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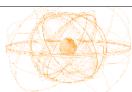
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Francois Perrin, 1968–2019

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Float On?

OCEANIX and BIG unveil a framework for a floating city at the United Nations.



The UN has just unveiled a floating city. Or, at least, a framework for how floating cities will be built.

Throughout the 2010s, a certain set of statistics have found their way into every article about urbanism. You know them. They have said, for example, that according to a recent UN statistic, "68 percent of the world's population is projected to live in urban areas by 2050."

However, it's barely the 2010s anymore! The new hot stat for the 2020s was used at the April 3rd launch by the UN to switch gears and justify exploring the possibility of building floating cities:

"By 2030, approximately 60 percent of the world's population will live in cities that are exposed to grave economic, social, and environmental pressures. Further, approximately 90 percent of the largest global cities are vulnerable to rising sea levels. Out of the world's 22 megacities with a population of more than 10 million, 15 are located along the ocean's coasts."

Serious stuff, all discussed at the highlevel round table in New York on April 3 hosted by UN-Habitat, the UN's coalition on affordable and sustainable housing, along with the MIT Center for Ocean Engineering, the Explorers Club, and OCEANIX, a group investing in floating cities on this new marine frontier.

Bjarke Ingels of BIG—architects of the "Dryline" around Lower Manhattan unveiled his design for a prototypical floating city today, which would be made out of mass timber and bamboo. This proposal would be "flood-proof, earthquake-proof, and tsunami-proof," according to Marc Collins Chen, cofounder and CEO of OCEANIX. The renderings show a continued on page 14

Welcome to Little Dubai

The Gulf-style managerial pop-up city boomerangs back to the West at New York's Hudson Yards.



In a recent review titled "The Case Against Hudson Yards Dining" on *Eater*, the inimitable food critic Ryan Sutton examined the food and beverage options at the mirage-like, instant Hudson Yards (henceforth Little Dubai), New York City's newest neighborhood. The dining scene is not a pretty picture, and the food options are just part of the bigger picture, dovetailing with the urbanism to expose the ugliness of 21st-century development culture.

As Sutton notes, Little Dubai "is a taxpayer-subsidized development that solidifies Manhattan's slow transformation from one of the world's most distinctive urban centers into a nondescript international mall for the wealthy." His biggest gripe? Rather than representing the wonderful melange of cultures that thrive in New York, the food and beverage programming is a cynical commercialized selection that

has no roots in the place where it resides. "The only place for pizza—New York's

quintessentially affordable street food—will be a D.C.-based chain where a lunch-time Margherita starts at \$11.50. The only Chinese-leaning restaurant will be an 'East meets West' spot run by a Dutch guy known for his competent Continental spots in airports, concert halls, and museums," he laments. The condition Sutton describes could easily be seen in a number of cities around the world, where international flavors are imported wholesale and in no particular fashion or relationship to the place they now inhabit.

This cultural importation is a new ideology: In an era where financial markets and soft power make national borders less and less important, it makes sense that a new type of immigrant cultural exchange would begin to take hold—one that no longer even requires physical, transnational immigration. Cultural exchange can now take place on airplanes, waves of capital, and wires of data in an age continued on page 12

Made in Tokyo

An exclusive first look at Atelier Bow-Wow's exhibition opening in New York in October.

Continuing their influential body of work examining the city from fresh angles and novel frameworks, Atelier Bow-Wow's Momoyo Kaijima and Yoshiharu Tsukamoto will cocurate Made In Tokyo: Architecture and Living 1964-2020 at New York's Japan Society. The show, scheduled to open in October, will examine Tokyo in the period between the 1964 and the 2020 Olympics, both of which were hosted in the Japanese capital and marked shifts caused by enormous infrastructural investment. Made In Tokyo, a close examination of the flows of everyday life and urban institutions, will feature models, drawings, and photographs of a collection of architecture and art that developed around the city in this period of extraordinary change. AN executive editor Matt Shaw exchanged emails with the iconic duo as they prepare the exciting exhibition. continued on page 14

Wrecking Ball

Tower project pits Gehry against the father of the L.A. Conservancy.



It's not often that Los Angeles moves to demolish one of its 1,158 Historic-Cultural Monuments (HCM), a list of relics that includes Simon Rodia's Watts Towers, Frank Lloyd Wright's Hollyhock House, and three of the city's majestic Moreton Bay Fig trees.

But if developers Townscape Partners had their way, their Gehry Partners–designed 8150 Sunset project could do just that. continued on page 17

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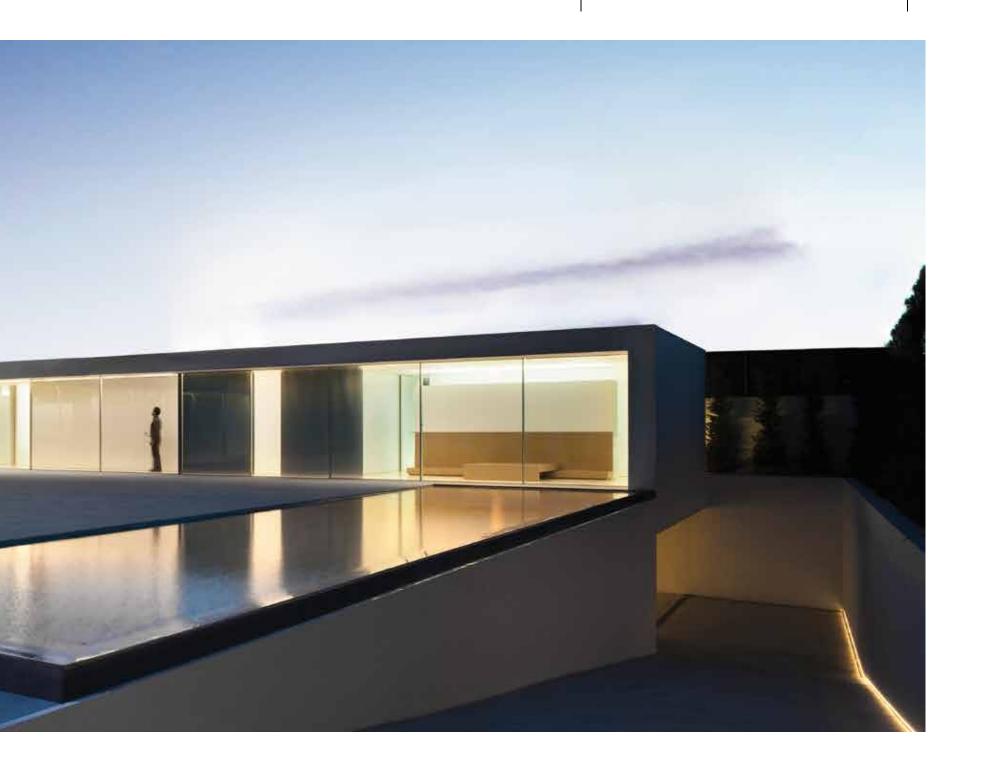
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Editore' Noto

Decks (over) and Yards

After Hudson Yards, Sunnyside could be next.



An aerial photo of Sunnyside Yard, a 180-acre active rail yard in Western Queens.

Lawrence Halprin and William "Holly" Whyte both published books in the 1960s that highlighted the ad hoc and often bottom-up design decisions that make cities successful for their users and inhabitants. Facing the massive Nieman Marcus-emblazoned steel and glass street wall that greets visitors entering Hudson Yards from 10th Avenue, the lessons of Halprin and Whyte seem a quaint reminder of how city building has changed in the past 50 years. Hudson Yards, or as its developers like to call it, "New York's next great neighborhood," is not so much an accretive, incremental part of the city, but a pop-up assemblage of highrise corporate boxes surrounding a shopping mall. There is little here that would interest Halprin or Whyte about how to design

As America's white middle class was abandoning the city for the suburbs, the authors wanted to rediscover and celebrate the joys of high density living. Gentrification has gone from an obscure English academic theory to a popular derisive term to describe how our cities are being organized, planned, and developed. In New York City in 2019, even affordable housing has been handed over to large corporate entities, much as it was in the 19th century, when tenements proliferated and developers were allowed to do as they wished with their property holdings.

The urban critics writing about Hudson Yards yearn for a seamless Whyte-inspired urban fabric that gives as much as it takes from the city. Sadly, the Yards are described, variously, as "an urban failure," a "\$25 billion enclave," "too clean, too flat, too art-directed," and "a vast neoliberal Zion." But how could it have been otherwise? It was conceived, planned, and designed by a corporation with little interest in anything but short-term profit, and it proceeded with little input from community boards, elected officials, or planners. The community boards had all been bludgeoned for years by proposals for sports stadiums on the site, and they gave the go-ahead to the first proposal that promised housing and a school, even if that meant luxury towers. Without serious input from community boards and city planners, this new quarter of the city was destined for failure. Developers only begrudgingly accepted the High Line—one of the most successful top-down planning projects of the past 25 years—into its 14 acres of "public" space when pushed hard by the department of city planning. The High Line, to its credit, makes provision for the sort of urban happenstance that we like about cities, and we can be thankful it wends its way

through Hudson Yards and does not stop at its perimeter. The short High Line spur, with its still unfinished plinth for a rotating case of public sculptures, visible overhead to cars driving up 10th Avenue, is the sort of unexpected condition that makes the city richer. Unfortunately, the gigantic footprints of the Hudson Yards buildings and their corporate lobby design aesthetic makes it impossible for any bottom-up ad hoc events to take place.

A major problem for the Yards is that it sits on a 28-acre concrete pad and underground infrastructure complex that precludes any urban use that doesn't generate billions of dollars in income. It's the same problem faced in varying degrees by the World Trade Center site and Park Avenue, but these seem like triumphs of urban design compared to Hudson Yards.

Sadly, this blueprint for city building on concrete pads (and its ecnomic and financing formula) may be the model for the next big development site in the city, Sunnyside Yard, as New York's Economic Development Corporation (EDC) has already begun planning its future. It was identified as a potential development site in Mayor Bill de Blasio's 2030 plan, and the 180-acre site in western Queens is not far from Manhattan and the growing centers of Long Island City, Astoria, and Queens Plaza. It potentially has 19 million square feet of retail, commercial, residential, and mixed-use spaces, and has been identified by the EDC as a place that could potentially house up to 24,000 homes, 19 schools, and 52 acres of public parks.

In February 2017, the city unveiled a feasibility study of the Sunnyside Yard area, which showed that decking was in fact possible, and that there were various scenarios in which a development of the site could move forward. But again, expensive decking will almost certainly preclude anything but corporate high-rise offices and luxury residential towers with commercial and open space, exactly like that at Hudson Yards

Sunnyside Yard sits next to one of the most important residential developments in the United States, Sunnyside Gardens, designed by Henry Wright and Clarence Stein of the Regional Planning Association of America (RPAA). If only the planners for Sunnyside Yard could look next door and have the expertise and nerve to propose something as revolutionary as the RPAA did in the 1920s. But let's not hold our breath—we are more likely to get another version of Hudson Yards on this public land. William Menking

Masthead

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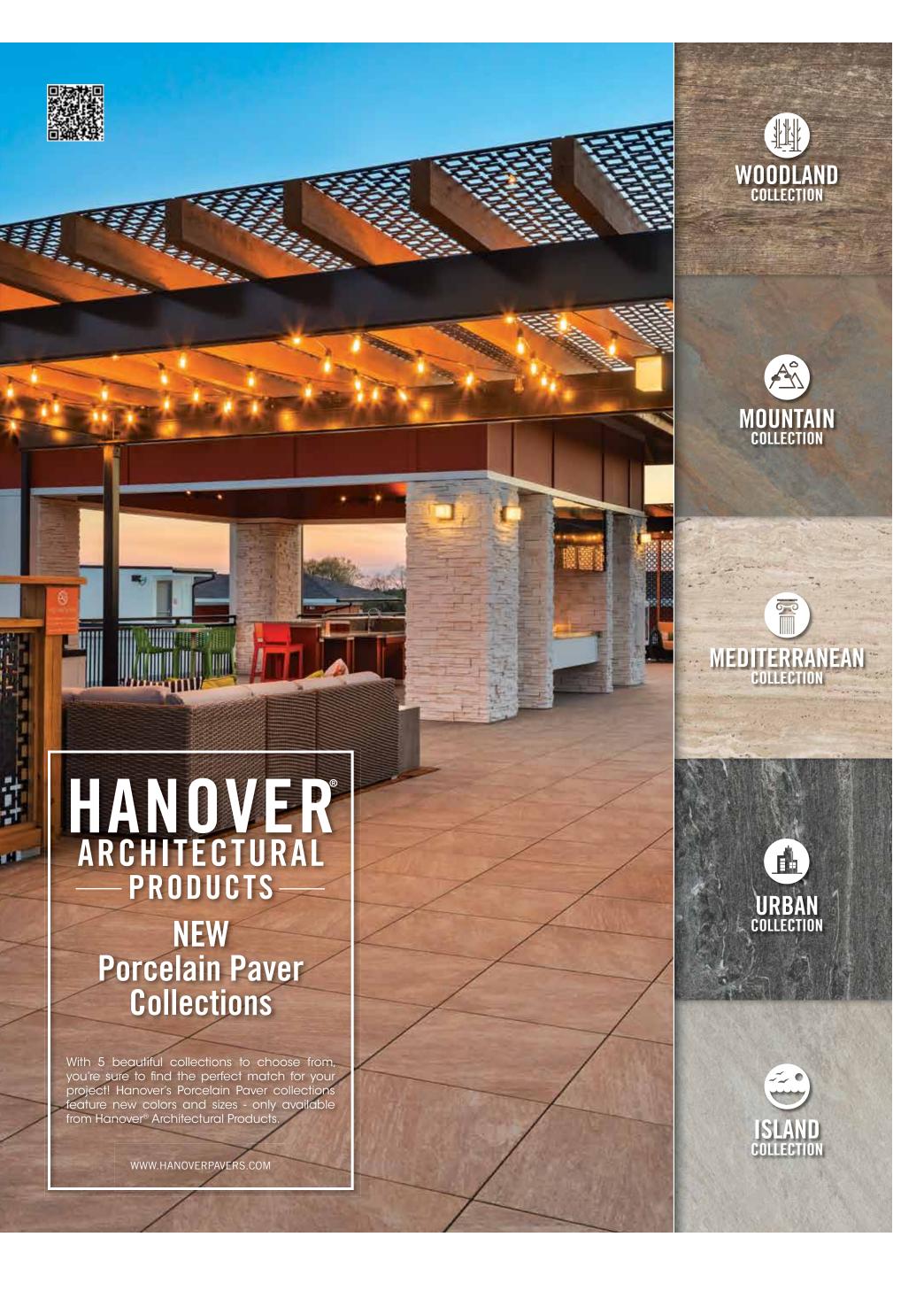
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6 In Case You Missed It...

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

Studio Gang-led team chosen to head massive O'Hare airport expansion

The city of Chicago has chosen Studio ORD Joint Venture Partners to design the \$2.2 billion O'Hare Global Terminal and Global Concourse at O'Hare International Airport. The winning team consists of Chicago's own Studio Gang, the international Corgan Associates, as well as local firms Solomon Cordwell Buenz and STL Architects.

The Hirshhorn Museum's Sculpture Garden set for a Hiroshi Sugimoto overhaul

A year after the Japanese artist and architect Hiroshi Sugimoto completed his renovation of the Hirshhorn Museum and Sculpture Garden lobby in Washington, D.C., the museum has approved a sweeping redevelopment of the garden. Sugimoto plans on opening up the Gordon Bunshaft-designed garden to the National Mall.

Junya Ishigami ordered to pay interns after Serpentine uproar

After 2019 Serpentine Pavilion designer Junya Ishigami came under fire for hiring unpaid interns, the Serpentine Gallery has told the Tokyo-based firm that it must pay anyone working on a Serpentine project, and the surrounding discussion has raised larger questions over the value of labor in architecture.

Architectural Association revives AA Files, prepares to

hand out degrees

A year after protests rocked the architecture world over the Architectural Association (AA) decision to render a portion of its staff "redundant" and possibly shutter its venerated AA Files, the London school is preparing to publish its next issue of the journal. The institution is also gearing up to award its own degrees.

Snøhetta wins competition for the Shanghai Grand Opera House

Snøhetta has won the competition for the Shanghai Grand Opera House, set to rise in the Expo Houtan neighborhood. The Oslo and New York-based firm's design centers around a massive corkscrew stair that connects the theater's roof to an entry plaza that then runs down to the banks of the nearby Huangpu River.

Peter Zumthor's shorter LACMA design is approved

The Los Angeles County Board of Supervisors voted to approve an environmental review report for a controversial "blobbly" plan by Peter Zumthor for a new Los Angeles County Museum of Art (LACMA) campus. The vote propels the plan one step closer to reality and effectively paves the way for an existing complex to be demolished.

Foster + Partners' skylinebusting London Tulip is on the path to approval

London's 1,000-foot-tall Tulip tower looks like it might have an easier time receiving approval than first thought. Plans for the Foster + Partners-designed observation tower easily cleared London's Planning and Transportation Committee on April 2, after planning officials released a 152-page document expressing their support for approving the project.

Jean Nouvel gives Qatar a museum that matches its context perfectly

The Jean Nouvel-designed National Museum of Qatar, in Doha, Qatar, is complete and open to the public. Unapologetically designed to look like the crystalized mineral formation known as a desert rose, the museum is composed of dozens of large discs intersecting at various angles, which produce the facade, roof, walls, ceilings, and apertures of the structure.



Populous reveals the Western Hemisphere's largest esports arena in Philly

A \$50 million esports arena is coming to the South Philadelphia Sports Complex courtesy of designers Populous, Comcast Spectacor (Comcast's sports and entertainment division), and developer The Cordish Companies. Once complete, the geometric Fusion Arena will hold up to 3,500 seats and will be the largest esports venue in the Western Hemisphere.

Mjøstårnet by Voll Arkitekter is the now the world's tallest timber tower

A Nordic structure has claimed the title of world's tallest timber building. Mjøstårnet by Voll Arkitekter is a 280-foot-tall tower in Brumunddal, Norway, constructed entirely out of cross-laminated timber. It's the third-tallest building in the country and features 18 stories of office space, apartments, a hotel, a ground-floor restaurant, and an adjoining public bath.

7 In Case You Missed It...

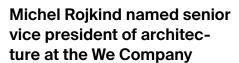
For more information and images for all of these stories, visit: archpaper.com/ICYMI

Christo to wrap the Arc de Triomphe in plastic next spring

Bulgarian-born artist Christo is making a triumphant return to large-scale building wrapping projects, with plans to fully envelop Paris's Arc de Triomphe in nearly 270,000 square feet of recyclable silver-blue polypropylene fabric. L'Arc de Triomphe, Wrapped (Project for Paris, Place de l'Étoile-Charles de Gaulle) will be on view from April 6 through April 19, 2020.

Sarah Whiting chosen as the next dean of Harvard Graduate School of Design

Sarah Whiting, current dean of the Rice University School of Architecture, has been named the next permanent dean of the Harvard Graduate School of Design. Whiting, an educator and practicing architect through her firm WW Architecture, will take over for Mohsen Mostafavi on July 1 of this year.



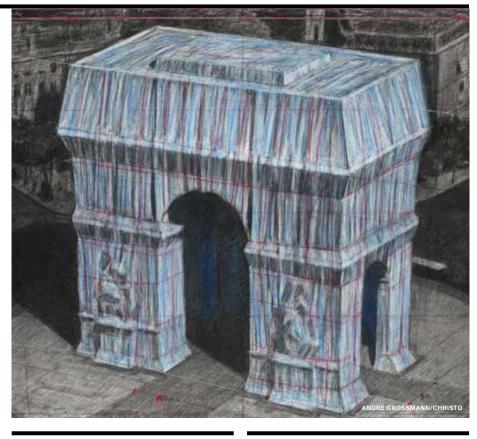
Mexican architect Michel Rojkind, founder of Rojkind Arquitectos, has been hired as the senior vice president of architecture at WeWork's parent corporation, The We Company. His first project? Overseeing the design and construction of a ground-up, 200,000-square-foot coworking building in Bentonville, Arkansas, with the company's chief architect, Bjarke Ingels.

Western Europe's tallest tower could have sheep grazing at its base

A 1,050-foot-tall tower could be Western Europe's tallest (occupiable) building—and it could be dropped into a rural Danish village of 7,000 people. Building Bestseller Tower in Brande may seem counterintuitive, but Brande is where international fast-fashion company Bestseller is headquartered.

Giant expansion coming to LAX as L.A. prepares for 2028 Olympics

According to a new environmental review document, Los Angeles International Airport (LAX) is poised for a large expansion that could add up to two new terminals and nearly two dozen new gates to help handle the influx of travelers headed to the city for the 2028 Olympic Games.



New York State approves

tion pricing plan

least \$1 billion a year.

first-in-the-nation conges-

With the \$175 billion New York State budget

locked in for 2020, so too is congestion pric-

ing on drivers entering Manhattan below 60th

Street. While the specifics have yet to be ham-

mered out, the plan is the first to be imposed in

the United States and is estimated to raise at

Studio Fuksas reworks Los Angeles's Beverly Center

The eight-story edifice of L.A.'s Beverly Center has undergone a \$500 million luxury overhaul by Studio Fuksas. The midlife face-lift includes the addition of an undulating aluminum mesh facade over the building's five above-grade parking levels. The expanded metal veil billows around the hulking mass, stopping above the ground level.

Pittsburgh's City Council votes against saving historic Venturi Scott Browndesigned home

In a 7-2 vote, Pittsburgh's City Council denied designating the 1979 Venturi Scott Brown-designed Abrams House as a historic landmark. After being purchased by neighbors William and Patricia Snyder, it was thought they might act to preserve the house, but instead they began preparing the building for demolition in secret.

Proposed Los Angeles tower at Angels Landing loses supertall status

A proposed Handel Architects-designed supertall tower complex headed to the coveted Angels Landing site in Downtown Los Angeles has received a significant haircut. As a result of the revisions, the project will lose its supertall status but will still rise to be one of the five tallest buildings in the city.

Notre Dame Cathedral catches fire, and France pledges to rebuild

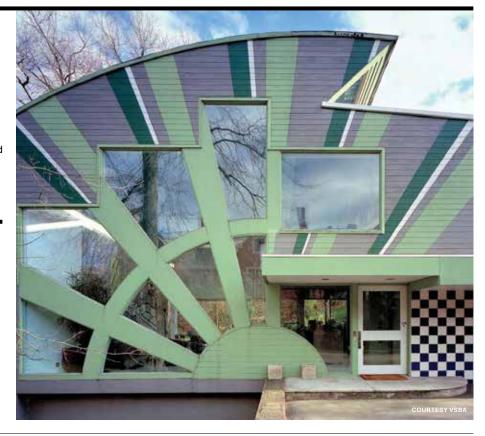
Fire engulfed the 800-year-old Notre Dame Cathedral in Paris on April 15, taking down its spire and sending the timber roof crashing to the ground. Although repairs could take decades, French president Emmanuel Macron declared that he would be pushing an ambitious five-year schedule and would be reopening the cathedral in time for the 2024 Summer Olympics in Paris.

Foster + Partners' controversial Australian Apple store is cancelled

It looks like the latest collaboration between Foster + Partners and Apple is dead in the water. The pair's future flagship Australian store in Federation Square in Melbourne, Victoria, has been blocked by heritage officials, and Apple has decided not to move forward with the project.

David Costanza and Piergianna Mazzocca win 2019 Ragdale Ring competition

The seventh annual Ragdale Ring design competition has been won by David Costanza and Piergianna Mazzocca for Shared Beds. Three wobbling, communal "beds"—reminiscent of Frida Escobedo's Civic Stage at the 2013 Lisbon Architecture Triennale—will be built in Illinois's Ragdale Ring garden in Lake Forest and will host performances beginning in June.



8 Open

Internationa

Under



Europe's first underwater restaurant is now welcoming guests below the North Sea in Lindesnes, Norway. The Snøhetta-designed Under lies partially submerged on the coast of southern Norway, terminating in a dining room 16 feet below the ocean's surface.

The restaurant and marine biology research station is wrapped in thick concrete for its entire length, creating an imposing, 111-foot-long "periscope." The concrete at the lowest point is 1.5-feet thick and surrounds a 36-foot-wide, 11-foot-tall window wall in the dining room that provides guests with a view of the ocean floor. The structure's finish was kept deliberately coarse to encourage mussels to anchor to it, so that it will eventually grow into a reef and purify the surrounding waters.

To emphasize the transition from Lindesnes's harsh environment to the dreamy marine world below, the oak-wrapped entrance gives way to ceiling panels clad in textiles that gradually change colors, which Snøhetta claims is "a metaphor for the journey of descending from land to sea." Speckled terrazzo floors are a reference to the mottled sea floor visible from the dining area.

Jonathan Hilburg

Bålyveien 48 Lindesnes, 4521 Norway

Architect: Snøhetta

East

The Brant Foundation Art Study Center



The home of the Brant Foundation's new East Coast gallery is in the old Con Ed transformer station, built in 1920-21. When it closed in 1980, it was bought by artist Walter De Maria and served as his home and studio until 2013. After it was purchased by art collector Peter Brant, it has been restored and converted into a public exhibition space by Gluckman Tang Architects. Beautifully detailed white exhibition walls act as counterpoints to the newly cleaned brick walls and sand-blasted machinery, like a still-operative 2,000-pound black iron hoist. The top floor exhibition space has a magical skylight sitting under a water fountain, which sends dappled light into the space and serves as a relaxing rooftop public space with a spectacular view



looking north over the East Village. The architects have turned the narrow open spaces on the west and north sides of the building into elegant and peaceful landscaped parks that act as a breathing space for this dense part of the city and allow natural light into the galleries. **WM**

-21 East 6th Street Jew York, New York	212-777-2297
rchitect:	Gluckman Tang Architects

est

Octave 9: Raisbeck Music Center at Benaroya Hall



Thanks to LMN Architects, Seattle has a new space for making experimental music. The recently opened Octave 9: Raisbeck Music Center performance and educational music facility brings new state-of-the-art sound experience capabilities right to the city's Benaroya Hall symphony complex, which was also designed by LMN 20 years ago.

The new music center is spectacularly technical in terms of its offerings, and includes a custom-designed acoustically absorptive ceiling and 13 curving screens hung on circular tracks that can create nearly-360-degree immersive and interactive projections. The facility's speakers, microphones, projectors, lighting, and HVAC are all integrated into the absorptive ceiling while a professional-quality

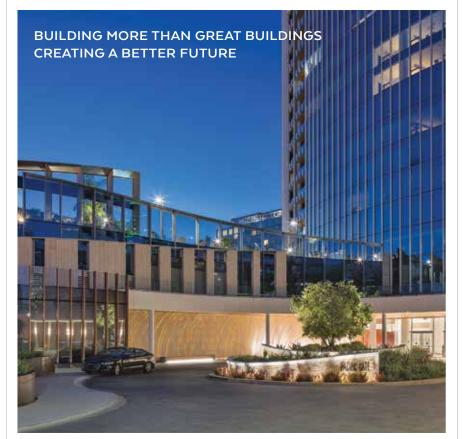
Meyer Constellation digital acoustic system is sophisticated enough to allow musicians who use the space to engage in cross-genre performances.

According to the architects, the sound system enables a "spatial sound" experience, created when individual speakers across the room play selective sounds to create the impression of movement. **Antonio Pacheco**

200 University Street Seattle, Washington

Architect:

LMN Architects



Pacific Gate by Bosa San Diego

Design Architect: KPF Architect of Record: Chris Dikeakos Architects Inc.

Cast-in-place high rise



9 Eavesdrop

Strong Foundation

If you have been following the saga of Anna Delvey, the so-called "Soho Grifter" in the news, you might have come across the great profile of her in *New York* magazine. Long story short, Delvey, whose real name is Anna Sorokin, conned rich New York socialites into supporting her lavish lifestyle and her extravagant Soho House–like private club, the Anna Delvey Foundation. She was convicted on May 26 of two counts of second-degree larceny and one count of first-degree attempted larceny. In the trial proceedings, more details have been in the news, includ-

ing an *ARTnews* report that displayed a range of slides from the presentation that she used. One of the more exciting ones for us at Eavesdrop is slide 68, which outlines design director **Gabriel Calatrava**'s role and background. Also, **Santiago Calatrava** and developer **Aby Rosen** were board members, while Daniel Arsham of **Snarkitecture** was listed as an advisory partner of the "foundation." A spokesperson for Arsham told *AN*, "Daniel had no role and was as surprised as everyone else to see his name listed in her foundation materials."

Here's who said it

In last month's Eavesdrop we asked who quipped, "Details wag da dog" in response to Mies van der Rohe's oft-repeated maxim, "God is in the details."

We all know Robert Ven
turi's retort to Mies's "Less is a bore." But even more playfully, it was the master of Manayunk himself who said, "Details wag da dog."

Zaha Hadid (Doesn't) Sell Out

A slowdown in the New York City luxury market seems to have claimed another building. According to *Crain's*, the **ZHA**-designed 520 West 28th has only sold 40 percent of its units, and even less than that when measuring in square feet.

Despite the curvaceous building's prime location along the High Line, there actually aren't too many neighborhood institutions, like grocery stores and movie theatres. The building's sky-high prices and large unit sizes haven't helped either, and the \$60 million double penthouse has sat vacant since the building's opening.

It appears developer Related is changing its marketing approach, as an eagle-eyed AN editor spotted a massive "ZAHA HADID" banner across the building's top level while walking the High Line. Now that Hudson Yards is open nearby, Related hopes the extra neighborhood amenities will entice potential buyers.



Helmut's Langer

Chicago's decision to award the new \$2.2 billion O'Hare Global Terminal and Global Concourse building to the **Studio Gang**-led team has stirred criticism, and some of it is from a surprising source. Legendary Chicago architect **Helmut Jahn** released a handwritten note blasting the winning design, saying that he hoped the next mayor of Chicago would roll it back.

"I am embarrassed that some of my most respected colleges [sic] have been missused [sic] to placate a premitidates [sic] decision, not justified by design or experience. Such attitude has not made Chicago a capitol of world architecture. Hopefully the next mayor will turn this around."

SOME OF MY MINT RESIDENT COURAGES HAVE BEENS (ON LUSSISED TO PLACATE A PREMITIONTES DECISION), NIT JUSTIPIED BY DESIGN OF EXPERIENCE.

SUCH A TIMBE HAS NOT MADE CHICAGO. A CAPITAL OF VORLY ARCHITECTURE.

