

BEYOND THE INTEGRATION OF ART IN ARCHITECTURE: CONSIDERING THE ART PATH AT MARINA BAY SANDS

Text by Lam Yishan

Images courtesy of Marina Bay Sands and as credited

Lam Yishan navigates the string of public art commissions at the in-progress Marina Bay Sands to discover how art and architecture can relate against the backdrop of a megalith development of local significance.

Public art in urban settings can be a tricky business. One may ask of public art many things: to be beautiful, to respond to its site intelligently, to animate public space, to humanise its surrounding architecture, to be participatory and interactive, to bring in visitors, to fill in voids, to earn extra gross floor area, and so forth. The process of making public art happen also involves numerous considerations that affect the outcomes and eventual resonance of the works, depending on the position one occupies: as an artist with an expressive, philosophical or cultural agenda; as a developer with bottom-dollar, return-on-investment concerns; as an engineer ensuring structural performance and safety; as, in Moshe Safdie's case, architect-curator, pulling it all together; and as a city authority, with a larger vision of making place and serving the local public. Last but not least, as the viewer, who will encounter the works and for whom the art was envisioned.

Marina Bay Sands' Art Path is a monumental project—a case of pulling out all the stops to produce the eight works created for the site by the five invited artists. The art is commissioned as part of the URA's Art Incentive Scheme, where an additional 2 percent of the total GFA (gross floor area) of the development is granted to the developer, Sands. Installed in various sections of the development from the hotel atrium to the exterior walls of the casino and through the retail mall, the works collectively benefit the scale of Singapore's second integrated resort located in the heart of the city's financial centre for the new era. In this case, the overarching narrative of the selection, installation and desired effect of the works is positioned as that of seamless

integration: the idea that the artworks and architecture are integrated into a singular experience.

This was described at the launch of the development's public art programme in May, when Architect Moshe Safdie opened the press conference with reference to historical examples in medieval, gothic, Islamic and Asian architecture. In these cases, artistic expression and ornamentation were integrated into the architecture, and where artists, craftsmen and master builders worked together from inception to completion, in contrast to the Renaissance attitude where art was treated more as an applied element, with painting and sculpture filling space. Inspired by that, Safdie Architects adopted a design team approach in the spirit of an architect-artist collaboration that kicks in at an early stage and develops interactively with regard to the design process and realisation of the plan.

Drift by Antony Gormley

Turner Prize-winning and OBE-conferred British artist Antony Gormley's *Drift* is a polyhedral suspended stainless steel matrix comprising 16,100 steel rods and 8,320 steel nodes measuring 40 metres long, 23 metres high, 15 metres wide, suspended cloud-like in the air between level five and 12 of the atrium of Hotel Tower 1, weighing 14.8 tons. The bubble matrix geometry, made by deriving polygons from packed spheres around the void space of a body, expanded to 10 times the size, was developed using a process by engineer Tristan Simmonds and constructed in partnership with local firm AME. It required 60 workers to assemble, comprising 9,000



stainless steel balls (each 32 millimetres in diameter) connected by 22,000 linear elements, each "unique in length and its rotation in space."

The work was made to occupy and amplify the vast space of the hotel atrium—to both "be in space and make space." Evoking quantum mechanics, molecular structures and cosmic objects, the work suggests the fundamental structures of nature, whereby even solid matter is composed of an assembly of infinite building blocks. Besides literally making heads turn, the intention of the work is to be encountered as one moves through the space, causing visitors to be aware of its many changing aspects. In this way it not only animates the gargantuan void overhanging the hotel atrium, but also gives the opportunity for a heightened consciousness, suggesting the larger philosophical considerations underpinning the work.

Wind Arbor by Ned Kahn

Ned Kahn created three site-specific kinetic art installations that collectively represent the most ambitious of the commissions: *Wind Arbor*, *Tipping Wall* and *Rain Oculus*. A past collaborator of Safdie's, Kahn's prolific 26-year career consists of artworks that reveal natural phenomena by employing natural forces such as wind, water, light and fog as materials. As much scientific experiments as aesthetic encounters, his works visualise air currents, fluid motion, turbulence and dynamic responses to site conditions to awaken the viewer's wonder and connection to the complex physical world around us.

