GROWING UP

As New York City's real estate battles for space, its schools are looking skywards

Words by Elissaveta M Brandon

PREVIOUS PAGE AND THIS SPREAD ABA Studio's vertical expansion of St Luke's School (2018) includes a gymnasium, classrooms, offices and a rooftop playground

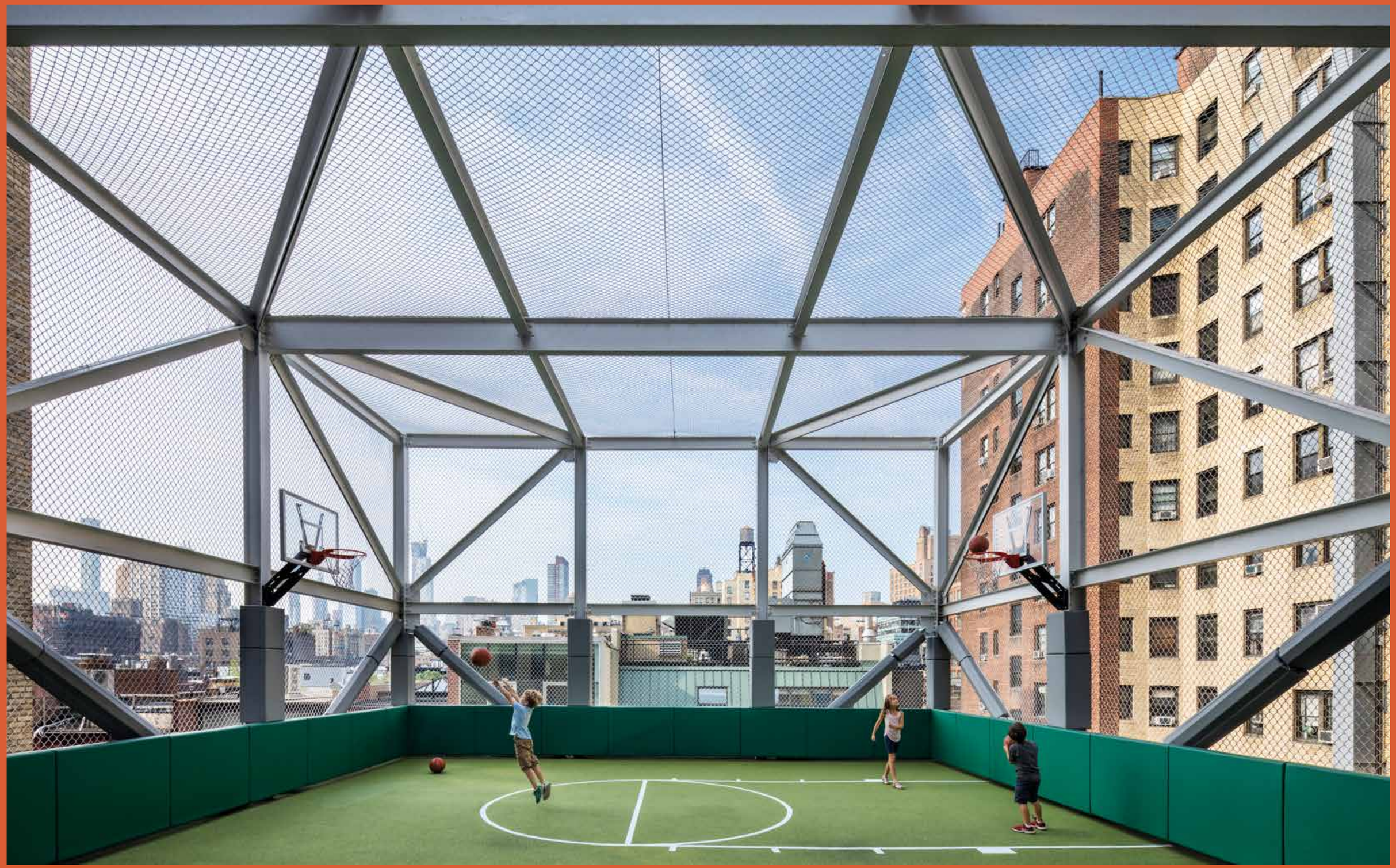
IN THE CITY of Skyscrapers – where buildings race each other to the skies, landscaped parks grow on elevated railways and cars stack vertically in automated parking lots – looking up for space is standard practice. For schools, the need for real estate in New York City has led to a slew of vertical expansions that seem fit for the city, but maybe less so for children.

In many parts of the world, schools are synonymous with low-rise, horizontal architecture. In recent years however, most notably in densely populated cities, schools have been growing more vertical. In Sydney, Grimshaw Architects is designing a 17-storey high school. In Berlin, Sauerbruch Hutton last year delivered a large copper-clad rooftop extension for the Berlin Metropolitan School. And in Hong Kong – one of the densest cities in the world – 'rooftop schools', occupying the tops of tall buildings, have been a thing since the 1950s.

