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OCULUS FALL 2018 AGILE SPACES

9 Letter from the President

Going for Zero By Gerald F.X. "Guy" Geier II, FAIA, FIIDA, LEED AP

- 11 Contributors
- 12 Letter from the Editor Back to School By Molly Heintz
- 13 At the Center On View
- 15 Street Level Freeman Plaza West By Alex Ulam with Cassandra Gerardo
- 16 Open House New York Spotlight Snug Harbor Cultural Center & Botanical Garden By Claire Wilson

46 In Print

You Say To Brick: The Life of Louis Kahn By Wendy Lesser Review by Stanley Stark, FAIA, NCARB, LEEP AP

46 Index to Advertisers View the Oculus archive online: aiany.org

48 Letter from the Executive Director First Call for Fall

By Benjamin Prosky, Assoc. AIA

"Architecture students deserve to be taught all the skills that will set them up for success."

-Jane Smith, FAIA, IIDA

Read more on page 38

FEATURES

19 Introduction Agile Spaces

20 Staged Right

The new theaters at the WTC will provide exceptional flexibility for a wide variety of performance types. By Fred Bernstein

26 Designed to Heal

The best contemporary healthcare settings merge curative environments with humane values. By Bill Millard

33 Ready Player One

As agility becomes the new definition of business acumen, digital tools help designers negotiate an ever-changing landscape. By Deborah Wilk

OP-ED

38 Design + Business: Starting Young By Jane Smith, FAIA, IIDA

PORTFOLIO

39 House of Bricks

Architectural photographer Christopher Payne provides a glimpse into one of the last manufacturers of molded bricks in America. By Cassandra Gerardo

Oculus Acue spaces Cover: Rendering of the 499-person auditorium in a theater-in-the-round configuration at the Perelman Center designed by REX, now under construction at the World Trade Center in Iower Manhattan. Image: Luxigon

Corrections: In the Summer 2018 issue of *Oculus*, the names of the partners in the firm N H D M ("Agenda for Change") were printed incorrectly; the correct names are Nahyun Hwang and David E. Moon. In the story "Radical Remix," one of the design partners for Empire Stores was omitted; the project was designed by S9 Architecture and Studio V.

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GOING FOR ZERO

For decades, architects have been committed to improving the sustainability of their buildings. Sustainability is now a top priority for many design projects. LEED has become the international standard for sustainable design; hundreds of thousands of square feet are certified per day. At AIA New York, we regularly work with members, industry stakeholders, and all levels of government to promote sustainable design.

One area of sustainability, however, has until recently gone largely unnoticed by our field. While energy reduction, water efficiency, and material selection have long been the subjects of architectural attention, waste management is a new, often unexamined, frontier in sustainable design.

In 2016, members of the AIANY Committee on the Environment recognized this oversight and, with the support of The Rockefeller Foundation, gathered a group of architects, designers, building managers, and waste professionals to undertake an unprecedented examination of how waste flows through our buildings and neighborhoods. Participants met in multidisciplinary workshops and made over 40 site visits to evaluate a range of strategies for different building types and sizes. The result of this process was our Zero Waste Design Guidelines, meant to help New York City achieve

its goal of sending zero waste to landfill by 2030. The guidelines offer practical advice, but also serve as an inspiration to undertake more ambitious initiatives and cultivate broader conversations about waste in our city.

Since the publication of the guidelines, AIANY and the Center for Architecture have continued to engage architects and the public on the design of waste management. AIANY COTE member and guidelines author Clare Miflin has led zero waste lunch-and-learns at architecture and design offices throughout the city. And this summer, the Center hosted "Designing Waste: Strategies for a Zero Waste City," an exhibition that examined New York City's overlooked gray spaces for trash-the trash rooms, basement corridors, loading bays, and sidewalks where waste is closest to us.

The Center for Architecture took the exhibition as an opportunity to directly engage firms and offices on their waste practices. In June, we launched the AIANY Zero Waste Challenge with the support of the Durst Organization, which invited offices of all sizes to reduce waste generation and increase diversion rates. Twenty firms committed and worked with zero waste consultant Think Zero to develop waste management plans tailored to their spaces. Results will be shared at a program on October 9.



The Center for Architecture also signed up. As part of our efforts, staff waste disposal has been centralized to four main stations. We've enrolled in GreeNYC's Stop Junk Mail program and have decreased the volume of magazines and periodicals sent to our offices. With more than 200 events and tens of thousands of visitors annually, improving waste disposal practices for our programs and public spaces is an important priority. As a first step, we have switched to compostable cups, dishware, and cutlery, and will be working with our caterers to use ceramic plates and reusable service items in lieu of plastic. And this fall, for the first time ever, our annual Heritage Ball will be going paperless.

We hope that the improvements at the Center for Architecture and at the offices of Zero Waste Challenge participants will inspire more New Yorkers to engage in better waste practices at home and at work. Even small changes removing deskside printers and bins, cutting down on printouts—can make a difference in how much waste we divert from landfills!

Guy Seier

Gerard F.X. "Guy" Geier II, FAIA, FIIDA, LEED AP 2018 AIANY President

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Fred Bernstein ("Staged Right") studied architecture at Princeton University and law at NYU, and writes about both subjects. He has contributed more than 400 articles, many on architecture, to the *New York Times*, and is a regular contributor to *Architectural Record* and *Architectural Digest*. In 2008 he won the Oculus Award, bestowed annually by the AIANY for excellence in architecture writing. His latest book is *Dirk Denison 10 Houses*, published this year by Actar.

Cassandra Gerardo ("House of Bricks") is a writer and an art director who received an MA from the School of Visual Art's Design Research, Writing & Criticism program. Her research interests include design history, speculative design on technology, and how design impacts consumer culture and identity.

Bill Millard ("Designed to Heal") is a New York City writer covering the built environment, health, and interdisciplinary ideas. A contributor to *Oculus, The Architect's Newspaper, Architect, Icon, Content, Annals of Emergency Medicine, Metals in Construction*, and other publications, he is also writing a book on density and sprawl.

Christopher Payne ("House of Bricks") specializes in architectural photography and the large format documentation of America's industrial heritage. Trained as an architect, he is fascinated by design, assembly, and the built form. Payne is the author of several books, and his work has been featured in the *New York Times Magazine* and in publications around the world.

Jane Smith, FAIA, IIDA ("Op-Ed: Design + Business") is a business owner and a national leader in architecture, interior design, and higher education. Founding principal of the award-winning firm Spacesmith, she served as chair of the department of interior design at the School of Visual Arts in Manhattan from 2006 to 2018.

In addition to reviewing books for *Oculus* ("In Print"), **Stanley Stark**, FAIA, NCARB, LEED AP, is science and technology principal at Francis Cauffman in New York City.

Alex Ulam ("Street Level: Freeman Plaza West") is a freelance journalist who writes frequently about architecture and urban planning. His work has appeared in *Landscape Architecture*, *The Architect's Newspaper*, *The Nation, Discover, Macleans, The National Post of Canada, Archaeology*, and *The New Republic*.

"Architects are using these tools to broaden client understanding of design's critical value," says **Deborah Wilk** ("Ready Player One") about the growing industry use of virtual reality and augmented reality. Wilk's writing on art and architecture has appeared in *W, Christie's Daily, Art + Auction,* and *Interior Design.*

Claire Wilson ("Open House New York Spotlight: Snug Harbor") has been an *Oculus* contributor for 10 years. Based in New York City, she was the author of the *New York Timess* "Square Feet: Blueprints" column on design in commercial space. She writes frequently about real estate. ■

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BACK TO SCHOOL

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Every fall, I begin hounding my thesis-writing graduate students with a single question: "So what?" As they wade through primary research and cultural theory, it's intended to be blunt force shock that cuts through all the other questions swirling around in their heads. "So what?" asks each of them to take a hard look at their own hypothesis and consider: Why does it matter? Why is it relevant?

At *Oculus* we have an opportunity to ask those same fundamental questions in our quarterly issues, going beyond the analysis of a single, finished building to connect the dots among current projects by observing trends, raising questions, and putting current practice in context. We hope what you read in these pages will stick with you and, ideally, prompt you to start a conversation with colleagues about why something matters to the profession, to the city, or to you personally.

