THE WEST
ARCHITECT'S NEWSPAPER
02__02.20.2013

WWW.ARCHPAPER.COM IF IT MATTERS, WE TELL YOU $3.95


SWA

SWA DESIGNS RIVERFRONT PLAN FOR SHANGHAI

AT THE FRONT

The LA office of landscape firm SWA has made a name for itself designing waterfronts in places as diverse as Tulsa, Los Angeles, and China. Last month, the firm won a competition to rethink a vital portion of the City of Shanghai's waterfront. It enlisted Morphosis to develop the site's architecture.

The site, known as Front City, for its location at the southern head of the city, includes a 940-acre mixed-use development and a 250-acre park along the Huangpu River, in the Pudong section of the city. The development is just south of the site of Shanghai's International Expo Centre.

SWA divided the 1.4-mile-long park space into five **continued on page 3**


BERRY AND LINNÉ, UTOPIADORG, AHBÉ

Parklet on Spring Street in Downtown Los Angeles.

LA KICKS OFF CITYWIDE MINI PARK PROGRAM

POWER TO THE PARKLET

On February 3, Los Angeles kicked off the pilot parklets program it announced last fall, opening a miniature public space in the Eagle Rock neighborhood of East Los Angeles. Designed by LA landscape architecture firm Shared Spaces, the park is located on the site of a former parking space in front of Bobby's Auto Parts, near the corner of Avenue 50 and York Boulevard.

The $30,000 parking space-sized park is modest in scope: It features stained wood-plank flooring, curving built-in wood furniture, and mosaic tile furniture and siding. But as the city's first parklet, it represents a major milestone. The parklets initiative involves intensive coordination among several city departments, including the Department of Transportation (DOT), the Department of Planning, the Bureau of Engineering, the Bureau of Street Services, the Mayor's Office, and various city council offices. The parklet was sponsored by LA Councilman José Huizar, planned and coordinated by the nonprofit Living Streets LA, and built by the LA Conservation Corps (which gives at-risk young adults **continued on page 4**

PRSRT STD
US POSTAGE
PAID
ITHACA, NY
PERMIT
No. 188

The Architect's Newspaper
21 Murray St., 5th Floor
New York, NY 10007


COURTESY AC MARTIN

DESIGN FOR WEST COAST'S TALLEST TOWER REVEALED

Winging It

On February 7, California-based architecture firm AC Martin Partners unveiled detailed plans for the Wilshire Grand, a 1,100-foot tower in downtown Los Angeles that will be the tallest building on the West Coast.

The $1 billion, 73-story project, funded by Hanjin International, is downtown's first high-rise office in decades. Located on the corner of 7th and Figueroa streets, it will include 400,000 square feet of offices, 900 hotel rooms, and a 160-foot-tall, mixed-use podium at its base.

The building's tapering, elliptical shape is evocative of a sail, or as architect and aviation enthusiast David Martin, sees it, an airplane wing. He said that his cousin Chris Martin, who is managing the project, thinks the podium design resembles Half Dome, the famous rock **continued on page 2**

CONTENTS

FILM INDUSTRY BUCKS DOWNTOWN LA ALTERATIONS

THE STREET STAYS IN THE PICTURE

The resurgence of the residential community in downtown Los Angeles has come with numerous urban design interventions, from bike lanes to parklets to new transit stations. Not all of the neighborhood's stakeholders, however, are happy about the changes. The film industry, one of the most powerful of those groups, has grown increasingly outspoken in its concerns about how the modifications are impacting business.

Downtown's impressive mix of Art Deco, Beaux-Arts, and Postmodern buildings, along **continued on page 5**


COURTESY JENNY SABIN

AN DELVES INTO THE WORLD OF CUTTING-EDGE MATERIAL SCIENCE. SEE PAGE 8

VOLUME 7, ISSUE 2 FEBRUARY 20, 2013. THE ARCHITECT'S NEWSPAPER (ISSN 1552-8081) IS PUBLISHED 20 TIMES A YEAR (SEMI-MONTHLY EXCEPT THE FOLLOWING: ONCE IN DECEMBER AND JANUARY AND NONE IN AUGUST) BY THE ARCHITECT'S NEWSPAPER, LLC, 21 MURRAY ST., 5TH FL., NEW YORK, NY 10007. PRESORT-STANDARD POSTAGE PAID IN NEW YORK, NY. POSTMASTER, SEND ADDRESS CHANGE TO: 21 MURRAY ST., 5TH FL., NEW YORK, NY 10007. FOR SUBSCRIBER SERVICE: CALL 212-966-0630. FAX 212-966-0633. $3.95 A COPY, $39.00 ONE YEAR, INTERNATIONAL $160.00 ONE YEAR, INSTITUTIONAL $149.00 ONE YEAR.

CAN'T WE ALL JUST GET THINGS BUILT?

As many of you know I've been putting together an exhibition opening this July at the A+D Architecture and Design Museum called *Never Built: Los Angeles*. The show features an abundance of visionary ideas that never had the privilege of being realized, from staggeringly ambitious buildings by Frank Lloyd Wright to city-changing subway and park plans that never saw the light of day.

The original and visually stunning ideas are immediately compelling, and will introduce viewers to a new history of LA. But the heart of the story isn't just the amazing, frustrated talent in this city and its amazing un-built work. It's why they weren't built. It's a story that LA, like so many American cities, is still telling.

As I was just discussing with a friend, it's a miracle that any building gets built these days. The constraints of red tape, political fragmentation, neighborhood resistance, risk-averse bankers, myopic developers, environmental regulation, zoning, etc. are never-ending. If we want to work our way back to a more innovative, visionary urban environment we'll need to fix all of those hindrances.

We need to make the building process more transparent, so that the multitude of city departments—accountable to nobody—can't hold up any project they choose. Environmental regulations can't be used for political or economic purposes, only for legitimate environmental issues. We need the building system to rally around good ideas, not act as a blockade to them. Financing needs to catch up with the times, supporting innovation, not just pro forma spread sheets.

Of course, I'm not promoting building any way, anywhere, without regulations. I just want to make the process easier and smarter. I want to make sure LA and other major metropolises in this country and throughout the world live up to their true potential instead of falling far short of it.

In the coming months leading up to the exhibition *AN* West will be looking into the issues that keep good projects never built, and asking architects, developers, and planners to weigh in on how this can be fixed. (The Protest in the next issue, for instance, is coming from a small developer). I encourage your input as well, on *AN*'s web site, on social media, and in emails and letters. And I'm encouraged that there will be yet another chance for Mayoral candidates to weigh in, with the LA mayoral forums in mid April, sponsored by AIA/LA and *AN*. Let's make sure that the next crop of visionary projects get built, and that our cities once again become laboratories for innovation. **SAM LUBELL**

COURTESY AC MARTIN

WINGING IT continued from front page

formation at Yosemite National Park. "It's nice that it evokes these reactions in people," said David Martin.

The building's uneven crown is a first for LA, a city whose fire regulations require flat tops for tall buildings, to aid with helicopter-based rescues. AC Martin was able to work with the city's fire department, replacing the requisite helicopter-based evacuation design with, among other measures, a fireproof core that will allow some elevators to work during any conflagration. Fire teams can still lower respondents and supplies in from the top of the building, if necessary.

In the plan, the structure is long and thin. Its footprint measures just over 100 feet from north to south, minimizing the tower's exposure to low-angle east and west sunlight. The building will offer wide-ranging views of the Pacific Ocean, the Hollywood Hills, and the San Gabriel Mountains.

Atop the hotel and office portions, a 50-foot-tall glass section, supported by outrigger steel trusses, encloses a restaurant, pool, party space, and deck. This terrace will be completely open to the elements, a rarity in tall buildings. A 100-plus-foot-tall stainless steel spire projects from the east end of the structure, making its overall height significantly taller than that of the current tallest West Coast building, the 1,018-foot-tall U.S. Bank Tower, also in LA.

Horizontal bands of LED lights will likely be embedded into the mullions of the curtain wall, repeating every 14 feet. Martin said that the lighting design is still being finalized, but it "won't be as huge or blatant as some may have feared. It will be very sophisticated." This is in reference to complaints among downtown residents that an earlier iteration of the tower's lighting scheme would be gaudy and distracting.

The five-story podium at the base, topped with an undulating glass canopy, is programmed for retail on the ground floor, along with a ballroom, a landscaped pool terrace, restaurants, a spa, and meeting rooms. Emerging from that space will be a landscaped plaza, welcoming pedestrians from Figueroa Street. Most of the building's hotel rooms and offices are enclosed by floor-to-ceiling glass. A few hotel rooms on the east and west sides project outward, providing wrap-around views.

The tower, which is aiming for LEED Silver accreditation, is expected to be complete by March 2017. The previous Wilshire Grand, an unremarkable hotel built in 1952, is now being demolished to make way for the new building.