In New York City, almost any building type – from townhouses to offices – has been converted into a school at one point or another. Squeezed by real estate and plagued by overcrowding, existing schools have had to get creative in their quest for growth. In true New York City fashion, they have been looking up for answers.

In the early 20th century, as New York City's population was booming, large educational institutions were constructed, such as Brooklyn Technical High School – a gothic-meets-art deco skyscraper built in 1933 – or John F Kennedy High School in the Bronx, an eight-storey monolith built in 1972 to serve a whopping 4,000 students. Following a debate around the relationship between school size and performance, however, the city entered a small schools revolution in the 1980s; large high schools were subsequently broken into a series of smaller, easier-to-manage ones. But as the city's population continued to grow, many of those smaller schools – already at capacity – were asked to absorb more students.

'Overcrowding has been an issue since they started building schools in cities,' says Sharon Haar, a professor of architecture at Taubman College at the University of Michigan, who wrote a book on the topic, Schools for Cities: Urban Strategies (2002). For a while, she explains, schools would simply build more buildings, and when they ran out of room, they would take over the basketball court, or 'plug in a new building shape', or uproot themselves and find a different location. For public schools, growing next door was usually possible. For private schools, expansions have been a trickier undertaking. 'Private schools don't have access to ▶



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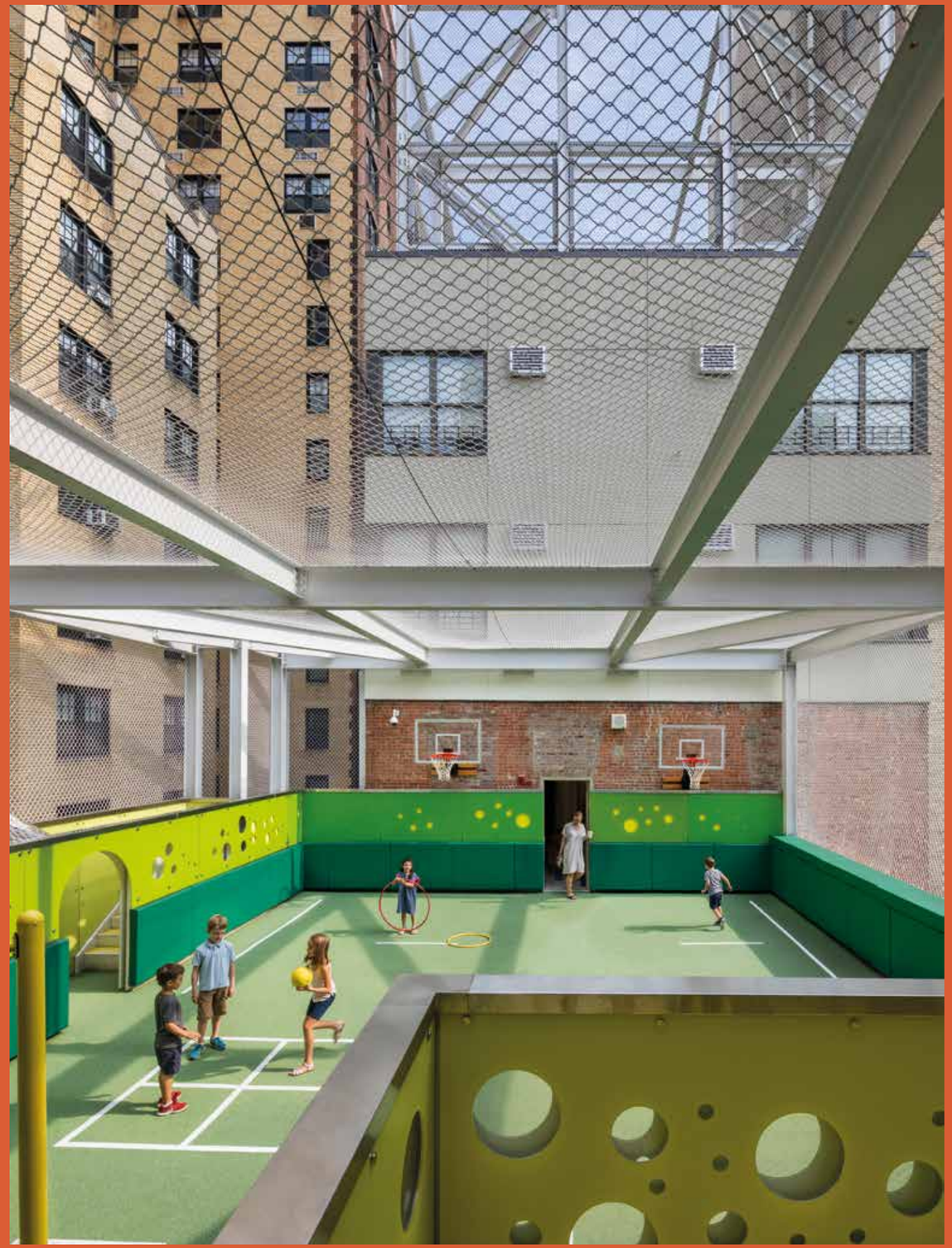

