

THE MAGAZINE OF DESIGN IN SOUTHERN CALIFORNIA MAY/JUNE 2004

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in means yet fulfills the aims,
is an artistic process."*

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www.laarch.com

COVER: Caltrans District Headquarters. Photo courtesy of Morphosis.

SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY

RFP NO. E727-04 On-Call Engineering Services

The Southern California Regional Rail Authority (SCRRA) is seeking Proposal for On-call Engineering Support. The estimated value of this procurement is \$1,000,000 to \$6,000,000.

Beginning April 2, 2004, Request for Proposal (RFP) may be obtained via download, mail, or in person, as follows:

Download: Visit SCRRA's website at www.metroink-trains.com/contracts.asp.

Mail: Send a letter to the attention of Ms. Janette Shew at: SCRRA, 700 S. Flower Street, 26th Floor, Los Angeles, CA 90017-4101 or fax to 213-452-0425.

Please include the following information on letter or fax:

Name of company
Street address, city, state, zip code
Contact person
Telephone number
Fax number
E-mail address (if any)

Note request is for RFP No. E727-04

In Person: See Ms. Shew in the SCRRA office at the address above. Please call ahead. Ms. Shew's telephone number is 213-452-0307.

There is no charge for the RFP documents.

A \$25.00 mailing fee is charged by SCRRA to mail documents via Federal Express (certified check, money order or company check only) or you may provide a Federal Express account number in lieu of the mailing fee.

A Pre-Proposal Conference will be held at 10:00 a.m. on Tuesday, April 13, 2004 at Authority's offices, 700 South Flower Street, 25th Floor, Board Conference Room, Los Angeles, CA 90017.

Proposals are due no later than 2:00 p.m. on May 10, 2004 at SCRRA's offices, 700 South Flower Street, 26th Floor, Los Angeles, CA 90017 and will be publicly opened and read.

The Contract to be awarded is subject to a financial assistance agreement between SCRRA and U.S. Department of Transportation. The Contract to be awarded is funded in part by the U.S. Department of Transportation, FTA Project No. CA-03-0552, CA-03-0662, CA-90-Y267, CA-90-0077 and CA-90-9011.

Disadvantaged Business Enterprise (DBE) participation goals will be established on a Contract Task Order (CTO) basis for all CTOs funded with DOT financial assistance. The DBE participation goal will range from 5% to 25%. A higher DBE Goal may be established based on the defined scope of services for each CTO, corresponding availability and commitment of DBEs. Proposers will not be required to demonstrate ability to meet the established DBE participation goal at the time of the proposal, but must indicate the names of a sufficient number of certified DBE firms in order to be considered responsive.

SCRRA does not discriminate against, or provide preferential treatment to any individual or group on the basis of race, color, ethnicity, age over 40, religion, sex, national origin, ancestry, physical handicap, disability including AIDS, mental condition, cancer-related medical condition, political affiliation, sexual orientation, or marital status in its contracting activities.



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contributors

PAUL ANDERSEN is a practicing architect in California and the Arthur Gensler Visiting Critic at Cornell University. He is researching applications of emerging fabrication technologies in architecture and building construction, and is the recent recipient of a Cornell Innovation Grant. Paul has also been awarded for several competition entries that address issues of housing and urbanism. Believing that architectural expertise requires a diversity of design methodologies and knowledge, he explores a range of architectural problems through a variety of working relationships. He studied history and mathematics at the University of Pennsylvania and graduated from UCLA with a master's in architecture.

ADAM GRIFF recently graduated from the MIT School of Architecture and is currently working at Michael Hricak Architects in Los Angeles.

ALLISON MILIONIS is an Oregon-raised freelance writer based in Los Angeles, with a varied background in the arts and architecture. She is a regular contributor to a Russian architecture and design magazine, and a US correspondent for *AW Architecture + Competitions*, Germany. She is working on her first novel.

MICHAEL WEBB was born in London and has lived in Los Angeles for 25 years. He is the author of more than 20 books on architecture and design, including *Modernism Reborn: Mid Century American Houses*, new monographs on Ingo Maurer and George Nelson, and *Brave New Houses: Adventures in Southern California Living*. Besides reviewing books and exhibitions for *LA Architect*, Michael is a regular contributor to *Architectural Digest*, *Architecture*, the *Architectural Review* and *Domus*.

CORRECTION: The price of *1000 Architects*, reviewed in the March/April issue, is 80 dollars.



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a letter from the editor

Repeatedly during the construction of this issue, architects, contractors and writers brought up the idea of the master-builder. And they presented it not simply as a historical reference, but as a vision of architecture's future. This, they felt, was how Architecture, as a field, could demonstrate its relevance and worth. That the future of architecture should be in building sounds almost self-apparent. But during the last decade's infatuation with words, the structures themselves often had an air of afterthought. They were merely the illustrations of ideas. No longer.



That Morphosis has gotten so excited about building (*Caltrans*, p. 22) shows that this trend's time has come. The process behind their project should serve as an inspiration. As context, we try to show a little of the history and potential of the relationship between architecture and construction, in a piece by Paul Andersen (*Nearly the Same*, p. 36). In addition, Adam Griff offers a few novel approaches to materials, and Allison Milionis celebrates those who typically do the heavy lifting: engineers and contractors. We also talk to three architects who enjoyed building so much, they decided to do it full time.

At the start I wanted this issue to read like a manifesto: *Put down your Deleuze and visit a job site!* But in the end it turned out that many of you were already there. I'm so glad.

Your editor,

Jesse Brink

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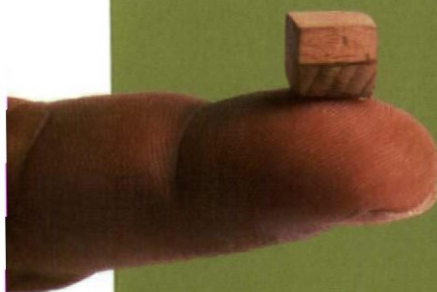


news

PEOPLE + PROJECTS



Exhibitions



Though not particularly architectural—only Richard Serra's *House* even pretends—**LACMA's** up-coming **Beyond Geometry** show should prove inspiring to any designer. The era and the many styles involved are familiar, but with this exhibit's international focus, many of the individual works will not be. Check it out after June 13. Los Angeles County Museum of Art, 5905 Wilshire Boulevard, Los Angeles 90036. For more information, www.lacma.org or 323-857-6000.

The quirky brothers Bouroullec have had some strange and wonderful visions for the office environment over the course of their brief (both are in their 20s) career. **MOCA** is presenting their first North American show at the **Pacific Design Center** from June 20. Visit www.moca.org or call 213-626-6222 for more information.



Honors

Lorcan O'Herlihy, John Friedman, Alice Kimm and Lawrence Scarpa, were recently selected as "Emerging Voices in Architecture" by **The Architectural League of New York**. Each of them will be presenting a lecture in New York later this year.

Beloved photographer **Julius Shulman** has achieved the rare honor of the **Austrian Cross of Honor for Science and Arts**. This award is one of the highest non-military medals offered by the country.

Architect Daniel L. Dworsky, FAIA, has been presented the Lifetime Achievement Award for Distinguished Service, by the **AIA/California Council**. Among his more famous projects in the city are the Bradley International Terminal at LAX, the Federal Reserve Bank and UCLA's Drake Stadium.

In Memoriam

With the death of Pierre Koenig, FAIA, on April 4, we lost the last of the Case Study greats. His very first house was steel-framed, which he designed and built as a student, ten years before his world-famous Case Study #22. Through fifty years in practice, and nearly as many as a professor at USC, Koenig gave life to a pure Modernism that continues on.



PROJECTS

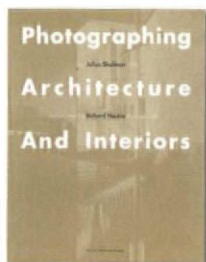
The San Diego firm of **Zagrodnik + Thomas Architects, LLP**, has just transformed a dreary Carpenter's Union Hall (above) into an 18,000 square foot Lesbian Gay Bisexual Transgender Community Center. The primary renovations involved the lobby, auditorium and mechanical systems.

KMA Architecture & Engineering has been retained by Parcel B LLC as executive architect for Park Terrace, the latest redevelopment project in San Diego's Ballpark District. Construction of the \$44 million mixed-use development, situated between Petco Park and the proposed Central Library, is slated to begin in Summer 2004.

Exhibitions, top to bottom: Richard Serra's *House*; Clildo Neireles' *The Southern Cross*; the Bouroullec Brothers' *Lit Clos*; Sleeping Cabin; Projects: Lesbian Gay Bisexual Transgender Community Center; San Diego, California. Photo: Pablo Mason.

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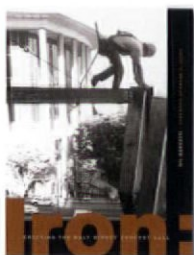
Photographing Architecture and Interiors

Julius Shulman

Introduction by Richard Neutra

This was Julius Shulman's first book and he still considers it his most genuine reflection on the profession and his own artistic philosophy. Originally published in 1962, it includes a forward by Richard Neutra. Frank Lloyd Wright once said that to his mind, no better photos had been taken of Taliesin West than those of Julius Shulman. Now reprinted intact with a new foreword by Julius Shulman and digitally scanned reproductions from original prints, this new edition of a classic work is better than the original.

ISBN: 1-890449-07-5, 9" X 12", 154 PAGES, \$39.95



Iron: Erecting the Walt Disney Concert Hall

Gil Garcetti

Foreword by Frank O. Gehry

Photographer Gil Garcetti had unparalleled access to the Walt Disney Concert Hall construction site. The personal relationships he developed with the iron workers over the course of many months and his admiration for their artistry are evident in the moving portraits contained in this book. Garcetti's evocative images, reproduced in rich duotones, bring to life the romantic ideal of American industry.

ISBN: 1-890449-15-6, 9.5" X 11.5", 144 PAGES, \$39.95



LA'S Early Moderns

Victoria Dailey / Natalie Shivers

Michael Dawson

Introduction by William Deverell

The modernist avant garde of Los Angeles made bold statements in their work, but they were every bit as much a community as they were individual eccentrics. They gathered in solidarity as friends and lovers, patron and client, over the shared excitement of breaking with tradition. The reader will enter a rarified social realm where client, artist, architect, lover, and publisher merge in a creative ferment that occurs spontaneously and magically at rare moments in a city's life.

ISBN: 1-890449-16-4, 7" X 9", 196 PAGES, \$34.95



Frozen Music

Gil Garcetti

In this large-format limited edition of 1500 copies bound in metallic fabric, Gil Garcetti's brilliant interpretive photographs of the stainless steel exterior of the Walt Disney Concert Hall evoke the mystery, fluidity, and form of Frank O. Gehry's lyrical shapes. *Frozen Music* has garnered positive reviews from Pulitzer Prize winning photographer David Kennerly, Weston Naef, Getty Museum curator of photography, and architectural photographer Julius Shulman.

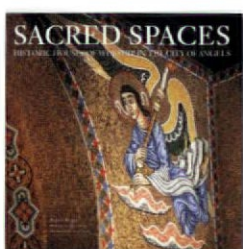
ISBN: 1-890449-27-X, 16" X 14", 45 DUO-TONE IMAGES, BOUND FOR INDIVIDUAL REMOVAL AND DEBOSSÉ, METALLIC CLOTH, 96 PAGES, \$125.00



Urban Surprises A Guide to Public Art in Los Angeles

This guide invites its readers to discover hundreds of public works of art; some awe-inspiring, some poignant, and some controversial by both famous and lesser known artists. Enhanced with neighborhood maps and beautifully reproduced color images by photographer Dennis Keeley, this book reveals the magic of the outdoor museum that is the city of Los Angeles.

ISBN: 1-890449-14-8, 6.5" X 8", 112 PAGES, \$14.95



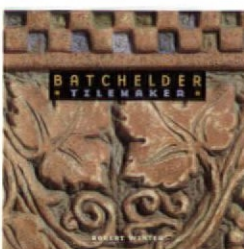
Sacred Spaces

Robert Berger

Introduction by Kevin Starr

Photographer Robert Berger visited over 300 historic houses of worship over the course of three and a half years, setting out to record Los Angeles' unheralded religious history. Lively text by noted historian Alfred Willis makes this book come alive and makes this book a substantial contribution to the "undiscovered" realms of religious architecture that make Los Angeles a city of complete beauty and maturation.

ISBN: 1-890449-21-0, 132 COLOR IMAGES, 176 PAGES, \$59.95



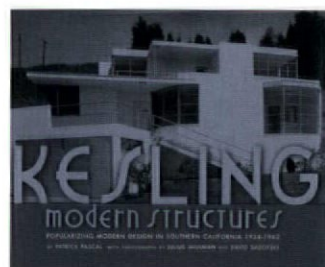
Batchelder Tilemaker

Robert W. Winter

"Robert Winter's masterful and much-needed new book establishes Ernest Batchelder as a giant of the great age of American decorative tile making a key figure in the history of design within the Arts and Crafts movement."

—Cleota Reed, Syracuse University, author of *Henry Chapman Mercer and the Moravian Tile Works*.

ISBN: 1-890449-03-2, 9" X 9", 130 PHOTOGRAPHS, 112 PAGES, \$29.95



Kesling Modern Structures

Patrick Pascal

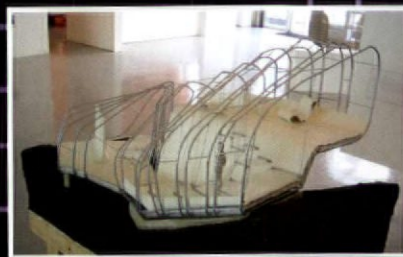
Photographs by Julius Shulman

Beginning in November 1935, William Kesling was Southern California's most prolific and successful practitioner of Steamline Moderne design, then called Modernistic. With never before published photographs by Julius Shulman, this book is the first exploration of the work of an important, yet, little known player in Southern California's fertile Modernist movement.

ISBN: 1-890449-13-X, 10.5" X 8.5", 96 PAGES, \$24.95



news
PEOPLE + PROJECTS



S U N S E T



Events

Architecture + Design Museum, West Hollywood California. Photos: Marvin Rand.

Despite the rainy and chilly weather, the ambiance was cozy at the new **A+D (Architecture + Design) Museum** for the opening of the annual **2x8: Groundworks** show, organized by the AIA/Los Angeles.

The event showcased the creative work of 20 architecture students (two each from ten schools within the metropolitan Los Angeles area) competing for AIA/Los Angeles sponsored scholarships. More than 400 people attended the opening party, where they had a chance to discuss the student's projects and the schools' architectural take on urban and environmental development, while the bar kept the drinks flowing.

AIA/Los Angeles and the members of the Academic Outreach Committee raised over \$40,000.00 in "in-kind" donations towards the installation of the 2x8:Groundworks exhibit and \$17,000 in cash toward the creation of a scholarship for the participating students.

