# The Architect's Newspaper



spin page 14

Morphosis takes<br/>terra-cotta for aSt<br/>Jo<br/>page 14

@archpaper

Studio Visit: Johnston Marklee page 16

Behind the architecture of Westworld page 62

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6 ICYMI 7 Eavesdrop 56 Marketplace

### Movies to Mammoths

### **Rapid Response**

Operation PPE creates 3D-printed equipment for the COVID-19 front lines.



Will the collective design prowess of Piano, Zumthor, and WEISS/ MANFREDI be enough to turn this central L.A. park into a cosmopolitan hub? See page 19.

### A South L.A. Homecoming

A new cultural initiative in a historically Black neighborhood looks to landscape and urban placemaking to unify the community. See page 22.

Things right now are undoubtedly brutally tough. And when the going gets tough, the architecture and design community gets 3D printing. As part of a grassroots mobilization

As part of a grassroots mobilization effort known as Operation PPE, architects, designers, makers, and a small army of displaced students have banded together and fired up their 3D printers to produce personal protective equipment (PPE) for medical professionals on the front lines of the coronavirus pandemic.

Operation PPE began in earnest with an email sent late on March 24 by Kirstin Petersen, assistant professor at Cornell University's School of Electrical and Computer Engineering, to Jenny Sabin, director of Sabin Lab at Cornell's College of Architecture, Art, and Planning (AAP) and principal of an eponymous architectural design studio in Ithaca, New York.

Petersen relayed the dire need for PPE, specifically face **continued on page 8** 



#### Facades

Explore bespoke cladding systems, cutting-edge composite materials, and more in our annual facades special section. See page 24.





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### William Menking (1947–2020)

AN's cofounder and editor in chief was one of architecture's guiding lights. See page 11.

COURTESY ALVIN HUANG



### The Ronald O. Perelman Performing Arts Center at the World Trade Center

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### **Missing the Mix**

In early March, I was still commuting to the office of the shelter magazine where I was working. COVID-19 had only just been detected in New York City, and I continued to hew closely to the workday habitus, albeit with some slight behavioral tweaks. I watchfully avoided the inadvertent brush with other commuters on the train, but I had not thought to wear a face mask; I gave pedestrians a wide berth on sidewalks but not in coffee queues; I washed my hands (and wrists) as though I were scrubbing into surgery, even as I continued to shake those of the people I met for interviews.

Although skeptical of voluntarism as redress to social problems, I did not bristle at the public health recommendations seeking to mitigate transmission in shared spaces, nor did I flout them-at least intentionally. Perhaps I was simply not ready to give up the easy pleasures of city life, whether sitting alone and reading in a crowded park, or meeting with friends for beers after work, or pursuing any other banal activity that finds hackneyed resonance on the page or screen. These pleasures, doubtlessly worth protecting, are the right of all in name alone, a fact made obvious by the spread of COVID-19. Like pathogens, inequities are not singular events imposed or grafted onto urban landscapes, but rather reside and preponderate within the laws that structure them.

For the critic and architect Michael Sorkin, cities were incubators for politics—and not just any politics, but that breed that is forged through collective struggle in space, spurred on by history. In the past year, Michael and I became close; I provided editorial assistance on a couple of book projects he and his publishing imprint, UR, had going, while he returned the (paid) favor with a spirited rap that belied his failing health. Huddled in his office, we talked in hour-and-ahalf segments about book projects, his work, architecture, food, travel. I goaded him into reciting from memory my favorite of his turns of phrase, and he always complied.

Michael was also a good friend of the great Bill Menking, cofounder and editor in chief of The Architect's Newspaper. When AN was looking for an executive editor, Michael referred me to Bill; not long after, I was summoned to the Lispenard Street loft for examination. At the time, in early February, Bill was still settling back into life in the loft after spending the preceding months in the hospital. His occasional wincing telegraphed the bodily pains he was nursing. Nevertheless, he was cogent and determined to resume his daily activities, chronicling a misjudged excursion to the corner post office that resulted in a tumble down the entrance steps.

The same day I started the job at *AN*, Michael died, owing to complications related to COVID-19. Two weeks later, in mid-April, Bill passed away after a protracted battle with cancer. Soliciting tributes from their friends and colleagues to publish on *AN*'s website, I found myself speaking to the same group of architects and academics back-to-back, some of us battling a feeling of numbness with welcome but uneasy stabs at humor.

We at *AN* are moving ahead, trying our best to keep apace with events in the world and the obstacles that come our way. Like everyone else, we can't help but tail these

#### Correction

The article "Mapping the Industry" in the February/March 2020 issue failed to note that the TallWood Design Institute is a collaboration between the University of Oregon's College of Design and the Oregon selfsame events; for this reason, the contents of this issue may seem out-of-date, or perhaps off-topic. The editorial preoccupation with Los Angeles, a thread that runs throughout the issue, including our visit to Johnston Marklee's Westwood studio and feature-length look at a 1.3-milelong, open-air museum percolating in Hyde Park, was meant to coincide with the since-canceled AIA Conference on Architecture 2020. Which is not to suggest that these initiatives and projects don't merit coverage on their own—only that our interest in them preceded the arrival of the present pandemic and economic crisis.

That explanation aside, we have attended to these realities in a few places in these pages, such as in our report on the efforts of individual architects to manufacture and supply personal protective equipment, or PPE, to medical staff in hospitals. I remain stubbornly attached to my skepticism of voluntarism—we should not have to rely on the improvisatory, if meaningful, action of individual actors to fill the gaps in our healthcare system-but the experience may bequeath to architectural practice new procedures of collaboration and better coordinate the aims of the designer and the desires of the user. If nothing else, these efforts attest to the willingness (not to say eagerness) of practitioners to break outside the confines of practice and engage with the world around them.

Last month, *AN* also launched Trading Notes, a weekly AIA-accredited conversation series that addresses the consequences the pandemic has had for the industry. So far, we have heard from architects, engineers, and construction managers about project slowdowns, the difficulty of conducting site inspections remotely, the comparatively painless move to remote working, the bunching up of material supply chains, and more. On page 9, we have excerpted from the colloquia to give the reader a sense of the conversations, which are free to join.

At the time of closing this issue, AN staff had just entered a seventh week of quarantine. The novelty has worn away, and we have settled into a pattern of work that could go on for much longer. (The current timeline for the easing of stay-at-home orders appears to be early June, but who knows?) I myself have yet to visit AN's FiDi office and have built relationships with my colleagues entirely over video chat and other messaging applications. This is a different kind of "propinquity" than what Michael advocated for, and one that cannot ever serve as its replacement. It's perhaps more akin to the sociability Bill so exemplified, but something still less, an all-tooliteral face-to-face lacking the infectious charge of shared space. At the moment, we find ourselves caught up in a mix, but deprived of the chance to mix it up. Here's hoping that we'll be back to it soon. Samuel Medina

Masthead

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State University College of Forestry. The article erroneously attributed the Tall-Wood Design Institute to only Oregon State University.

Editor's Note

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# 6 In Case You Missed It...

#### We corralled the top architecture and design stories buzzing about the internet this month.

#### To those we've lost

Unfortunately, in recent weeks, a number of major figures have passed away. Here's a partial list: Anne Bass, influential investor and patron of the arts, and commissioner of Paul Rudolph's Bass Residence; Elizabeth Sverbeyeff Byron, longtime architecture editor at several home design magazines; Iraqi architect, author, and critic Rifat Chadirji, who championed modernism in Iraq; Henry N. Cobb, American architect and founding partner of Pei Cobb Freed & Partners; Vittorio Gregotti, Italian architect, theorist, editor, curator, and teacher; Michael McKinnell. British American architect of Boston City Hall and cofounder of Kallmann McKinnell & Wood: and Merry Norris, one of Los Angeles's first cultural affairs commissioners and an outspoken arts advocate.

#### More museums and galleries transition to digital shows amid shutdowns

Can't go outside because of the novel coronavirus pandemic? No problem for culture lovers. Google Arts & Culture has put virtual tours of over two thousand institutions online, Hauser & Wirth has unveiled a VR program to explore its exhibitions digitally, and at England's Hastings Contemporary, you can book a robot surrogate to explore the museum for you.

#### Virginia Tech reveals plans for inaugural building at Innovation Campus in Alexandria

Just a couple of miles from the site of Amazon's forthcoming HQ2 is Virginia Tech's new Innovation Campus, and the school has revealed the first new building for the site. The Detroit-based SmithGroup is designing Academic 1, a multifaceted graduate learning center with a striated metal facade.

#### Eight architects design 16 buildings for the Greenwich Design District in East London

For the new, ground-up Greenwich Design District in East London, developer Knight Dragon tapped an all-star English roster—6a architects, Mole Architects, Architecture 00, HNNA (formerly Assemblage), Adam Khan Architects, and David Kohn Architects—as well as Spanish studios Barozzi Veiga and selgascano.

### OMA's Galleria department store in South Korea certainly stands out

In the fast-growing city of Gwanggyo, South Korea, OMA has completed the newest outpost of the upscale South Korean department store chain Galleria. The building takes the form of a monolithic slab of granite with a pixelated mosaic facade and protruding, prismlike passageways that wrap around the eight-story mass.

### Coronavirus postpones some of the world's largest events

The 2020 Summer Olympics in Tokyo will now be held in 2021. The games join a long list of events pushed to next year or just canceled as a result of the novel coronavirus pandemic, among them this year's Salone del Mobile.Milano, the AIA's annual conference, Dubai Expo 2020, and the Serpentine Pavilion.

### Grafton Architects wins first United States commission

Hot off Yvonne Farrell and Shelley Mc-Namara's Pritzker win in March, the Irish firm they founded together has picked up its first American project. Grafton Architects has won a competition to design the new Anthony Timberlands Center for Design and Materials Innovation at the University of Arkansas, which will largely use mass timber. After a dramatic reversal by the School of Architecture at Taliesin, whose board voted to remain open after it was announced the school would be closing, it turns out the situation may not be so simple. The Frank Lloyd Wright Foundation refused the school's offer to negotiate, and the matter may be headed to arbitration.

Is the School of Architecture at

Taliesin staying open or not?

Los Angeles County Museum of Art demolition kicks off despite lockdown

Although the pandemic has forced the closure of nonessential construction projects across the country, the demolition of the first of four buildings at the Los Angeles County Museum of Art campus commenced on schedule. Museum officials confirmed the other three buildings slated for demolition would meet similar fates in the coming months.

### Plans for the U.K.'s largest arena revealed

Los Angeles-headquartered sports and live entertainment company Oak View Group has revealed plans for OVG Manchester, a 23,500seat, multipurpose arena designed by Populous in the English city of Manchester that, when complete, will be the largest-capacity indoor arena in the United Kingdom.

### PAE Living Building revealed in Portland

Portland-based architecture firm ZGF has shared a first look at PAE Living Building, a highly efficient commercial building that broke ground in March in Portland's historic Old Town district. The 58,700-square-foot, mixeduse project is designed to last 500-plus years, meets the highest seismic standards, and is on track to open in summer of next year.





# 7 Eavesdrop

#### Mori's Moment



The February issue of the Japanese publication a+u is devoted to the work of Toshiko Mori. In the issue's introduction, journalist Fred Bernstein explains the origins of the facade of an eight-story commercial building by Mori at 277 Nott Street in Lower Manhattan. Mott Street is so narrow that "you never see the building fronally," Mori realized. So she designed a facade that is best understood from oblique angles: Four black granite "pillars," each twisted slightly differently, hold vertical strips of glass in place. For the pillars, Mori chose fair-trade Zimbabwe black granite, milled in a factory near Pisa, Italy. It's similar to the dark gray granite that Eero Saarinen used for his CBS headquarters, known as Black Rock, in Midtown Manhattan more than half a century ago. As a young woman, Mori recalled, she was walking down West 53rd Street, past Black Rock, when she encountered a shoot-out. Saarinen's building features pronounced columns that stick out from its facade, and Mori took refuge between two of the pillars as bullets flew. If the facade had been flat, she told Bernstein, she might have died. With her first commercial building in Manhattan, Mori paid tribute to Saarinen and the rock that protected her

#### **Horsing Around**



In a bid to emphasize the Sino-centered nature of the restaurant chain's culinary offerings, P.F. Chang's China Bistro guards the entrance to each of its locations with equine statues modeled after terra-cotta originals found outside Xi'an, China. *AN* reached out to architectural composites manufacturer **Kreysler & Associates**—which manufactured the bespoke facades of Los Angeles's Broad Museum and the San Francisco Museum of Modern Art—and confirmed that the Los Angeles-based company has long produced the statues, which range from 11 to over 70 feet in height. As P.F. Chang's continues its global expansion, it is safe to say that Kreysler & Associates will have its hands full churning out stables of sinewy steeds for the foreseeable future. Support the Union Construction Workers GoFundMe campaign, which will use your contribution to supply PPE and meals to the healthcare professionals working courageously and selflessly to treat those in need during the Covid-19 crisis. To donate, visit **tinyurl.com/wrzu9xa**.

#### 🛛 🔀 Ornamental Metal Institute of New York

# 8 News







Huang, architect and associate professor at the USC School of Architecture, works on a design for "pseudo" N95 masks.

Above left: Alvin

Left: Completed 3D-printed headbands for protective face shields Above: A 3D printer at the Sabin Lab at Cornell AAP generates PPE components. Various departments with access to 3D printers at Cornell University contributed to the massive collaborative effort.

Rapid Response continued from front page shields, at the Joan & Sanford I. Weill Medical College of Cornell University. By 10 a.m. the next morning, Sabin, with the blessing of J. Meejin Yoon, dean of Cornell AAP, had reopened the school's digital fabrication lab, revved up all ten of its 3D printers, and gotten to work.

Sabin also began spreading the word to faculty, staff, and students while providing detailed instructions on the lab website for others to help with their own machines. "We were able to respond to the need right away," Sabin said. "And what started out as just a few labs on Cornell's campus then began to grow."

Sabin and others who have since joined Operation PPE are basing their output, which includes a laser-cut clear plastic shield and a 3D-printed visor band that fits snugly across a user's forehead, on an opensource design file created by Erik Cederberg of Swedish company 3DVerkstan, which Weill Cornell Medicine had approved. The shields, which can be discarded or sanitized and reused, are cut from polyethylene sheets, while the visor band component is generally made from PLA or ABS, both standard 3D printing materials. (The medical community, however, prefers PET or PETG, as they're safer to reuse and longer-lasting, but will use the substitutes when nothing else is available.) Once the components are distributed, hospital staff sanitizes and assembles the face shields.

As Sabin's lab and others at Cornell with access to 3D printers and laser cutters began working, Yoon sent an all-hands-ondeck email to the school's alumni. Within 48 hours of Petersen reaching out to Sabin, a slew of major architecture firms—Terreform ONE, Grimshaw, Bjarke Ingels Group, Handel Architects, WEISS/MANFREDI, and Kohn Pedersen Fox among them—as well as other schools, including Carnegie Mellon and Iowa State, had joined the effort.

By April 3, the university's on-campus labs alone had donated 5,800 face shields. Alumni architects and their networks had donated many more.

"Together and in a very short amount of time, we were able to respond to a gap within the supply chain by leveraging 3D printing and a network of digital fabrication labs," Sabin said. "On one hand, 3D printing is not the best way to make these parts, and one 3D printer isn't going to make an impact, but when you have thousands, it's incredible."

V. Mitch McEwen, assistant professor at the Princeton School of Architecture and founding director of the Black Box research group, also played an early role on the design and organizational fronts. McEwen explained that one area the team considered was the material supply chain: "How do you widen the stream of materials coming into this, and how do we get ahead of the curve on the next PPE disaster?" She added that the Department of Health and Human Services has mentioned a potential shortage of PPE gowns on the horizon.

Cornell AAP alumnus Jay Valgora, founder of STUDIO V Architecture, was among the first architects to enlist in Operation PPE and has been instrumental in spreading the word.

"Everyone wants to help and no one knows what to do," Valgora said. "So it's kind of great to not only do this—to get this equipment into the hands of medical workers who really need it—but it's also great to give people a vehicle where they can help out and play a positive role."

In California, similar PPE-producing efforts are afoot, including one inspired by Sabin Lab's call to arms that is spearheaded by Alvin Huang, associate professor at the University of Southern California (USC) School of Architecture and founding principal of Synthesis Design + Architecture.

Within a short time, Huang brought together an initial network of more than 80 people working with 100 3D printers and three laser cutters. Students from other Los Angeles–area schools also joined the initiative, along with KAA Design, Arup, CO Architects, Michael Maltzan Architecture, RCH Studios, Brooks + Scarpa, and other firms.

Like the effort originating at Cornell, Huang's network creates and distributes protective face shields approved by USC's Keck School of Medicine, but the primary focus is on producing 3D-printed "pseudo" N95 masks. Proper N95 masks are not being produced at the same scale as face shield kits because 3D printers cannot replicate their complex design in a way that meets medical standards.

"This might be the scariest thing I've heard," Huang said, referring to the possibility that "pseudo" masks would stand in for true N95 masks. "But Keck's response was that this is wartime medicine, and we're preparing for war, and in wars you need a backup to the backup. And Keck identified this [type of mask] as a backup that's one level above using homemade cloth masks, bandanas, and socks."

As for Sabin, she's heartened by the synergetic work being done by a community united by one common objective.

"There's a kind of democratic space in that it is informal and bottom-up, and we've been able to make a real impact in that way," Sabin said. "I think everybody's been looking for a way to contribute during this difficult and unprecedented time, and I think this is a real and positive way to come together even though we can't be near each other physically. And every visor, every shield, makes a difference." Matt Hickman

# 9 News

### **Trading Notes**

Excerpts from a new online conversation series where leading architects, designers, and engineers discuss navigating the pandemic. By AN editors



The Trading Notes sessions happen over Zoom, where experts analyze best practices for remote management and other topics.

It took just a few weeks for many of us to shake off our daily routines and adapt to new regimens of work and exchange. Architects and designers work from their homes, connected to colleagues and third parties (engineers, manufacturers, suppliers) via chat and webcam. Meanwhile, trade partners, outfitted with personal protective equipment (PPE) and observant of social distancing, continue to labor on building sites. With industry events on hold for the foreseeable future, face-toface transmission of ideas is limited to web meetings. And it turns out...it's not so bad.

We will likely look back on this period as a paradigm shift. Toward what, we aren't sure. In order to gauge what potential for change there may be, *AN* launched Trading Notes, a weekly discussion series featuring experts from the AEC community. Thus far, the conversations have revolved around the consequences of COVID-19 for construction projects, architectural practice, and supply chains. The series is AIA-accredited and free to attend, with registration. Excerpts from the first handful of sessions follow.