PREVIOUS SPREAD AND LEFT Rooftop 'play decks' at Rodeph Sholom, designed by MBB Architects (2018)

BELOW At St Hilda's & St Hugh's (2019), MBB designed a rooftop playground divided into three zones

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'When you stack things vertically, you bring them closer together.' Eran Chen

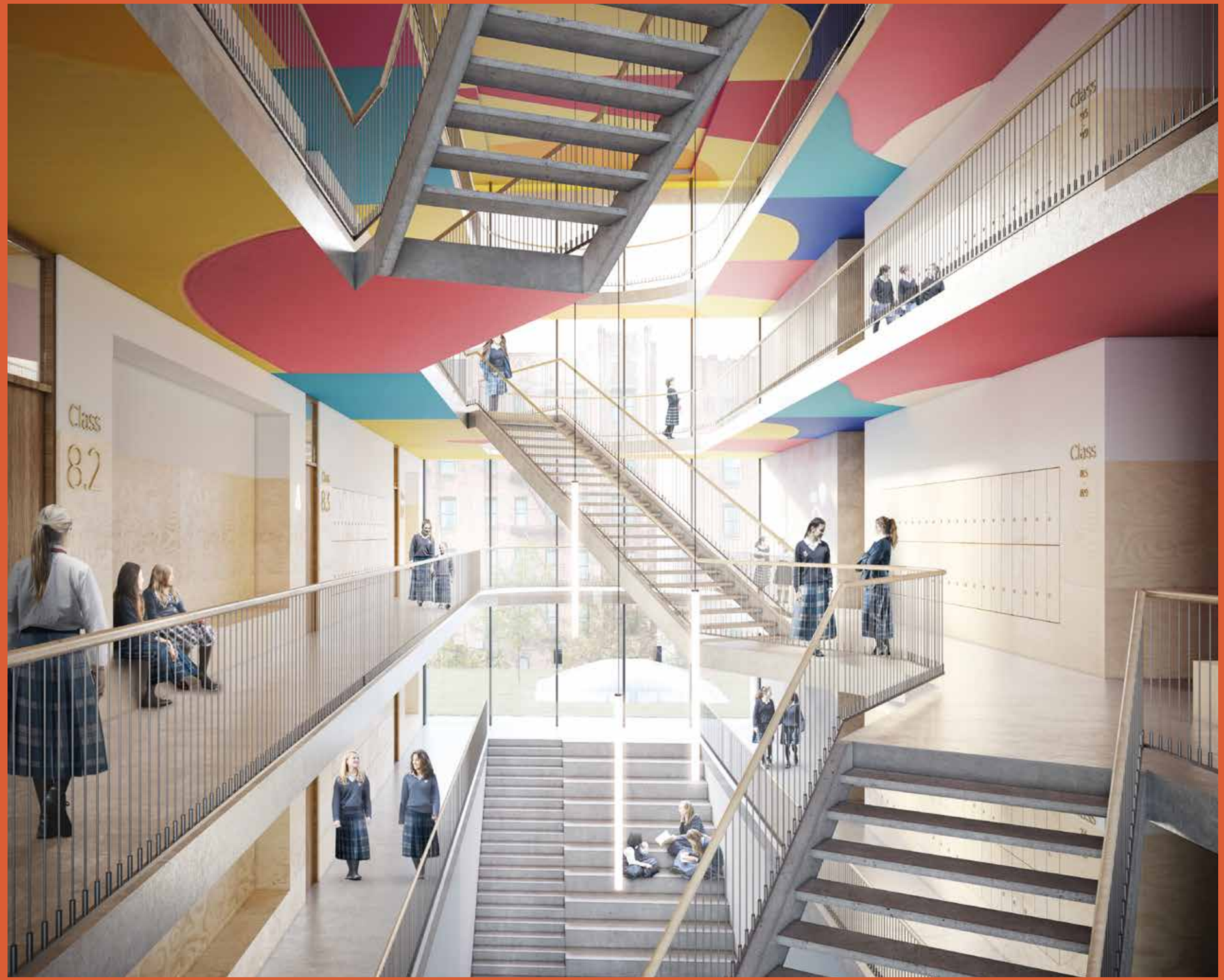
eminent domain,' says Andrew Bartle of local architecture practice ABA Studio, referring to the US powers of compulsory purchase. While public schools all had gyms and outdoor spaces, private schools couldn't necessarily afford long spans to deliver those elements. 'As those ornaments to classroom teaching became more critical to have in a good school,' Bartle explains, 'a lot of them went up to get those spaces.'