AIA/Los Angeles Academic Outreach Committee consists of: Alice Kimm, AIA; David Montalba, AIA; Lawrence Scarpa, AIA; Randall Stout, FAIA; and Buzz Yudell, FAIA.

The following schools participated in the event:

- Art Center College of Design / Department of Environmental Design
- California State Polytechnic University, Pomona / Department of Architecture
- LAIAD / Los Angeles Institute of Architecture and Design
- Otis College of Art and Design / Environmental Design Department
- Pasadena City College / Architecture Program
- SCI-Arc / Southern California Institute of Architecture
- UCLA / Department of Architecture and Urban Design
- UCLA Extension
- University of Southern California / School of Architecture
- Woodbury University / Department of Architecture

The A+D Museum is located at 8560 W. Sunset Boulevard, West Hollywood, CA 90069. Open Monday through Saturday, from 10 am – 7 pm and Sunday, 12 pm – 5 pm Phone 310-659-2445. Admission is FREE. www.aplusd.org.

PEOPLE

Cunningham Group Architecture has been promoted Los Angeles-based designer **Brent Thompson** to Associate. His project focus at the firm has been retail and entertainment destinations.

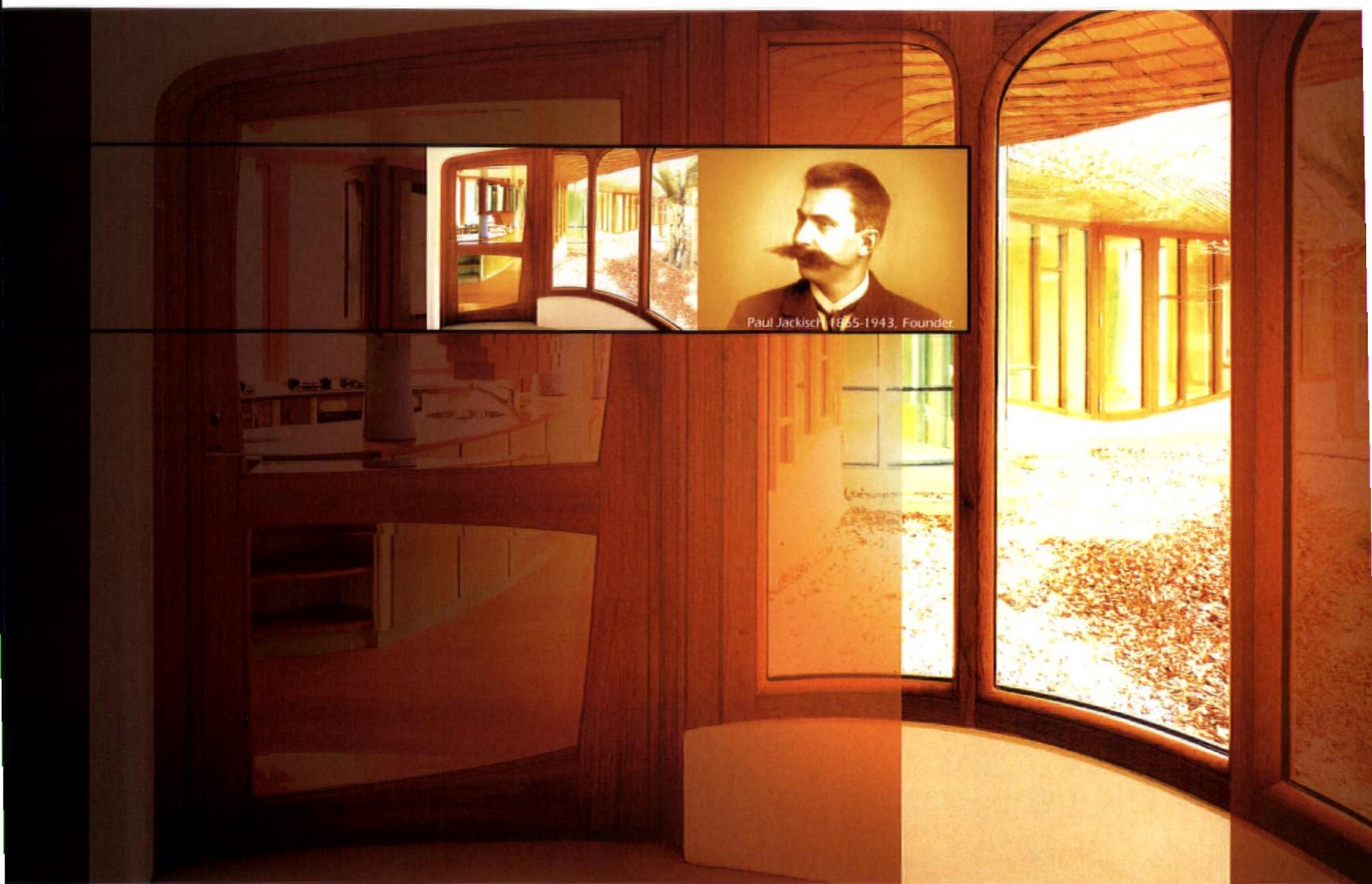
Loring Wou, a long-time project manager and project architect with **HGA Architects & Engineers**, was promoted to Associate Vice President in the Spring.

Culver City-based **Steven Ehrlich Architects** has promoted three team members to the level of Associate. They are: **Patricia Rhee, AIA**; **Aaron Torrence, AIA**; and **Takashi Yanai, AIA**.

Planner and designer **Robert A. Levine, AIA**, of **Cannon Design's** Los Angeles office, has been promoted to the level of Associate Principal.

AC Martin Partners recently elevated three of its staff members to new positions. They are: **Gail Bouvrie, AIA**, Senior Associate, Director of Design; **Craig O'Connor**, Associate, Senior Planner; and **Tammy Jow**, Associate, Designer.

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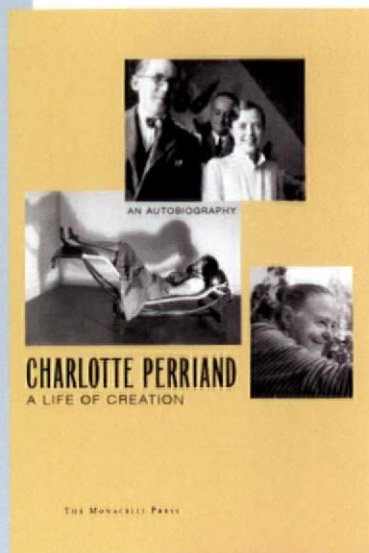
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A Life of Creation

(CHARLOTTE PERRIAND. MONACELLI PRESS, \$40 HC) ISBN 1-58093-074-3

When fledgling designer Charlotte Perriand showed Le Corbusier her portfolio of drawings in 1927, he dismissed her brusquely with the words: "We don't embroider cushions here." Today, she might have brought a sex discrimination suit; then, she blithely persisted and stayed five years, playing a key role in the design of classic furniture for which Corbu usually receives sole credit. Perriand wrote this touching memoir just before her death in 1999 at age 96, and her recall is astounding—of an era when everything seemed new and exciting, her collaboration with Fernand Leger and Jean Prouvé, her triumphs and setbacks. The passion for nature and simplicity that made her long stay in Japan so rewarding is the subtext of her later work. She has an engagingly conversational tone—much credit to the translator—which brings her and her world to vibrant life.

Objects of Design from The Museum of Modern Art

(PAOLA ANTONELLI. DAP, \$45 HC) ISBN 0-87070-696-9

MoMA canonized modern design as it did 20th-century art, and this anthology of pictures and expert texts highlights a collection of 3,708 objects that range in size from microchips to a helicopter. About a tenth of those are illustrated in nine thematic sections. Many are icons, but there are a few surprises, especially among recent acquisitions, where the inventive use of materials supplants functional beauty. Paola Antonelli, MoMA Curator of Architecture and Design, describes the collection as presenting a history of ideas and realizing a part of Alfred Barr's dream of a unity of the arts. She explains how the old selection criteria of truth and beauty have changed while retaining some of their old authority. It's comforting to know that relativism does not yet extend to firearms, making MoMA's collection a gun-free zone.

Harry Seidler: Houses and Interiors 1 & 2

(IMAGES, 2 VOLS., \$80 HC) ISBN 1 86470 104-8, 105-6

Born in Vienna, educated in Canada and at Harvard, protégé to Gropius and Breuer, and an assistant to Niemeyer, Seidler has a classic modernist resume. He traveled to Sydney in 1948 to design a house for his parents, stayed, and has practiced there ever since, playing

distinctive variations on those masters of orthogonal and organic geometries. What gives his work its special flavor is its rootedness in the sybaritic, outdoor culture of Australia, which occupies a climatic midpoint between New England and Brazil. At 80, the architect remains a passionate modernist, whose timeless, livable houses are chronicled in these two handsomely illustrated volumes with an introduction by Chris Abel, another talented expatriate.

New Architecture in Britain

(KENNETH POWELL. MERRELL, \$59.95 HC) ISBN 1 85894 227 6

First London, and now the provinces of Britain are enthusiastically embracing blobs, high tech steel and glass structures, and abstractions of the rural vernacular—a development that would have been inconceivable a few decades ago, when the natives cordially (and understandably) detested the few scattered impositions of Brutalism. Powell has made a judicious choice of a hundred buildings completed in the last three years, or about to be.

Aside from the po-mo villas of Quinlan Terry, it coheres as a portrait of the best new British architecture, with good representation of stars and emerging talents, plus guest turns by Gehry, Ando, and Libeskind. The descriptions are terse and perceptive; the illustrations of each project are few, but carefully chosen.

Butabu: Adobe Architecture of West Africa

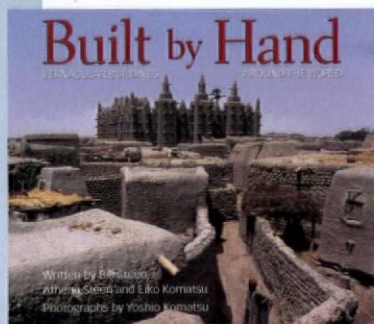
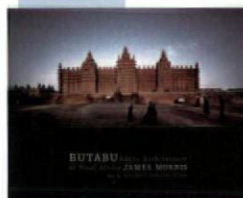
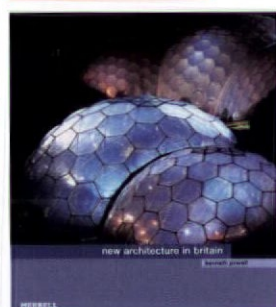
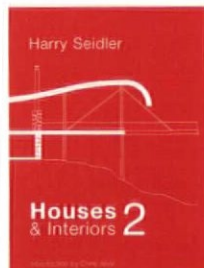
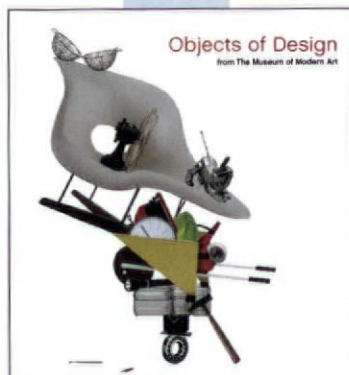
(JAMES MORRIS; TEXT BY SUZANNE PRESTON BLIER. PRINCETON ARCHITECTURAL PRESS, \$50 HC) ISBN 1 56898 413 8

The soft folds and highly textured surfaces of Mali mosques, Niger chiefs' houses and other examples of the African adobe vernacular have lured a succession of hippies with a wobbly sense of focus. So it's a delight to see a photographer who has chronicled the sharp-edged structures of Norman Foster and Richard Rogers bring clarity to such a picturesque subject, and to read such an illuminating essay on its cultural roots.

Built by Hand: Vernacular Buildings Around the World

(YOSHIO KAMATSU. GIBBS SMITH, \$50 HC) ISBN 1 56885 237 X

A photographic anthology of the astounding variety of architecture produced without architects—a colorful successor to Bernard Rudofsky's pioneering study of vernacular building, *Architecture Without Architects*.





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product watch

MATERIALS + TRENDS

It's hard to find a moveable wall system that we can get behind, but the Neo line from **SMED**, a Haworth company, is pretty sexy. SMED's goal was to create a partition for commercial and retail applications that could provide a sense of permanence and stylishness with a great deal of practical flexibility. The frames come in both metal and wood; the glass inserts come in various colors and finishes. Two caveats: this system does not carry electricity, and the backlighting shown here was provided by the photographer. Go to www.smednet.com for more information. ▶

Christopher Farr has brought the tapestry into the 21st century with a new textile line, named "Wall." Like those found in his rugs, Wall's designs are gorgeous, and if you don't think so, he'll have your own design woven. In addition, these pieces serve a practical purpose, providing much needed muffling of the echoes that build up in spare, hard modern spaces. The technique was first put to the test in Britain's new parliament building, to great effect. Call 310-967-0064 to arrange a visit to Farr's delightful showroom. ▼

Wall to Wall



For walls that are fast, light and insulative, try the new "Structural Concrete Insulating Panel" from **Green Sandwich Technologies**. They manufacture custom-sized panels—good for walls, floors and roofs—from a polystyrene core enmeshed within galvanized steel wirework and finished with a layer of concrete. The foam, steel and concrete are all largely recycled/reclaimed materials. Indeed, the panels have the highest-rated LEED score for structural products in the country. Oh, and it's termite resistant. Contact Green Sandwich Technologies, Inc. on 818-380-0112 or www.greensandwichtech.com. ▲



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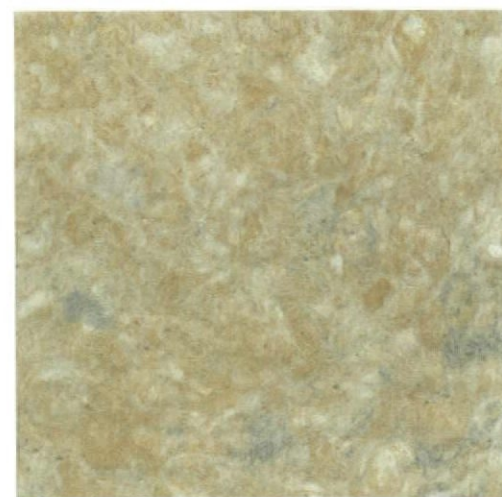
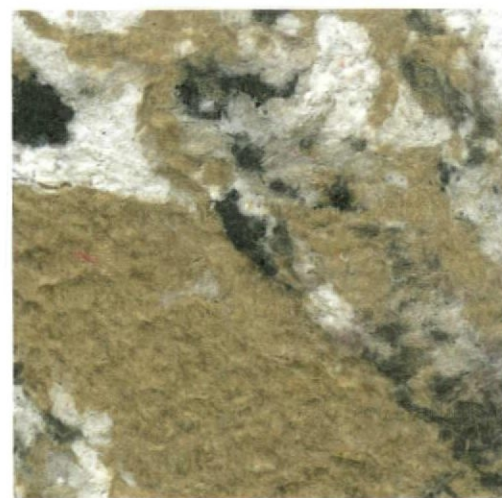


product watch

MATERIALS + TRENDS



Architect Eric Rosen and furniture-maker Joel Stearns have concocted a novel wall treatment that they call **Terraboard**. The material—a careful blend of shredded papers, glue and hardeners—comes in tiles and sheets, or can be applied directly to a wall to provide a continuous surface. The available finishes run from smooth to coarse to corrugated. The coloration depends on the papers used, and can be customized to the client's whims. Call 310-313-3052 or visit www.terraboardla.com. ▼▲



We like to touch this wall. Its smooth, undulating, pillowy surface is hard to resist. Its individual thin-birch panels are easy to install. Designed by Finn Jouko Kärkkäinen, the waves are made possible by the impossibly thin plywood, which drapes like fabric before the frames are applied. The panels are good for sound attenuation and general stylishness. For local distribution, call **Lampa + Mobler** at 323-852-1542. ▲

LA Architect's 2004 Design Symposium

Building Coalitions

June 4, 2004

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Los Angeles, CA
Free Parking

LA ARCHITECT PRESENTS BUILDING COALITIONS JUNE 4, 2004

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Program

9 am to 5:30 pm

Exhibits, Coffee, Pastries
360-degree architectural photography
demonstration by EPOP.

