

FUTURARC

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NEW & RE-EMERGING ARCHITECTURE

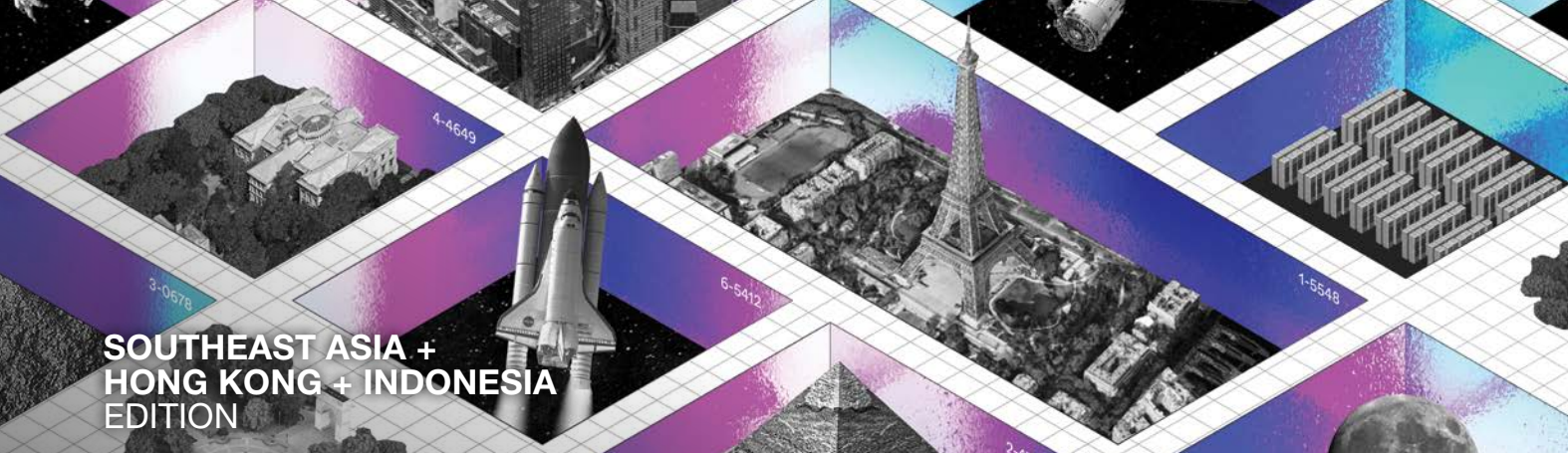
Tree provided to support
the construction of bees'
nests in a more naturalised
environment