HOPEFULLY THE NEXT MAYOR WILL TURN THIS AROUND.

-312719.

COURTESY HELMUT JAHN/BLAIR KAMIN

Jerde Lives!

Are Gensler's PoMo-smashing plans for Jon Jerde's Horton Plaza shopping complex in San Diego toast?

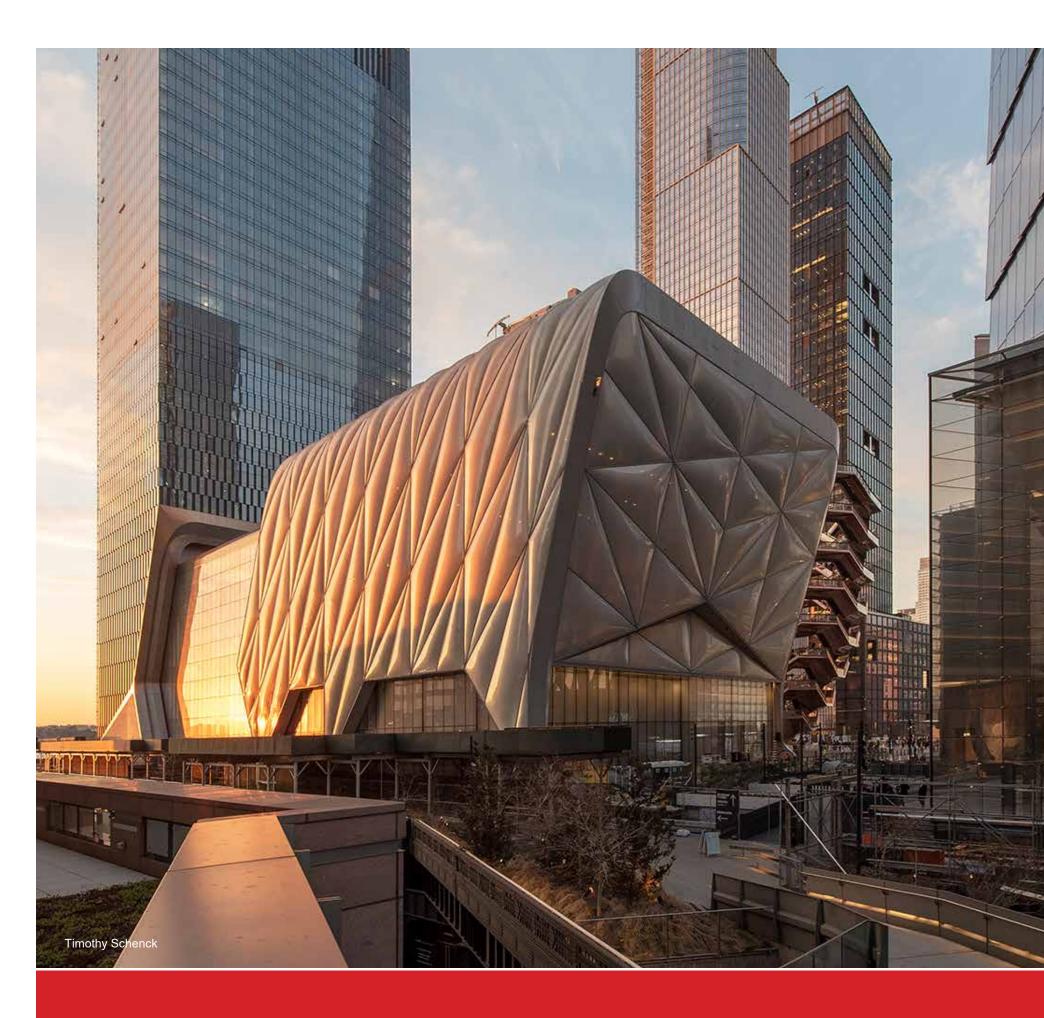
Rumors say: Maybe. After vocal public outcry from the city's architectural organizations and threats of litigation from some of the mall's tenants, plans to reclad the seminal work of "experiential architecture" with sanitized expanses of curtain wall glass could be headed back to the drafting board.

Sources tell *AN* that efforts to landmark the 1985 mall and existing development restrictions have effectively put the project on hold. The delay could be a blessing in disguise for the ghost mall, which might now survive long enough to have its rose-, cerulean-, and banana-colored stage sets come back into fashion.

What a world!

Sometimes truth is stranger than fiction. Or is that the other way around? Anyhoo, at a recent roundtable discussion at the United Nations in New York, Bjarke Ingels unveiled a prototype floating city (see front page). In his presentation, he said that his scheme "would not look like Waterworld." However, one of the two screenwriters of Waterworld was one of the next speakers, Peter Rader. "I bet when Bjarke threw shade at Kevin Costner, he didn't think the screenwriter of Waterworld was in the audience. This looks exactly what we did in Waterworld," said Rader.

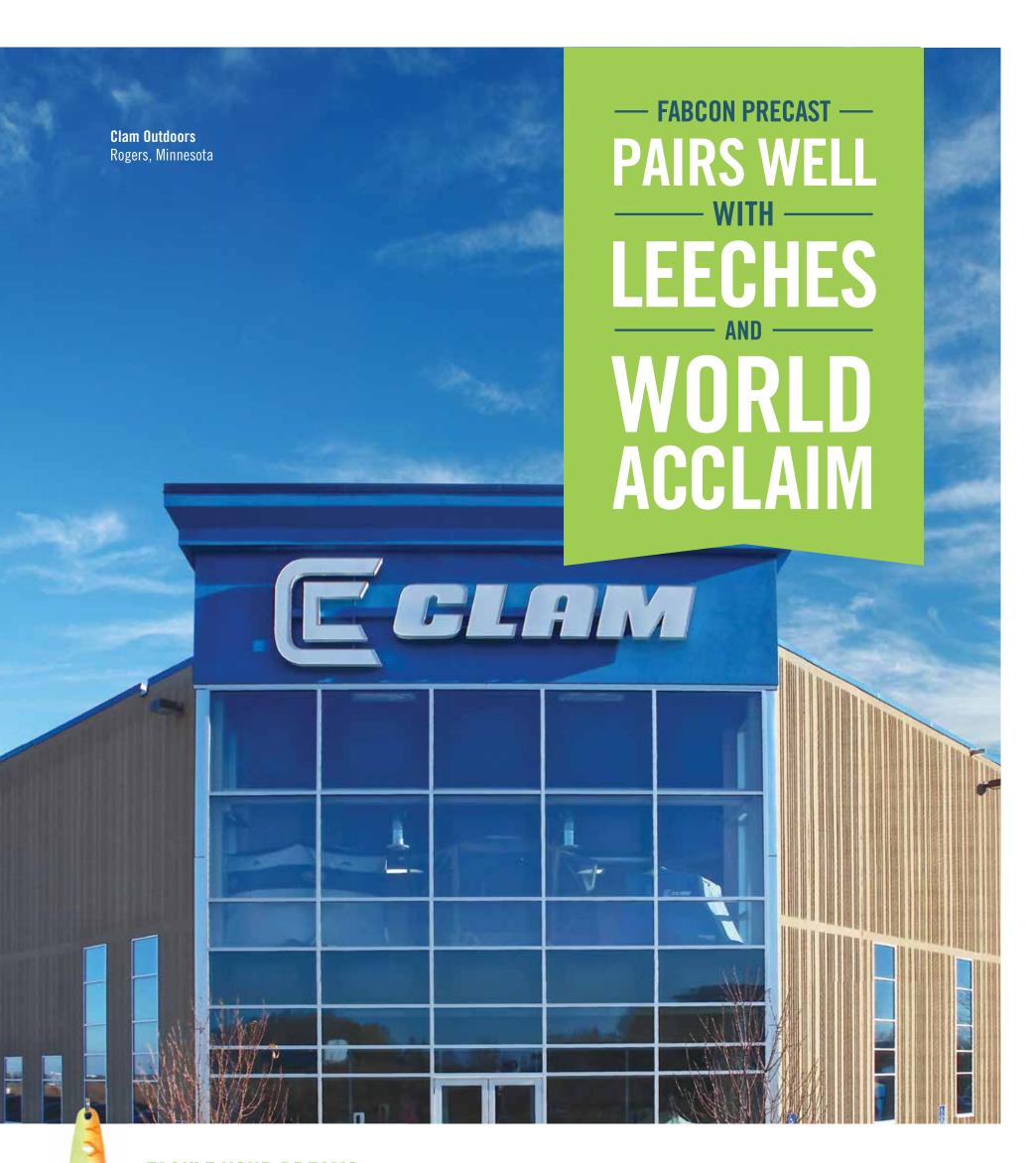
Send paparazzi shots and parametric curves to eavesdrop@archpaper.com.



The Shed NYC

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Little Dubai continued from front page of nearly frictionless globalization. That is how New York's Little Dubai got its character.

As much as Little Dubai's food offerings should shock us, so should its art and architecture. The art follows a similar path as the food, with superstar curators—ubercurator Hans Ulrich Obrist is a senior advisor—brought in to inject the place with some kind of pop-up world-class culture, much like what the UAE did at the Louvre Abu Dhabi, where the name and collection were cloned from the old world of Europe to the open expanses of the 21st-century Gulf. where anything goes. Consider the immersive installation Rain Room, the phenomenon that had lines around the block at MoMA in 2013. The Sharjah Art Foundation in the UAE has not only acquired Rain Room for its permanent collection, but built an entire new building to house it.

This kind of cultural exchange—that of international consultants—relies on enormous amounts of capital to lubricate its mechanisms. No longer does it require, however, actual immigration or imperialism to carry culture from one place to the next, as was the case in the 19th and 20th centuries when neighborhoods dubbed Little Italy, Chinatown, Koreatown, and Little Ethiopia naturally popped up around the world. Rather than streets of mom-and-pop shops, entire campus-like districts are instantly animated as breathing lungs of cultural import-export, with nothing to stop them.

Which brings us to the architecture of Little Dubai. There are several similarities to Dubai at Hudson Yards. The most obvious is that the towers themselves look like those nondescript condos and offices that make up most of the building stock in Dubai. Moreover, the neighborhood was master planned by KPF, which also cranks out towers in the Gulf, and Asia more generally. The similarities run deeper, from the food to the development patterns to the urban experience.

Like any good enclave, the mechanisms that have produced Little Dubai look a lot like those that produced the original Dubai and its urban environment. This is not to say that Little Dubai necessarily comes from Dubai itself. It is not that simple. In fact, New York and developing nations such as the UAE and China are in a constant feedback loop, where the West exports ideas about managerial production systems such as large architecture firms and the corresponding banal corporate aesthetics.

As Michel Foucault once noted, while colonization, with its techniques of domination and its political and juridical weapons, obviously transported European models to other continents, it also had a considerable boomerang effect on the mechanisms of power in the West, and on the apparatuses, institutions, and techniques of power there. A whole series of colonial models was brought back to the West, and the result was that it could practice something resembling colonization, or an internal colonialism, on itself.

"Firms like KPF and Foster take on these projects overseas where they can grow and practice working as larger firms," said Todd Reisz, assistant professor at Yale University. "Once they get big and good enough, they can bring these ideas about—how to make a city from the ground up—back home."

This is how New York's Little Dubai came

The original Dubai was opened up to private land ownership in 2002 in an attempt to become a stable place post-9/11 for foreigners—especially Middle Easterners, Africans, and South Asians—to park their money. Spe-



With the completion of Hudson Yards' first phase, the second, residential-focused portion can begin development.

cial economic zones were established that allowed business and development to operate without the strict controls of Shariah that governed the rest of the UAE. In these economic zones, international trade was encouraged by specially crafted civil legal code geared specifically toward port businesses (foreign investment). For example, a team of international consultants from mega-firm McKinsey advised the Dubai government in 2002 to draft a set of UK-style regulations for the Dubai International Financial Centre (DIFC) free zone, a "state within a state" that would operate with a different official currency-the U.S. dollar- and a different official language—English—than the rest of the UAE. It was designed by none other than architectural behemoth Gensler. This international managerial complex was the logical conclusion of some 300 years of the colonial urbanization of developing nations around the world, perfected by the UAE gov-

Companies like Emaar and Dubai Holdings buy and develop enormous plots of land that serve as self-sustaining neighborhoods that don't need to have much connection to their surroundings. Because of their sheer size, and the scale of the projects they oversee, these massive companies also obscure the relationship between public and private.

In New York's Little Dubai, a similar situation exists. The New York City Department of City Planning (DCP) acts a bit like the real estate state of the UAE, doing large rezonings and tax incentives to foster these big developments. Nearly 1 billion dollars in tax abatements were given to The Related Companies, Little Dubai's developer, in addition to nearly 4.6 million in infrastructure improvements and other incentives. And often,

because of the private nature, DCP has little authority to begin with.

Because the development is on stateowned land, there was no oversight from community boards. The parcel became part of a larger economic development strategy that usurps local regulation, leaving the citizens of New York City more or less out of the conversation. Little Dubai is regulated by a network of rules and capital that transcends physical territory, just like the old-world Dubai in the UAE (this model is also being pursued by ultimate cloud-based dark-power-mongers Google in Toronto).

This has led to a sort of Free Economic Zone, where Stephen M. Ross, Related's chairman, is a type of urban autocrat, pushing through what he wants when he wants. For example, in Little Dubai, Thomas Heatherwick's 154-stairway monument Vessel was simply ordered for \$200 million, shipped from Italy, and fastened together in about 18 months, with little in the way of design review or public process. The lack of community input is not necessarily a bad thing, but it raises important questions.

At 28 acres, Little Dubai has the characteristics of an entire neighborhood, with its own circulation paths, central public space, and complete set of programmatic functions from retail, residential, commercial, cultural, and leisure/hospitality spaces carefully orchestrated in both plan and section.

The city of Dubai is a place where these large private developments have happened so fast that they do not relate to one another on the street level. The piecemeal nature leaves hotels and malls and gated communities difficult to access because nothing was planned to connect at the street. While Dubai's infrastructure haphazardly connects these megadevelopments with curls of

spaghetti-like roads and onramps, Hudson Yards has similarly managed to bend New York's infrastructure to its will—the number 7 subway line was extended to the northern entrance to Little Dubai's main plaza.

Vessel and its counterpart, The Shed, occupy an important niche in the rich culture of Little Dubai: They serve as the attractors to get tourists to come and play, and thus spend money at retail options. Like the spectacular Dubai Aquarium, Dubai Frame, and man-made islands such as Palm Jumeirah, in the UAE, Vessel acts to bring attention to the place. The High Line is already doing this, but these new spectacles will bring in tourists en masse, possibly so much that this area will be like a cleaner and even less exciting Times Square.

This centralization of power—via a marriage of government and private interests—gives consultants the ability to plan whole districts, and ties Little Dubai to its namesake (and countless other cities like it). It should not come as a surprise that this is taking place in New York. In fact, it is a very New York phenomenon, since much of this culture was shipped from New York's office towers (literally and metaphorically) only to return to its origin point.

The process of globalization and the complete control of technocratic consultants has crystallized in spectacular fashion before our eyes in New York's Little Dubai. What remains to be seen is how the local context will absorb this pseudo-neighborhood. What is scary for New Yorkers is that it seems like it is going to fit right into its place at the apex of the Highline. Matt Shaw

In Memoriam: François Perrin

(1968 - 2019)



Francois Perrin

Los Angeles-based architect Francois Perrin has passed away

Perrin was diagnosed with a rare and aggressive form of brain cancer in January 2019 and passed away on April 1, 2019, in Ventura, California.

Born in Paris, France, Perrin would eventually settle in Los Angeles, where his design practice. Air Architecture, was well-known for creating materially inventive spaces filled with ethereal physical qualities that transcended everyday experiences.

Perrin's architectural projects were widely published, including his Venice Air House from 2006, an addition to a single-family home that used trapped air visible through clear polycarbonate siding as a form of insulation. Perrin's Hollywood Hills House from 2012 was designed as a series of terraces that simultaneously disappeared into and were hung off of a steeply sloped site.

Perrin has organized several exhibitions including Dialogues and Yves Klein-Air Architecture at the MAK Center for Art and Architecture in Los Angeles and Architectones in several loca- cois-perrin-brain-cancer-fund.

tions around the world.

Perrin was named a Chevalier des Arts et des Lettres by the French Ministry of Culture in

A joint project between Perrin and French Canadian architect Francois Dallegret is currently on view at the MAK Center as part of the Shelter or Playground exhibition. AP

This is Francois Dallegret's tribute to Perrin:

A bubble, the earth and a good way off.

François has burst our bubble and we will still cheer it when time comes to join him beyond our planets.

François considered that "the bubble offers a radical new space to experiment with."

François loved the air and inflated it to host the world.

François as a critical dreamer wanted to invite everyone to share our unique space through a cybernetic experience.

François spotlighted a perfect environment for human activities.

François hosted performances for the place "to explore themes of domesticity, technology and body movements in new

François had a relentless force for the desire of making the impossible happen, and

François said that architecture is performance and performance is architecture.

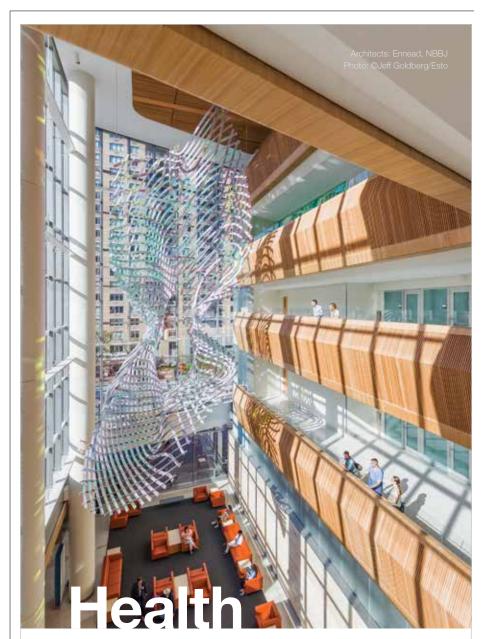
François empowered diversion toward a

François is still surfing across the world's oceans, far from what we know in the bizarre infinite.

Those who would like to contribute to the fund for Francois Perrin's wife and 16-month-old daughter can visit: www.gofundme.com/fran-



The first artist proof of Francois Dallegret's The Environment-Bubble was created by Francois Perrin at Performa at Brooklyn Bridge Park in 2017.



Conscious

When NYU Langone undertook the largest expansion in its history, the world-class hospital tasked Ennead and NBBJ with creating a patient-centered pavilion to house 374 single-occupancy rooms, 30 ORs, and the city's newest children's hospital. With so much going on inside the facility, its six-story atrium allows patients and staff to take in sunlight and the cityscape from expansive balconies proving that architecture can be good medicine too. Read more about it in Metals in Construction online.



WWW.OMINY.ORG

Made in Tokyo continued from front page The Architect's Newspaper: What can we expect from this show? How does it relate to your book projects, particularly *Made in Tokyo*, which shares a name with the exhibition?

Atelier Bow-Wow: What you can see from this exhibition is the Tokyo of the two Olympics, seen through the evolution of various urban institutions. Our book, *Made in Tokyo* (2001), showed the life of this unique city through the observation of "hybrid" metropolitan structures. By applying this lens to the urban institutions that were being created in 1964 and 2020, the years of the two Tokyo Olympics, we will showcase the change, or metabolism, of the life of Tokyo.

How did you sort through almost 60 years of architecture and development of the largest metropolis in the world? What were you

looking for as you made your framework? The urban architecture that was built between the last Tokyo Olympics and the upcoming Tokyo Olympics can be categorized in two ways: architecture that supports the everyday life of Tokyo (transit stations, city halls, offices, houses, etc.) and architecture that supports the nonroutine life (capsule hotels, stadiums, department stores, etc.). Comparing these two kinds of architecture and observing how the environments, conditions, and social expectations for each type has changed will reveal how life in Tokyo has transformed.

What are the major transitions you identify? What built works illustrate them?

Size. The size of the Olympics, the size of cities, the size of economic impact, the technical environment—namely, the internet—how families should live, the way of work-

ing, commercial services, demographics of cities, etc., have all changed drastically.

Were there surprises that you came across as you surveyed the city and its history? What assumptions about Tokyo might be upended?

We are the generation of the previous Tokyo Olympics and cannot hide how surprised we are at the tremendous turnover of city spaces from what we remember in our childhood memories. Since the government handed over the reins of urban creation to the private sector, the logic of capital and industry has entered into every corner of the city and started determining the shapes of life and urban spaces. Although it is widely said that the 70-year period of peace in Tokyo—without war or huge earthquakes—has contributed to cultivating a city that values quality over quantity, I think in reality it is liveli-

Ginza Six by Yoshio Taniguchi with Gwenael Nicolas and Kenya Hara

WILLIAM MENKING/A

hood that is servicing capital and industry.

From the outside, 1964–2020 in Japan seems to be a very positive and optimistic period of growth. Is that true?

Since World War II, we had grown in both population and economically until around 1990. Various urban institutions were created with great productivity and enthusiasm. Especially in the 1960s—15 years after the end of the war—young architects were allowed to creatively contribute to diverse architectural designs. Now, in contrast to those times, the institutions that were built in the 20th century are showing their age and need to be renovated. In high-value areas in central Tokyo, there is an incentive for large capital and organizations to move toward mass redevelopment that increases the total floor space, thus covering operating costs. On the other hand, buildings in the other areas are left to the tides of time and tend to be unoccupied and deteriorating. These buildings are often revitalized by young architects and activities rooted in their neighborhoods. In short, bipolarization is happening, and we cannot be positive about the situation.

Now we are moving to the idea of "revival" and localism of the countryside rather than Tokyo's centralism. Tokyo has been established on the support of the rural areas, but the fact has become more apparent and Tokyo is getting situated as one of the cities in the network of lives.

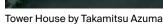
You include several avant-garde artworks, including some performance pieces, that are critical of Japanese economic development and consumerism. How do those fit into your narrative? Why did you include the performance of the performance of

They show what "ambiences" are surrounding architecture in each era. Along with focusing on urban institutions, we would also like visitors to imagine the backgrounds and conditions that surround the institutions.

(These responses were translated from Japanese into English.)



Co-curators Momoyo Kaijima and Yoshiharu Tsukamoto, Atelier Bow-Wow.



IBONE SANTIAGO



The underside of each "island" in Oceanix City features greenhouses

Float On continued from front page series of modular hexagonal islands with a productive landscape, where bamboo grown on the "islands" could be used to make glulam beams.

BIG envisions the cities as zero-waste, energy-positive, and self-sustaining. The necessary food to feed the population

would be grown on the islands. BIG has put together a kit of parts for each component of the man-made ecosystem: a food kit of parts, a waste kit of parts. Each island would be prefabricated onshore and towed to its location in the archipelago.

What would living on one of these islands be like? "All aspects of human life would be

accommodated," said Ingels. The design would dedicate seven islands to public life, including a spiritual center, a cultural center, and a recreation center. "It won't be like *Waterworld*. It's another form of human habitat that can grow with its success."

Oceanix City, as it is called, features midrise housing around a shared, green public space where agriculture and recreation coexist. Underground greenhouses are embedded in the "hull" of the floating city, while drones would buzz by with abandon in the sky above. The systems on each city would be connected, where waste, food, water, and mobility are connected. Because the cities are towable, they can be moved in the event of a weather event.

Land reclamation (creating new land by pouring sand in the ocean) is no longer seen as sustainable, as it uses precious sand resources and causes coastal areas to lose protective wetlands and mangroves. Could floating cities be the way forward for expanding our cities as we deal with the consequences of climate change and sea-level rise?

According to the coalition, "Sustainable Floating Cities offer a clean slate to rethink how we build, live, work, and play...They are about building a thriving community of peo-

ple who care about the planet and every life form on it." Doesn't this sound a lot like the Seasteading Institute, the infamous group of libertarian utopianists who want to break away from land and society altogether? For Collins Chen, his floating infrastructure is less ideological and more about infrastructure technology. These floating cities would be positioned near protected coastal areas, and function less as ocean-faring pirate states and more as extensions of areas threatened by rising sea levels.

"These cities have to be accessible to everyone. We can't build broad support for this without populist thinking," said Richard Wiese, the president of the Explorers Club. The first prototypes will start small, even though they are ultimately thinking big. The 4.5-acre pods will house 300 people, while the goal is to scale the system by repeating the unit until the city can hold 10,000 people.

Can floating cities be more sustainable and affordable than building on land? Would they only be for the rich? Would they be self-sufficient? Would they prevent climate gentrification and curb climate migration? Or, as has been the case in the past, will the idea prove too expensive to actually build? Matt Shaw

LAC-luster Scheme

Zumthor's LACMA proposal is an affront to L.A.'s architectural and cultural heritage.



The entirety of William Pereira & Associates' LACMA campus is poised to make way for a controversial design by Peter Zumthor.

Despite gaining approval from the Los Angeles County Board of Supervisors in April, what has already been said many times needs to be said once more: Peter Zumthor's oil slick-inspired redevelopment proposal for the Los Angeles County Museum of Art (LACMA) campus is just plain bad.

Say what you will about the existing mish-mash of buildings designed by William L. Pereira & Associates and Hardy Holzman Pfeiffer Associates (HHPA) the scheme seeks to demolish, but the \$650 million Zumthor proposal is simply not a suitable replacement.

Many have already delved into the (really) long list of reasons why Zumthor's proposal leaves so much to be desired—its substandard size, inflated cost, and absurd urban configuration among the top reasons to dismiss the idea. But worse still, perhaps, is that the overpriced proposal will also destroy a vital urban cultural resource: the museum itself, as Angelenos know it.

Critics might not like to say so, but LAC-MA is a real place and a beautiful one, at that. The terrace sandwiched between the HHPA addition and the main Pereira building can be effervescent when tour groups, families, and aficionados converge upon it, for example. Pereira's galleries next door are peculiar, yes, but the spaces just off the elevator, wrapped in warm wood paneling and studded with delightful details like inlaid clocks and flush-mounted wood accessory doors, are dignified and rich in a way that simply isn't found in other L.A. art museums. HHPA's building may form an impenetrable wall along Wilshire, but when you finally find the entry, a shaded outdoor living room soothed by flowing water and the jovial sounds of the social life taking place on the terrace beyond create a public space articulated for the senses.

For better or worse, the current manifestation of the complex has existed for a longer period of time—37 years—than any other of LACMA's incarnations. The current configuration is LACMA, it's the LACMA that director Michael Govan inherited when he arrived from New York, and it is the LACMA he wants to destroy as he strives to leave his mark.

Though the current configuration leaves much to be desired, Govan has had to strong-arm the Zumthor project into being, weathering withering criticism of the ever-devolving proposal without pursuing any meaningful changes to the design.

Govan, of course, did downsize the proposal as fundraising efforts pushed up against their natural limits, but he has persisted in pushing a vision that is fundamentally and irrevocably flawed.

In a way, the project and the persistence in bringing it to life despite its continuing and multiplying inadequacies follows a long line of efforts to undermine the legitimacy of Los Angeles and its unique architectural and cultural history.

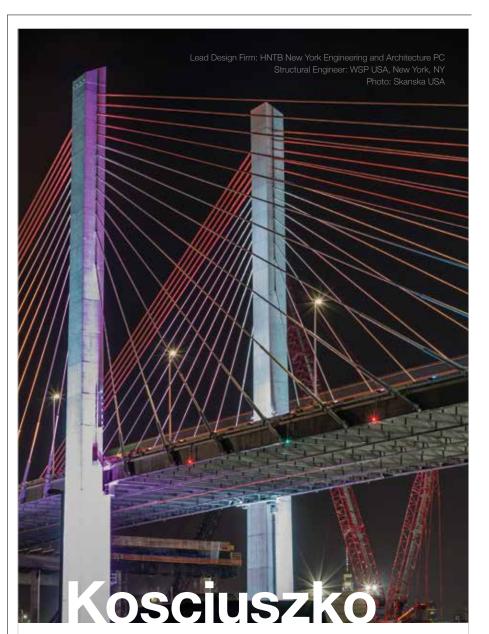
To put it plainly, Zumthor's LACMA represents the latest attempt to apply a colonial mentality to Los Angeles. It follows in the tradition of slash-and-burn conquests waged by powerful men who, like Zumthor, a Swiss starchitect, and Govan, former director of the Dia Art Foundation in New York City, come to Los Angeles and see nothing but a blank slate. They land at LAX as "visionaries" blinded by their own genius to the thriving richness of everyday life here.

It's not that they are violent and destructive men. Zumthor's delicately reverential Kolumba Museum in Cologne, Germany, and Govan's meticulous restoration of the former Nabisco headquarters for Dia: Beacon suggest that both are capable of thoughtful and respectful restorations. The reality is that, like many who came to Los Angeles before them, they simply don't value the city s as a real place with a long, complex, and legitimate history.

Late modernism and postmodernism are fundamental to Los Angeles's design history, however, and Angelenos should not let others delete them away.

The majority of people here inhabit these types of buildings in one way or another. It's where we go to the doctor, it's where our children go to school, it's where we work, it's where we learn about art. To try and minimize that aspect of Angeleno culture, to try and erase the sometimes contrived nature of late modernism or the often over-the-top pastiche of pomo, erases a fundamental aspect of who Angelenos are and how they live.

Often, outside voices serve to turn a mirror on a place, uncovering morsels of beauty from what might be considered banal to the local eye. Zumthor and Govan have failed in this regard and instead seek to erase buildings that are neither fully understood nor appropriately admired. Los Angeles has had enough of that; perhaps it's time for some fresh thinking. AP



à Gogo

The design of urban infrastructure affects city life as much as the design of its buildings. That's why replacing the Kosciuszko Bridge—a notorious pinch point in traffic between Brooklyn and Queens—was a high priority for Governor Cuomo. With heavy lifting from HNTB, WSP USA, and Skanska, a striking cable-stayed span has risen where the outdated bridge once stood, ensuring New Yorkers may still have trouble saying its name, but they never have trouble getting home.

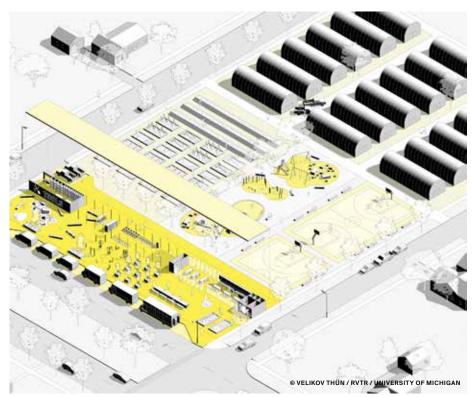
Read more about it in Metals in Construction online.



