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## The Singapore Architect

## Beauty vs. Buildability

## HERITAGE

Beauty in Harmony

## FEATURE Generating a Surface of Possibilities Neo-Tropical Future Living with the Pixel Familiarity / Differentiation

INSIGHT Construction in Context Labour and Work Humanity in the Digital Age of Perfection Buildability without BCA



Η.



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ERRATA FOR TSA 16 "BE AGILE" (SEPT 19 - DEC 19) ISSUE:

Khong Guan Building On pages 11, 78, 80, the design architect for the Khong Guan Building was incorrectly and inconsistently referred to as either "Meta Architec "Meta Studio." The correct name of the firm is **Meta Architecture**.

## Funan Digital Mall

On page 68, the Project Information incorrectly lists Arup Singapore Pte Ltd as the lighting consultant for the project. The correct firm is Nipek Pte Ltd.

## ISSUE NO. 17 — BEAUTY VS. BUILDABILITY

## KKDN: PQPP1560(1765) MCI (P) 109/04/2019

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Raymond Ang finds a refreshing resonance between Swiss precision and the HDB standards.



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What is the difference between building in Singapore and Japan? We ask a group of Japanese building experts at Kajima Technical Research Institute Singapore.

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## PERFECT (IM)PERFECTION: FINDING DELIGHT THROUGH ARCHITECTURE IN A DIGITALISED SOCIETY

What makes a space perfect has nothing to do with flawless precision. Dietmar Leyk and Sonja Berthold attempt to distinguish two different types of perfection.

## BUILDABILITY WITHOUT BCA: PERSPECTIVES FROM A SMALL PRACTICE

Wu Yen Yen shares the alternative approaches to buildability that her practice has explored and gives her interpretation of where the profession should be headed.

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Ian Tan looks back at 30 years of conservation in Singapore.

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## **Teo Yee Chin** Chief Editor

To build well does not need to mean to build with less human endeavour. Easy construction should also not be confused with automated construction.

In this issue of The Singapore Architect, we question if buildability as a concept has been horribly redefined by guidelines and checklists, and if the pursuit of "productivity" has been at the cost of quality in architectural production.

To be clear, that a work of architecture should be constructed efficiently is not in question. We often say that architecture is a blend of art and science, but it is really about art, science and economy. The belief that there is elegance in efficiency does firmly underpin the modern movement in architecture.

What has changed the game is the influx of cheap foreign labour that went into overdrive around the turn of the century and became a political problem. Capitalising on disparities across the region to drive growth had gradually resulted in a strain on both the national infrastructure and the social compact. The construction industry was an obvious field to make changes. Over the past decade of changing legislation, building techniques such as precasting and PPVC (prefabricated prefinished volumetric construction), which pulls labour off-site, and off-shore, have become a standard parameter for residential projects.

Architects can no longer play the game (and flaunt it) only when they feel inspired to. It is not an option any more. This is an issue now driven by the authorities with a one-two-three combo of legislation, incentives and publicity.

We wanted to understand motivations for exploring efficient construction techniques that are self-initiated rather than driven externally by compliance requirements. For this, we chose to interview Look Boon Gee and Ng Sor Hiang, directors of LOOK Architects. Starting from the precast elements in Gemmill Lane shophouse about twenty years ago, LOOK has quietly and consistently grown their practice while developing their kit-of-parts aesthetic and civic concerns in projects such as Bishan Library and Southern Ridges Forest Walk. As Look describes, the aesthetic is very much driven by the understanding of the technology.

Seeking a reference for how the local construction industry has developed, TSA also reached out to another context, Japan, known for its high quality of design and construction. In INSIGHT, we spoke to a group of researchers in the Kajima Technical Research Institute Singapore (KaTRIS) and came away with several interesting comparisons.

In the same section, Wu Yen Yen approaches buildability from the perspective of a small practice making small projects and operating outside of BCA's framework. In my essay, I distinguish between labour and work in architecture and construction. SPACECOUNCIL (Dietmar Leyk and Sonja Berthold) look for another definition of perfection to take architecture back to its roots in the age of mass customisation.

Under FEATURE, we showcase two public housing projects, Tampines Green Ridges (G8A + LAUD) and St George's Tower (LOOK) which both have to deal with the palette of stipulated building techniques, and investigate how the architects take the architecture beyond technical compliance and break out of the mould, so to speak. We also see in New Futura (SOM + ADDP) how a luxury condominium which bagged a constructability award can achieve an elegant silhouette with sinuous curves using modern building techniques. Lastly, Produce gives us a perspective into the future by their use of advanced modelling software and computer-guided fabrication machines to make a tactile and bespoke office interior for Lien Foundation.

Interestingly, the latest edition of Archifest which just concluded (see our coverage on p.16) had Craft as its theme. The idea of craft, which attributes value to human endeavour, would tear us diametrically away from the state-led version of buildability. As Alan Tay, Archifest Director, frames it, "if the broadest definition of craft is about precision that demands laborious attention and skilled handwork, where do we locate it within the realm of architectural production in an age where expediency and efficiency are privileged?"

The issue is compounded by society's inability, and reluctance, to raise the value attributed to construction work. If being a builder was an honourable and respected profession, would more "labour" on site necessarily be a bad thing? A mindset change (imagine if a child was able to proudly tell his classmates about his father's work on a construction site) would give the industry a huge lift, and have repercussions ranging from better workmanship to job creation for locals.

Beauty or Buildability? There is no straight answer, of course. But it is certainly important to always keep this question in mind.