Wind Arbor is the culmination of his wind-animated projects, a large-scale 6,800 square-metre installation that converts the building façade into an ever-changing visualisation of the wind. Measuring the area of five-and-a-half Olympic-sized swimming pools and measuring 15 to 55 metres in height from the north to south ends of the west-facing façade of the hotel, the work consists of 260,000 aluminium metal flappers mounted on hinges in a large cable net structure, moving freely in response to the wind currents. A piece of complex engineering, it works as a sensitive, articulated skin that reveals dynamic undulating patterns of wind and light as each metal flapper acts as a "detector" to amplify the atmospheric signals around it. The work reflects the light and colours around the building and acts almost as an extension of the atmosphere into the architecture itself.

As it covers 50 percent of the façade, it also helps to mitigate the heat gain of the building, especially as the western sun comes into the atrium in the afternoon. The lightly flapping metal units allow transparency for the building, as well as simulate the dappled effect of sunlight passing through leaves, into the atrium.

Tipping Wall by Ned Kahn

Nearby, *Tipping Wall* is a six-storey mechanical installation of 7,000 mechanical polycarbonate tipping water channels. The contraption playfully suggest the activity within the cooling towers where huge amounts of water are drawn up and down through screens and channelled through the building's air-conditioning system to cool the entire district.

OPPOSITE
Map of the development illustrating locations of the artwork. (Image: Marina Bay Sands)

TOP LEFT
Moshe Safdie (left) and Antony Gormley (right) studying a mock-up of the structure.

TOP RIGHT
Drift floating in space in the hotel atrium.



CLOCKWISE FROM TOP LEFT

Rain Oculus: glass bowl prior to filling of water.

Rain Oculus: simulation models. (Image: Ned Kahn Studios)

Wind Arbor by Ned Kahn, on the façade of the building in between the hotel towers.

Wind Arbor: mimicking natural formations, seen here at the building's edge closest to the hotel lobby.

Water runs down a black concrete wall and is captured by thousands of channels designed to tilt left or right, depending on which edge momentarily carries more incident water. This results in a fascinating field of complex interactions where each decision affects the elements below. As such, a surface of falling water has been animated into a novel and intriguing expression of continuous rotary movement that evokes the patterns of chaos theory and unpredictability.

Rain Oculus by Ned Kahn

Rain Oculus is a 22 metre-wide inverted acrylic dome at the events piazza that channels 6,000 gallons per minute of rain and pumped water into a great spiralling vortex. While the surface of the whirlpool becomes a turbulent mirror for the light from the sky, it also functions as a spectacular source of illumination for the central hub of the retail concourse below by moderating the sunlight through the acrylic dome. In part inspired by the ubiquity of vortices in nature, whether at the cosmic level of spiral galaxies, or at the subatomic realm, the work also allows the visitors to contemplate the vital significance of water.

* The *Rain Oculus* is currently under repair.

Rising Forest by Zheng Chongbin

In Zheng Chongbin's *Rising Forest*, 83 massive glazed ceramic sculptures are distributed throughout the hotel interior and exterior. Each vessel, weighing 1,200 kilograms and standing at three metres tall, carries a tree, to create a "canopy" as a comparative contrast of the organic layout of Chinese gardens through its repetitive form. Achieving the scale of the vessels and the painterly quality of the glaze was a feat involving a custom-made 6.5-metre kiln with a specially designed rotating fire to achieve the desired effect and the varied colours, clay quarried from the Yellow Dragon Mountain and careful craft. Perhaps it is successful of the artwork that the giant planting pots seem like interior design implements rather than attention-seeking art installations.

Blue Reflection Façade with Light Entry Passageway by James Carpenter

James Carpenter's façade of glass and metal fins was a response to the condition of having a long wall on the public-facing street, which because of casino regulations, would be devoid of windows. The opportunity was to enhance street life through the work. As such, suspended in front of a reflective metal

panel façade measuring 112 metres long and 17 metres tall are 80 stainless steel fins and 200 glass fins that create a variegated façade. This artwork, however, is almost indistinguishable from regular architectural façade treatment, and lack the visual and spatial engagement potential of the other works of art along the Art Path.

