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**Erratum:** We wish to address an error in the Vietnam map in *FuturArc* 3Q 2024 issue. There were inaccuracies in the geographical features. We apologise for any confusion caused. Rectification has been made and a corrected version has been published online and in the digital edition.

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Dear *FuturArc* readers,

In some warm-weather countries, taking a siesta or nap in the midday or early afternoon is a common tradition.

"In places such as Spain or Mexico, people traditionally didn't work during the hottest part of the day. Instead, they were more active at night when it was cooler... this is where the idea of the siesta comes from."

Philippe Rahm mentioned this in his conversation with us on the topic of climatic architecture. He also said that as the South's climate is moving to the North, parts of the world could become uninhabitable because it will be too hot and perhaps too humid for humans to survive.

A viable way forward, Rahm suggested, could be to look at how to use certain aspects of weather conditions to shape our living and working spaces, as well as learning how to use certain spaces according to changes in the elements and data from real-time environmental monitoring.

In line with this issue's theme, this topic is on point with what Ian Tan gathered from four experts in the built environment field who shared with him about how design practice, technology, academia, financial sector and also the larger community can contribute—and have done so—to mitigate climate change impacts, specifically urban heat island effect. Collaboration and clear practical steps are key.

As the heat has been turning up everywhere, what is 31 degrees Celsius on a thermometer could feel like 35 or even 38 degrees Celsius—meteorological reports have begun to state what certain temperatures feel like in addition to what the mercury is indicating.

This feeling like something is the essential point—we do not carry an instrument nor do we need one to tell us how a space, airflow, heat or humidity is making us feel. In matters of human comfort, the direct experience takes precedence. The projects featured in this issue explore how architecture makes occupants feel cooler, more comfortable or at ease, with and/or without mechanical means. They highlight the sensible use of shading, greenery, orientation, cross ventilation, natural building materials and so on.

Speaking of how it feels like, we feel great gratitude to Didi Contractor's family and Lakshmi Swaminathan for sharing with Nipun Prabhakar glimpses into Didi's life and architectural wisdom that have touched many lives—and through The FuturArc Interview, we hope to pass on her legacy and message of what it means to live sustainably to future generations of designers and natural builders.



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# Entering a State of (Climate) Emergency

by Ian Tan, PhD

It seems not one day goes by without the mention of global warming and the catastrophic effects it has unleashed this year. In East Asia where I am based, this year has seen two typhoons, Yagi and Bebinca, batter Chinese coastal cities of Hainan and Shanghai respectively. The latter was even described in local media as the “strongest storm to hit Shanghai in 75 years” since 1949.<sup>1</sup> Hundreds of flights were cancelled; thousands of residents evacuated. The cities took weeks to clear up the debris left in the wake of the storm.

More often, though, detrimental effects of global warming are no longer acute, sudden and with the understanding that life can return to normalcy thereafter.

As global warming exceeded the psychological threshold of 1.5 degrees Celsius across an entire year in 2024, scientists warn that the effects of climate change will become more severe and harder to manage in major cities as social problems like income disparity and inequality to life-saving resources exacerbate the impact of disasters.<sup>2</sup> During Tokyo's sweltering summer this year, over 120 people died of heatstroke.<sup>3</sup> The increased frequency of wildfires and unregulated vegetation burning had also directly contributed to worsening air pollution in Chiang Mai and Bangkok.<sup>4</sup> Even seasonal flash floods are becoming longer and harder to disperse. In Kuala Lumpur, once-every-100-years floods have become annual affairs, with the inundated city struggling to recover from massive traffic congestions and the economic cost to damaged infrastructure, businesses and homes.<sup>5</sup>

It is clear no Asian city is immune to climate change. Such gloom and doom are no longer considered anomalies, but unique challenges every city must address. As built environment practitioners, how might we change our practices and paradigms to incorporate planetary considerations to better serve our communities?

I spoke to four experts working across different but connected disciplines in the built environment field. Ranging from a sustainable investing consultant to a city planner developing rapid visualisation for urban heat, each brings different expertise and skills to tackle climate risks and other societal changes.