## BUILDABILITY

## NEWS

AWARDS

## World Architecture Festival 2019

## Shortlist for the World Architecture Festival Awards 2019 has been announced

The shortlisted projects for the World Architecture Festival Awards 2019 has been announced. The World Architecture Festival (WAF) is an annual festival and awards ceremony, one of the most prestigious events dedicated to the architecture and development industry. It is the only event where around 550 shortlisted architects present their projects live in critique rooms to a judging panel. One of these projects will be awarded the World Building of the Year title.

The following are the shortlisted projects from Singapore:

## **Future Projects**

## Civic

 Commonwealth Lane: Death & The Community — CIAP Architects and Ong & Ong (Landscape)

## **Completed Buildings**

## Health

 National University Centre for Oral Health, Singapore (NUCOHS) — architects 61 in collaboration with B+H

## Higher Education And Research

 National University of Singapore School of Design & Environment
 Serie + Multiply Architects with Surbana Jurong and National University of Singapore School of Design & Environment

## Mixed-Use

- DUO
   Buro Ole Scheerer
- Oasis Terraces

   Serie + Multiply Architects

 Novena Church (Church of St. Alphonsus) – cgnArchitects
 Grace Baptist Church

Religion

— LAUD Arc

School

## My First Skool at Segar Gardens AUD Architects

Transport

Jewel Changi
 Airport
 Safdie Architects

## Urban Projects

O DUO — Buro Ole Scheeren

## Engineering Prize 2019 Shortlist

 Jewel Changi Airport

 Safdie Architects, Singapore



National University of Singapore School of Design & Environment



Oasis Terraces



)



Grace Baptist Church



Novena Church



Commonwealth Lane

WORLD ARCHITECTURE FESTIVAL 04.12.19 – 06.12.19, AMSTERDAM

www.worldarchitecturefestival.com



## NEWS

## New Blueprint For Sentosa and Pulau Brani Certified Gold

The two islands will be developed into an iconic tourist and leisure destination

WilkinsonEyre and Grant Associates have unveiled a masterplan for a "major international leisure and attraction destination" on two islands off the coast of Singapore. Known as the Sentosa-Brani Master Plan, the proposal reimagines the islands Sentosa and Pulau Brani as a giant "island playground" that feature a mix of leisure attractions, tropical landscaping and nature trails.

It has been developed by landscape architect Grant Associates with Wilkinson Eyre and Singapore's Sentosa Development Corporation (SDC) as part of a wider regeneration of the country's south coast.

The Sentosa-Brani master plan is expected to be implemented in phases over the next two to three decades, but construction on the first milestone project — a 30,000 sqm multi-sensory walkway — will begin in the fourth quarter of this year and will be completed in 2022.

Sentosa Sensoryscape, which will be about the size of 5.5 football fields when completed, will connect Resorts World Sentosa in the north to Sentosa's southern beaches. Comprising a two-tiered walkway, Sensorvscape will have features that stimulate the five senses — such as textured surfaces and plants that respond to touch, a water feature with the sound of cascading water, and visually striking giant flower stalks framing the sides of the thoroughfare.

As part of the larger master plan, Sentosa and Pulau Brani will be redeveloped according to five zones. Each of the zones — vibrant cluster, island heart, waterfront, ridgeline and beachfront — will have their own character and will deliver a unique experience to visitors.

Transport connectivity will also be enhanced, and a "Downtown South" resort modelled after the labour movement-run Downtown East in Pasir Ris, announced by PM Lee, will likely be built on Pulau Brani.

The 1.22 sq km Pulau Brani, about a guarter the size of Sentosa, now houses a port terminal, which will move to Tuas by 2027 along with the terminals in Keppel and Tanjong Pagar.

The two islands are part of the upcoming Greater Southern Waterfront district, a 30km long coastal stretch to be developed for living, working and playing.

## AWARDS

## International Architecture Awards 2019

## The Winners Of The International Architecture Awards 2019 are announced

Design, together with The European Center for Architecture Art Design and Urban Studies and Metropolitan Arts Press, Ltd. organises The International Architecture Awards as a way in which to honour the best, significant new buildings, landscape architecture, and planning projects designed and/or built around the world's leading architects, landscape architects, and urban planners practicing nationally and internationally.

The International Architecture Awards are dedicated to the recognition of excellence in architecture and urbanism from



## The Future Of Us' Pavilion @ Gardens By The Bay Singapore (2015)

• Architects

○ Client

O General Contractor – Pico Internationa

Located between Marina Bay Sands and the Gardens by the Bay Singapore, The Future of Us Pavilion follows the grand tradition of architecture that evokes a dialogue between built form and nature in the tropics.

Blending the structure's intricate form and perforated skin fluidly with the adjacent environments of the Gardens, the Pavilion establishes a close relationship between landscape and architecture based on advanced design and fabrication technology.

For visitors, it offers a climatically comfortable outdoor environment and a stunning visual experience akin to walking under the foliage of lush tropical trees — an idea of future nature. Originally built to house The Future of Us, an exhibition to commemorate Singapore's golden jubilee in 2015, the building has since become a permanent national landmark that is now an intrinsic part of the Gardens. As such, it continues to serve as an important public asset and venue for major events including the annual Singapore Garden Festival.

Since 2004, The Chicago Athenaeum: Museum of Architecture and a global point-of-view. The program pays tribute to new developments in design and underscores the directions and understanding of current cutting-edge processes consistent with today's design thinking.

> This year's program honours new (2017-2020) corporate, institutional, commercial, residential architecture, interiors, and urban planning, designed for both built and unbuilt projects alike.

The 2019 winners from Singapore are:

## Sengkang Riverside Park Large Childcare Centre (2018)

- Architects
- Design Team – Chen Kian Khiong, Kee Jing Zhi, Tan Kian Teck
- Client - Skool4Kidz Preschool
- O General Contractor Sanwah Construction Pte. Ltd

Sengkang Large Childcare Centre is the first and only project in Singapore that integrates an entire facility into a park. As part of Sengkang Riverside Park, the building is a seamless extension of the park's constructed wetlands and open spaces. Emerging at the entrance of the park and gradually sloping down to the riverfront, the building features openings specially created to maximize natural daylight and allow for cross ventilation.

