

A New Gold Standard for Green Architecture

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As floods, fires and extreme temperatures worsen, these designers are making the case for resilient building



Architects Andrés Duany and Elizabeth Plater-Zyberk. (Jeffery Salter)

By David Walter

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In 1981, architects Andrés Duany and Elizabeth Plater-Zyberk broke ground on the vacation town of Seaside, Fla. Seaside was a planned community designed to cut through the (then-literal) smog of America's car dependency. To make driving both unnecessary and

undesirable, the husband-and-wife team narrowed streets while widening footpaths — and laid out Seaside's grid so that stores and community buildings were just a few minutes away from any home on foot.

Just as cannily, Duany and Plater-Zyberk cloaked their eco-conscious strategies in the aesthetic veneer of Main Street Americana, the better to appeal to buyers who had yet to absorb scientists' growing concerns about fossil fuel use. The result was an influential hit, both locally and on the global stage: In 1998, Seaside's Rockwellian cheerfulness was the backdrop for the Jim Carrey movie "The Truman Show."

Three years ago, though, Duany and Plater-Zyberk sold their Miami-based firm DPZ, now called DPZ CoDesign, to its senior architects and began instead to draw a small annual salary. The idea was to spend the final act of their careers as an in-house think tank, pondering the biggest architectural questions of the day. Chief among them: Is the world now approaching "green" design all wrong?

To hear Duany tell it, the answer is yes. In the architecture world, he says, green design has become morally and aesthetically stagnant. Prizewinning eco-conscious buildings are little more than gadgets: "I call it 'gizmo green.'" Meanwhile, he says, the preoccupation of today's sustainable design — minimizing carbon dioxide emissions and mitigating climate change — is naive at best and a dereliction of duty at worst. Mitigation is fine, he says, but it cannot be architects' main standard for greenness.

What Duany and Plater-Zyberk want to see instead is a tougher, more urgent type of green architecture that works to ensure our built environment can stand up to the next century of climatic assaults. On the level of town planning, this means incorporating weather shelters, water caches and emergency coordination centers in residential neighborhoods — similar to the way that planners portion out features such as fire hydrants and storm drains.

On a building level, Duany and Plater-Zyberk are advocating what's called climate-resilient or adaptive architecture, meaning flood protection, backup generators and building fortifications. These are needed not just in coastal or tectonic hot spots like, say, San Francisco, but in every city, town and homestead set to be affected by global climate change. Which is to say, every city, town and homestead.



The D.C. suburb of Kentlands, designed by Duany and Plater-Zyberk, in Maryland. (Courtesy of DPZ CoDESIGN)

“We’re not going to make it on climate change,” Duany says. “Sustainability is about mitigating and reducing emissions. Adaptation and resilience is about being ready for the changes that are being made.” This line of thinking is a startling, almost dystopian, evolution for two practitioners whose work typically operates in a sunnily utopian vein. (In addition to Seaside, their portfolio of planned communities includes the bucolic D.C. suburb of Kentlands.) But adaptation isn’t just a moral imperative for architects, the pair argue. It’s also simply where the business is heading.

[Extreme climate change has arrived in America]

“In 2022, the next IPCC [Intergovernmental Panel on Climate Change] report comes out. And everyone knows it’s going to be disastrous,” Duany says. At that point, he predicts, there will be a shift in demand toward tougher, more climate adaptive architecture. (The IPCC has warned that even if humanity manages to cap emissions at 1.5 degrees Celsius, or 2.7 degrees Fahrenheit, above preindustrial levels, the world will almost certainly see severe climate effects, including increased flooding, sea-level rise, heat waves, food insecurity and population displacement.)

Plater-Zyberk is more academic when speaking on the subject of climate change adaptation. She spent 18 years as the dean of the University of Miami School of Architecture and now teaches a class there on climate resilience. But she shares her husband's sense of urgency. She says that while her profession has begun to acknowledge the importance of adaptive architecture in theory — the American Institute of Architects endorsed the practice in 2018 — putting it into practice has been a muddled exercise. “About a year or so ago, when I started looking for the adaptation plans that municipalities and local governments were putting into place, I found that most of them were in fact about reducing emissions: You know, ‘Let’s make the government buy electrical vehicles!’ And so on. There was very little adaptation.”

After two years spent studying climate change and drawing up plans for DPZ's take on the “climate adaptive” town of the future, Duany — the salesman of the couple — started presenting the firm's findings to potential clients, including city leaders in the eco-conscious states of California and Colorado. This first round of meetings was encouraging, Duany says. But government contracts aren't his focus. “If I was in Sweden, we would work more with the government. But in this country, the government does almost nothing anymore. So you have to work for for-profit developers,” he says.