From this issue, you might pick up the gauntlet thrown down in the op-ed by Jane Smith, who argues that fundamentals of professional practice should be better integrated into the education of architects ("Design + Business," page 38). You may be intrigued by an expert insight in one of our features around the theme "Agile Spaces" (starting on page 19), regarding how interior spaces—and the design process behind them—are becoming evermore adaptable.

Amid these stories focused on change, we're thrilled to premiere a new series of images by photographer Christopher Payne. His visual essay on the Stiles and Hart Brick Company ("House of Bricks," page 39) is an ode to an ancient building material that remains vital today, perhaps for its

sheer versatility. Louis Kahn thought so, anyway (see Stanley Stark's review of *You Say to Brick*, page 46).

This issue also spotlights Archtober, the annual month-long celebration of architecture in the city. In honor of one of Archtober's central events, Open House New York (OHNY) Weekend (October 12-14), contributor Claire Wilson explores one of OHNY's listings in the borough of Staten Island, the Snug Harbor Cultural Center and Botanical Garden, which, at press time, had just announced some exciting new architectural plans by Marvel Architects.

Finally, check out a new and newsy column "Street Level" (page 15), in which writers Alex Ulam and Cassandra Gerardo point to improvements in the urban environment that alter our experience of the city.

In the next issue, we look forward to celebrating the 80th birthday of *Oculus* with some of the legendary editors and writers who've made their mark on the publication. We'll discuss a digitizing project that will ultimately make Volume 1, Issue 1, and all that follows just a click away.







In the meantime, we'll also be making content from current issues available online at www.centerforarchitecture.org.

On the Center's calendar, look out for upcoming Oculus Book Talks, with authors including Eeva-Liisa Pelkonen (*Exhibit A: Architecture Exhibitions that Made History*), Mark Lamster (*The Man in the Glass House: Philip Johnson, Architect of the Modern Century*), and Richard Sennett (*Building and Dwelling*).

So hit the books! As we all know, architects never really leave school. ■

Hein **Molly Heintz**

Editor-in-Chief editor@aiany.org

AT THE CENTER

Center for Architecture 536 LaGuardia Place

Close to the Edge: The Birth of Hip-Hop Architecture Through January 12, 2019

Hip-hop, the cultural movement established by the black and Latino youth of New York's South Bronx, began in the early 1970s. Over the last five decades, hip-hop's primary means of expression—deejaying, emceeing, b-boying, and graffiti writing—have become globally recognized creative practices in their own right, and each has significantly impacted the urban built environment. Hip-Hop Architecture produces spaces, buildings, and environments that embody the creative energy evident in these means of hip-hop expression. "Close to the Edge: The Birth of Hip-Hop Architecture" exhibits the work of students, academics, and practitioners at the center of this emerging architectural revolution.

Exhibition Curation & Design: Sekou Cooke Graphic Design: WeShouldDoltAll (WSDIA) Graffiti: Chino



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AT THE CENTER

Center for Architecture 536 LaGuardia Place

Paul Rudolph: The Hong Kong Journey

November 29, 2018 through March 9, 2019

In "The DNA of Architecture," a 1974 lecture, Paul Rudolph reflected on how people perceived the built environment: "We must use architecture, and the conditions of that use are constantly modified by matters both physical and spiritual. It may be the weather, the time of the year, our own particular time of life, our personal activities, our mood, the economic, political or philosophical twists and turns of fate; but, most importantly, it will be modified by our particular reading, and rereading, of history."

To celebrate Paul Rudolph's centennial, The Paul Rudolph Heritage Foundation and The Center for Architecture present "Paul Rudolph: The Hong Kong Journey," an exhibition of previously unseen drawings, sketches, and renderings highlighting a fascinating chapter in a productive career that helped define architecture of the late 20th century.





TOP: Rudolph's Bond Centre (now Lippo Centre) in Hong Kong. **BOTTOM:** Drawing of Bond Centre Lobby by Paul Rudolph, 1984.



STREET LEVEL

FREEMAN PLAZA WEST

BY ALEX ULAM WITH CASSANDRA GERARDO



MNLA's Freeman Plaza West viewed from Broome Street.

New York City has committed billions of dollars to containing stormwater runoff, currently a serious threat to surrounding waterways. Landscaping offers an effective filter with additional environmental benefits. The renovation of Freeman Plaza West in Lower Manhattan is part of a multimilliondollar stormwater runoff initiative in Hudson Square that uses permeable pavement and subsurface tree trenches to capture stormwater. Surrounded by roadways, including the entrance to the Holland Tunnel, where 12 lanes of chaotic city traffic merge into two lanes, the barren plaza was once a prime example of what Rem Koolhaas terms a "junkspace"—an unloved leftover of rapid modernization. But a new design by Mathews Nielsen Landscape Architects (MNLA) transforms the plaza into a highly usable destination, relying on landscape features to structure it. MNLA won the RFP issued by the Hudson Square Business Improvement District (BID) in 2010.

"The BID discovered that 40,000 people work in Hudson Square, yet they would go to SoHo for lunch. The challenge was to create a reason for people to stay in Hudson Square or come to Hudson Square," says Signe Nielsen of MNLA. "We looked around the district looking for opportunities for open space other than narrowing lanes on Hudson Street. There was a Port Authority parking lot we considered, but purchasing and reimbursing Port Authority seemed a bit of a stretch for our budget. I looked at a plan of the district and saw a huge area that is an entrance to the Holland Tunnel. When I went there, I noticed that once the cars get into lanes for the tunnel, they stop honking because they're in an orderly staggered sequence. Everyone has calmed down. Traffic is moving at five miles per hour. The fume and noise levels are lower, so I thought, How about this?"

Instead of a stone or concrete wall, MNLA used new and preexisting trees to mitigate the impact of roadways on the east and west sides of the space, and was even able to remove a lane of traffic along a critical boundary. The reimagined island becomes an oasis amid a busy thoroughfare, featuring lounge chairs with umbrellas, a Noguchi play sculpture for

children, an artificial turf area for yoga, and a lending library. "It's a perfect example of doing very little to make a space that people will appreciate," says Nielsen. "The budget was \$300,000 and we created two acres of space that people didn't have before."



- Gia Mainiero AIA, LEED AP, Associate Principal Dattner Architects

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Snug Harbor Botanical Garden's Carl Grillo Glass House will be open to the public on Saturday, October 13 for Open House New York Weekend.

OPEN HOUSE NEW YORK SPOTLIGHT

SNUG HARBOR CULTURAL CENTER & BOTANICAL GARDEN

BY CLAIRE WILSON

The best kind of adaptive reuse is the kind that captures the original synergy of a place, stokes it, harnesses it, then takes it off in a completely new and fabulous direction.

The Snug Harbor Cultural Center & Botanical Garden on Staten Island is one of those places. A complex of 26 buildings, it is almost more dynamic now than it was 185 years ago, when it opened as a bustling, self-sufficient community for retired seamen, complete with churches, concert halls, libraries, dormitories, a dairy farm, vegetable gardens, and a hospital. Today, it has been turned into a thriving center for local history, visual arts, performing arts, horticulture, natural world studies, and, by dint of its many handsome landmarked structures, architecture.

According to Janice Monger, president and CEO of the Staten Island Museum, which moved to Snug Harbor from nearby St. George in 2015, much of what goes on today at the center is informed by its original mission. "I'm thinking of sharing resources, pooling resources, communal living, makerspaces, and the population coming together with so many different talents," she said. "So much of the history of Snug Harbor is relevant today."

Located on 83 breezy, wooded acres with views of the Kill Van Kull and New York's Upper Bay, and a main stop on the Staten Island itinerary during Open House New York (OHNY), October 13–14, the Snug Harbor Cultural Center & Botanical Garden is the site's umbrella organization. Under its aegis are the Newhouse Center of Contemporary Art, the Music Hall (the second oldest such venue in New York after Carnegie Hall), and 14 distinct gardens, including the Chinese Scholar's Garden, a Tuscan garden, a rose garden, and the labyrinthine Connie Gretz Secret Garden, inspired by the children's book of the same name. A vegetable garden sells fresh produce to the public and supplies the kitchens of restaurants in three boroughs, including Chef Thomas Keller's Per Se.