Mesh fabric envelope

Bee harvesting
compartmentalised space

Treatment space





SOUTHEAST ASIA + HONG KONG + INDONESIA EDITION

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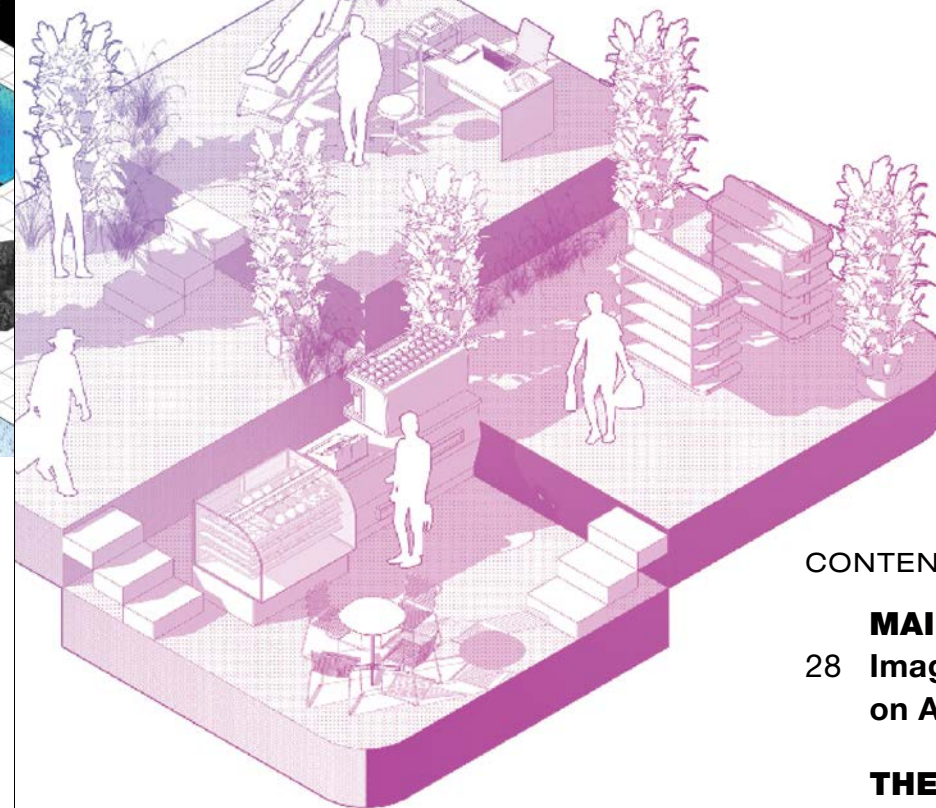