Arcs, Circle and Irregular Bands by Sol LeWitt Estate Entry

Finally, adding a dash of Technicolor to the building are two geometric wall drawings with graphical elements of arcs and circles conceptualised by the late American artist Sol LeWitt and executed by artists from the LeWitt estate. LeWitt's departure meant that the works were done posthumously by following LeWitt's directions and specifications to create the works in the hotel atrium reception. This could have resulted in a drastically different art piece with another artist but in this case, the concept of artwork being executed by others according to the artist's written instructions is the hallmark of LeWitt's methodology. The second piece of artwork will find its way to the underground pedestrian path to the MRT station.

Beyond Mere Integration

Confronted with the scale and the diversity of these artworks, how might they be assessed, given also their backdrop: simultaneously megaproject, planned economic driver for Singapore, business travel and gambling destination?

Apart from the analogy of seamless integration, beyond equalising the effects of the art and architecture, the works beg to be read and experienced on a level that lends itself to critical appreciation beyond the level of their physical integration with the landscape, either in the context of an experience-driven service economy, where human or user experience is key, or through an evaluative lens of art and architecture as socially embedded practice or human experience, where we view it as serving to facilitate interaction between bodies and space. How can public art lift us up, and out of context, in a good way?

It is not always the case that architecture and art commingle with positive interplay or engage their contexts well: as the "plop" art of the 1970s onwards, and numerous sculptural fountains and wall fixtures in countless developments attest to. For the Marina Bay Sands Art Path, thanks to Moshe Safdie's vision and

collaborative spirit, there are examples here—some clearly stronger than others—to learn from, of when art and architecture work to produce effects beyond the sum of their parts and thereby, have the potential to transcend ordinary physical experience.

It is in the same framework that these works—Gormley's and Kahn's being far more successful than the others by this measure—try to stand out from their site, going beyond banal or commercially motivated factors to deeper realms of artistic expression and humanistic exploration.

Interview with Antony Gormley

Famed for his artwork that deals with the engagement of the physical human body with space, including *Angel of the North*, *Iron:Man* and the recent *Event Horizon*, Antony Gormley (AG) is interviewed by *Singapore Architect* (SA). On his latest work, *Drift*, at the Marina Bay Sands, Gormley is asked, "Where is the body?"

SA What do you think motivates the integration of art into architecture, apart from allowing more floor area for developers to build?

AG This is a recipe for disaster you could say, where incentives overtake from aesthetic concerns. Ever since the Dockland Development Corporation from London, which also had a 1 percent for art, there is a way in which tokenism takes over, and we end up with the worst kind of art, which isn't art at all. It is simply a form of garnish. Often in buildings, which are fundamentally inhumane and an essential kind of expression of capitalism, which is the model of maximum return on minimum investment of office space, you get the kind of shiny object attached to the wall in the foyer or out in the front as a kind of trophy, a "sort of cherry on the cake" syndrome. On one hand, you want to encourage the initiative, but the initiative has to be matched by a kind of intellectual programme that allows the potential for great art-making, rather than simply tokenism.

The point of the work is that we have consciousness as living bodies, we have bodies that live in rooms, rooms are part of buildings, buildings are collectively part of the city, which in turn inhabits a land. We have this sort of Matryoshka doll configuration, of things fitting inside of things. But the fact is, in terms of development of the Internet, of material culture, now that over 50 percent of the world's population live in cities,

we actually deal only with the symbolic and meta-language either through the computer screen or through the fact that we live within the Euclidian geometry of a sheltering architecture.

So I'm asking where the human being fits in the scheme of things. By putting these bodies on the edge, we can see them, but they are witnesses to a horizon that we can no longer see within.

S A Could you tell us about the process of making the artwork here in Singapore?

A G I'm a sculptor, and it's been more than a pleasure, to work in such an environment of care. Moshe cares deeply about how things fit together, a sense of integration. My work wouldn't have been possible without Tristan Simmonds. He was able to write software that allowed us to conceive of this emerging system. Parametric design has only been possible in the last 10 years to this degree of complexity. That collaboration was reinforced by AME, a firm based in Singapore who previously only made oil installations for drilling. I have to say that was the most wonderful experience of a growing group of people. We had over 40 welders and over a 100 people that actually worked on the sculpture with such a sense of dedication, so that nothing seemed to be too much trouble.