Other institutions on the campus are independently run. In addition to the 137-year-old Staten Island Museum, they include the Staten Island Children's Museum, a popular catering hall, and the Noble Maritime Collection, a museum dedicated to the work of John Noble, a local artist who was passionate about Snug Harbor and the preservation of its history. The Noble opened in 1992 in one of the then still-derelict Greek Revival buildings that were built as dormitories for the Snugs, as the residents were called. It has been exquisitely restored.

It was Robert Richard Randall, the son of a wealthy Revolutionary



Lobby of the Staten Island Museum, the newest resident of the Harbor.

War privateer, who bequeathed the funds for Sailors' Snug Harbor in his will, drawn up by none other than Alexander Hamilton. The home for retired merchant seamen was to be in Manhattan, but when Randall died in 1801, Harbor trustees decided to build it on Staten Island and finance it with revenues from some 250 elegant homes they built in the area near Washington Square.

The first of the so-called "front five" Greek Revival buildings welcomed the first 37 "aged, decrepit and worn-out sailors," as Randall called them, in 1833. More Greek Revival structures followed, but over the years new structures were added in the Beaux Arts, Renaissance Revival, Second Empire, and Italianate styles. A grouping of small Victorian cottages built for the baker, the engineer, the farmer, and the gardener are still standing, now used for an artist-in-residence program.

In Snug Harbor's heyday, there were 900 Snugs and 50 buildings, including the 1893 domed Randall Memorial Church said to be a replica of St. Paul's in London, a cruciform 400-bed hospital (whose design was compared to an English prison), and a sanatorium. Sailors' Snug Harbor came through the Great Depression with a budget surplus of some \$4 million, but the cost of maintaining the grand buildings and caring for the Snugs in such an elaborate setting eventually became too much of a burden. Residents' rolls diminished, and buildings were abandoned. Demolition of some structures began in the 1950s; the marvelous church was one of those razed.

New York landmark laws in the 1960s saved what remained, including the breathtaking main hall of the Newhouse Center, featuring a cupola, clerestory windows, and mural on the ceiling. Also protected are the interior of the Music Hall and what is now called the Governor's House, yet to be restored.

Hewing to the original spirit of community and shared resources, there are now dance studios for rent, a music school, a Montessori school, a composting project, and an art school. At the artist studios for rent, artists will welcome visitors



on Saturday, October 13, for the first time for OHNY. In a decidedly 21stcentury take on adaptive reuse, Snug Harbor also hosts the prestigious Future of StoryTelling, an annual two-day summit by invitation only for leaders in media, business, technology, and the arts.

Restoration and renovation throughout the campus continue apace. The last of the "front five," Building E, needs refurbishing and a suitable occupant. With H3 Hardy Collaboration Architecture as consultants, the Staten Island Museum is renovating Building B, which will house some of its vast natural science and history collection. There are plans for a new annex to the Music Hall, which will provide much-needed ADA access for patrons and performers, new dressing rooms, storage for large-scale equipment, and a sizable community space.

Aileen Fuchs, president and CEO of Snug Harbor and former executive



A new annex is planned for Snug Harbor's Greek Revival Music Hall.

director of programs and exhibitions for the Brooklyn Navy Yard Development Corporation, took the position in July of last year and has her work cut out for her. She is overseeing more than \$30 million in fully funded capital projects now in the pipeline, including a new HVAC system, an electrical upgrade, and a new roof for Building C, one of the "front five." Infrastructure will be a priority. "We want to see what problems may be lurking around the corner and get ahead of them," Fuchs said. "We have so many beautiful structures that we have not been able to take care of properly."

Marvel Architects is the lead design team on a first-ever master plan now in the works for the center. Its goal is to enhance visitor experience throughout Snug Harbor, which many feel has not garnered the attention it deserves from the public. The plan calls for the addition of features common to most modern cultural institutions but historically lacking at Snug Harbor: adequate parking, wayfinding, improved pedestrian flow, food options, the creation of a visitor's center, and interactive technology.

The goal will be to continue on the path laid out for Snug Harbor when it was saved from the wrecking ball some 50 years ago. Said Fuchs: "I want to see our identity as an arts incubator continue to grow." ■



Perkins+Will's awardwinning Memorial Sloan Kettering Monmouth. The sun-filled atrium serves as a solarium with vertical circulation, café and lounge seating, and a community art exhibit.

Photo credit: Halkin Mason Photography LLC

In the 1960s, Ron Herron of Archigram ignited the imagination of a new generation of architects with his concepts for a "Walking City." The provocation: don't assume buildings need to be static. These mobile, modular microcosms could evolve on the spot, responding instantly to new conditions by changing not just their design, but also their location.

Perhaps this was Herron's playful take on the mid-century observation of fellow Brit H.G. Wells, "Adapt or perish, now as ever, is Nature's inexorable imperative." Adaptation of the built environment falls on the shoulders of architects, who in recent decades have grappled with evermore intense external forces like climate change and security mandates, as well as a force revolutionizing the way we think about interior spaces—namely, the imperative to integrate technology. As a kind of living species, our cities are slowly—sometimes frustratingly so—evolving to be stronger and smarter, and to serve people better. Our buildings are not yet on the move themselves, but they are becoming more nimble from the inside out. This somewhat elusive characteristic is best revealed in the design process and stories of use, rather than through finished photography. In following pages, our writers consider the subject of agile interiors for the 21st century through three lenses: culture, healthcare, and workplace. The common condition? Constant change. —*Molly Heintz*

STAGED RIGH

The new theaters at the WTC will provide exceptional flexibility for a wide variety of performance types.

BY FRED BERNSTEIN

Plans for rebuilding the World Trade Center, which began to emerge within days of September 11, 2001, have almost always included a place for performing arts. The intention was to make the 16-acre development (anchored by over 9 million square feet of offices) more than a 9-to-5 destination, and to provide a forwardlooking bookend to the retrospective 9/11 memorial and museum.

In early discussions, the World Trade Center Performing Arts Center (WTC PAC) was to have one or more resident companies. But over time, executives of the arts center, including its current president, Maggie Boepple, came to believe, she said, that "what NYC needed was a theater that commissioned new works." She adds: "We persuaded the board that we should be a producing house and not a presenting house," meaning that the WTC PAC wouldn't be a home to other companies, but a creator of its own attractions. That approach, however, required a facility flexible enough to accommodate the needs of both traditional and experimental works of theater, opera, dance, music, and the Tribeca Film Festival, which is planning to use the building each spring.

Joshua Prince-Ramus, the architect chosen in 2015 to design the center (now known as the Perelman, for its lead donor, businessman and philanthropist Ronald O. Perelman), imagined a place where auditoriums of various sizes could be combined, and where even the circulation spaces between those auditoriums could be employed by production designers. "The ideal building can be used as a device to help bring people into the space of the performance, even before they get to their seats," Prince-Ramus explains.





BEYOND THE BLANK SLATE

Founder of the Brooklyn firm REX, Prince-Ramus has had experience with flexibility: He collaborated with Rem Koolhaas of OMA on the Dee and Charles Wyly Theatre, a Dallas facility with a stage at ground level that can open up to the surrounding plaza, allowing not just the building, but its site, to be incorporated into productions. What the Wyly demonstrated, Prince-Ramus says, is that the old idea of flexibility just won't cut it. That concept—really the Miesian idea of "universal space"—assumed the availability (and affordability) of stagehands needed to make the change from one configuration to another. "People think, make it a blank slate and it's really flexible," Prince-Ramus says, "but nobody has

"We persuaded the board that we should be a producing house and not a presenting house." —Maggie Boepple



Rendering of the 499-person auditorium in a theater-in-the-round configuration. **TOP RIGHT:** Performing Arts Center construction progress as of September 4, 2018. **RIGHT:** Cutaway sketch of work, play, and public areas. TOP: The layout and character of the Play Level drive the design of the entire building. **Bottom:** Early sketches of the auditoriums' stageaudience variations.







the operations budget for that kind of flexibility. So you do one thing, and it becomes the de facto permanent condition."

