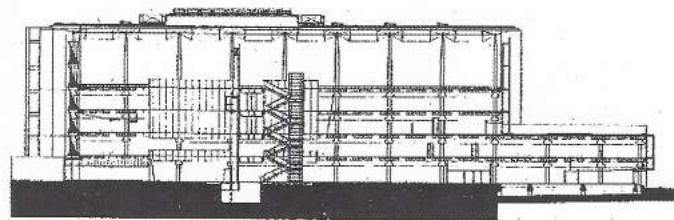
Central library, Phoenix,
Arizona, USA
Architect
bruderDWLarchitects
Engineer
Ove Arup & Partners



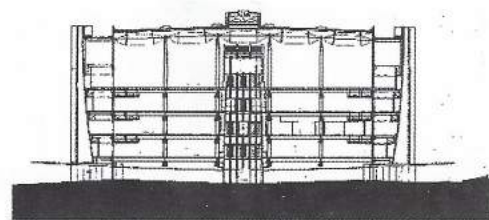
1 The cantilevered universal beams which act as a virtual canopy, signalling entrance and drawing people into the heart of the building.
2 The great south wall in the evening with the louvres in horizontal position.
3 The sail-covered north wall from motorway. Sails, and projection of saddlebags shade wall from direct sunlight at certain times of the year.
4,5 The huge service saddlebags clad in perforated corrugated copper flank the main volume, and are slashed through by a mirror-like stainless steel panel that sometimes seems to let the sky through the building.



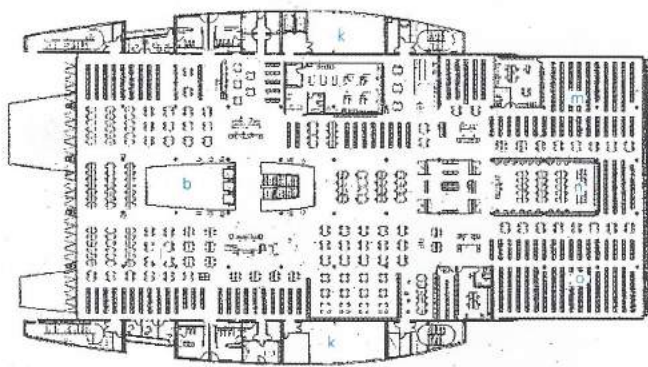
- | | |
|----------------------|------------------------|
| a entrance | m government documents |
| b crystal canyon | n microfiche |
| c restaurant | o periodicals |
| d auditorium | p technical services |
| e check-in | q administration |
| f check-out | r librarians |
| g fiction | s closed stacks |
| h biography | t music collection |
| j children's library | u Arizona collection |
| k duct in saddlebag | v non-fiction |
| l reference | |