I hope that what it does, being called *Drift*, is give an imaginative extra dimension to your experience of that space, and that it takes something material and present, and makes it somehow imaginative or participatory and allows you in some sense to be part of an emerging picture.

S A Being the new "Downtown," much significance is being paid to Marina Bay. What kind of engagement was envisioned for these works in this new public space, and for what kinds of public for this city?

A G I don't accept the distinction between public art and art. All art demands to be seen, and be met by the attention of a viewer. And all art demands a public. The intriguing thing in a project like this is the balance that it has to achieve between the privatised use of a hotel, and the fact that this is a public monument that stands almost like an object in the Bay that is witnessed by the rest of Singapore. And therefore it has, I feel, a symbolic presence which is acted out through the way in which human beings actually use the space.

In terms of the way that I was conceiving the work, I didn't want it to become like a decoration exclusively for the foyer of the hotel. I was very concerned about what the primary public access would be, which would be the bridge across through the atrium of the hotel.

For me, the big change that has happened in the way that we might conceive of art's participation in collective space, is that rather than being a trophy, it can become a catalyst for reverie or imaginative participation, and I think this is a very real development. Is it possible for the creative works of humankind not to belong primarily to privatised or specific realms of the museum's private collection or in enclosed spaces, but take their place alongside the sky, trees, mountains, buildings, and simply be a way in which imagination itself can be integrated in common experience? I would say that this is a very good example and argument to suggest that it can.

S A For *Drift*, the form of the object seems to be a bit more freeform as opposed to your previous "humanoid" work . . .

A G You're saying, *where's the body?* It's in there; whether you can see it or not depends on your state of mind, and how keen you are to find it. My work has always been about bodies in space. Our understanding of what constitutes the body and what constitutes space has radically changed—through the theory of general relativity, from 1915 through to 2010. Our understanding of the notion of solid objects, our own bodies included, has been revealed as an illusion. The degree to which sight is the projection of a pre-known symbolic order on our experience is something that we are all beginning to realise. This is a rather complicated way of answering the question, "Where has the body gone?" We now understand that the sub-optical structure of matter in a way that we have never before, and we see that rather than discrete objects, there are energy systems that are constantly changing. I hope that that is what is evoked in *Drift*. Within that is a question of how consciousness and matter come together. How do we, being-in-the-world, engage with its systems? That is a completely open question, and it is true of the fact that my work has been dematerialising, and my evocation of the body less as a thing than as a space, a space of potential, a space in which you are not certain about whether a body is a result of its context, or if the context is the result of concentrated energy within a bodily zone.

Interview with Ned Kahn

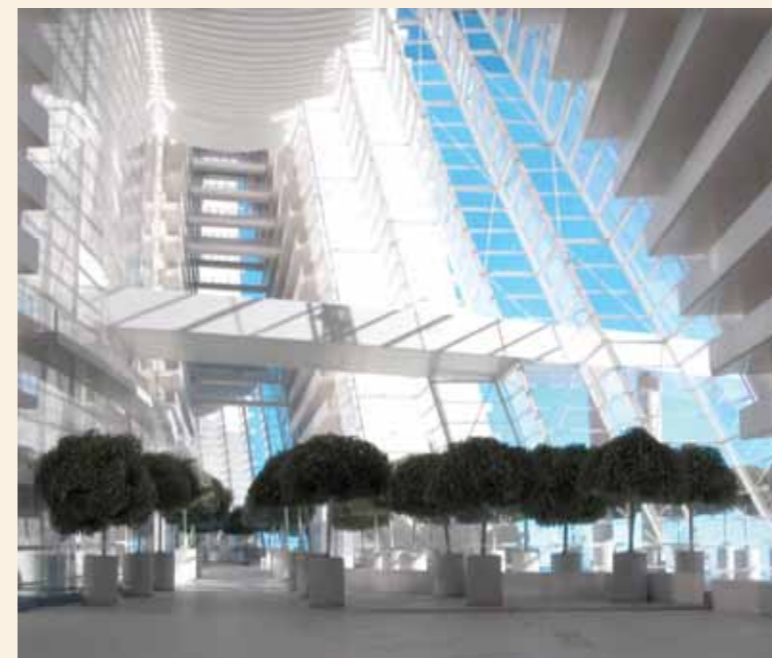
Three of Marina Bay Sands' major and most environmentally-engaging art installations are credited to Ned Kahn, an artist whose work has been influenced by natural phenomenon and brought to life by precise engineering. *Singapore Architect (SA)* talks to Ned Kahn (NK) on his passion for natural beauty and high science, and uncovers his thought processes along the way.