A solution lies in the fact that it's easier to raise money for buildings than for operations, as any development officer will attest. So an expensive building that can rearrange itself at the flick of a switch makes more sense than a less expensive building requiring stagehands to transform it. With labor costs high, "There is increased tension between operational costs and capital costs," says Prince-Ramus. "We're seeing that in every kind of cultural institution." But architects, he says, "are only now responding with an updated notion of flexibility."

That notion, he says, involves providing "presets"—selected theater configurations known to have good sightlines and acoustics. "You invest in the capital costs to make sure you can

move between the presets with minimal labor costs," says Prince-Ramus. Directors will begin riffing off the presets, he says, so "if you do each of the presets really well, you get real flexibility." At the Wyly, he reports, "we gave them three presets (proscenium, thrust, and flat floor), and during the first four years, they staged 28 productions in 25 unique configurations." His conclusion?

"People think, make it a blank slate and it's really flexible, but nobody has the operations budget for that kind of flexibility."—Joshua Prince-Ramus The three auditoriums can be combined to form seven additional unique performance spaces, for a total of 11 arrangements, including a rehearsal room venue.























VR simulations of multiple theater configurations as seen from the audience's point of view.

"We proved the benefit of not providing 'universal' flexibility," which would have meant a black box that was too expensive to transform, but a more 'tailored' flexibility."

At the Perelman, there will be several times as many presets as at the Wyly: 11 so far, with more to come as the building moves toward its projected 2020 completion. "It's the original idea of the Wyly taken to the next level," says Prince-Ramus, who worked with London-based theater consultants Charcoalblue on the design.

From the outside, the building appears to be a simple box, though an unusually elegant one: it will be clad in slices of translucent marble sandwiched between sheets of glass. (The building will glow at night like Gordon Bunshaft's Beinecke Rare Book & Manuscript Library at Yale University.)

From the lobby, patrons will take stairs or elevators (arranged in four couplets, marked A through D) to a top

Each theater can take on multiple configurations, which are themselves impressively varied; the floor of the biggest room, for example, can descend into the space below to provide raked seating.

floor, the "performance level," containing the three theaters (with up to 99, 250, and 499 seats) and a small rehearsal hall. Those rooms are served by a continuous loop of circulation essentially a perimeter hallway an amazing 78 feet high—and by two internal hallways that cross in the middle of the building. Each theater can take on multiple configurations, which are themselves impressively varied; the floor of the biggest room, for example, can descend into the space below to provide raked seating. But if that's not enough, the "guillotine walls" that separate the theaters (already 43 feet high) can be lifted into the mechanical spaces above, turning two or three of the auditoriums into larger performance spaces that incorporate the hallway space between them, potentially seating 1,200.

DESIGNING A SEAMLESS EXPERIENCE

The ability to meld circulation spaces into the performance spaces is a feature Prince-Ramus is particularly proud of. "You can allow the public to encircle the auditorium, if that's interesting," he says. "Or if you think it's important for the public to swarm the auditorium and move in from one direction, you can do that, too." He adds, "You can use the interstitial spaces to put people into the context of the performance before the play begins." Directors he has spoken to, he notes, believe that feature will facilitate their jobs, easing audiences' "suspension of disbelief."





TOP: Exterior staircase rendering. Half this grand stair offers generous seating for people who want to linger and watch the bustling plaza. LEFT: Rendering of WTC PAC at night as seen from southeast.

In drawings, videos, and models in his DUMBO office, Prince-Ramus demonstrates some of the permutations, which involve moving not just walls, lights, and speakers, but catwalks and seating towers tall enough to incorporate multiple balconies. The systems needed to operate them include hydraulic lifts, electric motors, and, of course, computers.

"A person could come to a performance two weeks in a row and be in two very different buildings," says Prince-Ramus. But how will patrons find their way around, with each configuration requiring different circulation routes? The solution is provided by baffles (nine-foot-high partitions that unfold from the perimeter of the buildings like shutters) that can be deployed to direct patrons and keep them from going astray.

Among the smaller problems the architects are dealing with is how to assign seat numbers: the same "physical" seat could be in very different positions for different performances. Bigger challenges include emergency evacuation plans, which must ensure multiple means of egress no matter how the theaters are configured. According to Alysen Hiller Fiore, a REX director who is leading the project, "We had to get a series of temporary permits of assembly from the Quality Assurance Division of the Port Authority" so that theater administrators don't have to apply for permits every time they change configurations. (The Port Authority, rather than New York City, has jurisdiction over the World Trade Center site.)

Though the building may look like a "dumb box," Prince-Ramus says, it's anything but. Inside it's more like a Swiss watch, with countless moving parts. The goal is to produce a level of flexibility that will keep the Perelman's creative team—and audiences—on their toes. "If we do this right," Prince-Ramus says, "no one will have any idea how complicated it was."

HOK's Ng Teng Fong General Hospital "Respite Garden."

DESIGNED TO FEA

When people are at their most vulnerable, they deserve a facility organized around their needs. The best contemporary healthcare settings merge curative environments with humane values.

BY BILL MILLARD

FEATURE

A hospital serves patients best when it combines advanced resources with simpler components of recovery. Medical miracles can make it easy to forget time-honored curative factors like air, daylight, common-sense pathogen control, and comfort.

Stephen Yablon, AIA, designer of award-winning healthcare spaces around New York, begins from the patient's perspective. "What's disorienting and frightening about being sick is you're removed from your friends—from your life," he observes. "So any feeling that can reinforce a connection to life outside or nature is healing." Knowledge of environmental effects on health, he continues, extends from ancient Greece to "the early days of the modern movement, where architects like Alvar Aalto and Berthold Lubetkin saw a strong correlation between the quality of design and the quality of care."



In the mid-20th century, however, with the advent of exponential advancements in healthcare, the patients' subjective considerations were not seen as important anymore. As medicine grew more industrial, modernism abandoned the social ideals expressed in Aalto's Paimio Sanatorium Preitila in Finland and Lubetkin's Finsbury Health Centre in London.

Dehumanizing environments in today's U.S. healthcare system are familiar. A patient endures kludgy Frankenbuildings: cramped, disorganized waiting areas; unnavigable, equipment-strewn corridors; inpatient rooms lacking stimulation and dignity; and half-hearted aestheticizing gestures, all in an atmosphere of stale air, eerie fluorescent **LEFT:** Patients' room in Alvar Aalto's Saimio Sanatorium, 1933. **BOTTOM:** Steven Holl Architect's award-winning Maggie's Centre Barts in London. Colored interior lighting plays with the translucent white glass of the façade to create a joyful, glowing atmosphere, while large windows provide views of an extended garden and an adjacent church.

"Any feeling that can reinforce a connection to life outside or nature is healing." —Stephen Yablon, AIA

light, and noise that makes sleep impossible. The healthcare setting is often the polar opposite of a healing space.

Recognizing these problems, progressive architects are designing spaces that promote both advanced interventions and natural processes. The field of evidence-based design (EBD) is using architecture, medicine, and public health to back up intuitions about nature's effects on patient healing. (A 1984 study, for example, found that patients recovering from gallbladder surgery had shorter hospitals stays and needed less pain medication if their hospital windows faced a natural setting rather than a wall or parking lot.)

Yablon cites Maggie's Centres for palliative care in the U.K and Hong Kong among the most influential architectural achievements in recent years. "They have the attitude that healthcare architecture does not have to be unchallenging," he says; their design "makes you feel connected to life." Still, ambulatory and inpatient spaces are not homes, and clients





TOP LEFT: Ng Teng Fong General Hospital's staggered beds provide each patient with a personal window. **BOTTOM LEFT:** RMJM's Khoo Teck Puat Hospital's interior open-air courtyard. **RIGHT:** Close-up view photo of NTFGH's patient bay.

don't want them too homelike. "You want a building to communicate that you're getting the latest in care," says Yablon. Today's healthcare design aims to strike a balance between state-of-theart expertise and personalized care through natural materials and lighting, patient-friendly circulation, and details that promote patient activity.