10 am to 4:30 pm

Panel discussions on the
profession's hot topics.

11:45 am to 1:15 pm

Lunchtime keynote speaker, Wayne Ratkovich,
The Ratkovich Company, presents ULI Los
Angeles' "Reality Check—Los Angeles in 2020".

4:30 to 6 pm

Walk to cocktails 43 floors down
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6 pm to midnight

Walk to the **2004 Builders Ball** presented by SMPS Los Angeles
Dinner/Silent Auction at the Jonathan Club honoring:

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- Ms. Ann Sewill, Board President, Southern California Association of Non-Profit Housing
- Alex Padilla, Los Angeles City Councillman

Keynote Speaker: To be determined

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For information contact Michael Wilson 818.956.5313
For sponsorship opportunities contact Jerri Levi 818.551.1073



profile
BY JESSE BRINK

Caltrans

Morphosis has always had a lot of energy, and they let it loose. Rambunctious, helter-skelter designs have resulted, squirming in their sites, uncomfortable in their cladding. Then Caltrans came along and said, *sit still*.

The Caltrans District Headquarters is part of a statewide experiment to see whether the process of design-build can achieve what design-bid-build typically fails to produce: aesthetically interesting buildings done quickly and cheaply. In an open competition they requested a program with space for Caltrans offices, daycare, an auto shop, retail space, a small transportation museum, a cafeteria, LA DOT offices and a plaza. Morphosis offered two schemes—one extreme, one a little pulled back—to demonstrate their consciousness of needs and budget. I never asked which one is being built.

Upon winning the commission, the firm became the executive architects to, as project architect Pavel Getov says, "maintain the energy necessary to realize the building." But this time they turned their energy inward to transform the cheap big box that you would expect to house Caltrans into an elegant technological marvel. In doing so they also demonstrated the best qualities of design-build: its high tolerance for experimentation, its valuation of collaboration and its freedom to move fast on the ground.

The collaboration was both broad and deep. Foremost was Clark Construction, partners in both the constant development of the design and the expeditious building of the structure. Their experience in actually building buildings was clearly invaluable to the process. But really every consultant, trade and supplier became a fully-contributing team member. Because, as Getov explains, "there was no clear distinction between the design and the technical aspects." The novel solutions, the cost savings and the remarkable aesthetics of the building all hinge on this exchange between the imagined and the physical.

The shining example of this approach is the building's cladding. Thom Mayne came across a high-tech rubberized roofing membrane back east

and realized it could be used to cover an entire building, not just the roof. It's a novel and effective waterproofing solution, but it's kind of ugly—like fancy tarpaper. So the membrane is shielded from view by a layer of perforated metal panels. These panels cover the windows as well, and there function as automated sun screens, opening and closing over the course of the day to maximize natural light and minimize solar heating.

From a theoretical standpoint, the separation of the rain-proofing role of the wall from the aesthetic role of the wall is powerful stuff. It allows the architect to employ the best solutions for both without the usual need to compromise the integrity of either. On a practical level, the solution is cheap. Wrapping the entire thing in building board and membrane saved so much money over the specified poured concrete that they were able to add an extra floor within budget.

To prove the viability of this cladding system, since no one had ever used the material this way before, they built a two-story mockup wall: one of many experiments. There are prototypes of the perforated aluminum panels that dress the membrane mounted to the construction office's exterior wall. Photovoltaic panel systems—developed internally by the team—dot the roof. Lighting, acoustical paneling solutions and paint swatches are being tested in the conference room. Potential plaza tables and chairs sit in the common space, facing empirical analysis at every lunch hour. There's energy in this hands-on approach.

Even better was the team's dogged insistence in understanding the materials going into the building. Design team members traveled the globe to study the steel, the building board, the cement, the glass, the aluminum panels, the elevators and everything else. At each manufacture's site there was exchange. In some instances the design

would change to accommodate the material. "It really doesn't affect the design if the module is 5'-0" or 5'-3", so choose the one that saves time, money and material," says Getov. At other times the architects encouraged the manufacturers to try something new, meeting the design vision and expanding their capabilities.

Now all this innovation and experimentation is delightful. But there's a budget, and there's a schedule. So let's close with a little math. The total approximate area of the building is 1.1 million square feet (that is, 750,000 sq. ft. of offices and 400,000 sq. ft. of underground parking). The total cost to create and build the building is approximately \$170 million. So the cost per square foot works out to less than \$160. The actual construction cost, minus design fees, permits and the like, is a mere \$143 per square foot. The schedule allotted about 2½ years from start to finish; it will be done in about 2½ years. Yes, unruly Morphosis is completing their most interesting and relevant building on time and within budget. ■

CLIENT: State of California, Department of General Services, Department of Transportation

DESIGN/BUILD TEAM: Main & First Design/Build Associates, Inc.

DESIGN AND EXECUTIVE ARCHITECT: Morphosis, Thom Mayne (Design Principal), Silvia Kuhle (Project Manager), Pavel Getov (Project Architect), Anthony Mrkic (Job Captain), Marty Summers, Chandler Ahrens, Mario Cipresso, Olivia Jukic, Irena Bedenikovic, Dwayne Keith, Salvador Hidalgo, Ted Kane, Axel Prichard-Schmitzberger, Kristina Look, Tim Christ, Daynard Tullis, Marty Doscher, Paul Gonzales, Jean Oei (Design Team)

ASSOCIATE ARCHITECT: Gruen Associates

STRUCTURAL ENGINEER: John A. Martin & Associates, Inc.

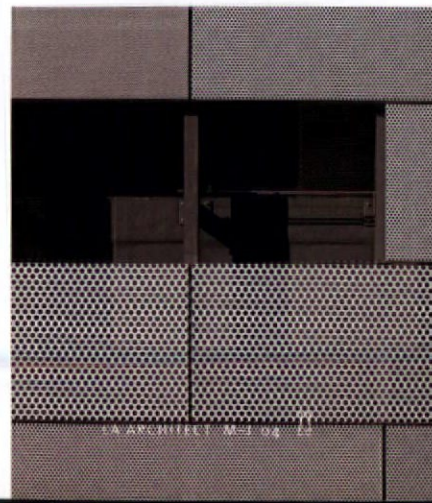
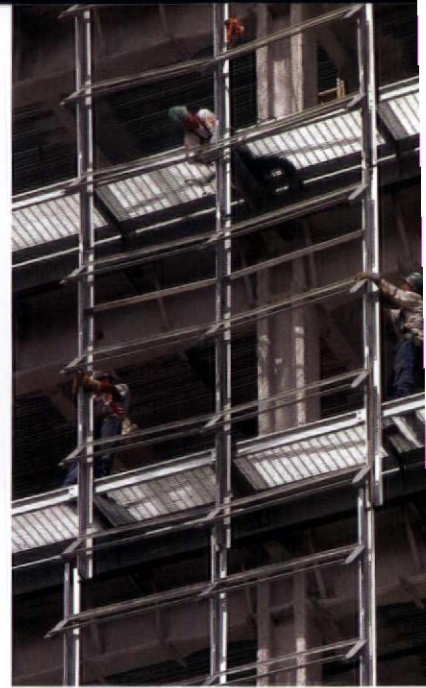
MEP ENGINEERS: Ove Arup & Partners California, Ltd.

DEVELOPER: Urban Partners

GENERAL CONTRACTOR: The Clark Construction Group, Inc.



Large photo and middle right photo courtesy of Morphosis. Other photos by Jim Sinshiermeier.





profile
BY MICHAEL WEBB

Art Center Challenges Aspen with its First Design Conference

PASADENA, ONCE DISMISSED AS THE HOME OF LITTLE OLD LADIES IN TENNIS shoes, can fairly claim to be the most interesting place in greater LA. Cal Tech is advancing the frontiers of science and technology; JPL is exploring the universe; Norton Simon is the most civilized of art museums; and there's a concentration of innovative houses. Add to these assets Art Center, which, under the leadership of Richard Koshalek, is branching out from its sequestered hillside campus. Phase one of its new South Campus, which will engage the public and take education beyond the classroom, was inaugurated in mid-March with the first Art Center Design Conference. Organized by Chee Pearlman, a New York consultant and the former editor of *I.D.*, it promises to challenge the preeminence of Aspen's conference, now in its 54th year.

The San Gabriel Mountains are no match for the Rockies, but the raw concrete shell on Raymond Avenue is as thrilling as Aspen's tent. Built in 1942 by a consortium of airplane manufacturers to house a supersonic wind tunnel, it has been converted into teaching spaces by Daly Genik, who retained the functional beauty of the original structure and added high-tech skylights. The conference drew about 700 participants from 11 countries, and was—for a debut event in an untested space—extraordinarily successful. Revelations far outweighed obfuscation; the speakers and guests interacted spontaneously; the organization was impeccable; and the stage décor (Alexander Girard fabrics, a Noguchi sofa and a cluster of Nelson's bubble lamps) made a pleasing design statement.

"Stories from the Source: Design Excursions Out of the Ordinary" was the theme that 31 speakers were invited to address over the 2 1/2 days of the conference. Pearlman, who spent two years planning the event with Art Center VP Erica Clark, made audacious casting choices. Opening night featured Cal Tech president David Baltimore, who found beauty in the blind forces that are shaping the universe, and confessed his love for viruses (safely sequestered under the electron microscope). He was followed by virtuoso performer Ricky Jay, who solved a fearsome chess problem, correctly guessed the cube root of numbers up to a million, recited Shakespeare and sang blue grass, all in one breathless sweep. That



John Hockenberry



Dean Kamen



Robert Full



Hella Jongerius



Peter Girardi



Ricky Jay



James Dyson



Frank Gehry



Bran Ferren, Charles Elachi, Richard Koshalek



Cameron Sinclair



Bob Lutz



Lee Clow

wacky juxtaposition set the parameters of a conference that defined its topic in the broadest terms, encompassing the arts and sciences, product and graphic design, media, inventions and architecture.

Pearlman invited John Hockenberry, an Emmy-award winning journalist and correspondent for NBC's *Dateline*, to serve as moderator. It was an inspired choice, for this warm and witty man put everyone at ease. His entries were as eagerly awaited as those of the speakers and were consistently rewarding. At the start of every session he rolled his wheelchair on from the wings, sometimes to the ethereal music of Hildegard von Bingen (a 12th century polymath), sometimes playing with a shark puppet. He would maneuver gracefully around the stage while telling stories and introducing his guest, exit swiftly, and re-emerge 20 minutes later to ask probing questions. He conducted a few conversations, notably with inventor Dean Kamen, who rode his human transporter up the steps to the stage and balanced on tiny wheels as Hockenberry interviewed two teams from local high schools who were contending with a thousand others in the national student robotics championship that Kamen initiated.

Speakers were grouped by sub-theme—including LA Stories, Failure's Success, Serious Play, Massive Change—which were intended to promote connections between diverse disciplines, but several speakers brought their own agendas. Bob Lutz, a top executive at General Motors, which was lead sponsor for the conference, delivered a polished infomercial on his company's new models, which range from the sexy Pontiac Solstice sports car to an alarmingly thuggish version of the Hummer. (For sheer style, Harley Earl's 1938 Buick concept car, parked in the forecourt on the last night, far outshone all the current designs). James Dyson repeated the oft-told tale of how he developed his bagless vacuum, but he tantalized the audience with an equally revolutionary take on the washing machine. Sandra Tsing Loh ranted noisily about censorship, striving hard but ineffectually to shock, and *Metropolis* editor Susan Szenasy delivered a characteristically humorless jeremiad about the shortcomings of design in public places.

Other addresses kept the audience on the edge of its seats. UCB biology professor Robert Full explained why the cockroach (and the gecko) should get more respect, as he linked his investigations to the development of fast-moving robots, novel adhesives and artificial muscles. Ex-WDI director Bran Ferren "interviewed" Koshalek and JPL director Charles Elachi, as he does all potential employees, by eliciting their reactions to a table crammed with enigmatic eBay finds. Hockenberry suggested Ferren could supplant Trump on reality television with a new show, "You're Hired!" Dutch maverick Hella Jongerius illustrated products that combine innovative form with emotional resonance. Todd Eberle showed the coolly beautiful portraits he has taken of the iconic creators of modern design, from Philip Johnson to Oscar Niemeyer, and these included an appealing outtake of the late Dan Kiley, sitting in a meadow on a Bertola chair, blowing the seeds of a dandelion.

TBWA/Chiat/Day creative chief Lee Clow reprised the best of his commercials for Apple and others, which tell a story in 60 seconds. Peter Girardi recalled how he turned a lifelong obsession with cereal boxes, graffiti and *Mad* magazine into a hilarious puppet show for Comedy Central. Cameron Sinclair made an impassioned plea for architecture that serves humanity—one of several speakers who emphasized the ethical dimensions of design. The best came last: Elachi describing the astounding achievement of landing and operating the two Mars Rovers, cutting from computer simulations to the jubilation at JPL when the craft performed exactly as they were meant to do, ten million miles from Earth. The last five seconds of the seven-month journey were critical.

In today's world, the sleep of reason has brought forth monsters, to quote Goya's frightening comment from two centuries ago. We can envy the astronomers and biologists, the physicists and inventors who are searching for new knowledge and striving for a better world even as fear, violence and superstition maintain their sway over most of humankind. That was one of the most provocative insights of this conference. ▶

WE'VE ALREADY SAID THE SAME

BY PAUL ANDERSEN

We have long defined architecture in comparison to construction.

We got the term "architect" in antiquity, lost it during the Middle Ages, and rediscovered it during the Renaissance. When Brunelleschi and Bramante began to design buildings, they initiated a shift: architecture became more aligned with art than with the building trades. It marked a separation of design and material.