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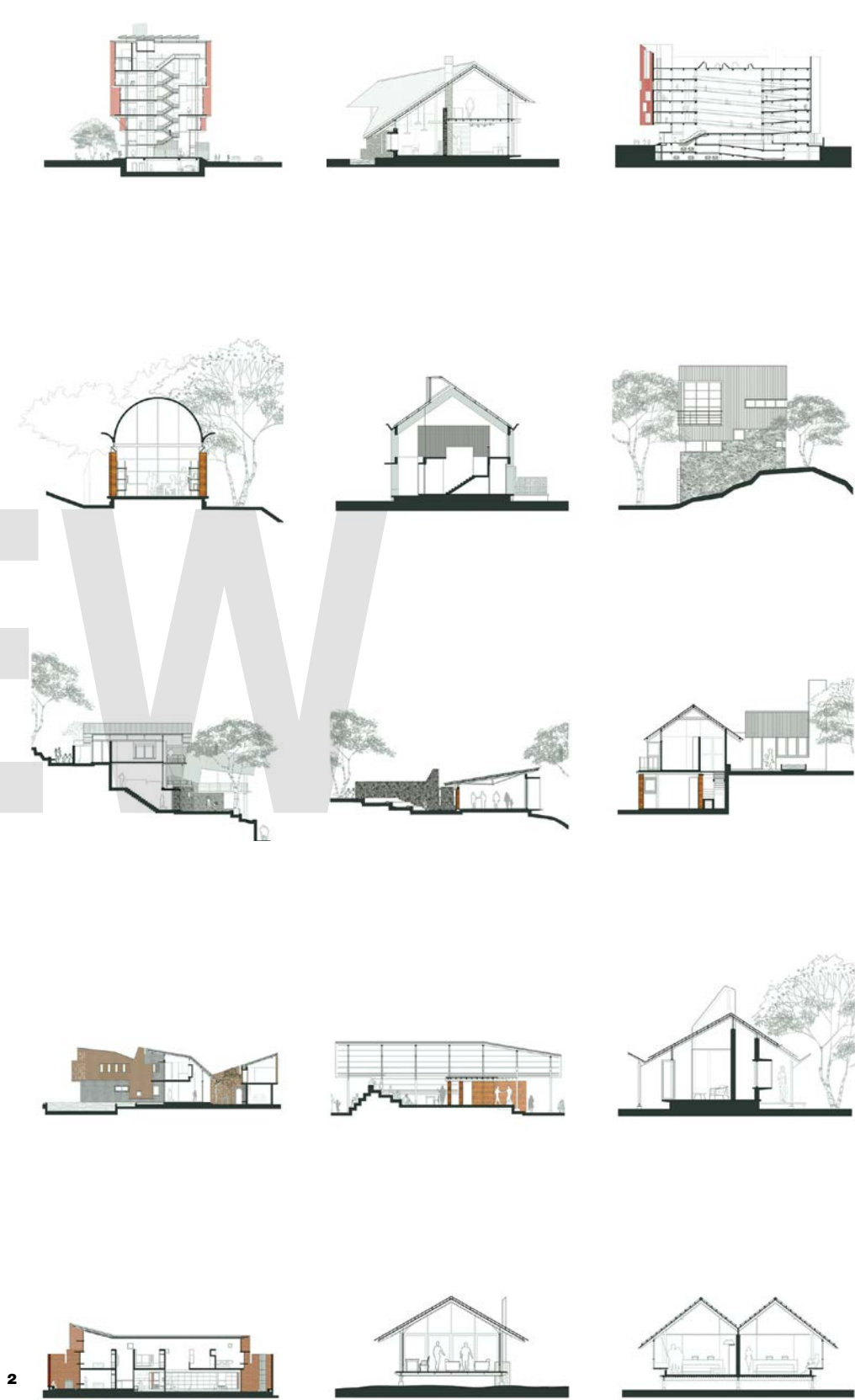
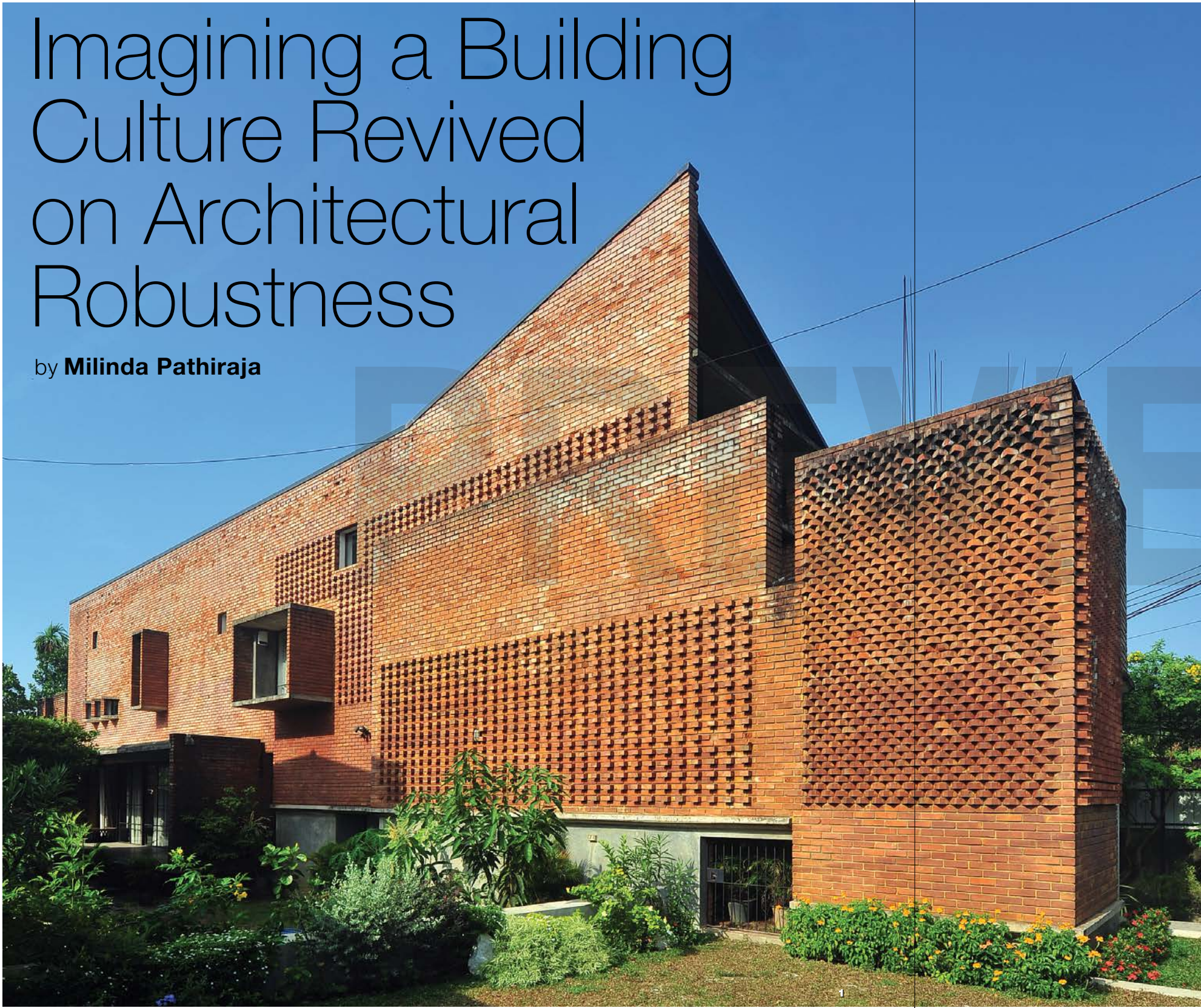
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Imagining a Building Culture Revived on Architectural Robustness

