Annex A: Design of the Singapore Pavilion
Venice Architecture Biennale 2025

About the Design of the Singapore Pavilion

Arrival experience of the Singapore Pavilion

Dining—sharing and enjoying food together—is the metaphor that threads through the design of the Singapore Pavilion.

Here, we offer a distinct interpretation of this familiar social ritual, drawing inspiration from our super diversity. The exhibit presents a variety of courses and discourses—to be consumed, contemplated, and discussed within a setting that encourages these interactions to unfold over time.

We sought to play with the tropes of dining—a table, chairs, chandelier—and to defamiliarise them, subverting typical dining aesthetics. At the heart of the installation is a monumental cloth, sculpted into the form of a conventional table. Measuring 12 by 2.4 metres, it anchors the space through its scale, yet appears light and almost fragile, given its ethereal materiality. Inspired by the material experiments of Frei Otto and Heinz Isler, it is shaped by applying forces at points of support, producing a wrinkling pattern that settles into a state of equilibrium. Once solidified, this emergent geometry is both structurally sound and visually compelling. Surrounding the table are six Neural Monobloc chairs—products of applied machine intelligence—that act as counterpoints to the human craft embodied in the table.

The table as a dynamic active participant in the performance of dining.

Above, mirrored disc lights reinterpret the chandelier, reflecting the table below and amplifying the space between. Suspended cameras and projectors observe and respond to the table scene. Within this sensory system, the table becomes an active participant in the performance of dining. Embedded sensors register visitors' presence, prompting shifts in lighting, projection, and atmosphere. The table shapes the dining experience, mediating between visitors' encounters with content and the responsive environment, inviting them to experience a thousand worlds within the Singapore Pavilion.

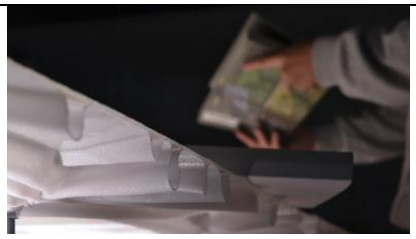
About the Fabrication of the Singapore Pavilion

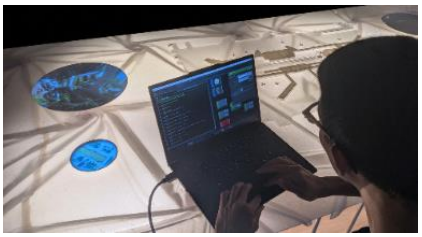
We began with the conceptual ambition of creating an immaterial table. Rather than design a conventional table, we sought to redefine the tablecloth as the structural and spatial entity itself. Realising this concept required iterative cycles of material prototyping, computational form-finding, and meticulous handcraft. A fabric suspended flat in space lacks the stiffness to resist applied loads; it cannot function as a table without rethinking its geometry and mechanical behaviour.

We drew on the experimental work of Frei Otto and Heinz Isler, who suspended membranes under load to allow tensile geometries to emerge naturally. These equilibrium forms, when inverted and solidified, yielded optimised funicular structures. While we adopted their approach of using cloth to compute force paths, we diverged by exploring the structural and aesthetic potential of localised wrinkling. These seemingly superfluous folds were not seen as imperfections but as opportunities—zones where material thickness could increase, enhancing the surface's ability to resist bending moments.

During prototyping, we tested textiles with varying stiffness and elasticity, resins with different Shore hardness levels and curing profiles, and manual techniques for controlling wrinkles. In parallel, physics-based simulations with finite element analysis helped us study the material's behavior and validate outcomes. Prototypes were scaled up, subjected to structural and light tests, and their surface carefully finished to achieve calibrated translucency—admitting light while allowing projection.

We transformed a standard piece of cloth into a complex manifold—its initially flat geometry giving rise to a wrinkled formation that is both controlled and stochastic. These folds revealed the cloth's latent structural capacity, concentrating force paths toward support points, where loads were transmitted through slender columns into the base. The tablecloth becomes more than a surface—it collapses the distinction between structure and skin into a single, performative form. This new *tabula* supports objects across its span without hierarchy or prescription—an open-ended field that invites new possibilities for the shared, informal rituals of dining. A manifold of materials and forces in one Singapore.