S A Your work is a confluence of art, architecture and the environment. Singapore is an intensely tropical country, and Marina Bay is a very coastal site. Yet most of the time Singaporeans are sealed off from the natural environment, which is why I find the artworks so wonderful. How were they initially conceived and translated to the final design?

N K Certainly my interest in nature is parallel with Moshe's interest in natural forms and geometries, so there is a deep resonance. We have worked together over 15 years and established a level of trust and camaraderie. Four years ago, Moshe had just won the competition and showed me his concept drawings. I came back with five ideas, and he encouraged me to be really bold, saying, "This is a huge building, it needs some art that is to scale with the project. Small art projects will get eaten up, so think big."

The whole west side of the hotel had a plant-draped arbour that served the function of shading the building. I suggested, "What if that were something more interesting or kinetic?" A lot of work that reveals the wind has been for parking garage structures. That's kind of where the architect runs out of steam, you know? So in this case we thought we might let it grow down and wrap around the cooling tower.

I did all this research on cooling towers, and found them intriguing, with the amazing amount of water in them that draws up and down, powered by huge fans. I thought, "Let's do a cooling tower that becomes one of the features and actually let people enter it," and had a design of a giant tornado vortex for the cooling tower and engaged an engineer who had a patent on something similar. We presented it, but the local engineers chose the standard prefab cooling tower technology that hasn't changed in 80 years and could be bought cheaply. In the end, the *Wind Arbor* takes the form of a shiny aluminium net that grows down and wraps around the cooling tower on three sides, with the rest of the cooling tower a beautiful shiny,



FROM TOP
Tipping Wall: see-sawing water channels.

Rising Forests: giant planting pots inhabiting the atrium space.

Rising Forests: study model of atrium space.
(Image: Moshe Safdie Architects)



anodised black that is same as the rest of the cable system and moving elements of the *Wind Arbor*.

Still stuck on the idea of having a semblance of connection to the cooling tower, I asked if I could steal some water from there and run it down the outside, instead of having it all be hidden. So that became the genesis of the *Tipping Wall*.

The *Rain Oculus* had an interesting trajectory. Moshe loved the shape of the roof of the ArtScience museum, but realised that rain would collect in there. I said, "That's a beautiful thing, let's gather the rainwater, turn it into a vortex and pour it through the building." But that would be a lot of warm Singapore rain to pour through a building that's air-conditioned. They had wanted to use the building to showcase Singapore historical artefacts, so humidity would have been an issue. At the place where the *Rain Oculus* has now ended up, my early idea was a plastic funnel with a mist vortex being ejected that would swirl around, pour down, evaporate and bring cool air into the building, acting as a form of air-conditioning and cleansing. People liked the idea, but it would bring humid air into the space whereas the struggle of air-conditioning here is to get the moisture out. So the idea became to do the vortex and get rid of the mist, and it turned from a funnel into a bowl.

I always move into a prototype as quickly as possible. I plunged into building a working model of the *Rain Oculus*, and did a whole series at a one inch to one foot scale, culminating in a bowl that was about two metres in diameter.

S A As you were creating models remotely, how did you understand the Singapore context and respond to the natural elements here?

N K I actually came to all this by hanging out with a lot of scientists and physicists. Those were my big influences. Right out of college, Frank Oppenheimer, a famous particle and cosmic ray scientist, told me amazing tales of the early days of quantum mechanics and of a crazy metal sphere that he built, funded and floated up into the atmosphere to detect the existence of cosmic rays. Hearing tales like this from him and other scientists, I started thinking about artworks that would be a sort of crude scientific experiment, inherently tied to the site and environment.