by **Milinda Pathiraja**





The FuturArc Interview

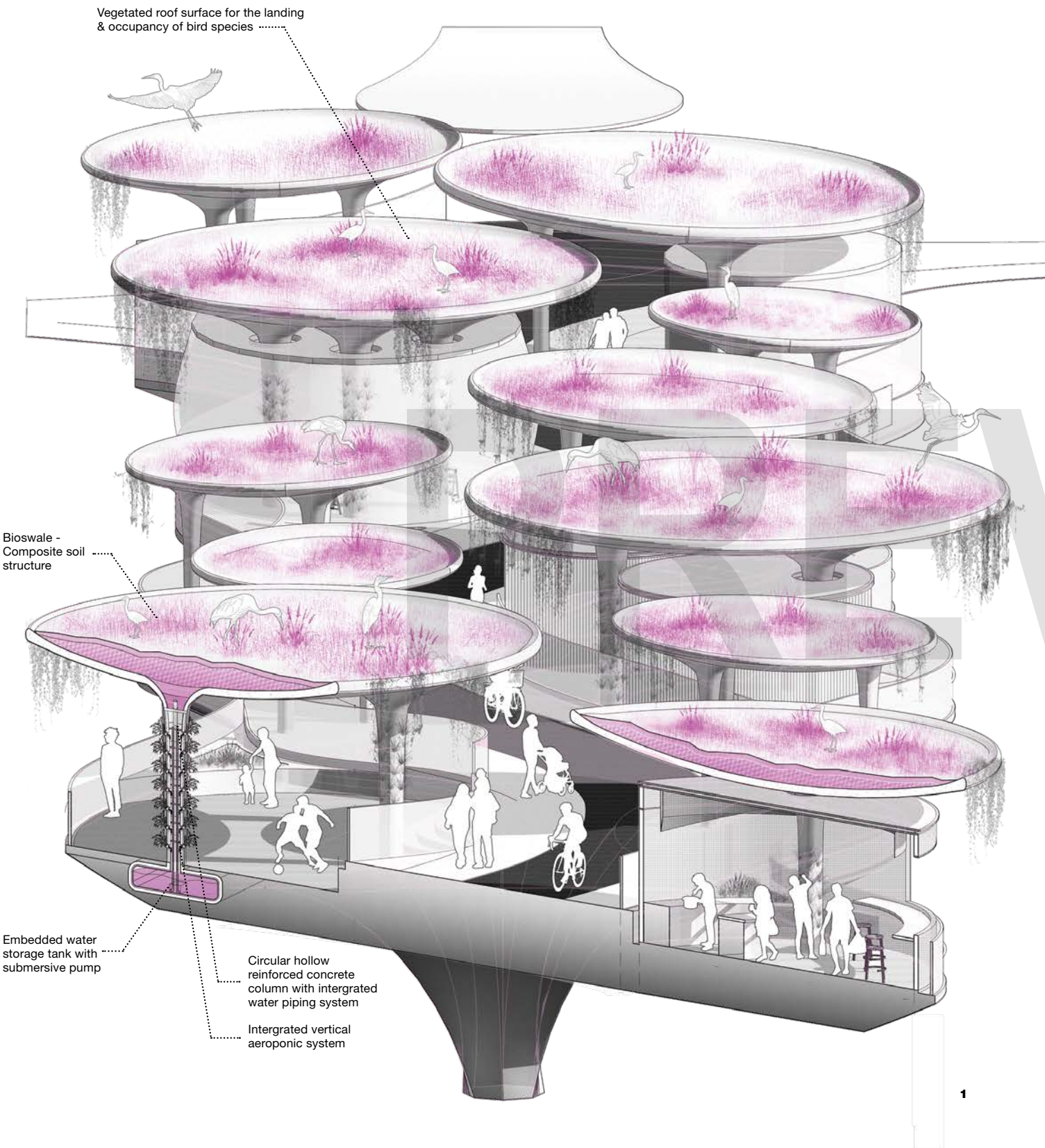
WENDY W. FOK

Creative Director/Technologist of WE-DESIGNS

by **Candice Lim & Dinda Mundakir**



Photos by Juan Villatoro



A FUTURISTIC IDEA OF USING NATURE TO HEAL & MANAGE DIABETES

What if bees and leeches could help manage diabetes?

This was an unusual proposition that certainly grabs one's attention. The bigger question is how does this relate to architecture, or more directly, healthcare-related architecture?

The students behind this ambitious project researched on several aspects of alternative therapies—some of which involved insects—and posited a future hub model that could bring these healthcare solutions, created with advanced, novel technologies, to the common person, via an urban plug-in set-up that integrates with existing blue-green infrastructure. The team proposed to deliver these healthcare technologies accessibly by plugging into Singapore's already existing and expanding island-wide Park Connector Network.