Architectural sage **Didi Contractor** devoted the later part of her life to designing environmentally conscious buildings while living in the small village of Sidbari in India's Himachal Pradesh. Renowned for her use of natural building materials and designs deeply rooted in sustainability, she inspired countless students with her visionary approach. Lakshmi Swaminathan, her dedicated mentee, honours Didi's legacy in *A Call to Return*, a book that encompasses a compilation of Didi's writings, lectures and personal reflections. A fan of Didi, Nipun Prabhakar took a journey through space (by visiting Didi's house) and time (by talking to Lakshmi) in an attempt to capture the essence of her life, spirit and work.

# The FuturArc Interview

## DIDI CONTRACTOR

Artist, Self-taught Architect, Natural Builder and Mentor  
via Lakshmi Swaminathan

by Nipun Prabhakar

# VIEW



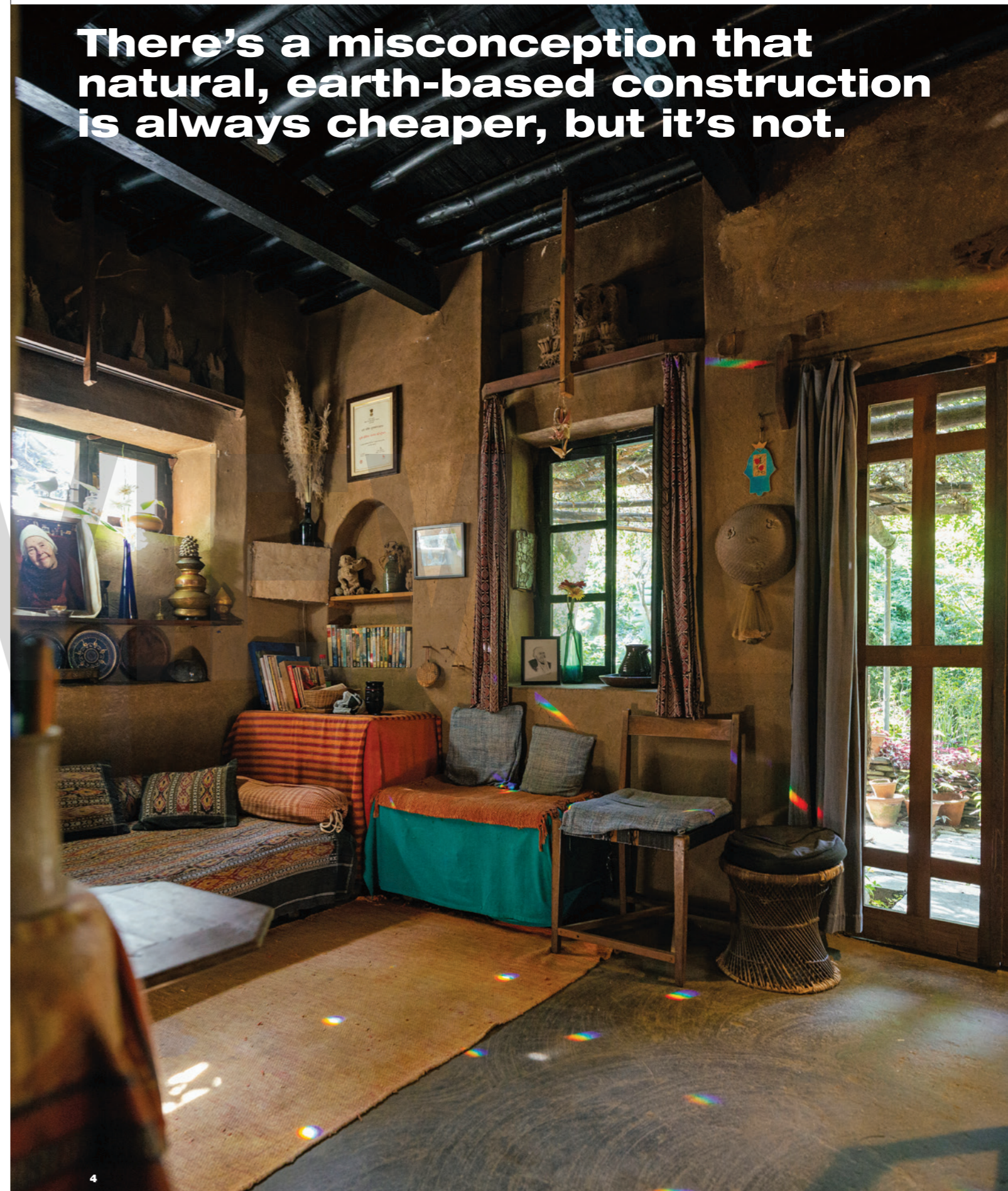
**NP: What inspired you to work on a book about Didi Contractor? Was there a particular moment when you felt her philosophy resonated with you and that it deserved to be explored through a book?**