#### Construction in the Age of COVID-19: How Are Firms Keeping Projects Online?

"For Sasaki, productivity did not take a very large hit; there was the initial shock and the time required to transition to working from home. However, folks adapted very well and it has more or less taken on a life as another design problem to solve. From a software perspective, adoption of cloud-based applications is paramount—in particular, BIM 360 and Miro have been instrumental to maintaining productivity."

-Bradford J. Prestbo, director of technical resources and associate principal architect, Sasaki

"It is interesting; in New York City, before they defined what essential construction was, a lot of our job sites were having problems procuring materials, stemming from COVID-19– related labor shortages. Our projects elsewhere, in, say, Nebraska, are full steam ahead and can get materials. It is all very regional, and depends on concerns in each area."

—Erleen Hatfield, managing partner, Hatfield Group

#### Supplying the Front Line: Tips for 3D Printing of Medical Components

"The distributed network of production is remarkable: people wanting to pitch in from New York City, from California, from all over the place. We began printing shields, and then we started paying attention to what else was needed and looking beyond PPE. With a different group, from Harvard GSD, we started looking at protective isolation hoods, which is another infrastructure for healthcare workers."

-Eric Höweler, partner, Höweler + Yoon

"Our office's effort began at the end of March, the same day that we received our new Stratasys F120 printer. It is a big printer, and we wondered, what can we do with this? And we immediately found a model that was approved for an R3 face shield, and we just started printing. The next day, because we needed more material, we reached out to the university and realized that we could combine our resources to source material and produce PPE."

-Marlon Blackwell, principal, Marlon Blackwell Architects, and Distinguished Professor and E. Fay Jones Chair in Architecture, University of Arkansas

#### System Disruption: Managing Project Logistics During the Pandemic

"Right now, the only offices of SOM that are working in the office are in China, which shows the picture coming full circle. We know that this is going to be with us for a while, and that does bring about some level of uncertainty. While we have seen some concerns about sourcing, we have also begun looking at multiple geographical sources for materials. At the same time, I've seen some projects that are hoping that by moving through the early design and planning right now, it will put them in a better position to ensure sourcing as we move out in a year or two."

–Julia Murphy, director, SOM

"We've been navigating this very interesting environment of sending multiple, large samples to architects' homes. We're doing a lot of video chats and sending videos from the factories. That has kept the project chain moving. We're working outside of the box, we're looking for different ways [to find] solutions to things that we've been doing the same way for years. That's where we all are."

–Jennifer Marchesani, vice president of sales and marketing, Shildan

Visit tradingnotes.archpaper.com to register for upcoming thematic talks, which air on Zoom, Fridays at 1 p.m. EDT.



The Tappan Zee Bridge, revolutionary in its day, was well past the end of its operational life. Replacing it with the new **Governor Mario M. Cuomo Bridge**, a span of more than three miles across the Hudson River, required erecting a structurally complex cable-stayed design with careful attention to the river ecosystem. The resulting "smart bridge" takes an active role in monitoring its own performance while carrying traffic—a triumph that will benefit the Hudson Valley for generations to come. Read more about it in **Metals in Construction** online.

### Steel Institute of New York

#### WWW.SINY.ORG

# **10 Obit**

### Michael Sorkin (1948–2020)



Sorkin in his Varick Street studio

Michael Sorkin, inimitable scribe of the built environment and leading design mind, passed away March 26 at age 71, after contracting COVID-19. Survived by his wife, Joan Copjec, Sorkin leaves behind an invaluable body of work, which concerned not just the future of his adopted city of New York, but that of urban life more broadly. A firebrand for social justice, he did not suffer fools; a cultivated wit and inveterate mingler, he was always generous with his time and vision. His friends and colleagues wrote to us with the following tributes.

Michael Sorkin, Where are you?

In sight of the invisible. Loyal to that cause.

Michael the critic. Michael the urbanist. Michael the politico-polemicist. Michael the architect. Michael the sardonic humorist.

Homeless and everywhere at home.

Educating the educators.

Colleague's definition. Friend's definition.

Redrawing the criticalurbanistpoliticoarchitecthumorist's map. In perpetuity. So those in arrears can follow. If they can.

Michael, where are you? Eating at Rosa? Laughing together at the prima ballerina and the qb?

Someone once told us, "The sun also ariseth." Just not today.

#### Love you.

—Eric Owen Moss, principal, Eric Owen Moss Architects "Jie, can you wiggle these buildings and make them sexy?"

"Jie, can you let me have some fun?"

"Jie, I had a dream last night. I think we need to try something new."

"Jie, I will be in on Saturday; leave me something not boring."

Michael, I miss the dynamic "creatures" you directed me to model.

Michael, I miss the tremendous beauty of your red-colored sketches.

Michael, I miss your utopian dreams for sustainable cities.

Michael, I wish I could have spent more time with you.

—Jie Gu, director and lead urban designer, Michael Sorkin Studio

Michael fizzed with ideas, his energy always captivating and inspiring. You could walk into his office to talk about a book project that we at Terreform had underway and walk out with instructions to contact a dozen different people about three more. Somehow amid this frenzy of activity, Michael always managed to maintain a laserlike focus on the Terreform mission of producing research to achieve more just, beautiful, and equitable cities. Somehow in this flood of ideas and instructions, proposals and counterproposals, Michael would always get the project done and the book (it always ended in a book!) printed.

We know we can never fill the huge absence that Michael leaves us. We are nevertheless determined to carry on Michael's enormous legacy, to complete the large number of projects that are already underway, and to continue the work of urban research for greater social justice, beauty, and equality in our cities.

—Deen Sharp and Vyjayanthi Rao, codirectors, Terreform Center for Advanced Urban Research

As friends, professional colleagues, and career-long skeptics concerning all manifestations of design orthodoxy, Michael and I had a bottomless reservoir of art and design issues to debate during our 30-plus years of dialogue. Michael and I had that kind of nurturing friendship where we could meet in an explosion of discourse on some hot topic, or just sit quietly at dinner and experience the reinforcing comfort of saying nothing. Of all Michael's many talents, the pinnacle was his acerbic wit, with which he skewered the pomposities of our profession and politics of the day. Not only was his trenchant humor invariably on target, it was always articulated in such a way that inspired the opposition to rethink an issue.

*—James Wines, artist, architect, and founder of SITE* 

When we met in 1994, most of his work at that time was speculative. But he trusted in the power of a good concept to convince people to act. If money was needed to pay his helpers who depended on him, there was no question of what was to be done. "Dahling," he told me, "you will see everything will be covered sooner or later. The main thing is not to be afraid."

—Achva Benzinberg Stein, landscape architect

Michael was a great critic, inspired teacher, and brilliant thinker. And happily for me, he was my friend. We would have a drink together once or twice a year and talk about New York. From old New York to the New York we loved to the New York we missed to the New York we hoped for in the future.

#### —Deborah Berke, partner, Deborah Berke Partners, and dean, Yale School of Architecture

We both had the idea, independently, of mounting an alternative to the 2016 competition for the proposed Guggenheim Helsinki, so we joined forces to see it through. In sheer expenditure by firms all over the world, the official competition was the most labor-intensive and costly ever seen. A true bonfire of the vanities. Ours was run on a budget of five thousand euros and operated more like a think tank for ideas for infusing arts and urbanism. The whole thing brought out the best in Michael-his fierce distaste for architectural elitism, his appetite for popular quality, his spontaneous fellow feeling, and, yes, his legendary sense of mischief, now so sadly extinguished.

#### —Andrew Ross, professor of social and cultural analysis, New York University

In 1998, an impish trickster, Michael seduced a group of Palestinian and Israeli architects and other intellectuals to a conference on occupied and segregated Jerusalem at a lakeside villa in Bellagio, Italy. We listened together as Michael insisted, more optimistically than most of us, that we could use architecture to do something about this injustice, although he understood that, by itself, unaccompanied by the fundamental political changes we must all struggle for, architecture could do very little. His subsequent book projects on Palestine— *The Next Jerusalem, Against the Wall*, and *Open Gaza*—demonstrate what he meant.

He was right, and at a time when the grip of architecture tightens all around us, when the builders of walls, towers, and digital surveillance systems are in charge, and when authoritarianism is using the global health emergency to encroach on our civil liberties—we all need to channel something of Michael and continue the fight. He will now bring his to gods and angels. Go on, Michael, give them hell!

#### *—Eyal Weizman, founding director, Forensic Architecture*

When I came to New York City as a young architect 20 years ago, I was in search of a mentor. I met Michael and felt an immediate affinity. He reminded me in some ways of my academic parents and their radical lefty friends who dreamed of a better world while working on their PhD dissertations. Michael was a brilliant mind, a champion of the dispossessed, and someone who fought valiantly for a just, equitable, and environmentally sustainable future. He believed in cities, in the power of collective action, and that doing better was always possible. Now we must strive to carry on without him, and push hard for the better world he laid out for us in his work.

#### —Vanessa Keith, principal, StudioTEKA Design

The last time I saw Michael, one month before he died, he asked me to come by his office. We talked about a Hungarian artist's book project on luxury apartments for which we were both writing essays, dished some dirt about various cultural figures on the South Side of Chicago, and looked at the old photographs of Michael's family on his shelves. We laughed about the double portrait of Joan and himself in front of the Taj Mahal that he had painted in Vietnam; Joan, considering it trashy, would not allow it in their home. Michael asked if I could recommend someone who could write about race and class in the neighborhoods near the University of Chicago for a book he was planning for his publishing house, UR, and then asked if I would write something for yet another book he was planning, on smart cities. Although he was not in the best of health, a frailty that the virus would exploit, he still pushed forward. He was only prevented from taking another trip-Africa-by emerging travel restrictions.

My last email from Michael came one week later. He heard me talking about my new book on the radio and immediately sent me fan mail. This, too, was Michael: He acted on friendship. Almost 20 years ago, he and I edited a book of essays by New York urbanists where we tried to put together our abundant sorrows and critical thoughts about the World Trade Center. The words Michael wrote about the fallen Twin Towers surely apply to him. He was, in all respects, "the Everest of our urban Himalayas."

—Sharon Zukin, professor emerita of sociology, Brooklyn College and Graduate Center at The City University of New York

In this silent spring of isolation that robs us of his voice, his pen, his friendship and humor, listen to the small murmurs arising, the tributes that come in from far and near. Witness his influence great and small. From the soil he has nourished with his commitment and action will spring forth—amid ongoing contestation—a better city. Listen to his call! This, dear Michael, *our* Michael, is your enduring legacy.

—M. Christine Boyer, William R. Kenan Jr. Professor of Architecture and Urbanism, Princeton University School of Architecture

There are many ways to spend our evenings apart at the moment. I, for one, have found a superb tonic for these dark times: Pour a glass of bourbon in Michael's memory and prop open your favorite collection of his writings. We will miss you for years and years to come, Michael.

—Barry Bergdoll, Meyer Schapiro Professor of Art History and Archaeology, Columbia University

# **11 Obit**

# William Menking (1947–2020)



William "Bill" Menking, an architectural historian and educator who was cofounder and editor in chief of *The Architect's Newspaper*, passed away on Saturday, April 11, at his Tribeca, Manhattan, loft after a long battle with cancer. He was 72 and is survived by his wife, Diana Darling, and their daughter Halle.

Menking was an invaluable part of the architecture community of New York as well as the nation and the world. Best known for founding The Architect's Newspaper with Diana Darling in 2003, he was also a prolific curator and writer. Menking was on the board of directors at the Storefront for Art and Architecture and The Architecture Lobby, as well as a tenured professor and trustee at Pratt Institute. He was the curator of the 2008 U.S. Pavilion at the Venice Biennale of Architecture and organized many exhibitions, including The Vienna Model: Housing for the Twenty-First Century City and Superstudio: Life Without Objects, the latter of which became an important book on the Italian collective. He was also the author of Four Conversations on the Architecture of Discourse (2012) and Architecture on Display: On The History of the Venice Biennale of Architecture (2010); both were coedited with Aaron Levy and published by the Architectural Association in London.

For Bill, the discourse and production of architecture were as much about people as

they were about ideas, and the two were interchangeable in many ways. Likewise, art was his life and he made life into an art. It is sad that someone who enjoyed life as much as Bill would ever have theirs cut short, but we can take solace in the fact that Bill did more living in his 72 years than most of us would do if we lived lives three times that long.

His friends were his colleagues, whom he loved to connect and gather, whether for a gallery talk or for a round of beers. "I am sorry for those who didn't experience his amazing [1998] Archigram show at the Thread Waxing Space [in New York], just one of many megaprojects in his determination to share his boundless enthusiasms with us," said Barry Bergdoll, Meyer Schapiro Professor of Art History at Columbia University. "The same generosity spread into the weekends when he staged Texas-style BBQs in his garage in Greenport, on his beloved North Fork."

This zest for life and love for travel took him around the world, most of all to Italy; he attended every Venice Architecture Biennale since it started in 1980. He was something of a one-man tourism bureau for the places he visited, always excited to give the best recommendations for architecture, museums, sightseeing, or restaurants. He would rarely lead you astray; usually one wound up far off the beaten path. "Bill was such a luminous and restless intellect, drunk with the delight of connecting the loose ends of architecture, urbanism, and art," said architect Marion Weiss. "His enthusiasm for radical architecture, urban exceptions, and great food was infectious."

Bill had a knack for being in the center of the action. Perhaps because it was in his DNA-he descended from some of the earliest British settlers in America, as well as the Okies who continued this trailblazing tradition. Bill was born at Ramey Air Force Base in Aguadilla, Puerto Rico, in 1947 and raised in Stockton, a small town in California's Central Valley, where he worked as an air-traffic controller for crop dusters and once played football against O. J. Simpson. He attended UC Berkeley for architecture and urban studies from 1967 to 1972, and I can only imagine the things he saw there (something about Governor Reagan bombing him and his friends). Clearly, this immersion in American counterculture helped shape his excellent taste and avant-garde predilections, from radical architecture to social activism, to local clothing shops and DIY oyster shacks.

During school, he headed to Florence, Italy, where he met key players of the radical architecture movement such as Archizoom Associati, Superstudio, and Gruppo UFO. His interactions with this community of radical thinkers, designers, and architects would form the foundation of some of his most important research and curatorial practice, including multiple shows on Superstudio as well as a seminal book (written with Peter Lang) published in 2003. It laid the groundwork for his future work on Archigram, the British cousins of the radical Italian architecture movement.

In 1973 and 1974 he worked as an organizer for the United Farm Workers, helping establish the labor union in rural towns in central and southern California, before landing in downtown New York City at a time of heightened cultural production. Hanging amid this vibrant art scene, he met Dan Graham, with whom Bill drove around New Jersey documenting suburbia. In typical Bill fashion, he got a job as a server at Studio 54, where he witnessed iconic moments like Bianca Jagger riding a white horse through the club. He moved into his famous Tribeca loft space on Lispenard Street. which he built out into a classic downtown dream loft that he was always excited to offer up as a venue for fund-raisers, or for meetings and holiday dinners with AN staff. He had one of the better-stocked liquor collections, almost entirely gifts from foreign visitors who would stay with him when visiting New York.

With an acumen for learning and navigating the urban environment, Bill began working in the early '80s working as a location scout for film and TV in New York. This led him to

# **12 Obit**

sunny and decrepit Miami, where he took up an art director post on Miami Vice; his contributions to the show helped rehabilitate many of Miami's now-celebrated modern and art deco buildings. Later in the decade, Bill moved to London to attend the Bartlett School of Architecture. During his time there, he became close with Peter Cook and other members of Archigram, and wrote for architectural publications including The Architects' Journal and Building Design, both then thriving in England. The experience inspired Bill to import this model to the United States, and The Architect's Newspaper was born in 2003 in his loft. "We had no idea what we were doing, and it made it better!" he often told me.

"In an age where information is fundamental to our lives, *The Architect's Newspaper* filled a gaping void, with straightforward reporting on what's happening in the profession day to day that we weren't getting from the two remaining monthly professional journals, and certainly not from newspapers," recalled Robert A. M. Stern, architect and regular reader of *AN*. "It also brought to our shores an American version of the lively discourse we'd been reading from the U.K."

"AN is just what it says it is, a newspaper. Strange that no one used this concept before Menking," said Phyllis Lambert, founder of the Canadian Centre for Architecture and avid AN reader. "Like the New York Times and the Guardian, it is my source for deeply informed, judicious information about what is happening in the field."

We will continue to celebrate the life of Bill Menking, who will be remembered as someone who was always in the right place at the right time, agitating and connecting, breathing life into whatever was around him. Bill's memory will live on not only through the continued influence of *The Architect's Newspaper*, Pratt, and Storefront, but also through all the lives he touched with his mentorship and guidance.

Everyone who came through the paper took some part of Bill's thinking with them. For me, his influence is palpable: how to avoid the status quo or the cliché. How to work in and around institutions. How to do more with less, and not be too precious. How to keep the social mission radical. Many of my fellow travelers came through Bill, including my Rockaways fishing buddy Walter Meyer and my Sunday pasta buddy James Wines, both, like Menking, equally lovers of life and intellectual discussion.

I can't count the number of people whose work I studied in architecture school that I ended up meeting through Bill in social situations, nor, I suspect, can others. "Bill was someone who gave you everything without asking anything in return. He was a connector of people, ideas, and souls," said Eva Franch i Gilabert, former director of the Storefront for Art and Architecture and now director of the Architectural Association. "If I just made a map of all the people he connected me to, I would be able to make a portrait of a generation of idealistic, honest, generous, radical, and eternally young."

One time, Bill and I were hanging out with his buddy Alastair Gordon outside the tent at Design Miami, when Hans-Ulrich Obrist came up to us. Taking a moment to pause, Hans said it best in his signature accent, with a big, shining smile: "Bill Menking is a legend."

Matt Shaw, former executive editor, *The Architect's Newspaper* 





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May 2020
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# 14 In Construction

### **Orange County Museum of Art**

The new OCMA wants to be a good neighbor.

Architect: Morphosis Location: Costa Mesa, California

General contractor: Clark Construction Group Structural engineer: John A. Martin & Associates MEP engineer and sustainability consultant: Buro Happold

Landscape design: OJB Landscape Architecture

Facade consultant: Walter P Moore Glazing: Roschmann Group Facade manufacturer: Boston Valley Terra Cotta

Structural concrete: Coan Construction Precast architectural concrete: Angelus Waterproofing & Restoration Reinforcing steel: CMC Rebar Structural steel: Beck Steel Acoustical ceilings: Martin Integrated Architectural woodwork: Spooner's

Woodworks Polished concrete topping slabs: Shaw &

Sons The new building for the Orange County

Museum of Art (OCMA) in Costa Mesa, California, has been a long time in gestation. Thom Mayne, of Morphosis, was announced as its architect back in 2008, and the building finally broke ground this past September. Now, everything is moving apace-pandemic notwithstanding-and the museum should have its long-awaited new home by 2021.