This futuristic concept that encompasses a collection of diabetic health care management services could help offload the treatment and prevention of diabetes from formal institutions like hospitals, and putting them back into the hands of the individuals—as such this collection of strategically located hubs is meant to be made easily available to the common person in their daily routines.

WHY DIABETES?

The team presented that by 2050, one in two adults in Singapore will be diagnosed with Type 2 Diabetes¹. Affecting more than 468 million people worldwide, it is becoming one of the fastest-growing health challenges of the 21st century. A chronic disease that could lead to many specialised healthcare complications, it is said to have seen an exponential increase over the past three decades, affecting countries of all income levels.

WHAT DOES THE DIABETIC CARE HUB MODEL CONSIST OF?

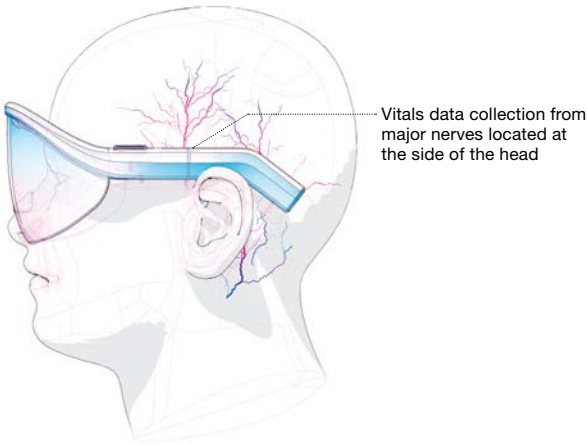
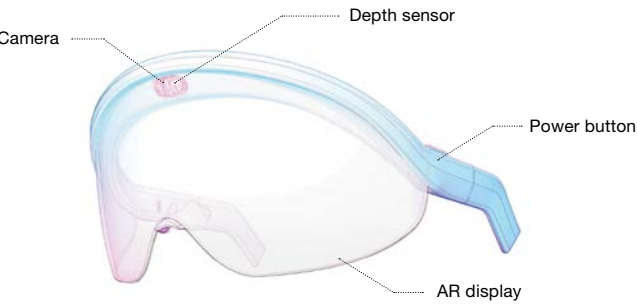
Augmented Reality (AR) Glasses