**LS:** For me, the journey with Didi began because I was deeply drawn to the grace and harmony of the aesthetics of her buildings. It was something rare—especially from someone reviving vernacular skills to suit contemporary living. Her work wasn't an imitation of traditional methods, but a respectful approach to traditions, cultures and environments, and she brought her own unique perspective, especially as a Western woman who had lived in India for so long. It was refreshing, and that blend of cultures and aesthetics was what first pulled me in. Didi felt a strong urge to write more, especially around 2019, 2020. She had envisioned three books—one for the general public to make them more aware of her philosophy, which revolved around living in harmony with Nature. Another was for young architects—a “why to build” approach, explaining the reasons behind her way of building. And lastly, she wanted to write a memoir.

There were already many pages of transcripts where she'd answered a lot of questions, which could be compiled into a manuscript. Another student, Debasmita Ghosh, and I were brought in to help with the transcripts. Unfortunately, Didi passed away before she could finish writing, though she did complete a few chapters of the book for young architects. After her passing, I continued to go through the transcripts, editing and sorting them, and that's when I realised these transcripts alone could form a meaningful book. The more I worked on her writings, the more I understood the philosophy behind her architecture. It reaffirmed my own perspective on what architecture should be. It wasn't just about creating a standout building; it became about the process, about being humanitarian, culture-centric and Nature-centric.



**1** Lakshmi Swaminathan sitting beside Didi Contractor's photograph in the living room of her house **2** Didi Contractor **3** Elevation of a private residence designed by Didi for her friend; it is being used by Didi's daughter, Maya, presently **4** Didi's living room with her unique furniture, carefully crafted from reclaimed wood; nearly every piece in the house is constructed using salvaged materials, reflecting her commitment to sustainability