The 53,000-square-foot building—almost half of which is gallery space—is deceptively simple in spite of its elegant flourishes. Brandon Welling, managing principal at Morphosis, described it as "a big plinth with concrete shear walls."

In the plinth are ground-floor exhibition spaces flanked by back-of-house spaces and a curvilinear mezzanine gallery. On top of the plinth sits an expansive roof terrace with hardscape and landscape for events and installations, bordered by support spaces and a flexible classroom and performance space.

"It's a complicated one-story plaza building with a heavy roof load," said Kurt Clandening, managing partner at John A. Martin & Associates, the structural engineer for the project. The roof terrace covers 70 percent of the building's footprint.

The project has no underground parking, so construction has proceeded quickly. Because the top layer of soil on the site wasn't suitable for deep piles—and the noise and vibration of pile driving would have disturbed the tenants in the surrounding office towers and performance venues—the design team overexcavated and used shallow foundations. This provided the opportunity to sink the building slightly. Welling described the design as returning park area to the adjacent plaza by lifting it up to the rooftop terrace and inserting the museum underneath.

The museum is the last building to go into the Segerstrom Center for the Arts, a cultural complex tucked into a corner of a larger mixed-use plaza. Surrounding buildings include a 21-story office tower to its south and a concert hall to the west, both designed by César Pelli. Another performance venue sits across a plaza to the north. The architects were careful to select materials that would help the new building fit in well with these neighbors, including a light-colored terra-cotta for the facade.









Left: Boston Valley Terra Cotta is making the custom terracotta panels.

Above left: Terracotta paneling on the facade will weave inside and around the building. Top: The new home for the Orange Country Museum of Art will feature ground-level galleries topped by a public plaza bounded by educational and support spaces in a sculptural shell.

Above: Detail of a digital model of the terra-cotta paneling

# **15 In Construction**

Morphosis had been in discussion with Boston Valley Terra Cotta about working together on a project, and the museum presented the right opportunity. It helped that the manufacturer was willing to push terra-cotta's typical uses, as the complex curves of the building's facade are its signature gesture.

"The terra-cotta is like a fabric woven through the building," Welling said. "It's a continuous strip that starts at the end of the upper facade on the terrace and weaves into the lobby, down through the atrium and across the front facade."

To get the terra-cotta to match Morphosis's design—a process that has required constant communication—the panels are cast and then slumped over forms. Judging from the samples, the result will be luminous and tactile, important qualities for a museum striving for a welcoming effect.

The new museum faces a plaza renovated in 2017 by Michael Maltzan Architecture, which prompted the Morphosis team to choose pavers for the area around OCMA that mix precast concrete with the stone from the plaza. These pavers work their way up to the glazing at the front of the building, and the patterning is continued inside. The pavers are used again on the roof terrace to connect it visually to the plaza below.

"We're always looking for opportunities for the ground plane to continue from outside to inside," said Welling, so that the experience on one side of the glazing is not radically different from the experience on the other side. The museum will have a 1,500-square-foot gallery that runs along the Avenue of the Arts on its east side, allowing passersby to see artwork on display.

Most of the building's complexity—those swoops of terra-cotta on its north side—centers upon the classroom and performance space on the terrace level. The space, which is just over 1,000 square feet, is cantilevered over the plaza and hovers over the atrium inside the building. A multilevel, floor-to-ceiling window overlooks the terrace and the plaza below it. Clandening described the multistory space, which features curved and angled surfaces on both the interior and exterior, as "a geodesic box inside a geodesic envelope."

The museum has needed more space for decades to show its permanent collection, which now numbers some four thousand pieces, while continuing to program changing and traveling exhibitions. The new building gives the museum an additional 15,000 square feet, but is smaller than Mayne's original unbuilt 2008 design or what had been proposed in earlier expansion plans. To give OCMA future flexibility, the roof has been designed to accommodate a one-story addition, which would enclose an additional 10,000 square feet on the south side of the terrace.

OCMA's new building fills the last open space within the Segerstrom Center for the Arts—one that's been held for it for a very long time. When the museum opens on the plaza, it will be a welcome and stylish addition. **Briana Miller** 



The museum is part of the Segerstrom Center for the Arts cultural complex.

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# **16 Studio Visit**

# **Johnston Marklee**

Architecture studio Johnston Marklee is best known for designing sophisticated, site-sensitive buildings befitting the display and production of visual art. The Los Angeles-based firm has designed multiple galleries and exhibition pavilions, and its most internationally renowned work is the 2019 AN Best of Design Award-winning Menil Drawing Institute.

Yet principal Sharon Johnston, who founded the firm alongside partner in business and life Mark Lee in 1998, is quick to point out that the eponymous firm has "produced a diverse body of works" that defies any strict scale or type. "Our interest is in history and working within the landscape," said Johnston.

"A key part of our practice is pushing out of bounds to look back at questions we as architects ask with a fresh lens," Johnston continued. "A diversity of voice is something we cultivate with a lot of intentions." That diversity is most apparent in the number of private homes that Johnston Marklee has designed in Southern California and locales farther afield, including Argentina, Hawaii, and Marfa, Texas. Each of the firm's residential projects responds to the surrounding landscape, be it the high desert or abutting the Pacific Ocean, in subtle yet innovative ways. The homes also possess, to quote Johnston, an embedded "sense of intimacy and generosity" that can be found throughout the firm's output, which also includes retail environments for clients such as Knoll, Aesop, and Chan Luu.

"A sense of the domestic is core to all of our work," said Johnston, who noted that the firm's approach has benefited from working with a specific group of clients who are "looking for new frames of reference...and we like fitting into this space." Matt Hickman



# **17 Studio Visit**









#### 1 Vault House

The buoyant Vault House is stretched out on a bed of piles drilled deep into a sandy beach in Oxnard, California. Comprising a series of stacked rooms inching toward the Pacific, the rectilinear home, with its vaulted ceilings, unidirectional arched windows, and curvy recesses, has a markedly narrow frontage. This is typical for Southern California's densely settled beach communities, where the architecture can be lofty but the lots constricted. As a result, single-view oceanfront residences are often dim facing the street and flooded with light on the ocean-fronting side. To help distribute natural light equally throughout Vault House, Johnston Marklee inserted a courtyard into its midsection, neatly dividing the guest quarters from more private areas. "When you're moving through it, it's more like a kaleidoscope in terms of a floor plan," Johnston explained.

#### 2 Menil Drawing Institute

Nestled on the lush grounds of Houston's Menil Collection, the Menil Drawing Institute is often described as Johnston Marklee's "big break," the firm having won the coveted commission over fellow finalists Tatiana Bilbao Estudio, David Chipperfield Architects, and SANAA. Low-slung and arranged around a trio of open-roof courtyards, the relatively compact museum building-completed in 2018, it's the fifth to join the Menil Collection's 30-acre campus-works carefully considered magic with natural daylighting by harnessing sun-blocking steel canopies, light-filtering plantings, and hypercalibrated window placement. The result ultimately feels more domestic than institutional. "There's a generosity about it, an intimacy with the viewer," said Johnston. Nicholas Hofstede, managing director at Johnston Marklee, added that the building's cozy accessibility benefits from a design approach that's "not so much formalist but pragmatic."

#### 3 Margo Leavin Graduate Art Studios

Completed in 2019 for the School of Arts and Architecture at the University of California, Los Angeles, the Margo Leavin Graduate Art Studios breathe new life into an old wallpaper factory in Culver City, California, without stripping the space of its historical patina. Located in a once down-and-out industrial zone known as the Hayden Tract, the project combines an adaptive reuse agenda with a 26,800-squarefoot expansion in line, said Johnston, with the architects' dual objective to find "contemporary expressions within a historic warehouse building" while "thinking about every square inch as a production space." This approach lends the bustling complex, which includes studios, galleries, classrooms, laboratories, and an artist-in-residence loft, more of a "factory than a school sensibility."

#### Philadelphia Contemporary

Philadelphia Contemporary, a peripatetic four-year-old nonprofit arts organizationor "curatorial institution," as it describes itself-announced in 2018 that it had enlisted the firm to design its first permanent home following an exhaustive search. What this much-talked-about home might look like has yet to be publicly unveiled. But the project has opened a door for Johnston Marklee-a firm that's unfailingly mindful of local context and that places such emphasis on architectural fundamentals like light and proportion of space-to "think about buildings that are more like scaffolds for programming," Johnston suggested. "What does it mean for an itinerant arts institution to have a home?"

Change is afoot in Los Angeles, and in this issue, we take the bad with the good. While the controversy over Peter Zumthor's project for the Los Angeles County Museum of Art is justified, the furor overlooks the plan's urbanistic virtues. Meanwhile, in South L.A., a new outdoor museum by Perkins and Will promises to undo a major historical oversight by foregrounding the cultural contributions Black Angelenos have made to their city.



Set to open in December 2020, the 300,000-squarefoot, Renzo Pianodesigned Academy Museum of Motion Pictures is the third institution to make Los Angeles's Hancock Park its home.

#### Nesto Names to Names

## In a few years' time, Hancock Park may become Los Angeles's first true urban microcosm. By Shane Reiner-Roth

"Tip the world over on its side," Frank Lloyd Wright once quipped, "and everything loose will land in Los Angeles." As a fresh L.A. transplant in the early 1920s, Wright clearly had trouble finding his bearings, yet nearly a century on, his testimony remains remarkably apt: To the uninitiated, the "fabric" of Los Angeles's cityscape can feel improvisatory, a game board consisting of extravagantly mismatched pieces.

The very same observation can easily be applied to Hancock Park, which counts geological excavations, fiberglass mammoths, contemporary art, and, soon, Hollywood cinema among its many oddities and enticements. No fewer than three cultural institutions are currently situated on the park's 34 acres, but they are an atomized bunch, existing together in relative isolation. However, plans are afoot that promise to join together these disparate pieces into a museological collection unparalleled in the western United States.

The prime mover is unquestionably the

Los Angeles County Museum of Art (LACMA), which became Hancock Park's first cultural institution when it opened in 1965. William Pereira's palatial yet restrained campus-originally a composition of three buildings (the Ahmanson Building, the Bing Center, and the Lytton Gallery) surrounded by reflecting poolsattempted to cast Los Angeles in the role of art-world magnet even as critics placed it at the margins. As the city expanded its influence in this arena, so, too, did LACMA expand within Hancock Park, with the museum adding buildings by Bruce Goff, Hardy Holzman Pfeiffer Associates, and Renzo Piano. More recently, outdoor artworks by Chris Burden, Michael Heizer, and Robert Irwin have signposted the institution's desire for outward growth at the expense of a defined center.

The La Brea Tar Pits, a group of asphalt lakes from which paleontologists have exhumed the fossilized remains of Ice Ageera Mammalia for more than a century, occupy 13 acres of the park's eastern half. In 1967, the sculptor Howard Ball created a fiberglass family of woolly mammoths along Lake Pit, the largest tar pit on the property, that dramatically raised the unusual site's profile. A decade later, the George C. Page Museum, a quietly monumental museum and paleontological research facility designed by Willis Fagan and Frank Thornton to study and display the fossils, took up residence at the northeastern corner of the pits—as far from the LACMA campus as physically possible.

For nearly half a century, LACMA and the La Brea Tar Pits seemed entirely indifferent to one another, even as they remained cheek by jowl. Both offer as many outdoor attractions as they do interior exhibitions, which has the potential to blur user groups, if not visitor experiences. But the parkland stretching between the two campuses has never done much to smooth the jarring transition from art to paleontology.

This strained dynamic was brought into question in 2014, when construction began on the 300,000-square-foot Academy Museum of Motion Pictures at Hancock Park's southwestern corner. Operated by the Academy of Motion Picture Arts and Sciences, the museum plans to split its programming between two buildings: the former May Company Building, a department store designed in a streamlined moderne style by Albert C. Martin in 1939 (and once briefly owned by LACMA), and the Sphere, a striking high-tech belvedere designed by Renzo Piano and featuring a 1,000-seat theater. When it opens this December, the complex will be America's largest dedicated to the art and science of filmmaking, a craft that turned the orange groves of Los Angeles into a city of global recognition.

With this third player in the mix, LACMA and the La Brea Tar Pits independently saw opportunities to reinvent themselves and, perhaps, finally unify Hancock Park and its





Left: The latest version of Peter Zumthor's design for the Los Angeles County Museum of Art (LACMA) is the linchpin of a revitalized Hancock Park. Top: A composite plan depicts the three projects within its boundaries: the Academy Museum (left), LACMA (center), and the La Brea Tar Pits project (right).

In August 2019, the Natural History Museum of Los Angeles County (NHMLAC), which manages the La Brea Tar Pits, announced it had selected three firms to develop master plans that would take stock of the site's invaluable contents while updating its outdated visitor experience. A few months later, after staging a public exhibit of the projects, NHMLAC elected to push ahead with multidisciplinary firm WEISS/MANFREDI's master plan. The design calls for the preservation of the site's most locally beloved elements, including Lake Pit and the original

aggregate cultural and recreational offerings.

Page Museum, and ties them together with a 3,200-foot-long looping pedestrian path. Calling the Page "introverted," architect Michael Manfredi summarized the scheme's intention to pull back the curtain on the museum's ongoing paleontological research: "Because Hancock Park is a public space, and

not a nine-to-five destination, our master plan

hopes to stretch the hours of engagement by revealing the hidden life of the museum to the public without [visitors] ever stepping inside; to make the science more visible, and make [the displays] a more active element of the park rather than mere inert objects." Manfredi conceded that the scheme is still in development, and his team expects to incorporate more public input in the next design rounds; so far, the joint effort has collected more than 2,100 survey responses from the local community.

Meanwhile, LACMA's own redevelopment plan has been met repeatedly with public and critical scorn. Since assuming the museum's directorship in 2006, Michael Govan has been emphatic about his desire to make his mark with a grand new building. In 2013, he unveiled plans to replace Pereira's midcentury pavilions and Hardy Holzman Pfeiffer's mid-1980s Art of the Americas building with a tabletop design spanning Wilshire Boulevard by the Swiss architect Peter Zumthor. Only Piano's 2008 Broad Contemporary Art Museum and 2010 Resnick Pavilion—a campus in themselves—would be spared.

Though there have been a handful of public meetings following each successive plan (the project has undergone drastic revisions since first being unveiled), local groups contend they have been purposefully left out of the decision-making process by the parties in charge-namely LACMA, Zumthor's office, and the county's Board of Supervisors. Among the most prominent of these is the nonprofit Save LACMA, whose mission statement touts the "enormous pool of good will, sentiment and investment" it has accrued in its drive to protect the museum's beleaguered buildings. Like its ally the Citizens' Brigade to Save LACMA, Save LACMA has decried recent cost estimates putting Govan and Zumthor's project at \$750 million, with \$125 million coming from the County of Los Angeles. Rubbing salt in the wound, another report alleged that the

new LACMA would contain 10,000 square feet less exhibition space than did its predecessor. Summing up the brouhaha in the *Los Angeles Times*, art critic Christopher Knight needled the expansion and dubbed it the "Incredible Shrinking Museum." LACMA fanned the critical flames when, in early April, after stay-athome orders had been issued to reduce the spread of the novel coronavirus, it began dismantling the Bing Center. Later that month, as if capitalizing on the controversy, the Citizens' Brigade unveiled alternative proposals to the Zumthor design, which varied in tone (though nearly all were wistful) and feasibility (with more than one barely-there provocation).

None were as audacious as Zumthor's parti, which is nonetheless poised to improve on LACMA's current campus. As grand as the Pereira buildings may have been in their day, they formed a visual barrier across Hancock Park's southern perimeter and created an inelegant walking path along the campus's





Left: In December, WEISS/MANFREDI won a competition to redevelop the 13-acre La Brea Tar Pits parkgrounds, edging out proposals by Dorte Mandrup and Diller Scofidio + Renfro. After more than 100 years, the site remains an active hub for paleontological research. Above: In addition to reclaiming a parking lot for recreational use, the project promises to make more visible the inner workings of the research center while activating museum displays.

expanding east-west axis. From the west, visitors had to scale the Ahmanson Building's pompously wide stairs before stumbling onto the main plaza, later blocked from Wilshire with the addition of the Arts of the Americas building.

Zumthor's decision to lift all the exhibition spaces and other museum functions into the air (and over Wilshire) grants visitors unfettered access to the central axis of the park. At LACMA in February, Govan quipped that visitors to the future Hancock Park will be able to go from "movies to mammoths" without paying an admission fee. It's striking that this consequence of Zumthor's planning has survived all the project's alterations; clearly, critic Christopher Hawthorne was correct in saying all the way back in 2013—that the design was less aloof than his peers made it out to be.

A composite site plan of all three ongoing projects reveals a Hancock Park that bears little resemblance to its present self: A flock of Piano-designed structures congregates in its western half, absorbed in their own symmetries; Zumthor's spaceshiplike LACMA retreats from the park's center and straddles Wilshire Boulevard to the south, touching down on a one-acre park (currently a parking lot owned by the museum); and, while still subject to change, the pedestrian loop winding through WEISS/MANFREDI's La Brea Tar Pits master plan echoes LACMA's curves, as if the two entities were at last ready to tango after decades of bumping elbows.

This gradual movement toward greater cohesion tracks with two other L.A. projects currently in the works. The first is the addition of seven new stations to the Metro's D Line along Wilshire Boulevard, representing a major improvement to the city's underdeveloped public transportation infrastructure. The Wilshire/Fairfax station, sited directly across the street from Hancock Park, is slated to be completed in 2023, three years after the Academy Museum and one year before LACMA (though a construction timeline for the La Brea Tar Pits master plan is still in the works, one may expect that it will attempt to align with its neighboring developments). According to the Los Angeles County Metropolitan Transportation Authority, or Metro, LACMA has indicated it would finance a second station entrance on its campus, which would connect the block to the city at large more seamlessly than ever before.

Yet even Metro has felt the pressure to accelerate its construction timeline in response to a second, even larger citywide goal: the 2028 Summer Olympics, the third time in the event's modern history that the games will be held in Los Angeles. As if impelled to replicate the success of the previous iteration in 1984–considered the only profitable games in modern Olympic history– Los Angeles is currently abuzz with construction on large-scale developments, including the Lucas Museum of Narrative Art (see page 30), SoFi Stadium, and the renovation of Los Angeles International Airport (LAX). Against this backdrop, the transformation of Hancock Park into a single, coherent block of art, film, and prehistory in time for the Olympics would be a major boon for the city's title as a cultural capital. (Such a consolidation might even compel Angelenos to finally call the park by its official name, which it shares with a wellheeled residential cluster to its east.)