WWW.SINY.ORG

Overcoming Obese-city

In Jackson, Mississippi, architects take on a citywide hunger problem.



A speculative prototype design for an infrastructural node for urban agriculture in Detroit designed by Kathy Velikov and Geoffrey Thün of RVTR.

By more than one measure, Jackson, Mississippi, is one of the nation's unhealthiest cities. In 2017, it was named the fattest city in America based on 17 indicators, including obesity rates, levels of physically active adults, and access to fresh produce. In fact, nearly one-fifth of city residents are considered food insecure. The state of Mississippi does not fare much better—for the last eight years, it was reported as the most food insecure state in the country, even though agriculture is the state's top industry.

It's not just that Jackson has only 17 grocery stores for a population of nearly 170,000—that's one per nearly 10,000 people. But the food that is available is disproportionately tipped toward fast food and gas station items. As one scholar of Jackson's food culture told the *Clarion Ledger*, "Hunger happens in between bags of chips."

All of this is compounded by the city's lack of viable public transit options. Jackson is designed around the car, but many residents, whose wallets are already stretched thin on federal food assistance dollars, don't own one. Even those with groceries or farmers' markets in walking distance are discouraged by the lack of sidewalks or crosswalks. All of this is undergirded by decades of generational poverty and disinvestment due to white flight, unfavorable tax policies, and the state's aggressive efforts to cut resources for Medicaid and limit food stamps.

But Jackson also has a long history of civil rights activism, and its residents in 2013 and again in 2017 elected mayors who promised nothing less than wholesale social and economic transformation. For Mayor Chokwe Antar Lumumba, addressing Jackson's food access challenge is part of his promise to make it "the most radical city in the world." But rather than enlisting conventional strategies, the city has mobilized its long-range planning division to lead a new design-based initiative. Bolstered by a \$1 million public art grant from Bloomberg Philanthropies, "Fertile Ground: Inspiring Dialogue about Food Access" brings together architects and artists alongside chefs, gardeners, food policy experts, and local institutions to facilitate a year of community-engaged interventions at three sites in the city. The project will culminate in a citywide exhibition in the spring of 2020, but ultimately it aims to establish a nonprofit research lab on food access that will operate on a permanent basis to sustain the momentum that is created.

The city invited an intriguing roster of architects from around the country to participate in the multidisciplinary initiative: Kathy Velikov and Geoffrey Thün, directors of RVTR; Anya Sirota and Jean Louis Farges of Akoaki; Walter Hood of Hood Design Studio, and Jonathan Tate, who runs his namesake practice, Office of Jonathan Tate. Architects are central to the project, said Travis Crabtree, a senior urban planner with the city and one of the project's coordinators. "When we first got the grant, people asked, Why are we spending \$1 million dollars on an art project when we could feed people for a million?" he said.

Looking more closely at what these designers bring to the table may illustrate what can be gained from this approach. The question of access is at the heart of practices like the Toronto and Ann Arbor, Michigan-based RVTR, led by Velikov and Thün. In their ongoing project, Protean Prototypes, they conceive of public transit systems as platforms to address access to mobility, food, education, and health. They do this by mapping the social and spatial opportunities for access, connecting underserved areas with local actors who can bridge access gaps and by proposing lightweight spatial prototypes that overlay onto public transit infrastructure, such as bus stops and metro stations. The prototypes might include emerging tech like mobile produce vending systems and bike-cart shares alongside other programs with a small footprint like exercise equipment and book lending programs. Apply ing this method to Chicago, San Francisco, and Detroit, this complex systems approach brings together architectural and urban scale in new assemblages that amplify the resources already on the ground and take advantage of the larger urban context to channel them where they are needed most.

In Jackson, Velikov and Thün will focus their efforts at the Ecoshed, a 15,000-square-foot, open-air building on a 2-acre industrial site that

borders two very different neighborhoods—the rapidly gentrifying Fondren and Virden Addition, one of the poorest in the city. For Fertile Ground, the Ecoshed will demonstrate a self-sustaining closed-loop food system and host the food lab, and eventually host the Fertile Ground nonprofit.

Architects Anya Sirota and Jean Louis Farges of Detroit-based Akoaki will also focus their efforts at the Ecoshed. Their practice has engaged with the problem of food access through four years of work with an urban farm in Detroit, Oakland Avenue Urban Farm, According to Sirota, Detroit has 1.300 urban farms, but none of them are sustainable. At the 6-acre Oakland Avenue Urban Farm, sustainability for Sirota and Farges has meant strategizing beyond economics alone. To them, urban farms are hubs for urban regeneration, and they realized that multiple layers of activity and programming were needed to realize that potential. Like Velikov and Thün, they see architecture as a way of "amplifying the activity that's already happening on the ground, to stitch together new and productive alliances.

Detroit may be 1,000 miles from Jackson, but the connection between the two cities runs deep. Like Jackson, Detroit is a majority African American city, with many residents who have ties to Mississippi and other southern states. Thus, the Oakland Avenue farm grows many heritage products from Mississippi. Likewise, the association to agriculture is similarly fraught in both cities; as Sirota noted, "We are highly attuned to the idea that going back to the land isn't necessarily representationally positive to everyone." Rather than framing urban farming as a return to an idyllic past (and glossing over the history of slavery and policies that led to the dispossession or denial of land to freed slaves), Akoaki's urban farm work is firmly sited in the urban. "We've become astutely aware that the neo-rural is not rural: it's something that deserves an aesthetic that hybridizes all the aspirations of the city and combines them with the necessity to produce picturesque landscape and food." Thus the practice's design of pop-up performance spaces next to the farm's kale fields for the Detroit African Funkestra is based on the colors and shapes of shuttered music venues across Detroit

Another participating architect, Oakland-based landscape architect Walter Hood, has extensive experience in designing cultural and urban landscapes. Hood will focus his efforts at Galloway Elementary in Jackson. The 4.3-acre, publicly owned lot is currently a playfield for a local elementary school. According to

the city's planning department, this site is located in a lower-income residential neighborhood with little public space and bordered by a major street dominated by fast food establishments. The theme here will be on food and community.

This is a good fit for Hood. His projects in Charleston, South Carolina: Macon, Georgia: Detroit, and Philadelphia, among other cities, demonstrate a steady thread of incorporating community feedback, local culture, and collective memory into landscape and urban design. In his Water Table installation at the Spoleto Festival in Charleston, Hood tapped into the ecology and history of rice production by mounting thousands of Carolina Gold rice plants in circular planters on a platform in a school courtvard, essentially recreating a rice paddy in downtown Charleston. The project resurfaced the link between rice production and the history of the slave labor that made Carolina's rice industry possible. Afterwards, the project was dissembled and distributed, planter by planter, across schools and institutions in the area, and lived on to continue the conversation. This archaeological approach also surfaces in many other projects by Hood Studio, including its master plan for Detroit's Rosa Parks neighborhood. Hood's work has long engaged with the idea of "being a protagonist in design," and, in reflecting on the future work in Jackson, asked, "How do we make a landscape powerful, so that once you do it. it has a resonance?"

Finally, at Congress Street, the third Fertile Ground site, New Orleans-based architect Jonathan Tate will bring his experience with food culture and exhibition design to a downtown storefront space. The Congress Street site is close to the heart of government and is intended to amplify the project to public officials and policymakers who work nearby.

For Tate, who designed the Southern Food and Beverage Museum in New Orleans, the task includes not only the adaptive reuse of an existing building but also the design of an outdoor parklet that invites the public in through greenscape and seating. The challenge will be to bring it all together—the art, the history, the contributions of numerous partners, and of course, engage critical feedback, in a downtown that goes quiet at 5 p.m. on weekdays. "Instead of a veneer you're walking through, it's about bringing the space of the building out into the street," he explained.

The architects, along with other Fertile Ground team members, began site visits in April, and will develop their proposals until the citywide expo in 2020. **Sukiona Hona**



Anya Sirota and Jean-Louis Farges's efforts to support Detroit's Oakland Avenue Urban Farm as a sustainable urban hub included designs for the Detroit African Funkestra.

Wrecking Ball continued from front page

The controversial three-tower development aims to bring 229 apartments—including 38 low-income homes—and 60,000 square feet of commercial programming to the site of the Lytton Savings bank, a commercial structure with a folded concrete roof designed by local architect Kurt Meyer in 1960, an advocate for architectural preservation in L.A.

Designated HCM no. 1137 on the HCM list, Lytton Savings was recognized in 2016 after Gehry's project was initially proposed. If demolished, it could be the first time a city monument is intentionally destroyed in 27 years, following the demolition of the A. H. Judson Estate—HCM no. 437—in 1992. The site of the Judson Estate, a mansion designed by [TK name,] the architect of L.A.'s Bradbury Building, remains empty to this day. In 1985, the deliciously gaudy Philharmonic Auditorium—HCM #61—in Downtown Los Angeles was also reduced to rubble and remained vacant until 2017.

This troubling legacy haunts Steven Luftman and Keith Nakata, two preservationists fighting to save Lytton Savings. They have been trying to work out a way to relocate the structure, though a new site and funds to relocate the 180-foot-long building have yet to materialize

"It's a long shot, but it's important to make a try," Luftman explained while highlighting the lengthy and complicated effort, adding, "The biggest obstacle to moving it is the building's sheer size." A recent 180-day grace period to create a plan to move the building expired on April 30, clearing the way for the developers to seek a demolition permit.

Like many buildings in Los Angeles, Lytton Savings has a hotly contested history that goes back to its prior incarnations. The



Above: The historic Lytton Savings bank in Los Angeles has lost a contentious preservation battle and will soon make way for a Frank Gehry-designed mixed-use tower. **Cover:** Rendering of the 8150 Sunset project designed by Gehry Partners for developers Townscape Partners.

structure was built atop the site of the former Gardens of Allah, a collection of bucolic hotel villas frequented by famous personalities, including F. Scott Fitzgerald, Greta Garbo, and Ronald Reagan.

Frank Gehry, however, has no nostalgia for Meyer's bank. "I came to L.A. when the Gardens of Allah were still there and was witness to [Bart Lytton] tearing them down," Gehry said. "The way it was done was ruthless."

Gehry explained that he was bothered by "the history of [how Lytton Savings] got there" and that he "didn't feel compelled to fight to keep it," adding, "I offered to live with it, but the client did not want to."

"Four of my buildings have been torn down without anyone asking," Gehry added. "It's kind of a better way to have it happen." Antonio Pacheco See more West Coast architecture on archpaper.com.

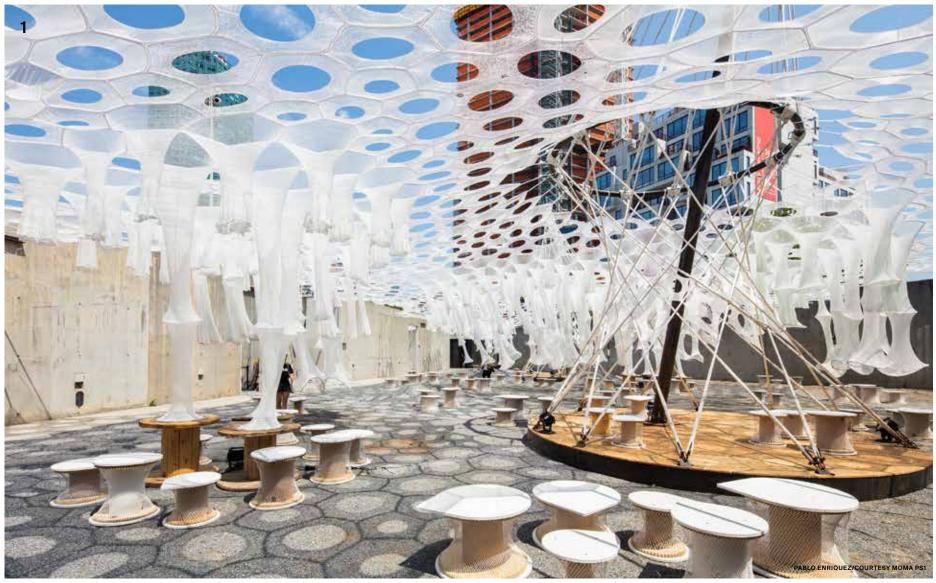




18 Studio Visit

Jenny Sabin Studio/Design Lab

From research to practice: Catching up with Jenny Sabin.



Projects like *Lumen* by Jenny Sabin Studio for the Museum of Modern Art and MoMA PS1's Young Architects Program 2017 showcased the studio's experimentation with woven architecture made out of responsive, digitally knit textiles that changed in color in response to both the sun's UV rays as well as due to its own photoluminescent threads.

Jenny Sabin has been experimenting with weaving light-weight, cellular structures into self-supporting forms, exploring how kirigami (the art of cutting and folding paper) can generate three-dimensional forms, and reimagining common construction materials like brick and tile. Her lab's transdisciplinary research has blended material science, architecture, and electrical engineering. Translating research finds into practical applications on a construction site is never a sure thing, but having a lab-to-studio pipeline definitely helps. For Sabin, that means a close integration between her lab at the Cornell College of Architecture, Art, and Planning (AAP) and the namesake Jenny Sabin Studio in Ithaca, New York.

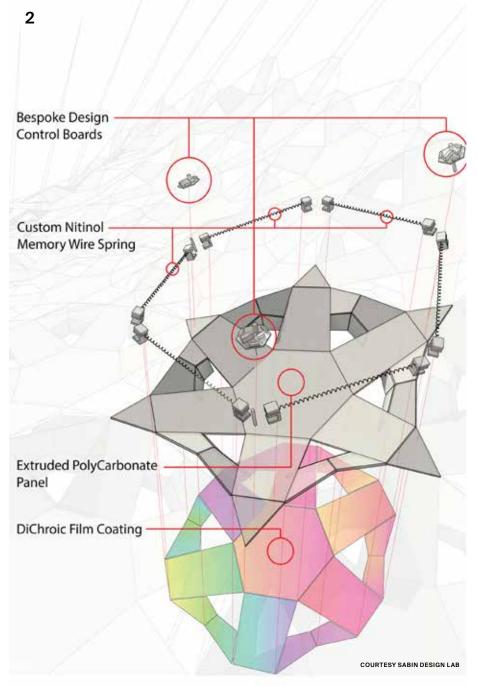
Sabin wears three hats: A teacher with a focus on emerging technologies at Cornell, principal investigator of Cornell's

Sabin Design Lab, and principal of Jenny Sabin Studio. The overlap between the lab and the studio means that Sabin has an incubator for fundamental research that can be refined and integrated into real-world projects. When AN last toured the Sabin Design Lab, researchers were hard at work using robot arms for novel 3-D printing solutions and looking to sunflowers for inspiration designing the next generation of photovoltaics.

Sabin's fundamental research has been realized in projects ranging from the ethereal canopy over MoMA PS1's courtyard in 2017 to a traveling Peroni pop-up. Rather than directly referring to nature in the biomimetic sense, Sabin's projects instead draw inspiration from and converge with natural processes and forms. Here are a few examples of what Sabin, her team, and her collaborators are working on. **JH**



19 Studio Visit







A diagram of how the multiple layers of skin and motors combine in *ColorFolds*.

Top: *Polymorph* was a modular canopy designed and produced by Jenny E. Sabin, Martin Miller, Jillian Blackwell, Jin Tack Lim, Liangjie Wu, and Lynda Brody.

Above: PolyBrick 1.0 experimented with form, creating interlocking, scalable modules. PolyBrick 1.0 was led by Jenny E. Sabin as principal investigator and primarily researched, designed, and fabricated by Martin Miller and Nicholas Cassab.

1 Lumen and Luster

In the studio's experiments with woven, self-supporting structures, the most famous such installations are gossamer canopies of digitally knit, tubular structures that absorb, store, and re-emit sunlight at night. MoMA PS1's Lumen for YAP 2017, House of Peroni's Luster, and PolyThread, an installation for Beauty, the 2016 Cooper Hewitt Design Triennial, have all pushed textile science forward. As Christoph Kumpusch, who runs Columbia GSAPP's Extraction Laboratory, pointed out at the House of Peroni opening, these canopies proudly display their boundary conditions instead of hiding them the way that more traditional architecture does.

The stretched fabric cones extrude from the cells of the woven canopy and naturally delineate the programming of the area below. These stalactites create the feeling of wandering through a natural formation and encourage a playful, tactile exploration of the space.

2 ColorFolds

The Sabin Design Lab's interest in kirigami, particularly its ability to expand two-dimensional representations into three-dimensional forms, has led to the creation of rapidly deployable, responsive, and scalable architecture that can be unpacked at a moment's notice.

ColorFolds was realized as a canopy of tessellated "blossoms," each made from polycarbonate panels covered in dichroic film, that was installed at Milstein Hall at Cornell. The modules open and close in response to the density of the crowd below, creating a shimmering exploration of structural color—3M's dichroic film is used here, producing color by scattering and diffusing light through nanoscale structures rather than using pigments. Visitors below the ColorFolds installation were treated to chromatic, shifting displays of light as the flocklike piece rearranged itself.

3 Polymorph

Polymorph was installed in 2013 as part of the 9th annual ArchiLab event at the FRAC Centre in Orléans, France, and demonstrated how computer-controlled fabrication technology can advance the production of ceramic components.

Using 3D-printed molds, the team at Jenny Sabin Studio created a series of component casts, from which nonstandard, bonelike ceramic modules were created. The overlapping, interlocking pieces were then bound and suspended to create a canopy. The ultimate goal was to study if such pieces could be used to create topologically and structurally varied architectural components in a network without adversely affecting their strength or performance.

4 PolyBrick

Sabin Design Lab's reinterpretation of the brick led to a brick prototype called PolyBrick. The first iteration, PolyBrick 1.0, was a modular brick that could twist and turn to interlock into place, a method that could eliminate the need for mortar and allow for the creation of more complex forms. It used additive 3-D printing to create hollow, fired, and glazed ceramic blocks, which could be used as low-cost brick alternatives.

PolyBrick 2.0 took the concept even further by emulating human bone growth, creating porous, curvilinear components that Sabin and her team of researchers hope to scale up to wall and pavilion sizes.

PolyBrick 3.0 contain microscopic divots and are glazed with DNA hydrogel that can react to a variety of situations—imagine a bioengineered facade glaze that can change color based on air pollution levels or temperature, or a component "stamped" with a unique DNA profile for easy supply-chain tracking.



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Digital technology has come to define almost every aspect of design and of our lives. We examine the latest developments: the Silicon Valley-ification of New York; Baidu's data collection; a new set of BIM standards; the newest smart products; and a preview of our third annual NYC Tech+ Expo.

23 May 2019

TECHTOWN USA

The origins and perils of development in the urban tech landscape. by Sharon Zukin



New York's Brooklyn Navy Yard has incorporated a new mix of advanced manufacturing tenants and art studios, and will add 5.1 million square feet of floor space as part of its plan to become one of the city's major tech hubs.

In most major cities of the world, an urban tech landscape has emerged. One day, we were working on our laptops at Starbucks, and the next, we were renting desks at WeWork. We embedded our small architectural and design firms in lowrent spaces in old factories and warehouses, and then we emerged as "TAMI" (technology, advertising, media, and information) tenants, heating up the commercial real estate market. Friends who could write computer code started businesses in their apartments before moving into tech incubators and accelerators, which then morphed into a "startup ecosystem." Though a competitive city in the 1990s might only have had one cutely named cluster of startups-New York's Silicon Allev. San Francisco's Media Gulch-by the 2010s. many cities were building "innovation districts." How did this happen? And what does it mean for these cities' futures?

The simplest explanation is that cities are catching up to the digital economy. If computers and the web are one of the primary means of production for the 21st century, all cities need the infrastructure—broadband, connectivity, flexible office space—to support them. Companies that control the means of production also need raw material—the data that newly "smart" cities can provide—to develop concepts, test prototypes, and market their wares. Local governments and business leaders have always reshaped cities around the businesses that profit from new tech-

nology; In the 19th century, they built railroad stations, dug subway tunnels, and laid sewage pipes; in the 20th century, they wired for electricity and erected office towers. Maybe we should ask why it has taken cities so long to rebuild for digital technology.

Inertia is one answer, and money is another. Entrenched elites don't readily change course, especially if a new economy would challenge their influence on local politics and labor markets. Think about the long dominance of the auto industry in Detroit and the financial industry in New York, both late converts to digital technologies like self-driving cars and electronic banking,

Another reason for cities' slow awakening to the tech economy is the post–World War II prominence of suburban office parks and research centers, part of the mass suburbanization of American society. On the East Coast, tech talent began to migrate from cities in the early 1940s, when Bell Labs, the 20th-century engineering powerhouse, moved from Lower Manhattan to a large tract of land in suburban New Jersey. A few years later, on the West Coast, Stanford University and the technology company Varian Associates spearheaded the construction of an electronics research park on a university-owned site of orange groves that later became known as Silicon Valley.

Silicon Valley got the lion's share of postwar

federal government grants and contracts from the military for microwave electronics innovation, missile research, and satellite communications. Venture capital (VC) soon followed. Although VC firms began in New York and Boston, by the 1960s and '70s they were setting up shop in the San Francisco Bay Area.

The Valley's hegemony was solidified in the 1980s by the rise of the personal computer industry and the VCs who got rich by investing in it. The suburban tech landscape so artfully represented in popular mythology by Silicon Valley's DIY garages and in physical reality by its expansive corporate campuses was both pragmatically persuasive and culturally pervasive. Its success rested on a triple helix of government, business, and university partnerships, defining an era from Fairchild, Intel, and Hewlett-Packard (the first wave of major digital technology companies) to Apple, Google, and Facebook.

In contrast to the suburban postwar growth of Silicon Valley, the urban tech landscape was propelled by the rise of software in the early 2000s and gained ground after the economic crisis of 2008. Software was easier and cheaper to develop than computers and silicon chips—it wasn't tied to equipment or talent in big research universities. It was made for consumers. Most important, with the development of the iPhone and the subsequent explosion of social media platforms after 2007, software increasingly took the form of

apps for mobile devices. This meant that software startups could be scaled, a crucial point for venture capital. For cities, however, the critical point was that anyone, anywhere, could be both an innovator and an entrepreneur.

The 2008 economic crisis plunged cities into a cascade of problems. Subprime mortgages cratered, leaving severely leveraged households and financial institutions adrift. Banks failed if they didn't get United States government lifelines. Financial jobs at all levels disappeared; local tax revenues plummeted. While mayors understood that they had to end their dependence on the financial sector—a realization most keenly felt in New York—they also faced long-term shrinkage in manufacturing sectors and office vacancies.

London had already tried to counter deindustrialization with the Docklands solution: Waterfront land was redeveloped for new media and finance, and unused piers and warehouses were converted for cultural activities. In Spain, this strategy was taken further in the 1990s by the construction of the Guggenheim Bilbao museum and the clearing of old industrial plants from that city's waterfront. By the early 2000s, Barcelona's city government was building both a new cultural district and an "innovation district" for digital media, efforts that bore a striking resemblance to the 1990s market-led development of the new media district in Manhattan's Silicon Alley and the growth of tech and creative offices in Brooklyn's

The Architect's Newspaper



As part of its master plan for the Brooklyn Navy Yard, WXY has created a 30-year guide for its growth, including a proposed museum of science and technology at the Navy Street lot.

DUMBO neighborhood.

Until the economic crisis hit, both spontaneous and planned types of urban redevelopment were connected to the popular "creative city" model promoted by Charles Landry in London and Richard Florida in Pittsburgh (later, Toronto). In 2009, however, economic development officials wanted a model that could create more jobs. They seized on the trope of "Innovation and Entrepreneurship" that had been circulating around business schools since the 1980s, channeling the spirit of the economic historian Joseph Schumpeter and popularized in a best-selling book by that title by the management guru Peter Drucker. Adopted by researchers at the Brookings Institution, urban innovation districts would use public-private partnerships to create strategic concentrations of workspaces for digital industries. It seemed like a brilliant masterstroke to simultaneously address three crucial issues that kept mayors awake at night: investments, jobs, and unused, low-value buildings and land.

In the absence of federal government funding, real estate developers would have to be creative. They built new projects with money from the city and state governments, the federal EB-5 Immigrant Investor Visa Program for foreign investors, and urban impact funding that flowed through investment banks like Goldman Sachs. Federal tax credits for renovating historic buildings and investing in high-poverty areas were important.

Though all major cities moved toward an "innovation economy" after 2009, New York's 180-degree turn from finance to tech was the most dramatic. The bursting of the dot-com bubble in 2000 and 2001, followed by the September 11 attack on the World Trade Center and an economic recession, initially kept the city from endorsing the uncertainty of tech again. Michael Bloomberg, mayor from 2001 to 2013, was a billionaire whose personal fortune and namesake company came from a fusion of finance and tech. most notably the Bloomberg terminal, a specially configured computer that brings real-time data to stock brokers' and analysts' desks. Yet, as late as 2007, Mayor Bloomberg, joined by New York's senior senator Chuck Schumer, promoted New York as the self-styled financial capital of the world, a city that would surely triumph over its only serious rival, London, The 2008 financial crisis crumpled this narrative and turned the Bloomberg administration toward tech.

By 2009, the city's business elites believed that New York's salvation depended on producing more software engineers. This consensus motivated the mayor and his economic development officials to build big, organizing a global competition for a university that could create a dynamic, postgraduate engineering campus in New York. Cornell Tech emerged as the winner, a partnership between Cornell University and the Israel Institute of Technology. Between 2014 and 2017, the

new school recruited high-profile professors with experience in government research programs, university classrooms, and corporate labs. They created a slew of partnerships with the city's major tech companies, and the resulting corporate-academic campus made Roosevelt Island New York's only greenfield innovation district. Not coincidentally, the founding dean was elected to Amazon's board of directors in 2016.

The Bloomberg administration also partnered with the city's public and private universities, mainly the aggressively expanding New York University (NYU), to open incubators and accelerators for tech startups. After NYU merged with Polytechnic University, a historic engineering school in downtown Brooklyn, the Bloomberg administration made sure the new engineering school could lease the vacant former headquarters of the Metropolitan Transportation Authority nearby, where NYU's gut renovation created a giant tech center.

Meanwhile, the Brooklyn waterfront was booming. The Brooklyn Navy Yard added advanced manufacturing tenants and art studios to its traditional mix of woodworking and metalworking shops, food processors, and suppliers of electronics parts, construction material, and office equipment, and began to both retrofit old machine shops for "green" manufacturing and build new office space. While tech and creative offices were running out of space in DUMBO, the

heads of the downtown Brooklyn and DUMBO business improvement districts came up with the idea of marketing the whole area, with the Navy Yard, as "the Brooklyn Tech Triangle." With rezoning, media buzz, and a strategic design plan, what began as a ploy to fill vacant downtown office buildings moved toward reality.

Established tech companies from Silicon Valley and elsewhere also inserted themselves into the urban landscape. Google opened a New York office for marketing and advertising in 2003 but expanded its engineering staff a few years later, buying first one, then two big buildings in Chelsea: an old Nabisco bakery and the massive former headquarters of the Port Authority of New York and New Jersey. Facebook took AOL's old offices in Greenwich Village. On the next block, IBM Watson occupied a new office building designed by Fumihiko Maki.

Jared Kushner's brother, the tech investor Jonathan Kushner, joined two other developers to buy the Jehovah's Witnesses' former headquarters and printing plant on the Brooklyn-Queens Expressway. The developers converted the buildings into tech and creative offices and called the little district Dumbo Heights. By 2015, the growth of both venture capital investments and startups made New York the second-largest "startup ecosystem" in the world after Silicon Valley. Within the next three years, WeWork (now the We Company) surpassed Chase Bank branches as Manhattan's



25 May 2019



Cornell Tech, a partnership between Cornell University and the Israel Institute of Technology, was a Bloomberg initiative that made Roosevelt Island New York's only greenfield innovation district.

largest commercial tenant.

All this development was both crystallized and crucified by Amazon's decision to open half of a "second" North American headquarters (HQ2) in the Long Island City neighborhood of Queens, New York, in 2018. Amazon organized a competition similar to the Bloomberg contest that resulted in Cornell Tech, but in this case, the contest was a bidding war between 238 cities that offered tax credits, help with land assemblage, and zoning dispensations in return for 50,000 tech jobs that the company promised to create. But in announcing its selection, Amazon divided the new headquarters in two, supposedly placing half the jobs in New York and the other half in Crystal City, Virginia, a suburb of Washington, D.C. Many New Yorkers erupted in protest rather than celebra-

The amount of tax credits offered to the very highly valued tech titan, almost \$3 billion in total. appeared to rob the city of funding for its drastic needs: fixing the antiquated subway system. repairing the aging public housing stock, and building affordable housing. The decision-making process, tightly controlled by Governor Andrew Cuomo and Mayor Bill de Blasio, enraged New York City Council members, none of whom had been given a role in either negotiating or modifying the deal. The deal itself was closely supervised by New York State's Economic Development Corporation behind closed doors, without

any provision for public input or approval.

Housing prices in Long Island City rose as soon as the deal was announced. A city economic development representative admitted that perhaps half of the jobs at HQ2 would not be high-paying tech jobs, but in human resources and support services. In a final, painful blow, Amazon promised to create only 30 jobs for nearly 7,000 residents of Queensbridge Houses, the nearby public housing project that is the largest in the nation.

Amazon representatives fanned their opponents' fury at public hearings held by the New York City Council. They said the company would not remain neutral if employees wanted to unionize, and they refused to offer to renegotiate any part of the deal. Opponents also protested the company's other business practices, especially the sale of facial recognition technology to the U.S. Immigration and Customs Enforcement agency (ICE). Yet surveys showed that most registered New York City voters supported the Amazon deal, with an even higher percentage of supporters among Blacks and Latinos. Reflecting Latinos from the Mission district are displaced the prospect of job opportunities, construction workers championed the deal while retail workers opposed it. The governor and mayor defended the subsidies as an investment in jobs. Not coincidentally. Amazon planned to rent one million square feet of vacant space in One Court Square, the former Citigroup Building in Long Island City,

before building a new campus on the waterfront that would be connected by ferry to Cornell Tech. After two months of relentless, vocal criticism, in a mounting wave of national resentment against Big Tech, Amazon withdrew from the deal. Elected officials blamed each other, as well as a misinformed, misguided public for losing the economic development opportunity of a lifetime.