A recent event kicking off the demolition drew several top city officials, including Councilwoman Jan Perry, who told the Annenberg Digital News: "We're not going to be able to tax our way out of this recession. I I think we're going to have to build our way out." **SL**

COURTESY SOM

UNVEILED

LOS ANGELES FEDERAL COURTHOUSE

We've known for some time that SOM would be designing the new federal courthouse in downtown Los Angeles. But the firm has just unveiled new images of the project, filling out the picture of this vital new landmark for the city on the corner of 1st street and Broadway. The familiar image of a cube-like landmark in the middle of the city is now accompanied by a closer view of a folded glass facade prominently featuring the U.S. seal. The building appears to cantilever out slightly from its base, with ramps and a small park leading the way to the entry. Inside, we get a peek at a large central atrium rising several stories, and walls of blond stone. SOM is still unable to comment on the design, but more information should be coming shortly. **SL**

Architect: SOM
Richard Meier & Partners
Client: General Services Administration
Location: Los Angeles
Completion: 2016

EAVESDROP> THE EDITORS

GOSSIP: GRAND AVENUE EDITION

The Grand, the multi-million-dollar, mixed use project on top of LA's Bunker Hill, is finally... slowly... moving forward with an Arquitectonica-designed residential tower, which just broke ground. But it appears that **Frank Gehry**'s days on the project may be numbered. After a recent call with **Related**, we got no assurances that the starchitect was still part of the project. A report in the Downtown News got similarly uncommitted answers.

Just across the street from the Grand we hear that The Broad (what's with all the THEs?)—**Eli Broad**'s multi-million-dollar art museum—is getting ready to add an upscale market to its rear, just above the parking lot. If it's even close to as successful as Chelsea Market in New York, Downtown LA could have yet another hit on its hands. Meanwhile, decking is being laid for a new park to The Broad's south, but still no renderings of the park have been unveiled. Let's make this public Mr. Broad. We can't wait to see your plans, which could singlehandedly make or break Grand Avenue.

SEND CONDO LEASES AND LOBSTER TAILS TO EAVESDROP@ARCHPAPER.COM

COURTESY SWA

Top: The park can be traversed via a 4.4 mile loop; Above: Site plan.

AT THE FRONT continued from front page

sections, also called fronts. These include the Eco Front (with a sprawling park), the International Front (a formal park with large plazas and landmarks), the Civic Front (with axial corridors and links to the larger development), the Community Front (including sports and recreation), and the Youth Front (for chidren's activities). All the spaces can be traversed via a 4.4-mile loop.

Along the river itself, the firm has created a floodwall control system made up of walls that rise and fall according to the water level. The sinuous stretches of riverbank will also include snaking pedestrian bridges; reflecting pools; and colorful, whimsical shade structures.

"We try not to create a boundary between natural and built landscape; spaces flow into one another," described firm principal Ying-Yu Hung.

Principal Gerdo Aquino lauded the willingness of Chinese clients (in this case the Shanghai Binjiang Tourist Resort Development Company) to push boundaries. "Once you've gained their trust and shown that you understand their culture, you can get as crazy as you want," he said.

That ambition is evident in the development company's excitement about designs put forth by Morphosis for the park's architecture. (Morphosis has yet to be named the official architect for the project.)

A highlight of the firm's design is its "friendship tower," a multi-story structure that merges with the landscape, resembling a series of interconnected Taihu stones—a porous limestone produced at the base of Dong Ting Mountain in Suzhou by millenea of lapping water. Morphosis principal Thom Mayne also designed a spectacular ferry terminal and cultural center for the site. Both seem to emerge from the earth, with pieces seemingly designed to combine with those from the other structures, like merging continents.

The project is set to break ground in March. The completion date has not yet been finalized. **SL**

OPEN> BAR

RON TOMS

> **RONTOMS**
600 East Burnside Street
Portland, OR
Tel: 503-236-4536
Designers: Ron Toms, Works Partnership Architecture

Rontoms Bar, an eastside Portland lounge serving up Scandinavian fare, local liquor, ping-pong, and free concerts on Sundays, is a local's best-kept secret. The entrance is marked with only a small painting of a boy spinning hats. And the bar itself resides in a spacious repurposed industrial building with mid-century furnishings; it's been likened to a cozy basement den, circa 1973. But just as talked about as the bar is its canopy: A portion of Rontoms' large patio, located at the corner of Burnside and Sixth Street, contains the 1,500-square-foot wood structure, fashioned from two bent girders held together by a ridge beam. The canopy's minimalist take on the log cabins of the great Northwest also adds refined simplicity, sheltering patrons from the Northwest drizzle and glaring summer sun, while allowing for al fresco drinking and dining under its raftered ceiling. **ARIEL ROSENSTOCK**

CRIT> PEROT MUSEUM OF NATURE AND SCIENCE

IWAN BAAN

MORPHOSIS' MODEL MUSEUM

The Santa Monica firm Morphosis has completed its first museum, and it's a model of its typology. The Perot Museum of Nature and Science fuses the programs of three institutions that abandoned their old quarters, merged their operations, and commissioned a shared building. According to Morphosis principal Thom Mayne, "The first scheme was much more aggressive and architectural, but [museum officials] couldn't deal with that, and we developed a cube raised on pilotis as an alternative."

Though the firm may have reined in its invention, the final design is a brilliant match for the site and the program. It's located on the far side of an elevated freeway, away from the glittering towers of downtown and the axis of the Dallas Arts District. It anchors a barren expanse in the Victoria Park development, and its form and facades aptly express the museum's function.

The massive concrete cube is cut away at the southeast corner and glazed to pull natural light into the five-story atrium. A glass-enclosed escalator projects from the south facade, beckoning visitors to enter and explore. A low podium extends from the base of the cube, and both are faced with precast concrete relief panels that simulate rock strata (and were themselves inspired by a nearby rock quarry). As project architect Arne Emerson explained, "Fabricators prefer repetition, but we devised a system that combines a few variants to achieve random patterns." The depth of the relief diminishes from the base to the top, dematerializing the mass, and creating a constantly changing chiaroscuro, as the sun moves around the building.

School buses drive up to the entrance of the podium that contains the children's museum and educational wing on the east side. To the west, families park their cars and proceed up a curved and canopied ramp to the entry plaza. The roof of the children's museum is a boldly landscaped terrace that opens out of the lobby and can be viewed from above. Shale and native plantings recreate a typical Texas landscape while concealing a tank for the collection of rainwater—a precious commodity in this drought-prone city.

A flexible black box for displays on the second through the fourth levels morphs into transparent public areas at the entry level and around the atrium. Offices are located on the fifth floor. Many science museums pack everything into a windowless container, or go to the opposite extreme of building a glass house, like Renzo Piano's California Academy of Science in San Francisco. Here in Dallas, there's a sharp divide between dark and light. It gives the curators what they need, and visitors can enjoy the alternation of immersion and release.

Open staircases, escalators, and glass elevators provide easy access to the upper floors, and many visitors head straight to the lofty fourth level for its spectacular displays of dinosaur skeletons, a vivid history of the universe, and a bird display in the mezzanine gallery. The second and third levels house displays of minerals, robots, and biology; a platform simulating earthquakes of different strengths; and (this being Texas) an exhibit on oil prospecting.

At the entry level, a café and shop flank a 300-seat theater with state-of-the-art projection and well-honed acoustics. Wavy recessed lighting slots punctuate the fabric-covered sidewalls and ceiling, in an echo of the rippling concrete cladding. In the lower-level Sports Hall, you can try to outrun an animated cougar or T. Rex, roaring down a parallel track, or else match skills shooting hoops with a pro. As business director Jennifer Scripps, observes, "You can learn a lot at home on a computer, so a museum needs to offer a visceral and social experience."

Dallas was a latecomer in acquiring good venues for the arts, and now the sciences, but when the city finally caught up, it did things right. Symphony Hall is one of I.M. Pei's best buildings. Renzo Piano's Nasher Sculpture Center is a jewel. OMA and REX designed an adventurous theater. And there's a flamboyant but functional opera house by Foster and Partners.

The new museum, largely funded by the Ross Perot family, is a triumph of bold architecture and enlightened philanthropy. Both elements are lacking in a city like Los Angeles, for example, where the County Museum of Natural History has done a good job of restoring its Beaux Arts legacy, but has failed to realize the bold addition it commissioned from Steven Holl.

MICHAEL WEBB

POWER TO THE PARKLET continued from front page work experience through conservation and service projects).

"We're definitely learning lessons for the future," said Valerie Watson, assistant pedestrian coordinator at the Los Angeles DOT. "We're finding out how to interface with the community and how to move forward with back-of-house regulations."

Watson said she hopes the pilot program will turn into an official city program by the end of the year, after which "you'll see a crop of parklets coming to the city."

The city's three other pilot parklets opened shortly after the first. Two colorful parklets, created pro bono by designers Berry and Linné, architects/developers utopiad.org, and builders Hensel Phelps, opened this month on Spring Street in downtown Los Angeles. Watson worked on these parks as part of the Downtown Los Angeles Neighborhood Council, which coordinated the projects. She said they can easily be copied because they use inexpensive, off-the-shelf materials like wood, perforated metal, and stone pavers.

Another new parklet, a much larger iteration designed by Shared Spaces, was at press time set to open on February 16 in El Sereno, another neighborhood in East Los Angeles.

This first round of parklets took more than two years to realize, not because of the complexity of their designs, but because of the significant community outreach and input involved and the development of an entirely new approval process, which is now coming into shape. Future parklets should take less time to complete, said Tricia Roberts, deputy planning director for Los Angeles councilman Huizar.