“Sustainability is about mitigating and reducing emissions,” says architect Andrés Duany. “Adaptation and resilience is about being ready for the changes that are being made.”

In July, Duany presented some of his ideas to an online gathering of the National Town Builders Association. Over the prior few months, some of DPZ's climate-resilient home plans had been tweaked to address the covid-19 pandemic: Think more outdoor space, fewer narrow hallways and rooms with disinfecting UV light fixtures. But Duany's thesis remained the same. “Lots of bad things are coinciding, and we should be designing places for those who wish to get through this for a generation or two in better shape,” he told the audience.

He then scrolled through building prototypes, developed in partnership with architect Korkut Onaran. For affluent families, Duany proposed a multigenerational alternative to McMansions, resembling the walled courtyard houses found in Latin America, Europe and Asia. These compounds' walls protect against wind, rain and storm surge. Clusters of eight or so walled compounds would surround a central green that could be used for vegetable farms, exercise facilities or a small schoolhouse. Resilient adaptations such as backup generators, solar panels and water purification facilities would come standard. The goal, Duany said, was to design communities that could be “partially self-sufficient” in the weeks after a disaster.

Duany also showed a less expensive option: linked networks of townhouse and apartment complexes, none higher than five stories. (Tall buildings, he says, are less resilient — you don't want to be trapped on a high floor when the power cuts out.) Outdoor common areas would be linked by covered arcades to guard against wind, snow and fierce sunlight. There would also be shared food gardens, recycling spaces, tinkering sheds and gathering places.

These kinds of communal spaces strengthen bonds among neighbors, which in turn allow communities to bounce back faster after disasters, Duany says — something that planners now call “social resilience.”



Boilers sit on the roofs of buildings in the Ocean Bay apartment complex in New York as part of a resilience project. (Leticia Barboza/New York City Housing Authority)

What sets DPZ’s climate-adaptive designs apart from many celebrated “green buildings” — with their floor-to-ceiling triple-glazed windows, “living walls” and curtains of LEDs — is just how ordinary they look. Duany and Plater-Zyberk’s adaptive residences are clad in the kind of vaguely upscale, history-referencing ornamentation common across American suburbia. In his July presentation, Duany showed prototypes in a variety of commercially mainstream styles: from the smooth stucco and curved gables of the Cape Dutch style, to a Southern Greek Revival pastiche built using white siding.

[The pandemic has shown us what the future of architecture could be]

So far, the strongest stylistic through-line of resilient architecture is its lack of a signature style. Hana Kassem is a principal and sustainability expert at the New York office of Kohn Pedersen Fox Associates. Over the past few years she has led the architectural mega-firm’s push into the realm of climate resiliency. “There’s not a specific aesthetic as of yet” for

adaptive design, Kassem says. She explains that a lot of its most important adaptations are largely invisible: strengthening foundations, insulating core mechanical systems and tucking away backup generators.

Instead, what unites this emerging architectural genre is an ethos: “The word that comes to mind is ‘flexibility.’ The idea is that you have spaces or features that have a certain day-to-day use. And then when there’s an event or a period where the climate is threatening, you can pivot those spaces to a different use.” (Think of a storm barrier with a sitting bench carved into it.)

“In the past, a lot of design was very conscious of sustainability and resilience because resources were limited,” says architect Elizabeth Plater-Zyberk.

For now, you can design a screamingly modern glass-and-concrete bunker and fairly hold it up as a paragon of Climate Change Adaptive Architecture. But you could also do the same for a renovation of a 19th-century farmstead. Indeed, some of the world’s most enduring design styles — from the cross-ventilated mud-brick homes of northern Africa to the heat-insulated stone houses of New England — are examples of ways that humans have adapted their living spaces to nature’s whims.

In a way, Plater-Zyberk says, America’s current lack of housing resilience is a deviation from this history and a consequence of the country’s success. “In the past, a lot of design was very conscious of sustainability and resilience because resources were limited,” she says. Hardy materials were often close at hand, and people were attuned to the qualities and vulnerabilities of the land that they built on. By the 20th century, architects had shifted toward standardized building materials that were attractive and easy to use. But these materials often had a shorter life span and weren’t necessarily tailored to the environment. The task for today’s architects is to re-engineer the kind of architectural durability and environmental sensitivity that past generations took for granted — all while nature itself grows more unforgiving.



At the Coney Island Houses complex in New York, efforts to promote community resilience include an elevated common area with seating. (Leticia Barboza/New York City Housing Authority) (FTWP)

Not everyone will want to move in to the kind of freshly built resilient communities that Duany and Plater-Zyberk hope to build worldwide. An equally important challenge for climate-adaptive design, then, is that of retrofitting older buildings for the weather of the future.