Yet it wasn't clear that landing a tech titan like Amazon would spread benefits broadly in New York City. A big tech company could suck talent and capital from the local ecosystem, deny homegrown startups room to expand, and employ only a small number of "natives."

From San Francisco to Seattle to New York, complaints about tech companies' effect on cities center on privatization and gentrification. In San Francisco, private buses ferry highly paid Google workers from their homes in the city to the company's headquarters in Silicon Valley, green space and cafes in the Mid-Market neighborhood proliferate to serve Twitter employees and other members of the technorati. low-income by astronomical rents-all of these factors stir resentment about Big Tech taking over. In Seattle, Amazon's pressure on the city council to rescind a tax on big businesses to help pay for homeless shelters also aroused critics' ire. Until recently. moreover, tech titans have been unwilling to support affordable housing in the very markets their

high incomes roil: East Palo Alto and Menlo Park in California, and Redmond, Washington.

It remains to be seen whether urban innovation districts will all be viable, and whether they will spread wealth or instead create highly localized, unsustainable bubbles. Venture capital is already concentrated in a small number of cities and in a very few ZIP codes within these cities. According to the MIT economist David Autor, although the best "work of the future" is expanding. it is concentrated in only a few superstar cities and only represents 5 percent of all U.S. jobs.

Yet urban tech landscapes emerge from a powerful triple helix reminiscent of Silicon Valley. Elected officials promise jobs, venture capitalists and big companies make investments, and real estate developers get paid. Though these landscapes glitter brightly compared to the dead spaces they replace, they don't offer broad participation in planning change or the equitable sharing of rewards.

Sharon Zukin is a Professor of Sociology at the City University of New York, Brooklyn College, and is author of the forthcoming book The Innovation Complex: Cities, Tech, and the New

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YOU ARE HERE

How China's Baidu Maps turns the location data of 600 million people into stunning 3-D cityscapes—and big profits. By Xiaowei Wang



In shopping centers like Pacific Century Place in Beijing, China, Baidu Maps can tell users how to navigate each floor based on its data.

Level 3, number 203. Turn right 10 feet. Go straight for 15 feet. The best way to experience data's strong grip on everyday life in China is to open up Baidu Maps, an app by China's biggest search engine company, and walk around a shopping mall for an afternoon. Inside the building, a network of Bluetooth beacons, Wi-Fi modems, and satellites from a global navigation satellite system whir and ping through the air and the ionosphere to determine your precise location. The map on the Baidu app tilts to reveal an elaborately modeled 3-D cityscape.

The resolution of Baidu Maps is stunning: Entire cities are modeled in 3-D. Within public buildings, the floorplan of each building level is precisely mapped. As I stand inside the Taikoo Hui Mall in the city of Guangzhou, China, I search for a store within the mall. Baidu Maps reveals which level the store is on and how many meters I need to walk. Strolling through the mall with the app tracking my location with a blue dot on the screen, life starts to feel like a virtual reality experience. The difference between the map's 3-D model and the reality beneath my feet is smaller than ever. The 3-D model makes an uncanny loop: Virtual models were used by architects to design these spaces, which now unfold on a messy plane between real space and screen space.

China now has its own tech giants-Alibaba, JD.com, Tencent Holdings, and Baidu-homegrown behind the Great Firewall of China, Like their American counterparts, these companies have managed to surveil their users and extract valuable data to create new products and features. Baidu began as a search engine, but has now branched out into autonomous driving, and therefore, maps. The intricacy of its 3-D visualizations is the result of over 600 million users consulting the app for navigation every day or using apps that rely on Baidu Maps in the background. such as weather apps that rely on its geolocation

The tech company, like its counterparts such as Google, take advantage of multiple features available in smartphones. Smartphones possess the ability to determine users' positions by communicating with an array of satellites such as GPS (Global Positioning System): GLONASS, Russia's version of GPS; or BeiDou, China's satellite navigation system. Such satellite systems are public infrastructures created by American, Russian. and Chinese governments, respectively, that enable our phones to determine users' precise longitude and latitude coordinates. The majority of apps and services on smartphones rely on location services, from food delivery to restaurant reviews. However, satellite navigation systems are still imprecise-they are often a few meters off, with anything from the weather to tall buildings affecting accuracy.

satellite signal receiver chips. A slew of other sensors, such as accelerometers, light sensors, and magnets are embedded in the average smartphone. In 2015, Baidu invested \$10 million in IndoorAtlas, a Silicon Valley startup that specializes in indoor mapping. The company's technology is at the forefront of magnetic positioning, which allows indoor maps at 1-meter accuracy to be

created simply by using an average smartphone. This technology relies on the Earth's geomagnetic field and the magnets in smartphones. By factoring in the unique magnetic "fingerprint" of each building based on the composition of its materials, such as steel, a building's floor plan can be mapped out without any data provided by the architect. However, this strategy requires user data at scale; multiple user paths need to be recorded and averaged out to account for any anomalies. Gathering large amounts of data from users becomes an imperative.

Floorplans aside, magnetic positioning is not the only dimension of user location data collec-However, smartphones contain more than tion that allows data to become a spatial model. As people drive, bike, and walk, each user generates a spatial "trace" that also has velocity data attached to it. Through such data, information about the type of path can be derived: Is it a street, a sidewalk, or a highway? This information becomes increasingly useful in improving the accuracy of Baidu Maps itself, as well as Baidu's autonomous vehicle projects.



27 May 2019

Satellite navigation system accuracy deteriorates in urban canyons, due to skyscrapers and building density, obscuring satellites from the receiver chip. These inaccuracies are problematic for autonomous vehicles, given the "safety critical" nature of self-driving cars. Baidu's 3-D maps are not just an aesthetic "wow factor" but also a feature that addresses positioning inaccuracies. By using 3-D models to factor in the sizes and shapes of building envelopes, inaccuracies in longitude and latitude coordinates can be corrected.

Much of this research has been a race between U.S. and Chinese companies in the quest to build self-driving cars. While some 3-D models come from city planning data, in China's ever-changing urban landscape, satellite data has proved far more helpful in generating 3-D building models. Similar to Google's 3-D-generated buildings, a combination of shadow analysis, satellite imagery, and street view have proved essential for creating 3-D building models automatically rather than the manual method of user-generated buildings or relying on city surveyors for the most recent building dimensions.

The detailed 3-D city models on Baidu Maps offer data that urban designers dream of, but they only serve Baidu's interests. None of it is available to the people who design cities or buildings. Both Baidu and Google have End User License Agreements (EULAs) that restrict where their data can be used, and emphasize that such data has to be used within Baidu or Google apps. Some data is made available for computer scientists and self-driving car researchers, such as Baidu's Research Open-Access Dataset (BROAD) training data sets. Most designers have to rely on free, open-source data such as Open Street Maps, a Wikipedia-like alternative to Baidu and Google Maps. By walling off valuable data that could help urban planning, tech companies are gaining a foothold over the reality of material life: They have more valuable insights into transport networks and the movements of people than urban designers do. It's no surprise then, that both Baidu and Google are making forays into piloting smart cities like Toronto's Quayside or Shanghai's Baoshan District, and gaining even greater control over urban space. Urban planning and architecture are becoming increasingly automated and privately controlled, the realm of computer scientists rather than designers.

In Shoshana Zuboff's 2019 book, *The Age of Surveillance Capitalism*, she examines how tech companies throughout the world are employing surveillance and data extraction methods to turn users into free laborers. Our "behavioral surplus," as she terms it, becomes transformed into products that are highly lucrative for these companies, and feature proprietary, walled-off data that ordinary users cannot access, even though their labor has helped create these products. These products are also marketed as "predictive," which feeds the desires of companies that hope to anticipate users' behavior—companies that see users only as targets of advertising.

Over the past several years, American rhetoric surrounding the Chinese "surveillance state" has reached fever pitch. But while China is perceived to be a single-party communist country with state-owned enterprises that do its bid-

ding, the truth is, since the 1990s, much of the country's emphasis has been on private growth. Baidu is a private company, not a state-owned enterprise. Companies like Baidu have majority investment from global companies, including many U.S.-based funds like T. Rowe Price, Vanguard, and BlackRock. As China's economy slows down, the government is increasingly pressured to play by the rules of the global capitalist book and offer greater freedom to private companies alongside less interference from the government. However, private companies often contract with the government to create surveillance measures used across the country.

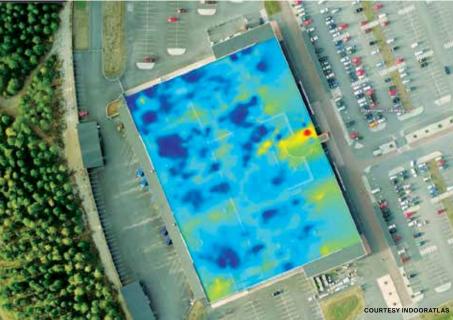
The rhetoric about the dangers of Chinese state surveillance obfuscates what is also happening in American homes-literally. As Google unveils home assistants that interface with other "smart" appliances, and Google Maps installed on mobile phones tracks user locations. surveillance becomes ubiquitous. Based on your location data, appliances can turn on as you enter your home, and advertisements for milk from your smart fridge can pop up as you walk by the grocery stores. Third-party data provider companies also tap into geolocation data, and combined with the use of smart objects like smart TVs, toasters, and fridges, it's easy to see why the future might be filled with such scenarios. Indeed. if you own certain smart appliances. Google probably knows what the inside of your home is like. In 2018, iRobot, the maker of the Roomba vacuum. announced that it was partnering with Google to improve the indoor mapping of homes, and now setting up a Roomba with Google Home has never been easier. Big tech companies in the U.S. would like us to believe that surveillance is worse elsewhere, when really, surveillance capitalism is a global condition.

Over the past 30 years, cities around the world have been the locus of enormous economic growth and corresponding increases in inequality. Metropolitan areas with tech-driven economies, such as the Shenzhen-Guangzhou-Hong Kong corridor and the Greater Bay Area, are home to some of the largest tech companies in the world. They are also home to some of the most advanced forms of technological urbanism: While Baidu may not have every single business mapped in rural China, it certainly has the listing of every shop in every mall of Guangzhou.

The overlap between cities as beacons of capital and as spaces where surveillance is ubiquitous is no coincidence. As Google's parent company, Alphabet, makes moves to build cities and as Baidu aggressively pursues autonomous driving, data about a place, the people who live there, and their daily movements is increasingly crucial to the project of optimizing the city and creating new products, which in turn generates more wealth and more inequality. Places like San Francisco and Shenzhen are well-mapped by large tech companies but harbor some of the worst income gaps in the world.

The "smart city" urbanism enabled by surveillance and ubiquitous data collection is no different from other forms of development that erode affordable housing and public space. Reclaiming our cities in this digital age is not just about reclaiming physical space. We must also reclaim our data.





Top: Baidu Maps' 3-D visualization feature not only maps street layouts but also building heights and interiors, the result of over 600 million users in China consulting the app or relying on other apps that use Baidu. [Baidu Maps screenshots retrieved by the author on March 21, 2019]. Map data copyright Baidu 2019. **Above:** It isn't just geolocation data that powers Baidu Maps. Baidu has also invested \$10 million in IndoorAtlas, a Silicon Valley startup that specializes in indoor mapping through magnetic positioning. Based on each building's unique magnetic footprint, a smart phone user can create indoor maps at 1-meter accuracy based on the app's technology.

28 The Architect's Newspaper

SINGLE MARKET BIM

Tracing the path to the new global standards. by Phil Bernstein

During my days as a technology vendor, I chafed at the idea of introducing government standards for technology developed by a polyglot group of stakeholders. Users, software companies, and bureaucrats often sought a "lowest common denominator" between various software, sacrificing innovation and progress for vague notions like "open access." In the early days of Building Information Modeling (BIM), several such efforts emerged, the most prominent of which were the General Services Administration (GSA) attempts to create a standard and the development of BIM-derived digital permitting submissions in Singapore. Both projects garnered much attention but gained little traction in the form of implemented technologies or operating protocols-at least in their early forms. But they had one important effect: In the loosely organized, disparate network of the building industry supply chain, government could provide a galvanizing influence. At least when government spoke, the industry

In 2011, however, we witnessed a welcome change with the publication of the United Kingdom's "Government Construction Strategy." Much of the early theory about industry productivity and need for process integration had long emerged from that side of the Atlantic-for example. Sir Roger Egan's seminal "Rethinking Construction" report-but there was little action. The David Cameron government, however, saw construction as a critical economic engine, concluding that improving the cost and carbon impacts of building while bolstering U.K. capabilities as a global building leader would drive growth. One pillar of the resulting government policy document was BIM, and the following requirement: "2.32. Government will require fully collaborative 3-D BIM (with all project and asset information, documentation, and data being electronic) as a minimum by 2016. A staged plan will be published with mandated milestones showing measurable progress at the end of each year."

As upwards of 40 percent of construction dollars in the U.K. are spent by the government, the industry snapped to attention, formed cross-industry collaborations, and established and implemented BIM requirements for all their projects (with logistical and financial support from the government). BIM adoption shot up from 10 percent in 2012 to 70 percent by 2018, and savings on the first prototype projects were estimated at as much as 2.5 percent of the total lifetime cost of designing, building, and operating the project. By my own estimate, that's as much as five times the fees likely paid to the design team and 25 percent of original construction cost. Not bad for a first effort. And, in typical British fashion, the resulting standards (search online for "PAS 1192") were clear, rigorous, and implementable.

The success of the U.K. effort has spread across Europe, and EU government leaders have taken similar roles (at least until Brexit) in developing standards for the entire European Union, while also establishing footholds with other global networks, most notably in Latin America and Southeast Asia. Singapore, in collaboration with the U.K. team, has spurred a multiyear effort to create a standards collaboration there. As we approach the end of the second decade of BIM, one can see the slow emergence of a global network

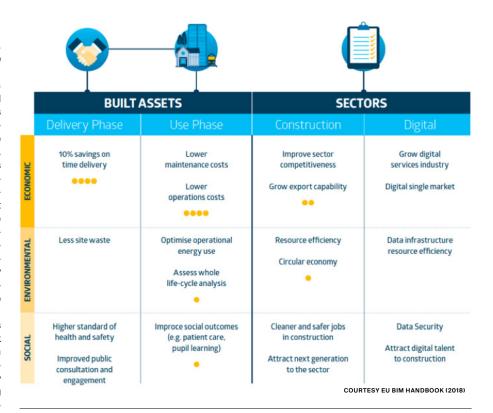
of BIM standards leading to a single market BIM, catalyzed by what may be the only cohering force in the building universe: the long arm of the law.

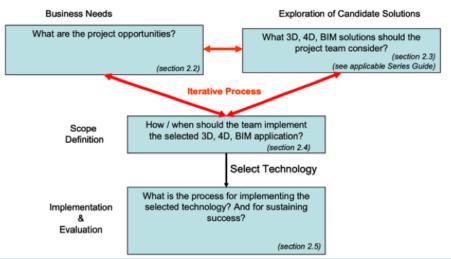
Now that the technology is mature and its use stable, global BIM standards are a good thing. The U.K. effort rightly became the basis of a worldwide standard created by the International Organization for Standardization (ISO: see ISO Standard 19650) and released in early 2019. Based on the now viral PAS 1192, ISO describes its work as "recommended concepts and principles for business processes across the built environment sector in support of the management and production of information during the life cycle of built assets (referred to as 'information management') when using building information modelling (BIM)." Note the emphasis on business process driving the technology standard; precisely the right relationship for creating a stable platform for the otherwise disparate players in the global building industry.

And there's an even larger idea here. What's most powerful about the U.K.'s trailblazing work on BIM standards is the origin point: Rather than start with the prosaic, bottom-up question of lowest common denominator tech standards, they chose a broad organizing principle—improving building through technology is good for the economy and the environment, and doing this in a way that is agnostic to specific technologies or proprietary software drives competitive innovation that helps the entire market.

Driving BIM standards has further benefits to government, not the least of which is transactional transparency. State-run construction is rife with overbidding, conflicts of interest, and corruption. A bedrock principle of "collaborative 3-D BIM" is information clarity—all members of the building team can see and understand the physical and technical characteristics of the project in parametric three dimensions, along with the resulting arithmetic of cost projection—which makes it that much harder to manipulate a bid.

In the early days of the U.K. project there was an appointed Chief Government Construction Advisor with a direct line to high-level policy makers in the Cabinet. The United States' construction market, roughly five times the size of the U.K.'s, could surely benefit from some policy-driven federal leadership, something that is certainly hard to imagine in today's administration and go-go economy. But when the inevitable downturn does occur, we'll know which way to look for inspiration for industry improvement.





COURTESY GSA BIM GUIDE SERIES 01

Top: "Value Propositions of BIM" from the EU BIM Handbook (2018). **Above:** Adoption Process Diagram from the GSA BIM Guide Series 01 (2007).



29 May 2019

TECH * JOIN THE AEG EVOLUTION

A look inside the 2019 NYC Tech+ Expo at the New York Academy of Sciences on June 13. by Drew Zeiba

Rapid advancements in technology are shifting the way the architecture, engineering, and construction industries do their work. That's why for the third year in a row, The Architect's Newspaper presents TECH+, an annual trade conference and expo that explores innovative technologies used in design and construction taking place on June 13, on the heels of NYCxDESIGN month. AN's programming partner, Microsol Resources, will present the TechPerspectives Forum.

"Technology is changing how architects design and build faster than ever, but it often has a behind-the-scenes role," said Diana Darling, publisher of The Architect's Newspaper and president of AN Media Group. "TECH+ puts the newest innovations shaping our built world front and center and invites people across the industry to learn and to engage with technology and forge connections and communities around it."

Taking place at the New York Academy of Sciences on the 40th floor of 7 World Trade Center in Manhattan-the center of one of America's fastest-growing tech markets-TECH+ will showcase the latest in smart building systems, advanced materials, and innovative products that are reshaping the built environment of today and tomorrow. From cutting-edge virtual reality-aided design tools to mobile apps, parametrics to rapid prototyping and fabrication, this inspiring and forward-thinking event will feature a lineup of visionary speakers, compelling panels, and live product demonstrations from industry-leading developers and start-ups alike.

"We are excited to bring back TECH+ to New York City for the third time to hear from the AEC industry's foremost technological innovators on everything from visualization to simulation to automation," said Darling. "The AEC industry is complex and takes time to integrate new technologies, but we want to showcase the amazing innovations in real time and bring together industry trailblazers that are always ahead of the curve."

TECH+ will bring together architects, engineers, designers, builders, real estate professionals, investors, entrepreneurs, software developers, students, and makers to inspire new ideas. encourage cross-pollination, stimulate innovation, and establish vital connections. TECH+ consists of a highly curated group of architecture and technology leaders responsible for the strategic direction of their firms and for the future of the global urban landscape.

This year's opening keynote speaker is Dr. Andrea Chegut, director of the MIT Real Estate Innovation Lab. as well as the head of MIT's Design X venture accelerator for student and faculty firms from MIT's School of Architecture and Planning. As a researcher, she investigates new technologies and their economic and financial implications on the built environment.

Other featured speakers on the TechPerspectives Forum include James Vandezande, chief technical officer of HOK, who will be giving the Industry Keynote, and Deep Dive speaker Scott Lomax, senior principal at Thornton Tomasetti, who has overseen major projects, including the

Shed and Vessel at Hudson Yards. Four additional panels explore other topics including BIM, collaboration, IoT, and visualization. In addition to the Forum, the Biz Blitz lighting talks spotlight leading exhibitors and cutting-edge startups located in the adjacent Expo and Startup Alley.

Panels include discussions of workflow optimization and collaboration by Turner VDC manager Ayse Polat, Penn State University VDC Engineer Russ Manning, PhD, and Payette director of information technology Dan Gallivan; a look at intelligent building and buildings and the Internet of Things with M Moser Associates senior strategist Jennifer Mannier. Derek Fu of IBM's Watson and cognitive buildings projects, and NYSERDA's Michael Reed; and a conversation on visualization and immersive storytelling through the newest technology like AR, immersive experiences, and VR headsets, with SHoP VR and computational designer Christopher Morse, SOM associate director and head of visualization, Daniel Cashen, and WeWork head of visualization, Greg Rogers.







MICROSOLRESOURCES

Cove.tool

Cove.tool is redefining energy modeling and parametric optimization by building smarter, more accurate models in a tenth of the time. Using automation for tedious tasks, cove.tool cuts time and cost, leaving the creative part to architects, engineers, and contractors. The cloud-based web application learns everything about a project's sustainability goals to create custom results. The tool is integrated into the design process with plug-ins for Revit, Rhino, and SketchUp.

covetool.com

Kubity

Kubity is a Paris-based software company that designs and develops cloud-based visual communication tools for 3D models. Founded in 2012 by a group of software engineers and an urban projects developer, Kubity is united around a simple idea: creating a way for anyone, anywhere to simply and intuitively explore 3D models in augmented and virtual reality on smartphones and computers.

pro.kubity.com

Microsol Resources

Microsol Resources has been delivering integrated solutions to the architecture, engineering, and construction industries for over 30 years. The company is a recognized leader in BIM and CAD-based solutions, as well as an Autodesk Platinum Partner. Besides CAD and BIM software, Microsol also provides training, consulting, staffing, 3D printing, and data management services to help customers gain a competitive advantage and improve their overall productivity.

microsolresources.com

N/VVIS



NavVis

NavVis technology helps the AEC industry go digital at a fraction of the cost. NavVis's laser scanners can rapidly create Digital Twins of any environment and capture up to 500.000 square feet a day. NavVis works with multiple ENR TOP100 AEC companies, boosting their productivity and cutting costs.

navvis.com

PlanGrid

PlanGrid, recently acquired by Autodesk, is construction productivity software used on more than one million projects around the world. It allows teams to collaborate effectively with access to an intelligent record set on any device-streamlining construction, turnover, and operations.

plangrid.com

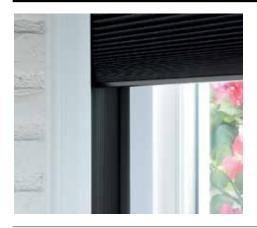


For more architectural technologies coverage, visit techplusexpo.com.

SWART BUILD

CONNECTIVITY, MONITORING, AND REMOTE CONTROL

Managing a property can be difficult, but these new smart building systems work to prevent damage and allow you to take action as soon as a problem is detected. From plumbing to Wi-Fi to air quality, here are the newest solutions in residential and commercial applications.



Duette LightLock Shades Hunter Douglas

Can't sleep without complete darkness? Hunter Douglas has a custom window treatment that lives up to its name. The honeycomb-shaped "Lightlock" shades feature overlapping front and back panels that block incoming light. The system can easily be lowered or lifted with the PowerView App and other voice-activated smart home systems.

hunterdouglas.com



Flo by Moen Flo Technologies

Prevent water damage and waste with this new leak protection system. Homeowners can control the water pressure, flow rate, and temperature via the FloSense app. Further, features that allow users to run daily tests, identify leaks, and get troubleshooting tips permit proactive monitoring and the ability to shut off the water or contact Flo Support.

meetflo.com



Onelink Surround Wi-Fi First Alert

Onelink Surround Wi-Fi provides full-speed internet connection around the house (even in "dark zones") with the benefit of cyber-security. The system is compatible with Onelink alarms, enabling connectivity between smart building systems and providing controls to monitor and react to emergency alerts via the app.

onelink.firstalert.com



SiXCOMBO Honeywell Home

In addition to detecting smoke and heat, Honeywell's monitoring system detects carbon monoxide. The system uses infrared sensors to detect flames, while thermometers measure temperature. Using an encrypted two-way wireless platform, the system alerts all sensors across the home if a discernible danger is detected—with blinking lights and voice alerts announcing what action should be taken.

honeywellhome.com



Phyn Plus

Make your home or office watertight with Phyn Plus. The patented water monitoring system uses ultrasonic sensors to monitor any plumbing network 240 times per second. The app allows users to monitor water usage, shut off the water, and send leak

phyn.com



Radiant Furniture Power Center Legrand

Providing electricity to both standard plugs and USB connections, Legrand's power hub is a breeze to install in existing furniture and infrastructure. From a chair to a bookshelf, the power and charging solution fits easily on flat surfaces or can be mounted vertically to provide connectivity in convenient areas.

legrand.us

SAFETY AND SECURITY

Watch your home from anywhere with these smart home security systems. With added features like emergency response systems and digital keys that provide guest access, these devices do more than just monitor your home; they help you actively secure it.







XANDEM Kits XANDEM

Weave an invisible, motion-sensing web with XANDEM's small radio devices. The wireless mesh technology connects through walls and furniture to detect motion and pinpoint it to an exact location of movement.

xandem.com

Security Light System

Create automated lighting schemes with this wire-free smart light system. With the ability to network not just multiple smart lights but also Arlo's security cameras, Arlo's security devices pair together to actively protect your home. Users can turn lights on and off remotely via the Arlo app. For added security, notifications are sent to your phone or email when the system detects motion.

arlo.com

Smart Video Doorbell

Netatmo's new smart video doorbell allows you to remotely see who's at the door and open it. Thanks to the video call delivered to your smartphone in real time, you won't miss any visitors or packages. The app also allows you to view past calls and events and download videos.

netatmo.com



Motion Sensor Kangaroo

This camera-free, microphone-free wireless motion sensor detects household disturbances and sends alerts directly to your smartphone. The peel-and-stick hub is easy to install and connects seamlessly to your home Wi-Fi network.

heykangaroo.com



Smart Lock Pro + Connect

Lock and unlock your door with the push of a button. This smart lock attaches directly to your existing dead bolt on the inside of your door so you can still use your keys. With the August app, you can give digital keys to guests from your phone. The new all-white design by Yves Béhar features a more narrow, oval-shaped profile that fits with both contemporary and traditional style doors.

august.com



View Outdoor Camera

Hive's new outdoor security camera live streams in 1920 x 1080–pixel high definition to your smartphone. The camera automatically detects motion, sounds, and people with its built-in sensors and microphone. Notifications come with an image of what has been detected, so you can see what's happening day or night.

hivehome.com



Message in an Envelope

Our annual facade issue is our biggest yet, and we have gathered the most exciting projects from across the country (and a couple abroad), as well as the latest and greatest glass, screens, cladding, shading systems, and curtain walls. We also take a look at the cutting-edge research on woven fabric facades and hear from some of the leading women in the AEC industry.

OSSIP VAN DUIVENBO

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Varna, Bulgaria: Varna Wave residential building with a façade made of Corian* Exteriors; project by STARH; photo by 3inSpirit, all rights reserved.

Bagnolo Cremasco, Italy: the headquarters of Omnicos company featuring a decorative façade made of Corian® Exteriors; project and photo by Beppe Riboli Studio, all rights reserved.

Buffalo, New York: Corian* Exteriors used for the new guard house of the plant where Corian* Solid Surface is manufactured; photo Corian* Design.



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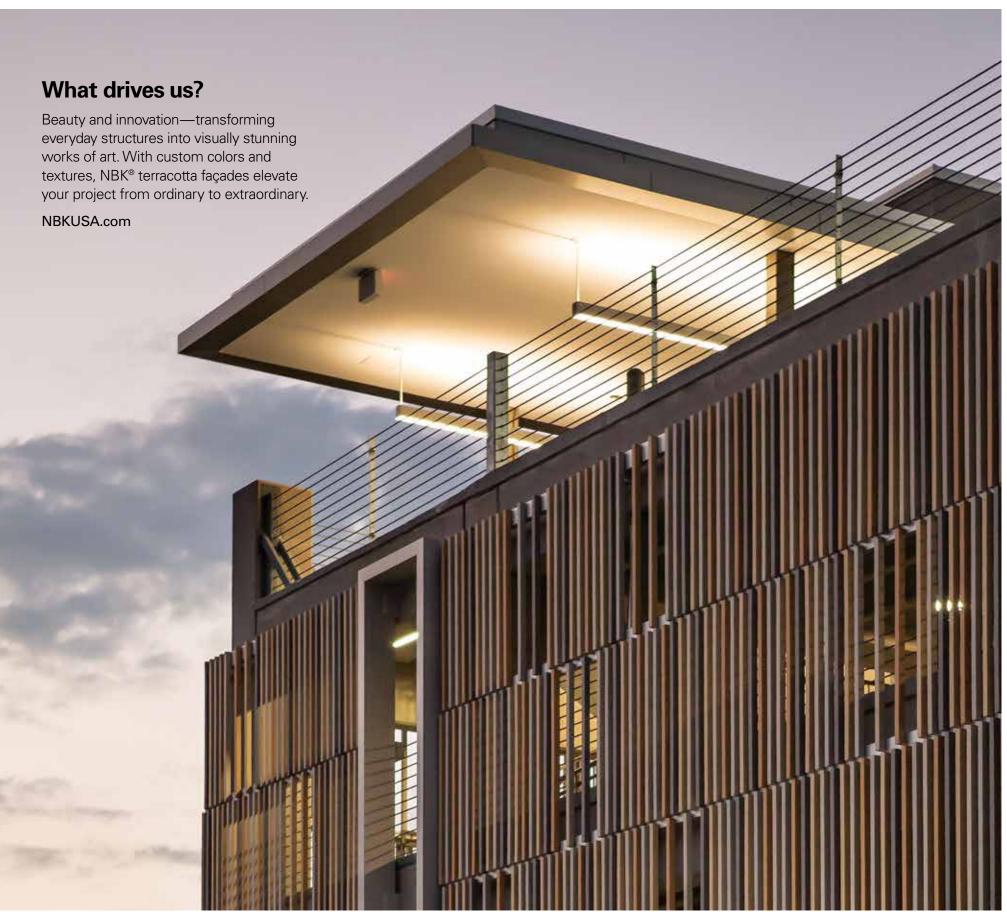
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Project: 560 Garage Architect: Lawrence Group Photo: Ashley Streff



ARCHITECTURAL TERRACOTTA

Textile Hybrid

Humans have been using fabric to create shelter for thousands of years. If a set of groundbreaking researchers and designers have their way, however, applications of textile-based architectural elements have the potential to play an important role in shaping the future of enclosures as well.

Across scales and methods of application, research into the use of textile-based elements in architecture has increased over the last 15 years as professional and university teams in Europe and the United States have embraced robotic weaving applications, custom-designed carbon fiber textiles, and experimental fabric facades. With an eye toward wrapping ever-larger structures, creating unique sensory experiences, and engineering a more sustainable future, new applications of fabrics have the potential to change the face, look, and feel of architecture as we know it. *By Antonio Pacheco*



Researchers at the Institute of Building Structures and Structural Design in Stuttgart, Germany, are developing flexible composite fiber structural assemblies for the Elytra pavilion, a domed structure made up of woven glass carbon fibers.