Parklets have been popular elsewhere, in cities like New York, Boston, and San Francisco, which has more than 25 of them. But LA's parklets, said Shared Spaces principal Steve Rasmussen, will be open to the entire public, not just the customers of the businesses which they front, a scenario that often happens in San Francisco.

LA's pilot parklet program is part of a bigger initiative for streetside improvements in the city, namely the Streets for People program, which includes separated cycle lanes, increased street plantings, wider sidewalks, curb extensions, bicycle parking, and midblock crossings. **SL**

THE STREET STAYS IN THE PICTURE continued from front page with abundant surface parking lots and alleys, comprises the city's busiest collection of off-studio filming locations. In 2012 alone, on-site film industry shoots downtown totaled 8,394 production days, according to Film L.A., a nonprofit created by the city and county to balance the business of filming with its impacts on neighborhoods.

One downtown neighborhood in particular, known as the Historic Core, a boomtown for the new residential population, is an especially popular filming location. The film industry uses the neighborhood as a proxy for any older city in the United States, such as New York or Chicago. "It's the only place in Los Angeles that doubles for them," said Paul Audley, president and CEO of Film L.A.

In November 2011, however, an unexpected conflict arose when the city unveiled a buffered bike lane painted bright green and running along Spring Street between Cesar Chavez Avenue and 9th Street, the heart of the Historic Core. Just weeks after the lane opened, Film L.A. announced that the green color was adversely impacting film shoots. According to Audley, the bike lane "killed filming for three weeks," as crews scrambled to find a way to cover up the incongruous green streak.

The bike lane is only one example of street level decisions that can ruin the illusion the film industry desires. For instance, palm trees, ubiquitous in Los Angeles but not elsewhere, take certain locations out of play. Audley cited the headquarters of the Los Angeles Police Department as a building that would attract the gaze of a lot more cameras if not for its landscaping.

With two new parklets opening on Spring Street in January, to be followed shortly by the Bike Nation bike-sharing system, plus a downtown streetcar project backed by a voter-approved tax increase, Film L.A. has plenty of work on the horizon to make sure that the neighborhood continues to play the role of back lot for Hollywood. Since the Spring Street bike lane controversy, Film L.A. has worked closely with the mayor's office, the city council, and other city departments to improve the siting of such urban initiatives. According to Audley, Film L.A. will not oppose any of the projects, "because they are important to the future of downtown, to keep it vibrant and alive." He acknowledged, though, that more work is required "to consider the needs of this critical industry as these projects go forward."

To Daveed Kapoor, a downtown resident, registered architect, and one of the designers of the Spring Street parklet, the proximity of these new facilities to the work of the film industry has multiple benefits. "We're going to export images of a new type of city," said Kapoor, adding that the parklets and the bike lane will slow traffic on the street, making it a safer place for film crews to work.

Rick Coca, spokesperson for Council member José Huizar, who represents the area, stressed that the film industry will have to adjust to the new reality of downtown: "You have 50,000 people living there, as opposed to 10,000 people living there ten years ago…500,000 people work there."

Clearly, the ghost town quality that made downtown such an attractive back lot for the film industry—like the era of the early 20th century that built the neighborhood—is a thing of the past. **JAMES BRASUELL**

COURTESY NEXT CENTURY ASSOCIATES

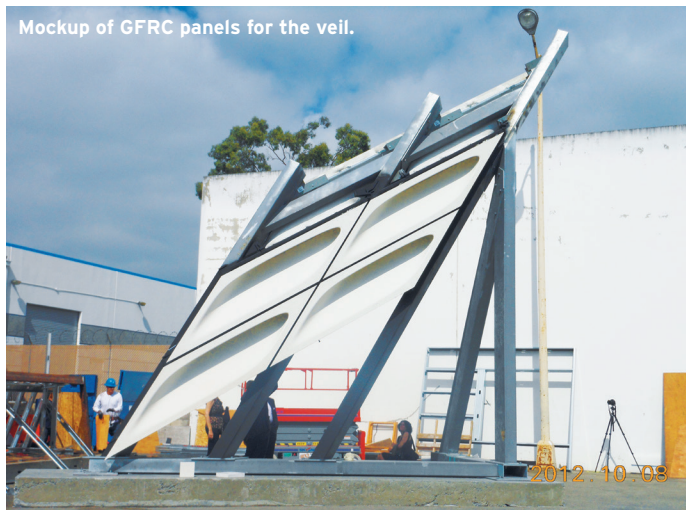
Century City's Minoru Yamasaki-designed Hyatt will be preserved and augmented by two new Pei Cobb Freed towers.

LA APPROVES REDEVELOPMENT OF MINORU YAMASAKI-DESIGNED HYATT

A NEW CENTURY

On January 15, after years of ups and downs, the Los Angeles City Council approved the $2 billion, 1.5 million-square-foot redevelopment of the Century Plaza Hotel. In 2009 developer Next Century Associates proposed to tear down Minoru Yamasaki's curving midcentury Hyatt Regency Century Plaza Hotel to make way for a major redevelopment of the site. A parade of preservationists, including the LA Conservancy and Diane Keaton, stood in their way. The outcome of that standoff is a compromise in which the hotel will be preserved by Marmol Radziner and surrounded by two three-sided, 46-story residential towers designed by Pei Cobb Freed. The project will also feature a 100,000-square-foot retail plaza and more than two acres of public open space designed by Rios Clementi Hale. The executive architect is Gensler.

The City Council certified the scheme's Environmental Impact Report and approved a 15-year development agreement. **SL**



Mockup of GFRC panels for the veil.

COURTESY WILLIS PRECAST


The cantilevered section will contain offices.

COURTESY MATT CONSTRUCTION

The Broad, philanthropists Eli and Edythe Broad's contemporary art museum rising on Grand Avenue downtown, is the most significant new architectural project in Los Angeles. The three-story, 120,000-square-foot building, designed by Diller Scofidio+ Renfro (Gensler is the Executive Architect), topped out on January 8, and by next year will be home to the Broads' collection of more than two thousand contemporary artworks.

Project Manager Greg Wade, who works for the museum's general contractor, MATT Construction, recently walked me through the site.

Perhaps the project's most important element is a 65-foot-long, 1.5 foot-wide, 2-inch thick, V-shaped member of built-up structural steel plate that resembles the hull of a Viking ship. It's called the "touchdown beam," and, once installed, will bear the load of the entire "veil." The veil encompasses the steel and GFRC (Glass Fiber Reinforced Concrete) lattice that will front the museum.

At the time of this writing, the beam sat a few feet from the building, awaiting relocation to the Grand Avenue side. The 83,000-pound beam, shipped in one piece from Germany, will be set in place with a 500-ton hydrocrane.

When DS+R first conceived of the veil—originally designed to be precast concrete—it was meant to support the weight of the museum's roof. That plan was scrapped, however, because the cost and complexity of supporting that much weight with no structural steel would have been too high, said Wade. The touchdown beam would also have had to be so large that it would block much of the sidewalk. Instead, the beam will now fit handily below grade so the veil will appear to emerge from the concrete.

The veil, which soon will be covered with hundreds of molded GFRC panels, has been the object of close coordination between the architects and the builders. The architects have been working in the 3-D design software CATIA, which has been translated into Revit and Autocad 3D for the builders. Sometimes the shape hasn't matched what the architects wanted, so it's been changed, said Wade. Other times the shape hasn't matched what the builders needed, so it's been changed again. This back and forth, the project manager claimed, has constituted the most interaction he's ever had with an architect.

The second floor of the building cantilevers 60 feet from the building's core toward Grand Avenue. In the center of this floor will be the vault, which will contain the artworks not on display in the galleries. To install this cantilever, the builders teamed with geotechnical and mining specialists DYWIDAG Systems International, creating a post-tensioned structure more akin to a bridge than a building. The slab was raised via a gigantic hydraulic jack, employing about 300,000 pounds of force. It measures six feet thick near the building and just two feet thick at its end.

The top floor will contain the bulk of the museum's exhibition space. A diagrid steel matrix frames the roof. It will soon be given a curvy GFRG (Glass Fiber Reinforced Gypsum) cladding, resembling the veil, and will be inset with 399 glass skylights, all angled to face north, to create a glowing, rhythmic effect.

MATT Construction made mock-ups of many of the building's systems before beginning construction. A dozen were required by contract, but the firm made almost 100 to determine various components' constructability. "Until you start to build, you really don't know what will work," said Wade. **SL**

annual

floor sample sale

up to 70% off

march 2-10
mon-fri 9:30am - 6:00pm
sat & sun 11:00am - 6:00pm

ddc

New York
212.685.0800
136 Madison Ave @ 31st
181 Madison Ave @ 34th

Los Angeles
310.273.5050
8806 Beverly Blvd @ Robertson

www.ddcnyc.com

MATTERS OF SUBSTANCE

Bill Millard plumbs the field of materials science in search of the next transformative technology

If, as Louis Kahn said, a brick wants to be part of an arch, what does a biopolymer molecule, a block of aerogel, or a slab of metallic foam want to be? The empirical basis for inferring bricks' intentions is well established, comprising building traditions that have evolved over millennia. For newer materials, the chance of moving from laboratories to construction sites can be a crapshoot. The successful ones not only capture markets but transform behavior.