The team shared that “the AR system was envisioned as a guide that would increase accessibility of information, reduce friction of data collection and help connect patients to the environment and programme of care—to guide and influence patients in making positive lifestyle decisions and improve the management of their condition. While it is not specifically integrated with the alternative treatments that we had proposed, the AR component was our speculative take informed by rising technological trends of wearables and how this was a potential form that the project could develop upon.”

They conjectured that the adoption of AR technology, such as these glasses, would replace all personal mobile technology in the future. Although it may seem speculative for now, they believed it could further enable an integrative management ecosystem between patients and healthcare providers, and that this typology of smart AR glasses could open up the possibility of non-invasive, continuous vital monitoring and providing opportunities of immersive real-time guidance and feedback that enrich physical experiences.

While it seems like a neat arrangement, the complex aspects of data collection, sharing and processing—where the data goes to and who processes the data to give out care advice—as well as privacy issues cannot be overstated.

1 The hub consists of various Nature-based and high-technology therapies to treat diabetes as one of Singapore's fastest-growing health challenges 2 Augmented reality eyewear





Aswin Indraprastha



Carlos Bañón

IN CONVERSATION WITH
**ASWIN INDRAPRASTHA &
CARLOS BAÑÓN**

by **Dinda Mundakir**

**NEXT-GENERATION
TECHNOLOGIES IN
ARCHITECTURAL DESIGN**

In the domain of architecture, computational design has come a long way, from 2D drafting in the 1980s to 3D modelling gaining prominence since the 1990s. In the 2000s, it has seen the emergence of Building Information Modelling (BIM), which embeds information such as unit prices, volumes and time schedules into models, allowing for more consistent collaboration between disciplines. Another branch of development is algorithmic design, which utilises a set of instructions to generate or modify forms.

Nowadays, the latest tools in computational design include artificial intelligence, which simulates human behaviour in ‘learning’ through advanced programmes. While many of these technologies are still considered new in varying degrees—and are definitely developing at different rates in different economies—they have also often been used as blanket buzzwords to convey a sense of newness, which may sometimes be more of a marketing gimmick than a fact.

So, what are the new technologies in architectural design? What is the actual state of their adoption in the industry? What are their benefits and risks? More importantly, how sustainable are these methods—both in terms of their ability to help us design Greener and the amount of energy such methods consume?

Since it is the tendency of innovative technology to trickle down, this means architectural education plays a pivotal role in its proliferation. *FuturArc* spoke to two lecturers from Singapore and Indonesia, both specialising in computational design, to address these questions and more.

**HOW ARE NEW TECHNOLOGIES TRANSFORMING THE WAY WE
DO/LEARN ARCHITECTURE?**

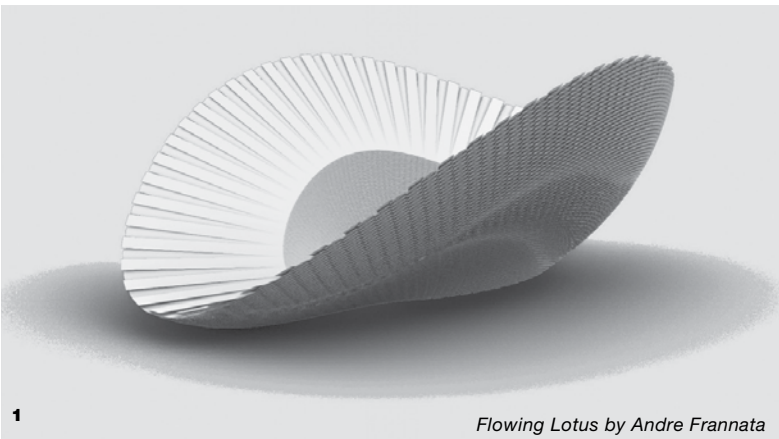
Virtual reality (VR) and augmented reality (AR)

Carlos Bañón, a professor at Singapore University of Design (SUTD), told us that their students have been introduced to VR as a way of being more directly immersed in their designs: “You can actually design while being part of the design. When you design from the ‘inside’ as a user, you’re aware of many things that you wouldn’t be if you’re designing from the ‘outside’.”