**There's a misconception that natural, earth-based construction is always cheaper, but it's not.**

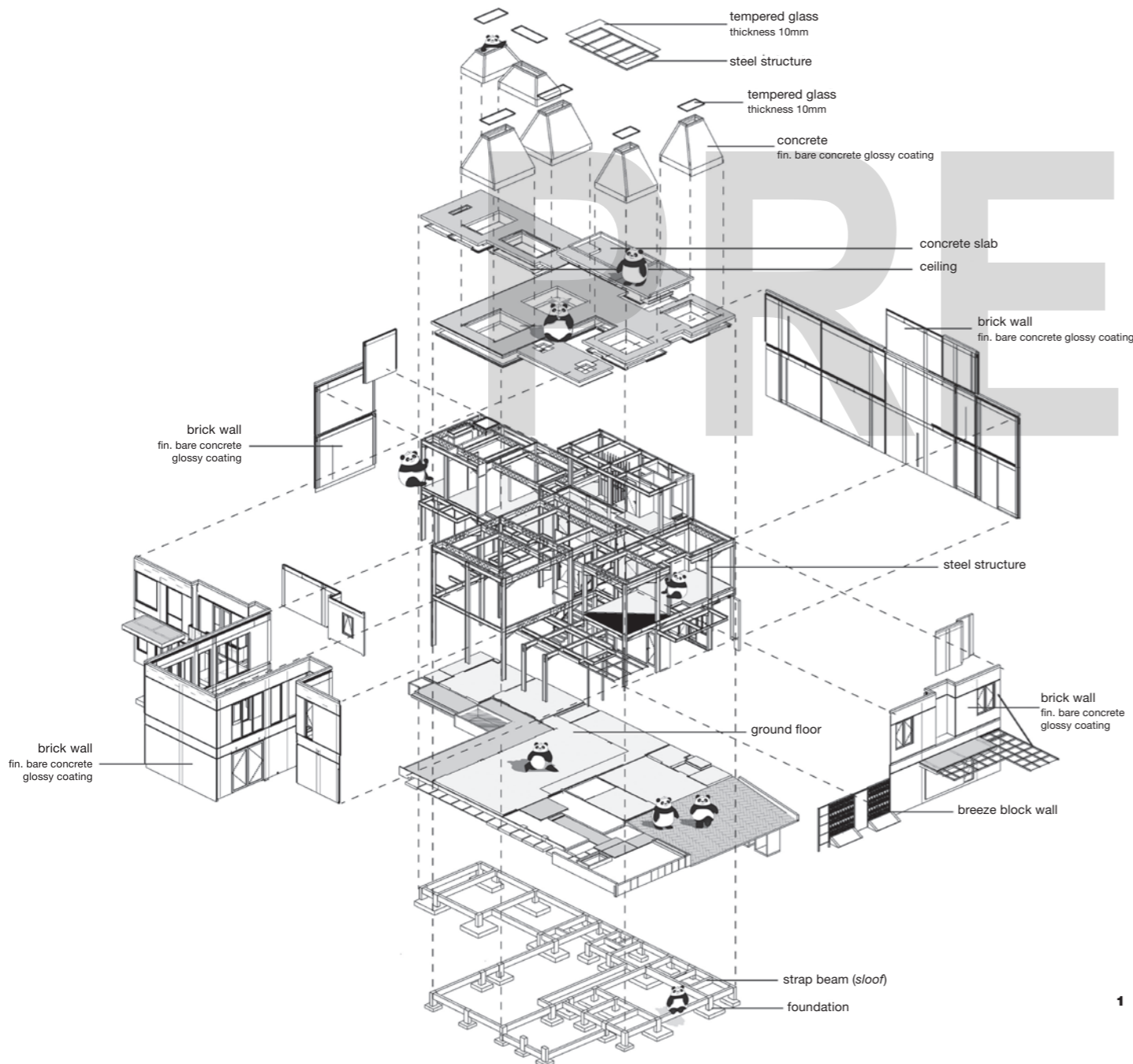


● Tropical, monsoon (Am)

# STUPA HOUSE

A stupa describes a hemispherical and often truncated mound-like shape in traditional architecture, with one of the most popular examples in Indonesia being Borobudur Temple and its array of 'perforated' masonry.<sup>1</sup> Similar ideas of a grand yet 'airy' structure informed this residential architecture in Tangerang's sweltering climate, where the average maximum temperature is around 35 degrees Celsius<sup>2</sup> with a humidity averaging 70 per cent.<sup>3</sup>

The design was initially conceived in an understated industrial style. However, the client wanted a shift to a more 'familial' home that could foster emotional comfort and cohesion among the users. Hence, with the aim of creating bright but adequately cool spaces for daily activity, the architects devised pyramidal 'stupas' as a distinctive roof feature, which serve to modulate the dwelling's microclimate.