The most promising approaches, materials specialists agree, emphasize integration rather than isolation. "We don't just create materials or products; we create information systems," says architect/author Blaine Brownell, who co-directs the MS in Sustainable Design program at the University of Minnesota and whose most recent book, *Material Strategies: Innovative Applications in Architecture* (Princeton Architectural Press, 2012), links innovations in minerals, concrete, wood, metal, glass, and plastics to prominent case studies. Using the term *hypermaterial* to denote the convergence of materials and information processing, Brownell looks to the management of light, energy, and data as the leading edge of materials research.

Jason O. Vollen, associate director of the Center for Architecture Science and Ecology (CASE), a joint project of Rensselaer Polytechnic Institute and SOM, heralds "a fundamental paradigm shift from moving energy mechanically, which is how we do it now, to moving energy materially." Instead of multiple layers of a structure performing different functions, Vollen says, as in Mike Davies' concept of the polyvalent wall, "We think one layer should do multiple things; we think a potential solution is the multivalent material. That's not so far off; it's speculative fiction rather than science fiction." Citing the "holy grail" of Lawrence Berkeley National Laboratory's Stephen Selkowitz—a material optimizing both daylight and insulation—Vollen says "what exists now won't do that, but what exists around the corner might." Nanotechnology, where categories blend and "metals can become more like glasses, glasses become more like ceramics," he continues, is yielding unprecedented control over properties such as heat flow and daylight transmittance. With high-performance ceramics in particular offering properties that answer climate-change-driven imperatives, he is convinced, "the industry is poised for a revolution."

Materials research is often a matter of systematic biomimicry, invoking a parallel understanding of natural processes occurring over time on multiple scales, from the nanoscale to the visible to the ecosystemic. "It's not about translating shape, or a static image of a biological behavior," says Jenny E. Sabin, assistant professor of architecture at Cornell and a founding member of Cecil Balmond's Nonlinear Systems Organization. As the architectural member of the National Science Foundation-sponsored ESkin interdisciplinary team, which also includes a materials scientist, a cell biologist, and a systems engineer, Sabin investigates homologies in materials, geometries, and forms. She describes her challenge as "thinking about how those properties could work across scales" and replicating them in "highly engineered, sustainable materials that have very sophisticated responses to environmental cues."

Generative models based on cellular activity inform her "Branching Morphogenesis" installation at Linz, Austria's 2009 Ars Electronica (comprising 75,000 cable zip ties in tension, organized according to microscale cellular forces) and her all-knitted myThread Pavilion for Nike's Flyknit Collective, produced with New Jersey-based fabricator Shima Seiki USA. "It's not just that we can produce complex organic form," she continues, but that designers can "directly interact with manufacturing technologies...Working with soft textile-based materials at a large scale is only possible through really cutting-edge fabrication technologies." Strategies that arise from these investigations include "embedding a more nonlinear lifespan" into a material, so that products pass usefully through multiple life cycles; porosity, allowing lightness

Jenny Sabin's myThread Pavilion for Nike's FlyKnit Collective explores biodynamic models and data sets to illiuminate new ways of thinking about material structures.

COURTESY JENNY SABIN

and transmissibility as well as strength; geometries that repel or absorb water, a high priority in materials that must endure sea-level rise; and self-organizing properties on nano-to-macro scales.

The technological transition suggested by business consultant David Morris, vice president of the Institute for Local Self-Reliance—replacing the hydrocarbon-based economy, with all its externalities, costly extractive processes, and resource-availability constraints, with an older, cleaner system, "the once and future carbohydrate economy"—calls for more use of lifelike materials, Brownell suggests: those derived from agriculture and those deriving knowledge from living systems. A brick may want to be thick, but contemporary materials want to be smart.

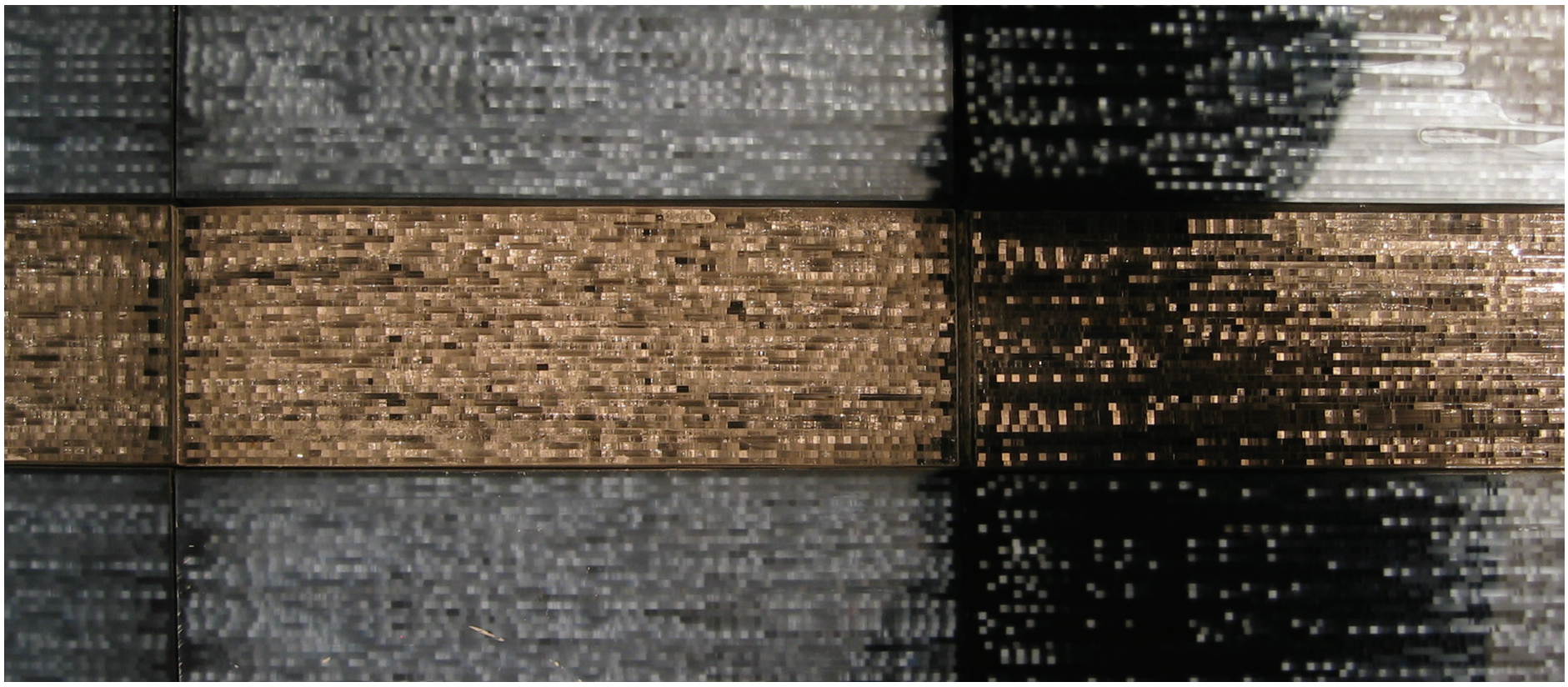
Resource maximizers, beginning with light

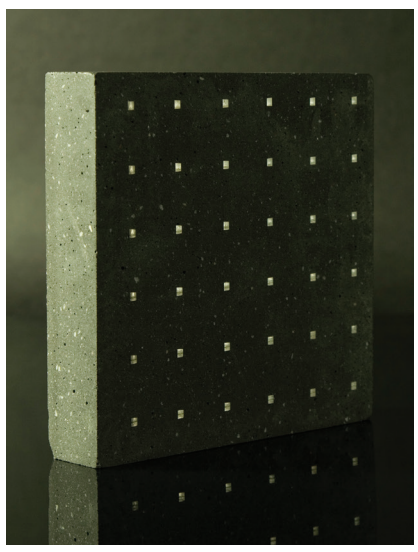
Andrew H. Dent, PhD, vice president of library and materials research at Material ConneXion, sees two broad questions driving research in the field: what does Earth have in abundance, and what are we running out of? To the extent that materials and processes based on ample, readily available resources (from sunlight to silicon) replace those with sources in short supply (petroleum, gold, copper, clean air, and water), materials research represents a critical adaptation to emergent conditions.