German Engineering

Fiber Composite Dome

Institute of Building Structures and Structural Design

Universities in Germany are leading the charge, especially at the Institute of Building Structures and Structural Design (ITKE) in Stuttgart, where Professor Jan Knippers has developed methods for creating textiles from bendable composite elements, including carbon and glass fibers.

Knippers is currently working on developing the latest iteration of his Elytra pavilion, a Fiber Composite Dome prototype structure that will make its debut at the National Garden Show in Heilbronn, Germany, later this year. The 40-foot-wide dome is made of woven glass carbon fiber elements connected only by steel washers and bolts. To create the pavilion,

Knippers has designed a geometric array of 60 resin-impregnated fiber body assemblies that come together to distribute structural loads from the dome elegantly and efficiently. The precision-driven arrangement also extends to the size and organization of each strut's individual carbon fibers, which are robotically arranged into place, baked in an oven until stiffened, and finally assembled into taut spanning assemblies. When erected into the final spherical shape for the pavilion, a secondary shell made of ETFE polymer is added on top for protection from the elements.

Building Scale

CRC1244 Demonstrator

Institute for Lightweight Structures and Conceptual Design

Building-scale research is also taking place in Germany, where Dr. Walter Haase, managing director of the Collaborative Research Center (CRC1244) at the Institute for Lightweight Structures and Conceptual Design (ILEK) in Stuttgart is really pushing the envelope.

Fourteen university-based research teams are working there to develop ways to "create more living space with less material" by using fabric-based facade and building elements to drive innovation in overall building design. The group is currently building a 120-foot experimental modular tower that will serve as a testing site for new fabric-based facade and building technologies that could transform the

way buildings are designed, fabricated, used, and even recycled.

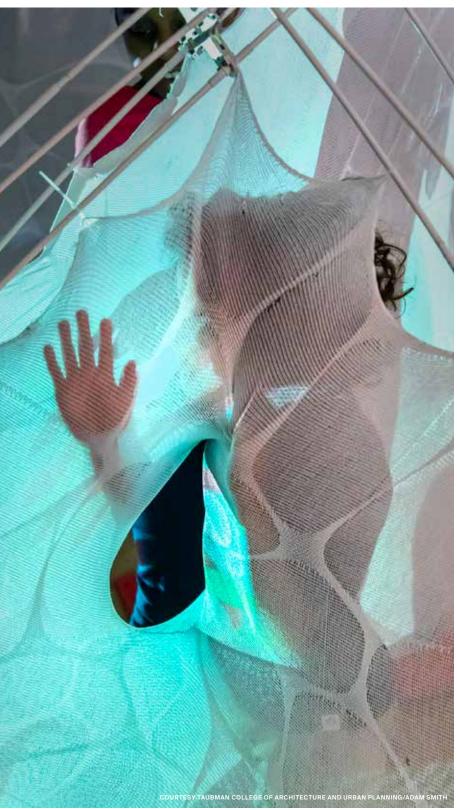
The elemental steel strut and concrete tower exists to test out new material approaches for each of its square-shaped levels, with a specific focus on folded surface structures, innovative processing of conventional fabrics, geometrically deformable structures, and origami-inspired folding structures that can be used to create lightweight sandwich panels. The tower is designed with flexibility in mind so that fabric-based facades developed by academic and industrial project partners can be tested and switched out as necessary in the coming years.







The recently completed Allianz Field soccer stadium in Minneapolis by Populous features a 88,000-square-foot PTFE canopy backlit with 1,700 LED lights programmed to create dazzling displays inspired by the Northern Lights.



Sean Ahlquist and his team at Taubman College of Architecture and Urban Planning in Michigan assemble a "textile-hybrid structure" created from CNC-knitted textiles strung on glass-fiber reinforced polymer rods for a recent installation for Exhibit Columbus.

Fabrics in the Field

Allianz Field

Populous

In terms of real-world applications, fabric-based architectural strategies are coming to lighting as well, especially in the realm of stadium design, where membrane materials like PTFE and other custom fabrics are used to wrap wide and often curvilinear stadium geometries with ease.

The Populous-designed Allianz Field soccer stadium in Minneapolis, for example, features a 88,000-square-foot transparent and laminated custom PTFE fabric facade created in partnership with fabricator Walter P Moore specifically for this project. Stretched over a parametrically designed steel rib substructure, the fabric facade is backlit with 1,700 emotive

LED lights that can be programmed to glow for various occasions.

Populous is also behind the Daily's Place Amphitheater and Flex Field project in Jacksonville, Florida, a unique dual-use space that blends a performance amphitheater with a practice football field. There, fabric roof panels are hung from steel trusses that frame the space. The outer steel structure allows for a monolithic fabric ceiling that can be bathed in LED light. (For more on this project, see page 66.)

Feeling Fabrics

Social Sensory Architectures

Lab for Material Architectures

At the University of Michigan A. Alfred Taubman School of Architecture and Urban Planning, for example, Sean Ahlquist is working across disciplines and with industrial and corporate partners to develop articulated material structures and design approaches that "enable the study of spatial behaviors and human interaction." Ahlquist's research focuses on using computational design and fabrication to create structures and spaces that move "beyond materialization" to focus on "sensing, feedback, and engagement as critical factors of design exploration," according to a recent scholarly article he wrote.

Using CNC knitting, hybrid yarns, and other

digital fabrication techniques, Ahlquist's research team is able to generate pre-stressed lightweight structures, innovations in textile-reinforced composite materials for aerospace and automotive design, as well tactile sensory environments that can act as "interfaces for physical interaction."

A recent project for Exhibit Columbus in Columbus, Indiana, creates custom textile micro-architectures by manipulating fibers and stitches to generate "instrumentalized, simultaneous structural, spatial, and sensory-responsive qualities" in fabric structures that can be used by children with autism to filter and manage multiple sensory inputs.





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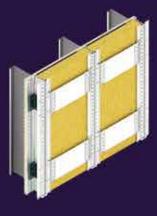
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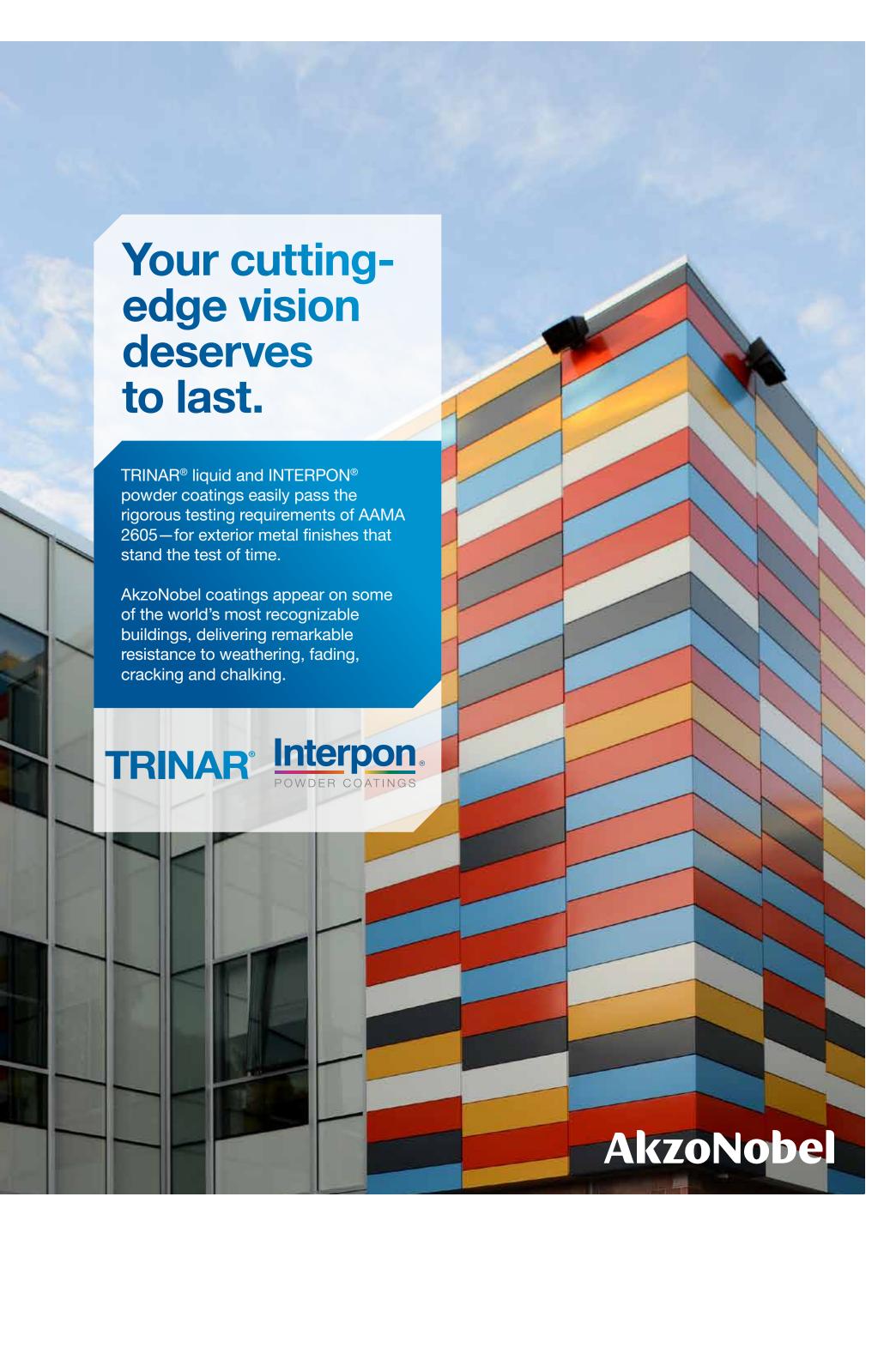


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42 Facades Women in Facades The Architect's Newspaper

Women in Facades

We surveyed the leading women in the facade design and manufacturing industry and asked: What do you find most interesting about facade innovation today? What are you working on now and what do you think we will see in five years?

Their responses, organized into six categories, offer an informal cross section of the challenges facing the facade industry—climate change, security—and of a coming multi-material revolution in facade design. *By Antonio Pacheco*

Topic Legend

- Heading toward decarbonization
- Technological change
- Inspiration
- Special projects
- Material innovations laminated glass and stone
- Trends in facade design

Tali Mejicovsky Associate, Facade Engineering and Building Physics, Arup



I am most interested in designing for net zero energy and innovations that push for best performance. Some ideas include the use of FRP framing, thin glass in conventional assemblies, and designing for disassembly and recycling.

Pam Campbell Partner, COOKFOX Architects



One of our projects, One South First in Williamsburg, Brooklyn, uses large-scale, 3-D-printed molds to create pre-cast facade panels. We designed several variations of panels to respond to specific solar orientations; beyond the facade's shape, the finish and crisp edges were particularly important, creating an interplay of reflection and shadow on the building's surface.

Odile Decq Founder, Odile Decq Studio



- Glass is a material that can solve in one all the questions an architect faces when designing a facade today: lighting outside and inside, protection from too much solar heating, isolation from the cold, providing a multiplicity of aspects, colors, textures, inclusion, and more. I've always said: if steel was the material for building innovation at the end of the 19th century, glass is the material for the end of the 20th century.
- From the beginning of my career I have been fascinated by glass evolution and the way facades have been modified thanks to this fantastic material. Its various qualities, its treatment, and its plasticity are what I am searching for in terms of innovation today. My research today is oriented toward sensible facades that can be joyful and sensual at the same time.

Nicole Dosso Technical Director, Skidmore, Owings & Merrill



- Beyond materiality, our 35 Hudson Yards project is emblematic of a collective process between the architect, developer, fabricator, and supplier. New Hudson Facades and Franken-Schotter, who quarried, supplied, and fabricated the Jura limestone used in the facade, helped to drive improved energy performance as well as optimize the geometry, manufacturing, and material selection.
- The return of materiality to the facade is a departure from the monolithic slick glass facades that have dominated the image of the super tall tower for the last two decades. The approach of combining materials pays homage to the historic fabric of New York City facades, which predominantly fancied the use of stone, brick, and terra-cotta.

Emilie Hagen Associate Director, Atelier Ten



- Climate change is the greatest challenge of our time and facade innovation presents an exciting way to take action. Over the next 12 years, we need to make big changes to reduce global emissions worldwide and within the built environment. Implementing innovative designs that balance embodied carbon reduction, energy performance, and life cycle is one way to make a difference.
- We are now testing the global warming potential of facade options by comparing pairings of cladding material and insulation that offer the same thermal performance. We're looking at materials like polyiso, spray foam, and mineral wool, as well as ceramic tile, terra-cotta tile, and GFRC tile, which all vary greatly in terms of their life span, global warming potential, resource depletion, and acidification.

43 Facades Women in Facades May 2019

Elena Manferdini Founder, Atelier Manferdini



- ♦ In particular, our office proposes an alternative language for traditional facades, based on vibrant color schemes and geometric patterns, along with augmented reality applications, whose aim is to engage new subjectivities.
- A Passivity is the dominant state of today's subject, who, conditioned to consume images, confuses them with reality; but our work suggests that a new breed of reactionary subjectivities is now possible. These imaginative facades become a political space for nuance and personal participation.
- Facades, even when buildings are privately owned, are important for the city at large because they are inevitably the background of our public imagination. Any facade language strategy is by default political because it negotiates how the privacy of human interactions comes to terms with a surrounding social and cultural context.

Andrea Love Principal and Director of Building Science, Payette



- I am working on a tool to look at the impact glazing has on summer comfort to complement the Glazing and Winter Comfort tool we developed a few years ago. We're also doing life cycle assessment of the typical facade systems we use to understand their embodied environmental impact. We are continuing to explore new ways to leverage simulation tools to understand performance and drive design on several projects across our office.
- The thing I find most interesting about facades today is the increase in attention paid toward their role in building performance and occupant comfort. Whether it is a high-performance facade for passive survivability for resiliency or consideration of the embodied carbon impact, I find it exciting to see how we as an industry are embracing the important role that facades play.

Doriana Mandrelli Fuksas

Partner, Studio Fuksas



- The quality of projects over the last 20 years has grown a lot, and nobody and nothing prevents us from thinking that the creation can continue to expand. I have a positive vision of the future, a future made up of large infrastructures: of museums, of innovative workplaces, of spaces dedicated to new technologies, of spaces where people can meet.
- The Shenzhen Airport has the skin of a honeycomb-shaped beehive. No one knows where it comes from, but clearly it is variable from every point of view and changes with every change of light, internal or external.
- ▲ Imagining a facade seems too simple, but complicated, too. I let it arrive as the last stage or last section, from the center to the outside. At the end of a path inside the building, of a cinematographic montage that leads to discover what you want to see, the facade arrives. Unexpected, scandalously irreverent.

Jennifer Marchesani Director of Sales and Marketing, Shildan Group



- When Shildan introduced terra-cotta rainscreen to the United States market 20 years ago, the panels were red, small, and flat. Now our capabilities are amazing. We just completed the Sentry Insurance Building in Steven's Point, Wisconsin, designed by Flad Architects, with the largest terra-cotta rainscreen panels in the world (10 feet long).
- We are seeing a trend toward complex terra-cotta shapes unitized in curtain walls on high-rise buildings. Custom 3-D shapes and curved terra-cotta elements are gracing more buildings, adding a complexity in production and systems, but resulting in unique, one-of-a-kind facades.

Stacey Hooper Principal, NBBJ Valerie L. Block Architectural



This is a time of revolutionary technology and digital fabrication, which is propelling imaginative industry partnerships to realize more complex, efficient, and high-performance building facades, built faster than ever before. This sea change will be pushed along by stricter codes, accountable system performance, and reduced market shares for curtain wall systems that don't pursue meaningful change.

Valerie L. Block Architectural Marketing Consultant, Kuraray America, Inc.



- I have seen more laminated glass used in facades over the past 20 years. There are several reasons for this, including building code requirements for impact protection of openings; blast and security requirements for exterior glazing in certain building types and locations; and a desire to incorporate minimally supported glass systems, where a concern for post-breakage glass retention has led to the specification of laminated glass.
- I have seen a growing concern over security. Architects working on K-12 and higher education projects are designing facades to resist intrusion, and in some cases, to provide ballistics resistance in the event of an active shooter.

44 Facades The Architect's Newspaper

Thermal Layers

These high performance weather and air barriers keep moisture out and simultaneously provide circulation. *By Gabrielle Golenda*

LP WeatherLogic Air & Water Barrier

LP Building Solutions

WeatherLogic is an integrated sheathing and structural board system that requires no secondary wrapping. By bonding a water-resistant overlay directly to the panel during construction, all the edges are sealed and then secured with seam and flashing tape to form a complete air-and-water-tight membrane system.

lpcorp.com



Securock ExoAir 430 Air Barrier System

USG Corporation & Tremco Inc.

Prevent spontaneous combustion and moisture buildup with a hybrid membrane composed of a gypsum core enveloped in a glass mat-faced membrane. The panels can be paired with other Tremco sealants and transition membranes to create the most absorbent insulation.

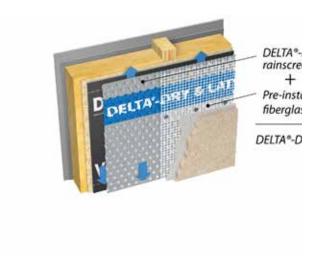
securockexoair.com



DELTA-DRY & LATHDörken

This unique weather barrier-screening hybrid for stucco and manufactured stone facades combines a rainscreen system with preinstalled fiberglass lath. The ventilated exterior coating wicks moisture from the outside while simultaneously providing open air flow for moisture to escape from the inside.

dorken.com



JM TPO SA - Flashing Membrane Johns Manville

This permanent membrane is designed for vertical applications and therefore ideal for curbs and parapet walls. With a peel-and-stick application, the self-adhering barrier makes installation easier and faster.

jm.com

HardieWrap Weather BarrierJames Hardie

James Hardie's trademarked MircoTech coating keeps moisture from soaking into the membrane without compromising ventilation so that water vapor can escape from the inside. The system is ideal for both cold, humid climates, and hot, humid environments.

jameshardie.com

Wolverine Wrap The Griff Network

Made from a cross-woven polypropylene, Wolverine Wrap acts as a weather and air barrier to keep external moisture out and provide ventilation for interior moisture to escape. It is available in widths of 3', 8', 9', or 10' and lengths of 100', 150', and 195'.

thegriffnetwork.com







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40 Tenth Ave.

Architect: Studio Gang Location: New York, NY

Structural engineer: Arup
Facade consultant: Arup
Daylighting consultant: Arup
Geotechnical engineer: RA Consultants
MEP/FP: GEA Consulting Engineers
Expeditor and code consultant: Code LLC
Facade access consultant: Lerch Bates
Facade manufacturer: Focchi (glazing)
Facade installers: Walsh Metal & Glass
(curtain wall); Cauldwell Wingate Company
(general contractor)
Construction system: Insulated doubleglazed unitized curtain walling

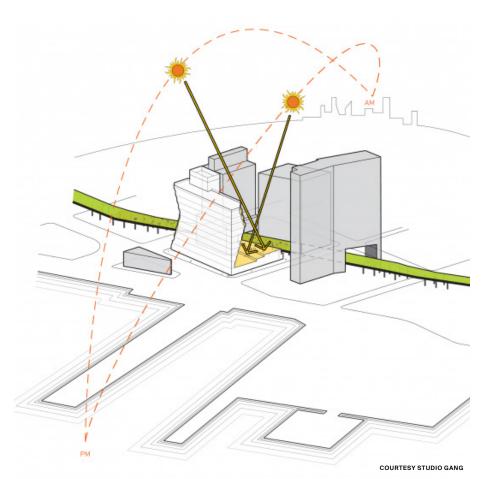
Products: high-performance low-emissivity

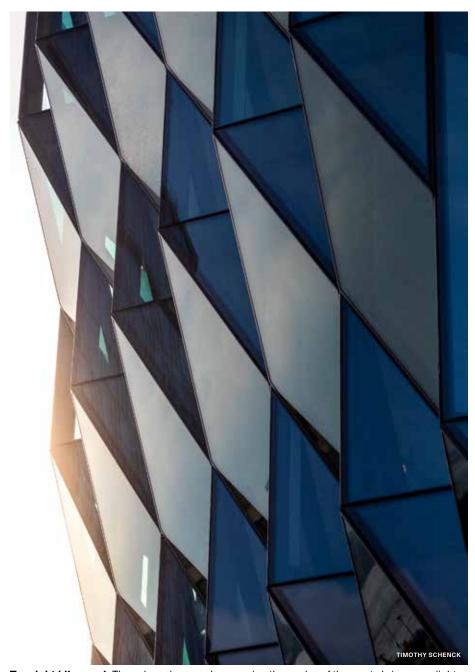
The most recent addition to an impressive collection of architectural characters inhabiting New York City's High Line, 40 Tenth Avenue offers a sculpted massing that will maximize its solar exposure along the public park. The project, led by Studio Gang, is situated between the Hudson River and the High Line, with a primary west-facing orientation. To minimize the afternoon shadow cast onto the park, the architects developed a unique inverted, stepped setback shape to the building.

Clad in a high-performance curtain wall from Italian firm Focchi, the tower integrates 12 types of glass. Despite a rather complex massing, the geometry of the enclosure was refined into a canted, diamond-shaped panel, surrounded by triangulated panels set perpendicular to the slab edges. The overall effect is a faceted, three-dimensional version of the architectural corner—perhaps a recasting, or import, of the Miesian corner to one of Manhattan's most significant public spaces.

The project adds to a portfolio of highrises designed by the Chicago-based practice (which also has offices in New York, San Francisco, and Paris) that explore "solar carving" as a formal and performative strategy. "'Solar Carving' is one strand of a larger body of research about how we can make buildings responsive to the specific qualities if their context and climate," said Studio Gang design principal Weston Walker. "To maximize sunlight, fresh air, and river views for the public park, we pushed the building toward the West Side Highway and carved away its southeast and northwest corners according to the incident angles of the sun's rays."

A growing issue for the High Line is the diminishing degree of sunlight caused by the development of Manhattan's Far West Side. According to Walker, the city's prevailing 1916 Zoning Resolution—legislation that mandated ziggurat-like setbacks to boost ventilation and light for city streets—did not anticipate the proliferation of midblock public spaces such as the High Line. "As-of-right zoning would have endangered rather than protected the park by allowing the tower be built directly over the High Line." John Stoughton



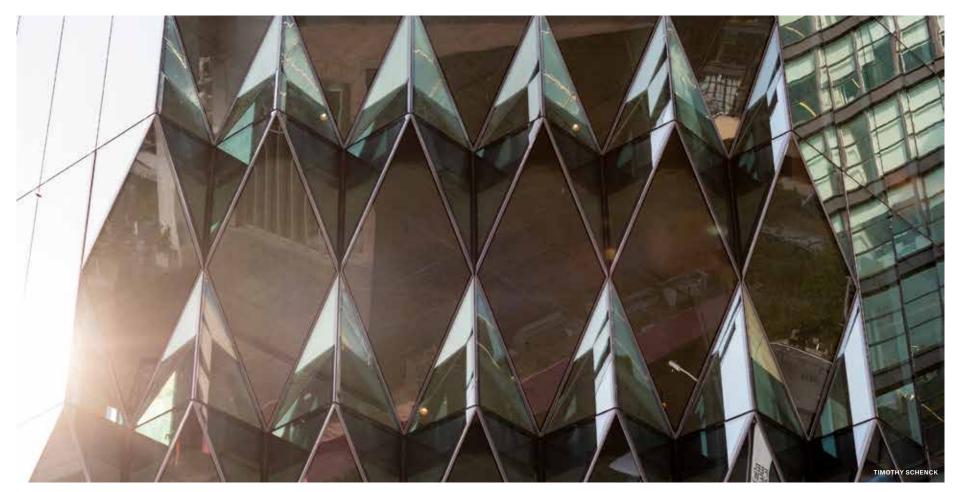


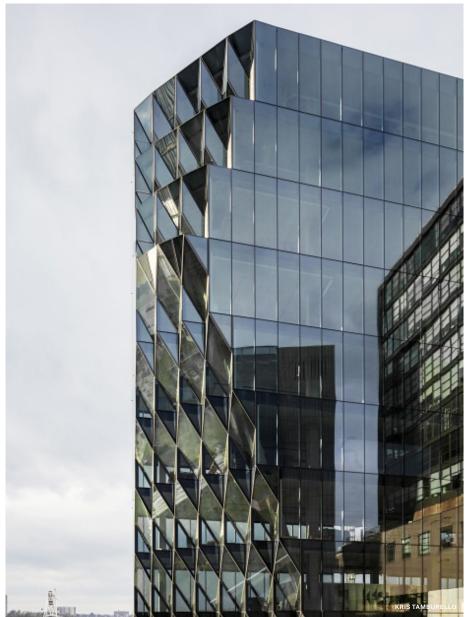
Top right (diagram): The volume is carved away using the angles of the sun to bring more light to High Line park than would normally be allowable.





Clockwise from left: The glazing system has been geometrically optimized into a pattern of three-dimensional facets that articulate the carved sections of the tower. The curtain wall unit is composed of a central diamond-shaped panel tilting downward, surrounded by four triangular pieces that are perpendicular to the slab to achieve standard stack joints. The carved curtain wall not only blocks sun glare and heat gain but also creates dynamic corner workspaces. These allow for private terraces on many of the office levels that are angled to provide views down to the park and up to the sky. The facade will feature high-performance glass with low reflectivity.





Top and above left: Two primary glazing systems are used. A curtain wall cladding is used for the broad, flat expanses of the facade, and a unitized, faceted glazing system is used for the "solar carve" zones. The smooth expanses of flat glass contrast with the faceted areas, emphasizing the difference between the simple rectangular form of the building mass and the gemlike carved



Above: By locating the building on the Western edge of the site, Studio Gang was able to further protect the solar access to the High Line, open up space for a terrace adjacent to the park, and produce a building with narrow floorplates that could be flooded with natural light and offer 270-degree views.



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Above: Design Wall[™]: Ascot White, Siam Blue, Rocky Grey; Versa-Lok[™]: Rocky Grey; Corrugated Panel: Rocky Grey



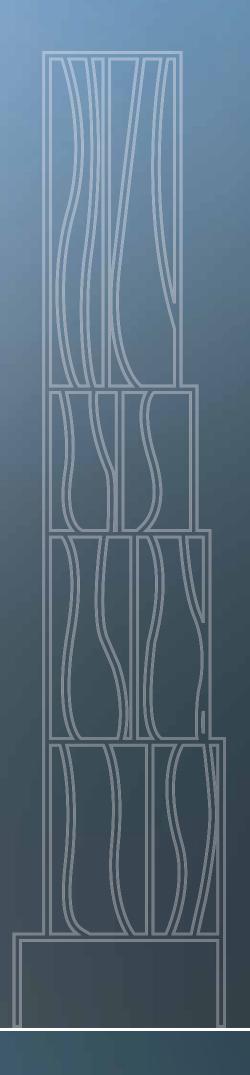


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UCCA Dune Museum

Architect: OPEN Architecture **Location:** Qinhuangdao, China

Structural/mechanical/curtain wall engineer: CABR Technology

Controls: Lutron Hardware: Dorma

Sunshades: Silent Gliss International **Outdoor decking:** Woodn

On a beach in northern China, light canons emerge from the tops of a dune, hinting at a structure buried beneath the sand like a lost Courbusian villa. The Ullens Center for Contemporary Art Dune Museum (UCCA Dune) is neither lost nor buried, but carved into the sands of Bohai Bay by the Beijing-based firm OPEN Architecture.

Inspired by children digging in the sand, the building is defined by a series of interconnected organic spaces that seem scooped from the ground. There's a raw, handcrafted feel to the rooms because they are, in fact, crafted by hand. Local workers and former shipbuilders shaped the complex geometries of the museum's concrete shell using formwork made from small linear strips of wood, and other, more elastic materials. The architects deliberately retained the rough texture left by the formwork, allowing traces of the building's construction to be felt and seen. Natural light from generous light wells fills the central gallery, casting shadows that accentuate the interior's rough concrete texture.

Creating this handmade aesthetic required some technological support. The architects and structural engineers shared digital models to optimize the building's form and calculate the thickness of the concrete walls. "Finetuning this geometry was a back and forth process between structure and architecture," notes founding partner Li Hu. Even with these calculations, the realities of the unusual site required the architects to adapt their design in the field, simplifying things and changing details like the enormous opening that faces out toward the sky and sea, which could only be installed from the inside rather from without, as had been initially planned. These field adjustments were challenging, "but on the other hand," Hu says, "they were also the sources of great excitement, as they pushed for innovation and improvisation, which lead to unexpected results."

A sense of craftsmanship carries through the entire building, which features custom furniture and fenestration—all made by hand. The final element of the enclosure is, of course, the dune itself. As a green—or rather, brown—roof, the sand improves the building's performance by dramatically reducing the energy required to cool it during the summer. But as the dune protects the building, so too does the building protect the vulnerable coastal ecosystem. The presence of the museum ensures the preservation of the dunes, from large oceanside real estate developments. Jimmy Stamp





Top: The museum's nearly completed concrete structure, seen before it was buried under the dunes. To calculate the stresses and optimize the shell geometry, a digital model was shared back and forth between the architects and the structural engineering team, CABR. **Above:** The large window wall posed challenges for the architects, who had to adapt their design during construction.