VR also allows students to develop a sense of space more quickly, especially during the peak of the health crisis where project visits have been restricted. “Most of the basic principles of architecture remain the same, such as transitions, introduction of lights, scale and spatial principles,” said Bañón. However, he also felt that the immediacy of the experience is creating a shift in design thinking: “I think the way we implement these in teaching is redefining the way that we learn architecture—even the order of things is different. Now, we don’t follow a linear process where in the early steps you learn something, and in the last steps you learn something [different]. It is now more iterative: we do the same thing, but more complex over time. So, VR applications are definitely changing the way we can actually experience our own designs.”

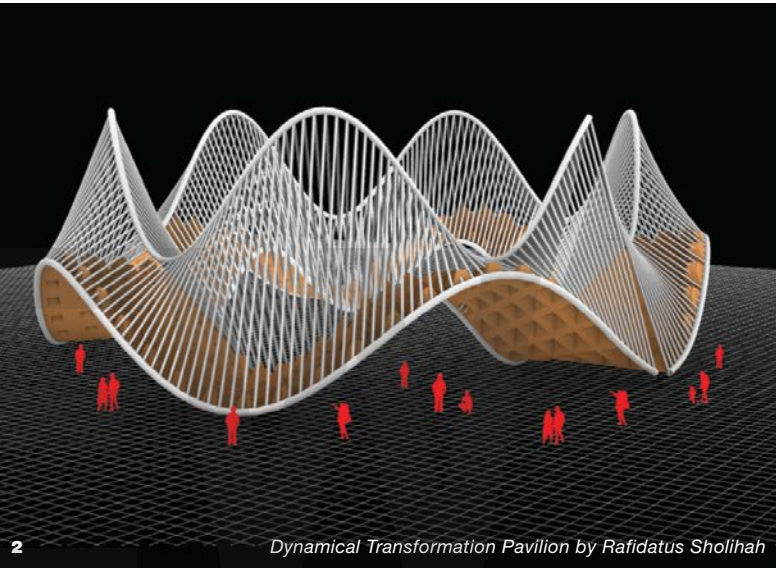
In the context of Indonesia, Aswin Indraprastha, a professor at Institut Teknologi Bandung (ITB), mentioned that VR has been used to replace physical models in the presentation of designs, but it is not yet used as a teaching tool. “There have been a few examples [of VR application] conducted by state-owned companies, in the context of BIM workflow for clash detection.” A ‘clash’ in BIM refers to a mismatch between different systems within a building. “But I think that implementation is still in the context of prototyping, because this kind of technology is still progressing here. In a few years, it might become more mainstream.”

1 to 3 Aswin’s students’ works at the DigitalFUTURES: InclusiveFutures – Form Follows Data Flows workshop on parametric modelling, which introduced students to the mathematical logic behind creating geometric forms as a foundation of computational architecture
4 Algorithmic design approach is an elective course that Aswin teaches at ITB, tasking students to articulate the fabrication process behind their designs to be tested in models using CNC laser cutters and milling, as well as rapid prototyping using 3D printers



1

Flowing Lotus by Andre Frannata



2

Dynamical Transformation Pavilion by Rafidatus Sholihah



3

Wabi-Sabi Pavilion by Diandra Fakhira Nasution



4

NOI Dome by Annissa Zhafira Febriyanti
All images courtesy of Aswin Indraprastha unless otherwise stated