This blurs the lines between indoor and outdoor, for a richer learning environment. The architects proposed a 'rolling hill' concept that would merge the building mass with the park, while providing a whimsical but exciting narrative for children as the 'hill school'.

www.internationalarchitectureawards.com

## NEWS **Founders' Memorial Public Voting**

## Singaporeans invited to choose their favourite design for the founders' memorial

take a first look at the five shortlisted designs for the Founders' Memorial, and choose their favourite design. The shortlisted designs will be part of the Founders' Memorial Design Showcase, which will travel island-wide from

Singaporeans will have the opportunity to November to December 2019. Beyond the travelling showcase, Singaporeans can also choose their favourite design online. One of these five designs will eventually become the Founders' Memorial, slated to open in 2027.

The Five Shortlisted Designs

The five shortlisted designs and teams are (in alphabetical order).

www.foundersmemorial.sg



## A. 8DGE + RSP Architects

future. The architecture is designed as a circle rising above a landscaped podium. The podium is an open space where visitors are channelled into the centre. This is called the Origin: a symbolic common space for of Singapore's skyline awaits, upon which we reflect on our past and everyone, regardless of race, language or religion. Rising above is the embrace the future.

The Founders' Memorial is a beacon that guides Singapore into the circle, representing harmony and inclusiveness. The circle tilts towards the sky, as if Singapore's aspirations have taken flight, against all odds. The journey cumulates in the viewing gallery, where a panoramic view



## B. Cox Architecture + architects61

The Singapore flag is the inspiration for the site, which is marked by five pathways — representing the five stars and the abstracted crescent moon — the Memorial. Each pathway is a physical celebration of the ideals that each star of the flag represents — democracy, peace, progress, justice and equality.

The social history, trials, tribulations and victories of the Singaporean people act as the inspiration for the internal makeup of the Memorial. It is a place of internal and collective reflection whereby the act of procession through the building is a journey to understanding the rich and complex history of the nation.



## C. DP Architects

The memorial is a quiet yet powerful tribute to our founding fathers curved form is inspired by the hands of our founding fathers — hands nation into the independent Republic it is today.



## D. Johnson Pilton Walker + RDC Architects

The memorial design rises out of the earth to evoke the crescent moon of the national flag; symbolising a young, rising nation. It looks to the future.

To honour the past, the arrival experience celebrates the diversity of Singapore's people, who are gathered together from all corners of the world to the central plaza, united by shared founding values. This is the epicentre of the experience, engraved in many languages.

Set on the water, amidst lush gardens, and with panoramic skyline views, this is a timeless, civic place accessible for all and allowing growth into the future

Its form, cupped in a gesture of giving, nestles the iconic Singapore and their selfless giving to nation building. Shaped like a cradle, its skyline in its cusp. It expresses our founders' commitment and aspirations; where our present successes and future of our nation are that have worked tirelessly, placing nation above self, to nurture a young possible through the core values we have inherited from our founders.

## E. KengoKuma&Associates + K2LDArchitects

The Founders' Memorial draws from monuments of the past and the context of the present to create a space for the future. The concept originates from a path; a journey retracing the legacy of the

founders. Multiple paths shape the architecture and landscape, inviting visitors to reflect, learn, and share while contemplating the dynamic skyline or the lush gardens. All paths lead to the memorial amphitheatre where visitors gather for milestone events.

As a living memorial, the proposal extends the legacy of The Garden City into the future for generations to come.



## NEWS

## **Archifest 2019: Notes From Director**

2019 Festival Director and Formwerkz Founder Alan Tay shares his thoughts after another well-received Archifest

## Craft

Craft. Throughout the ages, architecture has always been preoccupied with the bespoke. Architects working alongside with artisans, developing deep understanding of materiality and developing techniques that often reflects the genius loci.

This discussion is timely and relevant when the practice and the construction landscape is rapidly evolving. If the broadest definition of craft is about precision that demands laborious we locate it within the realm of architectural production or construction in an age where expediency and efficiency are privileged?

While we wish to focus on the role of craft in the discourse of architecture, the theme has the potential to encompass far more.

The maker culture that leverages highly on open source and technology, hacks the old artisan mode of production. While this cutpaste approach democratizes and demystifies what used to be only exclusive to the few, it does raise questions on issues of equity and ethics.

Through the series of master lectures, panel discussions, exhibitions, tours and

this discussion and understanding of craft.

At the very least, the Festival wishes to honor and recognize those among us that have dedicated a life time of perfecting their craft of Architecture. It has always been intrinsic part of architecture, since time immemorial. It may not solve world problems, but Craft does make us happier.

In Retrospection

13 Days 12 Exhibitions 1 Conference 7 Forums 7 Tours 14 Workshops 3 Films 2 Parties

We were pretty contented with what we have achieved in this Archifest.

The venue in URA Centre allowed us to mount a decent collection of exhibitions from different groups, each engaging the theme from diverse perspectives. We managed to pull through a record-breaking number of workshops this year. These workshops workshops, we wish to engage the fraternity, conducted by artisans from different

This year, the theme for the festival is the academia, the agencies and the public in trades are effective in eliciting active public participation and in communicating the theme of Craft.

> We have learnt a great deal as well. We were surprised, from media responses, how little association the public has made between craft and architecture. That definitely strengthens our conviction with the timeliness of the topic.

> It has started some conversations within the fraternity. A particular exhibition (Making Architecture) and a forum is picking upon some momentum in Jakarta.