53 Facades Case Study May 2019



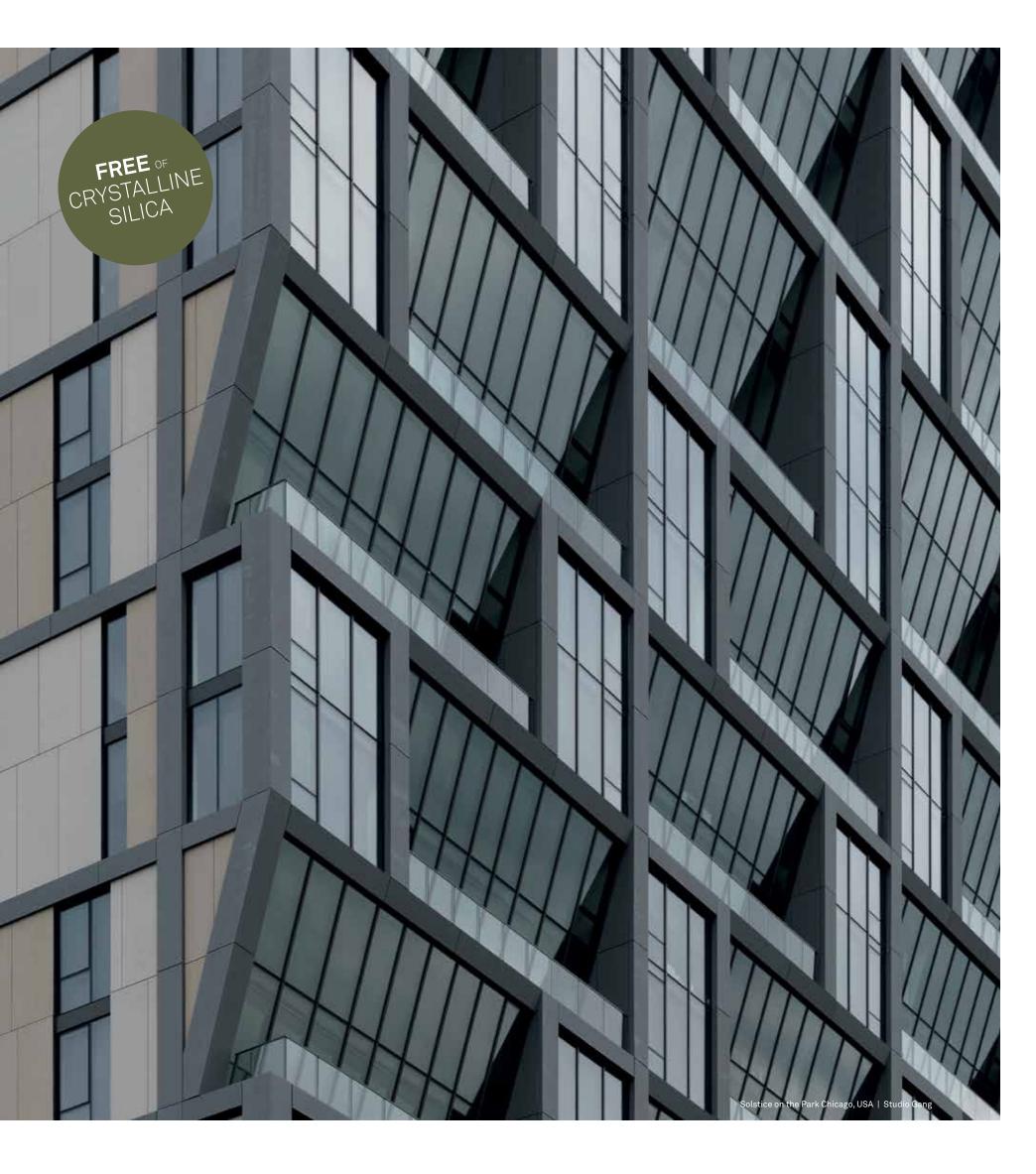


Top: OPEN Architecture changed their initial plans to plaster over the concrete walls in order to maintain what founding partner Li Hu calls "the raw but truthful quality of the concrete texture." **Above:** The sculptural formwork was made almost entirely from narrow strips of wood.



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RIEDER

56 Facades Products The Architect's Newspaper

Envelop(e)

New manufacturing methods have made cladding and paneling more structurally sound and less cumbersome to install. These systems are highly customizable and made to last from season to season. *By Gabrielle Golenda*

Apollo IICertainTeed

These all-black shingles generate energy without the bulky infrastructure that typically accompanies solar panels. Simply installed directly on the roof, the environmentally conscious system can be employed on new and existing structures.

certainteed.com

Calacatta Maximum Fiandre

Fiandre's engineered tiles emulate the bold veining that occurs in marble. Unlike the natural stone, these porcelain slabs are lightweight and resistant to stains and wear and tear.

granitifiandre.com

Vintago Swisspearl

These fiber cement panels highlight the sanding production process with surfaces characterized by an undulating coarse grit. It will be available to specify in June upon its release in the

swisspearl.com







GRP SIDING Technowood

Made from fiberglass-reinforced polyester, this panel system is designed to withstand the weight of the most taxing structural applications. To fulfill the most decorative requirements, the siding is available in six natural wooden tones and seven varnished colors.

technowood.com

Porcelain Open-Joint Cladding Solutions

Porcelanosa Facades

Porcelanosa's facade system incorporates all the colors and textures from its interior porcelain surfaces (including wood, concrete, stone, technic, or metals) for the building envelope. The system prevents moisture build up and heat transfer via a ventilated air cavity directly behind the panels.

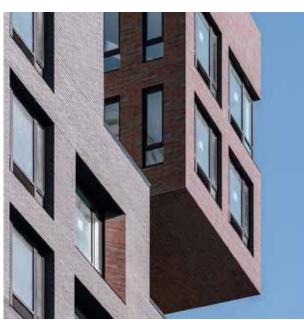
porcelanosafacades.com

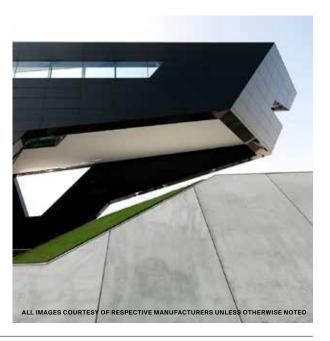
StoVentec Glass Sto Corp.

These glass-faced composite panels create a decorative reflective surface that provides thermal insulation. Made to order, each panel is offered in a variety of sizes, shapes, and custom colors.

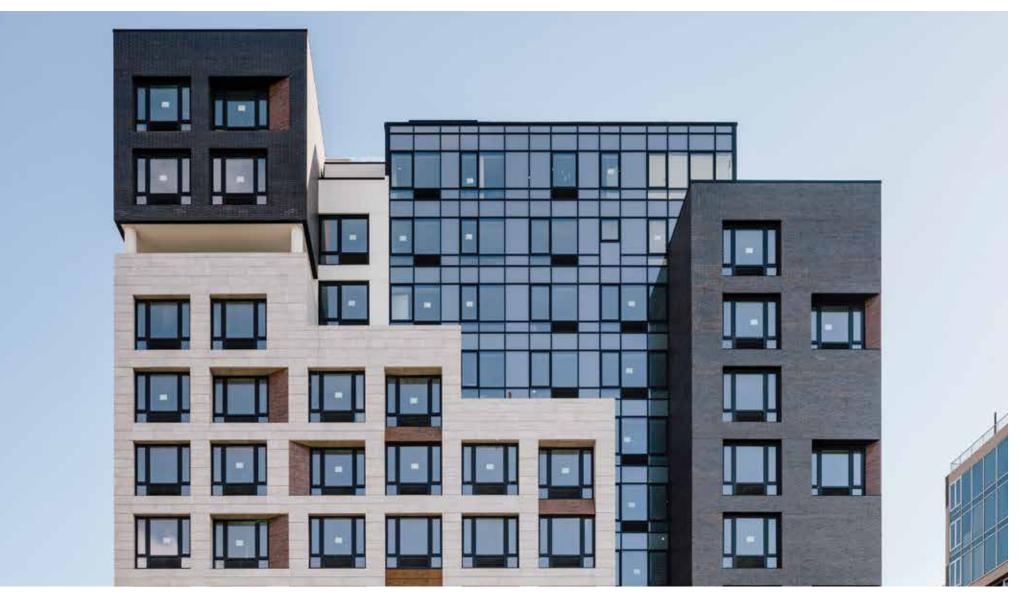
stocorp.com







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More Envelop(e)

Architectural precast concrete Calacatta Silk **Gate Precast**

These precast polished concrete panels are a cost-effective alterative to natural stone facades. Fabricated offsite, each panel is prefabricated to fit building envelopes of all shapes

gateprecast.com

Neolith

Please do touch! These Calacatta Silk slabs have the same smooth, velvety touch as real marble. Available in superlarge format slabs, Neolith's cladding can create nearly seamless (exterior) surfaces.

neolith.com

Self-Cleaning Micro Texture Surfaces Rigidized Metals

By angling the panels to create low surface tension, this cladding system is designed to repel water. The stainless steel panels are offered in a range of colors from muted tones to the brightest hues.

rigidized.com







KarrierPanel Barrier Wall Panel System Kingspan

The KarrierPanel series is a cost-effective cladding solution available in a plethora of colors. The system is offered with compatible insulation panels, QuadCore, to provide a safe fire barrier and improve overall thermal performance.

kingspan.com

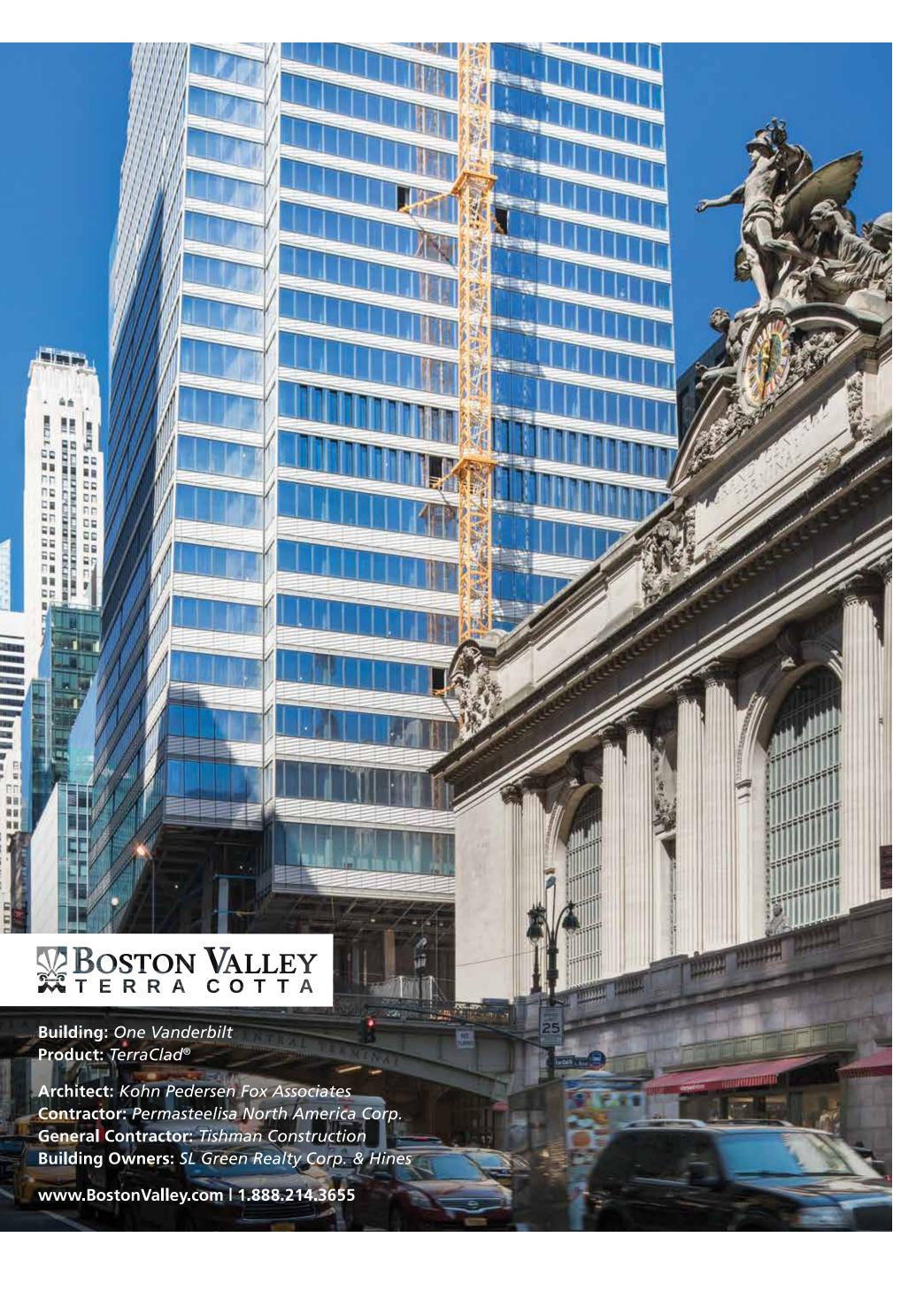
TECU Gold KME Architectural

Ever want to wrap a structure in gold? These copper alloy panels create glistening building envelopes that can be made to fit a variety of projects—from large cladding areas to small-scale $\,$ installations. Left intentionally untreated, TECU becomes more beautiful with time, developing a natural patina.

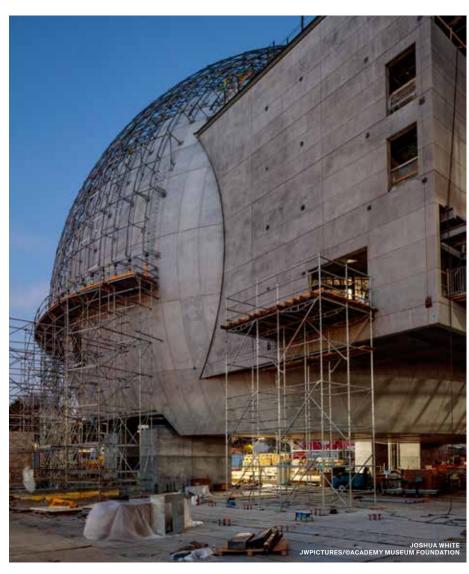
kme.com

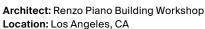






Academy Museum of Motion Pictures





Executive architect: Gensler LA
Consulting engineers: KPFF
Facade consultant: Knippers Helbig
Structural engineers: BuroHappold
MEP: BuroHappold
Lighting consultants: BuroHappold
Sustainability: Atelier Ten
Products: St. Gobain glass

When it opens later this year, the Academy Museum of Motion Pictures, located in the heart of Los Angeles, will be the world's premier museum dedicated to movies. Designed by Renzo Piano Building Workshop (RPBW), the building consists of a renovation and restoration of the 1939 May Company Department Store—now known as the Saban Building—and a new, concrete and glass spherical addition.

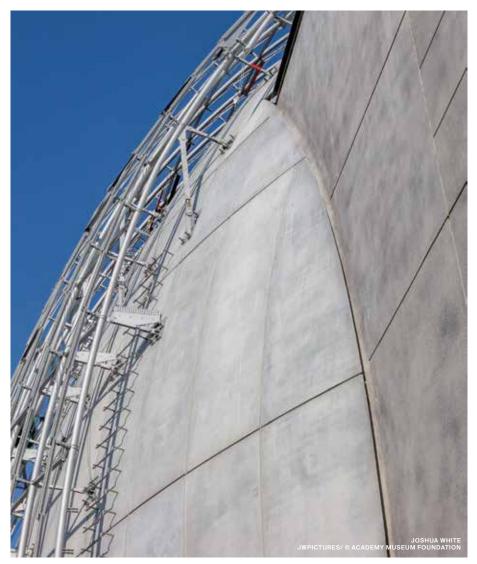
The project was inspired by the capacity for cinema to transport viewers to a new world, and the architects think of the 45,000-square-foot sphere as a spaceship. More specifically perhaps, the project evokes the TARDIS—Doctor Who's time-and-space-traveling police box that's famously bigger on the inside than appears possible from the outside. As Mark Carroll, partner at RPBW notes, "We didn't want it too large, because it could overpower the Saban Building. So we tried to keep it small and compact but still big on the inside."

The sphere's two primary programs drove its design: the spacious 1,000-seat David Geffen Theater and the Dolby Family Terrace. The majority of this cinematic starship is clad with 680 precast-concrete panels attached

to a shotcrete structural frame. The concrete is the visible part of a "box in a box" assembly that was designed to acoustically insulate the theater from within and from without. Behind the precast shell, a floating gypsum box completely encloses the space to provide additional soundproofing.

Atop the sphere, a glass dome covers the Dolby terrace, which offers expansive views toward Hollywood to the north. The dome comprises exactly 1,500 overlapping lowiron glass shingles set over a graceful steel frame-a solution arrived at after "many interactions," according to Carroll. Among the 146 unique shapes of shingles are glass vents, arranged at the top of the dome to help keep the open-air terrace cool. To ensure the structure stays rigid during a seismic event, cables crisscross the frame's 4-inch structural supports, which span 120 feet across the roof and over the dome, casting dynamic shadows onto the curving facade. RPBW carefully coordinated the construction of the glass and concrete elements, which were cast with openings to attach the dome's "egg cutter" structure.

The project is the latest blockbuster building on L.A.'s Miracle Mile, joining a collection that includes RPBW's additions to the Los Angeles County Museum of Art. The futuristic dome is not only an apt addition to the neighborhood but to the original structure, whose Streamline Moderne design offers an optimistic vision of the future from another era. As Piano said, "The Academy Museum gives us the opportunity to honor the past while creating a building for the future—in fact, for the possibility of many futures." Jimmy Stamp





Top left: The orthagonal concrete volume houses the theater's support spaces and connects aerial bridges from the restored Saban building to the new dome structure.

Top right: Designed to be visually light and unobtrusive, the "egg crate" structure is composed of 4-inch steel elements spaced roughly 4 feet apart. Its maximum span is 120 feet.

Above: The connection between the dome's structure and the concrete sphere required close coordination between the design team and fabricators to ensure the attachment points would be properly located in the cast panels.



The Working Glass

New manufacturing methods produce high performance curtain walls, glazing, and glass designed to provide optimal thermal performance without sacrificing nearly seamless views. *By Gabrielle Golenda*

Jumbo Anti-Reflective Glass AGNORA

Aptly dubbed, AGNORA's 236" x 126" monolithic glass panels are ideal for any application where excessive glare would otherwise be a problem. Each sheet is coated with anti-glare coating by Guardian Glass.

agnora.com

isopure sedak

Thanks to new lamination manufacturing methods, isopure, a new system from sedak, yields nearly seamless large glass expanses. The safety glass adheres together with seemingly invisible butt joints that afford zero sightlines in large-scale, all-glass facades and roofs.

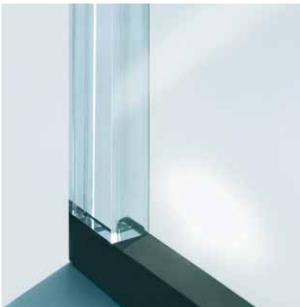
sedak.com

SOLARBAN 60 Vitro Architectural Glass

Vitro Architectural Glass's SOLARBAN 60 is designed to provide thermal comfort year-round and reduce heating and cooling costs. This is achieved by a clear coating that blocks 62 percent of solar light transmission while also allowing 70 percent of visible light to filter through the glass.

vitroglazings.com







HarmonySageGlass

SageGlass designed a digital in-pane system that transitions the glass from tinted to completely clear. The system works to provide heat, daylight, and solar management with pixel-like lines that occupy the glass surface in various gradients depending on the time of day and other extraneous conditions.

sageglass.com

AviProtek TWalker Glass

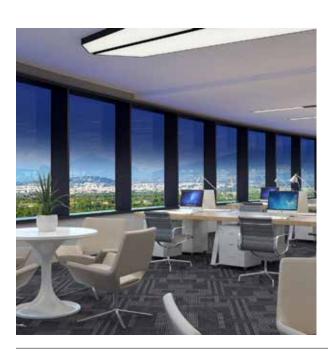
Walker Glass glazes Pilkington North America's pyrolytic coated panels to create bird-safe glass with a fritting pattern that contrasts with the reflective surface. Effectively, the coated patterns deter birds from colliding with the facade while remaining hardly discernable to the human eye.

walkerglass.com

UltraClearGuardian Glass

This "ultra-clear" low-iron glass maximizes views with its reduced green tint, developed to deliver nearly untinted views. When combined with Guardian's low-E coating, SunGuard, the system reduces solar gain.

guardianglass.com







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Wonderwalls

Prefabrication and new thermally broken barriers bring new curtain wall systems that minimize heat transfer and minimize on-site construction time. By Gabrielle Golenda

YUW 750 TU Thermally Broken 2500 UT Unitwall **Unitized Curtain Wall** YKK AP

YKK AP improved the existing YUW 750 curtain wall system with a new advanced thermal barrier that minimizes heat transfer. The unitized system is glazed and assembled in a quality-controlled environment and then shipped on site for speedy construction.

ykkap.com

Kawneer

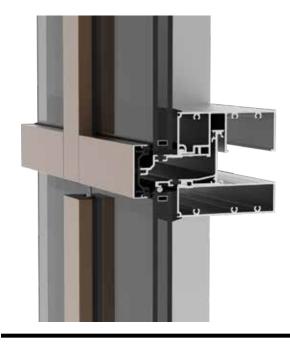
Kawneer's glass system is ideal for high- to mid-rise applications. The glass unitized curtain wall comprises a foursided barrier block system designed for thermal performance.

kawneer.com

CW-250 Curtain Wall **GAMCO**

To accommodate insulated and monolithic glass, this glass structural system is offered in several back-member framing sizes. Flexible to actualize the most inventive facades, the system integrates doors, projected windows, louvers, and metal panel options.

gamcocorp.com







Planar Pilkington

Planar delivers maximum clarity to optimize the amount of light that enters the building envelope. Meanwhile, the entire system incorporates Pilkington's various glass products to achieve thermal performance, solar control, and pristine views.

pilkington.com

PDR-225 Oldcastle BuildingEnvelope

This window wall is shop-assembled and sealed with a 3/8" polyurethane break to provide optimal thermal performance. It can be glazed for interior and exterior applications alike.

obe.com

CW-7000 ESWindows

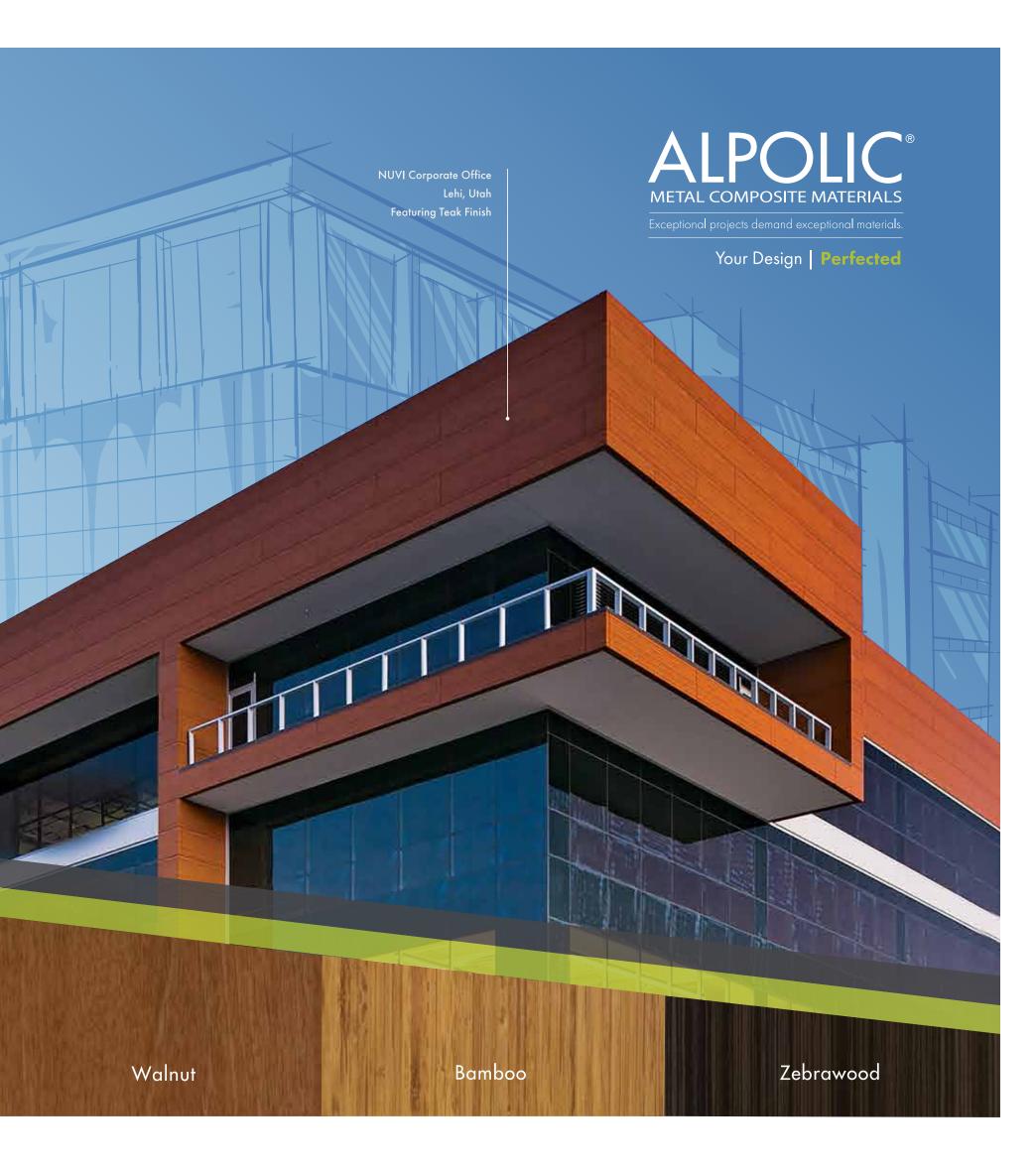
This unitized curtain wall system is designed to withstand a high-grade hurricane. The pre-glazed and preassembled glass unit system is available in large, trapezoidal, and inclined modules to realize the most imaginative facade designs. Meanwhile, the integrated vents offer nearly zero-sightline views.

eswindows.com









TIMBER SERIES

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Allianz Field

Architect: Populous

Location: Saint Paul, Minnesota

Structural Engineer/Facade Consultant: Walter P Moore

Waiter P Moore

Facade Installer: Mortenson Construction,

FabriTec Structures

Facade Manufacturer: Saint Gobain
Facade System: PTFE-coated fiberglass

weather barrier **Products:** Illuminate 28

Completed in March 2019, Allianz Field is a 350,000-square-foot soccer stadium located centrally between Minneapolis and St. Paul, Minnesota. The project was executed by Populous, Walter P Moore (WPM), Mortenson Construction, and FabriTec Structures, and it features a facade of woven fiberglass clear-laminated with Polytetrafluoroethylene (PTFE)—effectively a tensile membrane capable of shielding the audience from the elements while transmitting twice as much light as other PTFE membranes.

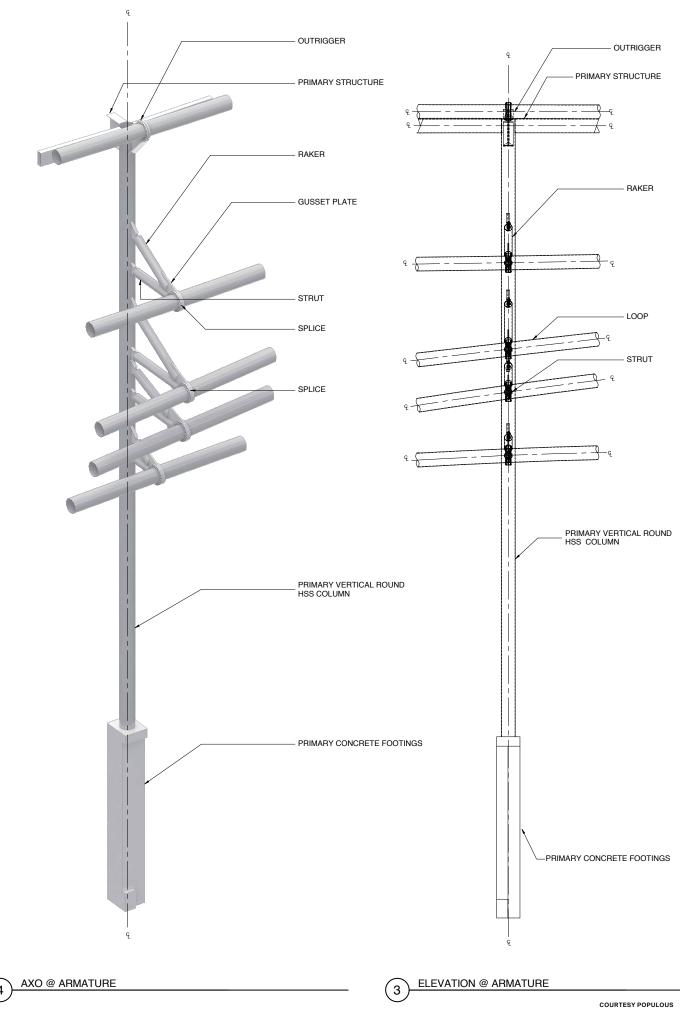
According to the design team, the client initially approached Populous and Walter P Moore to produce a stadium with a translucent, weather-barrier facade. The group was aware of a clear PTFE laminate being developed by French manufacturer Saint Gobain—now known as Illuminate 28—and facilitated the shipment of moderately sized samples from the company. These samples were used to construct a 6-by-6-foot frame of the material to gauge its tensile and lighting qualities. The design and construction of the stadium occurred as the facade material was being developed.

The enclosure system of the stadium consists of three interconnected layers: the exterior skin of PTFE-laminated fabric, a secondary backup system of steel driver pipes and armatures, and a circular colonnade of steel columns.

In abstract terms, this enclosure system sounds simple enough. However, unlike rigid cladding materials, the tensile strength of fabric is ultimately determined by the 3-D shape it is stretched into. "We never knew if our fabric shapes would work or not from an engineering standpoint until after the design was complete," said Populous associate principal Phil Kolbo. "To achieve the design, Populous and WPM had to set up a cohesive process that could design, test, and modify the supporting steel quickly and iteratively to satisfy both the design and engineering requirements of the

In total, over 90,000 square feet of fabric wrap the stadium. Due to budget constraints, the design team had to maximize the spans between structural components. Utilizing Rhino and Grasshopper 3-D imaging software programs, WPM created nearly 50,000 analysis elements to locate sites where the fabric was overstressed. This information was then exported from Rhino to Tekla software and delivered to the steel fabricator.