SOMETHING IN THE AIR

Patients want to have an active role in their recovery. "The ability to control one's own environment is oddly not as common as you might think in hospitals," says William Roger, FAIA, regional leader of healthcare practice at HOK's San Francisco office. For inpatients, autonomy can involve something as simple as an operable window.

In two exemplary Singapore hospitals, Roger's HOK colleague Mara Baum, AIA, told a recent AIA National Conference audience, "Form follows performance." That nation's medical system outperforms the rest of the world on efficiency metrics including life expectancy and cost, according to Bloomberg rankings. (The U.S. comes in 44th of 51.) Despite the hot, muggy climate, HOK's Ng Teng Fong General Hospital (NTFGH, a 2017 AIA COTE Top Ten award winner) and RMJM's Khoo Teck Puat Hospital achieve impressive results by EBD criteria: natural ventilation, passive cooling, and ample vegetation in patient spaces. Henry Chao, AIA, principal at HOK New York, recounts how his firm's proposal (with Studio 505 and CPG) won the NTFGH competition by integrating the ground floor with nearby commercial buildings, pedestrian flow, and the Mass Rapid Transit system, so that NTFGH is a "hospital without walls," seamlessly meshing with the urban fabric.



Most patient wards in Singapore, where healthcare is universal but stratified in a public/private system, are multi-bed, not single or double occupancy as in the U.S. With 82% of patient beds in passively cooled, naturally ventilated rooms, NTFGH's floor plans stagger beds along sawtooth-shaped headwalls to give each patient a personal window, separating exhaled air and reducing pathogen transmission. (Diagnostic areas and treatment floors have air conditioning, which cools 30% of the hospital.)

Carnegie Mellon professor and EBD scholar Vivian Loftness, FAIA, notes that many interior features—green spaces and views, hands-free design minimizing surface transmission, and daylighting (including solar orientation and circadian color-temperature variation)—have strong research support. Natural ventilation, however, is "one of the big debates right now." Despite American air-exchange codes and assumptions about bacteria, viruses, and pollutants, natural ventilation may actually improve air quality and reduce hospital-acquired infections. "We're trying to strike an interesting balance here: how do we get the cleanest air possible under circumstances that support healing?" Baum says. "Studies indicate air-exchange rates are higher with natural ventilation with operable windows than with mechanical ventilation. But it's less controllable, so that makes a lot of Americans nervous."

"Mechanical systems are pretty badly maintained over time," Loftness observes. "If you're in an environment that isn't highly polluted, nothing beats fresh air through an open window." The proliferation of air-quality sensors, Baum adds, expedites monitoring of particulates, carbon monoxide, carbon dioxide, and other ventilation hazards. Designs need to accommodate metabolic and comfort differences between patients and staff. Loftness observes: "If all your thermal systems are geared toward nurses and doctors, the patients will be too cold," with the converse leaving staff overheated. This underscores the value of individualized control.

Site variables are pivotal. Natural ventilation would be undesirable for a facility located near high levels of vehicular exhaust or plant allergens. Yet in most of the U.S., Roger suggests, it is feasible during temperate seasons. Considering the potential energy and cost savings, this long-established practice may make a comeback even in a nation accustomed to HVAC.

"If you're in an environment that isn't highly polluted, nothing beats fresh air through an open window." —Vivian Loftness, FAIA

ROOM WITH A VIEW

American inpatient facilities are largely moving from doubleto single-bed rooms for both infection control and patient preference. Roger notes that retrofit projects must balance privacy, light, views, and safety concerns. "Typically, we want the toilet door to be as close to the patient as possible," he notes, since "most falls occur as the patient leaves the bed to go to the toilet." Simplifying that movement, providing sightlines to the corridor and the window, and minimizing isolation when an inboard bathroom blocks the corridor, he says, sometimes involves a hybrid room plan, "flipping the headwall" where gases and other utilities are located.

This can be expensive. "If you're doing an entire unit of rooms," Roger says, "you might simply be reversing the access to the gases in the wall for the next room over." Studies have examined whether alternating or uniformhanded designs affect medical errors. In surgical and obstetrical areas, he says, "same-handedness is important, with everything in the same place because the same room

DESIGNING FOR LONG-TERM TREATMENT

For patients visiting the same medical care facility multiple times a week for treatment, a calming atmosphere can provide comfort and promote healing. Memorial Sloan Kettering (MSK) and Perkins+Will created just such an environment away from MSK's Manhattan location and closer to patients' homes. Opened in January 2017, MSK Monmouth in Middletown, NJ, was designed to incorporate the building's natural surroundings into the patient experience. Natural light, earthy colors, organic textures, and views of the outdoors fill the interior of the facility, while exterior courtyards allow both patients and caregivers to enjoy the fresh air and changing seasons. "With cancer care, it's important for patients to see change and progress," says Suzen Heeley, executive director of design and construction at MSK Cancer Center.

Bulky, anxiety-provoking medical equipment such as linear accelerators used in external radiation treatment are often hidden away from patients' sight in a facility's basement. Perkins+Will and MSK redesigned the experience so patients undergoing treatment are

is being utilized by multiple surgical teams." In the patient room, however, "it hasn't been proven beneficial. We think it is, but no one's collected enough data to say it is definitively." HOK estimated a cost increment around \$1,200 per room for one hospital, he reports, which decided single-handed rooms were affordable.

Such cost-tradeoff decisions, Roger suggests, are best made on a long-range basis. His team studies the operational consequences of physical details—nurses' travel distance between rooms, adjacencies, multifunctional spaces that can reduce footprint and construction costs—"but not skimping on things that increase safety, decrease problems, and make a happier staff," he adds. Design, operations, and maintenance, he says, constitute "only about 8% of the 40-year life of a building."

Loftness has linked EBD findings and the financial variables guiding owners' decisions. Because ongoing personnel costs outweigh up-front costs, return-on-investment statistics for green amenities are persuasive. The savings may support features whose appeal awaits research confirmation, such as gardens or parks where patients can walk, as in Khoo Teck Puat (branded as "a hospital in a garden and a garden in a



Perkins+Will's Linear Accelerator treatment room at MSK Monmouth.

greeted with natural light, and gentle washes of diffused colored lighting play across the ceiling and wood wall backdrop throughout the procedure. MSK Monmouth received a 2018 AIA/Academy of Architecture for Health Healthcare Design Award. *—Cassandra Gerardo*

hospital"), or design contributions by acousticians, reducing noise so inpatients can sleep. "The notion that EBD is critical to the future," she recognizes, "has not necessarily resulted in a concerted effort among architects, engineers, and the medical community, or federal funding to gather that data. But we're getting the data from other countries."

BRINGING CARE TO THE PATIENT

A recent trend is to extend healthcare to patients instead of drawing them to large centers. This distributive model operates on several scales. One involves internal practices like moving specialized equipment to a patient's room rather than transporting the patient to an intensive-care unit. Waiting rooms are becoming obsolete as communication technology allows smoother remote triage. Yablon cites "patient-centered care" ambulatory facilities that eschew doctors' offices entirely in favor of open collaborative spaces with separate entries for patients and physicians, saving patients from navigating corridors in exposed gowns for tests.

On the community level, Yablon has explored the satellite clinic. He has designed a series of renovated neighborhood

public health centers first built under Mayor Fiorello LaGuardia; Mt. Sinai's clinic in Manhattan's Ansonia building, whose Beaux-Arts interior niches serve as work areas; and the Diane L. Max Health Center of Planned Parenthood in Long Island City, where color, daylight, and form are wayfinding aids for a polyglot Queens population and pastel-hued walls and graphics convey a sense of welcome.

Institutions' outreach reflects an implicit power shift in contemporary healthcare. "The move will be to go even further, like being in shopping malls," Yablon comments. "If your doctor's running late, you can do something else; you're not just stuck in a parking lot." Competition for patients, he finds, drives revisions in operations and design, recognizing the value of patients' time and perspectives.