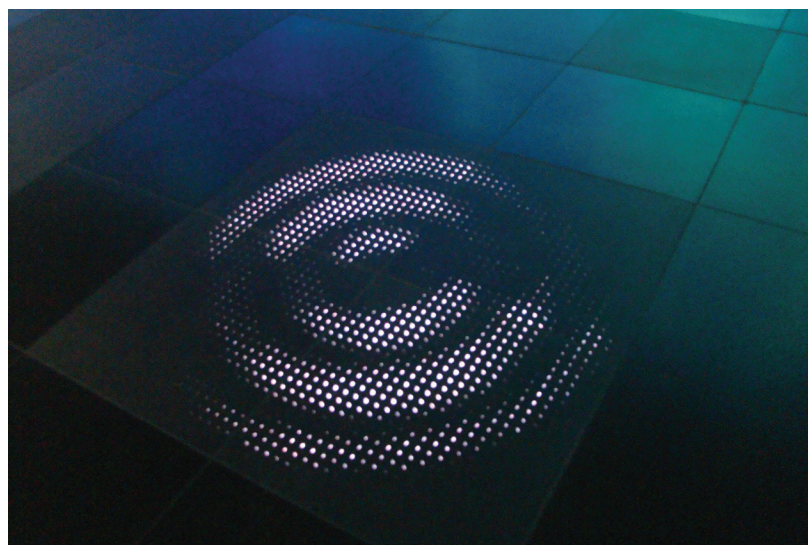
Much of this work is economic optimization rather than new discovery, Dent adds. Methods of developing biopolymers from a wide range of plants harvested in different regions and conditions (corn, castor, switch grass, sugar cane, potatoes, and others) are already known. "The issue is how to beat out oil," he says, which "even at a high price is still significantly cheaper." Tradeoffs of this sort are inevitable. A material may be lightweight enough that its production and transport save energy and yield an admirable overall ecological footprint, but its components pose toxicity concerns, as with ethylene tetrafluoroethylene (ETFE, the transparent insulating "pillow" material seen in the 2008 Olympic Water Cube and other buildings worldwide). Biopolymers for construction, consumer products, or fuel, likewise involve edible crops and thus compete with food production. "Back in 2006 and early '07," Brownell recalls, "when there was so much excitement about biofuels and ethanol...states like Iowa were promising all kinds of fuel-making capacity without taking a hard look at how a lot of this corn that we make goes to developing countries in order to feed the world." Vollen frames this starkly as "a political and regulatory issue: 'if we replace oil with corn, what do we eat?'"

In this regard, viewing solar energy as the ultimate free resource, Brownell is particularly enthusiastic about products that harvest and manipulate light, such as Sensitile's light-piping panels, embedding optical channels in concrete and resin substrates, or a recent breakthrough at Duke University's Pratt School of Engineering, scattering silver nanocubes on a gold film to "help the substrate absorb virtually all the light...so incredibly efficiently that nothing leaves the surface" and improving the efficiency of sensors. Another promising use of multiwall carbon nanotubes, he says, is field-induced polymer electroluminescent (FIPEL) technology, which generates a warm, nonflickering wavelength resembling sunlight—"that spectrum that clearly influences human behavior and productivity in workplaces and learning places." These flat lighting panels offer a distinct improvement over harsh compact fluorescents and heat-inefficient incandescents, with efficiency approaching that of LEDs. Developed at Wake Forest University and licensed for commercial development to CeeLite Technologies, the panels can be integrated with flexible substrates and incorporated into windows or even textiles.

Brownell also cites the engineer/designer Akira Wakita's work with "conductive threads to make thermochromic and photochromic textiles that can act as computer monitors." The importance of lighting in the developing world, he emphasizes, makes it a promising field for leapfrogging technologies that address "the good but tough 99 percent question" about new materials' relevance to global

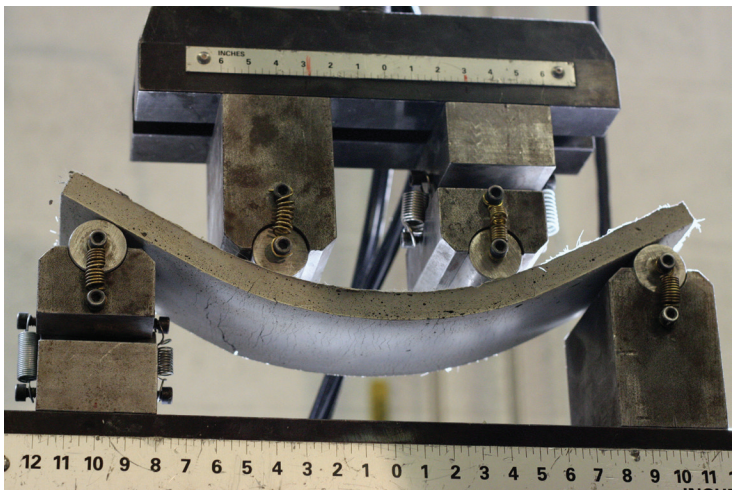






COURTESY SENSITILE

Sensitile's light-piping panels harvest and manipulate light through optical channels embedded in concrete and resin substrates.



COURTESY UNIVERSITY OF MICHIGAN

COURTESY CYMAT

COURTESY LEFARGE

Top: Victor Li at the University of Michigan has been experimenting with fiber-reinforced bendable concrete. **Middle:** Alusion, an aluminum foam that's 80 percent air, was derived from Cymat, a material used as glass shielding on military vehicles. **Bottom:** Lafarge's Ductal is a high performance concrete reinforced by organic, reinforced metallic fibers that increases the material's compression resistance, ductility, and longevity.

populations, as well as a generally fertile field for disruptive technologies. "I'm still marveling at how LEDs have transformed the whole lighting field," Brownell says. "It wasn't that long ago [that] it was kind of hard to find an LED."

Concrete, the most widely used construction material on Earth, is ripe for innovation. Its Portland cement component accounts for an estimated 5 percent of the global carbon footprint; by weight, concrete is environmentally friendlier than metals or polymers, Brownell says, but its sheer prevalence means that improving its performance has considerable ecological effects. Strategies include reducing cement volume with additives like blast furnace slag or rice husk ash (practiced by the Canadian firm EcoSmart). Then there is Calera's carbonate mineralization by aqueous precipitation, which diverts preheated flue gas into seawater, combines energy production, cement manufacture, and carbon sequestration, and enhances CO absorption by using magnesium silicate, iron carbonate, or other alternative components. This process is done by TecEco in Tasmania, Novacem in London, and CarbonCure in Nova Scotia. ("Concrete strikes me as something like *molé*," Brownell comments: "Every family has their own recipe.")

Tensile strength is a concern with any concrete; among various high-performance crack-resistant concretes that use silica fume, superplasticizers, ground quartz, or mineral fibers, Victor Li's work at the University of Michigan with fiber-reinforced, bendable concrete stretches the category's definition altogether. Lafarge's Ductal is another high-performance concrete that bridges the border between concretes and composites. A novel self-repair strategy developed at Newcastle University, BacillaFilla, programs a *Bacillus subtilis* strain to create calcium carbonate and a "microbial glue" when it is injected into cracks; it then cures to the same strength as the surrounding material (finally stopping, thanks to a genetic "kill switch" that keeps the bugs from surviving once they detect a surface; this feature relieves hypothetical sci-fi concerns about an uncontrollable Bill Joy-style gray goo).

The prospect that concrete could move from carbon-positive to carbon-negative strikes many commentators as an achievable goal—provided the newer variants gain market share, despite contractors' comfort level with current recipes. "What we need," suggests Dent, "are some high-profile architects to use some of [the new] material and show its advantages by being part of a high-profile, near-carbon-zero building."

Material moneyball

Untested novelties face market resistance, particularly in areas where suboptimal technologies are entrenched, easily available, and (as Vollen points out) insurable. The factors that add up to successful technology transfer are far from systematic; for some materials, decades passed between their invention and commercialization. Dent hails Gorilla Glass, the ultra-strong, scratch-resistant surface that allows durability and interactivity in smartphones, as a transformative material that could also be useful in architecture. Yet when Corning developed the similar Chemcor glass in the early 1960s, it mothballed the product after about a decade, only to revive the idea on request from Apple in the mid-2000s. Serendipity and a suitable niche among related technologies appear essential for promising ideas to migrate from laboratory R&D to the Sweets catalog or the shelves of Home Depot.

One of nature's recurrent strategies for economizing on material bulk—porous forms—characterizes several materials whose properties have drawn attention. Metallic foams, often aluminum or zinc, combine strength with lightness and thermal resistance; one such product, an aluminum foam marketed by the Canadian firm Cymat as SmartShield, was originally developed as a blast barrier on the undersides of military vehicles that encounter roadside bombs. "An individual at Cymat who had an architectural background recognized that, in addition to having the extreme technical properties, the material was aesthetically interesting," reports Kelly Thomas, spokesperson for its distributor, Stone Source. Slightly altered in cell structure and slab thickness, rebranded as Alusion, the foam (80 percent air by volume) is now available to serve as walls, partitions, decorative fixtures, acoustic drop ceilings, or exterior cladding. Currently a specialty material, Alusion could conceivably gain increased prominence after the opening of the 9/11 Museum, where it will appear on the undersides of the twin fountains.

A class of even more ethereal materials, aerogels, has existed since the 1930s: they are exceptionally light (often called "frozen smoke") and highly rated as thermal insulators. Brittleness limits their practical uses, though one aerogel, Kalwall+ Lumira, has found use as a translucent wall and skylight material. Recent work at NASA's Glenn Research Center (GRC) in Cleveland, however, has generated polymer-based aerogels robust enough to resist crumbling and flexible enough for use in building insulation, clothing, autos, and elsewhere. About 500 times as strong as silica aerogels, with R values up to ten times those of polymer-foam insulation, NASA's polyimide aerogel has attracted about 70 commercial inquiries since last August, reports GRC technology transfer specialist Amy B. Hiltabidel, with five possible U.S. manufacturers currently negotiating to license it.

It is too early to tell whether initial costs will drop enough for this material to catch on commercially, but Hiltabidel reports that on the GRC's Technology Readiness Level scale, where a basic-research project rates a 1 and a 10 is already on the space shuttle, polyimide aerogel, "one of the first materials that has attracted such a varied interest" outside the aerospace/defense sector, is currently about a 6. "Because it's more developed" than the average, she says, "it will have a faster time to market, and I would say well within five years, probably closer to two to three."