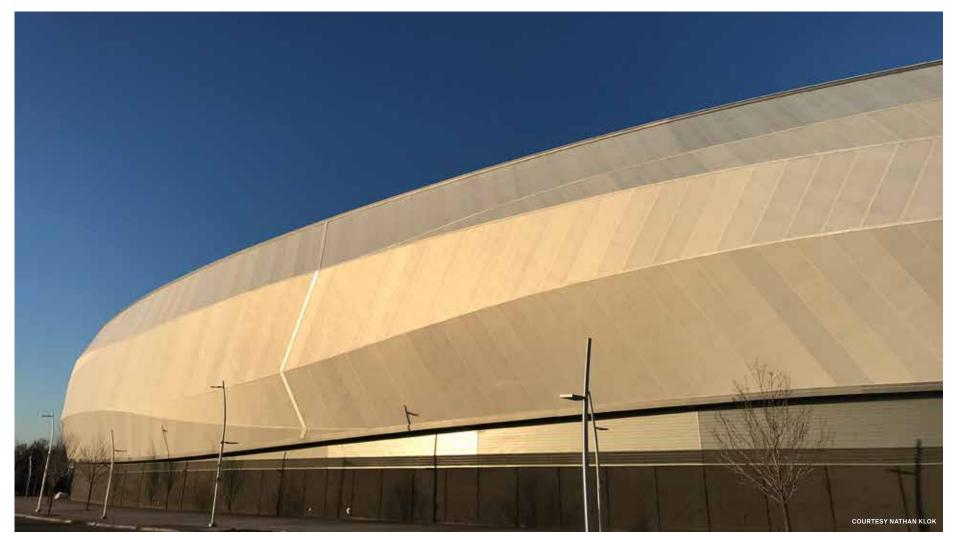
"Once we had a fabric and driver pipe design, then it was supporting the process throughout getting the owner, Mortenson, and FabriTec comfortable with the material and construction process," said Walter P Moore principal Justin Barton. "It started in February 2016 and went all the way through FabriTec's final installation and punch list in late 2018, nearly 24 months of continual conversation." Matthew Marani



The weaved fiberglass is stretched over a system of armatures and outriggers that determine the tensile membrane's final shape.



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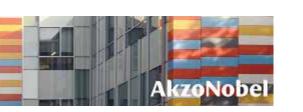






Top: The facade of Allianz Field is back-lit by 1,700 LED lights.

Above: The secondary system forms a riblike impression while stretching the exterior skin. **Left:** The stadium's semitranslucency was achieved by using a clear PTFE-laminate.



Broad Spectrum Sun Protection

These new screening and sun shading solutions decrease solar gain and add a little panache to any building envelope. *By Gabrielle Golenda*

Sculpted 3D Metalwërks

Articulate dynamic facades with these custom three-dimensional metal screens. Available in three interchangeable wall panel shapes, the modular system is designed to be easily integrated with LED lighting and incorporate planters and irrigation for growing vegetation.

metalwerksusa.com

Fabricoil Cascade Architectural

This copper-clad steel fabric system is ideal to manage solar gain. The metal screens can be installed around a building envelope to control the amount of sun filtering in and, at the same time, provide unobstructed views through the semitransparent coiled fabric.

cascade-architectural.com

Living WallsEco Brooklyn

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ecobrooklyn.com







LARGO NOVA 1032 HAVER & BOECKER

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haverboecker.com

Architectural metal systems BŌK Modern

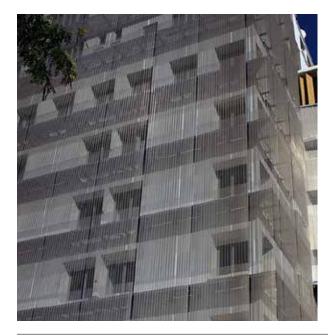
BŌK Modern's metal panel systems are CNC-cut to fit each site-specific application, providing the specified amount of shading. The decorative cutouts are particularly pleasing when patterned shadows are cast from the sunshades on to the surrounding environs.

bokmodern.com

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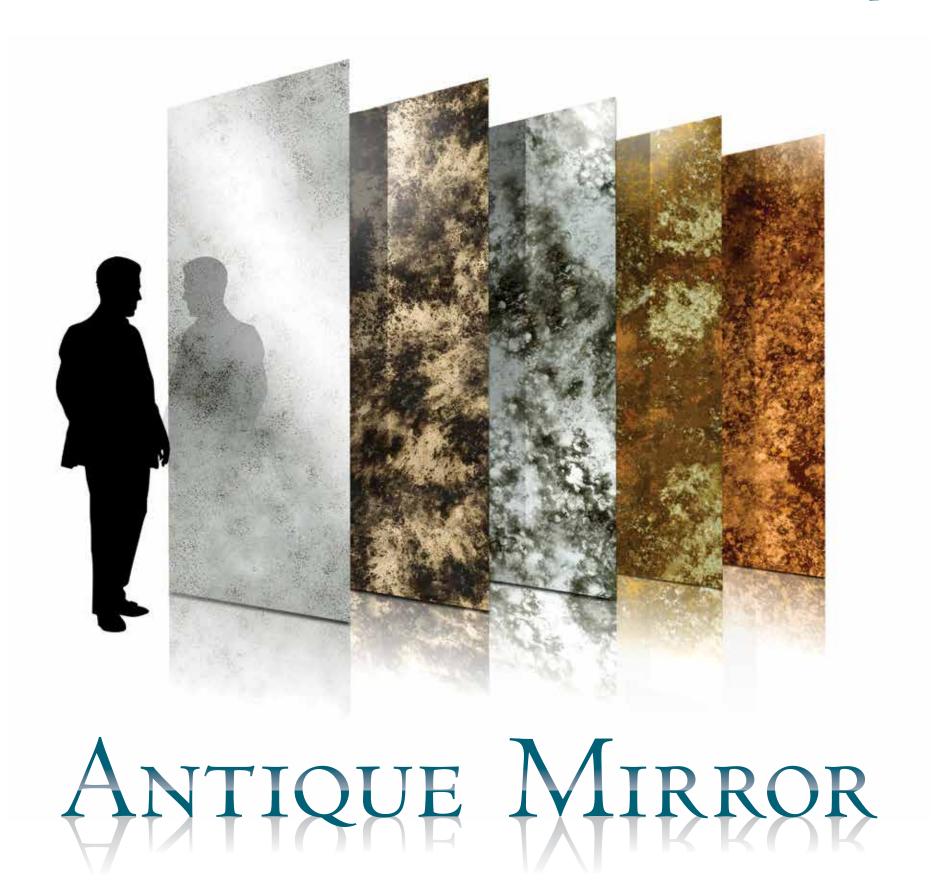




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Steinway Tower

Architect: SHoP Architects **Location:** New York

Facade Consultant: BuroHappold Engineering Facade Installer: Parkside Construction

Facade Manufacturers: NBK Architectural Terracotta, Elicc Americas Corporation, SYP Glass Group

Products: NBK Architectural Terracotta custom terra-cotta rainscreen Client: JDS Development

Over the last two decades, SHoP Architects has pushed the envelope of facade design, leading a notable shift from predominantly glass-clad skyscrapers to supertalls incorporating a variety of materials. SHoP's 111 57th Street, or Steinway Tower, is currently rising on Manhattan's Billionaires' Row—a stretch of dizzyingly luxurious towers. The Steinway Tower stands out with a facade that incorporates three materials: terra-cotta, glass, and bronze ornamental work.

The tower rises from a narrow lot located immediately behind and adjacent to the historic Steinway Building. In the mold of historic New York skyscrapers, the tower sets back and tapers upward along its south elevation. Both north and south elevations are clad in a glass curtain wall with vertical strips of bronze sprouting into finials at each setback.

As a result of the site's constraints, the approximately 1,400-foot-tall tower's width runs at a remarkably narrow 45 feet—the width-to-height ratio comes out to just 1:24. Partnering with Buro Happold Engineering, a key challenge for the project was developing a facade system capable of supporting the weight of cladding materials, notably the terra-cotta panels.

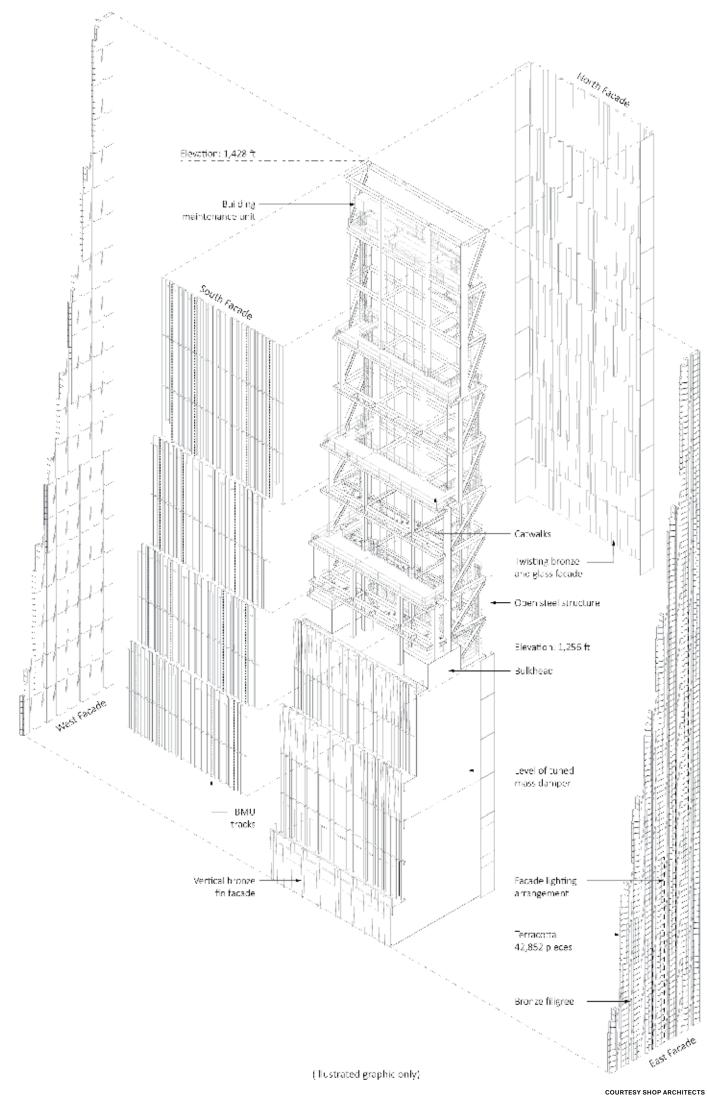
Concrete shear walls back the facade for these two elevations with only select opportunities for punched window openings. "These select openings allow for vision glass to be used while the remaining glass panels contain shadow boxes," said BuroHappold Associate John Ivanoff. "The unitized curtain wall panels are consistent in dimension across the width of the facade; the units are separated between different materials."

The composition of the east and west facades is formed by a trio of terra-cotta, glass, and bronze. Curtain wall–manufacturer Ellic Americas merged the three materials into approximately 4-foot-by-16-foot panels, with bronze filigree fluttering between vertical stripes of glass and terra-cotta. These panels were then delivered to the site, craned into position, and hung from concrete structural slabs similar to typical curtain wall systems.

In total, nearly 43,000 terra-cotta pieces, mechanically fastened to a unitized aluminum curtain wall system, run across the two elevations. The design of the quasi-fluted terra-cotta strips was formulated using a 3-D wave geometry generated by a computational script. This geometrically focused design by SHoP was adapted by NBK Terracotta to conform to its specific fabrication parameters.

The building is scheduled to be completed in 2019 Matthew Marani

in 2019. **Matthew Marani**



The east and west elevations of the Steinway Tower are concrete shear walls clad in unitized curtain wall panels of terra-cotta, glass, and bronze.



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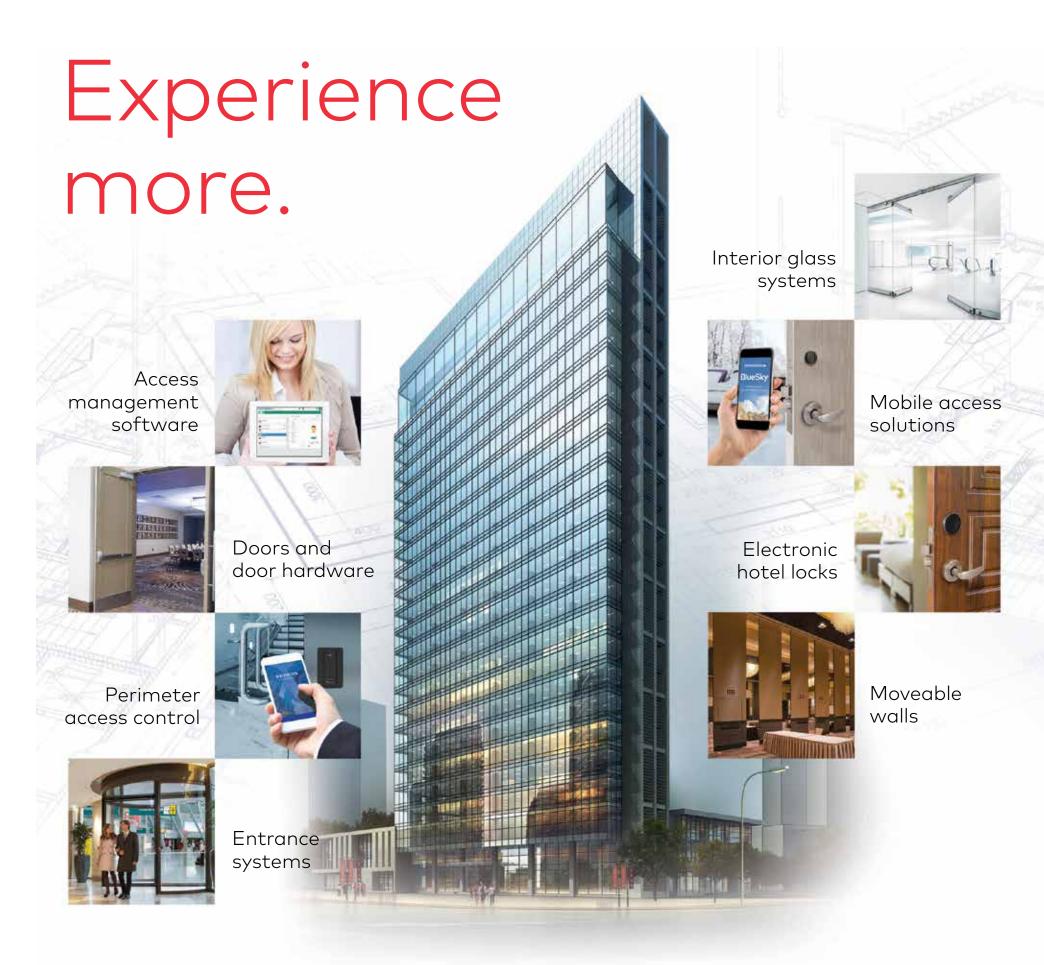


The facade produces a lenticular effect when seen from the street.



 $SHoP\ Architects\ developed\ a\ wavelike\ format\ for\ the\ terra-cotta\ panels\ using\ parametric\ design.$





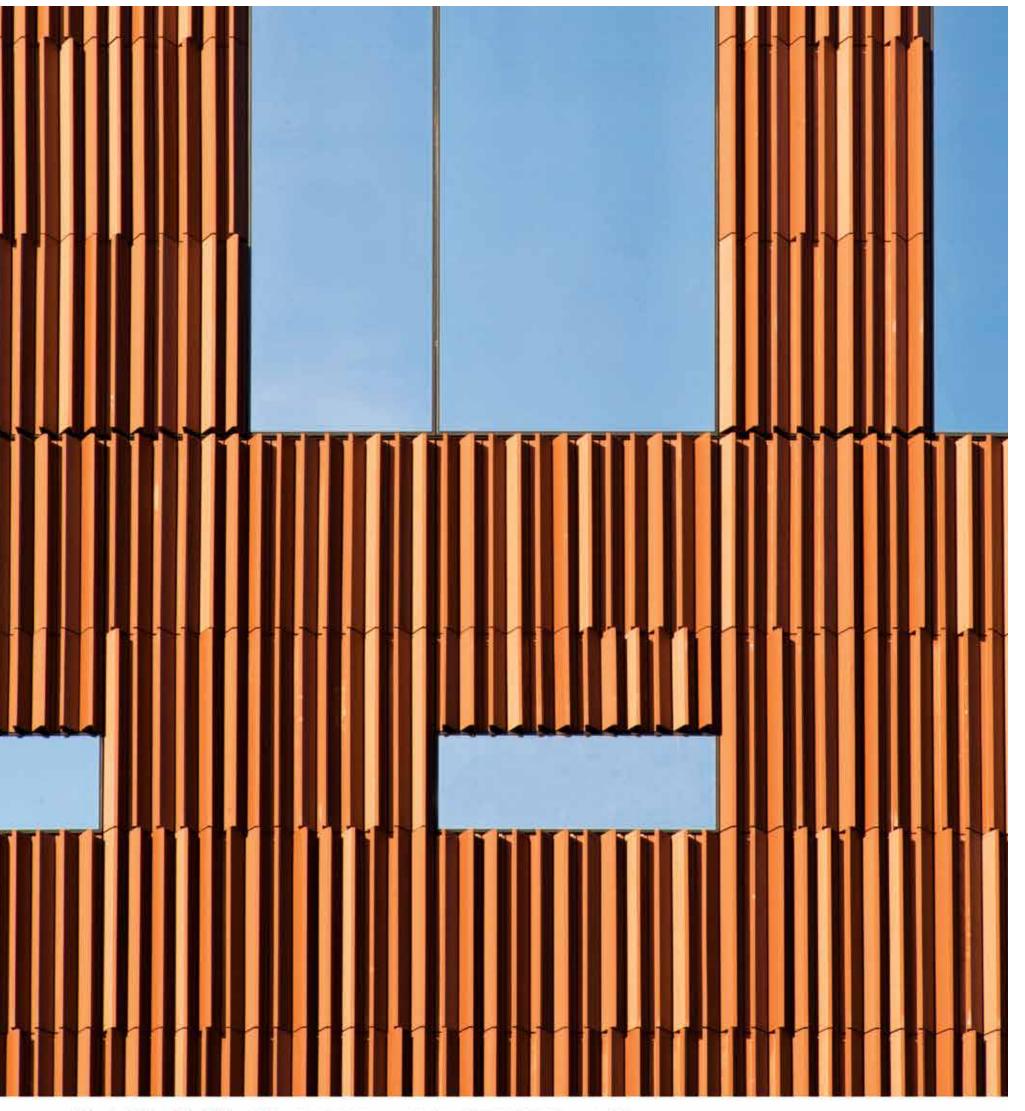
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74 Facades Mini Case Studies The Architect's Newspaper

Case Studies

In addition to in-depth profiles, we bring you a few notable examples of how products from these pages can come to life in built projects. *By Gabrielle Golenda*

JW Marriott

Location: Nashville, Tennessee Architect: Arquitectonica

Architect of Record: Smallwood, Reynolds, Stewart, Stewart & Associates Facade Manufacturer: YKK AP America

Facade Installer: Custom Enclosure Solutions

Products: YKK AP America YWW 50 T Window Wall glazing system and Model 35D Entrances

Ford Motor Company Parking Decks

Location: Dearborn, Michigan

Architect: Rich & Associates Parking Consultants

Prime Design Firm: SmithGroup

Engineer: Rich & Associates Parking Consultants General Contractor: Devon Industrial Group

Installer: L&S Erectors

Product: Cambridge Architectural Mesh Huron





Broadcom Parking Garage

Location: San Jose, California Architect: HOK

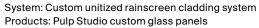
General Contractor: Devcon Construction Specialty Contractor: B.T. Mancini Co. Product: CENTRIA EcoScreen Perforated Panels and Cascade Panels

Aquarium of the Pacific

Location: Long Beach, California Architect: EHDD

Facade Manufacturer: Woodbridge Glass, Sentech Architectural Systems

Facade Installer: Woodbridge Glass, Clark Construction Facade Consultants: BuroHappold Engineering









76 Facades Case Study The Architect's Newspaper

Imprint

Architect: MVRDV Location: Incheon, South Korea

Co-Architect: GANSAM Architects & Partners Facade Consultant: VS-A Group Ltd Panelization Consultant: WITHWORKS GFRC: Techwall Lighting: L'Observatoire International In Paradise City, a new entertainment and hospitality complex in Seoul, South Korea, MVRDV was faced with a unique challenge: design two contextual, expressive buildings without any windows—one an indoor theme park and the other a nightclub. The two new structures, known collectively as The Imprint, share an architectural language and echo the design of the six other buildings in Paradise City. Despite its theme park name, "Paradise City is not a collection of individual objects like Las Vegas," notes MVRDV principal and cofounder Winy Maas, "but a real city."

To make these new buildings fit in with their environment, MVRDV's solution was to fit the environment over the new buildings. That is to say, the architects virtually projected the facades of the nearby buildings, stretching

them across the plazas and over the massing of the new buildings—one a simple box, the other a curving box that gives definition to public space. The facade compositions were "imprinted" in relief onto glass fiber-reinforced concrete panels. The panels, 3,869 of which are unique, were individually fabricated employing the same 3-D modeling files used to design the project.

Most of the panels were painted white to create high contrast shadows that emphasize the design of the contextual echoes, but a few sections of the nightclub and surrounding plaza are painted gold. These gilded highlights are augmented with exterior lighting and, when seen from the planes landing at the nearby Incheon Airport, look like spotlights shining onto the structure. It's an appropriate

gesture for a project with facades that appear to be pulled upward, offering a peek under the curtain where mirrored surfaces and dynamic lighting suggest the glamorous spaces and experiences that lie behind.

MVRDV's client called the completed Imprint a "work of art," and indeed, the buildings do evoke dueling works by the sculptor Rachel Whiteread, who is known for her casts of architectural objects and spaces. But can a nightclub in an entertainment complex really be a work of art? Why not? "What, then, is the difference between architecture and art?" asks Maas. "The project plays with that, and I think that abstraction is part of it, but it has to surprise, seduce, and it has to calm down... Giorgio de Chirico would have liked to paint it, I think." Jimmy Stamp



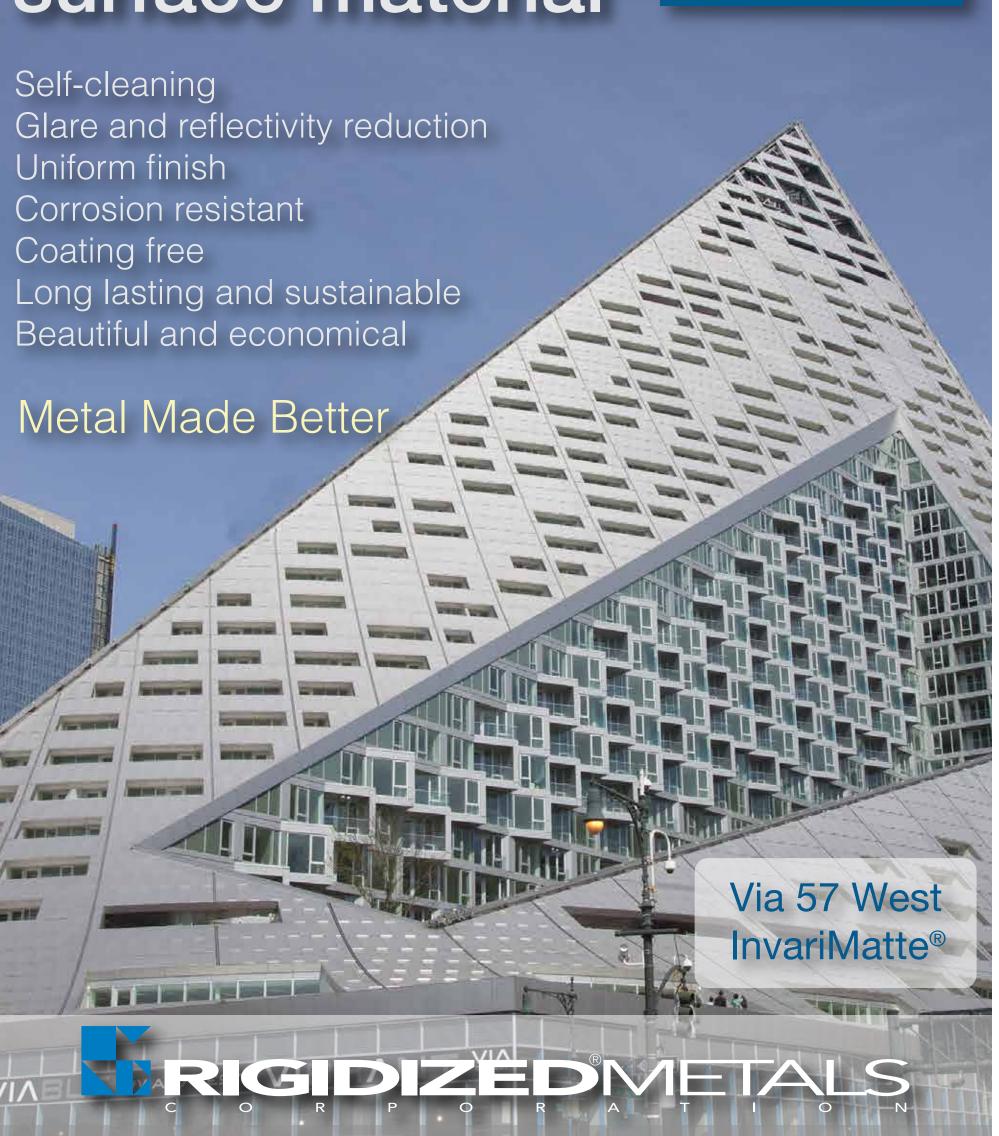




Top: Gold-painted GFRC panels highlight the entrance to the new nightclub. At night, the gold area is lit from above to further distinguish it from the rest the building, which is illuminated from below. Above left and far right: The corner entrance to the indoor theme park lifts like a curtain to reveal mirrored ceilings and a glass media floor, while the GFRC facade resembles a crushed drawing.

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212 Stuart Street

Architect: Höweler + Yoon Architecture **Location:** Boston, MA

Expected date of completion: 2021 Architect-of-record: Sasaki Associates Facade consultant: Vidaris

Construction systems used: Precast, Window Wall, milled limestone panels (at building base) and curtain wall (at building base)

Breaking ground later this year, 212 Stuart Street is located on the northern edge of Boston's Bay Village Historic District between two very different contexts: a midrise commercial corridor and 19th-century enclave of brick rowhouses. Architecture firm Höweler + Yoon was challenged with bridging these distinctive neighborhoods via a 20-story residential building that is contemporary in design but still deferential to the landmarked neighborhood.

The architects found inspiration in the masonry buildings in the area, notably the fluted piers on a nearby 1930s garage dubbed "Motor Mart." In response, they designed a series of super-scaled precast concrete panels to break up the relatively straightforward massing of the high-rise building into "courses" of varying height. The facade is constructed from 14-inch-thick concave panels whose rhythms produce a dynamic play of light and shadow; there's a depth and richness to the facade that echoes the surrounding historic architecture. The design was developed and refined over many iterations and with many physical models. The developer-client was won over by the idea with a small plaster prototype of the

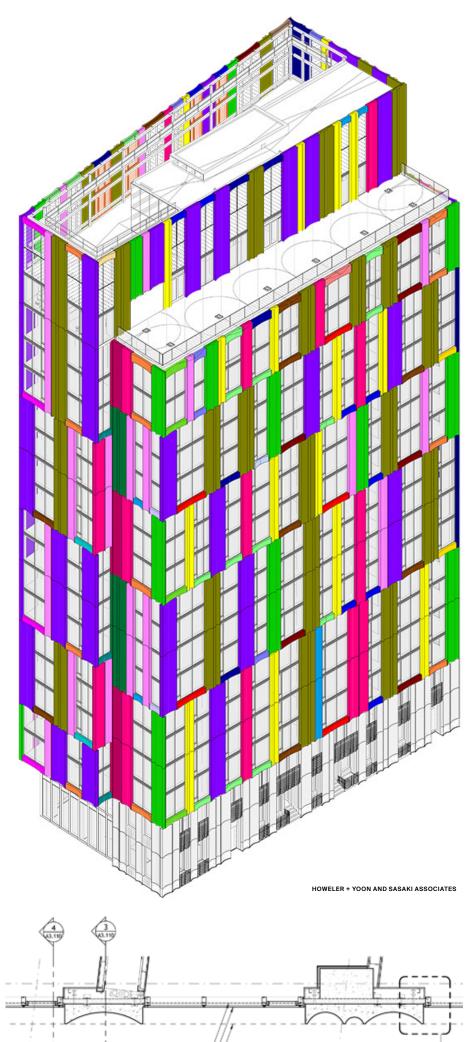
fluting but was ultimately convinced with a fullscale foam mockup created to study the lighting effects and to better understand how the deep concrete panels would affect the views from the inside.

The concave panels and the overall assembly were optimized in collaboration with precasters, who helped the architects realize that it would be more efficient to use nine unique panels than the three they initially proposed. Window walls and glass spandrels complete the envelope. The design is more complex than it first appears, with a lot of movement and deflection that required extensive coordination between multiple systems to create the appearance of a single unified building envelope. "Ultimately, we worked out all the details with the help of the precaster, the glazier, the facade consultant, and the architect of record, Sasaki Associates," said principal Eric Höweler. "It's a very clear diagram, but it turns out that requires a lot of work to get right."