At the time of this writing, Hancock Park is not much to look at. Some elements are dulled by years of neglect, others too shiny for lack of occupation, and others still scarred by the recent violence of demolition. Yet a little patience will likely yield an outsize reward: a true microcosm of a city possibly too large in size and cultural importance to take in by any other means.

# A South L.A. Homeconing

Destination Crenshaw celebrates the culture of South Los Angeles as it parades down the community's main drag. By Matt Hickman



A long drive through Los Angeles, a city famed for both its car culture and the superlative diversity of its residents, will take you through a generous number of officially designated ethnic and cultural enclaves: Little Tokyo, Chinatown, Little Ethiopia, Persian Square, Historic Filipinotown, Olvera Street, Little Armenia and neighboring Thai Town, and Koreatown, a district so large and so dense that it comprises an entire major neighborhood *and* surrounds a separate ethnic enclave in the form of Little Bangladesh.

But as pointed out by Marqueece Harris-Dawson, a Los Angeles City Council member who represents District 8 in the western section of South Los Angeles, this sprawling patchwork of city-christened cultural districts omits one of L.A.'s largest, oldest, and most established communities: that of Black Angelenos.

"There's nothing in L.A. that officially designates [a cultural district] for the group that's been here the longest outside of Native Americans," Harris-Dawson told *The Architect's Newspaper.* "Black people founded the city of L.A." (Harris-Dawson is referring to the Pobladores, the group of 44 settlers, half of whom were of at least partial African descent, who established the city in 1781.)

That's all set to change, however, with Destination Crenshaw, a project spearheaded by Harris-Dawson that broke ground along Crenshaw Boulevard in the South L.A. neighborhood of Hyde Park this past February.

Spanning 1.3 miles-or 2.6 miles, if you're

counting both sides of the street—along an over-12-block stretch of Crenshaw Boulevard's historic commercial core, Destination Crenshaw will entail infrastructural and lighting improvements, facade rehabilitation, landscaping, community gathering spaces, "unapologetically Black" public art, and more. It's easiest thought of as an open-air linear art and history museum celebrating South L.A.'s African American community.

Slated to feature over 100 permanent and rotating street-side artworks from established and emerging Black L.A.-based artists, Destination Crenshaw will be an experience that has some of the narrative-driven qualities of a museum but is ultimately rawer, more dynamic, and liberated from the constraints of four walls.

The project was born from urgency as a direct response to community uproar surrounding the expansion of the Los Angeles Metro Rail system. The Crenshaw/LAX Line. an under-construction \$2.1 billion light-rail line that will run at grade along this stretch of Crenshaw Boulevard, has long been a source of apprehension for residents and community leaders, particularly with regard to the impact that a major transit project could have on local small businesses, homeowners, and the fabric of the community. Transit-spurred gentrification was and still is a major concern. Yet some, including Harris-Dawson, have come to view the arrival of the Crenshaw/LAX Line, which includes two new Metro stations bookending Destination Crenshaw, as an opportunity

to create something new. And that something has ultimately taken the form of a streetscape unlike anything that's been attempted before.

"When you simplify it, we're just building a platform to showcase and grow the things that already come out of the Black community," said Harris-Dawson. "What we're doing isn't rocket science—except for the amount of art, because that's quite unprecedented."

In addition to implementing long-sought infrastructural improvements, including bike racks, additional parking, and new, "culturally stamped" sidewalks, Destination Crenshaw will, in the words of Harris-Dawson, use public art and design to illustrate "the story, culture, and roots of this neighborhood in a way that you can hear, see, touch, and feel so that it actually reflects where you are."

Funding for the \$100 million project has come from a range of sources, including private backers, the City of Los Angeles, the State of California, and the Los Angeles County Metropolitan Transportation Authority, which contributed \$15 million earmarked for a large, Metro station-adjacent park at its northern end.

To aid in envisioning a dynamic solution that would protect and support Black-owned businesses along Crenshaw Boulevard while also introducing new elements spotlighting South L.A.'s profound global cultural influence, Council District 8 turned to the Durham, North Carolina-based office of Perkins and Will. Leading the Destination Crenshaw design team is Zena Howard, a protégée and colleague of the late Phil Freelon. Most notably, Howard served as senior project manager for Freelon Group on its work alongside Adjaye Associates at the Smithsonian's National Museum of African American History and Culture in Washington, D.C. (Perkins and Will acquired Freelon Group in 2014, five years before Freelon's passing.)

"Our practice focuses on using the built environment to bring to light and support communities and their untold stories," said Howard, who is currently managing director of Perkins and Will's North Carolina office. "And oftentimes these are communities that have been disenfranchised or otherwise marginalized or divided."

"There really isn't a true precedent for this," Howard added. "There are some projects that are in the same ilk-people cite the High Line and other things-but there are none that tell a consistent story that had not really been put forth, and that are community-driven and inspired in the way that this is."

The opportunity for extensive community engagement and collaboration with a vast and diverse number of partners was immensely appealing to Perkins and Will. "It excited us...[as] a way to have architecture partner with so many different aspects of our community, culture, and society to help bring this story to light," Howard explained. "We were up for doing something that had never been done before."

Crucial to the engagement process was working alongside Destination Crenshaw to

#### 23 Feature





Left: With a design inspired by the flowers of African star grass, metal shade canopies with integrated story panels provide a refuge from the heat while telling the story of Black L.A. Above: Located near the southern end of Destination Crenshaw on Crenshaw Boulevard and Slauson Avenue, I AM Park is one of several green spaces that will provide natural venues for community gatherings.



munities to gather.

Facing page: The triangular Sankofa Park and its elevated viewing plaform will anchor the northern end of Destination Crenshaw where Crenshaw and Leimert Boulevards meet. Above: With a shape<br/>inspired by the myth-<br/>ical West African<br/>bird, Sankofa Park's<br/>elevated platform is<br/>meant to create a<br/>local place for com-Right: Aerial view of<br/>the overlook at San-<br/>kofa Park<br/>bird, Sankofa Park's



form a diverse, multigenerational design advisory council or, as Howard referred to it, an "'A' team of thought leaders, artists, and people who have lived in the community for decades."

Among the 20-person-strong community partner team are gardener, artist, and community activist Ron Finley; Amanda Hunt, director of education and senior curator of programs at the Museum of Contemporary Art, Los Angeles; Felicia Filer, public art division director for the City of Los Angeles Department of Cultural Affairs; filmmaker and activist Ben Caldwell; and street artist ArcherOne. Rapper, activist, and Crenshaw native Nipsey Hussle was also intimately involved in the planning and advisory stages of the project before his death, in March 2019.

These are "people on the front lines of Black L.A. art culture," Harris-Dawson said. "Some of them are artists, some are curators, historians, community organizers, and urban planners. But they all have some tie together... and they're real community stakeholders."

"We chose them because you have to have real authoritative pushback when people design something that does not reflect you," Harris-Dawson added.

The unifying design narrative that emerged from the monthslong charrette process was "Grow Where You Are Planted." Praising and encouraging endurance against all odds, the design uses African star grass as a central motif. Moving south to north along Crenshaw Boulevard, Destination Crenshaw is divided into four distinct thematic nodes, or "lenses,"

that together tell the story of Black Los Angeles's past, present, and future. Each node features small parks, interactive installations, and, of course, an abundance of public art. Commencing at the planned Hyde Park station, at Slauson Avenue and Crenshaw, is the "Improvisation" node, which was inspired by Hussle and celebrates the spirit of creativity and ingenuity in the face of limited resources. Beginning at 54th Street is the "Firsts" section of Destination Crenshaw, which uses the story of Biddy Mason, one of L.A.'s first female Black landowners, to spotlight numerous other trailblazing individuals and events that came from or took place in South L.A. At 50th Street is the start of the "Dreams" node, which was inspired by the life and career of pioneering African American architect Paul R. Williams, and includes the Crenshaw Wall, a mural-clad 800-foot wall/ canvas that dates back to the 1970s. Around the planned Leimert Park station, on Vernon Avenue, Destination Crenshaw concludes in the spirit of "Togetherness," which, as Howard explained, is "about the ability of this community to come together to celebrate, to resist, and to mourn in times of happiness and protest." This northernmost section of the project will include its centerpiece, Sankofa Park, a large, open public space straddled by an over-

backward. In addition to Sankofa Park and a multitude

look structure whose form takes its inspira-

bird, which flies forward while also looking

tion from the symbol of the mythical Sankofa

of pocket parks punctuating Destination Crenshaw, landscape design firm Studio-MLA is overseeing a major tree planting effort. Nearly all the trees along this stretch of Crenshaw Boulevard were removed by the city in 2012 to make way for the space shuttle *Endeavour* as it was hauled 12 miles through the streets of L.A. to the California Science Center. Although trees were replanted in other areas of the city that the shuttle traveled through, Crenshaw Boulevard has remained woefully barren.

"This is also an environmental equity project," said Howard, referencing the landscape design. "We are also reforesting, bringing back 822 trees to beautify this boulevard and to make it a humane place to be."

As Kenneth Luker, the project's lead design principal with Perkins and Will, explained, one of the main challenges in conceiving Destination Crenshaw revolved largely around scale.

"How to create a unified experience across such a large urban landscape was challenging when we consider how many other components of the urban context need to coexist with this project, such as the Metro, Crenshaw Boulevard, and many private landowners," Luker said. "The 'connective tissue' of our concept was designed specifically to unite this urban landscape of multiple pocket parks, art installations, and exhibits."

Beyond the interventions by Perkins and Will, Destination Crenshaw is also investing in a facade improvement program for existing small businesses along the corridor, starting with soul food restaurant Dulan's On Crenshaw. This is important, Harris-Dawson pointed out, because "we want these businesses not only to survive with the new train coming but to thrive."

With an estimated completion date in early 2021, Destination Crenshaw is scheduled to greet riders of the Crenshaw/LAX Line when that project wraps up around the same time. And while concerns linger over how the new presence of mass transit will play out in this pocket of South Los Angeles in the near future, Destination Crenshaw will have at least already made a bold and beautiful mark in a community whose cultural influence—in visual art, music, and film—spans the world but has never been officially saluted in its own backyard.

"While this project can't resolve all of that," said Howard, referring to the potential for transit-oriented development and real estate turnover resulting from the new Metro line, "we can mark this area culturally with icons, art, architecture, and landscape design that speaks to and memorializes this community and their contributions regardless of any change that may happen later."



Our annual facade supplement explores the state of building skins in the United States today and what they'll look like tomorrow. One of the biggest trends we're seeing is the growth of custom repetitive manufacturing, which is making bespoke cladding systems more attainable for a wider array of projects than ever before. A panel of international leaders in facade engineering discusses the capabilities and long-term implications of the technology in a series of interviews. Case studies of innovative projects from across the country cover a variety of materials and applications, including the spacecraftlike glass fiber-reinforced plastic facade of Los Angeles's Lucas Museum of Narrative Art and the ETFE pillows of The Bloomberg Building (home of The Shed) in New York City. Product listings round up the latest in customizable cladding systems, biophilic tensile screening, coatings, and curtain wall systems. We also dissect the vogue for exoskeletal towers to understand what the future of facades has in store. By Gabrielle Golenda and Matthew Marani



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Facades

## In cities across the country, a new class of towers celebrates structural lines while pushing technological boundaries.

Feature

By Matthew Messner



Zaha Hadid Architects' One Thousand Museum tower in downtown Miami features an innovative glass fiber reinforced concrete frame.

When 875 North Michigan Avenue, formerly the John Hancock Center, opened on Chicago's Magnificent Mile in 1969, it signaled a departure from the all-too-prevalent trabeated Miesian skyscraper. Its subtly tapered 100-story form and iconic X-frame structure, designed and engineered by Skidmore, Owings & Merrill's Bruce Graham and Fazlur Khan, respectively, demonstrated that beauty and structural performance need not be mutually exclusive. As if taking this lesson to heart, a new crop of expressively framed towers has sprung up around the country in recent years, each one upping the ante in exuberant form and structural daring.

In Seattle, a short walk from the city's famed, OMA-designed central library, The Mark gamely cantilevers over its older neighbors. The 48-story hotel-and-office tower, designed by ZGF Architects and engineered by Arup, relies on a hybrid steel "megabrace" and concrete core structure to perform its acrobatic feat. Comprising multistory steel members, the triangulated megabrace—so termed by Arup—addresses the structural complexities of building a formally expressive tower in the volcanically active region. The architects also rehabilitated the two historic structures nestled below The Mark's protruding midsection: the First United Methodist Church (now an event space) and the Rainier Club. Their efforts have resulted in an eclectic city block, complete with classically proportioned low-rise structures and a decidedly contrapposto tower.

In San Francisco, the Heller Manus Architects-designed 181 Fremont employs a similar megabrace structure (again courtesy of Arup) capable of withstanding the city's seismic activity and ever-present wind loads. But the slightly tapering tower also deploys a structurally integrated damping system (rather than the more typical tuned mass damper), which enabled the architects to increase the tower's height; at 802 feet, 181 Fremont is the tallest residential high-rise on the West Coast. And because the shocklike dampers work in-line with the megabrace, the design team was able to eliminate tons of steel from the project–3,000 tons, in fact. The envelope created additional efficiencies; calibrated to the angle of the sun, the "saw-tooth" glass facade reduces solar gain by 6 percent.



Ateliers Jean Nouvel's 53 West 53 tower in Manhattan uses a reinforced-concrete structural frame.

In a departure from the steel systems normally associated with exoskeletal structures, Ateliers Jean Nouvel turned to concrete for the French firm's first residential tower, 53 West 53 in Midtown Manhattan. At almost the same supertall height of 875 North Michigan Avenue, 53 West 53 even takes some aesthetic cues from the Chicago icon, but the similarities are superficial. Nouvel's skyscraper was meant to be even taller, but political and economic exigencies—negotiations with city planning, the Great Recession—prompted a complete structural rethink, including subbing out the steel for reinforced concrete. Sloping and slanting up to a pointed precipice, the structure trades a normal diagrid for highly irregular facets, palpable on the exterior as well as the interior. The result is a celebration of the structure in all of the building's 145 units, each with expansive windows spanning massive diagonal structural members.

In downtown Miami, One Thousand Museum takes the possibilities of concrete to even further extremes. Designed by Zaha Hadid Architects and engineered by DeSimone, the luxury high-rise employs a unique structural



The Mark by ZGF Architects and Arup cuts a striking silhouette in downtown Seattle, thanks to its hybrid steel "megabrace" and concrete core structure.



In San Francisco, Heller Manus Architects has designed 181 Fremont, which makes cunning use of a structurally integrated damping system.

system made up of 4,800 prefabricated glass fiber reinforced concrete (GFRC) panels. The pieces, which were individually fabricated in Dubai and test fitted before being shipped to the dense Miami lot, act as both concrete formwork and finished surface. Whereas 181 Fremont and The Mark contend with intense seismic conditions, One Thousand Museum is faced with a very real hurricane threat. The structural system was put to the test perhaps earlier than expected when Hurricane Irma, a Category 4 storm, struck Miami in September 2017, as construction was underway. By exploring the formal potential of GFRC, the svelte tower sets a new bar for aesthetic, structural, and construction methods. As a proof of concept, it represents a dramatic advancement of 875 North Michigan Avenue's revolutionary construction, while opening new doors for expressionist towers to come.

## **Fabrication Futures**

## Facade engineers discuss the international trend of custom repetitive manufacturing.

Computer-aided manufacturing has revolutionized the field of facade manufacturing over the last decade. Dana K. Gulling, author of *Manufacturing Architecture*, describes the overall trend as one of "custom repetitive manufacturing," which reestablishes a level of customizability in industrial processes and facilitates fruitful collaboration between architects, facade engineers, and manufactures from the design-assist phase to completion. To learn a bit more about the shift, *AN* surveyed leading facade engineers about how it affects their work. By Matthew Marani



Erleen Hatfield Managing Partner, Hatfield Group

Custom repetitive manufacturing (CRM) has the potential to change how we design and construct buildings by making advanced digital design processes—like computational and parametric design—a viable option for a broader range of clients. This results from custom-designed elements being fabricated cost-effectively and with minimal production waste. In our work as a design-driven engineering firm, we embrace CRM as a powerful tool for realizing even the most technically demanding architectural designs.

Before CRM, fabricating the type of custom elements associated with these processes was too expensive for most clients—it only made sense for high-budget projects, so the tremendous potential of digital design methods could not be realized on a broad scale.



Chris O'Hara Founding Principal, Studio NYL

The most important aspect of maximizing custom fabrication in mass production is to use the technology judiciously. Oftentimes in our studio, we try to take complex forms and develop them for modest budgets. To achieve this goal, we use a "kit of parts" mentality. We use mass-produced extrusions for glazing systems and mass-produced cladding support systems for our opaque cladding, and marry them with a substructure that can be digitally fabricated or arranged in a unique geometry to realize complex forms or longer spans.

Often lost in our ability to fabricate is the reality of installation. We can solve the translation of fabrication to installation through panelization, but in our experience it often is the marriage of high tech and low tech that leads to the best results. The fun and challenge is: How do we manipulate the systems our installers are comfortable with and use basic principles to make them unique?



Michael Min Ra Cofounding Partner, Front Inc

Key factors driving the realization of custom systems and components are a combination of conceptual demand and corresponding supply through advancements in and adaptations of technology in design tools, transfer of data, and compatible methods of manufacturing.

This sequential exchange of digital data from relatively low-resolution initial design to highly refined final solution enables successful custom fabrication and assembly of parts, and variability within given system parameters and schedules.

This mode of practice is applicable to both repetitive and variable facade typologies. Repetition offers profound advantages in allowing more detail definition with simplified cost control, whereas variety can be accommodated through instantiation. As the costs of digital design processes diminish and designers' manufacturing and construction knowledge expands, this process of customization will proliferate to the extent seen in other industries that benefit from economies of scale.



Ashley Reed Director, DeSimone Consulting Engineers

When we consider the repetitive manufacturing and automation of building enclosure systems, we need to evaluate three distinct phases: design, fabrication, and installation. Advances in fabrication technologies and installation practices are instigating a collapse of the latter two phases. However, people are still superior at improvising and handling the complexity of on-site conditions and fabrication. Enclosure systems consist of assemblies designed to withstand loads and integrate varying levels of boundaries to control heat, air, and moisture. Currently, the fabrication of assembly components is automated, but the compilation of these components into the ultimate assembly is still largely reliant on human labor.