1

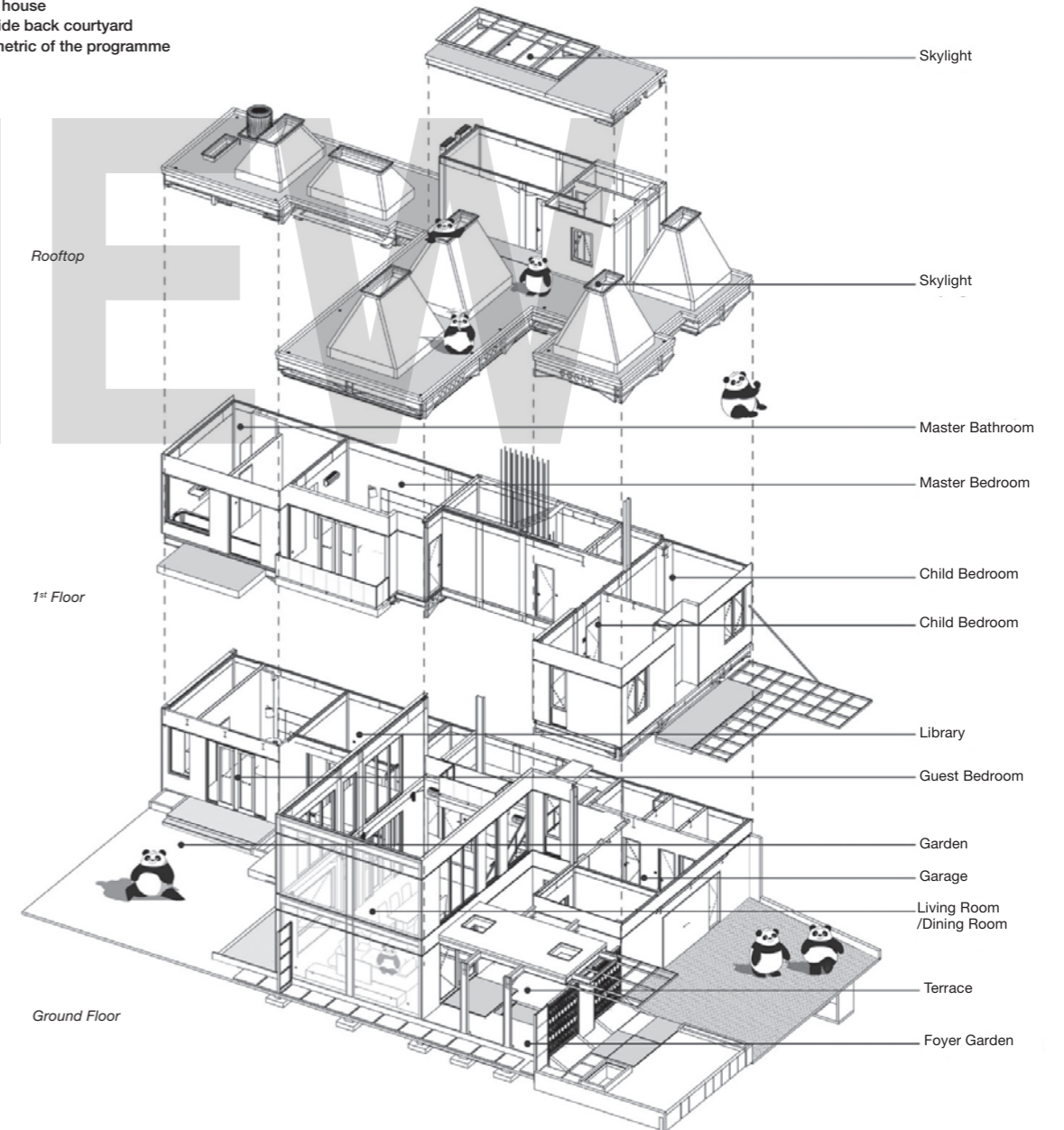


2



3

- 1 Exploded axonometric of the structures
- 2 The pyramidal stupas serve to modulate the microclimate of the house
- 3 View from the inside back courtyard
- 4 Exploded axonometric of the programme



4



● Warm semi-arid climate (BSn)



## JAMUN GROVE

“We turn towards Nature as our guiding force at Jamun Grove,” Amit Aurora and Rahul Bansal, Partners at groupDCA revealed how they designed their office.

At first glance, the low-rise outfit looks like a cluster of cosy cottages, one that will not bring to mind a working environment. But who is to say how or what an office should look like in today’s climate, both meteorologically and contextually? Over the past three, four years, have we not seen how personal and professional domains have ‘crossed over’, sometimes blurring lines and design formats?

### LYING LOW, TAKING CUE FROM NATURE

Adopting a fragmented scheme, the layout comprises four low-rise structures: a reception; a studio block; the principals’ cabins; and a pantry and office space. Conceptualised around the existing trees, the blocks have views to the greenery on-site, so that that each team member is never far from the natural surroundings. Oriented along the east-west axis, the blocks are constructed with rubble masonry walls to shield the interiors from harsh sunlight. The north-facing walls are porous, accommodating large, glazed windows and open out onto shaded verandas that can be used throughout the year, shaping informal break-out spaces or workstations. To further ensure optimal comfort, the southern walls are punctured with small fenestrations, modulating heat and glare. These design strategies ensure the studio is unaffected by the scorching summers while welcoming the gentle winter sun.

**1** The principals’ cabins **2** Wide circular platforms made of earth wrap around the trees **3** The thatched roof is a part of North India’s design vocabulary, integrated with the studio block’s morphology and helps maintain comfortable internal temperatures

The blocks are, therefore, well-lit by diffused natural light absent of heat and glare, open organised spaces that help to foster clear thinking and refreshing views. Along with the well-insulated roofs and walls, and the surrounding greens, the studio embraces Nature to cultivate a serene work environment.