The design of 212 Stuart Street was a collaborative process during which the architects also worked closely with the Bay Village community—who needed to be convinced. For nearly everyone except architects, concrete has a bad rap in Beantown, and the architects had to prove that they weren't trying to build another Boston City Hall. The 1930s Motor Mart that inspired their design helped with this: "People thought it was limestone, but it's actually precast," noted Höweler. "So we were able to show that there is a way to do precast beautifully. It doesn't have to look like City Hall." Jimmy Stamp





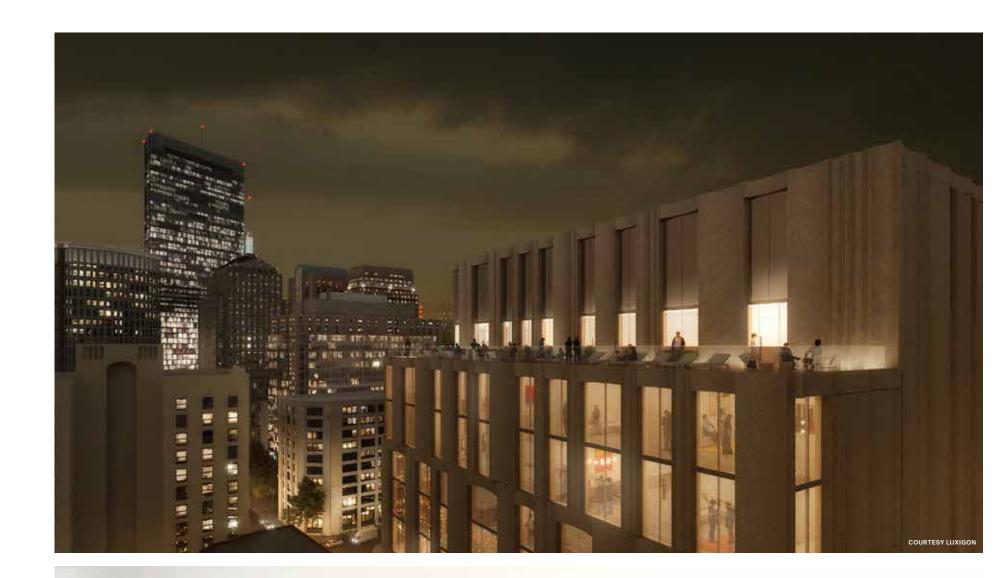


Top: Illustration showing the variation of concave panel types and repetition. The final pattern

HOWELER + YOON AND SASAKI ASSOCIATES

FACE OF GLASS

79 Facades May 2019



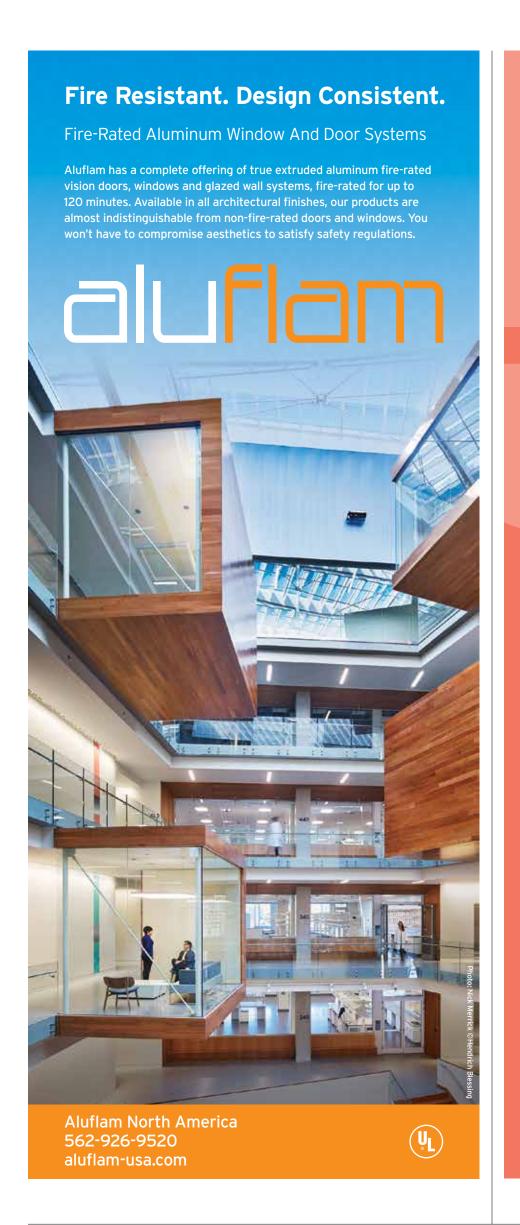


COURTESY HOWELER + YOON

Top: Exterior amenity deck. The building massing shears along the horizontal axis, stepping down to the South to accommodate an exterior amenity deck and to dimish the reading of the building from the neighborhood behind. Mechanical areas at the roof level are screened by scalloped precast panels with shadowbox infill.

Above: Townhouses at ground level. Milled Limestone scalloped panels and deep planters with ironwork line two walk-up units accessible from the street. These "new neighbors" respond directly to the existing townhomes across the street maintaining an active residential frontage.

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Metal

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With 30 years of experience, Alumil is one of the most advanced com panies globally in the design and production of aluminum extrusion products with state-of-the-art pro-. duction lines in all its factories. alumil.com

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BŌK Modern was developed by architect Russ Naylor, Principal of NC2 Studio, in response to the limited cost effective options on the market for custom railings and other architectural metal systems. bokmodern.com

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Sto is an international technology leader in the design and production of innovative building materials tailored to human needs. stocorp.com

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AIA Conference on Architecture 2019 June 6-8, Las Vegas conferenceonarchitecture.com

85 Highlights

West

Mapping Space: Recent Acquisitions in Focus

Getty Center 1200 Getty Center Drive Los Angeles, California Through July 14, 2019



Mapping Space: Recent Acquisitions in Focus is a provocative exhibition on view at the Getty Center that draws together recently acquired works of photography from the Getty's collection to explore shifting approaches to land-scape photography.

The exhibition examines the work of five artists—Uta Barth, Robert Kinmont, Richard Long, Mark Ruwedel, and Wang Jinsong—who each seek to upend conventional forms of survey photography through genre-shifting experiments in representation.

Mark Ruwedel's We All Loved Ruscha (15 Apts.) engages with the history of conceptual

art by reshooting the sites featured in artist Ed Ruscha's *Some Los Angeles Apartments*, a collection of iconic and quasi-anthropological photos of vernacular dinobat homes.

Wang Jinsong's series, One Hundred Signs of the Demolition, presents a superscaled view into the nitty-gritty details of late-nineties Chinese urban renewal.

Come to see how these genreshifting photos blur the lines between documentation, narrative, and protest; leave, perhaps, with a less rigid view of landscape photography.

Fast

Siah Armajani: Follow This Line

The Met Breuer 945 Madison Avenue New York, NY 10021 Through June 2, 2019



Sixty years of art from the Iranian-born artist Siah Armajani are now on display at the Met Breuer, highlighting nearly a hundred pieces of quietly (and loudly) politically revolutionary collage and architectural models.

Exile, the refugee crisis, and public art are all themes addressed overtly, but not directly, in *Follow This Line*, which charts Armajani's trajectory as an artist throughout the 1960s and '70s. Magic spells, computer-generated graphics, propaganda speeches, public art installations, and other ephemera are used to create a "language of exile." Of particular

note are the models from the 1974–75 series *Dictionary for Building*, a work that sought to create a visual vocabulary of architecture, of which only 150 pieces remain from what was originally thousands of compartmentalized building details.

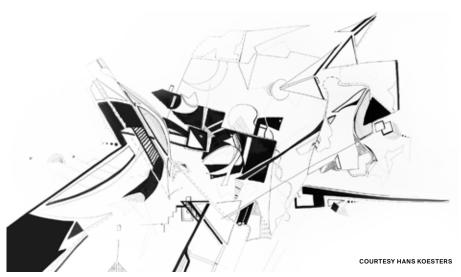
Running concurrently with Follow This Line is an installation of the artist's Bridge Over Tree in Brooklyn Bridge Park, the first staging of this public sculpture since 1970. The work will be on view and open to the public until September 29, 2019.

West

Collective Consequences

Taliesin West

The Kiva 12621 North Frank Lloyd Wright Boulevard Scottsdale, Arizona Through May 12, 2019



Los Angeles-based artist and designer Hans Koesters unveils an ongoing series of collaborative, improvised drawings at Taliesin West in Scottsdale. His project and exhibition, aptly titled *Collective Consequences*, shows what happens when a handful of people decide to draw simultaneously and unpredictably on one blank canvas.

Koesters began the project during a weekend-long drawing workshop at Taliesin West. There, he and his colleagues produced the "collective consequences" sketches by playing an adapted version of two drawing games, "Exquisite Corpse" and "Dot-the-

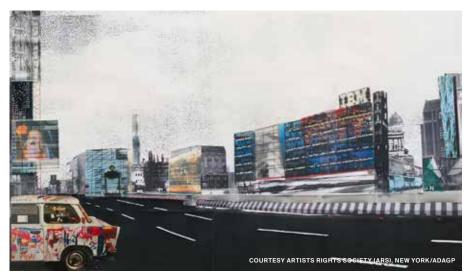
Dot," with groups of three to four students.
The game taught students to analyze spatial relationships while responding to the ideas and design concepts of other artists.

The ink and graphite drawings that comprise the series are abstract, monochromatic, and influenced by basic elements of art and architecture, such as fine lines, intersecting planes, and intricate patterns. Koesters's background and training in art and architecture allow him to merge the two disciplines as he and his colleagues put pen to paper to create this collection of bold, architectonic illustrations.

Midwest

Influencers: The Pritzker Architecture Prize

Carnegie Museum of Art The Heinz Architectural Center 4400 Forbes Avenue Pittsburgh Through September 2, 2019



Pittsburgh's Carnegie Museum of Art (CMOA) presents a new exhibition celebrating the 40th anniversary of the Pritzker Architecture Prize. Established in 1979 by the Pritzker family of Chicago, the prize has become the world's most respected award in architecture. The exhibition, organized by Raymund Ryan, curator of the Heinz Architecture Center, encompasses the work of over half of the honorees of the Pritzker Architecture Prize, including Jean Nouvel (whose competition entry for Central Berlin, 1990, is pictured

above) and the 2019 laureate, Japanese architect Arata Isozaki.

The show features works spanning four decades of architectural talent, vision, and dedication, with detailed drawings, models, and photographs from the museum's extensive collections. It also overlaps with the museum's annual summer camp, where children and families can visit the Heinz Architectural Center for inspiration from both the objects on view and the architecture graduate students who lead the camp.

86 Review

The Architecture of Closed Worlds; or, What Is the Power of Shit? Lydia Kallipoliti | Lars Muller Publishers | \$40.00

Where's the future we were promised? It's hard to follow popular culture in the early 21st century without encountering variations on this question. Almost everybody remembers The Jetsons. This show is usually the go-to example for those who still—for some reason—want a jetpack (or, perhaps even less realistically, George Jetson's threehour work week). Saturday morning cartoons may have showed us the shiny future in our living rooms, but the futures of the 20th century were designed in the workshops, laboratories, and drafting studios of architects and designers, and most of that never made it to television. Lydia Kallipoliti's new book, The Architecture of Closed Worlds; or, What Is the Power of Shit?, tells us, as the subtitle suggests, a messier set of stories about the hidden production history of design futures.

If commuters dream of a Utopia with flying cars, then urbanists, engineers, architects, and building scientists yearn for structures that clean themselves, eat their own waste, recycle their own water, and never need to tap an electrical grid. These are the "closed worlds" of the book's title. This book is a catalogue of attempts, over an 80-year time span, to create self-sustaining structures that can support human life. But Kallipoliti shows that, besides acting on mere biology and its technical problems, the image of the closed world is a cultural agent as well. This is a dream that's about more than survival; it's about independence and the freedom to explore and expand life into hostile or unknown territories. The closed worlds here bridge the space between mainstream architectural history, science fiction, space science, pure engineering experiment, and countercultural autonomy. There are spaceships and communes, quack medicine and fad diets. There are brave explorers risking their own lives (Jacques Cousteau's team living on the continental shelf), snarky art projects as cultural commentary (Ant Farm's "clean air" inflatables), astronaut trainees getting sick on their own waste (in a 1960 simulation at NASA Langley), utopian technocrats (Masdar City), and even hamsters (SEEK). Of course, Bucky Fuller makes several appearances.

The book is organized like one of the classic "catalogues" of 20th century future studies. American audiences will recognize antecedents like Paula Taylor's The Kids' Whole Future Catalogue, from 1982, a riff on Stewart Brand's 1968 Whole Earth Catalog, which featured underwater living, space settlements, and driverless cars. Another precedent, from the U.K., is the Usborne Book of the Future series, which presented domed cities, space elevators, and two-way wireless video chat via wristwatch. Like these books, Kallipoliti's gives us a format that's easy to browse casually at a surface level, and it's just as easy to get lost in its depths. Also like these other collections, this book is lavishl illustrated. The period photographs and drawings are complemented and unified by a series of complex and compelling diagrams by Temitope Olujobi, showing the technical networks that these structures weave in order to create and sustain their environmental conditions.

But Closed Worlds is not a work of optimistic retrofuturism. Kallipoliti includes, along with each project entry, a section on "Key Failures." Waste builds up, maintenance takes time, seals leak, crops fail—but even more broadly, hubris exists. The reach of these would-be world-makers often exceeds their grasp. These failures bring the projects back down to Earth, and Kallipoliti has invited a collection of practitioners and critics to join her in short essays that examine what it all means. These "Commentary" entries for select projects help contextualize the work in contemporary terms. No hagiography, the stories that Kallipoliti is telling in her book are far stranger and dirtier than simple nostalgia for lost futures would allow, and these stories are all the more instructive for their open-endedness.

This resistance to offer up easy answers is the book's strength, but it can also leave the reader a little confused and maybe should be poster size to do justice to their intricacy. But, again like in the projects, of material and energy from component to component, coded in the custom notation and color scheme invented just for at the Storefront for Art and Architecture in New York, it's hard not to get dizzy and lose sight of the big picture. Does this cat-

wanting. The diagrams by Olujobi are, like the projects themselves, fascinating. They the complexity here can be overwhelming at times. As we try to follow the movement the book and its accompanying exhibition

alogue of complex failures mean that any attempt to design systems this complicated will be doomed? What is the nature of the implied openness that is the complement to the closed nature of the worlds catalogued here? Is the closure ever really complete in the first place? Maybe the crucial question that we've yet to grapple with, as designers, is right there in Kallipoliti's subtitle: What indeed is the power of shit?

Here in the 21st century, architects are constantly reminded that the construction and maintenance of the built environment takes a disproportionate toll on the quality and health of the unbuilt environment. Kallipoliti's open questions about Closed Worlds are a vital reminder that these conditions—and our attempts to address them and answer her questions—are not new. As we discuss how built structures can, through partial or complete closure of their own waste-to-value cycles, mitigate their impact on the world, Kallipoliti's book reminds us that this larger world is itself both "closed" and "open." We, as a technical species, and as designers, have already begun to intervene in those complex, incomprehensible networks that Olujobi is drawing, but at the scale of the planet. Whether we have intended to be or not, we are ourselves the makers of a closed world, and we might as well get good at it.

Fred Scharmen is a Baltimore-based architect, educator, and frequent AN contributor. He is the author of Space Settlements, a book about NASA's 1975 design project, which is forthcoming in July 2019.





Top: BIOS-3, Institute of Biophysics, Russian Academy of Sciences, Siberian Branch in Krosnoyark, Russia. The BIOS-3 station is featured during a closed ecosystem experiment, while observed by one of the experiment's leaders, Vladimir Okladnikov, photographed on January 30, 1985. Above: Climatron, by Murphy and Mackey, with St. Louis Engineers Synergetics, Inc., St. Louis, Missouri, 1960. Climate control panels of the Honeywell control system at Climatron's Data Center, regulating the interior climate by heating and cooling.

87 Review

The Art Happens Here: Net Art's Archival Poetics

New Museum, 235 Bowery, New York | Through May 26



Melanie Hoff, Garlic Trust, 2019, a reinterpretation of Shu Lea Cheang's Garlic=RichAir, 2002-03.

What happens on the 'net stays on the 'net.

Or maybe not, according to the new exhibition The Art Happens Here: Net Art's Archival Poetics, a history of internet art from 1985 to today presented by Rhizome at the New Museum of Contemporary Art in New York. The show brings net art out of the tubes of the internet and into the gallery, part of an intensive archival project curated by Rhizome's artistic director, Michael Connor, with assistant curator Aria Dean. The show focuses on 16 artworks selected from Net Art Anthology—Rhizome's major online exhibition of one hundred works from throughout net art history-born-digital art that both resulted from and has influenced a rapidly changing network culture that pervades the real world, beyond the browser.

The show's title comes from M.River & T.Whid Art Associates (MTAA)'s 1997 Simple Net Art Diagram, which outlines the relationship between computers, the network, the artists, and the artwork. Two personal computers are linked with a label, "The art happens here," pointing to the space between the computers. An important distinction is made here—and in the show—between net art and a broader conception of digital art that focuses on techniques in a new digital media. "Net" implies that the art is a performance that investigates how people relate to each other and these machines.

We can see how the artworks in this

exhibition were at the forefront of using the technology and investigating what its critical and societal impact might be in the future. These were social networks before social networks, tag clouds before tag clouds, and streaming services before streaming services. Goofier early works include Alexei Shulgin's 1998 386 DX, a "band" (a computer) that performs punk music, and Alex Galloway, Martin Wattenberg, and Mark Tribe's StarryNight, a 1999 conceptual visualization of Rhizome's early email list-serv content, displayed with tags that connected dots linked to event "pages."

The later work in the show is more overtly political; the earlier works are more concerned with tautological questions about the medium/space of the internet—experiments in relating to one another and defining ourselves across new digital platforms, such as StarryNight and Simple Net Art Diagram. More recent works, however, signal how we use these platforms—and their more advanced, codified descendants, such as Facebook-as places to enact politics. For example, Miao Ying's 2007 Blind Spot is a Chi nese dictionary with all the words redacted that the Chinese government would censor online. Iranian artist-activist Morehshin Allahyari's Material Speculation: ISIS was an attempt in 2016 to reproduce 3D-printed replicas of a set of 12 artifacts from the ancient cities of Hatra and Nineveh, destroyed the year before by ISIS.

Perhaps this evolution makes sense, since those early experiments—the band

in 386 DX or StarryNight for the Rhizome "website"—are also a form of political speculation about social relationships in the face of new technology. The exhibition tracks these developments in the technology and art as well as changes in society that unfold alongside the art historical narrative of the show. Or perhaps it is less about the tracking of changes in broader culture, and more about the change in how the technology is used: As it becomes more user-friendly, it becomes available to people who are not only interested in it as an experimental medium. Or, as we become more comfortable with it, we begin to turn to how it can be employed critically, rather than simply as a technological experiment.

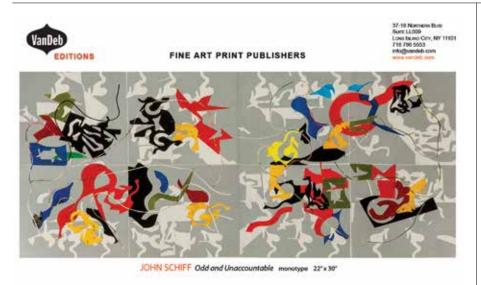
All of the works in the show resonate as a history that still echoes through our experience of online art, but also the internet in general. Are Facebook and Twitter net art projects, extended to their logical conclusion and rocket-fueled by capitalism? Like all good histories, the exhibition recasts our understanding of the present by displaying prescient works, such as a re-creation of Shu Lea Cheang's para-fictional Garlic=RichAir, a 2002-03 work that speculated on a future where capitalism had collapsed and garlic was the only currency. Artist Melanie Hoff created a video game for the 2019 show, complete with a Wi-Fi network where players could claim and trade their garlic. The work reads like an early version of so many blockchain speculations that artists today are

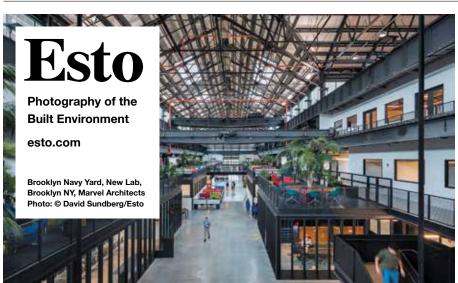
There is also a feedback loop between digital and physical in the net art posited here, which when viewed as a space for performance becomes a sort of new commons where different people come together, but also where people find others like themselves. Notably, Wolfgang Staelhe's *Untitled* turned a webcam into a lens for landscape photography as it broadcast the physicality of Manhattan's skyline in 2001, and serendipitously interfaced with current events as it captured the events of 9/11.

It would be a stretch to say these online sites have replaced physical terrain as the main locale of community as well as conflict, but it could be said that the sites inherited the DNA of conceptual art and spatial practice, leaving the net a final, feral Wild West for experimentation. Today, we have more controlled spaces like Facebook that are mediated by corporate interests, but new spaces are always opening up online and underneath it in places like crypto-raves and online black markets where artists can get their rocks off. Perhaps it is no coincidence that one of the most strik ing works—or spaces of performance—in the show is Olia Lialina's Give Me Time / This Page Is No More, an archive of GeoCities websites, logged at first at a moment noting "under construction" and then at a moment when they had been closed. GeoCities was shut down by Yahoo! in 2009.

Matt Shaw is AN's executive editor.

88 Marketplace









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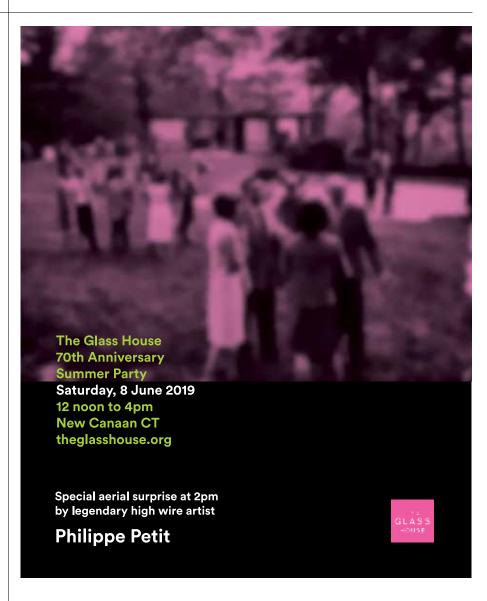
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90 Comment

An Architect Without Architecture? A Retrospective of Valdas Ozarinskas By Kazys Varnelis

Envision an entirely different turn in architecture after deconstructivism. What if, instead of neo-modernism and algorithmically generated formalism, architecture had pushed forward with conceptualism and a Brutalist take on the postindustrial world? *An Architect Without Architects?*, a recent retrospective on the work of Valdas Ozarinskas (1961–2014) at the Contemporary Art Centre (CAC) in Vilnius, Lithuania, gives a glimpse of such a possibility.

Ozarinskas was born in the northeastern Lithuanian town of Ignalina, where in 1974 the Soviets began to construct the largest nuclear reactor in the world, a facility that would later provoke concern within the European Union due to its lack of a containment building, a design it shared with the destroyed reactor at Chernobyl. After military service, Ozarinskas studied architecture and graduated from the State Art Institute (now the Vilnius Academy of Fine Arts). His first works were informed by deconstructivism, although he aligned himself less with the colliding planes of Malevich and more with Tatlin's faktura. The retrospective opens with one of Ozarinskas's first projects, the 1989 Tarakonas (cockroach), designed with Audrius Bučas, with whom he would frequently collaborate. An abstract composition made of debris found at construction sites, Tarakonas is depicted in photographs floating in the air and of indeterminate scale, perhaps a building, a light, a space probe, or a threatening insectoid robot. Though it is a take on Productivism, Tarakonas was made not at the beginning of the Soviet era, but at the end, when utopian ideal had been displaced by dystopian reality.

During the 1990s, after Lithuania regained independence, Ozarinskas became the deputy director of the CAC under visionary director Kestutis Kuizinas. There, Ozarinskas had the opportunity to explore his architectural imagination more freely. Built in the late 1960s by Vytautas Čekanauskas, the exhibit hall was inspired not by Soviet architectural dogma but by Aalto and European modernism. If the CAC was a significant building, by the time Ozarinskas became deputy director it was in desperate need of an update. Working with a minimal budget, Ozarinskas traced surgical interventions into the space by installing industrial steel doors in the galleries and repurposing found objects such as a glider wing which, suspended by cables, still serves as the reception disk. The result, akin to the earliest moments of Brutalism at Hunstanton, dragged rough poetry out of the simultaneous deprivation and optimism of the first years of reconstruction.

Ozarinskas is best known for collaborating with his wife, Aida Čeponytė, his longtime collaborator Bučas, and architect Gintaras Kuginis as the Private Ideology group on the Lithuanian pavilion at the Hannover World Expo in 2000. Here, Lithuania made its first appearance in a World Expo since attaining independence, and Private Ideology set out to insert Lithuania into the globalizing world with a structure based on the theme of flight. The result deliberately recalls the shape of a jet engine, while also evoking a science fiction flying craft. An international success, the pavilion brought disdain at home from the conservative Lithuanian Architects' Union, which wanted instead to promote the sort of weak

"folk" pastiche commonly found at Vilnius's most touristic restaurants.

Having little opportunity to practice as an architect after 2000, Ozarinskas immersed himself in the art world. Like the central figure in Tarkovsky's film Stalker, Ozarinskas compulsively sought out objects in the "Zone" of post-Soviet Lithuania. A display case full of Ozarinskas's jewelry reveals not precious metals and gems, but repurposed industrial parts and even some items that look like they might be from disassembled weapons. In the CAC cinema, which Ozarinskas and Bučias also designed, the exhibit featured black pillows of heavy rubber, lined with grommets and outfitted with an integral handle. Originally created for a 2001 concert by minimalist electronic group Monolake, these would reappear in his exhibits from time to time as seating; we'd sit on them as night bled into morning while Ozarinskas described how they could be an end to architecture, a reduction of all human needs to a piece of furniture for nomads.

In the 2002 Lux Europae light festival in Copenhagen, Ozarinskas and Čeponytė installed another controversial project, this time a reflection on the role of the Ignalina nuclear power plant in Lithuania's economy. The Ignalina plant, at this point, generated 90 percent of Lithuania's electric power, which was its dominant export, but was slated to be decommissioned as a condition of the country's ascension to the European Union. For the 2002 exhibit, Ozarinskas and Čeponytė suspended a series of cathode ray tubes from the ceiling of a Copenhagen train station, their cabling and suspension hidden in high tech orange

fabric bringing to mind anti-radiation suits worn by nuclear power plant workers. On the monitors flickered footage Ozarinskas had found from the reactor on Lithuanian television and that he depicted as a live feed from Ignalina. The result again brought round condemnation from conservatives in Lithuania who claimed the exhibit harmed the national image and demanded it be shut down.

The final two projects in the retrospective—and of Ozarinskas's life—index the anxiety provoked by the global financial crisis, which hit Lithuania hard. For a 2010 CAC exhibit entitled Formalism, Ozarinskas and Bučas filled the main gallery of the CAC with a gargantuan, 25-meter-wide version of the Monolake pillow. The optimism of 2001 had ended, however, and Ozarinskas described it as a "story of our failures," a black mass that smothered everything. Ironically, the Black Pillow achieved international success, being exhibited at the Liverpool Biennial in 2012. Having left the CAC, Ozarinskas found himself at the Antanas Mončys House museum in the seaside town of Palanga. His last show, Filters, was composed of a set of 300 x 137 cm photographs taken through welding filters. Rather than being continuous black fields, each photograph had a distinct texture, promising—but nevertheless denying—a hint of something visible beyond and reminding viewers of the darkness inherent in Malevich's reduction to what he called "the zero of form." Ozarinskas died five days after the exhibit opened, at the age of 53, leaving behind a rich legacy of work still virtually unknown in the West.



Valdas Ozarinskas, Foyer, 2014 Installation view, CAC Vilnius, 2018.

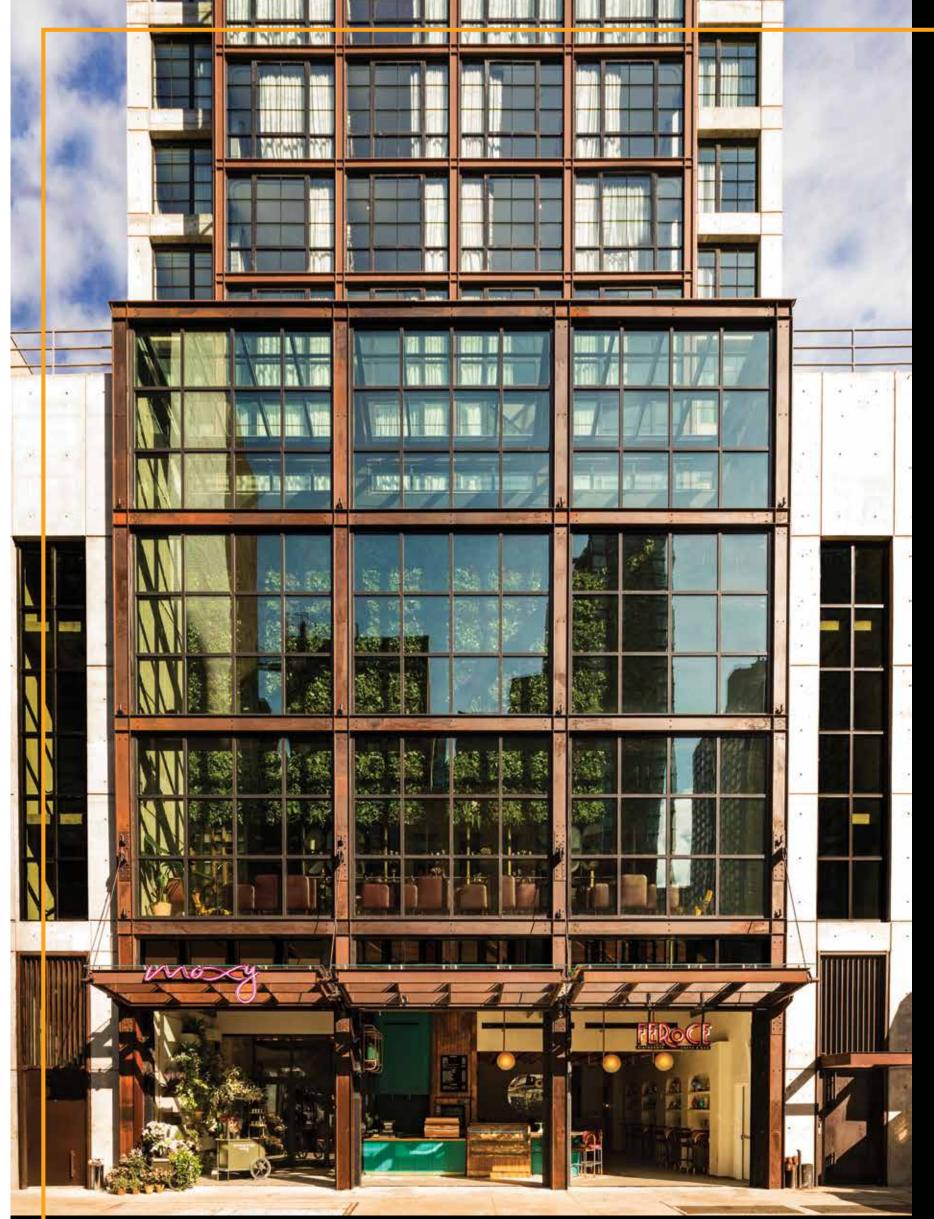
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Project: Moxy Chelsea Architect: Stonehill & Taylor Client: Lightstone Group Finish: Nomad Steel

Spec: Exterior Matte with Physical Texture Profile: Slab Edge Photo: Michael Kleinberg for Moxy Chelsea