Since the devastating effects of Hurricane Sandy in 2012, New York City has been at the forefront of grappling with this task. In 2015, the New York City Housing Authority (NYCHA) began a \$3.26 billion project to repair and retrofit more than 200 of its public housing buildings for increased resilience to climate change. As that budget suggests, retrofit is not a cheap or easy endeavor. This is just as true for individual homeowners as it is for city governments: While emissions-friendly home upgrades like solar roofs often qualify for tax credits and subsidies, most home renovations geared toward climate-adaptive design don't yet qualify for financial breaks.

Nor is retrofit always the wisest approach. “At first blush, your first response is let’s retrofit, let’s repurpose. If something’s already built, the sustainable thing to do is not to tear it down and build a new thing,” says Kassem. “But on the other hand, at some point you need to evaluate the amount of effort poured into retrofitting any building. That needs to be weighed against the value of the building itself and how efficient it is.”

Renovating public housing is still probably New York’s best way to pioneer resilient design on a neighborhood scale. Because these complexes are owned by the government, planners can act holistically and with full regulatory standing. (As compared to the slower work of going block by block, trying to persuade individual property owners to voluntarily invest in upgrades.) Also, and just as important: History shows that lower-income people typically suffer the most after floods, heat waves and other climate disasters.

[New York’s most famous skyscraper shrank its planet-warming emissions. Can the rest of the city do the same?]

During Hurricane Sandy, for instance, Brooklyn’s Red Hook Houses — the borough’s largest public housing complex — was inundated with more than six feet of storm surge. The neighborhood’s drainage system was pummeled by waves of excess seawater. With nowhere else to go, the surge burst through sewage linkages to flood basements, where architects from bygone eras had placed all of the complex’s boilers and electrical hubs. The damage left the complex without power, heat or water for weeks.

Red Hook Houses is in one of the city’s lowest-lying waterfront zones — on reclaimed, landfilled marshland. Most of its buildings date to the late 1930s. The goal of the NYCHA renovation project is not only to bring the complex up to date with present-day building standards, but also, the agency hopes, to create a forward-looking playbook that can eventually be applied to the rest of the city.

One of the simplest climate adaptations, for instance, involves painting all the rooftops in a complex the same shade of a sun-repelling white to reduce the ambient temperature of a neighborhood during a heat wave. “Private property owners face similar challenges, but they don’t have the bandwidth for experimentation,” says Joy Sinderbrand, the head of NYCHA’s resilience program.

For the Red Hook Houses retrofit, the agency partnered with Kohn Pedersen Fox’s Kassem. “You don’t want the measures you take to constantly remind people of how vulnerable they are,” she says. “You don’t want to add stress to people’s daily lives, for them to say, ‘Oh yeah, I’m within the flood plain.’ ” That’s why NYCHA’s retrofit efforts tend to treat high, looming walls as a method of last resort. Instead, one of Kassem’s main strategies in the Red Hook Houses is to elevate the courtyards between buildings well above normal ground level, to create “lily pads” that should stay high and dry even during exceptional flooding.

In most places, the means of achieving this “lily pad” elevation is unobtrusive: a landscaped 5 percent gradient. During and after a storm, these elevated areas should create protected zones where residents can strategize, coordinate and seek relief. In normal times, they look like a nice park. This underscores a principle of climate adaptation: Instead of thinking of landscaping as purely decorative, ask: Is there a way that my acreage can serve as a protection from extreme weather?

Kassem also scattered the complex’s utilities infrastructure across futuristic, aboveground “pods.” This strategy represents another key principle of resilient design: Never put all of your eggs in one basket, and definitely don’t put that basket in a flood-prone basement.



Duany and PlaterZyberk hope to build resilient communities worldwide. (Jeffery Salter)
Duany would offer another precept for climate-resilient architecture. “You have to remember not to be Calvinist about it,” he says. “A lot of the climate mitigation stuff wants you to suffer. It’s about penance: You screwed up nature, so you have to suffer. You have to live badly and in the cold and dark ... and it has to look bad.” He continues: “What we’re saying is no. It’s a pleasure to be able to open a window. It’s a pleasure to have your children go out and go to the pond and find fish for dinner.”

Duany and Plater-Zyberk's vision may be modest about designers' ability to prevent climate change. But they are optimistic about architecture's ability to better marry people's lives with their environments. "If you want to do mitigation, you have to do what Greta [Thunberg] does. You have to write letters to the senators, and the senators have to write letters to the president, and the president has to lobby the oil companies," Duany says. "But adaptation says you can begin tomorrow. Adaptation is absolutely local. It prepares your community for the coming tough times. It's very empowering."

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