Frances Halsband, FAIA, founding partner of Kliment Halsband, identifies a key principle in her firm's work with Mt. Sinai: "Somehow when you start talking about a patient,

"Somehow when you start talking about a patient, they stop being people. Patients are actually people that's the big revelation." —Frances Halsband, FAIA

they stop being people—they become something else. In fact, what works for people works for patients. Patients are actually people—that's the big revelation."

New Mt. Sinai facilities, including a local plastic-surgery space and an ambulatory clinic in Kyabirwa, Uganda, extend patient-centric thinking to reinvention of spaces and processes, notes Halsband. She says that surgery chair Michael Marin, MD, who understands that design is critical in changing a hospital's culture, "took me through his operating suite and said, 'You see this enormous machine? We don't need this. We just have it so we can bill Medicaid." The plastic-surgery suite eliminates excesses like waiting areas and cumbersome triage procedures in favor of roving concierges and large touch screens aiding doctor-patient communications. Kyabirwa's clinic will save lives among the underserved through streamlined spaces appropriate to appendectomies, not technology meant for heart transplants.

"It's not about innovation," Halsband summarizes. "It's about things we already know work well to make people feel comfortable in spaces they're in. The challenge is to bring more of those things into an environment that's become over-institutionalized."

Aalto and Lubetkin would presumably approve.







TOP: Kliment Halsband's plastic surgery exam rooms at Mt. Sinai offer patients privacy, while calming pastels and frosted windows provide a lightness to the space. **MIDDLE:** Colored wayfinding at the Planned Parenthood in Queens. **BOTTOM:** Mt. Sinai Ansonia's cosmetic dermatology waiting area is located in one of the building's historic turrets.

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FEATURE

READY PLAYER ONE

As agility becomes the new definition of business acumen, digital tools help designers negotiate an ever-changing landscape.





BY DEBORAH WILK

Take a moment and think back in time—oh, say, a year or 18 months ago—when the vision of a corporate employee walking through the common space of his or her office sporting a pair of virtual reality (VR) goggles was reserved for the playful workplace idyll of the tech and entertainment industries (replete with free snacks and foot massages). In the meantime, the majority of staffers were relegated to screens on desktops to create projects the old-school way, with web tools, employee memory, and company databases in need of updates. But as the tech industry has cast its cool glow on nearly every sphere of business, the gamer posture has entered the workplace at large. The response by architects and designers might be the quickest of all, however, as they have picked up VR's proverbial ball and made the quick pivot to run with it.

And why not? What other field can lay literal claim to the creation of virtual space? The difference is that architects and designers dare to build their visions in real space and, in so doing, add their distinctive signature to practical uses for the augmented and virtual reality landscape. It's a key part of the increasingly crucial agility game, in which all players on the field must be ready to shift the scheme, the time frame, and the plan to best serve clients' changing needs.

Woods Bagot integrates VR and AR into their design process to help clients visualize project developments in real time.

EXTREME FLEXIBILITY

"For almost 15 years, I've been involved with computational design, helping our tools work the way designers want them to work," says Shane Burger, principal and global leader of technical innovation, based in the New York office of Australia's Woods Bagot. "We build tools to deploy across our whole company, but they usually begin for specific projects. It's kind of 'designer as tool builder.' We've got a core team of computational designers and software developers, but we give the architects the tools they need to build something suited to their needs."

One of the firm's star-rated projects is the much-buzzedabout The Eleventh on Manhattan's new West Side, with design led by Bjarke Ingels Group. Woods Bagot, the project's architect of record, has deployed its own Wombat tool to enhance existing (although not always precise) 3D modeling applications to assist team architects in understanding and configuring the vast array of data—geometries, unit-ofmeasure translations, building components, and materials required to match various changing modeling bases. Wombat is an umbrella that marries the geometric capacity of Grasshopper with the imaging of Rhino to create "highly dynamic documents, showing all components in Revit," says Burger.



TOP: Gensler's office uses sensors to measure space usage and productivity. **RIGHT:** Visitors using VR headsets in Gensler's lab space.

"It's lightning-fast," he adds, "drilling down into data in as little as 90 seconds." It also deals with the pedantic yet crippling issue of conflicting naming conventions, unifying information in a set, searchable form.

As augmented reality and virtual reality are in the midst of adapting building's work process and modeling to rapidly shifting schedules and project briefs, they are similarly helping guide changes in design's business at large. "As our clients' businesses are changing, our traditional services are morphing into edge services," says Gensler Principal Sonya Dufner, who sits on the firm's client relationships management committee. As it happens, the classic first question for most projects-How do we design space most authentic to a client's character?-has always been a catalyst for uncovering needs a company didn't realize it has. Accordingly, lessons learned from such authentic space creation has led to rethinking past projects as new undertakings, such as brand generation. Current calls for informality and personal amenities secure client identities as industry leaders or change agents, as well as cultivars of individual employee growth. "Because people can work anywhere, an



office space needs to be a draw," says Dufner. In addition to providing access to leadership, politics, and daily goings-on, the office can offer technologies people don't typically have at home or can't get at remotely.

Having relocated its own Midtown Manhattan office in the last two years, Gensler New York has been using itself as a test case. A lab space features VR for use with 2D- and 3D-printed material. "Fluidity in those spaces excites people
about how to present ideas to clients," says Dufner. An open-plan layout allows passersby to catch the latest innovations, making the VR area a kind of performance space within the office. In addition to infusing the workplace with the playfulness of gaming, the healthy competition fostered among different project teams certainly bolsters firm excellence.

Comfortable settings (both formal and tertiary) for remote and in-person meetings with clients and contractors can morph into gathering spaces for staff to relax and socialize. "We've been careful to look at social spaces and think about how to program them," says Dufner. "We now have an experience manager who programs those spaces and builds culture." As a busy staff on deadline often works overtime, these areas become activated more and more after hours. Gensler has formalized such organic, off-the-clock mingling, fostering meetings about social activism, yoga classes, and the cleverly christened "attitude-adjustment" gatherings on Friday nights, featuring coffee and cocktails. "Lately, we've been watching a lot of soccer," quips Dufner during the World Cup games. The company experience manager-a new hire with a background in event planning-regularly meets with clients about how her role augments built space and office culture and how the staff itself becomes a draw for employee recruitment.

Clients are starting to understand that design services don't necessarily end after a built project has been completed.

CONSTANT CHANGE

The upshot is that clients are starting to understand that design services don't necessarily end after a built project has been completed. "Business is changing so quickly," says Spacesmith principal Ámbar Margarida. "CEOs move from city to city; companies change their real-estate assets almost instantaneously." That latter issue is a growing concern as clients have sudden needs not only to upsize and accommodate growing staff, but to downsize to streamline holdings. This often entails clients subleasing space and designers being asked to help optimize resources. "Architects have to be ready to rip out part of a project to make the space appealing to a variety of different companies that might move in," says Margarida.

Spacesmith clients asking for such changes include Abrams Books, the publishing house that values a distinctly 20th-century closed-door office culture. The pressing need to maximize space, however, meant a new solution had to be found. The place went







Abrams Books's open work environment contains flexible work spaces, including a full library, reading nooks, and small, enclosed meeting rooms.



from flaunting 93 private offices to one. "But we gave them many things in return," says Margarida. An open plan allows flexibility for staffers to work from where they want when they want. Personal workstations function as employee primary space and are offset with secondary spaces (conference rooms) and tertiary spaces (soft-seating areas as well as carrels in the café and library). The office now has a room-booking system to keep groups from having to roam to find a place to meet.

Because of the nature of publishing, small, quiet spaces are the most popular in the project. "We first tried enclosed rooms without ceilings to keep from having to budget HVAC," says Margarida, "but people felt they weren't private enough. So now we're using Framery phone booths that don't need HVAC." Gauging employee reaction and space use after the initial build has become key to maintaining design agility. But to streamline design efforts, designers also want to learn about client issues with the existing space. To enhance the questionnaires, which, regardless of the amount of detail requested, never seem to illustrate staffers' true needs and desires, the digital universe offers a new tool: sensors.