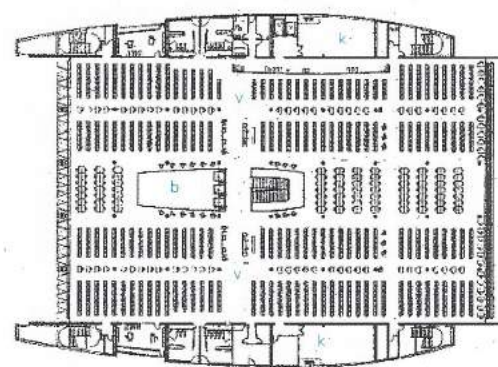
north-south section



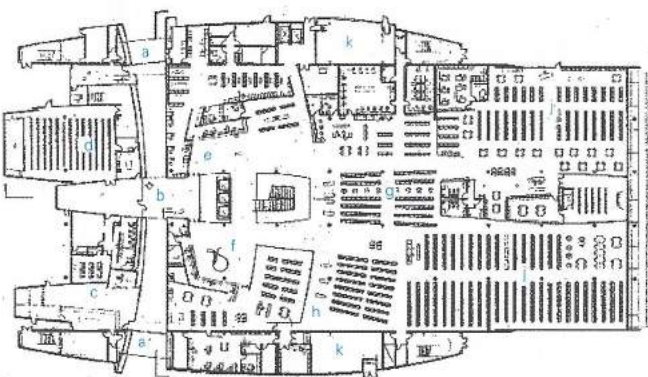
east-west section



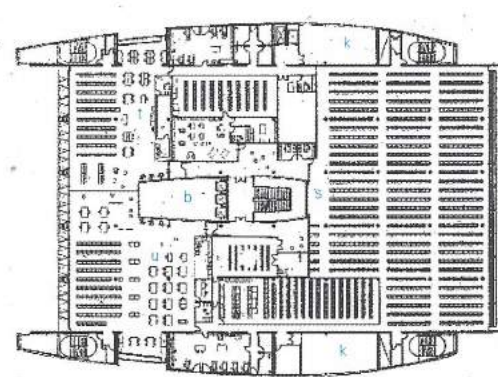
first floor



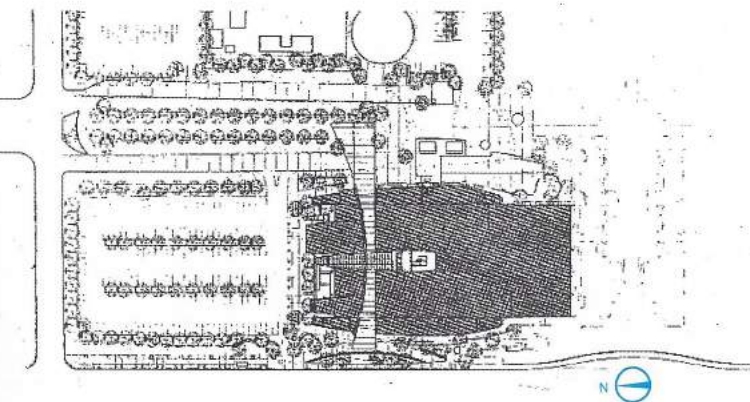
fourth floor



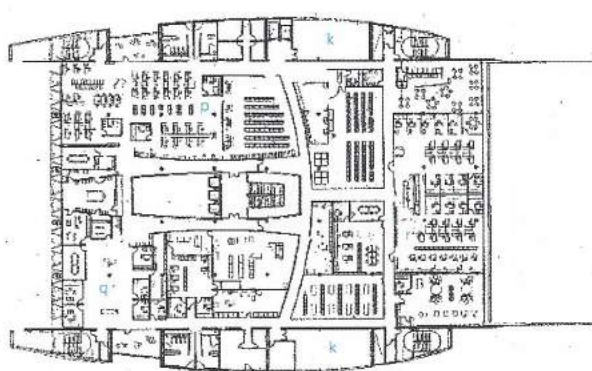
ground floor (scale approx 1:1400)



third floor



site plan



second floor

attend architecture school, became an architect in the old-fashioned way, almost by apprenticeship, as he worked for a succession of distinguished architects and befriended others including Paolo Soleri and Bruce Goff. Perhaps as a result, his sensibility is much more honed to appreciation of the tectonic qualities of architecture than many of his contemporary countrymen. Looking at his work, it comes as no surprise to learn that he became a devotee of Carlo Scarpa during a period as a Fellow of the American Academy in Rome in 1987.

But unlike Scarpa, whose devotion to craftsmanship is legendary, Bruder has to work within the rigorous constraints of the (very efficient) industrialised US building industry – particularly in the Phoenix library, which is his biggest building to date, but one that has had to be realised on quite a restricted budget. Externally, the tectonic sensibility is to be seen in the copper walls of the saddlebags, which are perforated with regular holes so that at night the inner life of the building is seen in shadow-play. In daytime, it becomes clear that the saddlebags are slashed by smooth polished steel panels that rise from above the entrances to roof level. These curve slightly inwards over the entrance canopies, emphasising that they are metaphors for the girths, or whatever the straps are called that attach saddlebags to the horse. But the polished steel panels do more than merely call attention to the equestrian aspects of the design; in certain lights, they act as mirrors for the sky, so the brown cliffs suddenly seem to have been miraculously chopped through by a wide canyon.

The entrances themselves have canopies, or rather virtual canopies, made of white-painted universal steel beams which project horizontally from under the curve of the polished metal. Every fourth beam cantilevers far out; its neighbour is a couple of metres shorter, and there is a shorter beam between that and the next long beam. The canopy is a powerful (yet not overpowering) invitation to enter which delicately reaches out against the huge scale of the copper walls, gradually becoming visually more dense and protective as you penetrate towards the interior: Carlo Scarpa has come to the South-West.

But before going in, it is as well to finish looking at the exterior. On the south side, the building projects beyond the saddlebags and is revealed as a rather angular grey unequipped entity, whose thin precast concrete walls frame a glass skin which constantly changes,

for it is striated with computer controlled adjustable aluminium louvres that move according to the sun to prevent the interior from becoming over-insolated. The north elevation is contained by the ends of the saddlebags that house escape stairs; the projections gradually peel back the copper to reveal the precast concrete of the inner walls – another Scarpa-like touch. The glass wall is not only shaded by the projecting saddlebags but by vertical sails (designed with FTL/Happold) of teflon-coated acrylic fabric. Their profiles are calculated to provide shading for the interior against direct sunlight between spring and autumn without obscuring magnificent views of the mountains above the predominantly low-rise city. The sails are kept in shape by ropes in sleeves at their outer edges: the ropes are tensioned against struts that convey the sails' loads back to the main structure. It is surprising that Bruder has not come up with a homely South-Western metaphor for the frilly-knicker effect of the sails against the glass.