### RESOURCES AND MATERIALS

“Built environments must be designed to keep them relevant for a longer period,” the partners added. Drawing from traditional construction methodologies, Jamun Grove utilises local materials and construction techniques to meet modern requirements. For instance, the blocks incorporated traditional thatch roof systems and stone masonry walls with glazed openings suited for today’s weather.

The materials are sourced within a 300-kilometre radius of the site. The masonry walls constructed from rubble stones blend in with the natural surroundings. The thatched roof, a part of North India’s design vocabulary, is integrated with the studio block’s morphology by local artisans and helps maintain comfortable internal temperatures. It is coated with heat-reflective paint, and a corrugated cement sheet is placed over metal sections that bridge the gap between the inclined rubble masonry walls. A polyurethane panel serves as the second layer of insulation, and the thatch is secured to it. Drawing on their expertise, local artisans bundled and tied the grass to create the final layer of the sustainable, economical roof.







● Tropical, monsoon (Am)



## THE CORNER HOUSE: AN INDOOR-OUTDOOR COMMUNITY SPACE WITH AN ADAPTABLE ENVELOPE

The city of San Juan is regarded as the geographical 'heart' of Metro Manila, the Philippines's largest metropolitan area. This strategic city predominantly consists of residential areas, with the largest population group comprising 20–24 years old.<sup>1</sup> Although there are numerous shopping centres that cater to this young demographic,<sup>2</sup> they are largely closed-off, heavily air-conditioned outfits.

This may be because strolling in Metro Manila's tropical heat is no walk in the park. Record-breaking temperatures have soared above 40 degrees Celsius in 2024,<sup>3</sup> and there is a lack of facilities that support outdoor activity. The near absence of functional sidewalks in San Juan was observed by architect Amata Luphaiboon, who hails from the walkable Bangkok. "Safe pedestrian pathways are scarce, making walking, let alone jogging, along the streets quite difficult. This prompted us to rethink how we could offer a safe, engaging and dynamic pedestrian experience."

Hence, The Corner House was designed to address this need without becoming another mechanically-cooled offering. The design was informed by Luphaiboon's experience in creating the COMMONS open-air community spaces in Bangkok that first opened in 2016. "I see the 'mall lifestyle' as detrimental to both physical and mental well-being," he said. "During the COVID-19 pandemic, the open-air concept proved invaluable, allowing tenants and property owners to endure the economic challenges of the pandemic. We believe that the principle is equally relevant in other countries, starting with the Philippines."

<sup>1</sup> The project distinguishes itself in Manila's architectural landscape as there is nothing quite like it in the country <sup>2</sup> The four-storey atrium provides a central space for activity, enclosed by floating glass box volumes housing the commercial outlets





● Equatorial (A)

## SJ CAMPUS: COOLING THROUGH PASSIVE AND ACTIVE DESIGN ELEMENTS

Singapore is one of the world's most humid countries, with a mean annual relative humidity of 82 per cent and a daily variation ranging from 90 to 60 per cent from mornings to afternoons, frequently reaching 100 per cent during periods of heavy rain.<sup>1</sup> This, combined with day temperatures that average up to 33 degrees Celsius<sup>2</sup> (with a historic record of 37 degrees in May 2023<sup>3</sup>), results in a challenging climate that demands the adoption of technology to achieve thermal comfort. Famously, founding father Lee Kuan Yew even credited air-conditioning as an enabler of Singapore's development,<sup>4,5</sup> but a sustainable solution to cooling spaces requires holistic built environment strategies.

Today's new and existing buildings in Singapore are being incentivised to fulfil Super Low Energy (SLE) standards or higher with the aim of reaching 80 per cent of SLEs by 2030.<sup>6</sup> As a greenfield addition to the Jurong Innovation District, SJ Campus does so and beyond—it fulfilled the Building and Construction Authority (BCA)'s Green Mark Platinum Super Low Energy (SLE) and BCA-HPB Green Mark Platinum for Healthier Workplaces certification, as well as getting WELL Pre-Certified by the International WELL Building Institute.<sup>7,8</sup> Notably, it implemented a slew of cooling strategies, featuring a combination of landscaping features alongside passive and active design elements.

### LANDSCAPING FEATURES

SJ Campus sits on a narrow, steep and irregular site, with a height difference between the street level and the adjacent Jurong Eco-Garden. Furthermore, the site predominantly faces east-west with potentially high solar radiation and heat gain.