> It is extremely consuming but fulfilling at least.

Alan Tay

FESTIVAL DIRECTOR OF ARCHIFEST 2019 FOUNDER OF FORMWERKZ ARCHITECTS











Conference Speakers, Moderators, and Organisers

NEWS

## 8th mASEANa International Conference Singapore 2019

## "Progressive Once More": **Rejuvenating Mid-Century Modern** Architecture in Southeast Asia

## Organisers' Synopsis

Modernist buildings and landscapes in South-East Asia stand as a tangible and concrete embodiment of the region's heroic post-independence nation-building era. Built between a couple of decades in the mid-20th century, the best examples possess high urban, architectural, social and economic significance. However, unrecognised as heritage and faced with mounting redevelopment pressures, these modern complexes are at a watershed moment. What are the alternative models of urban regeneration without tabula-rasa renewal? The conference aims to uncover and showcase how innovative adaptive reuse of modernist buildings and sites — once seen as avant-garde and progressive — could imbue a new lease of life and recover their 'cutting edge' through creative planning, programming and design, tackling pressing global issues such as environmental sustainability and urban liveability.

## Commentary

This 8th mASEANa (modern ASEAN architecture) international conference is the first one hosted in Singapore. It is significant in its time and place because it marks the efforts to start Docomomo-sg, the Singapore chapter of Docomomo (International Committee for | Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement), an international non-profit organisation that was founded in 1988.

The conference brings together academics, practitioners and technical experts to share experiences and opinions on the conservation of modernist buildings in South East Asia as well as in Europe and North America.

On the first day, Eunice Seng chose the year of 1973 to illustrate certain milestones in the development of Singapore's modern architecture. She appealed for the consideration (and control) of relevant the economy, in how they shape public imaginations of what was important heritage, seeing that the top-ranked heritage buildings for Singapore was the control tower of Changi Airport and the Merlion, but yet included none of the architectural masterpieces.

Setiadi Sopandi shared how the Gelora Bung Karno stadium complex had been revitalised for the SEA games in 2018 after some 30 years of neglect. Beverley Salmone of Doh Eain shared their economically sustainable alternative to demolition of Yangon's heritage buildings, which involves a renovation of these buildings and then a rental model that gives revenue to the owner and also the social enterprise that manages the property.

Dr. Pinai Sirikiatikul of Silpakorn University gave an alternative, labour-intensive, history of precast construction through the dedicated efforts of architect Amorn Srivongse in Chiang Mai University. Wong Chung Wan of MAEK consultants gave an intriguing technical perspective into the life of materials. Gerard Rey Lico in his usual thoroughness and clarity painted an overview of the evolution of Filipino modern architecture.

On the second day, the presence of guest of honour, 2nd minister for National Development, Desmond Lee, was a major boost. It was especially impactful as the organisers made sure that he was present for the major presentations on Park Hill in Sheffield by Mark Latham (Urban Splash, UK) and the listing of modern buildings in England by Elaine Harwood. Minister Lee also listened to Donovan Rypkema (Heritage Strategies International, US) who gave a purely economic analysis of how to incentivise owners and developers to buy into conservation. It is indeed important that our leaders be made aware of these efforts and ideas which have been successfully implemented overseas.

The event contained a treasure trove of case studies and would have opened the minds of many conservation sceptics. Regretfully, the relatively small audience may have largely contained the alreadyconverted. Nonetheless, we should see this as the beginning of a growing conversation with various stakeholders and the public in general.

ORGANISERS: DOCOMOMO-SG WORKING GROUP-IN-PROGRESS, THE NUS DEPARTMENT OF ARCHITECTURE AND SINGAPORE HERITAGE SOCIETY

31.10.19-02.11.19, THE URA CENTRE





with Minister Desmond Lee in attendance





Networking Event at the Projector, Golden Mile Tower with an address by the Guest-Of-Honour, Professor Ho Puay-Peng



Panel discussion for the Special Plenary Session with speakers (from left to right): Malone-Lee Lai Choo, Donovan Rypkema, Elain Harwood, Mark Latham, Hossein Rezai-Jorabi. Moderated by Sarah Ichioka.

Post-Conference Tour at the Golden Mile Complex

## NUS SDE4 is Well Certified Gold

## NUS SDE4 is the first university building to receive prestigious award

The National University of Singapore (NUS) has been awarded the Design and Environment (SDE), in partnership with external consultants, WELL Certification at the Gold level by the International WELL Building Institute (IWBI) for its SDE4 building. The building is the first university building in the world to achieve WELL Certified Gold, and the first building in Singapore to be conferred this prestigious WELL Certification.

This major achievement was announced today at the SDE50 Gala Dinner to celebrate SDE's golden jubilee.

The WELL Building Standard is the premier standard for buildings, interior spaces and communities seeking to implement, validate and measure features that support and advance human health and wellness. Its performance-based certification marries the best practices in design and construction with evidence-based scientific research.

SDE4 is Singapore's first new-build net-zero energy building, conceptualised and constructed by researchers from the NUS School of

builders and developers.

It hosts a suite of sustainable building features that are not only energy efficient and environmentally friendly, but also improve the comfort and wellness of its occupants. The six-storey building serves as a living laboratory to demonstrate and explore human-centric and integrated sustainable developments.

Some of the key features in SDE4 which contributed to its WELL Certified Gold rating include a hybrid cooling system, excellent access to daylight, straight flight staircases encouraging movement and collaboration, and its extensive landscaped and outdoor spaces.



## NEWS

## **Temasek Shophouse Wins Architectural Heritage Award**

## Sensitive re-use and thoughtful restoration creates an example of sustainable development

old shophouse, near MacDonald House in Orchard Road, picked up one of the island's most prestigious conservation awards at the annual Architectural Heritage Awards on 21 Oct 2019.