You enter the building along a curved route from the porches which delivers you past the lecture theatre or the restaurant (according to where you came in) to the central lobby which is the base of an atrium – Bruder calls it the 'crystal canyon' – which runs up through frameless glass walls to rooflights. (These have mirrored louvres that are computer controlled to move to reflect sunlight into the big void underneath – a rather more successful suncatching contraption than Foster's in the Hongkong and Shanghai Bank, AR April 1986). Through the glass walls of the atrium, the main structure of the building can be seen clearly. It is very similar to normal multi-storey warehouse construction, with precast columns carrying precast beams that themselves support precast floor units. To east and west, precast concrete walls act with the diagonally braced steel structures of the saddlebags to stiffen the whole structure. (The concrete walls also act as thermal flywheels, absorbing heat during the day and emitting it in the cool of the night.) Apart from the crystal canyon, the spaces contained by the precast structure are, as you might expect, rather run-of-the mill – except where they offer splendid views through the great north and south glass walls. On the ground floor, there are the fiction and video lending departments and the children's library. The first floor contains the reference library, and departments for periodicals and government; the second floor houses the administration;



6 Stiff frilly sails shade north wall but allow views of city and mountains.
7 Staircase in its glass well.

the third special collections. And on the top floor is the great reading room – the main non-fiction area.

Here, the trabeated structural discipline of the lower floors is abandoned. Strange tapering precast columns stop short of the curved roof but are plainly supporting it. The trick is pulled by propping the purlins of the galvanised corrugated roof deck on stainless-steel struts that are themselves supported by stainless-steel cables which are stretched from the column heads. The arrangement translates the downwards (and upwards) thrusts of the roof through the struts to tensile stresses in the cables which are transferred to mainly compressive stresses in the columns through the cruciform stainless column heads.¹ (It would be wrong to call them capitals, for they do not provide a visually satisfactory capping effect.) Instead, the columns are more like a grove of masts or tentpoles which, with the rigging up under the curve, give a vague impression of transience, of setting out on a journey, appropriate perhaps for a space devoted to the exploration of knowledge.²

The feeling of embarkation and transience is amplified by the daylighting. A slot of rooflights against the side walls stresses the hovering, unconnected quality of the metal curve, while emphasising the noble, striated smoothness of the precast concrete. In the roof deck above each mast is a 2 m diameter rooflight which is glazed with blue laminated glass, in the middle of which a 400 mm hole is left clear, so that at the summer solstice sunlight shoots straight down to anoint the masts of knowledge, which are of course also partly symbols of other more human and animal things. In so doing, the light evokes

ideas that relate us to an immemorial past. By ingenious use of technology and new methods of structural analysis, Bruder and his engineer (Michael Ishler of Ove Arup & Partners Los Angeles) have made a place that has several dimensions of magic on a relatively low budget and within a system of procuring and making big buildings that so often marginalises architecture to external decoration. MARGARET SEAL

- 1 The cables penetrate the concrete side walls (which take vertical loads only) through holes to connect with the bracing steel frames of the saddlebags, which must take a good deal of the lateral stresses.
- 2 The space lit from the ends and with a central reading area has points in common with Bruder's much smaller branch library at Cholla, Phoenix (AR July 1992, p46-51).

Architect
bruderDWLarchitects, New River, Arizona; a joint venture between William P. Bruder and DWL Architects & Planners: Will Bruder, Wendell Burnette, Carleton Van Deman, Bob Adams, Marc Arnold, Lito Aquino, Maryann Bloomfield, John Chopes, Lauren Clark, Mark Dee, Beau Dromick, Dan Filuk, Michael Haake, Frank Henry, Toni Ann Hindley, Sharon Kraus, Rick Joy, James Lindan, Dean Olsen, Peter Pascu, Vicky Ramella, Jeff Wagner

Landscape architect
Martino & Tatasciore

Engineers
Ove Arup & Partners, Los Angeles (structural/acoustic/building systems): Rob Bolin, Peter Budd, Richard Russell, Jacob Chan, Donna Clarendine, Nancy Hamilton, Richard Hough, Michael Ishler, Alan Locke, Dan Ursca

Bates/Valentino Associates (building systems)

Hook Engineering (civil)

Consultants
Mason Associates, Professional Library Consultants (library)