Anna Wendt Director, Buro Happold

Repetitive manufacturing has long been admired from a cautious distance by both engineers and architects. Cost efficiency, precision, mass production, and shorter lead times are advantages that shouldn't be ignored. The increasing opportunity to introduce unique, customizable features to the repetitive manufacturing process provides further opportunities for ensuring that a sense of craftsmanship is achieved for iconic buildings.

An example where the Buro Happold facade engineering team has pioneered the use of such technology is on the King Abdulaziz Centre for World Culture in Dhahran, Saudi Arabia. The project, designed by Snøhetta, has a unique facade comprising an intricate surface made from 215 miles of CNC-bent stainless steel tubes. Innovative planning and design allowed the design to be optimized and developed for production by the facade contractor seele.



Benson Gillespie Partner, SURFACE DESIGN GROUP

The ability for fabricators to provide custom facade systems has been a blessing for smaller and midsize projects. Our 10 Jay Street project [in Brooklyn, New York], designed by ODA, is a great example of this trend, where a completely custom curtain wall system was used to achieve a geometrically complex facade design at a relatively limited scale. We expect that custom facade systems will only increase throughout the industry as parametric software becomes more integrated within design and fabrication processes.

This trend has led to an increase in the numbers of international fabricators participating in the design-assist and bidding processes, as their custom systems are often competitively priced in comparison with standard systems offered by local vendors. This leveling of the global playing field has significantly expanded the options available to designers and owners.



Karen Brandt Senior Principal, Heintges

Although custom repetitive manufacturing is not a new technique for some materials in facades, like terra-cotta, exploration and advancement of the design potential of custom repetitive manufacturing is increasingly a part of our consulting work with architects. We've observed a shift in interest from designing "one-off" final products to interest in custom tools used in the fabrication process that have the potential to amplify the value of both human and machine fabrication time. There is a fascinating range in "custom tool" approaches: from an extremely expensive but reusable tool used for the fabrication of complex bent architectural glass to an extremely inexpensive, but ultimately disposable, CNC-routed foam mold for architectural precast concrete. Sustainability will ultimately be the most important consideration to advance these approaches.



Alloy Kemp Associate, Thornton Tomasetti

Custom repetitive manufacturing has forced us to be smarter about where we implement custom solutions and repetitive processes. Designing bespoke facades, even if they're easier to realize now, still can incur increased cost. For example: Processes like heatwelding ETFE panels or laying up composites over a mold can be programmed to be repeated even when the physical output is different. But for curtain wall extrusions, numbers of dies are still a major cost factor. Attaching mullions at varying angles is less influential on cost. While we're past the point of specifying one typical detail, not everything can be made fully custom at the same economy. It's the fun, exciting challenge of being a facade engineer: to make complex facades developable from a

repeated kit of parts and processes.



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## Lucas Museum of Narrative Art





#### Architect: MAD Architects Location: Los Angeles

Architect of record: Stantec Architecture Enclosure consultant: Walter P Moore GFRP panel fabricator: Kreysler & Associates

The form of the Lucas Museum of Narrative Art is suggestive, shape-shifting, not unlike the popular media to which the nascent institution is dedicated. Under construction since 2018, the curvilinear 290,000-square-foot museum is beginning to animate the entire western edge of Los Angeles's Exposition Park, a 160-acre park opposite the University of Southern California. The project, which is named after its chief benefactor, the filmmaker George Lucas, joins a loosely cohered complex of cultural and recreational destinations, including the Natural History Museum of Los Angeles, the California Science Center, and

#### the Los Angeles Coliseum.

Facades

In 2014, the Beijing-based firm MAD Architects prevailed in an international design competition that tasked participants with translating the lofty, future-oriented miseen-scène of the Lucas brand into a landmark piece of architecture. After a lawsuit prompted the museum to relocate from Chicago to Los Angeles, MAD refined its winning proposal into a stunningly amorphous "creature" with nary a right angle in sight, popularly likened to a spaceship by locals and critics alike. Containing a permanent collection and rotating exhibits dedicated to the media of filmmaking, in addition to theaters, classrooms, and a free public research library, the sweeping structure gracefully (in renderings, at least) spans 185 feet at its center to form a new gateway to Exposition Park.

The enormous building rests on a base isolation system that will gently rock the

structure in the event of an earthquake. But in order for that system to work, the design team had to be extra mindful of the weight of the outer paneling, or rainscreen. After it was discovered that glass fiber reinforced concrete (GFRC), a composite material popular among architects of curvilinear building facades, would overburden the base isolation system, the team opted for glass fiber-reinforced plastic (GFRP), a highly durable composite material a fraction of the weight of GFRC.

Case Study

The chief benefit of both composites is the supersmooth exterior surface they can yield, provided that panels interlock in just the right way. To that end, MAD enlisted an army of tools including Maya, Rhino, Dynamo, and Revit, each with a number of plug-ins and custom scripts. The architects sent all this modeling information over to Kreysler & Associates' production facility on Mare Island, in Northern California, where each of the 1,500 GFRP panels is being fabricated. There, a CNC machine cuts out custom foam molds, into which a resinous mixture is injected; after the curing process, robot arms scan the panels to verify their dimensions and contours before sanding them to a smooth finish.

May 2020

The panels will then be shipped to Exposition Park, where, beginning this month, they will be installed in a secondary structure of variegated trusses branching off the burly primary structure, which is made up of predominantly straight beams. At the time of writing, the museum's superstructure is only halfway erected, the first outlines of a cinematic vision. For now, observers will have to fill in the gaps—or scene—themselves. Shane Reiner-Roth





Facing page, top: Located at the edge of Exposition Park, the Lucas Museum will have an otherworldly presence befitting the Lucas brand. Facing page, below: Prototypes of the GFRP panels were fabricated at Kreysler & Associates' facility in Northern California.

Above: An exploded f axonometric drawing re of the facade shows er the exterior GFRP y panels, secondary a. structure, weather wall, and building structure. Left: Every GFRP panel will be uniquely fabricated using individually shaped molds.

## **The Bloomberg Building**



Architectural designers: Diller Scofidio + Renfro, Rockwell Group Location: New York

Facade manufacturers: Vector Foiltec, Cimolai, CS Facades

Facade installer: Sciame Construction Structural engineer: Thornton Tomasetti System: Custom steel shell clad in ETFE panels

Product: Texlon ETFE

Hudson Yards, the mega-development reshaping Manhattan's Far West Side, needs little introduction; it has been both praised and vilified for its gigantic scale and contentious urban ethos. Regardless of the controversy surrounding it, the project showcases some ambitious engineering. Designed by Diller Scofidio + Renfro (DS+R) with Rockwell Group, The Bloomberg Building's versatile ETFE cladding and mobile shell exemplify the development's remarkable construction.

The Bloomberg Building, home of The Shed, a cultural center, is a multipurpose structure composed of four stories of loftlike spaces clad in a unitized glass curtain wall. The building is encased in a pillowy shell of diamond-shaped ETFE panels that rest on six gargantuan tracked wheels—bearing some resemblance to the industrial shipping infrastructure formerly located on the nearby Hudson River.

ETFE is a pliable and lightweight alternative to glazing. The Shed lies atop Hudson Yards' overall foundation, which is composed of a vast network of trusses spanning old rail yards below, and the use of heavy insulated glass units would potentially overload this nonadjustable structure. According to DS+R associate principal Charles Berman, ETFE was also chosen for its spanning capabilities and inherent flexibility. "ETFE can be fabricated into much larger, self-supporting, pneumatic cushions that allowed the facade to enclose the structural steel frame without intervening substructures of aluminum or steel," Berman said. "ETFE's flexibility permitted DS+R to address the dynamic deflections that The Bloomberg Building experiences when in motion without the complex moment allowances and expansion joinery that a glass and metal facade would require."

Collaboration proved crucial to the project. DS+R, facade consultant and structural engineer Thornton Tomasetti, contractor Sciame, and fabricators were involved from the early design-assist phase. According to Thornton Tomasetti associate Alloy Kemp, the early stages of the design sought to push the limits of the ETFE panel size while meeting the daylighting and acoustical requirements of the performance space within. The structural steel frame is girded with a U-shaped upstand that is fastened at key points; fabricator Cimolai assembled each component in Pordenone, Italy, prior to shipment to New York. Once in place, the steel shell was outfitted with aluminum extrusions and plates, and then the ETFE panels were installed. Inflation tubing was set for each panel during the installation process.

The material and location also presented unique challenges for the contractor. "ETFE must be installed in temperatures above 40 degrees Fahrenheit. Any colder and the material becomes brittle and will lack the pliability needed for installation," said Sciame senior vice president Steven Colletta. "Getting the material to look right-it cannot be too tight or too slack-required a great deal of field adjustment and coordination to account for the anticipated movement of structural steel, all the more complicated because of Hudson River-borne winds." Matthew Marani









Facing page, top: The Bloomberg, which houses The Shed, rests at the base of 15 Hudson Yards and is enclosed with a movable ETFE shell. Facing page, below: Each of the diamond-shaped panels is 25 feet in its short dimension and 60 feet at its long dimension. Each is split in half to form two acute triangles.

# **Top:** The lightweight qualities of ETFE, as opposed to glazing, reduced the possibility of overloading the foundation structure

and avoided complex

ances and expansion

movement allow-

joinery.

Above and left: Custom aluminum extrusions, fastened to a steel upstand with aluminum plates, are the point of connection for the ETFE cushions. Inflation tubing for the panels passes through the steel upstands.

33

Facades

Case Study

May 2020

## **Biophilic Tensile Screening**

In an attempt to connect nature with the built environment, these vertical greening systems enliven building skins with flora. Added benefits include sound absorption, daylight screening, and reduction of solar heat gain. By Gabrielle Golenda

#### **Modular Panels** greenscreen

greenscreen.com

Greenscreen's welded-wire green facade wall system has a flexible panel structure that allows for mounting at various depths and angles. Standard panels are offered in 4' widths by 6', 8', 10', 12', and 14' lengths, and can be installed vertically or horizontally. Custom panels are also available.

### **Trellis System Green Wall** Jakob Rope Systems

Jakob's modular trellises are fashioned from lightweight, rigid panels that can be freestanding or wall-mounted. The system comes as a kit, which includes wire trellises, spacers, anchors, high-tensile steel cables, and supplementary equipment.

jakob-usa.com



#### **Basic Wall** GSky

Using 5' and 10' screens, this modular vine system is designed for full plant coverage on expansive, monolithic facades. GSky designs and fabricates the panels, then installs irrigation and greenery on-site.

gsky.com

#### **Omni Facade** Omni Ecosystems

Made from lightweight aluminum, this screening solution is easy to install. It is often paired with Omni Infinity Media, a self-regenerative soil ecosystem that minimizes runoff.

omniecosystems.com







Dearborn Residence | Chicago, IL | Filoramo Talsma Architecture | Photo: Sinziana Velicescu

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## **Charred Wood Cladding**

A centuries-old Japanese technique, *yakisugi*, often called shou sugi ban outside of Japan, is a way of charring wood to prevent decay and infestation, as well as provide dimensional stability and fire resistance. These manufacturers use their own processes to mimic traditional results. By Gabrielle Golenda

#### **Ignite** Thermory

Unlike other manufacturers, Thermory doesn't use fire in its shou sugi ban. Instead, the company uses steam and heat processing for added durability, moisture wicking, and rot resistance. The panels have a charred-looking finish.

thermoryusa.com

#### Charwood Montana Timber Products

Made from reclaimed wood from the western United States, this shiplap siding is stained and sealed in six tones ranging from lightly seared to blackened.

montanatimberproducts.com

#### Kebony Shou Sugi Ban Delta Millworks

Delta Millworks, a timber manufacturer based in Austin, Texas, takes Norwegian wood brand Kebony's Monterey Pine Clear lumber and chars it to emphasize the wood grain. Delta offers the product in Gator or Half Gator (thoroughly or more lightly scorched).

deltamillworks.com



#### MATSU reSAWN TIMBER co.

reSAWN singes British wood brand Accoya's high-performance wood to a charcoaled crisp, providing added durability and weathering resistance. While recoating is encouraged to conserve the charcoal surface, the exposed timber will naturally develop a gray patina over time.

resawntimberco.com



#### **Suyaki** Nakamoto Forestry

Four mills in Hiroshima and Tokushima prefectures burn a thick, water-repelling, UV-resistant soot layer on Japanese cedar sourced from sugi and hinoki forests. The wood is then oiled to seal the soot layer, creating a hydrophobic surface that requires little to no maintenance.

nakamotoforestry.com



#### Blackland Matchstick Woods

Matchstick chars this cypress by hand to amplify the wood's natural deeply grooved texture and finishes it with a VOC-free sealant. The Texas company offers Blackland in 1"-thick planks either 6" or 8" wide and up to 12' long.

matchstickwoods.com









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The Residences at Twelve40 | Philadelphia, PA Architect: ISA - Interface Studio Architects, LLC, Philadelphia, PA Installer: Classic Exteriors, Perkasie, PA Distributor: Marvic Supply, Richlandtown, PA

Left: Multi-Purpose Panel & Rigid Wall II in Silversmith Solid & Perforated Panels Z Boxes in Silversmith ATAS International, Inc. Allentown, PA | Mesa, AZ 610.395.8445 | www.atas.com

## **Charles Library**







Left: Sheltered entryways create covered plazas for Temple University's Philadelphia campus. **Top:** Facing a busy pedestrian thoroughfare is a cedar-clad entryway that's carved into the side of the library's formidable granite base.

Above: The Charles Library's curvaceous wooden arches extend past glass facades and into a soaring domed atrium lobby.

Architect: Snøhetta Location: Philadelphia

Architect of record; sustainability and LEED consultant; MEP engineer: Stantec Civil engineer: Hunt Engineering Company Structural engineer: LERA

Facade consultant: Heintges Design programming consultant: brightspot

strategy
Dome geometry and framing fabricator:

Radius Track Glass curtain wall assembly and installation: National Glass

System: Split-faced granite and red cedar rainscreens; glass curtain wall

Stone: Coldspring split-faced Mesabi black granite

Glass curtain wall: 1" IGU (1/4" clear glass, 1/2" airspace) with coatings on second surface; coatings at arched entrances: Viracon VE-85: coatings elsewhere: Viracon VNE-63

85; coatings elsewhere: Viracon VNE-63 Interior wood: ACGI Linear Systems Open Series 3 with western red cedar, 2" by 5/8"

nominal thickness Exterior wood: ACGI Linear Systems Open Series 3 with western red cedar, 2" by 1" nominal thickness

Contractor: Daniel J. Keating

In designing the Charles Library at Temple University in North Philadelphia, Snøhetta wanted to make a contemporary statement that would integrate harmoniously into the pedestrian core of a leafy, architecturally diverse urban campus that is still largely defined by historic stone masonry edifices.

The resulting building, a research library clad in stone, wood, and glass and topped with one of Philadelphia's largest green roofs, achieves this goal with aplomb. Completed in August 2019, the 220,000-square-foot library serves as a bold yet welcoming center of gravity for the surrounding landscape.

"In the course of identifying the strategic goals of the project, we identified a strong need for the library to be a magnetic heart of the campus—and embracing, so to speak," said Snøhetta project manager Chad Carpenter. "It's a place that people want to come to that's at the heart of their path between all the different departments on campus."

The designers wanted the library to reference the stately stone facades of neighboring buildings. After considering the use of precast concrete panels, the team ultimately chose an open-joint stone rainscreen system when budget calculations showed that the former would not be viable. Six-inch vertical sections of split-faced Mesabi black granite sourced from Minnesota-based quarrier and fabricator Coldspring clad much of the building.

"A lot of universities have a fairly rigid material palette, but **continued on page 40** 

# Vibrance



**The upper two-thirds** of this Technical Education Center is clad with Petersen's Highline S1 panel in three shades of red, gray and white, as specified by Pfluger Architects. The mix of finishes and profiles adds a high-tech appeal, with vibrant colors that pop and installation detailing that creates unique shadow effects.

**Career & Technical Education Center, TX** Installing contr.: Texas Roofing Co. Architect: Pfluger Architects GC: American Constructors Owner: Del Valle Independent School Dist. Photo: alanblakely.com

#### **Highline S1**

Metal Wall Panel System Cardinal Red, Ron Red, Tor Red, Bone White, Cityscape



CASE STUDY @ PAC-CLAD.COM/DELVALLE

## **Charles Library**





Top: The Charles Library's glass-encased fourth floor looks out into a lush, meadowlike green roof that's one of the largest in Pennsylvania. **Above:** An elevation of the library showing the glass-clad volume inset from the stone facade.

continued from page 38 Temple's campus has evolved in a different way," Carpenter said. "But a lot of the most important and oldest buildings on campus are stone buildings. And we picked up a little bit on the way in which those buildings used stone. We weren't trying to make a contextual building. It's a contemporary building that also speaks to the materiality, solidity, and durability of some of the best buildings on campus."

Cut into the building are its main portals

and pièces de résistance: soaring western red cedar archways that lead into a triple-height domed atrium lobby that's also clad in a thicker version of the same ACGI cedar.

"Often in architecture there's a desire to control color and texture, and to know exactly what you're going to get," Carpenter said. "Cedar has quite a bit of color tone variation so that when you have this geometry that's allencompassing and enveloping, that variation and liveliness in color and tone breaks it up and keeps it from becoming overwhelming."

In addition to warmth and variation, cedar is particularly resilient in outdoor applications and easily bendable, which allowed the team to avoid cutting and carving the material using CNC machines. The cedar components were assembled flat and then shipped to the site, where they were bent.

The library's swooping wood-lined portals help open the library to the rest of the campus. A smaller corner entry, which directly faces one of Temple's busiest pedestrian intersections, creates a sheltered plaza that looks straight through the library's sprawling lobby to a larger arched entry on the opposite side of the building.