This century-old three-storey building has been rejuvenated with a new mission of 'giving back' to society. Called Temasek Shophouse, the building which used to be a townhouse with apartments and shops, was the sole winner of the Urban Redevelopment Authority's (URA) award for restoration. The building's original ornamentation and missing features were

original form as possible. For instance, false ceilings at its five-footway were removed, drawing attention to its original double height columns.

It now stands proudly in its former grandeur as a community space along the busy Orchard Road. Through thoughtful repair, re-imagination and sensitive reuse, it is a showcase of sustainable development.

Inside, a two-storey atrium now stands in the place of bulky escalators from the 1980s, introducing a new sense of spaciousness

The sensitive restoration of a century- carefully restored, returning it as close to its to the building. The 18-month restoration of the state property had been undertaken by lessee Temasek Trustees and architect Surbana Jurong Consultants. The site is home to Temasek's philanthropy arm and has space for its co-working partners, as well as a public arena on the ground level.

> The Architectural Heritage Awards 2019 also features a Special Mention for 105 Onan Road by Ezra Architects, cited by URA as "a true labour of love" where the "use of recycled materials and upcycled discards throughout the project help to add to the charm"

## AWARDS

## World Architecture News Awards 2019

The WAN Awards is an international award, now in its eleventh year, that recognises architectural excellence from around the world. Judges this year include Eva Jiricna and Martha Thorne. The winning projects for the World Architecture News Awards 2019 has been announced.

The following are the awarded projects from Singapore:



NEWS

## Healthcare

Silver Award

○ St. Joseph's Home — SAA Architects

## Mixed Use

## Bronze Award

O Oasis Terraces Serie + Multiply Architects

## COMMERCIAL — Over 50,000sqm

Bronze Award

O DUO - Buro Ole Scheer

# Feature

p32 Neo-Tropical Future Written by Ar. Yang Han

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WRITTEN BY Ar. Teo Yee Chin MSIA

PRODUCE, a design studio co-founded by Ar. Pan Yi Cheng MSIA, is a trailblazer.

Since its inception in early 2013, it has defined for itself a special role operating across the disciplines of architecture, engineering and construction, and in occupying this liminal space with increasing confidence, generated exciting possibilities for the industry at large.

<u>FEATURE</u>

## **Generating a Surface** of Possibilities

DRAWINGS BY PRODUCE PHOTOGRAPHS BY Daniel Chia



THE SINGAPORE ARCHITECT

Learning from his time working at the now defunct Advanced Geometry Unit (AGU) within Arup in London, Pan sought to research design solutions always grounded in an integrated understanding of structure and fabrication. While there is a predilection to challenge their techniques by building complex curved geometry, regular orthogonal solutions have often been found to be applicable as well.

Regardless of the eventual form, what is consistent is the simple intent to control the process from design to built form. This objective is matched by a thorough knowledge of material properties, and a capability to model the form down to individual modules and joints. For the old architects who have relinquished the responsibility of building and would rather speak wistfully of the need for good contractors to translate their rough artistic sketches into built form, the work of PRODUCE is a blast of a wake-up call.

The determination to control the fabrication process and not be daunted even by complex geometries led PRODUCE to invest in a 5-axis CNC (Computer Numerical Control) Router several years ago. While this enables them to rapidly prototype working models, it has also opened up another revenue stream as they accept assignments from other clients to cut components.

The above outline serves as a background to understand the trajectory of the studio's work. The interior fit-out of Lien Foundation Office is the latest completed

project of PRODUCE, and also one that overlays a surface of complex curvature onto an existing space. As with previous notable spaces such as Herman Miller Pavilion Version 1 (2012), Herman Miller Pavilion version 2 (2016) and Wild Rocket (2014), the heart of this project comes down to a small custom-fabricated module. Before we get into the detail, a brief explanation of the client is in order.

Lien Foundation is a philanthropic organisation. It is however not only a charity that pays for others to solve problems, but one that leads the thinking and propagates new solutions. They do this by being a research house of sorts, commissioning films and publications to document ideas and raise awareness. Currently, Lien Foundation focuses their efforts on early childhood development and eldercare through two clusters in their office.

The approach to the commission began as a reaction against the informal and open nature of co-working spaces that are all the rage now. Instead, what was required of the office was analysed and clarified as three aspects - cluster identity, personalised workspace, and open collaboration. Pan conceptualised the design as a long and thin paper scroll akin to the pages or reels of knowledge that form the output of the office. This was manifested as a continuous surface that contorted to deliver the three aspects identified above. Other than the two work clusters, the surface also defined the CEO's office, the pantry and the meeting spaces.



View of PET and Birch finishes

The surface took the form of a three-dimensional catenary vault, an ideal shell structure that is able to take significant load. The intent was for the construction to be self-supporting. The surface was divided into about 1,200 unique triangular flat panels. Each triangular unit is a structural plywood panel sandwiched by acoustic wool on the inside and thin finishing birch ply on the outside.

Several prototypes were made to test the ideal joint between these triangular modules. The joint needed to allow tolerance and be easily assembled. Importantly, it must contain the intelligence to achieve the overall form. The use of advanced software and the 5-axis machine are critical here. With these tools, each edge of each panel is chamfered to a precise angle such that when it comes into full contact with the edge of the adjacent panel, they will be at the correct incline conforming to the model. Notches are made such that bolts and nuts can be used to tighten the panels together.

Most services, such as lights, are coordinated within the model and integrated via pre-cut holes in the panels. Some sprinkler points however needed to be cut on site in order to accommodate the in-situ installation by the sprinkler contractor. This raises the issue of discrepancy between the "ideal model" versus the "adapted model".