ABA Studio has a plethora of school expansions in its portfolio. In 2018, the practice completed a vertical extension of St Luke's School, a private school in Manhattan's West Village. The two-storey addition rests on top of a fortress-like 1955 brick building, and includes a gymnasium, classrooms and offices, plus a 279 sq m rooftop playground. A few blocks south, at Little Red Elisabeth Irwin School (completed in 2014), the architect extended a 1912 building in a landmark district, built two additional floors on top of it, and set them back to hide them from street-level view.

Since 2014, on and off, ABA Studio has also been working with Manhattan Country School – a private school which, in a quest to double its enrolment, moved from the Upper East Side to a building on the Upper West Side which could be expanded, and asked for a two-storey extension on top. As well as a new elevated courtyard, the project will add five additional classrooms, support spaces, plus a playground on the rooftop.

Rooftop playgrounds aren't new to New York City schools. In the gilded age of the late 19th century, many schools in Manhattan installed playgrounds and gyms on the roof. Encased in metal cages, these play spaces helped address one of the biggest drawbacks for urban schools: the lack of outdoor space.

Over the past few years, New York ▸



IMAGES: DARC STUDIO

THIS SPREAD ODA's 11-storey addition to Beth Rivkah School requires new vertical connectivity

practice MBB Architects has designed a series of rooftop playgrounds for schools across the city. 'There's been a ton of studies, especially related to growing children, about the importance of being connected to nature and the outdoors,' says Sara Grant, a partner at MBB Architects. In 2019, the studio designed a playground on the roof of St Hilda's & St Hugh's, an independent school on the Upper West Side. Divided into three zones – an open deck for play, a fenced-in ball court, and an outdoor classroom – the addition is part of the school's 20-year masterplan to maximise the use of its building.

For all their benefits, rooftop playgrounds – and vertical extensions more broadly – come with an enormous set of challenges, starting with noise. 'It's next to impossible to fully contain noise,' says Grant. At Rodeph Sholom, a private school on the Upper West Side for which MBB designed two rooftop playgrounds in 2018, the architect consulted with the neighbours and opted for a dual approach. One half of the playground, where the roof is close to neighbours' windows, is clad in a solid surface with acoustic batting; on the other half, where residents were more concerned about daylight than noise, the playground is open.

Acoustics are a challenge within the school building, too. In 2018, at Grace Church School – a private school in downtown Manhattan – MBB built a 1,300 sq m, rooftop gymnasium on floating acoustic slabs that eliminate noise transmission to classrooms below. To support the new space, it had to reinforce the original structure by tying new steel members to the existing columns – a little bit like St Luke's School, where ABA Studio threaded eight 'supercolumns' through the existing building and connected them to giant trusses on either ends of the building. ▸

BELOW High-rise education: ODA's design for the expanded Beth Rivkah School in Brooklyn

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Ultimately, vertically oriented schools imply a change in circulation. Moving people up and down poses new challenges around fire strategy and elevator capacities. When a school is spread out over multiple floors, the building must also work hard to preserve its sense of community.

'The nice thing about horizontal structures is that you don't have to go up and down, but when you think about it, they're pretty two-dimensional in their spatial experience,' ODA founder Eran Chen tells me. 'When you stack things vertically, you bring them closer together.'

ODA is currently working on a vertical expansion of Beth Rivkah School, a private girls' school in Brooklyn. Spanning 19,790 sq m, the 11-storey addition will increase capacity for the school's middle and elementary grades, and bring its high school, currently housed in a different facility, under the same roof. The existing building will continue to house the middle school. The expansion will house the elementary school at the top (accessed by express elevators capable of holding a full classroom of children), and the high school at the bottom. Shared facilities, such as a gym, cafeteria, play areas and a library, will occupy the middle floors.

For Chen, connecting all those spaces is the challenging part. So, the design includes a series of carved voids to form a central atrium and non-linear staircases to connect the floors. In the elementary school, four gigantic spheres are introduced for informal play – 'like a 3D playground', he says.

In places with a dense, historic urban fabric like New York City, vertical extensions to existing buildings will often be a necessity as populations grow. But where new development is possible, and urban sprawl stops being an option, more building typologies will no doubt embrace verticality as a default design. Schools – like housing, offices, or even hospitals – are no exception. ◆