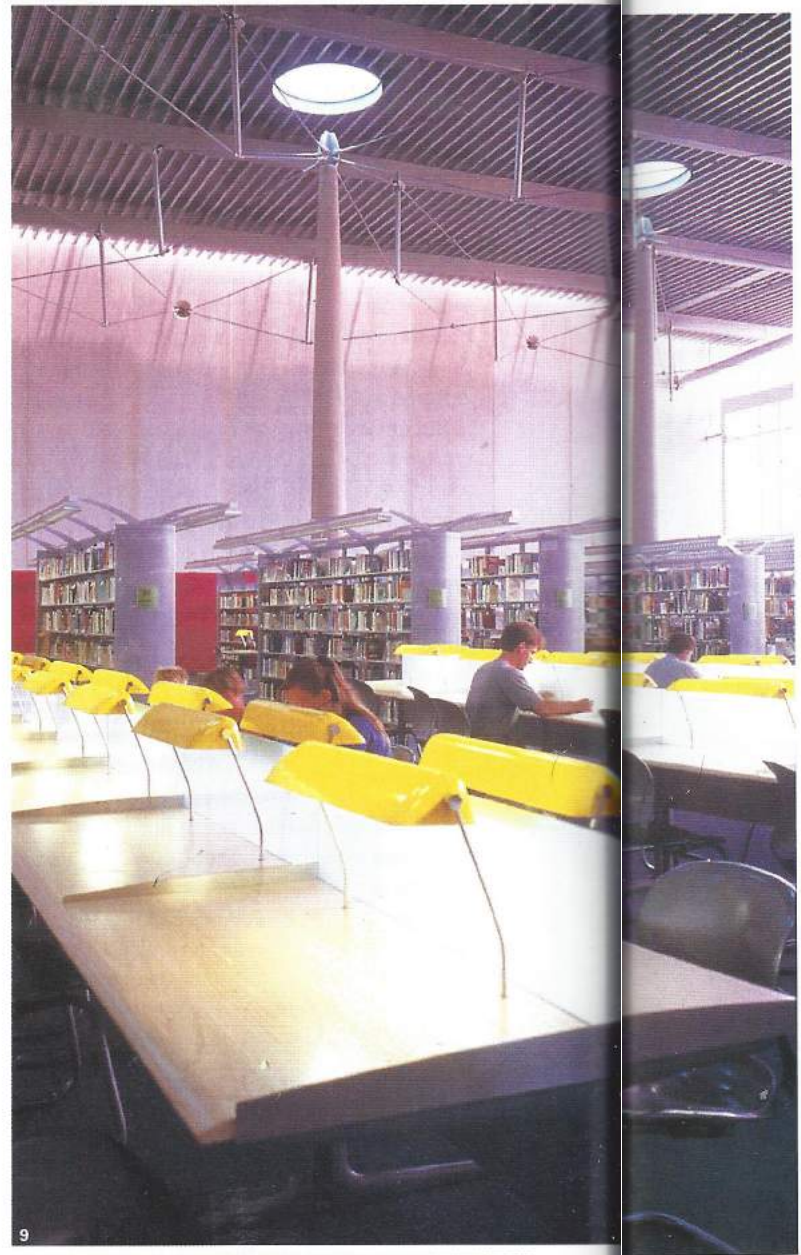
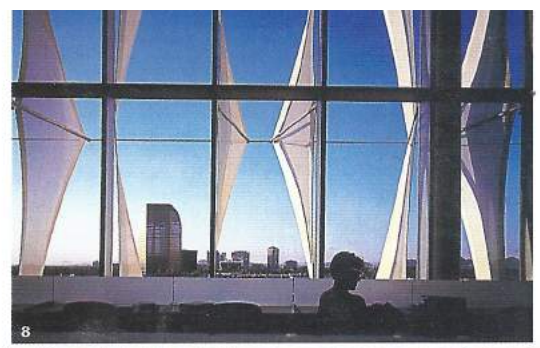
Lighting Dynamics (lighting)

Tait Solar Company (daylighting)

Construction Consultants Southwest (cost)

FTL/Happold (structural fabric)

Photographer
Bill Timmerman



- 8 Looking out through the sails.
- 9 Roof of reading room is supported by rigging attached to columns which are anointed by light from above.
- 10 Slots of light at edge of roof emphasise its hovering quality.
- 11 Trabeated precast construction of intermediate floors seen from crystal canyon.
- 12 Crystal canyon runs up to roof lights and contains glass lifts which climb its north wall.

Central library, Phoenix, Arizona, USA
Architect
bruderDWLarchitects
Engineer
Ove Arup & Partners