COURTESY SNØHETTA

"That sort of porosity of the building and embedding the desire lines of the campus right into the circulation flow of the library was very much part of the design," said Carpenter. Matt Hickman



# LIQUID COATINGS



www.DuraCoatProducts.com

## **Unitized Curtain Walls**

These curtain wall systems can be glazed, sealed, and assembled off-site to save time. By Gabrielle Golenda

#### **1620UT/1620UT SSG Curtain Wall System** Kawneer

Kawneer's structural silicone-glazed system is ideal for lowand mid-rise applications. The system provides a 2" sightline in 6" or  $7\frac{1}{2}$ " depths.

kawneer.com

#### Signature Series Unit Wall Oldcastle BuildingEnvelope

Designed for optimal thermal performance, this unit is outfitted with reinforced polyamide struts. It is offered in both captured and structural silicone-glazed options.

obe.com

#### Schüco Façade UCC 65 SG Schüco

Schüco's Unitized Customized Construction (UCC) system allows for modular integration of various components to fashion a custom-built curtain wall. With sightlines as little as 2.5", the assembled units resemble an all-glass facade.

schueco.com



#### **400SS Curtainwall** Tubelite

Perfect for low- and mid-rise projects, 400SS supports insulated glass or panels up to 1" thick via the secure grip of the ½" screw spline. The framing system is available in 19 standard paint colors and 11 anodized finishes.

tubeliteinc.com



#### H-60 Unitized Channel Glass Frame System Bendheim

This system uses Bendheim's channel glass in a linear design that diffuses light and minimizes glare without sacrificing privacy. It can be specified in a range of finishes and colors to match other architectural finishes.

bendheim.com



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## Weather and Air Barriers

### **Transition Membranes**

These flexible air barriers wrap around small, intricately detailed areas to provide ventilation and prevent moisture buildup in a continuous membrane assembly. By Gabrielle Golenda

#### **DensDefy Transition Membrane** Georgia-Pacific

Formulated with a butyl-based adhesive, DensDefy selfadheres to hard-to-reach areas, such as gaps, vertical expansion joints, and drift/control joints. It is offered in widths of 6", 9", and 12".

buildgp.com

#### **StoGuard Transition Membrane** Sto Corp.

This nimble solution is designed for continuity at transitions, including from sheathing to foundation, between dissimilar materials, and at masonry control joints. The system is ideal for vertical above-grade wall construction with concrete, glassmat gypsum sheathing, concrete masonry, and wood-based sheathing.

stocorp.com

#### ExoAir 110AT Tremco

ExoAir 110AT is an impermeable, self-adhering, tape-like sheet designed to be applied directly to transition areas like window and door openings. It is best used with steel, wood, and poured concrete substrates.

tremcosealants.com







### **Waterproofing Barriers**

Sprayed or rolled, these liquid-applied waterproofing solutions quickly seal without special installation equipment. By Gabrielle Golenda

#### Hydropel Sealer Kryton

Hydropel is a clear, water-based sealant made with silane and siloxane compounds that bind to the surface substrate to form an insoluble barrier. It is easily sprayed or rolled on concrete, brick, mortar, and masonry, in vertical or horizontal applications.

kryton.com



#### Henry Pumadeq System Henry

Pumadeq is a flexible and long-lasting protective layer that cures in as little as 30 minutes. Henry's special formula combines methyl methacrylates with polyurethane for added durability.

henry.com

#### Home Stretch Liquid Waterproofing Membrane Poly Wall

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poly-wall.com







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## **Humboldt Fitness Center**

Architect: Hufft Location: Humboldt, Kansas

Facade manufacturers: B&W Trailer Hitches, Firestone Building Products Facade installer: B&W Trailer Hitches General contractor: Crossland Construction

System: Custom rainscreen Products: Firestone UNA-CLAD UC Panels, custom mild steel panels

The Humboldt Fitness Center marks the arrival into Humboldt, Kansas, from the north on the old Highway 169. The new Highway 169 passes the town by, just over a mile to the east. In small towns like Humboldt (population 1,789), it's easy to feel like the future is passing by, too, as young people take off for big cities—but as the new fitness center indicates, companies and communities are working together to maintain local identities and quality of life in rural America.

The 11,000-square-foot fitness and community center, designed by Kansas City-based firm Hufft, nods to the local barn vernacular in its extruded form, which is largely clad in standing seam Firestone panels. But it's the east and west facades that visitors will likely notice first. There, diamonds of copper-tone mild steel panels clad folded surfaces sliced by glazing.

Hufft wanted the building to capture the fabrication culture of the industrial and agricultural town, and the diamond pattern of the facade was a nod to the fabrication capabilities of B&W Trailer Hitches, the Humboldt-based business that funded the center and made the steel panels.

"It started with a tour of [B&W's] factory and getting to know what its capabilities are," Hufft president and creative director Matthew Hufft said. "We worked with their technical department to iterate different options. There are several different types of fabrication techniques used, showcasing the company's capabilities."

From fabrication to the installation of the panels, B&W was involved every step of the way.

"We did several options, and then [the B&W] technical department took over and refined the options into an outcome they felt was the best balance between showcasing their capabilities and being relatively simple to fabricate," Hufft said.

The result is a simple but bold construction that complements both the metal of the rest of the exterior and the light-colored woods of the interior, and will gently weather over time. **Michael Friebele** 









Far left: The protruding panels are applied to a flat backing surface.

Near left: The design team developed the final facade by working with the capabilities of the local fabricators. **Top:** The center's copper-tone mild steel panels are meant to announce the building to visitors and residents.

Above: A local trailer hitch company funded the project and fabricated the steel panels.

## **Nordstrom Flagship**

Architect: James Carpenter Design Associates Location: New York

Facade manufacturers: CRICURSA, Tvitec, Permasteelisa Facade installer: Permasteelisa Facade consultant: SURFACE DESIGN GROUP

System: Custom curtain wall Product: CRICURSA Curved Glass XXL

Over the last four decades, James Carpenter Design Associates (JCDA) has been a pioneer in advanced glass installations and facade design in projects like the Museum at the Gateway Arch in St. Louis and the Fulton Center Sky Reflector-Net in New York. The firm's skill in achieving lightness and transparency is on display once more in the facade of the new Nordstrom flagship in New York, located at the base of the Adrian Smith + Gordon Gill Architecture-designed Central Park Tower, which will be the world's tallest residential structure when finished. The store's undulating curtain wall, made of curved and supersize glass panels, ripples across seven stories of the tower's south and north elevations. According to JCDA, the wavelike form is an homage to the rivers bounding Manhattan.

Spanish glass manufacturer CRICURSAone of the few manufacturers worldwide with the technical capacity to produce extra-large curved glass panels—was pulled into the project at an early stage. "The design started with the glass itself and worked out to the surrounding frame system, so ensuring the bent profiles were achievable in terms of structure, manufacturing, handling, and shipping was important in the early design stages, most critically in the visual mock-up and the performance mock-up stages," JCDA studio director Joseph Welker explained.

In total, there are five typical profiles and four unique corner profiles, and their dimensions range in height from 17'6" to approximately 19'6", and in width from 3'10" to 6'2". The result is a succession of convexities and concavities following an A-A-B-B rhythm, which create occupiable spaces similar to those of bay windows. The curtain wall is backed by a diaphanous steel mesh veil; like the curtains in the Pool Room of the nowdefunct Four Seasons restaurant in the Ludwig Mies van der Rohe and Philip Johnsondesigned Seagram Building a few blocks to the east, the veil filters daylight and adds depth to the facade.

It is difficult to overstate the complexity of the curtain wall system, and New Yorkbased facade consultant SURFACE DESIGN GROUP played an essential role in developing a design that balanced aesthetic concerns, thermal performance, structural behavior, and code compliance. "The final glass composition was developed as a slump-formed, complex-curved, insulated glass unit, comprised of various layers of laminated, low-iron glass and a subtle, custom ceramic dot frit pattern," said SURFACE DESIGN GROUP partner Benson Gillespie. "Aluminum mullions were stretch-formed to an exacting tolerance that matched the glass." Matthew Marani



COURTESY PERMASTEELISA

Above left: A diaphanous steel mesh curtain backs the curtain wall, which, along with a subtle ceramic frit, reduces glare.

Above: The custom glass curtain wall was fabricated by Permasteelisa, and is fastened to a steel anchor plate at the floor slab with extruded aluminum hooks.

Left: The floor-toceiling curtain wall modules are arranged in an A-A-B-B pattern, and, like bay windows, are occupiable.

## **Custom Facade Sources**

With specialized knowledge in building materials, production, and construction, these manufacturers and fabricators leverage digital design tools to realize complex and bespoke facade designs. By Gabrielle Golenda

#### **Gate Precast**

Specializing in architectural precast concrete, Gate Precast produces supporting structural systems as well as self-supporting facades and light-weight rain screens. Notable projects using Gate Precast products include Dallas's Perot Museum of Nature and Science, by Mor- phosis; the Atlanta Braves' new home, Truist Park, by Populous; and Brooklyn's One South First, by COOKFOX.

gateprecast.com

#### Permasteelisa Group

Permasteelisa collaborates with design teams to develop, engineer, fabricate, and install custom building envelopes with thermal, acoustic, and air barriers. The unitized curtain walls of Studio Gang's MIRA Tower, in San Francisco, along with those of New York's Central Park Tower, by Adrian Smith + Gordon Gill Architecture, and the Kohn Pedersen Fox-designed One Vanderbilt, were all fabricated and installed by Permasteelisa.

permasteelisagroup.com

#### MG McGrath

MG McGrath specializes in the fabrication, installation, and distribution of custom metal and glass enclosures. The Minnesota-based company is also capable of integrating stone, epoxy, cement, and terra-cotta into their facade systems. Recently, it provided the perforated aluminum cladding for MANI-CA Architecture's Chase Center in San Francisco, in addition to developing a glass stone rain screen for Santiago Calatrava's St. Nicholas Greek Orthodox Church in New York City.

mgmcgrath.com



#### **Roschmann Group**

The Roschmann Group offers solutions for custom facades and roofing. With an expertise in one-off applications, the company has the capability to produce cladding in aluminum, glass, sheet metal, steel, timber, and glass fiber-reinforced plastic. SANAA, Maya Lin Studio, and Rogers Stirk Harbour + Partners have all used Roschmann's bespoke products.

roschmann.group



#### **NBK Architectural Terracotta**

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nbkterracotta.com



#### **Island Exterior Fabricators**

Island Exterior Fabricators, which provides support from design assist to installation, can integrate features such as privacy screens, louver systems, balconies, and stress skins, into their custom-fabricated facade panels and systems. Island has worked with Snøhetta; Morphosis; and Skidmore, Owings & Merrill on buildings throughout New York and Boston.

islandef.com







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#### Aura Exterior Paint Benjamin Moore

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benjaminmoore.com

#### PERMANIZER Exterior Acrylic Latex PPG

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ppgpaints.com

#### SeasonPLUS Exterior Paint Valspar

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valsparpaint.com



#### **High Endurance Plus Exterior Paint + Primer** Glidden

glidden.com

This durable exterior coating resists fading, cracking, and peeling. It protects building envelopes through blistering summer heat and frosty winter temperatures.



#### **Duration Exterior Acrylic Latex** Sherwin-Williams

Duration Exterior Acrylic Latex furnishes an extra-thick, enduring, and mildew-resistant coating. It is offered in low-luster, flat, satin, and glossy sheens.

sherwin-williams.com



#### MARQUEE Exterior BEHR

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behr.com









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### Resources

#### **Biophilic Design**

greenscreen greenscreen.com

GSky gsky.com

Jakob Rope Systems jakob-usa.com

Omni Ecosystems omniecosystems.com

#### Ceramics, Terra-cotta, and Engineered Stone

Boston Valley Terra Cotta bostonvalley.com

Cladding Concepts International claddingci.com

Cosentino cosentino.com

Fiandre granitifiandre.com

Florim florim.com

HG Stones hgstones.com

Marmi Faedo marmifaedo.com

NBK Architectural Terracotta nbkterracotta.com

Neolith by TheSize neolith.com

Porcelanosa porcelanosa-usa.com

Shildan shildan.com

TerraCORE terracorepanels.com

#### Composites and Coatings

Abet Laminati abetlaminati.com

AkzoNobel akzonobel.com

Axalta axalta.com

Benjamin Moore benjaminmoore.com

Corian corian.com

Eastman eastman.com

FunderMax fundermax.at

Glidden glidden.com PPG ppgpaints.com

Sherwin-Williams sherwin-williams.com

Swisspearl swisspearl.com

Trespa trespa.com

Valspar valsparpaint.com

#### Concrete

Fabcon fabconprecast.com

Gate Precast gateprecast.com

High Concrete highconcrete.com

TAKTL taktl-llc.com

#### Contractors and Fabricators

Benson Industries bensonglobal.com

Enclos enclos.com

Harmon harmoninc.com

Island Exterior Fabricators islandef.com

MG McGrath mgmcgrath.com

Permasteelisa Group permasteelisagroup.com

Roschmann Group roschmann.group

Walters & Wolf waltersandwolf.com

W&W Glass wwglass.com

Zahner azahner.com

#### **Fabric**

Bemo bemousa.com Birdair

birdair.com

EFCO efcocorp.com

Structurflex structurflex.com

Vector Foiltec vector-foiltec.com

#### **Glass and Wall Systems**

AGC Glass agcglass.com

AGNORA agnora.com

Bendheim bendheim.com

CRICURSA cricursa.com

C.R. Laurence crlaurence.com

Erie Architectural Products erieap.com

GAMCO gamcocorp.com

Glasswerks glasswerks.com

Graham Architectural Products grahamwindows.com

Guardian Glass guardianglass.com

J.E. Berkowitz jeberkowitz.com

Kawneer kawneer.com

Kinestral kinestral.com

NorthGlass northglass.global Oldcastle BuildingEnvelope obe.com

Pilkington pilkington.com

Pulp Studio pulpstudio.com

SAFTI *FIRST* safti.com

SageGlass sageglass.com

Saint-Gobain saint-gobain-northamerica.com

Schüco schueco.com

sedak sedak.com

Tecnoglass tecnoglass.com

Trosifol trosifol.com

Tubelite tubeliteinc.com

View view.com

Viracon viracon.com

Vitro vitroglazings.com

YKK AP ykkap.com



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# **57 Review**

### Building a new New World: Amerikanizm in Russian Architecture

Canadian Centre for Architecture | On view through August 23, 2020



El Lissitzky's 1925 photomontage of a pair of proposed Wolkenbügel (Cloud-Iron) towers in Moscow

My in-laws are Russian. Muscovite, actually. They're in the United States because of geopolitics; the idea of personalizing those politics seems odd. Only after traveling to the Canadian Centre for Architecture, in Montreal, to view the exhibition Building a new New World: Amerikanizm in Russian Architecture did I realize that personalized views of geopolitics also have a history. The exhibition collects an enormous array of architectural objects and documents that trace the ideas, materials, people, and trends that moved between Russia and America for more than a century. Russians' views of Americanism (America, as they saw it) are curator Jean-Louis Cohen's subject.

Cohen begins the exhibition's wall text with the words of Alexis de Tocqueville, who explicitly set "Anglo-Americans" and Russians apart, a judgment based in their declared differences from traditional European values. Tocqueville's ideas about Americans became the basis for most claims about our national character. As Cohen says, Russian Americanism was similarly mediated by non-Russian interpreters—a Russian translation of Hugo Münsterberg's 1904 *Die Amerikaner* appears in one of the beautiful cases by exhibition designers MG&Co.

MG&Co.'s handsome curtains create transitions between the galleries, each of which is focused on a theme, and enclose six digital projections—one on each side of three thresholds—that reflect on the contents of each gallery. The gallery walls and the curtains are color coded, as are the cases that carry the essence of the show: models, drawings, and an overwhelming assembly of books and journals. Those materials, in combination with the projections on the walls, create a rich and varied experience. There are places to stop and read, places to move and scan, and places where connections can be made as one watches films, such as that of an American engineer dedicating a Russian dam on the Dnieper River.

In addition to all this content, maps by Italian design agency Studio Folder illustrate the "routes of architects, intellectuals, artists and politicians who travelled across the two continents between 1813 and 1991." The end points of each line are sometimes surprising (Des Moines, Fort Wayne, Yalta, Novosibirsk) and sometimes not (New York, Los Angeles, Moscow, Kyiv). The maps make evident the reality that Americanism was more than a generalization, more than political rhetoric, more than a literary fantasy. In fact, as Cohen has made clear in his selection of themes and objects, the very history of industrial infrastructure from the late 19th to the mid-20th century was shaped by Americanism's transposition across the globe.

The gallery named "America and the Modernization of Czarist Russia" focuses on the 1893 World's Columbian Exposition and the 1904 St. Louis World's Fair, sites that represent industrial exchange

between these two countries, among others. But this gallery also reveals Maxim Gorky's anguish in his 1906 book In America, in which he describes New York City as "a stomach of stone and iron, a stomach that has swallowed several million people and is consuming and digesting them." The negativity abates in the third gallery, where the legacy of Frank and Lillian Gilbreth's motion study is traced through the work of Aleksei Gastev's Central Institute of Labor, Ford's tractors are shown getting built in the Putilov plant in Leningrad, and displays describe how Albert Kahn's company trained over four thousand Russian architects, draftsmen, and engineers from 1930 to 1931.

The exhibition traces a dialectic between Russians' attraction to American modernity and their abhorrence of it, which were sometimes present simultaneously. A gallery focused on the avant-gardes shows this opposition: Adaptations of Hollywood (Buster Keaton and Charlie Chaplin) in Russian moviemaking are set against the disparaging words of poet Vladimir Mayakovsky, who found New Yorkers beset by a "dormant and flaccid rural mindset." There were Russians who sidelined American influence altogether, like Nikolai Ladovsky at the Vkhutemas or El Lissitzky and his horizontal skyscrapers. Geopolitical borrowing moves its target when it is politically strategic-some Russians chose other influences despite the continued interest in American

factories and America's culture industry.

Among the most impressive objects in the exhibition is the model of Boris Iofan's Palace of the Soviets from 1934. The image commonly associated with this winning entry for the international design competition depicts the building from the ground. A military parade marches in the fore ground and fighter planes fly behind a figure of Lenin, which caps the neoclassical birthday cake of a building. A book (Das Kapital?) is in Lenin's left hand, while his outstretched right hand points upward. Despite the monumentalizing efforts of the drawing, Stalin's architects could not overcome a model's capacity to domesticate political bravado at a toylike scale.

In the sixth and final gallery, model airplanes hang above as though they have escaped from Iofan's drawing. Documents below them display the Soviet capacity to build flying warcraft that equaled or exceeded that of America (albeit thanks to industrial espionage). One object stands out on the wall: a brochure drawn from Cohen's father's collection of Soviet memorabilia. As a French reporter in Russia, he picked it up at a 1947 airplane show. That object represents an empathetic encounter with Russian Americanism mediated by Cohen family history. It is touching to think of all those events that historians trace through their narratives that may also be passed along in bedtime stories.

The exhibition offers a welcome way to examine the richness produced by the mixture of memory and history, as well as the rigor and beauty of historical documents that display the critical role of architecture in constructing geopolitics. In A Terrible Country, a recent novel by Keith Gessen, which has nothing to do with architecture, the protagonist makes connections among his life, his family's travails, and the academic study of Soviet history. He sees the Russian tendency to borrow other nations' advances as an addiction. His protagonist's musings summarize the clarity afforded by interweaving human memory into historical narrative:

"Russia has always been late to the achievements and realizations of Western civilization. Its lateness was its charm and its curse—it was as if Russia were a drug addict who received every concoction only after it was perfectly crystallized, maximally potent. Nowhere were Western ideas, Western beliefs, taken more seriously; nowhere were they so passionately implement-ed. Thus the Bolshevik Revolution, which overthrew the old regime; thus the human rights movement, plus blue jeans, which overthrew the Bolshevik one: and thus finally this new form of capitalism created here, which had enriched and then expelled my brother, and which had impoverished my grandmother and killed Uncle Lev. You didn't have to go and read a thousand books to see it: you just had to stay where you were and look around.'