Conceivably, either of these materials could become what every product wants to be: a market-maker that changes people's expectations. Or both could end up in narrow niches. With any new technology, Vollen suggests, "what you probably want is not to bet on one horse; what you probably want to do, which is what nature has done, is bet on many horses. Within the larger ecosystem of material ecology and construction ecology, there will always be a place for new things to survive, and the longer each one of these things survives, the more fit it is, and the more it's going to solve the problem, long-term."

He analogizes commercial ecosystems to earthly ones: "In the ecological model, you think about what fills the void when something leaves: there's always a gap... We think they'll all find a place in the ecosystem, and we should encourage them. What's really critical, I think now, is to encourage the process by which we use each building as an experiment, as a demonstration site, and see which one is going to be the model of fitness in the future."

BILL MILLARD IS A NEW YORK CITY BASED WRITER AND A FREQUENT CONTRIBUTOR TO *AN*.

FEBRUARY/MARCH 2013

FEBRUARY

WEDNESDAY 20
LECTURE
Ben Van Berkel: Architecture and its Future
7:00 p.m.
SCI-Arc
W.M. Keck Lecture Hall
960 East Third St.
Los Angeles
sciarc.edu

Julia Dault
7:00 p.m.
Portland State University
Shattuck Hall Annex
1914 SW Park Ave.
Portland, OR
pica.org

FILM
The Bicycle Thief
3:10 p.m.
Pacific Film Archive Theater
Berkeley Art Museum and
Pacific Film Archive
2575 Bancroft Way
Berkeley, CA
bampfa.berkeley.edu

THURSDAY 21
EVENT
Measuring Walkability
12:30 p.m.
San Jose State University
College of Engineering
1 Washington Sq.
San Jose, CA
spur.org

LECTURE
San Francisco Neighborhoods: Then and Now
7:30–9:00 a.m.
WeWork SOMA
156 Second St.
San Francisco
aiasf.org

Thom Mayne and Neil M. Denari on Lebbeus Wooods
7:00 p.m.
SFMoMA
151 Third St.
San Francisco
sfmoma.org

EVENT
Experience Midcentury Modern
7:00 p.m.
Lautner: Sheats Goldstein Residence
10104 Angelo View Dr.
Los Angeles
aplusd.org

FRIDAY 22
EVENT
Compostmodern 2013: Resilience
9:00 a.m.
Palace of Fine Arts
3301 Lyon St.
San Francisco
compostmodern.org

EVENT
2013 Benefit Art Auction
5:30 p.m.
Vestas
1417 NW Everett
Portland, OR
mocc.pnca.edu

FILM
On the Waterfront
7:30 p.m.
LACMA
5905 Wilshire Blvd.
Los Angeles
lacma.org

SATURDAY 23
LECTURE
Food, Art and Community: Creative Community Engagement with the Environment
2:30 p.m.
Inner City Arts
720 Kohler St., Los Angeles
aialosangeles.org

LECTURE
Leisure, Commerce, and Tragedy in the Villa of Oplontis near Pompeii
2:00 p.m.
The Getty Villa
17985 Pacific Coast Highway
Malibu, CA
getty.edu

EVENT
Introduction to Design Thinking
10:00 a.m.
Frye Art Museum
725 Ninth Ave.
Seattle, WA
fryeartmuseum.org

SYMPOSIUM
Design of Self
9:00 a.m.
UCLA
Royce 314
405 Hilgard Ave., Los Angeles
aud.ucla.edu

MONDAY 25
FILM
Altered States
8:30 p.m.
Roy and Edna Disney/CalArts Theater
Walt Disney Concert Hall
631 West Second St.
Los Angeles
redcat.org

TUESDAY 26
EVENT
Llyn Foulkes and the Machine
7:30 p.m.
Hammer Museum
10899 Wilshire Blvd.
Los Angeles
hammer.ucla.edu

LECTURE
Pamela Burton
6:30 p.m.
UCLA
Perloff Hall, Decafe
405 Hilgard Ave., Los Angeles
aud.ucla.edu

FRIDAY 27
LECTURE
The Power of Politicized Street Art
12:30 p.m.
SPUR Urban Center
654 Mission St.
San Francisco
spur.org

EVENT
WHO Sculpture Unveiling
6:30 p.m.
Mint Plaza
Mint St. and Jessie St.
San Francisco
theintersection.org

SATURDAY 28
TOUR
A Walk Through Grand Reductions
12:30 p.m.
SPUR Urban Center
654 Mission St.
San Francisco
spur.org

MARCH

FRIDAY 1
EXHIBITION OPENING
Spectacle ½A Group Exhibition
5:00 p.m.
111 Minna Gallery
111 Minna St.
San Francisco
111minnagallery.com

SATURDAY 2
EVENT
Stand Out from the Crowd II (Portfolio Review)
1:00 p.m.
Killefer Flammang Architects
1625 Olympic Blvd.
Santa Monica, CA
awa-la.org

THURSDAY 7
EXHIBITION OPENING
Object Focus: The Bowl, Part 1
11:00 a.m.
Museum of Contemporary Craft
724 NW Davis St.
Portland, OR
mocc.pnca.edu

20/2
11:00 a.m.
Pacific Northwest College of Art
Main Campus
1241 NW Johnson St.
Portland, OR
cal.pnca.edu

MONDAY 4
LECTURE
Niall McLaughlin
6:30 p.m.
UCLA
Perloff Hall, Decafe
405 Hilgard Ave.
Los Angeles
aud.ucla.edu

FRIDAY 8
EVENT
David Freeland: Organized Resilience
1:00 p.m.
SCI-Arc
960 East 3rd St.
Los Angeles
sciarc.edu

SATURDAY 9
EXHIBITION OPENING
New Work: Trisha Donnelly
SFMoMA
151 Third St.
San Francisco
sfmoma.org

EXHIBITION OPENING
Garry Winogrand
SFMoMA
151 Third St.
San Francisco
sfmoma.org

SUNDAY 10
EXHIBITION OPENING
From Portland to Rome and Back Again: Carrie Mae Weems' World View
2:00 p.m.
Portland Art Museum
1219 SW Park Ave.
Portland, OR
portlandartmuseum.org

WEDNESDAY 13
LECTURE
Keller Easterling: Extrastatecraft
7:00 p.m.
SCI-Arc
W.M. Keck Lecture Hall
960 East Third St.
Los Angeles
sciarc.edu

FILM
Vertigo
3:10 p.m.
Pacific Film Archive Theater
Berkeley Art Museum and
Pacific Film Archive
2575 Bancroft Way
Berkeley, CA
bampfa.berkeley.edu

THURSDAY 14
SYMPOSIUM
Pacific Standard Time Presents: Modern Architecture in L.A.: A Confederacy of Heretics Symposium
SCI-Arc
W.M. Keck Lecture Hall
960 East Third St.
Los Angeles
sciarc.edu

LECTURE
From Cultural to Physical: Toward an Infrastructural Contextualism
5:00 p.m.
Diablo Valley College
321 Golf Club Rd.
Pleasant Hill, CA
aiasf.org

FILM
Los Angeles Film Forum At MOCA
7:00 p.m.
MOCA
250 South Grand Ave.
Los Angeles
moca.org

THURSDAY 21
EVENT
ACSA 101: New Constellations/ New Ecologies
California College of the Arts
1111 Eighth St.
San Francisco
acsa-arch.org

SATURDAY 23
LECTURE
Gregg Pasquarelli, SHoP Architects
7:00 p.m.
California College of the Arts
1111 Eighth St.
San Francisco
aiasf.org

MONDAY 25
EXHIBITION OPENING
Traveling Fellows Exhibit
10:00 a.m.
USC School of Architecture
Watt Hall
Los Angeles
arch.usc.edu

TUESDAY 26
EXHIBITION OPENING
Japan's Modern Divide: The Photographs of Hiroshi Hamaya and Kansuke Yamamoto
10:00 a.m.
The Getty Center Los Angeles
1200 Getty Dr.
Los Angeles
getty.edu

TRAVIS SOMERVILLE

TRAVIS SOMERVILLE: A GREAT CLOUD OF WITNESSES
Catherine Clark Gallery
150 Minna Street, San Francisco
March 2–April 13

In his solo exhibition at Catherine Clark Gallery, Travis Somerville presents a mixed-media exhibition, layering past and present. He continues his work investigating historical memory and questioning how particular fragmented stories are simplified into collective truths. Specifically, Somerville uses imagery from the Civil Rights movement to explore the status of human rights in our contemporary society. By presenting current stories of immigration, Uzbekistan's child labor, and the uprisings of the Arab Spring against collages, images, and objects from the Civil Rights movement, Somerville explores our "post racial" culture. One installation presents a line of reproduced racially designated water fountains mounted to a gallery wall.


STEPHEN TALASNIK

STEPHEN TALASNIK
Davidson Galleries
313 Occidental Avenue South, Seattle, WA
Through March 2

Stephen Talasnik's intricate graphite and ink drawings are influenced by an early enduring interest in architecture and engineering, specifically by the design of aviation, visible bridge infrastructure, and the architecture of amusements. His work also borrows from the great and fantastic designs he saw at New York's 1964 World's Fair, from NASA's Space Program, and from his later studies under black and white photographer Aaron Siskind. Travels to the Far East in the mid 1980s exposed Talasnik to hand built bamboo and reed structures. In Japan he documented modern architecture and product design. In the early 2000s, he pursued work in sculpture propelled by his interest in engineering and motivated by early 20th century avant-garde Russian stage sets.