To overcome these challenges, the buildings were deliberately arranged into smaller masses to maximise their north-south alignment, with pilotis 'floating' structures that create a series of indoor and outdoor landscaped courtyards. This allows for larger and more unique tree specimens to be preserved on the site, as well as vegetation below the floating structures. For example, a 60-year-old banyan tree has been preserved despite being located close to the entrance and the basement structure. One biophilic water feature, a pond at the entrance, is also completely natural and has not been treated with any chemicals.

As a result, more than half of the existing green area has been maintained, with the remaining landscape replaced by climate-controlled gardens and accessible roof gardens. The variety of landscapes offers key spaces for people to gather, relax and enjoy the fresh air. As the campus is open on all sides, it provides easy access to Jurong Eco-Garden through a boardwalk and connected to the Jurong Town Corporation (JTC)'s mobility corridor towards



**1** The application of sunken gardens helps to passively cool the internal spaces



## IN CONVERSATION WITH PHILIPPE RAHM: A CLIMATE-FIRST APPROACH TO ARCHITECTURE

by **Dinda Mundakir**

Although it can be difficult to envision Earth's temperatures before our lifetimes, climate proxy data<sup>1</sup> over the past 2,000 years shows that we are living in a thermally unprecedented era. Over the past two centuries that correspond with industrialism, average global temperatures have been on an anomalous rise, to the point of surpassing the 1.5 degrees Celsius threshold in 2024.<sup>2</sup> This seemingly small degree may pose cataclysmic consequences—be it in the increasing severity of meteorological disasters or the effort it would take to modify our microclimates to support life on Earth, something that people may take for granted.

*FuturArc* spoke to **Philippe Rahm**, principal of Philippe Rahm architectes and tenured associate professor at the National Superior School of Architecture in Versailles, France. Since the 1990s, his work has championed architecture's physiological and meteorological aspects, exploring design approaches that dynamically interact with climate as 'building blocks' of architecture. As highlighted in recent lectures across Asia to introduce his latest book *Climatic Architecture* (Actar Publishers, 2023), Rahm continues to advocate architecture that is rooted in historical and socio-cultural contexts while addressing the urgent challenges of the present.

All photos courtesy of Philippe Rahm architectes

1

**Parts of the world could become uninhabitable because it will be too hot and maybe too humid ... it will be very complicated to survive in this type of climate.**

### DESIGNING IN A 'TOXIC' ENVIRONMENT

**DM:** For places like Indonesia, Thailand, Singapore and Malaysia, air pollution is a major problem that has been increasing in recent years, exacerbated by the climate crisis sparking forest fires and the continued usage of unclean power sources. This has thus shifted our rule of thumb in tropical design, where ideally, we should let in as much ventilation as possible, but which we cannot do so now since we have to protect ourselves against the 'dirty' air.

**In your Taichung Central Park project, to tackle a similar problem in Taiwan, you suggested to control the air flow and use certain plants to absorb some of the pollutants. However, there have been various studies that showed how trees could actually increase the amount of local pollutants, because the particulate matter gets 'stuck' and makes the surrounding air dirtier.<sup>3</sup> What do you think can be done for this problem—when the 'building blocks' of climate become toxic?**

**PR:** Air pollution has two meanings—toxic pollution, like gases and particulate matter (PM) that damage your health when you breathe them in; and CO<sub>2</sub> pollution, where it is blocking the infrared from the Earth and creating global warming. For the second type, the increase is everywhere on the planet, made worse by the burning of fossil fuel and such. In Europe, for example, now the climate is becoming increasingly warmer like in North Africa or Indonesia. This is why we should fight to lower the emission of CO<sub>2</sub> first, by stopping the use of fossil energy as our primary mission.

What you are describing is true. In the beginning, we saw studies that showed how some resinous trees (that have a kind of glue on them) could be used to capture PM<sub>2.5</sub>, and some plants with hairy leaves. But once there is rain, everything falls down and could go back in the air. So, in reality, very little is captured.

**1** Philippe Rahm in the Meteorological Garden of Taichung Central Park **2** The Ego Field is an inwardly oriented installation within Taichung Central Park's sensory landscape



All images of Taichung Central Park, Taichung, Taiwan, 2012-2019  
courtesy of Philippe Rahm architectes, Mosbach paysagistes,  
Ricky Liu & Associates

2