Yet the tenuous connection between architecture and construction has been repeatedly challenged and redefined. A series of complex attitudes followed the emergence of the Architect (see page 28), each of which shares a common quality: the architect does not actually build. And whether construction serves as the generative material of architectural design or a reality to be disarmed, it has a common use: demonstration.

Proof of Design

In some cases, demonstration comes in the form of an experiment. Construction can be a material testing ground, a critical medium for architectural intelligence. Frank Lloyd Wright used construction to demonstrate, promotionally, the value of his petal column design for the Johnson Wax Building. In his famous test for the Wisconsin Industrial Commission he loaded a column with 60 tons of earth, sand and pig iron—over five times the required weight—before it failed.

The test proved that the design was structurally sufficient, allowing construction to proceed. But the testing went beyond mere proof. The commissioners were satisfied when 12 tons had been successfully supported, but Wright gave the instruction, "Keep piling."

Wright paces before a crowd of onlookers so large that the police have to rope off the site. He announces the principles behind the column's strength, draws sketches, stands beneath the column, hands behind his back, coat draped over his

shoulders and hat perched atop his head. He kicks the column and hits it periodically with his cane. He is proving that architecture has exceeded construction. His showmanship announces the supremacy of his design over the material.

Yet the architectural-ness of the idea itself is unclear. The column's structural design, which used a cylindrical basket of steel mesh instead of independent reinforcing bars, is based on the staghorn cholla, a cactus. Wright identifies an architectural idea in the cactus and appropriates it through design. Architecture is thievery. He then stages a performance where construction, or more specifically destruction, backs up the value of his botanical loot.

Design of Decay

While Wright used building construction to make an emphatic statement, others used it to raise questions. Artist Robert Smithson choreographed a similar performance at Kent State. The act was the same: he heaped earth onto a structure until it collapsed. But his Partially Buried Woodshed remained after the event had concluded. What was Smithson doing? In lieu of a definitive statement, Smithson's project poses a question: Are you sure, Mr. Wright, that you have proven your domination over concrete?

Here, construction is not the test of an architectural idea; it is merely a reorganization of material. Which, by the way, is moving steadily in the direction of disorder. Wright's columns will fail again someday.

Top: Courtesy of Johnson Wax. Bottom: © Estate of Robert Smithson/Licensed by VAGA, New York, NY.





Construction becomes architecture. Structural and material principles generate a formal language and thus the architectural agenda is to facilitate construction as efficiently as possible. The roofs of the Agnelli Exhibition Hall in Turin and Cathedral in Perth are literally inverted moment diagrams: the logical result of attempting to use as little concrete as possible.

Architecture should engage the humanities in addition to construction.
The architect should be as much a scholar as a building designer. Gleaning the most potent ideas from other fields and crystallizing them, giving them form through building construction, is architecture's great contribution.

Architecture and construction should augment the diagram. Building designs are often based on structural diagrams derived from elaborate wire models. But the buildings should not replicate the diagrams. Nervi + mass + a variety of finish materials = architecture. Form and materials do not succumb to the structural logic.

Construction becomes architecture, version 2. Aesthetics should yield to mechanical and electrical systems. The American home can be determined solely by its services. Conditioned space is the goal, and therefore conditioning systems are the only necessary components of the suburban house. It could become an actual machine for living.

Architecture must overcome construction. The image of logical structure supercedes real construction. Everything from chunks of program to masonry arches are buried in buildings to service the fantasy of creating a conceptual structure, to allow a building's thinness to suspend perception of its burden.

Construction becomes architecture. Structural and material principles generate a formal language and thus the architectural agenda is to facilitate construction as efficiently as possible. The roofs of the Agnelli Exhibition Hall in Turin and Cathedral in Perth are literally inverted moment diagrams: the logical result of attempting to use as little concrete as possible.

Smithson constructed a sort of architecture by burying the woodshed.

For Smithson, the critical characteristic of construction was its irreversibility. Once the Partially Buried Woodshed was constructed, it could not be undone. Positive proof of what a more liberal definition of construction could produce, the project created a new attitude toward architecture: entropy can be generative. Rather than resisting disorder, as Wright did with much defiance, Smithson coolly works within it. Perhaps it is unsurprising, then, that his works are so widely studied in schools of architecture.

Both Wright and Smithson put on their performances in order to create new possibilities for architecture. For Wright it is the proof necessary for his design to be realized and revered. His project expands the capabilities of architecture by introducing a new structural logic, one that is based on curves rather than perpendicular forces.

Smithson expands the domain of architecture by creating a new role for the architect: designer of deterioration. The Partially Buried Woodshed is an illustration of creative potential in destruction, of the opportunity and necessity for a different kind of project. Rem Koolhaas stands behind him: "It is a tragedy that planners only plan and architects only design more architecture. More important than the design of cities will be the design of their decay."

The Construction Business

The Johnson Wax Column test and the Partially Buried Woodshed are two of many examples of architecture and construction expanding their limits. As the two fields grow, their associations become progressively more complex.

The emergence of parallel businesses such as AMO, counterpart of Koolhaas' Office for Metropolitan Architecture, and Gehry Technologies is an example. Gehry Technologies is an apotheosis of the impact his design has had on manufacturing: to a greater extent than Wright, Gehry has innovated construction to materialize his architectural objectives. Construction technologies become Gehry-defined systems proven by his designs. The company is effectively a test of Gehry's construction expertise within a new critical medium: a market economy.

What have spin-off companies spawned for construction? Gehry Technologies can be understood as an architectural production company. They provide tools and guide their use, at least technically. Gehry's

business expands by adding clients, specifically other architects, contractors and engineers. The company works in parallel with Gehry Partners, the architecture firm, and will potentially develop an even more elaborate construction modus.

OMA's relationship with its offspring is a sedimentation of various connections and disconnections. Like Gehry Technologies, AMO garners new clients, but the company also breeds new business by offering additional services. An example: AMO does extensive materials research, for clients such as Prada, which has distinct consequences for OMA's architectural work. It generates design possibilities and improves construction generally, its application not limited to the work with Prada. But AMO's influence extends beyond buildings. While one objective of AMO is to supplement the architectural design of OMA, another is to apply design expertise in other fields, such as materials science, information technology and brand consulting.

A major difference between Gehry Technologies and AMO is that while Gehry Technologies is focused on building construction, AMO is purposely not resigned to buildings as the sole realm of architectural influence. Gehry's businesses are akin to OMA, which is fundamentally concerned with the built environment. AMO seeks to recover a larger degree of cultural influence that architecture once had. Consider how the corporate headquarters was once a large part of a company's identity, as in the case of the TransAmerica building. When material experimentation, brand identity, construction and information technologies all converge, such a unified front is possible again.

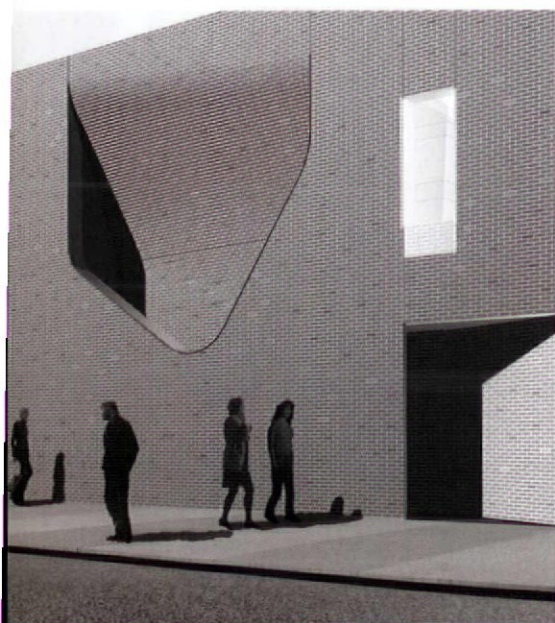
There is a Future

Thus, in these two companies we see two futures for architecture. One is a homecoming. Gehry's seamless integration of design and construction returns to a time when the architect was the builder, an unsentimental reconnection to our roots. In this future, architecture focuses on construction.

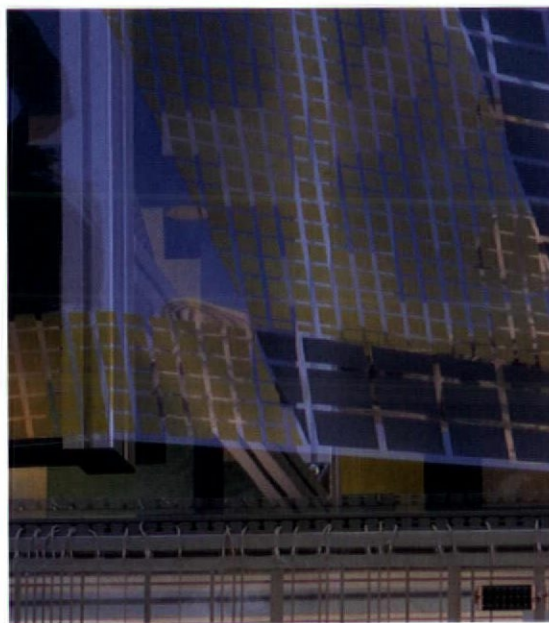
The other is a sequel, the TransAmerica building reborn. AMO regains a prominent cultural position by testing design expertise in media other than building construction. It is a program of dissemination rather than convergence. In this future we become architects of energy laws, architects of communication systems, architects of cactus farms, architects of Kmart's recovery, architects of the future of Iraq. ■

Material Matters

By Adam Griff




Witte Arts Building



Smart Wrap



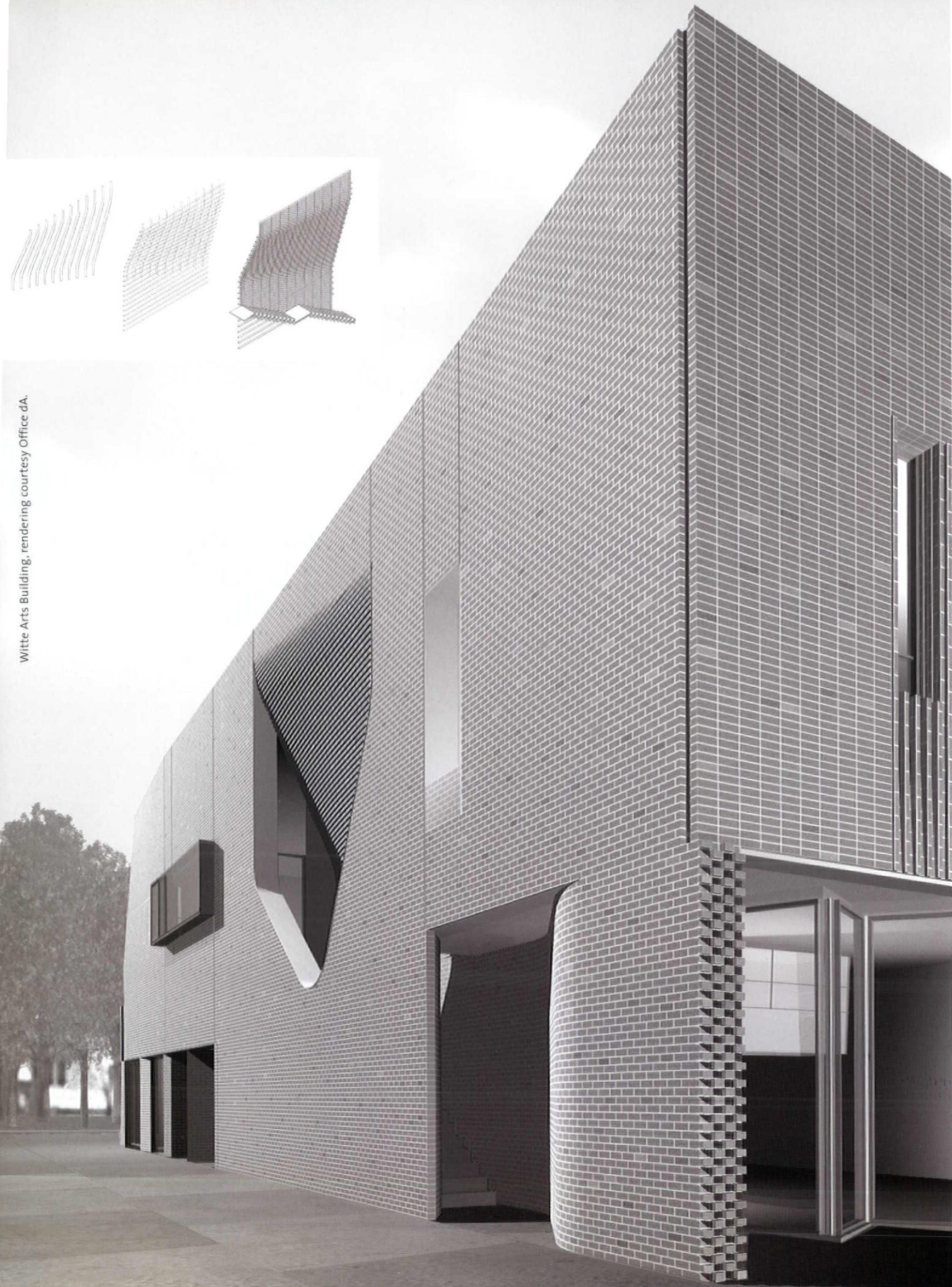
Carbon Tower Prototype



There has been a revolution in the world of materials science. More new materials have been invented in the last twenty years than in the entire history of science. Many of them, developed in other industries, are being applied in fresh ways in architecture. A new generation of architects begins with a material and designs by understanding its limitations and potentials.

The materials trend in architecture has nearly as many approaches as it has practitioners. Some seek to exploit the latest developments for architectural purposes. Thus we find architect Peter Testa designing towers made from carbon fiber and the partners of Kieran Timberlake turning thin films into construction materials. Others apply new technology to old standbys, as Office dA has in their novel brickwork. And as the choices of materials proliferate, there is also a new awareness of the volume of materials being generated and its repercussions for the environment. For example, it's estimated that more than six cubic kilometers of concrete is poured per year worldwide—approximately one cubic meter per person. Seeking sustainable practices, many designers and engineers use nature as a model for reconceiving the lifespans of materials. Engineer John Harrison has developed a form of concrete that uses waste products to make a superior concrete that absorbs greenhouse gases to help mitigate the damage our building habits wreak.

Witte Arts Building, rendering courtesy Office dA.



Office dA – The Witte Arts Building

The Witte Arts Building could not be a more commonplace commission. A small arts building, consisting of studio spaces and a gallery/café, it is “a conventional dumb box done in brick,” according to Nader Tehrani, principal partner of Office dA. The project is part of a downtown revitalization for Green Bay, Wisconsin, meant to reconnect the suburban neighborhoods with the city’s historic center and the Fox River.