The Model S comes in four battery options, claiming ranges between 160 and 300 miles.

COURTESY TESLA

TESLA'S TRANCE

Tesla Model S four-door sedan:
Base price $52,400
www.teslamotors.com

It hit me on Sunset Boulevard. I was inching past Chateau Marmont in a traffic gulag of indeterminate length, watching my reserves dwindle and my coolant nearly boil when someone, some *thing* coughed. Politely. A well-bred cough that repeated each time we lurched forward. My window was down, and beside me was the bleached flank of a long white BMW. An immaculate bimmer. And it was coughing! There! It did it again!

I realized that the cough came from one of those exotic high tech engine re-start gizmos that help save the planet, a teaspoon of petrol at a time. I counted—yep, that's getting on to maybe a quarter of a cup. And I thought of the hundreds of bits of metal rubbing around inside the admirably complex engine, and the transistors and capacitors and circuit boards and levers and knobs and belts and fans that were ever so admirably acting in concert to produce that admittedly polite little cough, and I thought, "That's it." That's the sound of the post-machine age. It's the sound of Zeno warming up his paradoxes. It's the death rattle of the contraption.

Because, with the arrival of the Tesla, the 100-year reign of the internal combustion engine finally has a worthy challenger: one capable of dethroning the old guzzler and beginning a new era. Not simply the vehicle, but the entire infrastructure. It's all-electric, no compromises. The design upends traditional automotive principles yet holds on to, even expands, the mystique of driving.

Tesla's visionary leader, Elon Musk, is not a traditional car guy. Not a guy one could picture with a wrench in one hand, a nut in his mouth, and the other hand probing the lower extremities of an oil sump. He's not that kind of guy. But, hey! Even car guys aren't really car guys any longer. Real car guys actually enjoy balancing old Dell'Ortos, or tracking down a suspicious leak. They're made for it! If it weren't for all the clattering chaos of valve trains they might reckon they'd not gotten their money's worth. Musk's ideas, on the other hand, seem to have materialized out of a cloud. The car (I drove the Model S four-door sedan) is so nimble, so responsive, so telepathic, that it sometimes seems guided by thought alone.

So what is it that makes the Tesla so different? For starters, look in the scrap heap. No muffler. No carburetor(s). No intake. No gearbox. Throw away the differential, the drive shaft, the ignition coil, the starter motor. And while you're at it, deep-six the valves, the cams, the crank, and the pistons. Oh, and don't forget the gasoline tank, the oil pan, and the filters and fillers. Plus the radiator (always liked them—beautiful!) and the hoses and clamps. Now, what have you got left? Four wheels and a clean sheet of paper.

Add a DC electric motor and a battery and you have what Nicolai Tesla (the original!) had envisioned in the early 20th century, when the battle between the internal combustion engine and the electric motor first began. The **continued on page 13**

Dune, designed by Magnus Larsson, would use bacteria to slow the spread of the desert.

COURTESY MAGNUS LARSSON STUDIO

DESIGN WITH NATURE?

Bio Design: Nature + Science + Creativity
William Myers
The Museum of Modern Art, $50

MAYNARD L. PARKER

Would you wear a jacket grown from bacteria? Get a tattoo digitally printed on your skin using stem cell technology? How about sip from a plastic cup made possible by the electrochemical wonders of human waste? This futuristic, faintly unsettling collision of biology and design is the subject of William Myers' *Bio Design: Nature + Science + Creativity*, a lush, 288-page tome that works as both high-minded eye candy and environmental battle cry. If *Bio Design* has a fault, though, it's that the book is all too sanguine about the prospects of a marriage between biology and design, and about the latter's ability to tame the former to suit its needs.

Myers is a New York-based freelance writer (and contributor to this newspaper). His premise in *Bio Design* is that designers and architects have drawn inspiration from biology since the days of Lalique and Mucha. Only recently, though, have advances in biotechnology—advances that the late Steve Jobs called "the biggest innovations of the twenty-first century," as the back of the book helpfully notes—given designers the tools to fold real live organisms into their work. It is now theoretically possible to cross trees with glow-in-the-dark jellyfish genes, creating organic street lamps. It's possible to use sand and bacteria to grow a Great Wall-style bulwark against the spread of the Sahara desert, and to transform E. coli into the digital data stores of tomorrow. It's even possible to whip up a mood-enhancing mousse from a diner's own blood.

These sorts of things aren't just the lofty ideas of a few designers-turned-mad scientists. In Myers' telling, they're key to righting centuries of environmental wrongs. "The 20th century did not demand as dramatic a transformation as that which the 21st century appears to require," he writes. "Building with bacteria and other organisms is simultaneously becoming a technological possibility and a *necessity*."

As evidence, he compiles an impressive kaleidoscope of projects, each lusciously—almost pornographically—illustrated. Many of these images will be familiar to readers who feast regularly on design blogs, but that doesn't detract from the power of seeing them all in one place, a vibrant petri dish of our bio-connected future.

Myers is a deft, often-thoughtful guide. He has an unobtrusive writing style that eschews the "gee whiz!" response that bleeding-edge design typically inspires. He also acknowledges that biodesign faces significant economic and political hurdles and must be accompanied by new regulations and financial incentives to reach its potential. But there's a question he does not address, except in passing: Is biodesign *good* design?

If it's as urgent as Myers suggests, it damn well better be. Maybe it's too soon to say. A lot of the featured projects are in the conceptual or prototype phase. Others occupy the looser precincts of art and thus don't hew to the usual design standards. But I would've liked some consideration of the projects' individual merits beyond the boilerplate I can find on Designboom. Are they functional? Affordable? Lasting? The earth-saving credentials of biodesign won't matter a jot if it doesn't meet these, and other, criteria.

Take the Baubotanik Tower, a 29-foot-tall green building that architects at the University of Stuttgart engineered out of living trees. But the plants require a (not very green) steel-tube scaffold to grow. And it will be five to 10 years before the design is, in Myers' words, "fully functional." I have no idea whether that means it will be habitable or merely stable enough to not collapse. The project is an intriguing demonstration of our potential to integrate the natural world into the built environment. But is it the future?

Myers in general seems complacent about the uncertainties of biodesign, as if they were somehow external to the endeavor of imbuing the lifeless with life. He insists that the benefits outweigh the "unintended consequences"—a pat conclusion that isn't borne out by even recent attempts at bringing biology to heel.

Recently, *Scientific American* ran an article about a woman in her late 60s who went to the doctor complaining of swelling and an odd clicking sound in her eye. Turns out she had bone fragments growing in her face. She'd forked over $20,000 for an untested cosmetic procedure in which the doctor isolated adult stem cells from her abdominal fat and injected them into her face, with a dermal filler, making the stem cells ossify. You could call the result an anomaly—one of those "unintended consequences" Myers warns about. But you could also say that it was perfectly natural. The history of humans bending biology to their **continued on page 13**

COURTESY TESLA

The electric powertrain is simple with a minimum of parts.

TESLA'S TRANCE continued from page 12
batteries of the time simply weren't up to the challenge, and the gasoline engine won out. It wasn't until cell phones and laptops fanned the development of lightweight, very powerful batteries that carmakers were able to get enough electricity for a long enough time to reliably power an automobile.

Do the math. The controversial "extra cost" of a huge 300-mile-plus battery reserve has been, in essence, bartered for all the superfluous mechanical devices that have been scrapped. And with them go regular maintenance, tune-ups, wear and tear, oily deposits, and topping-up. A quick review would indicate that the current refinement of the internal combustion engine consists primarily of adding gadget after gadget to optimize the performance of multiple subsystems, hoping against hope to advance efficiency by sometimes infinitesimally small increments, often at the cost of diminishing reliability and thereby increasing complexity to unsustainable levels.

The brilliance of the Tesla's design is a stupefying simplicity in which nearly every part plays multiple roles. The battery pack, for instance, is an integral part of a stressed skin structural platform. Those surprisingly compact jumbo coffee cans next to the wheels? They're amped-up motors—350-horse-power total—that can take the performance model Tesla from 0 to 60 in less than five seconds. Add a few cables (big ones), a black box or two, and that's it.

Well…there's the matter of creature comforts. Sublime. Not quite the *Tron* vibe one would expect from an all-electric. Leave that to the new BMW 3i. It's more old streamliner. Moderne. A Norman Bel Geddes sort of fuselage with femme overtones. Sleek flush door handles that pulse out to reluctantly offer something for the hand, but it is not the sort of car for the voluptuary. The thrills it gives aren't the analog sort. But they are thrills, nevertheless.

The silence of a glider. Poise of a top. Effortless vault of a cat. The Tesla seems unflappable even when pressed really hard, coddling your hopelessly animal flesh in a nearly gadget-free, sleek and refined interior with a minimum of hardware. Remarkably, the designers have not lifted a finger to protest the absence of the knobs and buttons that festoon even the most modest auto interior. They have simply, thankfully, let it be.

CRAIG HODGETTS IS A PRINCIPAL AT HODGETTS + FUNG IN CULVER CITY, CALIFORNIA.