Michael Osman is an associate professor at University of California, Los Angeles Architecture and Urban Design.

### **Functional Creativity with Ornamental Metals**

These New Urban Spaces Deliver on Both Performance and Beauty

Sponsored by the Ornamental Metal Institute of New York



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Learning Objectives After reading this article, you should be able to:

- Recognize features of design and construction that have advanced the state of the art in using ornamental metals
- Reconceive the distinction between ornamental and functional or structural metals
- Identify properties of ornamental metals that are particularly useful in prominent buildings
- Understand the level of design, coordination, and skilled onsite work that goes into public buildings with high-visibility ornamental-metal components
- Demonstrate familiarity with contemporary case studies in which innovative use of ornamental metals improves occupants' quality of life and the buildings' aesthetics
- Describe to clients the return on investment in ornamental metals, assessed in both tangible and intangible terms

<image>

**Ornamental metals have purposes** that enhance both visual aesthetics and building functions. In the following high-profile urban projects, which range from retrofits of landmarked buildings to transportation infrastructure, steel and aluminum components allow dramatic gestures, novel geometries, optimization of material properties, and purposeful contrasts in texture and form. The practical complications of combining customized metal pieces with other materials, particularly on retrofit projects, call for an understanding of those properties and hands-on experience with the details of construction.

Ask just about anyone on the street about ornamental metalwork, and the reply is likely to involve sculpture. New York City's public spaces display many arresting metallic forms, thought-provoking for their heft and robustness (as in Richard Serra's mammoth installations of curved steel, including the erstwhile Titled Arc mounted at Federal City Plaza), reflectivity (Thomas Heatherwick's polished copper-colored stainless steel Vessel at Hudson Yards), or complex ductility (the tensely wound 11-mile aluminum coils of Anthony Gormley's New York Clearing on Brooklyn's Pier 3). The same qualities make these materials essential to the functionality of the built environment as well.

The vernacular sense of ornamental is an

imprecise fit for the phrase *ornamental metals* as used in architectural contexts. Although Adolf Loos famously opined that "ornament is crime," a less dogmatic understanding holds that ornamentation can be inseparable from structure and function, making the distinction more a spectrum than a binary choice. Some of the most prominent buildings in New York City and elsewhere make use of ornamental metals in ways that serve the aims of structural integrity, durability, and energy/environmental performance as well as aesthetics.

Ornamental components that complicate the borderline between form and function are hardly criminal: They are essential to many of the most memorable structures in urban public space. Two defining features of the new Museum of Modern Art renovation/expansion by Diller Scofidio + Renfro and Gensler. for example, use the bulk and precision of stainless steel to establish the institution's visual identity and execute practical functions: the "blade stair" in the western Speyer/ Farley Building's exposed atrium, a six-story, six-inch-thick slab suspended from the roof to support stairs and landings with no lateral bracing, and the 37-foot, 95,000-pound canopy cantilevered above 53rd Street to shelter visitors from the elements.

"Ornamental" metals are also sometimes defined according to the trade union involved in their installation. (In New York City, leading contractors work with Ironworkers Local 580, affiliated with the Ornamental Metal Institute of New York and with the International Association of Bridge, Structural, Ornamental and Reinforcing Ironworkers.) The umbrella term can encompass a host of architectural components: panels, canopies, mullions, pilotis, purlins, brackets, brises-soleil, diagrid members, and others. Familiarity with design and material options in ornamental metals should be part of every contemporary architect's skill set; awareness of recent applications in high-visibility sites can be a potent source of inspiration; and coordination with engineers, fabricators, and onsite contractors translates innovative design ideas into realized building features.

Case studies from around the city exemplify the ingenuity that design/engineering/construction teams can bring to the civic realm. These include public infrastructure and privately owned facilities, illustrating techniques and materials used to streamline, strengthen, and beautify buildings that command the public eye.

#### Moynihan Train Hall: Industrial grandeur resurrected

In 1993, Sen, Daniel Patrick Movnihan, noticing that McKim. Mead & White's James A. Farley Post Office Building (1912) was no longer the center of the city's mail-handling operations, proposed that conversion to a railroad station could help relieve Penn Station's notorious congestion. After political delays and multiple redesigns, this problem-solving vision is finally being realized, as Skidmore, Owings & Merrill (SOM), general contractor Skanska, and their collaborators are transforming the bulk of the Farley building into rail platforms and concourse/retail space for Amtrak and the Long Island Rail Road (LIRR). The project's first phase, the West End Concourse, opened in June 2017 and expanded access to the two rail lines; the second phase,

Moynihan Train Hall, is expected to open later in 2020, pending any construction delays related to COVID-19.

The project's most dramatic addition is the undulating 92-foot-high glass canopy that covers the train hall. This skylight comprises steel diagrid members by Seele, arranged in four bulbous east-west segments supported by massive trusses from the original building: structural members that also enhance the building's muscular aesthetics, strengthened by new color-matched beams. An additional northsouth glass vault covers a corridor west of the main hall at the center of the building between Eighth and Ninth Avenues, linking its 31st Street and 33rd Street entrances. New steel canopies at those entries are designed "to complement McKim Mead & White's Beaux-Arts architecture," said SOM design architect Andrew Lee, and to "reflect the language that we see in the skylight," introducing visitors to the hall's balanced aesthetic upon entry.

The junctures between the glass canopy and the original building's masonry are covered by metal paneling to create seamless connections around the hall; additional metalwork includes column-cover wraps, guardrails, handrails, handrail shoes, and functional grilles that support lighting and conceal ductwork. The uniform appearance of the panels and grilles is deceptive, because "every one of these panels and every one of these grilles is a different size," noted Permasteelisa director of business development William Bueso. "Every item we're doing is a custom one-off piece made specifically for this job... the only stock things we've ordered are the screws, nuts, bolts, and handrail shoes."

For Lee and his colleagues at SOM, the mission involved "celebrating the heritage of



SOM, the architects behind the hall, refer to the canopy-reinforced by steel diagrid members-as a "skylight."

this building," which is both an echo of the civic dignity of the original Penn Station and a no-nonsense functional facility. "It wasn't an exactly thoroughly finished building; the inside was more of an industrial building," Lee said. "We tried to reveal some of the existing structure by highlighting some of the articulation and the ironwork of the past rather than doing new applications of metal... taking that language and using ornamental metals to recreate some of it in areas where it wasn't as highly finished."

In a transit facility, Lee added, "finishes at the human scale have to be extremely durable and stand the test of time." The design team selected a material palette that is "not evoking some of the connotations that stainless steel typically has; it's very institutional... there's a way to finish it to a higher quality that maybe leaves out some of those connotations." With ample LED signage and video displays, at any rate, the hall hardly needs the sparkle of reflective surfaces. Describing the paneling and grillwork as "generally very quiet," Lee waxed philosophical about the detailing: "to really tread lightly in that train hall space, so that you let the skylight and the existing structure breathe." At staircases between the concourse and platforms, he noted, glass guardrails "minimize the kind of visual clutter that would be in a very busy space to begin with," optimizing sightlines to the platform level and aiding navigation-a distinct improvement over the abattoir claustrophobia that has provoked complaints over Penn Station's traffic flow for decades. A grand staircase, seven elevators, and 11 escalators expand vertical circulation options.

Like any major transportation center. Moynihan is a massive job; it is complicated by its combination of existing and new structures, marrying 21st-century steel to 1912-vintage masonry. Retrofits pose challenges that new construction does not, particularly where onsite investigations discover details that were not apparent at the design stage, "You can't foresee some things that are on a 67-year-old truss," observed foreman Will Jones, a key contributor to the Moynihan project for Permasteelisa. "They didn't know it until you got inside." Pointing during a site tour to various anomalies that the project's design documentation did not predict-cross-bracing in the building's old trusses; lighting wired through a truss; brackets that had to be replaced when onsite calculations revealed that a beam with attachments

could not support a grille: beams that shifted slightly when they were loaded with glass and wires were tensioned-Jones recognized the increased speed and flexibility of contemporary procedures such as digital communication and component prefabrication, while observing that a degree of improvisation goes with the territory. "One of the challenges with an existing building," he continued, "is building things ahead of time to meet the schedule, and not quite understanding, because you didn't have a chance to really dive into a lot of the details, how that's going to fit on the job site. On a new building it's a little easier to do that; on an existing building it's harder, because you open this up and boom! I uncover this site condition."

Bueso found that as a design-build project, Moynihan has been running more smoothly than other design-bid-build projects he has been involved with. He commented that the general precision of construction documents "changed with the crash of '08," after which cost cutting by some general contractors (GCs) became more severe. "Figuring out the finer details got pushed down to the subcontractors," he observed, so that "instead of having things really laid out and highly detailed, they would just let the subs figure that stuff out in the field." However, he added that the Moynihan project benefitted from the involvement of Skanska. Because designers and engineers are integrated into its staff, Skanska is able to communicate with architects and subcontractors more smoothly and in finer-grained detail.

Building information management (BIM) systems are more useful at front-end stages than on ornamental-metal installation. in Bueso's view. "BIM stops, really, at the structural [stage] and at the MEP: it has not gotten to ornamental metal," he said. "I don't know of any [ornamental-metal iob] in the U.S. that has been done on BIM; maybe cladding and a collar cover, but most of it's all field measuring by hand." The heralded advantages in clash detection and prevention strike him as more theoretical than practical to date. "I think we have another 10 years to go before this starts happening," he continued. "It'll definitely get there; but it's not there yet. Thinking about all the advanced products they'll build faster and cheaper, it's still a guy with his tools having to come out here, measure that thing, build it, [and] fasten it to the thing."

At Moynihan, energy-conservation features

include radiant flooring on the concourse level, which will heat and cool the entire building; this required installing a piping system before pouring concrete, the type of up-front investment that saves resources in the long run by heating air efficiently from beneath occupied spaces and lowering the overall volume of ductwork throughout the hall. "We underestimated the existing-building component of the project," Bueso noted, speculating that general project cost overruns reach the 20-30 percent range—distinctly lower than found on the city's only comparable recent transit hubs, the World Trade Center PATH Oculus and Fulton Center.

Considering its spaciousness (255,000 square feet), its expanded connectivity (creating direct station access from Ninth Avenue for the first time, along with the midblock entrances on the two cross-streets), and the relief it offers to two of the three rail systems squeezed into Penn Station (initially built to handle up to 200,000 passengers a day, today serving over half a million), Moynihan Train Hall is a critical upgrade on all fronts. The anticipated scale of passenger traffic ensures that the project is not so much a matter of "if you build it, they will come" as "since so many of them are coming, can we build a facility they can bear, possibly even enjoy?" The hall's ornamental metal components function subtly, in concert with the structural steel, masonry, and glass, to give the region's long-suffering travelers a space that respects both its own history and their dignity.

#### Credits, Moynihan Train Hall

Clients: Empire State Development Corporation (ESD); Skanska USA Civil Northeast (Design-Build); Vornado Realty Trust, Related Companies Architects: Skidmore, Owings & Merrill (Roger Duffy,

FAIA, Design Partner; Laura Ettelman, AIA, Managing Partner; Marla Gayle, AIA, Project Manager; Peter Fajak, AIA, Senior Design Architect (Phase I); Jon Cicconi, AIA, Senior Design Architect (Phase 2); Andrew Lee, AIA, Design Architect (Phase 2); Joyce Ignacio, Senior Technical Coordinator); McKim Mead & White (original James A. Farley Building, 1912) Design-Build General Contractor: Skanska USA Civil Northeast

Structural Engineer: Severud Associates

MEP/FP/IT/Telecom: Jaros Baum & Bolles Skylight Structural Engineer: Schlaich Bergermann

Historic Building Restoration: Building Conservation

Associates Rail Engineer: Systra Consulting

Civil/Geotechnical Engineer: Langan Engineering &

Environmental Services Lighting Design: Domingo Gonzalez Associates Graphics and Wayfinding: Pentagram Acoustics/Audiovisual: Cerami & Associates Security Design: Thornton Tomasetti; Weidlinger Protective Design Practice; Ducibella Venter & Santore Vertical Transportation: Van Deusen & Associates Historic Certification/Preservation: Higgins Quasebarth & Partners, LLC

Baggage Handling Systems: BNP Associates, Inc. Code Consultants/Radio Design: Code Consultants Professional Engineers, PC Industrial Design: Billings, Jackson Design

Industrial Design: Billings Jackson Design Skanska Subcontractors:

Roof Structural Steel and Glass: Seele Ornamental Metals: Permasteelisa

#### Tammany Hall (44 Union Square): Advanced building technology reinvents a landmark

The former Tammany Hall headquarters at the northeast corner of Union Square has a lively history, housing not only the New York Democratic Party organization named for the Lenape chief Tamanend (and associated with notorious 19th-century political patronage) but, later, the International Ladies' Garment Workers' Union, the Union Square Theatre, and the New York Film Academy. For a mere threeand-a-half-story structure (before renovation), the 1929 building by Thompson, Holmes & Converse and Charles B. Meyers has carried substantial weight among the city's political and cultural institutions. Modeled loosely after Federal Hall downtown on Wall Street, and landmarked in 2013, it is soon to re-emerge in radically different form as the headquarters of a major technology company. Tammany Hall is undergoing a gut rehabilitation preserving the facade and adding a striking new domed roof, with a grid shell of 2" x 6" steel tubes supporting over 800 triangular glass units (no two of which are identical), extending the building's usable space to six stories.

The parametric steel-and-glass structure atop the neo-Georgian shell's brick, limestone, and terra-cotta tracery is a stylistic surprise but, to some informed observers, incongruously harmonious. Todd Poisson, AIA, partner at BKSK Architects, recalled the extensive historical research that led to the design. Owners Reading International, a theater/ real estate firm that had operated the Union Square Theatre but found it unprofitable (and, to the regret of off-Broadway fans, demolished Tammany Hall. Recalling the competition brief, Poisson said "they wanted to move away



BKSK Architects is adding a free-form glass dome to the historic structure.

from the name Tammany." But he and his colleagues took a contrary approach—"Why don't we re-embrace the name Tammany in a way that they wouldn't expect and look at Tammany's history?"—and won.

Boss Tweed, Richard Croker, and other 19th-century politicians had appropriated the name of Tamanend and the iconography of his tribal clan; the "peacetime chiefs of the Lenape Nation were typically from the Turtle Clan," Poisson discovered, and Tamanend was "legendary for letting William Penn and his folks stay and signed a treaty of peaceful coexistence with them back in 1680." The architects, instead, consulted with the Lenape Center on questions of cultural authenticity and together developed a parti that would replace the building's "pretty tepid slate hip roof" with a dome evoking not only a turtle shell rising from the sea (an image from the Lenape narrative of the North American continent's creation) but also the domes that were common in Georgian and neo-Georgian design. The Tammany Society's previous headquarters on 14th Street was domed, Poisson noted, and in England and the U.S., "there were some we found that got their domes 100 years after they were built.... Using that as inspiration, and other classical domes throughout the history of architecture, we modeled our dome to honor Tamanend with a little organic source material," commingling Lenape and English heritage. Only this dome would be executed in steel and glass.

A structure driven by such symbolism required an exceptional level of precision in design and construction. Stefan Zimmerman. senior branch manager at the Würzburg, Germany, branch of Josef Gartner GmbH (a member of the global Permasteelisa Group), pointed out that the roof is a true free-form design. not a pure dome based on fixed circular radii or ellipses. "This means that every single member is different in shaping and different in geometry, different in angles," Zimmerman explained. "So the individual surfaces of the canopy have been broken down into triangles." Such a geometry, he added, "creates angles between the tubes, it creates angles between the nodes, it creates torsional twists for the tubes, which all need to be accommodated in the node points.... The tubes are relatively simple with a 90-degree end connection, but all the complexity's in the node points, [which]

are CNC-machined" to accommodate the angles and torsions. Wrapping the dome frame above an arched pediment at the 17th Street (north) entrance created particular geometric challenges. None of the glass is curved; the precise design and machining generates the appearance of curvature with large numbers of small straight steel members, joined at approximately 1,000 node points, supporting over 800 flat triangular double-pane insulated glazing units (IGUs), each combining SGG Cool-Lite Xtreme and Parsol Grey glass panels by Eckelt (a member of the Saint-Gobain group). "The upper dome glass (fifth and sixth floors)," Poisson reported, "has a darker tint to address glare and thermal comfort, while the lower hipped roof zone glass is slightly clearer, as it is a clerestory glazing for the fourth floor, and is partially shaded by the terra-cotta sunshades." Each IGU for the upper dome has a clear Cool-Lite Xtreme glass panel with a high-performance sputter-coat solar coating on surface 2, an argon-filled space, then two laminated layers including one tinted Parsol Grey; for the lower section, each IGU comprises a clear Cool-Lite Xtreme panel with the solar coating on surface 2, an argon-filled space, and two laminated layers included one tinted Parsol Grey and one clear panel facing the interior.

Because of fire-protection standards, Zimmerman said, "the wall thicknesses of the steel are higher than they would have needed to be for structure and for deflection requirements." The dome is fully self-supporting, and a new concrete liner wall at the perimeter takes the steel structure's entire load; no columns touch that steel structure and no internal loading onto the floor plates. The unique shapes of all components called for exceptional logistical control on the job site, Zimmerman pointed out, along with caution in packing and handling; "if one glass breaks during transport or installation, then you cannot simply say you use the next glass in the crate to install, because it doesn't fit." Prefabrication of tubes and nodes at Gartner's German factory included steel lettering to guide assembly. A system of offsite storage and regular shipments to "feed the site with the demand for the next two, three days" overcame storage limitations at the tight downtown Manhattan site.

Rayhaan Nagrath, project manager at

Gartner's New York office, points out that the dome includes areas with two roof types. designated RT1 for the dome and "bull nose' (a protruding segment atop the western facade toward Union Square) and RT2 for the lower perimeter glass. "The bull nose breaks up the two systems," Nagrath noted, "and the frames for the RT1 and the RT2 are constructed differently": The RT1 frames include a node system, connecting node to node with horizontal purlins, with a hole in each node as a modular design feature allowing optional mountings, while RT2 frames are composed of purlins without nodes. Purlins include bolts for sprinkler attachment. Support brackets separated from the steel allow the entire structure to move under wind loads, preventing bending and glass breakage; "you have to let the structure breathe and move freely," Nagrath said. Steel fins placed strategically 11/2" above the glass articulate the form to help "break up what the eye sees" from street level, along with acting as a net to disperse snow loads and prevent unexpected avalanches to the street. A hip-roof segment below the dome uses terra-cotta sunshade panels in multiple shades of gray, helping control solar gain and providing visual variety.