The assembly gives definition and identity to the 2 research clusters



Certain panels (seen as voids here) are designated for access



View of joints after assembly

## LEGEND

- Waiting Area/ Pantry
   Meeting Room
   Director's Office
   Work Area
   Meeting Pod
   Lounge



The ideal set of information on the drawing board tends to require adaptation. Most architects set themselves up, in varying degrees, to modify their design in order to accommodate exigencies on site or contractors' limitations. This honestly can be due to factors beyond the designer's control, but it can just as well be due to inadequacies of foresight, coordination and documentation.

Compared to most architects, what PRODUCE does comes very, very, close to an ideal model. While I do doubt that such a degree of control can be asserted in larger building projects, what matters is that PRODUCE does not capitulate but continues to research on techniques of control and fabrication to eliminate each new obstacle that arises.

One example in this instance is the structural performance of the plywood assembly. To accommodate larger clear headroom spaces, some of the vaulted surfaces became too flat and thus needed isolated hangers. PRODUCE do not (as yet) have the software for Final Element Analysis (FEA), which would show the stress points in the model and allow correction before construction. To overcome such surprises which cannot be foreseen in the model, PRODUCE commits to always test in prototype or a 1-to-1 mockup. To me, this stage is also precious because it allows the experiential qualities to be manifested.











## **FEATURE:** Generating a Surface of Possibilities



## Eldercare cluster office space

## PROJECT INFORMATION

- CLIENT Lien Foundation
- TIME TO COMPLETE 4 months
- O TOTAL FLOOR AREA 200 sqm
- CONSULTANTS
- O DESIGN ARCHITECT Produce Workshop Pte Ltd
- LIGHTING CONSULTANT Palicon Lighting Pte Ltd
- CONTRACTORS
- O INTERIOR CONTRACTOR Coreno Pte Ltd
- SUB-CONTRACTOR Superstructure SG Pte Ltd

## SUPPLIERS

- O FLOOR TILES/ FLOOR FINISH BOLON (XTRA)
- CONTRACT / LOOSE FURNITURE Herman Miller SAYL Work Chairs (XTRA), Work Desks (VCOP)
- OTHER FINISHINGS
   Birch Plywood, Birch Veneer,
   Acoustic Felt Panels (Panalogue),
   Marble Table Top (Kstone)
- derive their aesthetic success from the combination of two material effects. The first is the intricate fabrication detail at a scale apprehensible by a human. The second is the overall spatial volume defined by a surface of consistent geometry that these modules come together to make.

Lien Foundation Office, like the Herman Miller spaces,

Like all good buildings, these tactile qualities come through the assembly of forms in space. However, by employing high-tech fabrication techniques and hybrid business models, Pan and his team at PRODUCE are charting new ways to attain the age-old fundamentals of our craft. This is surely a space to watch.



View of meeting room and collaboration spaces

<u>FEATURE</u>

## Neo-Tropical Future

WRITTEN BY Ar. Yang Han DRAWINGS BY ADDP Architects LLP PHOTOGRAPHS BY

The post-independence wave of architecture in Singapore birthed many architectural gems. One most iconic example was The Futura constructed in 1976, one of the boldest and most dynamic approach to high rise living.

Its architect, visionary Timothy Seow, has sadly passed away in September this year. A true innovator, it was not only ground-breaking in form but was also the first to conceive of "Bungalows in the Sky", with ideas such as swimming pools for the 3 penthouses and private lifts for all its units. Following its en-bloc sale in 2006, Futura was demolished in 2012, and it took another 5 years for the site to be reoccupied.





The previous Futura occupying the site

## Background

When the Futura was first slated for en-bloc intensification, there were sentiments to conserve its unique architectural form. The design team of concept design architect Skidmore, Owings & Merrill and the principal architect ADDP were on board from 2008, and their first design iterations were about preserving the original tower block. The challenge was to increase GFA while working with characteristic features of the Futura such as split levels within the unit that no longer comply with new accessible requirements. Many iterations were studied, but none were found to be economically viable. With that conclusion, the SOM-ADDP team moved on to develop new schemes involving complete reconstruction.

## Strategic Moves

The conceptual allegory for the new development given by the developer CDL was that of a luxury car. Drawing parallels to the production of premium vehicles, the design of a building must be visionary and forward thinking. It takes years to perfect a car for production, and when it is finally marketed, the design must still remain ahead of its time. This perspective adapts well for architecture, as the incubation period for a building is longer and the building when completed must not be outdated and shall remain relevant throughout its lifetime.

The designers initially leaned towards a single tower, but the advantages of a two-tower design proved preferable on many levels. The smaller floor plate of each tower accommodated fewer units per floor, promising more exclusivity and at least one 90-degree facade corner within each unit. The depth of the units are also reduced, meaning ventilation and daylight could penetrate the full depth of the unit. Though having 2 towers within the compact site meant some unavoidable overlooking between the opposing corners, this is not uncharacteristic of the already dense state of living within District 9, and design features were then introduced to alleviate the situation.

The resultant scheme has two 36-storey towers with identical tilt from north, staggered on plan as twins except for mirroring each other along the east-west axis. The number of units decrease from three to two going up the towers, capped with a penthouse with a roof pool occupying two floors. All 124 units enjoy private lift access and panoramic views with minimum blockage. The corners of the square plan are designated as living room or master bedroom, and are rounded with faceted curtain wall or



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SITE ELEVATION PLAN



 ${\sf Opposing\ corners\ of\ towers\ with\ rounded\ facades\ accentuated\ by\ the\ fins\ that\ sweeps\ around\ edges}$ 

"The project deserves special mention for its high standard of design development and refinement in execution, especially visible on its facade elements. The futuristic aesthetic derives from the choice of curtain walling and aluminium-clad fins which, being broken down into components, can take on complex geometries."

pulled out in sweeping curved balconies. This softens the approach of the two towers at the closest point of proximity. The rounded corners are further accentuated by metallic ribbons that wrap each tower.