I was immediately intrigued with the wind and weather currents here, spoke to some environment experts and got the weather data. The winds here are really interesting—I'm just starting to get my mind around it. This is common to a tropical environment, but the weather evolves quickly every day. In California, you know what the weather will be like days in advance as it's coming towards you and how it will interact. It's almost a deterministic thing. Here, it seems as though reading the weather forecast is almost a pointless thing to do. There's... a consistency to the randomness.

S A What about context in terms of the public?

N K What I try to do is make artworks that are inherently physically responsive to what's really there in a place, in the moment. In a lot of public art, they bring artists from far away, and plonk you down in a culture that you really know nothing about, asking you to

do something that represents this place. It always seemed like a fool's errand to me, or just a recipe for superficiality, and that more often than not, makes fun of everybody.

S A Could you tell us more about the technical side of the project, the considerations you had to work around to execute the work? Were there modifications needed to the system, such as the size of the panel or materials involved?

N K In the previous wind-animated facades I've worked on, we constructed a whole secondary structure attached to the building requiring a lot of metal. When I saw Moshe's design, it was such an airy design that we came up with this net structure that would allow you to only attach the panels at the top and the bottom.

We involved a premier cable net company from Switzerland in building the prototype system of vertical cables and moving pieces with clamps to adjacent cables in a staggered array. We thought we were greatly simplifying the design having this cable net structure by using their standard cable net hardware. But as we got into it, the engineers told us that even though this thing is incredibly lightweight, and there is not much wind in Singapore, they wanted it to be engineered to withstand the force of 120 mph winds.

MBS (Marina Bay Sands) involved a local company who found some amazing fabricators in Thailand that does boat hardware, who are used to casting intricate stainless steel fittings for yachts. They made a beautiful mould, and figured out how to make these things relatively economically. There are



260,000 moving pieces. Each one of those has two stainless steel clamping assemblies, making it over half a million of these, so it was an amazing job of casting, polishing, machining, assembling all the aluminium pieces. There was some R&D on the whole anodising process to make it last decades in this kind of climate.

S A What do you think is the role of the work as a piece of public art? Your work has been described as an observatory to the landscape. How does that link to your philosophy of what art is and what it does?

N K The analogy of an observatory is an interesting one. For a lot of the work I do, in urban environments when people are inherently distanced from nature. You could look at these artworks as a window around a piece of nature, framing a view of it to give people an opportunity to get into that state of mind.

S A It kind of renders the invisible visible, and I suppose in an urban democratic sense, you no longer have to make the epic hero's journey to the observatory, neither do you have to be a specialist to be able to observe that. It's being made available. On the larger global landscape, what do you find are the best conditions for doing such experiments?

N K Part of it is working with people you have nice rapport with, who share a nice synergy of ideas and skills. Another big thing for me is getting involved early on. I get depressed when people call me in after the building is all done. The things I get most excited about are some unique opportunities, such as an amazing pedestrian bridge and a pier that is powered by ocean waves, two projects in Los Angeles. Such opportunities

do not come along often. A lot of people come to me with parking garages, blank concrete walls and lightless plazas that someone builds and now go "okay we need to give reason for people to come here."

S A The field of kinetic architecture is burgeoning, at the same time it isn't yet really formalised. Why do you think this is happening and where do you think it is going to go?

N K Some kinetic architecture has been driven by technology, say LEDs, which are a lot easier and ubiquitous, and computer-controlled. A lot of it is kind of superficial, to my mind. But some people have really started to think about adaptive facades, which respond to the environment in interesting ways. Those are the things that I am more intrigued with. The skin of the building is such an interesting membrane. It keeps heat and cold, and lets light in. I met a scientist who asked people what they thought the brain of the cell is, which people usually think to be the nucleus. He says it is really the membrane, which stores most of the cell's intelligence, taking in all this information and energy and responding to the environment. The skin is so amazing, it protects you from the environment, helps you feel things, storing information that lasts a lifetime. ▀

For more information about Art Path, visit www.marinabaysands.com.

LEFT
Arcs, Circle and Irregular Bands: Bands of colour that greet you at the reception.

RIGHT
Blue Reflection Façade: a variegated façade which reads more like architectural treatment than a commissioned artwork.