Margarida has been using Workplace Advisor, a utility developed by Steelcase in partnership with Microsoft. The software tracks space usage, reporting to wireless access points both before and after a build. "I can see live space utilization information and learn how space is being used by a client before we start." Afterward, the sensors offer information for possible retrofitting. " It allows us to be entirely engaged with the client," she says. "We can see what areas are popular, which aren't, and go back and change." Gensler similarly installed sensors in its own offices, allowing the team to make refinements for its own employees and collect useful information for clients. "We've been able to observe where our employers are creating amenities beyond the original plan," says Dunfer. "It helps clients understand how they should make similar investments in their projects."

MOBILE TOOLS

Choosing off-the-shelf software can be a challenge. While Woods Bagot maintains an advantage by building tools initially suited to the specs of its own projects, others are left to an array of digital offerings. The trick is finding a utility that eases the work process rather than adding to it. Margarida's group has used software that required loads of data entry, but didn't render an equivalent amount of useful info crunching in return. She is currently using Airtable, which she initially assumed would be for furniture specs alone. "It's gone far beyond its use," she notes with enthusiasm. "It's a super-smart Excel spreadsheet that can be used for everything from project management to data collection. We're starting to use it during the construction planning phase." Specifically, she's utilizing it for interior plans of the new multiuse residential, classroom, and athletic facility for New York University at 181 Mercer Street, adjacent to I.M. Pei's Brutalist icon, Silver Tower. "Airtable allows me to work out spec sheets for the project's different uses," she says about the customizable software. "The moral is to try out different things-parallel to the living office."

Another constituent part of the agility game is mobility, and the developers at Morpholio are dedicated to changing how architects and designers actually work on-site. App cocreator Toru Hasagawa admires the romance of the builder observing a vista while viewing a broad construction docu-

"It's exact science on-site in real time. It's almost like super vision." —Toru Hasagawa of Morpholio

ment between outstretched arms. But despite his appreciation for that posture of the past, Hasagawa heralds the digital banner by using advances in data compression to bring detailed renderings to the lithe iPad Pro. "With the addition of the pencil tool, there is more eye-to-hand capacity," he says. This allowed Morpholio—developed exclusively for mobile devices—to create a mobile clipboard. "Before, architects would go to the site, take photos, then review. But 2D yields only so much information. With augmented reality we can create



scale. The designer can scale the space based on different plans and show the client what the possibilities are." Accurate to the millimeter, "it's exact science on-site in real time," Hasagawa notes. "It's almost like super vision."

The superhero metaphor is apt, especially as design teams are increasingly requested to perform superhuman tasks. Real-life superheroes, however, know the value of collaboration. As with the Woods Bagot portfolio of products and Airtable, Morpholio's collection (including Trace for building, Board for interiors, and List, which blends data for presentation and review) depends on designer input. "We want all attention focused on design rather than data management," says Hasagawa. "Successful technology disappears—we don't want people to become the machine." The company's 2.0 range of products seeks to make the interfaces more human-based. "True feedback happens because it can respond to human brainstorming," he says. "We're trying to take away tech barriers and put creativity first."

Although Wombat is not exactly open source—the label for when software code is universally available, allowing improvements and enhancements by the tech community at large—its tools "are freely available," says Woods Bagot's Burger. "We'll build our own versions, but if it becomes a community thing, we're happy to collaborate." The innovations of The Eleventh wouldn't be possible without



TOP: Morpholio TracePro AR Perspective Finder. **BOTTOM:** Morpholio TracePro's Smart Fill tool calculates the area of the fill and updates as the user sketches.

community input of just the last two or three years, he says. "We all benefit from what everyone else does. Everyone likes to up their game."

As Spacesmith's Margarida puts it, "Architecture and design have always entailed an iterative process. When do you ever stop moving things around in your house? Agility has been with us for a long time. You're always designing. You have to be open to that." **OP-ED**

DESIGN + BUSINESS: STARTING YOUNG

BY JANE SMITH, FAIA, IIDA

Sheela Maini Søgaard, a keynote speaker at A'18, this year's national AIA conference on architecture, extolled the virtues of "Design + Business" to the 5,000 or so architects assembled at Radio City Music Hall. The theme was splashed right up on the screen in the branded typeface of Bjarke Ingels Group, where Søgaard serves as CEO and partner of the dynamic international architecture practice. The graphics impressed and her points convinced, but many in the audience wondered why they were listening to a business partner, rather than an architect, address a crowd of mostly AIA members. But perhaps this was telling?

More than anything else, the architect's business experience often conjures up feelings of dread instead of visions of opportunity and excitement. I wondered how many practice leaders left Søgaard's talk with a pit in their stomachs rather than dreams of big-picture innovation and risk-taking that mark Ingels's practice.

Still, we have to face facts: Architects need to be better business thinkers to succeed and thrive in today's world. We need to improve at accounting, marketing, rainmaking, negotiating, and managing. With these skills, we can build better, bigger, and more rewarding works of architecture.

Which raises another challenge: time. Who can absorb all that finance and management work when the real work of design needs to be done? Large firm partners either have these skills or have dedicated experts in-house who handle finance and management, Søgaard acknowledged in her talk. She went on to cover topics of cash flow, business development, and marketing, which should be as intuitive to architects as design development and construction documentation. I wonder, at what other conference would esteemed leaders of industry receive an Accounting 101 lecture as their keynote address? What professional group would be told that a strong operations team is a key to profitability? It's actually an embarrassment, and no fault of Søgaard's. She was speaking to her audience.

The time for a massive paradigm shift is now. We need to make professional business competencies as essential and integral to practice as design is to the fully formed architect. Architecture is equal parts art, science, and business, and all three legs of the stool must be sturdy to succeed. All three, I'd argue, are equally enjoyable. Business is fun and exciting. It makes the process of architecting better.

Even more important, today's emerging entrepreneurial geniuses realize that creativity and inspirational ideating are linked to business planning and follow-through. Millennials are graduating ready to take on the world: They have big ideas for empire-building endeavors that are both world-changing and personally rewarding; architecture students are no different. They deserve to be taught all the skills that will set them up for success. Sugarcoating leads to disappointment and disillusion once they enter the workforce. Our students are capable of learning holistically the business and design of architecture. Let's not sell them short.

By the completion of the typical architecture bachelor or master's program, young designers know they will be working with engineers and other project consultants and have been schooled in the collaborative process. They have completed technical courses, and studio professors have drilled them in the necessity of building a full design and technical team. Conversely, they have spent little or no time on the business aspects of architecture practice, except for the rudimentary basics covered expeditiously in the one mandatory professional practice class. As former AIA CEO James P. Cramer implored in a 2012 article posted on Design-Intelligence: "In studio, teach the current metrics in finance, marketing, professional services, and operations." He called this the "Design/Enterprise model." Every studio course should detail everything, including costs, design efficiency, square-foot metrics, and the likely marketing overhead for each project, said Cramer.

With an integrated model, students can be exposed to professional practice early in the curriculum. As they learn the basic principles of design, they simultaneously learn the basic principles of professional practice. Traditional architectural educators may say there's no time, and that focusing on the business waters down the design. I counter: If there's no time in school, when will there ever be?

I propose we step back and reconsider architectural education, starting with a proposition of integrated practices— "design + business," as Søgaard suggests. We should support the Association of Collegiate Schools of Architecture and National Council of Architectural Registration Boards, who earlier this year launched "a data collection initiative to better understand the range of approaches to teaching professional practice in degree programs."This information will be critical to schools as they seek to integrate business precepts into design thinking, where it certainly belongs.

Integrated practice will help establish the best and most promising path for architecture. Under this model, I see a bright future for the next generations of architects, who will have their clients' complete confidence as designers and trusted advisors. And instead of tuning into a lecture once a year, we'll cultivate an ongoing mindset that informs an ever-improving profession and built environment. ■

HOUSE of BRICKS

Architectural photographer Christopher Payne provides a glimpse into one of the last manufacturers of molded bricks in America.

TEXT BY CASSANDRA GERARDO



J.