## **Refinement in Execution**

The facade ribbons peel off from the curtain wall transom and taper to form deep but thin sun shading fins around tower corners. The fins undulate along the perimeter, and are deepest around corners for shading and to reduce overlooking from above and below. At places, a secondary fin serves as a light shelf to illuminate deep interior spaces. As fins vary across different unit types and differ on alternate floors, the resultant composition adds dynamism to the facade.





BASEMENT 1 STOREY PLAN



1ST STOREY PLAN



14TH & 30TH STOREY PLAN



 ${\it Facets}\ of\ the\ ribbon\ installed\ with\ seamless\ splice-joint\ connections$ 

The fixing details on the frameless curtain wall are delicate and minimal, in order to foreground the dance of the ribbons across the facade. As the project predated the use of BIM software, every facet was modelled in AutoCAD 3D with close design supervision for overall coherence of the form. The aluminium cladding to the fins are prefabricated and dry-fixed with seamless splicedjoints.The detail intentionally avoids the silicon filled joints of typical aluminium cladding in order to enhance the visual continuity of the fin surface.

Six sky gardens are inserted on different floors in the two towers. These are imagined as lush private gardens of activity. They provide a range of shared facilities such as the spa, gourmet epicure facilities, lounge and wellness decks surrounded by landscape and 360-degree breathtaking views of the city skyline. The lofty sky terraces display an organic tiered core of tree-like growth that are highlighted at night for a dramatic glow. The asymmetrical placement of skygardens in the two towers introduce further variation to the facade enabling the entire composition of the twin towers to look different from every angle. The towers are connected on the third floor, where facade ribbons from each tower peel off, thicken and join to become link-bridges.



Accent lighting to the tree-like core highlighting the skygardens at night







SECTION PLAN



## Site Planning

The positioning of the two towers on ground frames a semi-circular entrance driveway with its anchoring water feature. Guests arrive on the highest point in Leonie Hill and enjoy a vista between the towers to the landscape beyond, which is however set lower and cannot be directly accessed from the driveway. This gesture works with the terrain and also exposes a sliver into the basement, allowing daylight into the carpark. Vertical landscaping and a tumbling waterfall further animates the crevice, framing the underground lobbies for a pleasant arrival at basement drop off.

As most of the facilities are already elevated to the podium and sky terraces, the ground plane can be generously landscaped. Necessary facilities such as the clubhouse, pool changing room and substation are pushed to the perimeter of the site and integrated into the landscape design. Five heritage trees are preserved on site and integrated into the landscape design with structures deliberately planned around them.

At the arrival driveway, looking down the extensive landscape of greens and blue



Built-up structures integrated with landscape



Curated artwork create accents to the landcape



## The Future, Again

With a masterpiece as its predecessor, SOM-ADDP had large shoes to fill. Tasked to create a bold new design with premium standards for luxury homes, SOM-ADDP have delivered with their own vision, employing new technologies to express its curves and distinctive features.

Just as its predecessor did, New Futura stands out as a modern architectural showpiece, bringing vibrancy to the neighbourhood and striking a graceful presence in the skyline.

PROJECT INFORMATION

CLIENT City Sunshine Holdings Pte Ltd (City Developments Limited)

○ TOTAL FLOOR AREA 25371.65 SQM

• PRINCIPAL ARCHITECT ADDP Architects LLP

CONCEPT ARCHITECT Skidmore, Owings & Merrill LLP

O CIVIL AND STRUCTURAL ENGINEER KTP Consultants Pte Ltd

 QUANTITY SURVEYOR AECOM Cost Consulting and Project Management (Singapore) Pte. Ltd. (Formerly known as Davis Langdon KPK (Singapore) Pte. Ltd.)

○ LANDSCAPE ARCHITECT Coopers Hill Singapore Pte. Ltd (Formerly known as Belt Collins International (Singapore) Ltd.)

○ LIGHTING CONSULTANT Light Cibles Pte. Ltd.

FAÇADE CONSULTANT Building Façade Group, HCCH Consulting Pte Ltd

O INTERIOR DESIGN

## **CONTRACTORS**

- MAIN CONTRACTOR (BUILDER) Dragages Singapore Pte Ltd
- O ALUMINIUM/ FAÇADE SUB-CONTRACTOR LHL International Pte Ltd
- INTERIOR CONTRACTORS Direct by Builder
- LANDSCAPE CONTRACTORS Nature Landscapes Pte Ltd

## SUPPLIERS

- O FLOOR TILES/ FLOOR FINISH Direct by Builde
- CEILING Direct by Builder
- WALL FINISHES Direct by Builder
- O SANITARY WARES Hansgrohe, Laufen and Geberit
- LIGHTING Krislite Pte Ltd (Common Area Lighting)
- CONTRACT / LOOSE FURNITURE Jesse from XTRA (Wardrobes)
- NOTABLE FINISHES, FURNISHINGS & EQUIPMENT Miele (Kitchen Appliances) & Poggenpohl (Kitchen Cabinets)

<u>FEATURE</u>

# Living within the Pixel

WRITTEN BY Cheryl Chan DRAWINGS BY

PHOTOGRAPHS BY Infinitude

After weaving through the quiet void decks of Boon Keng, I stumbled upon a green relief space between two Housing Development Board (HDB) blocks. From here, I caught a glimpse of St George's Tower nicely framed between the old HDB flats. Juxtaposed against its older counterparts, St George's Tower's articulated façade with its intriguing pixelated pattern seems to have more in common with the neighbouring condominium than the humbler HDB estate that surrounds it.