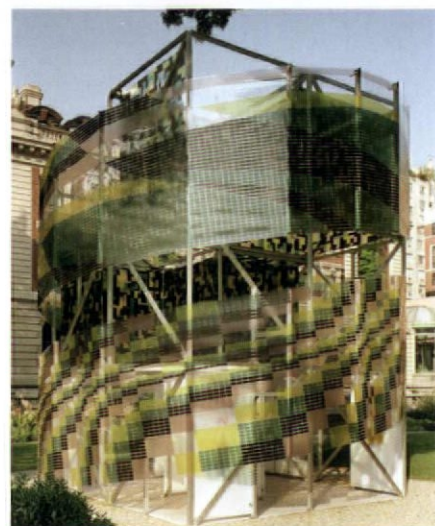
Office dA used the building’s shallowness and corner orientations to show off their manipulation of the brick. They handle it playfully, exploring the full possible effects. Each elevation receives a different treatment. The elevation facing the Old Fort Howard Neighborhood consists of rippled vertical stripes that make the brick resemble drapery while the Broadway façade, looking to the historic core, pokes fun at the masonry of its nineteenth century neighbors. The non-bearing cladding system manages to appear deeper than a traditional masonry bearing wall. When the elevations meet at the corner, the bricks’ alternation between lightness and heaviness, thinness and depth, is given full articulation. The third façade pulls away from the building’s main volume to encase an exterior stair and a fire egress balcony. This exposes the cladding’s depth at its two ends and creates enough space for Office dA to draw the transitions around the corner. Rather than expressing some concept of its essential quality, the design continually reveals conflicting ideas about its nature. As Nader Tehrani explains about the project, “We make the brick do what it doesn’t want to do. We take the old Kahn saying and do the opposite.”

Office dA’s complex handling of the material is only possible through their use of

CAD/CAM technology. Their manipulations required precision – up to a 1/16th of an inch – impossible with conventional construction systems. Thus the corbel wall that makes a bower over the exterior stair required special laser-cut jigs to hold the bricks and relieving angles in the right position. Despite the sophistication of their approach, Office dA continues to use local and traditional materials in their work. But their sophisticated usage creates surprise and delight. The simple material becomes, in Tehrani’s words, “a Trojan horse that captures you for a moment” and then you become attentive to the full possibilities of a building’s making.

Kieran Timberlake Associates – Smart Wrap

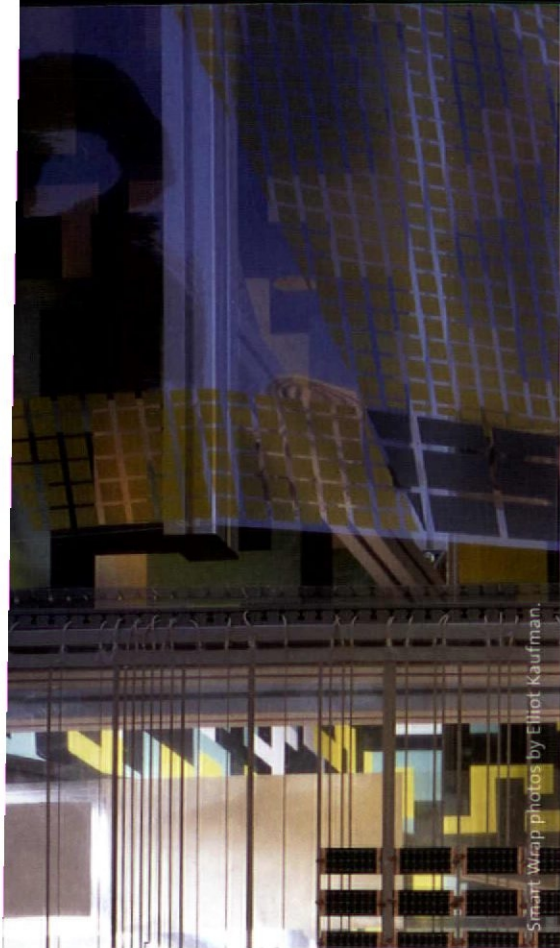
Architects Stephen Kieran and James Timberlake, principals of Kieran Timberlake Associates LLP, want to revolutionize the entire building industry. To do so, they have developed a highly engineered material, Smart Wrap, that replaces a building system with a thin, flexible plastic. Looking at its shimmering paper-thin surface, one has an inkling that they might just do it. Smart Wrap is a composite of specialized thin films, integrated to perform all the functions of a wall and cladding system. It provides shelter, climate control and insulation, lighting and information display and power. Smart Wrap’s foundation is a polyester plastic substrate, a strong and flexible material used in applications from beverage containers to clothing. Additional thin films are layered onto the substrate to add new functions. Phase-change materials moderate temperature swings; OLED technology, used in cell phone displays, provides light and information display; organic photo-voltaics generate power; and an



Smart Wrap photos by Barry Halkin.

aerogel sandwiched between thin films serves as insulation.

This host of building systems replaces the difficult and time-consuming construction of a building’s envelope with a ready-made material. The most remarkable aspect of the material is its production: Smart Wrap is printed. The various layers are added directly onto the plastic substrate through the processes of deposition printing and roll-to-roll printing. Constructing the cladding systems becomes synonymous with printing drawings of it; design and fabrication become one activity. The development of smart wrap offers a new model for design, one whose possibilities first became apparent to Kieran and Timberlake while researching the aerospace industry on a Latrobe fellowship. In their book *Refabrications* they explain how the aerospace industry designs by asking how to reduce parts and complex components. Aerospace designers attempt to remove all possible joints and connections, seeking to create a simple and seamless product that is easy to make and rarely fails. Incorporating new functions and abilities into the makeup of the material blurs



Smart Wrap photos by Elliot Kaufman.



“The architect becomes a coordinator between various kinds of intelligences, applying their knowledge to create something society needs, instead of the usual passive role of an architect, selecting given products.” — Stephen Keiran

its distinction from mere product. The ability to design materials as products could potentially change the relationship between scientists, designers and fabricators. As Kieran explains, “The architect becomes a coordinator between various kinds of intelligences, applying their knowledge to create something society needs, instead of the usual passive role of an architect, selecting given products.” By exploiting thin film’s material properties and fabrication techniques Kieran and Timberlake have circumvented the building industry and in the process offered a new model for architecture.

TESTA Architecture & Design — Carbon Tower Prototype

Carbon fiber composites have fascinated Peter Testa and Devyn Weiser, principals of TESTA A+D for a long time. Lightweight,

strong and moldable into almost any shape, the material is a favorite of designers, but Testa and Weiser like carbon fiber more for what it’s not than what it is. Individual fibers are relatively weak but gain strength as a material from the way in which they are combined and ordered. Carbon fibers composites are an example of a ‘weak system’. For Peter Testa ‘weak systems’ are a powerful philosophy of design that looks for deeper systems and patterns to give the projects their power. It is an approach that “does not use brute force, but material intelligence, and seeks a more organic and holistic solution.”

Their theoretical project, the Carbon Tower Prototype, a forty-story highrise fabricated entirely from composites, builds on just such an approach. Carbon fiber composites are unique in that the material is extremely stable and does not change length. Consequently,

extremely long members can be used without deformation. Additionally, these large members are easy to fabricate using poltrusion, a process by which the material is extruded in a similar fashion to how dough is forced through a mold to make pasta. The design uses these characteristics to weave the entire building seamlessly together. The structure consists of 24 strands in a double helix encircling the building’s exterior. Each strand runs the entire length of the building and is twisted one full turn over its length in pre-tension, making it strong in compression. A meshwork of cables embedded in the floor ties the exterior strands together. By manipulating the same material to achieve different qualities, the building achieves integrity without reducing its complexity or subtlety.

Advances in computer design allow the carbon fiber composites to be manipulated in



such complex fashions. The carbon fibers are woven in complicated patterns, often combining different fibers, to give the material radically diverse properties and three-dimensional forms. The act of weaving and patterning the composites is very much like the craft of a carpenter, according to Testa. "A carpenter understands the particular grain in a piece of wood in shaping. The craft comes from understanding the material at a very detailed level and manipulating it directly." Testa A+D has developed a software plug-in for Maya called Weaver to allow architects to weave their own patterns, restoring a sense of craft to the art of architecture.

John Harrison – Eco-concrete

An effusive, energetic engineer from Tasmania, John Harrison grows increasingly excited as he discusses his new type of concrete and its implications for rethinking sustainability. Two of our most pressing environmental problems, waste and greenhouse gases, are largely caused by new construction. Buildings and infrastructure account for seventy percent of all material used, and a third of the energy consumed. Construction activities account for thirty-five percent of all global carbon dioxide emissions, making it the single largest contributor. However, while many designers look



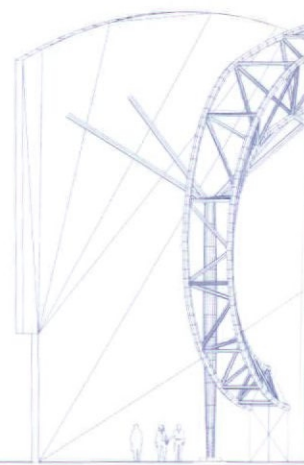
Testa A + D's Carbon Tower Prototype.

to reduce the overall amount of material used and scientists struggle with policies to reduce greenhouse gas emissions, John Harrison thinks it is highly unlikely that we will wean ourselves of the need for fossil fuels and more raw materials in this age of rapid global development. Developing countries will be at a particular disadvantage if forced to limit emissions. Instead, he argues, we should look to nature and the way it re-uses and re-incorporates material waste. The earth has experienced global warming before from the massive emissions of volcanic gases during the Precambrian period. Nature adjusted by removing the carbon dioxide from the atmosphere through carbonation in the formation of limestone and plantlife's use of carbon dioxide for energy. The rich tropical jungles of the period absorbed the gases and locked them away. But now that we are burning the ancient remains of these jungles as fossil fuel, the gases are being re-released. John Harrison's powerful idea is to imitate nature and trap the gases once again—this time within concrete.

The volume of concrete used worldwide makes it an ideal place to store waste and emissions. Concrete is already a highly sustainable material because of its ultra-low embodied energy, but, by adding magnesia, the material can become a sink for carbon dioxide. In porous and semi-porous materials such as brick and pavers, the magnesia carbonates remove carbon dioxide from the air and trap it. Additionally, this new cement, called eco-concrete, can be composed of up to ninety percent recycled industrial materials. These waste products can vastly improve the concrete's performance: plastics increase ductility, sawdust increases insulation properties and fly ash, an industrial waste product from power plants, further increases strength. Concrete not only becomes the new landfill but also cleans the air. Building can be reconceived as potentially having a positive effect on the environment instead of a negative one that needs to be minimized. In Harrison's words, "By looking closely at the processes of nature, cities can become the new forests." ■

There is no impossible we can do anything.

NEVER SAY NEVER



BY ALLISON MILIONIS

LOS ANGELES HAS A WONDERFUL FLAIR FOR THE new and untried. The pioneering "can do" spirit that turned a small semi-desert town into one of the most thoroughly urbanized and productive regions in the world (in less than two centuries, mind you), permeates the culture. Here is an attitude that accepts the extreme and the unusual as the norm, and an infectious belief that everything is possible.

"There is no impossible," said one contractor, "we can do anything." Anything? Curious, *LA Architect* asked several professionals in the building industry about some of their most challenging projects. Did they ever think the job impossible?

Janah Risha, Principal, Risha Engineering Group, Inc., has created a unique niche for