Unlike the manufacturers of modern extruded bricks, which contain wirecut holes that extract excess clay, making them lighter and cheaper to produce, the Stiles and Hart Brick Company, located in Bridgewater, Massachusetts, and operational since 1886, produces over 70,000 traditional solid molded bricks per day. "It's like pottery. There are different colors and slight variations that make a façade more pleasing to the eye," notes photographer Christopher Payne, who is fascinated with the product. "Once you notice them, you see them everywhere." Stiles and Hart bricks constitute the structures of Ivy League institutions such as Harvard, Yale, and Brown; pave the prominent municipalities of Massachusetts; and comprise Boston landmarks like Fenway Park and Faneuil Hall.



Previous page: A 100-year-old brick mold still in use.

Above: Brickmaking begins daily at 5am. Workers extract clay from nearby pits, place it into a conveyer, mix it with water, and then press it into branded molds.





Workers remove the bricks from their molds and cure them for 36 hours in wheeled drying racks, which are set on tracks. The machinery may be over a century old, but the technology is highly automated, directing leftover heat from used kilns into this preliminary drying areas. The clay is then wheeled into a beehive kiln, where outside gas burners blow hot air into the oven, cooking the bricks over the course of four days. The position of the bricks within the kiln and on the drying racks will determine their final color. Shown here is one of Stiles and Hart's six kilns half full. Baked bricks are packed onto pallets, shrink wrapped, and shipped out across the country. The process from clay pit to pallet takes two weeks.

Christopher Payne is showing an expanded version of this series in the exhibition "Brick by Brick: The Erie Canal & the Building Boom" open from October 2, 2018–January 19, 2019 at the ArtsWestchester Gallery in White Plains, NY. For more details, visit artswestchester.org/ brick-by-brick-exhibition.





IN PRINT REVIEWS

You Say To Brick: The Life of

Louis Kahn, by Wendy Lesser. Farrar, Strauss and Giroux. New York, 2017. 377 pp.

This biography of Louis Kahn portrays him as a very divided man. As an architect, he evolved from a socially committed modernist in the 1930s and '40s to a globally prominent designer of seminal, important, and often monumental buildings during the 1950s to his untimely death in 1974. Kahn emerged as one of the most influential architects of the postwar era.

Born in Estonia in 1901, Kahn came to the U.S. with his parents in 1908 and settled in Philadelphia. As a youth he demonstrated significant artistic talent and went to the



University of Pennsylvania School of Fine Arts, where he studied architecture. Kahn was influenced by Paul Cret, one of his professors, and by a year spent in Paris.

Lesser follows the architect's career and also explores his highly involved life. During Kahn's European travels-both his year in Paris and his sojourn in 1946 at the American Academy in Rome-he was deeply influenced by the qualities of mass and monumentality, which became important components of his later work. While most modern architects look forward, Kahn looked back toward the virtues of much older architecture. He began teaching at Yale in 1947, and in the mid-1950s he became permanently associated with Penn, where he was the central figure at the Philadelphia School of Architecture. Teaching became an anchor in his professional life, and he developed a reputation for gnomic pronouncements.

Kahn's career path was slow and thwarted. His breakthrough came

INDEX TO ADVERTISERS

ALPHABETICAL INDEX

ABC Stone Trading 5
AISCCV2
Architectural Grille14
Architectural Record -
Innovation Conference 10
Artistry In Architectural Grilles 47
Bison
Burns Engineering15
Existing Conditions Surveys, Inc 7
Fisher & Paykel
Grassi & Co
Hendrick Architectural
Historical Arts & Casting
Municipal Testing Laboratory CV4
Ornamental Metal Institute
Of New York
Severud Associates Engineers1
Rieder North AmericaCV3
Steel Institute Of New York
Swan Drafting Services 47
The Falcon Group

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with the design for the Yale University Art Gallery (1953), which brought him prominence within the architectural profession. As his practice grew, he kept his office staff small, leading to significant inefficiencies, delays, and changes. Indeed, Lesser depicts the office as chaotic, a cross between an atelier and a graduate student seminar. But his staff was devoted, as he made the work compelling. Over the next 20 years, Kahn produced his most enduring achievementsthe Salk Institute in San Diego; Phillips Exeter Academy Library in Exeter, New Hampshire; Richards Medical Research Laboratories in Philadelphia; Kimbell Art Museum in Fort Worth, Texas; Indian Institute of Management in Bangalore; and National Assembly Building of Bangladesh in Dhaka.

A poor manager, however, Kahn delivered projects late, was indifferent to the bottom line, and had strained relationships with clients. His obsessiveness and frequent changes to improve projects sometimes led to successes that were admired and innovative, but problem-laden. Meanwhile, Kahn was leading a divided and secret personal life: in addition to having a wife and family, he had multiple liaisons, including two mistresses with whom he had children.

By the 1970s, Kahn's professional life had grown more disordered. Though he had hired more employees and new commissions were coming in, he was constantly traveling, and his practice continued to lose money. In March of 1974, he died anonymously in New York's Penn Station. Of the major projects he left unfinished, only three were ultimately completed in a form recognizably his, thanks to some of his devoted associates: National Assembly Building in Dhaka, Yale Center for British Art in New Haven, and Four Freedoms Park in New York.

Steven Korman, a client who knew Kahn well, characterized the architect's divided self. "He really cared about all the people he was involved with," said Korman. "He wasn't conventional. He didn't want to hurt people. He did, but he didn't want to." Lesser does an admirable job of capturing Kahn's remarkable career and the divided self that produced it.

Stanley Stark, FAIA, NCARB, LEED AP, is the book critic for Oculus.



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LAST WORD

FIRST CALL FOR FALL

BENJAMIN PROSKY, ASSOC. AIA EXECUTIVE DIRECTOR AIA NEW YORK CHAPTER CENTER FOR ARCHITECTURE

Archtober, NYC's Architecture and Design Month, turns eight in 2018! This year's festival returns with 31 days of lectures, tours, screenings, and programs organized by 60+ partners across the five boroughs. Every year, our lineup of events celebrates the breadth and diversity of New York City institutions engaging with architecture, design, and the built environment. As New Yorkers, we're lucky to have such a vibrant ecosystem of organizations highlighting the importance of design in everyday life.

The festival's popular Building of the Day series of architect-led walking tours continues, featuring new projects including The Shed and a new waterfront park, Hunters Point South (by this year's President's Award winner WEISS/ MANFREDI with SWA/Balsley), as well as historic icons like the airport-terminal-turned-hotel TWA Flight Center and Bronx Community College's Marcel Breuer masterpieces. The Center for Architecture will expand its family-oriented offerings for the month, with a Build a LEGO City Family Day, a Build and Wear Halloween Costume workshop, and the launch of its Urban Explorers

downloadable building guides. Once again, don't miss Archtober favorites, including Pumpkitecture, where architects live-carve to compete for the prized "Pritzkerpumpkin," and Archtober Trivia Night, organized in conjunction with Housing Works Bookstore Café and Urban Archive. On October 25, join us at Chelsea Piers to celebrate design excellence and the Center for Architecture's 15th anniversary at our annual Heritage Ball, this year honoring WEISS/MANFREDI, Larry Silverstein, Commissioner Mitchell J. Silver, Beverly Willis, FAIA, and the Beverly Willis Architecture Foundation.

Archtober's month of festivities will kick off on October 1 with "Close to the Edge: The Birth of Hip-Hop Architecture," curated by Sekou Cooke of Syracuse University. The exhibition will display works by practitioners, academics, and students who apply the primary elements of hip-hop—deejaying, emceeing, B-boying, and graffiti painting—to produce spaces, buildings, and environments that embody the creative energy of this cultural movement. In November, join us for the opening of "Paul Rudolph:



Photo credit: Yusuke Suzuki

The Hong Kong Journey," to mark the architect's centennial birthday. The Center for Architecture has partnered with the Paul Rudolph Heritage Foundation to showcase previously unseen drawings, sketches, and renderings that highlight a fascinating chapter in Rudolph's career. Be sure to check out the exciting talks and programs we will host in conjunction with these exhibitions. ■