MAYNARD L. PARKER

DESIGN WITH NATURE? continued from page 12
whims is a history of unintended consequences. In the 1970s, biologists tried to control a weed out West by importing an enemy insect. But the insect didn't do its job and instead caused an unexpected surge in the population of deer mice, which carry hantavirus, a disease that can kill people.

Clearly, biology is not always well understood. It's wildly unpredictable. And just because something is, or derives from, life, doesn't guarantee that it will protect the environment—or us. One of the most impressive innovations described in the book is a brick made by combining sand, bacteria, and a solution of calcium chloride and urea to create a green alternative to standard kiln-fired bricks. But the process generates ammonia, a toxic byproduct and "a considerable obstacle," as Myers himself admits.

Bio Design offers an excellent introduction to a promising new design discipline. Yet to say, at this early stage, that the field is *necessary* to our future is a judgment that should be viewed with as much skepticism as the notion that you can inject your belly into your eyes and look 20 again.

SUZANNE LABARRE IS THE EDITOR OF *POPULAR SCIENCE* ONLINE.

PROTEST> AIA MUST DO MORE FOR HUMAN RIGHTS

DENVER POST, AP

Supermax prison, Florence, CO (left); Thompson Correctional Center, Thompson, Illinois

In January, AIA San Francisco took a courageous step, endorsing a campaign to urge the overall organization to amend its Code of Ethics and Professional Conduct to prohibit the design of "buildings that violate human rights." Since everyone is in favor of human rights, this decision seemingly would have been an easy one, but in fact the discussion burst out of its allotted time on the board agenda. It was also noteworthy for the intensity of reflection it raised. Meanwhile, the issue is now moving forward in other AIA chapters, knowledge communities, and ultimately the National Board of Directors, who may all consider the same question.

"Wait a second," I hear someone saying: "How is it possible for buildings to violate human rights in the first place?" As the president of Architects/Designers/Planners for Social Responsibility (ADPSR), I got to make that case to AIASF. And the situation was not as simple as it might seem on its face, because there are actually two specific (and rare) building types that violate human rights: execution chambers and supermax prisons.

In the case of execution chambers, it's no secret that the United States is an outlier among the world's developed countries—in fact, among all countries—in continuing to use the death penalty. We are in the company of China, Saudi Arabia, Iran, and Iraq, as those particular nations carry out the highest numbers of executions. International human rights groups over many decades have consistently called for the United States (and all countries) to end the death penalty. What's relatively new is the realization that racial bias and prosecutorial errors make the U.S. death penalty irreparably unfair. That was the reasoning that led the legislatures of six different states to abolish the death penalty in the past six years alone.

Supermax prisons, meanwhile, are architecturally unique in that they contain no space for group activity and are, in fact, designed to eliminate the possibility of voluntary social contact entirely. This is the opposite of most building types, which bring people together for work, learning, play. In fact, human psychology depends on daily social interaction to maintain a stable sense of self. When deprived of social contact for extended periods, people suffer severe depression, paranoia, and hallucinations; commit acts of self-mutilation; and frequently resort to suicide—at a rate more than double that of other prison units.

Accordingly, in 2012, international human rights organizations, including various United Nations bodies, identified prolonged solitary confinement—*over fifteen days*—as a form of torture. When prisons are designed with hundreds of cells arrayed in tiny pods, when all food and services are delivered to each cell, and exercise takes place only in segregated outdoor yards sized for one person at a time, it's clear that most people will stay for far more than fifteen days. In states from Louisiana to California, people have been held in solitary *for decades*.

So what does this mean for architects? Commissions for death chambers come up occasionally, exemplified by one in 1994 for the federal execution chamber in Terre Haute, Indiana, and California's remodeling of its death chamber at San Quentin State Prison, in 2010. There are over 50 supermax prisons in the United States, and an RFP is out for one more right now.

These are not proud milestones in domestic governance or architectural history, so we cannot let our natural aversion to the horror of execution or prison conditions keep us from confronting the issue. Consider that doctors, nurses, psychologists, anesthesiologists, and many other medical professionals have specifically amended their ethics codes to prohibit participation in executions or any act of torture. The World Medical Association code even states, "The physician shall not provide any premises, instruments, substances, or knowledge to facilitate the practice of torture."

Does the public expect anything less from architects who "provide premises" as our basic public service? Does our obligation to protect public "health, safety, and well-being" not include, as a bare minimum, a commitment to stop making places where—admittedly despised—members of the public will be killed or tortured?

ADPSR shared our campaign at the recent conference of the AIA Academy of Architecture for Justice (AAJ). AAJ is the knowledge community of AIA members who design prisons, jails, police stations, and courthouses. From what we saw at the conference, some members interpreted our campaign as needlessly casting blame, while others agreed that extreme isolation and execution don't belong in even the toughest kind of facilities they would be willing to design. Without presuming to speak for AAJ, we do want to clarify that we cast no blame on past work, before the ground rules for solitary confinement and human rights shifted. In the past, the consequences of housing thousands of people in supermax prisons weren't clear. But it is our hope that knowing what we know now, AAJ will join AIASF in support of ADPSR's human rights position.

What's at stake here is not just the tiny number of contracts for these building types, but architects' professional commitment to public well-being. This can't be just an individual act of conscience, for instance, by an individual refusing to design a supermax prison—since surely someone else will design it. And some brave architects facing such a program no doubt try to talk their clients into a more humane approach. Yet such a conversation may well get cut short by the prospect of losing the contract to other architects who won't question the program.

The architects who take the courageous stand of challenging unreasonable client demands need support. We want them to have the support of the AIA Code of Ethics, and of a profession publicly committed to the highest standards of Human Rights. AIA San Francisco has taken the first step. To join ADPSR's petition to AIA, go to www.tinyurl.com/aiaethics or contact ADPSR (www.adpsr.org) to host a discussion at your local AIA chapter.

RAPHAEL SPERRY IS PRESIDENT OF ARCHITECTS / DESIGNERS / PLANNERS FOR SOCIAL RESPONSIBILITY. HE IS BASED IN SAN FRANCISCO.

facades+ PERFORMANCE

NYC APRIL 11+12 2013

PRESENTED BY

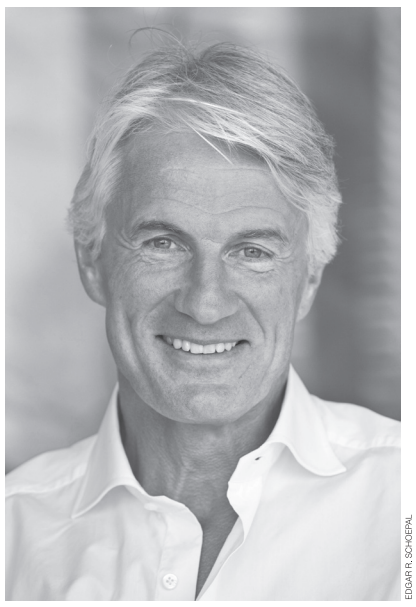
THE ARCHITECT'S NEWSPAPER

enclos

OUR BEST CONFERENCE YET- SIGN UP TODAY!

Cut through the jargon and consider the the heart of high performance building envelopes. Join a broad consortium of your peers at **facades+PERFORMANCE**, where experts in the industry will analyze, discuss, and dispute the development, implementation, and maintenance of high-performance building enclosures.

Discover new perspectives on building skins and opportunities for advancement in the delivery of cladding systems.



EDGAR R. SCHOEPAL

Keynote Speaker: Christoph Ingenhoven

World Class Sustainable Design Visionary

NY APR 2013 | EARLY BIRD REGISTRATION DEADLINE MARCH 1 | **SF JULY 2013** | **CHI OCT 2013**

CONFERENCE CHAIR

YKK AP Quality inspires®

SPONSORED BY

AkzoNobel Tomorrow's Answers Today

Boston Valley Terra Cotta

CAMBRIDGE ARCHITECTURAL

DUPONT®

GKD METAL FABRICS

LASVIT

NBK ARCHITECTURAL TERRACOTTA

Sika®

SPECTRUM METAL FINISHING, INC.

Thornton Tomasetti

view

W&W GLASS, LLC

SUPPORTING SPONSORS

AIANY

The City College of New York

Rhinoceros® NURBS modeling for Windows

SMPS Society for Marketing Professional Services New York

MODE COLLECTIVE

Visit www.facade.archpaper.com for more information.

New Solarban® R100 solar control, low-e glass. A better glass for a better environment.

Clean lines. Clean look. Clean conscience. It's a lot to expect from an ordinary piece of glass. Then again, Solarban® R100 solar control, low-e glass is about as far from ordinary as you get – thanks to a Solar Heat Gain Coefficient of .23 and a neutral-reflective appearance that lets your building put its best face forward. And you'll really be surprised by the extraordinary energy savings you can expect with Solarban R100 glass. To get your copy of the white paper, go to **ppgideascapes.com/SBr100.**

SOLARBAN® R100 NEUTRAL REFLECTIVE LOW-E GLASS | CERTIFIED cradle to cradle SILVER

PPG IdeaScapes™ Glass • Coatings • Paint

PPG Industries, Inc., Glass Business & Discovery Center, 400 Guys Run Road, Pittsburgh, PA 15024 www.ppgideascapes.com