Behind the scenes of the fabrication process.
Images courtesy of SUTD

Additional Design Elements in the Singapore Pavilion

Neural Monobloc Black Chairs

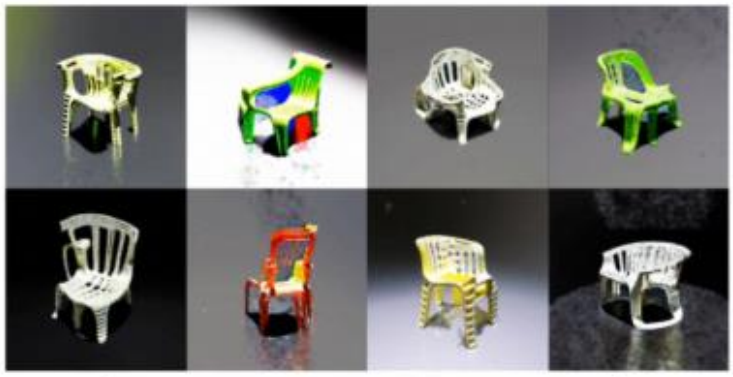
Placed along the periphery of the Singapore Pavilion's tablescape are the **Neural Monobloc Black chairs**, a reinterpretation of the injection-molded plastic chairs (known as 'monobloc') found in almost every coffee shop (or coffee house) and hawker centres in Singapore, in terms of its form and function. In fact, these monobloc chairs play a much-unspoken social role in facilitating the open-ended nature of Singapore's collective seating and dining at these places. Strangely enough, it is their very genericity that accentuates the diversity of the multi-cultural food served and multi-racial dining experienced.



The monobloc chair is the world's most widely/cheaply/quickly produced and disposed chair. It is also the most common chair imagery on the internet, thus automatically finding its way into any datasets used to train today's most powerful foundation AI models such as ChatGPT and Stable Diffusion. The project Neural Monobloc Black (2024) takes part of its name from this ubiquitous white stackable plastic monobloc chair. However, it is not white, but black; not light, but heavy; not planar, but volumetric; not generic, but unique; not made with unsustainable polypropylene, but with sustainable upcycled teak; not machine-optimised for single user, but AI-hallucinated for ambiguous number of users; and not uncritical in consumption, but itself a critical design project. It is therefore fundamentally also a critique on the form, function, process, and materiality of all modern designs.

These six chairs are generated directly in 3D with an in-house fine-tuned text-to-3D AI model, fabricated in wood, and charred black. Their AI-hallucinated multi-perspectival (even hypercubist) seating affordances collectively influence circulation, views, and gathering within a space, making it an enhanced placemaking artefact. In effect, bringing to mind the multiplicity and diversity of dining experiences at the coffee shops and hawker centres in Singapore.

Much like how its local coffeeshop counterparts serve as seats for conversations, contemplation and community, these neural monobloc black chairs offer a space for respite, reflection, and re-imagination; of the thousand worlds in one Singapore.



Neural Palate Kueh

Neural Palate Kueh is a reinterpretation of traditional Singaporean kuehs (bite-sized snack or dessert foods) as local architecture in the form of 3D-printed kuehs. Each 3D-printed kueh-inspired architectural form is placed in dialogue with an existing building in Singapore such as Kueh Lapis with Golden Mile Complex and Huat Kueh with the ArtScience Museum. Traditional kuehs are edible cultural artefacts and material records of ritual, memory and geometry, not unlike buildings. Hence, the project is a playful fusion of nostalgic food heritage and familiar built environment, mediated by artificial intelligence, to discover a new architectural language—part food, part-built form, but completely Singaporean.

Using Multimodal Large Language Models, the process begins with AI's deconstruction of each kueh along three axes: conceptual underpinnings (rituals of eating and cultural symbolism), design operatives (geometric form and culinary construction), and materiality (ingredients and textures). These insights become the design principles for speculative architecture that mirrors the spirit of Singaporean built form.

Beyond formal resemblance, a series of accompanying AI-generated videos reinterpreting footages of local dining experiences are also on display at the exhibition, to further reveal another layer of shared latent affordances between social dining and participatory city planning. Each dining video footage is placed in-sync next to its AI-generated dining-inspired architectural planning, such as Kaya Toast breakfast with the ArtScience Museum and Laksa with the Jewel Changi Airport.

Local dining embodies a social hybridity, while local food embodies a formal hybridity, both shaped by the confluence of Malay, Chinese, Indian, and others. In the case of kuehs, each layer, fold, or filling carries traces of a shared, multi-racial legacy. Like Singapore itself, they are not defined by a singular origin but by a weaving of many. This is the essence of ***superdiversity***: a cultural fabric layered, entangled, and inseparable, quintessentially a thousand worlds in one Singapore.

The Art Science Museum, as a Huat Kueh (steamed cake)

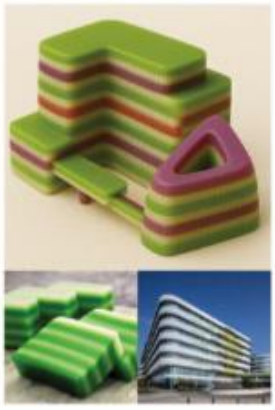
Esplanade,Theatres on the Bay, as Ang Ku Kueh (sweet dumpling)

Golden Mile Complex, as Kueh Lapis (layered cake)

Public housing blocks, as Kueh Salat (custard on glutinous rice)

Reflections at Keppel Bay, as glutinous rice dumplings

South Beach, as Kueh Lapis (sweet layered cake)



Singapore University of Technology and Design, as Kueh Lapis (sweet layered cake)