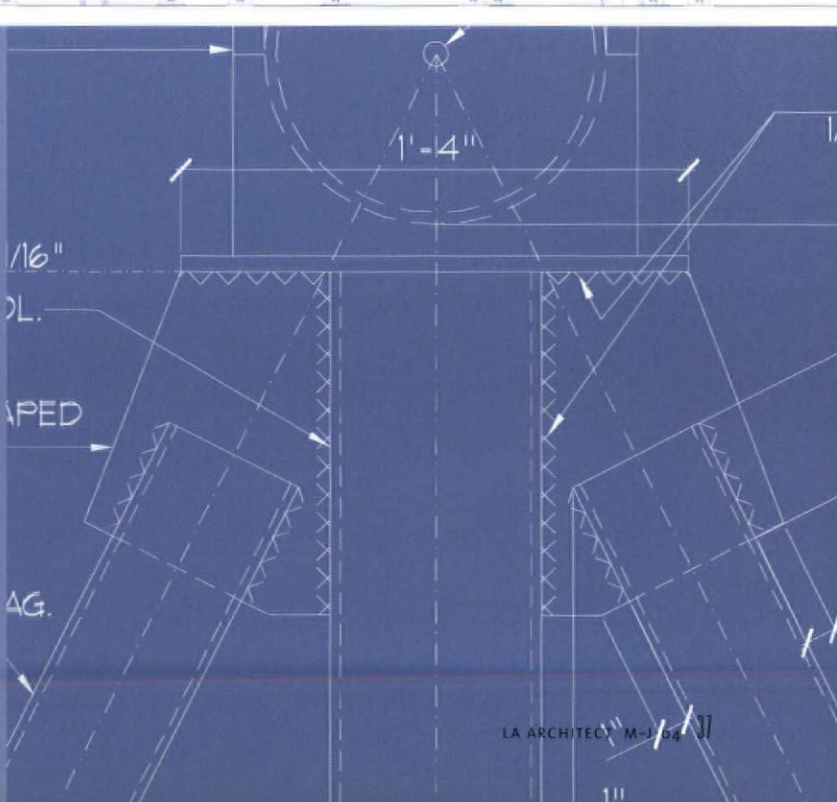
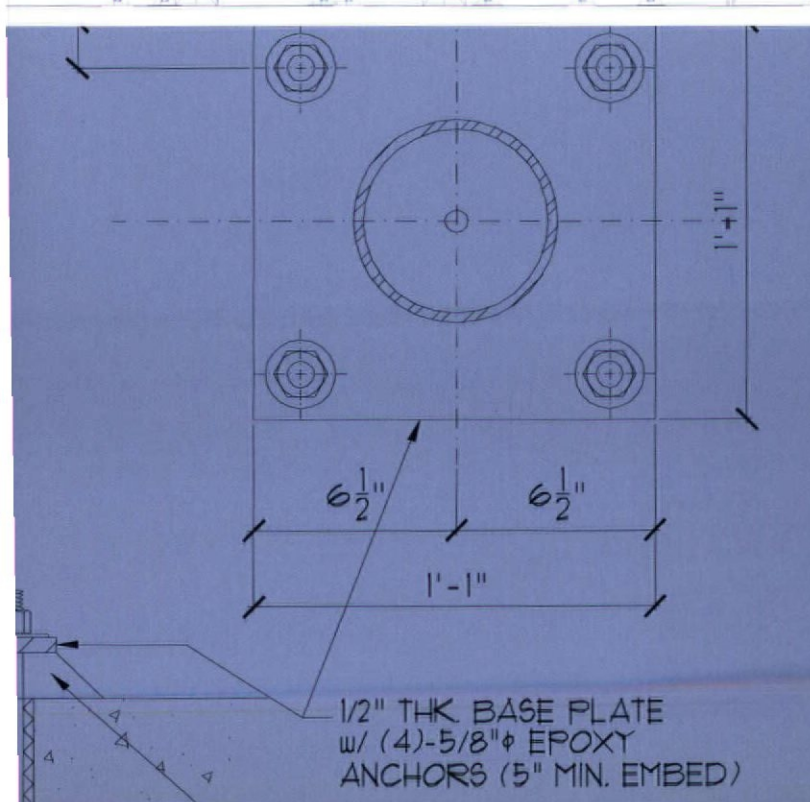
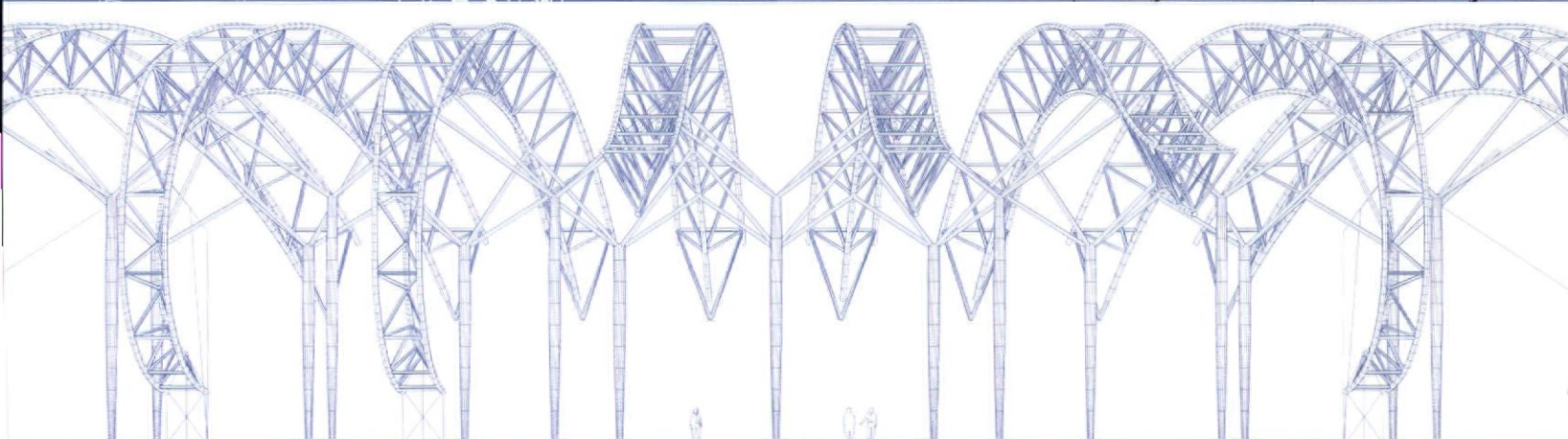
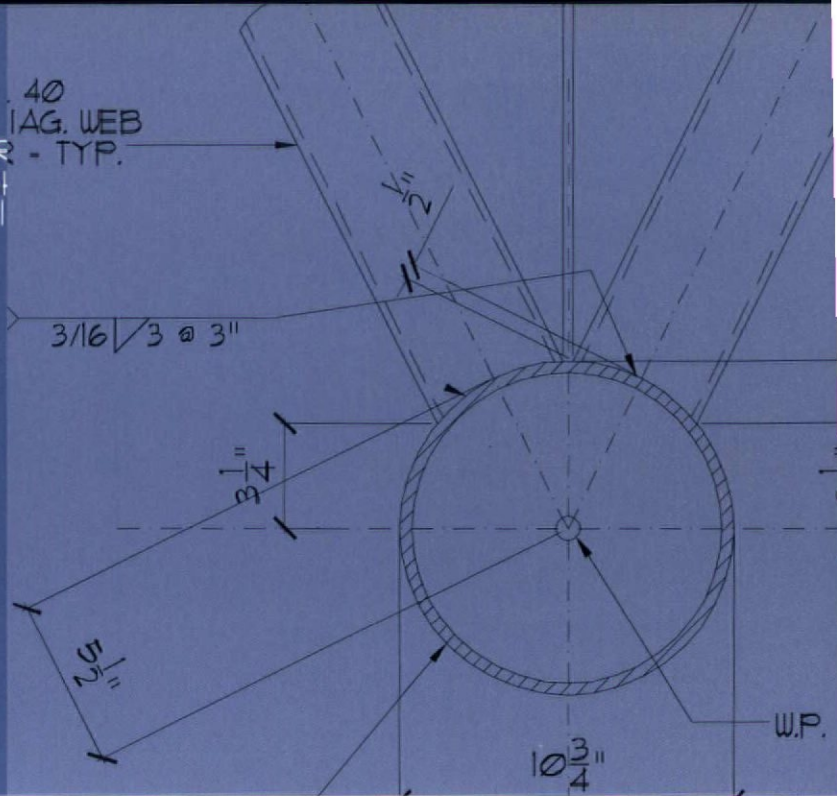
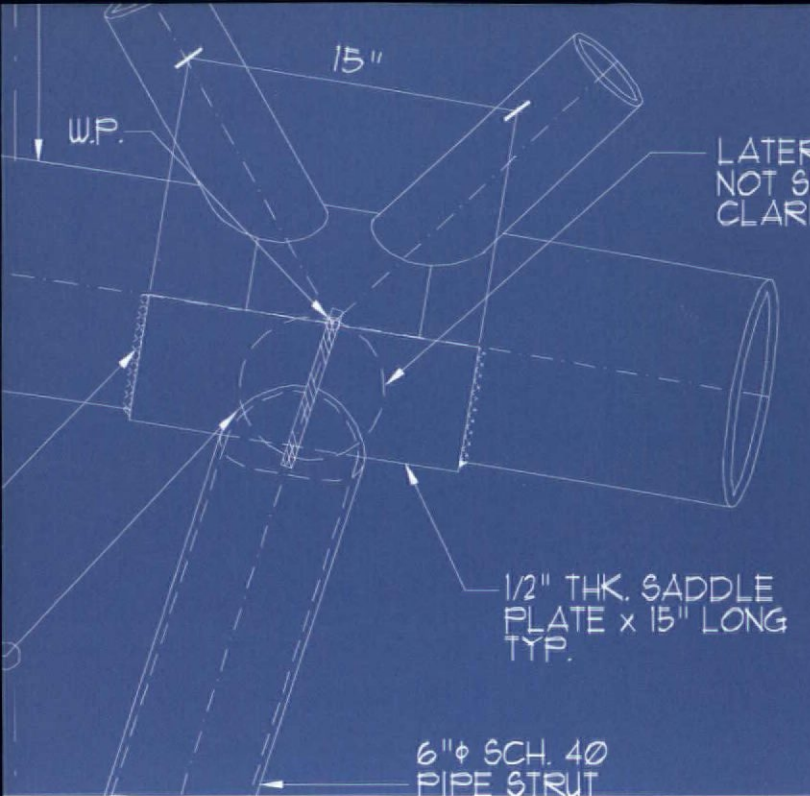
himself in LA. Rather than limiting his scope of work to "traditional structural engineering services" Risha's healthy portfolio includes over 25 specialty structures built for movie sets. This is Tinseltown, after all.

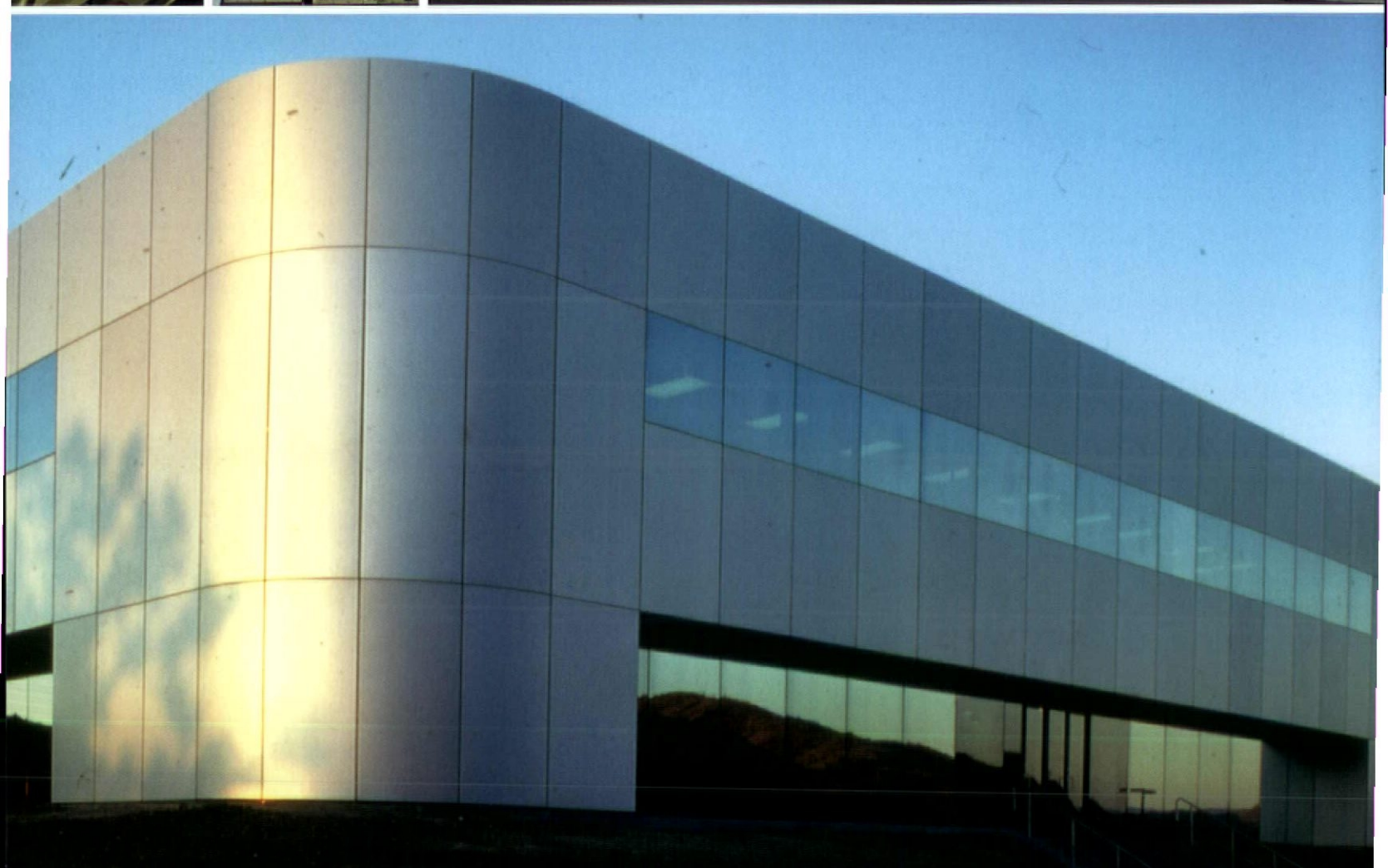
With clients like Dreamworks, Warner Brothers and Paramount Pictures, Risha's firm has had the opportunity to work on the sets of blockbuster films. Though most set structures are clearly devised for the world of fantasy, Risha recently completed one that was about as real as a building can be.

The Terminal, which will be released in June 2004, is an action thriller that takes place almost entirely within an airport terminal. For obvious reasons, no airport was willing to make room for an extended visit by a film

crew, so a replica had to be designed and built. "This project was more a reality than a fantasy," says Risha, who, with his staff, spent five harried weeks designing a life-size airport terminal mock up that included a first-class lounge, shops and even a Starbucks.

The three-level, 117,000 square foot structure was built in a hangar in less than three months. A complicated truss system required a lot of extra detailing, including fabrication directions. Risha explains, "As skilled as the crew was, we knew they had not done a structure like this before." The complicated connections were simulated using steel plates, then shrouded with set elements devised by the studio construction crew. Because of the size, complexity and location of





We integrated the architecture and engineering process, and under such a compressed schedule we had to constantly inform each other.

Andy Howard, ARUP

the set atop a major fault line, Risha proposed that the project be built to current seismic code. A buttress system erected off-camera provided additional support without hindering the prescribed aesthetics of the trusses. "We had to practice sound building principles, obviously," says Risha, "but it's easier to work on a building like this. We have more freedom to be creative."

Risha credits the team effort for pulling the project together within such a condensed, high stress schedule, and yes, a tight budget. "It was really phenomenal how everyone came together to make this happen."

ARUP Managing Principal, Andy Howard can quickly recite a list of public projects that posed considerable engineering challenges: Seattle Public Library, San Francisco Federal Building and the Caltrans Building in downtown Los Angeles. All three are complex designs that integrate highly sophisticated and unusual structural and mechanical systems. Did the ARUP team blink an eye? Hardly. "The biggest challenge on the Caltrans project was the delivery of the building within the State's design excellence program," says Howard. The goal of the program is to develop architecturally significant public office building design under a compressed time schedule and intense budget pressures. "We had only 29 months from the design/build procurement to the completion of the building."

Sustainability is a key component to the building and it required a considerable investment of time and effort to develop and

resolve the high-performance skin and photovoltaic wall. Coordination and communication among the design/build team was critical, which is why ARUP team members spent a lot of time in the Morphosis office detailing the facade with the architectural staff. "We integrated the architecture and engineering process," adds Howard, "and under such a compressed schedule we had to constantly inform each other."

"The more challenges there are [in a project], the better we like it," says Atila Zekioglu, also a Managing Principal at ARUP. "We like resolving constraints because we're learning from that experience as well." Zekioglu headed the effort on the Seattle Public Library, designed by Rem Koolhaas, where an all-glass facade generated a lot of debate over safety. There, the biggest challenge was convincing the owners, contractors and especially the cost estimators that the project could be done safely and on budget. How did they do that? "We had to be busy participants," says Zekioglu, "we had to be there, helping the project take shape." Zekioglu attended public meetings in Seattle, presenting himself as not just an authority on matters of engineering, but a vested member of the team, helping to win the confidence of the public, owners and wary contractors.

"If everyone is thinking and working together, there's no damn reason why contractors and architects have to be adversarial," Stan Weston says, emphatically. "It comes down to understanding each other and solving problems together." Weston should know.

With over forty years experience in the construction industry, the former Southern California contractor (who left LA for Sedona, Arizona), has a long list of architects and firms he has worked with.