"We really wanted to be harmonious with the landmark base building," Poisson commented. The fins "serve as further articulation of the shell... to make it more harmonious with the scale of both the stonework of the base [and] the tracery of the window mullions and muntins, especially at the second floor. There's a balcony with doors with beautiful tracery muntins above it, which we replaced in kind. So we were inspired by the details of the existing building for the scale and detailing of the dome; we wanted to have enough articulation so it did not appear alien."

After factory preassembly of the RT2 frames, installation of both the dome and the terra-cotta panels proceeded from the top down because of the difficulty of caulking before installing fins. The total assembly uses approximately 50 frames, 300 purlins, and over 800 glazing units; "pretty much every aspect of this job is unique," Nagrath said, "except for maybe the brackets, which will be covered up." With these custom components and a high degree of structural interdependence, plus limited space for shoring points supporting the system during construction because scissor lifts needed room to move, tolerances throughout the frames had to be extraordinarily tight, meticulously checked and adjusted at each step. "If you make a mistake and at the end the frame is too big for the hole," he observed, "what are we-just cutting the frame? That means we have to replace the glass. Or the other way, if it's too big for the glass frame, what are you doing: Are you extending each steel beam? Then you also have to replace the glass.... The principle is always the same: You develop the structure as a system; in most cases it acts as one." The pace of construction, he reported, was "about a frame a day, plus some time for all the intermediate purlins," plus the glazing, averaging 13 glass units per seven-hour workday.

This painstaking process has yielded a building that has already begun garnering honors before even opening, winning an AIA-New York QUAD Design Award in 2017. Zimmerman noted carefully that Tammany may be a difficult precedent to replicate elsewhere; "this is more like a piece of art and not like a real building envelope," he said, and he knows of no comparable domes in New York. "The ability to build these free-form structures is actually less than 20 years [old]," and Gartner's other comparable projects have been in Europe and Toronto: one nearing completion in Los Angeles (the Academy Museum of Motion Pictures) is not free-form but a radius-based dome. Whether the modernization of Tammany Hall in the long run will be seen as a one-time achievement or as a general advance in the arts of design, metalwork, cultural hybridization, and adaptive reuse-and whether its commercial tenants enjoy its unique vantage point solely within their own work environment or make the space available at times to visitors-it has restored one of New York's long-neglected treasures to the public eye.

#### Credits, Tammany Hall

Owner: Reading International (RDI) Architect: BKSK Architects Structural engineer: Thornton Tomasetti (Weidlinger Associates) acade fabricator: Eckelt/Saint-Gobain, Permasteelisa Group/Gartner Facade installer: Tower Installation Exterior Envelope Engineering: Buro Happold MEP: Dagher Engineering Glazing Products: Saint-Gobain Construction Management: CNY Group Owner's Representative: Edifice Real Estate Partners Preservation Strategy: Higgins Quasebarth & Partners, LLC Community Relations: Beckelman+Capalino Energy and Commissioning Services: OLA Consulting Exterior Lighting Design: Buro Happold Geo-tech: RA Consultants, LLC

#### 1100 Avenue of the Americas: Less becomes more as old evolves to new

Certain buildings earn prominence by treading lightly on highly visible ground. The former HBO headquarters at the corner of Sixth Avenue and 42nd Street has moved through multiple iterations since its initial construction in 1906 as an E-shaped six-story steel-framed masonry building, using light wells to admit sun and air in the era before reliable mechanical systems. Its location between Bryant Park and a privately owned public space (POPS) facing 43rd makes its relations to nearby voids, volumes, and views an essential aspect of its identity. Its new version, a butterfly shedding the chrysalis of decades-old wall technologies, expresses a delicate dialectic between glass and steel; as the exterior presents more uniform and transparent glazing, the interior offers purposeful textures thanks to a sequence of stainless steel and aluminum components.

The building's history traces a century's



MdeAS Architects designed a new glass envelope for 1100 Avenue of the Americas.

movement from heavier to lighter materials: sequentially expanding and morphing instead of being razed and replaced, it acquired nine more stories in 1926. When Gordon Bunshaft's concave W. R. Grace tower arose next door on 42nd in the 1970s, noted principal Dan Shannon, AIA, of MdeAS Architects, "they ripped down the north property to put in the plaza, which created the scale of the Grace Building. In the '80s it was transformed into the HBO building [by] KPF... and the masonry facade was removed; the building was filled in to its property line, infilling those courtyards." It reached its current 17-story height in 1984, with a two-story mechanical bulkhead atop the 15 occupied stories and a then-new dark-green curtain wall featuring the glass/metal proportions achievable at the time and "a highly reflective glass," which Shannon called "the old solution to energy issues."

The transformation now being led by MdeAS opens the building's ground floor to the 100-foot-deep POPS and to 42nd Street, separating ground-level storefronts with off-center, double-height see-through entrances north and south-"an amazing urban move," Shannon said, "because now you've got this nearly freestanding [roughly] 20-story building; it's more of a peninsula, but it connects through axes to Bryant Park." The chief tenant will be a major corporation that also occupies a nearby tower, creating an institutional campus amid the park and plaza. The emphasis is now on transparency, with clearer glass in three types of unitized curtain wall increasing the visibility of the double-height lobby and storefronts and the upper commercial floors.

The newly exposed lobby is spacious enough to counterbalance the building's relatively tight heights and structural spans, legacies of its initial condition. The architects chose highly reflective materials to complement exterior green spaces: a rare Greek marble called Thassos, sourced from an island north of Athens ("a pure white," Shannon commented, "like snow just fell"): aluminum panels for surrounds, ceilings, and walls, painted a "medium gray silver-champagne color" to contrast with the white stone; and highly polished curved stainless steel for the desk and bench seating, reflecting the plaza and park. "We've never done a building interior lobby that relies so much on ornamental metals," he said.

The lobby's custom curtain wall resembles

a Pilkington Planar system, noted the project architect, MdeAS senior director Jeff Ellerbrock. but was actually custom-fabricated by installer W&W Glass: the entry wall is a generous 25 by 25 feet, with two Crane revolving doors and a swing door on both ends, all glass with a horizontal tube. Floors 3 to 15 use a different unitized system fabricated by the Canadian firm Sotawall. "All the trim work" in the lobby, Ellerbrock reported, "is satin stainless steel; once we're inside, we're bringing a bit of a hand element to it, a blackened stainless steel [and] a satin base with oxidation." The corridor to the single-height elevator lobbies also has blackened stainless and a painted aluminum ceiling soffit, bringing a contrast in mood after one has passed the bright Thassos. Fifteen stories above grade, atop a roof habitable by tenants, the bulkhead caps the building with more aluminum composite panels, adding more vertical rhythm to its glass-and-metal profile.

"Why would we remove a 1983 curtain wall and replace it with a 2020 one?" Shannon asked. "There are two major reasons for that: one is workplace, and the second one is energy." Today's insulated glass units (IGUs) with advanced coatings allow for clearer glass and greater light transmittance with less solar gain, improving views and interior comfort. The entire building is clad with factory-built unitized curtain-wall panels, yielding gains in quality control, with "fewer gaps [and] less air and water infiltration over stick-built systems, which are a thing of the past," and in construction speed, avoiding the complications of onsite assembly in the congested Midtown area. "Up until five, eight years ago, the storefronts were done in the field," Shannon said. "Effectively, it's better controlled at the assembly plant." He also noted that in the reglazing, "we're particularly focused on flatness after reflectivity, interior and exterior, and the energy issues; we want to provide the flattest glass possible. All the glass is heat-strengthened, but we keep that outer lite as thick as we can, because the thicker the glass on that outer lite, the flatter it is. And obviously, we're reflecting a lot of other buildings, and when you have straight lines, you want a flat surface.

Recladding a building of this age poses certain challenges, Shannon suggested. "It doesn't have the kind of appropriate structure for landing a curtain wall, for installing the anchors, so there's a significant amount of work done at the perimeter of the building to accept the new curtain-wall anchors to the building, so we have to put in new steel along each floor." There are also zoning concerns: "You always have to be cognizant of where the property line is," he added, "because you can't protrude past this in a building where we're completely removing the wall. When you overclad, you can project four inches out on certain buildings built before '68, but on this building, because we're removing it, it's not an overclad, it's a complete new cladding.... So you really have to be careful on how the system is engineered to be hung on the building, because we don't control where that steel was in the first place, from when it built as a masonry building. Some of the other challenges are the floor-to-floor heights in a building that was built so long ago, [which] are all over the place. Unitized construction is most efficient when you control the sizes of things, but those are just the units that are a little different, that take a little bit more collaboration between us and the fabricator and installer.'

On such a heavily trafficked Midtown site, some observers would wonder why the owners (Brookfield Properties and Swig Company, which also jointly own the Grace Building) would revamp a century-old 15-story building rather than demolish it in favor of a taller tower-an option the owners evaluated. The decision reflects multiple concerns, including sightlines, natural light, and zoning. "The most important thing about this building [is that] it's a pavilion, compared to the behemoths around it." Shannon said. "The overall property, when you combine Grace with this, is what's considered an overbuild to the comparable FAR that's available today, and that's why this building was not brought down and a ground-up building put in its place... it's bigger than what you could replace it with, and you'd have to correct the overbuild. So it becomes inevitable that this thing hung around."

With the "behemoths" and the park nearby, wind loading was a special consideration. The architects engaged Rowan Williams Davies & Irwin for wind-tunnel testing, "basically just to double-check, "to see if there were any requirements that were a bit more strict than just the code [American Society of Civil Engineers 7]," Ellerbrock explained. "The code was actually more strict after we went through that process, but it was a good check for everyone."

Energy performance was another important driver behind the decision to renovate 1100 a second time. Potential thermal bridging is a perennial concern when metal components are prominent. "That was another reason we went unitized everywhere, aside from the lobby front door," Ellerbrock noted, with the system "thermally broken with an extruded aluminum system. There's a little bit of metal trim that comes to the face of the building, but that's thermally broken from the structural mullions themselves, and then where we have opaque metal panels on the bulkheads and the lot-line conditions. those are composite aluminum, which offers some rating, but then we have a pretty thorough insulated wall behind that."

Full energy modeling on the building passed easily, overperforming enough that the team could use what Ellerbrock called "a lesser-performing glass at the entry... a little bit thinner, not an IGU, so we could get to the appearance of just more glass rather than seeing the actual IGU frame." The building's mechanical ventilation is a direct outside air system (DOAS), Shannon said, "which gives the highest level of flexibility with the least amount of impediments in terms of the size of ductwork; it's a very common system in Europe; it's beginning to proliferate in New York City."

The changes at 1100 are dramatic enough to go beyond the conventional understanding of retrofitting. Shannon has spoken at conferences such as Facade Tectonics' 2019 New

York Forum about ways to achieve long-range efficiencies over the life cycle of a building and the capacity of recladding, among other renovations, to give clients the "new" buildings they often seek, without destroying the old. The Climate Mobilization Act (Local Law 97), he observed, requires buildings to meet a 40 percent reduction in carbon emissions by 2030, relative to 2005 figures. Advances in facade technology over the past decade, he contended, make it preferable to reclad an older building that is underperforming environmentally and economically, thus retaining its distinct qualities and scale, along with avoiding the energy and monetary costs, operational disruptions, and embedded-energy wastage that demolition of an active, occupied building entails. Prominent among his case studies at this panel was 1100's recladding, achieving greater clarity and improved energy metrics.

Around the city, Shannon observed widespread efforts to bring older buildings up to advancing performance standards and codes. "It's always been talked about [as] improvements and transformation. The new thesis on these buildings," he countered, is "'Let's make a new building." Despite all the reasons to avoid knocking buildings down, "when [people] are putting this kind of money, capital costs, into this, owners, investors, tenants want new buildings.... Obviously, if they're landmarks, don't do it; there are buildings that have unique and inherent quality that can't be reproduced. But the thesis has become 'Let's make a new building: let's make a building that stands for the next 50 vears as a progressive contributor." Upgrading not just 1100's skin and interior materials but its very DNA, its parti within its urban context, makes it a forward-thinking model of how a building can be simultaneously old and new.

#### Credits, 1100 Avenue of the Americas

Architect: MdeAS Architects Owners: Brookfield Properties; The Swig Company Structural Engineers: Gilsanz Murray Steficek MEP/FP/IT/AV Engineers: Cosentini Associates Facade Consultant: Front Inc. Lighting Design: Tillotson Design Associates Vertical Transportation: EWCG Acoustics: Cerami & Associates Facade Maintenance: Entek Engineering, LLC Construction Manager: Tishman Construction Corporation Curtain Wall Installer: W&W Glass, LLC Curtain Wall Installer: W&W Glass, LLC Curtain Wall Installer: Sotawall Glass Supplier: AGC/Interpane Interior Metal Systems: Champion Metal & Glass, Inc Wind Tunnel Testing: Rowan Williams Davies & Irwin

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# **62 Pictorial**

### **Designing Divination**

An interview with Westworld production designer Howard Cummings



Clockwise from top left: Ricardo Bofill's home, La Fábrica; Wallace E. Cunningham's Crescent House; Santiago Calatrava's City of Arts and Sciences; the Palau de les Arts Reina Sofia at the City of Arts and Sciences; La Fábrica

"Everything in this world is magic, except to the magician," advises Anthony Hopkins's character in the HBO television series *Westworld*. The show, which just ended its third season, revolves around a Western-style theme park in a highly advanced future and the humanoid robots that come to escape its enclosure and discover the real world beyond it. The impossibly lustrous, pristine built environments of that world may appear magical to the millions of viewers watching at home, but they are the collective work of dozens of would-be magicians, i.e., visual effects supervisors, costume designers, and set decorators.

Since joining the *Westworld* team for the show's second season, production designer Howard Cummings has sought to match the complex narrative with arresting visual storytelling. *AN* spoke with Cummings about the architecture of the future—and why it isn't altogether different from the architecture of our present.

#### *AN:* The show mostly takes place in Los Angeles in the year 2058. How did you determine the look and feel of the city nearly four decades from now?

Howard Cummings: We made sure to essentially do the opposite of the original *Blade Runner* (1982), which depicted the Los Angeles of the future as dystopian and dilapidated. Jonah Nolan, the cocreator of *Westworld*, wanted the city to look more advanced than it is now, as though climate change had been eliminated through carbon-catching towers, which are sometimes visible throughout the show. Public plazas are elevated, transportation is mostly belowground, and the use of personal cars is drastically reduced. But we were also able to take advantage of the recent building boom in the city, offering glimpses of newly completed buildings, such as the [Diller Scofidio + Renfro-designed] Broad Museum.

#### Aerial views of downtown Los Angeles also depict fictional buildings next to currently existing skyscrapers. How was the design for those fictional buildings determined?

The downtown skyline is infilled with CGI buildings that were inspired by the city of Singapore—its vertical greenery provided the look we were going for, which is partially mandated by the government. We would shut down sections of L.A. roadways and bring in planters, seating, and different types of green surfaces to make the city look a lot more green than it really is. We even assembled a kit of roadway disguises that appear to accelerate the city's current initiatives to become greener and more pedestrian-friendly. You may notice we also "completed" the L.A. River project in some flyover shots, turning it [back] into a fully functional river.

#### We heard that the Danish architect Bjarke Ingels was an informal consultant for the latest season. How did he become involved, and what input was he able to provide?

Bjarke sent a message expressing interest in the show. Because I was already familiar with his work, I invited him to visit us before we shot the third season, and he stayed for several hours to see how we film and design our sets. I then had him meet Jonah, and I learned that they were oddly alike in personality—they even ended up going on sightseeing trips together.

When it came to designing futuristic buildings for the latest season, Bjarke offered to help [out] by giving us the digital models of a bunch of projects BIG designed but which were never realized. If you look at some of the aerial shots, his buildings can be seen sprinkled throughout.

#### How does real-world architecture factor into the show, and how did you decide which real-world buildings to include?

The first two seasons were set almost entirely within fictional settings. Viewers could generally see only the Westworld landscape [mostly filmed at Melody Ranch Studio, a Western-style film studio in Santa Clarita, California] and the all-glass, "behind-the-scenes" production spaces that were built for the show. When the Westworld characters venture out of the theme park in season two, we felt it was a good opportunity to showcase significant buildings around the world. We were able to use Frank Lloyd Wright's Millard House in Pasadena because the house was on the market during filming, and we had been looking for Wrightian houses at the time. This season, we wanted to go back to the house, but we weren't allowed because it had just been sold. Shooting in the actual house was quite difficult, anyway, because it's small and highly protected, so at some point it became more reasonable to rebuild it as a set.

For the third season, we also scouted locations in and around Barcelona. Bjarke also happened to be in the city, and Ricardo Bofill's home, La Fábrica, was considered as a filming location. The building incorporates cement silos originally fabricated using poured concrete. Bofill added some touches that included Gothic-style archways; his work from the 1970s was so postmodern, and it was a weirdly timeless design that for me was the opposite of the *Westworld* labs, which are all black and glass. Bjarke connected us to the Bofills, who allowed us to tour the home. Jonah fell in love with it, and we eventually got permission to use the actual living quarters as a laboratory for the show. But because we only had one day to film there, we also had to build some interiors that were designed with Bofill's original in mind.

While in Spain, we also chose Santiago Calatrava's City of Arts and Sciences in Valencia as the headquarters for the Delos Corporation, because it felt like a good setting for a tech campus.

#### It seems that the buildings of the future are depicted as either rough-hewn concrete or from a white, plastic-like material.

Exactly. We felt that concrete provides a real atmosphere and texture to modern buildings. It can be formed into anything; it's got incredible fluidity while still being foreboding. We're trying to incorporate the concept of 3D printing into the show, as well as buildings that could be imagined as [having been] 3D printed. Each episode takes about two weeks to produce, and with an average of 35 locations per episode, there were limitations regarding the use of 3D printing and scouting for concrete buildings. Fortunately, we were able to find plenty of areas in Los Angeles, Singapore, and Spain to match this aesthetic.

In the first episode of season three, for example, you see a concrete house that was supposed to be off the coast of China. That house is designed by Wallace E. Cunningham in Encinitas [north of San Diego]. We were initially hoping to use the Salk Institute in [nearby] La Jolla, but ended up falling in love with this house with a texture that almost blends into the rocks beneath it. Shane Reiner-Roth

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