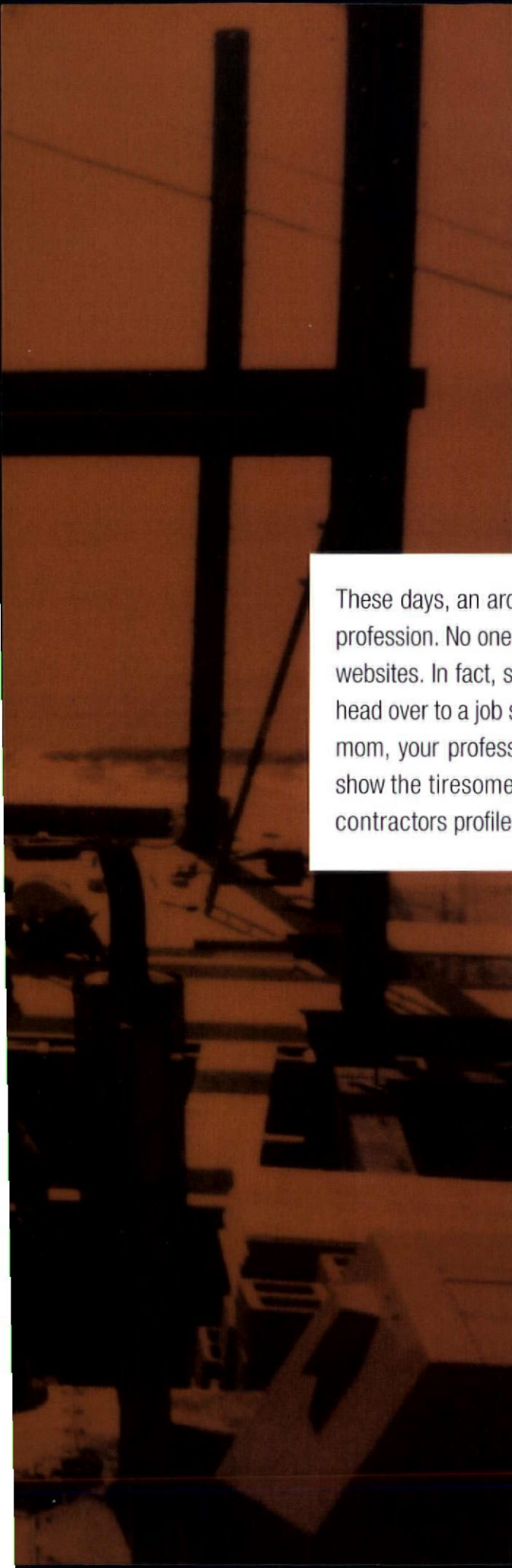
In the early 1960s, with a special appreciation for good design, and hands-on experience at the construction site, Weston set his sights on the firms doing exceptional modern design. Within two years he was making it on the bid list of architects such as Buff Straub Hensman and Craig Ellwood. Weston describes his first project given to him by Ellwood as a carport at the West LA home of a Hollywood producer. "We did this damn carport. There were to be no mill marks on the steel, and all welds had to be filled and polished," explains Weston. "It was a Mies van der Rohe-like carport plunked right in front of a English Tudor house."

Weston moved on to bigger and more complex projects, and within a short time had earned the respect of the LA design community. "We loved the tough jobs. I guess that's why we were well-liked and respected." Weston explains that he experienced many technically difficult jobs, but nothing was impossible unless he just didn't get the drawings. For instance, in 1968 Weston paid a visit to John Lautner to see some plans for a house he was designing in Malibu. "They were the crudest schematics," Weston exclaims, "I loved the plan but the sketches scared me. I couldn't give him an estimate." The house did get built, "just not by me," laughs Weston. ■



the builders

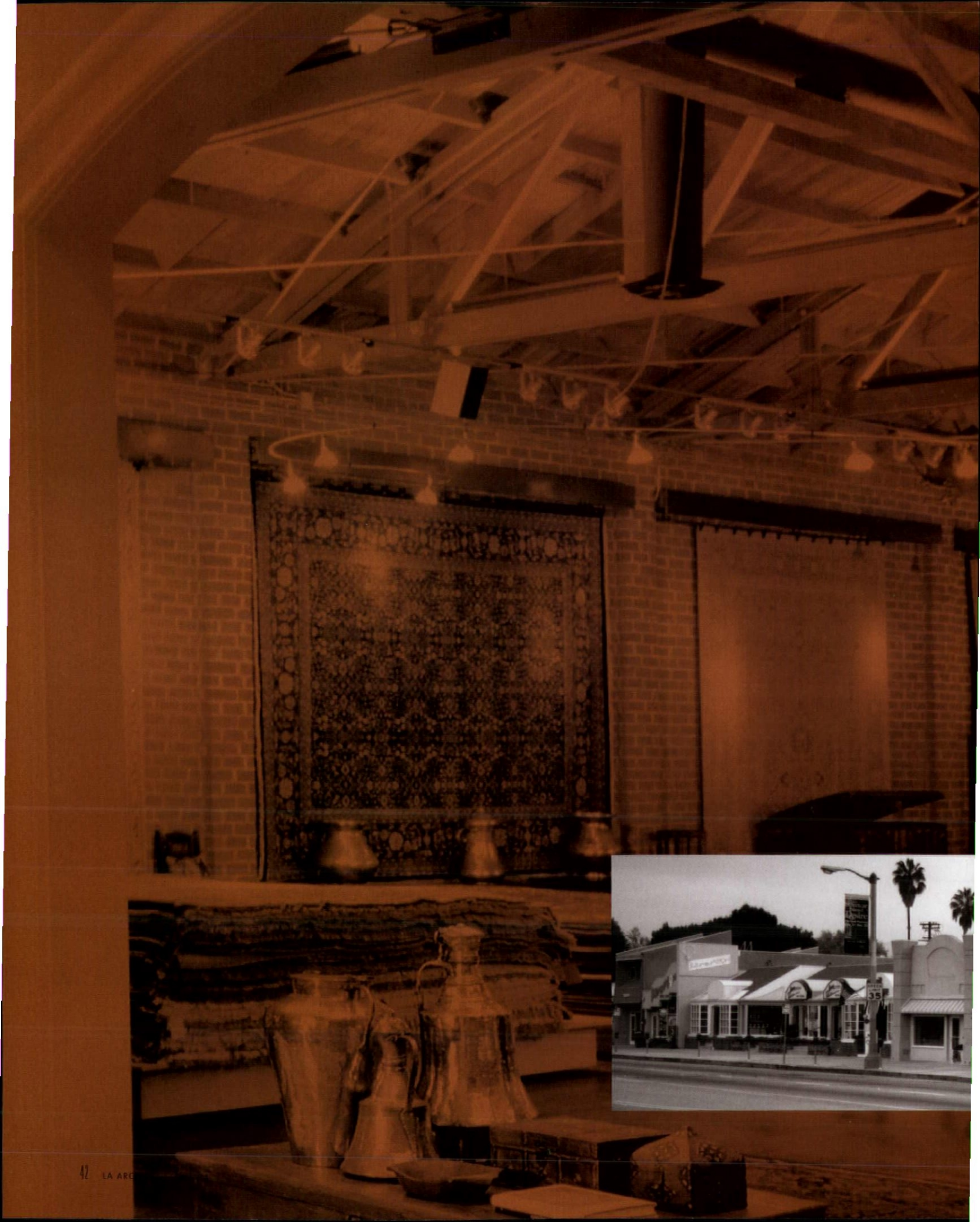
By Jesse Brink

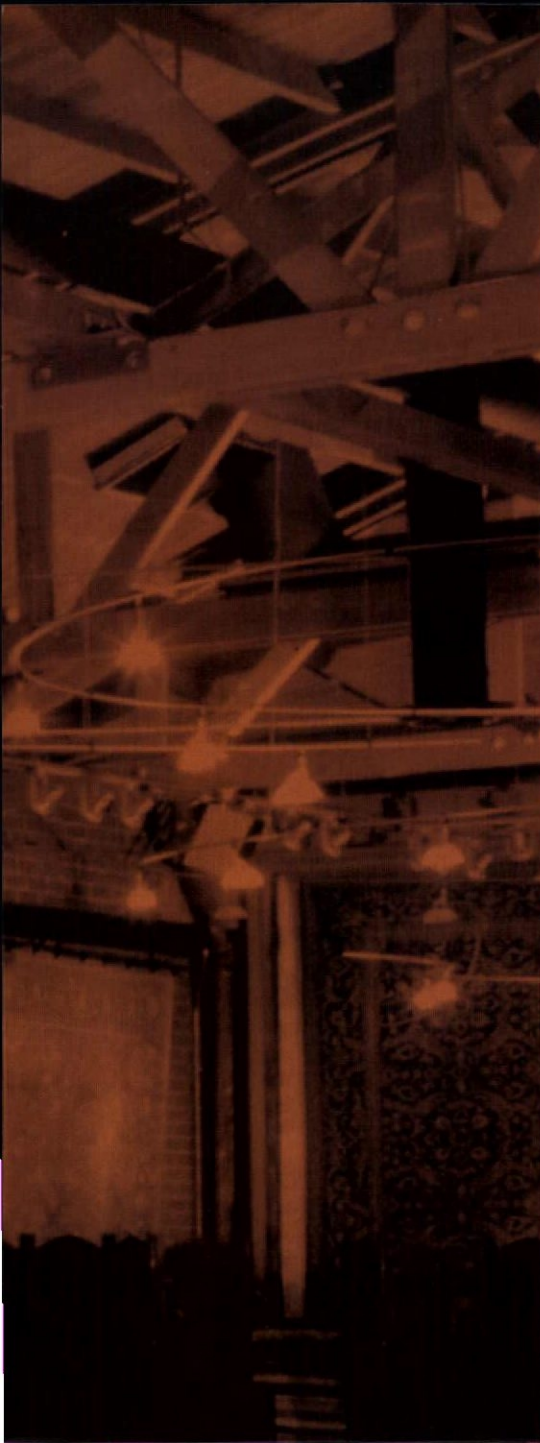


These days, an architectural education seems to be a ticket to just about any creative profession. No one is surprised if you take that degree and go design clothes or toys or websites. In fact, someone will probably write a magazine article about you. But if you head over to a job site, if you start building buildings, it's unlikely that anyone—not your mom, your professors nor you peers—will celebrate the move. As the stories below show the tiresome stigma against construction is waning, but it persists. The three contractors profiled here have also persisted, and succeeded in doing what they love.



CLOCKWISE FROM LEFT TO RIGHT: A beach house by Gary Paster, under construction.





Enlightened Builder

Gary Paster is, in certain ways, an old-school contractor. His dad was in the business. He's been working job sites – when school was out – since he was twelve. He wears a mustache. But as a little kid he loved to draw, borrowing plans from his dad and copying them endlessly. And when the time came, he went to school in architecture, first getting his Associates degree from El Camino Community College, and then starting at Cal Poly. Shortly after he entered Cal Poly, the head of the architecture department, Ray Kappe, left to found SCI-Arc. Paster, and many others, went with him.

The experience at the new, unformed school was not positive. Paster sums it up: "Basically we paid them to let us build them a school." He took a semester off to design and construct a spec house with his dad in the Pacific Palisades. After a little more frustration with SCI-Arc and its theoretical focus, Paster quit school and started building. After more than 22 years as a contractor, he has no complaints. His is a creative field and of a piece with architecture – "Originally they were together." And the high-end homes he builds require subtle craftsmanship to realize their detail-oriented designs.

What, though, did he gain from studying architecture? Well, for one thing, "I think I'm probably more patient with architects than most contractors." This is, in part, because of the shared language and a mutual view to the project's big picture. In addition, Paster maintains a passion for architectural history, of the built variety. He particular admires architects like Sullivan, who designed, drew and built, and wants to see that experience return to architecture. He imagines a sort of apprentice program that would get architectural students out in the field to learn how things actually get built. It's an excellent idea.

Designer-Builder

When Howard Lichtman was in architecture school, his approach to architectural practice didn't have a name. It also didn't have any respect. While earning his MArch at UCLA in the late seventies, Lichtman was also working towards a contractor's license. For this he felt "genuinely shunned" by fellow students. "The contractor was seen as a low-life." Now he could claim the giddily hyphenate title "design-build" but for the fact that what it typically refers to is not his approach. Lichtman designs, and he builds.

Appreciation for building came early for Lichtman, growing up with a sculptor mother and an engineer father. From high school on through his graduate days he made money doing small-scale construction: landscaping, building darkrooms, laying tile. At UCLA he knew he wanted to continue to build, and design as well. In Lichtman's mind, the two fields were one. But in practice he treats his design and construction services as wholly separate, with separate contracts and bidding. He will not build a project he hasn't designed; he builds about 70% of his own designs.



FROM LEFT TO RIGHT: Howard Lichtman's 22 retail stores on Ventura Blvd. in Sherman Oaks.



Still, Lichtman's experience can inform design-build architects and contractors as well. In particular, he feels that too often the drawings produced by non-builders are not really thorough. They may specify non-optimal solutions drawn from Sweets or another non-empirical source. He tries to specify finish items as early as possible, as he has seen how they can slow down the building process. All his clients are from past referrals, so they already know who he is and that there will be continuity through the whole process. Finally, by being on site he can develop the design as it is being built, to capitalize on opportunities that may arise.

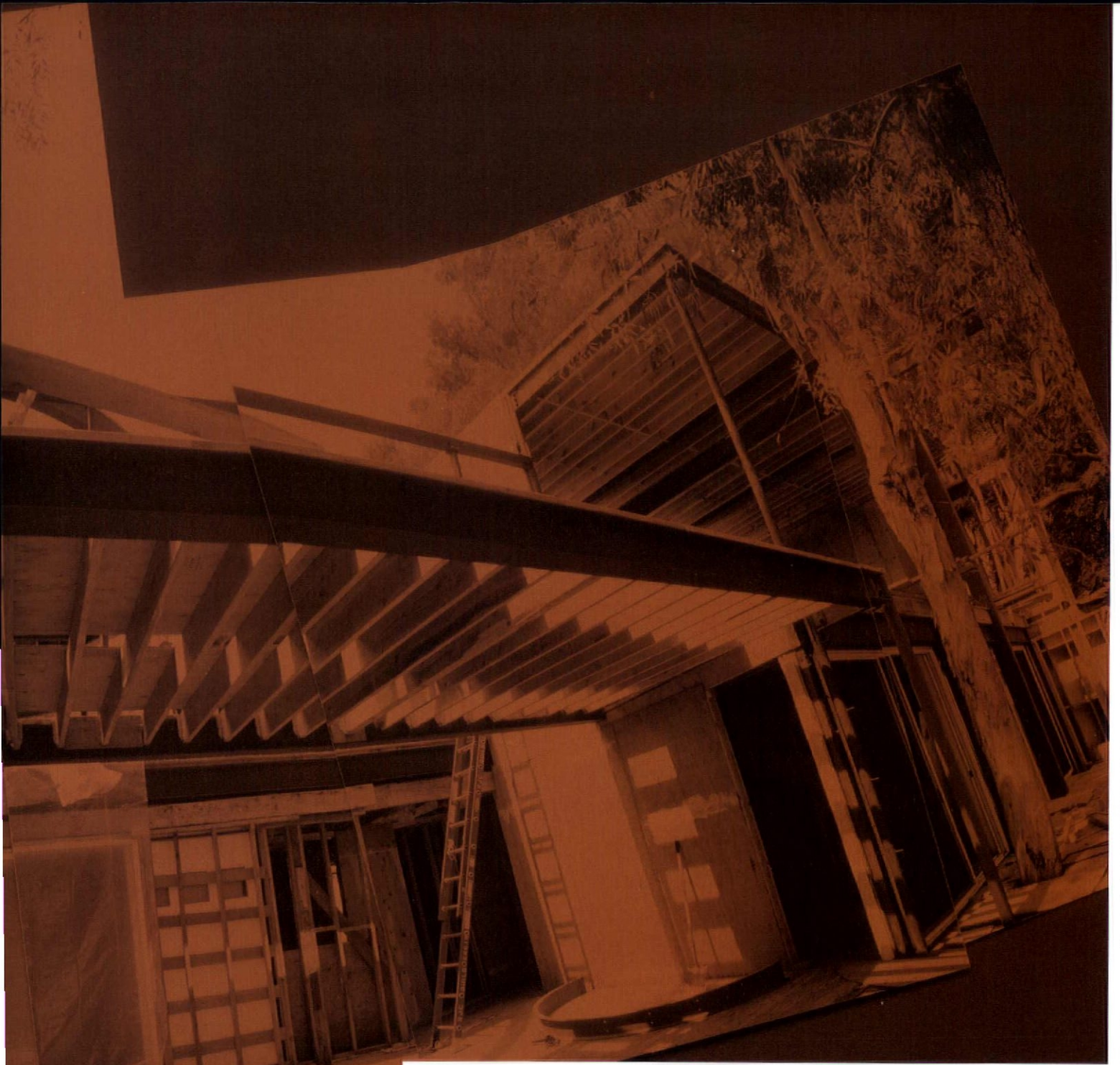
Architect's Builder

Whenever anyone asks John Cordic if he misses architecture, he thinks back to his first architecture job out of school. "I was miserable, really depressed by the work and the environment." So he left the firm and rented a storefront where he could make things. As a student at SCI-Arc, he had gotten praise for his designs, but raves for his drawings and especially his models. A beautiful model Cordic built in his shop for artist Robert Graham led to his becoming the project's contractor.

Thus began Cordic's career. Asked about the learning curve moving from architecture into contracting, his answer is interesting: "Contractors have to begin assembly without a complete solution in hand." It's incremental. "You get the foundation done, you get the steel done; you don't get overwhelmed by a set with 320 sheets." Nevertheless, he credits his schooling as an excellent preparation in everything from engineering to contract preparation. "A good architectural education can make you so diversified that you can tackle anything."

Because of his background, and his belief in the value of design, Cordic works on multiple fronts to bring that design to life. His bids are ultra-thorough, and include detailed submissions from the subcontractors. This helps the architect when presenting to the client, and also ensures that the project gets built on budget. "The poor architect is trying to get as much money for the design as possible. You use so much money on hidden features like the foundation. So why should he get cheated on the windows?" After the bid, the real work begins. "Construction is an unrelenting fight to make it square, straight and aligned. If you see a mistake in rough framing, tear it out, because if you think it's a hassle now...." ➤





FROM LEFT TO RIGHT: Houses built by John Cordic. Photomontages by Michael Gruber.

“A good architectural education
can make you so diversified that
you can tackle anything.” —John Cordic

See Things. Differently.

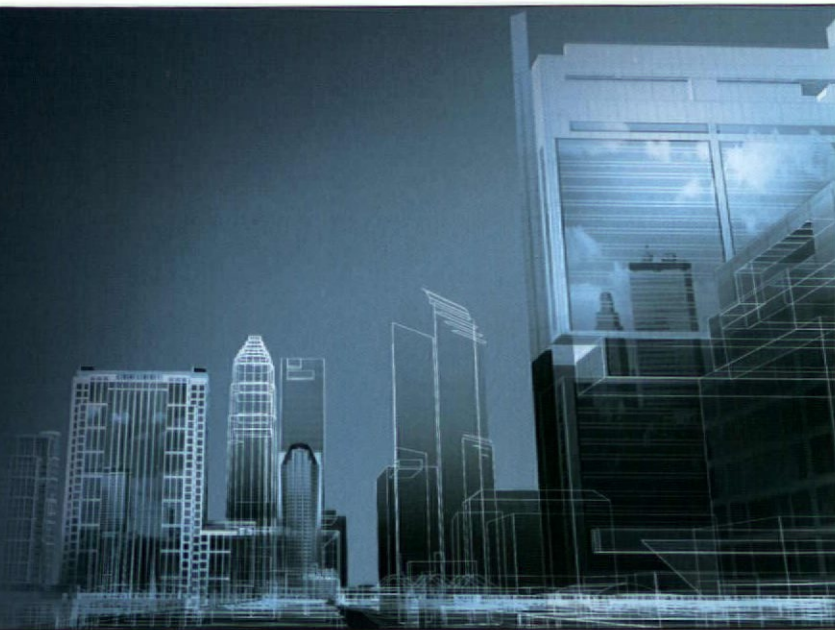
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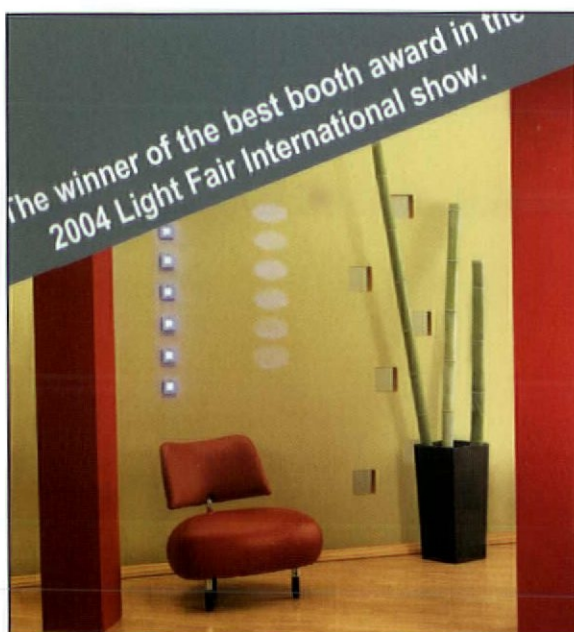


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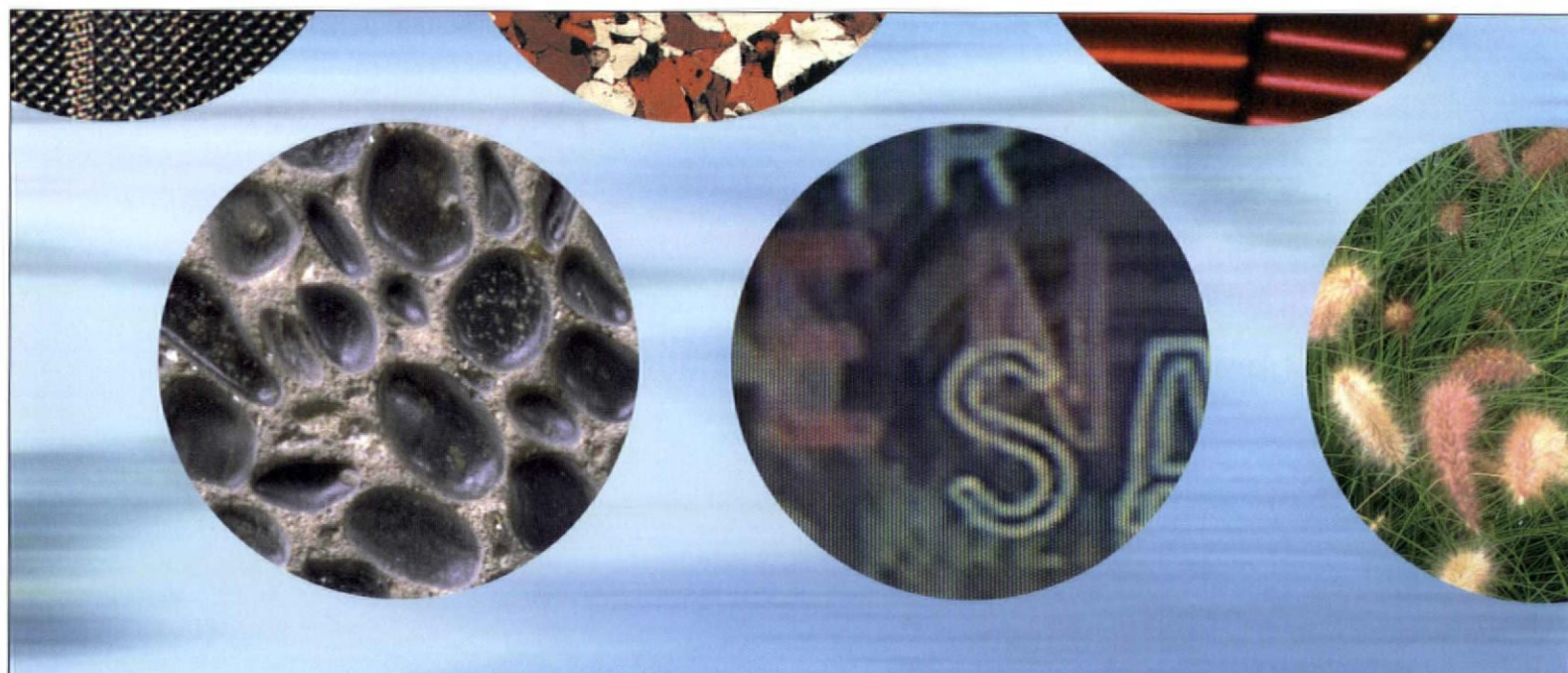
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BY JESSE BRINK

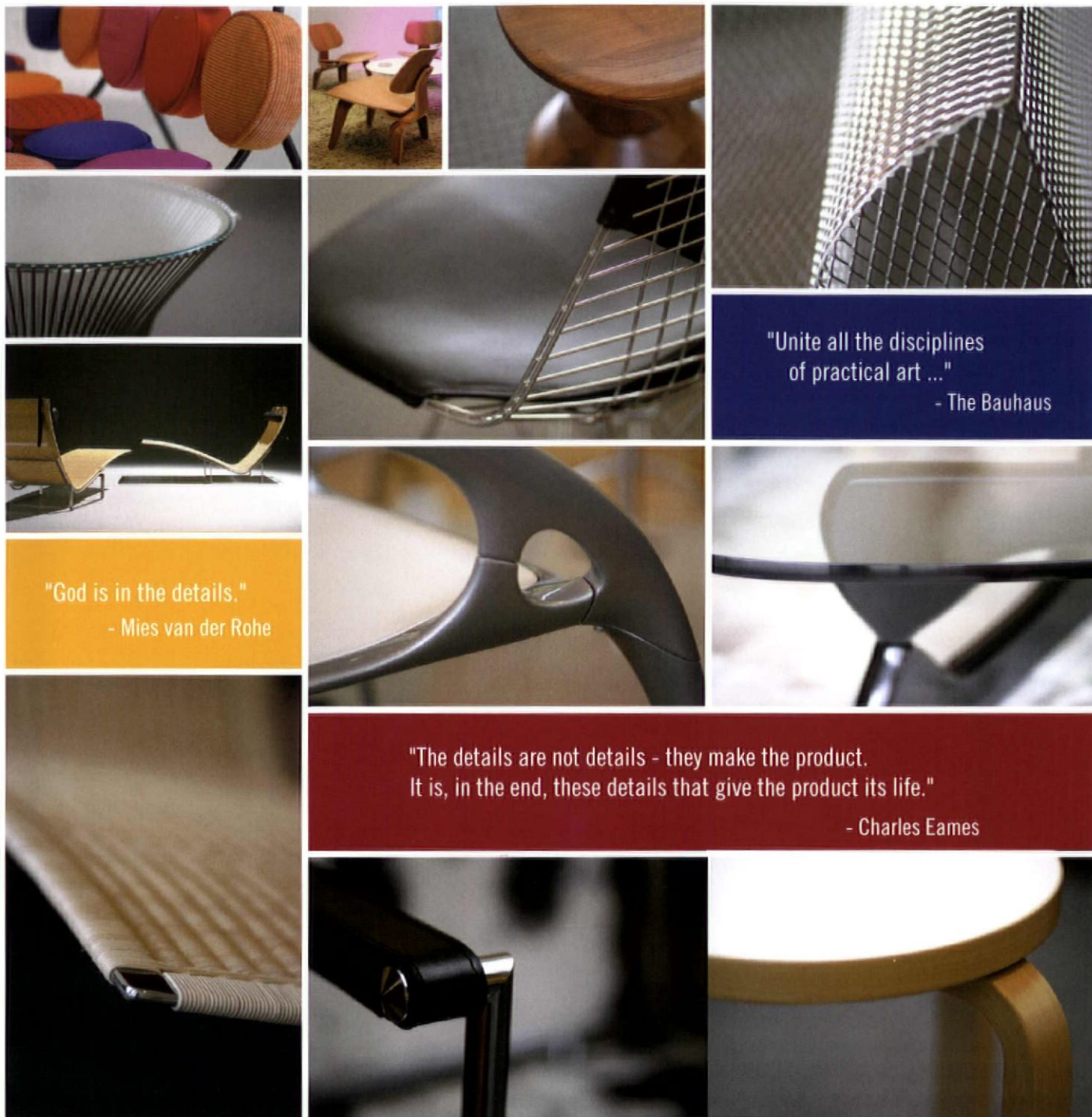
BEHROKH KHOSHNEVIS IS ONE OF THOSE PEOPLE

who talks about the future in the present tense. Slightly more disconcerting is the fact that he, or rather his robot, builds it, too. In this future, construction is automated by robots that "print" houses, in layers, directly from an architect's CAD drawings. Khoshnevis has many beguiling, scored animations depicting this very process, which he calls Contour Crafting. So far, the robot has only produced a small wall. "But," declares the professor, "if you can build a wall, you can build a house."

Here's how: A truck arrives at a graded job site with two men, a gantry-mounted robot and various modular electrical, plumbing and ceiling components. They set up the robot and array the components within its reach. Once started, the robot glides back and forth above the site, extruding layers of concrete, or a similar material, in parallel strips, following a CAD drawing. After each tracing of the plan has dried, it adds another layer and fills in the gap between the previous strips. As the elevation rises, a second robotic arm adds electrical and plumbing systems, as necessary. This arm also adds lintels and roofing.

As professor of Industrial & Systems Engineering and Director of the Manufacturing Engineering Graduate Program at USC, Khoshnevis is just the person to re-make how buildings are made. He has the world's largest producer of construction chemicals developing materials for him. Both Frank Gehry and Greg Lynn have shown interest in the great flexibility in form that the process allows. And Khoshnevis is sanguine about the time it may be before his robots are building in force. "Construction has been basically the same for 20,000 years, what is another 20 to revolutionize it?"

To learn more about Behrokh Khoshnevis and see his Contour Crafting process in action, visit: <http://www-rcf.usc.edu/~khoshnev/>. ■



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