The HDB flat is, and has been, a ubiquitous Singaporean symbol that often lends itself to conversations about societal structure. There has been a definite evolution in the scale and legibility of public housing and the striking silhouette of St George's Tower bears witness to that.



THE SINGAPORE ARCHITECT

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The elderly day-care centre is located right off the vehicular entrance.

St George's Tower is sited alongside Sungei Whampoa and benefits from its adjacency to the Park Connector Network (PCN). The 32 to 34-storey high-rise residential blocks are spaced out around the site with view corridors planned to maximize the river frontage. The centre of the site is freed up for recreational space which serves as a

**River Views** 

nodal point for the development.

otherwise bulky 9-storey car park.

With the site is bounded on one side by busy Serangoon Road, the 9-storey Multi-Storey Car Park (MSCP) acts as more than just an ancillary structure. It is situated to act as a physical and noise buffer from the heavy traffic, shielding the residential spaces within. Vertical greenery and a slim railing design softens the massing of the

With vehicular access to the car park designed along the site boundary, the site maintains a car-free and pedestrian friendly planning concept. Sheltered linkages woven into the landscape crisscross the site and include a direct connection to the PCN. The fenceless concept for the development allows unobstructed views towards the



Sheltered linkage connection

river and a precinct pavilion overlooks the PCN fostering some interaction between residents and passers-by.

However, with the project fronting the river and Park Connector, an opportunity to introduce an intermediate scale to respond to the pedestrian traffic does not seem to have been fully capitalised. While the blocks are placed to maximise the number of units facing this view, the landscape design of this in-between space could have been more of a feature.



Precinct Pavilion

## A Block called "Home"

Compared to the adjacent low-rise buildings, the three tall residential blocks of St George's Tower stand out. The sheer height of St George's Towers redefines how a "home" looks like, as opposed to the horizontally expressed slab blocks of the eighties. As HDB estates go, its vertical silhouette stretches way beyond the familiar.

With the homogeneously pixelated pattern traversing the entire facade, it is less easy to identify one's floor or window, whereas in an older HDB estate one might still be able to pick out his own plants drooping over the parapet. Where mothers used to shout out of the window to their children at the playground, a call on the cellphone may be more apt now given the height of one's home.

At the building scale, LOOK layered two sets of patterning strategies to create the intriguing facade. Firstly, the façade is made up of precast window modules in an alternating pattern. Next, an interesting painting strategy is developed, with each painting module spanning across 3 floors. Special attention is paid to every element, from the choice of colours to the detailing of the deep canopies, inexpensive building materials are used to achieve a harmonious visual complexity.

Here, "home" is identified at the scale of the estate, it has shifted away from a human scale. This is a direct result of the current model of public housing, where the distinguishing features can be found in the façade, public spaces and shared amenities of a development.

## **Articulating Shared Spaces**

The 32 to 34-storey residential towers are punctuated with double volume landscape decks at the 24th storey, dividing the facade visually into one and two thirds. LOOK took the opportunity to break down the towers on an urban scale to avoid having an over towering effect on its neighbours.

Ascending to the landscape deck at the 24th Storey, we were greeted by an unobstructed view of the neighbourhood, its spatial quality was amplified by the double volume space and porous railing design. Ample exercise equipment and seating areas allow residents to enjoy the tranquility of the sky terrace.

A large, multi-generational playground forms the central node of the development, exercise machines for the elderly and playground structures for the young can be found at the heart of the estate.

St George's Tower also features the first of its kind, an integrated elderly care facility that caters to the ageing demographics of the precinct. With a dedicated standalone building for the seniors, it serves the community well and reverses the negative perception of elderly care from "Not-In-My-Backyard (NIMBY)" to "Good-In-My-Backyard (GIMBY)". Linkways and bridges connect the Senior Activity Centre to the residential blocks and there are also specially designed studio apartments catering to the elderly in the development.

The 2-storey Senior Activity Centre has its balcony extended along its façade, allowing a view to the playground while the elderly go about their activities. Sounds of laughter and children playing bring about an uplifting and happier ambience for the elderly as well.





Façade of Multi-Storey Carpark

Facade close ur



ELEVATION PLAN



ELEVATION





## FEATURE: Living within the Pixel

## LEGEND

- 01 Adult Fitness Station 02 Elderly Fitness Station
- 03 Children's Playground04 Pedestrian Linkway @ 9th Storey
- 05 Main Drop-off
- 06 Secondary Drop-off 07 Shelter
- 07 Shelter 24 Precinct Pavillion 25A Block 26A
- 25 Elderly Day-Care Centre 26B Block 26B
- 26 Multi-Storey Carpark 26A Block 26A



SECTION PLAN

## LEGEND

- 01 Adult Fitness Station
- 02 Elderly Fitness Station
- 03 Children's Playground
  04 Pedestrian Linkway @ 9th Storey
- 63 Children's Praygroun
  64 Pedestrian Linkway (
  65 Main Drop-off
  66 Secondary Drop-off
  67 Shelter
  68 Community Garden

- 09 Precinct Pavillion 10 CRC
- Letter Boxes 11
- 12 Future Social Communirt Facility 13 Deck 1A

- 14 Deck 1B 13 Community Living Room

55



08 Wash Area



1ST STOREY PLAN

56



LEGEND
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01	Main Bedroom
02	Bedroom
03	Living
04	Dining
05	Bath W/C
06	Household Shelter

- Air-con Ledge
  Service Yard
  Kitchen
  Access Balcony
  Wash Area
  Lift Lobby



TYPICAL FLOOR 1 PLAN

## LEGEND

- 01 Main Bedroom

- 01 Main Bedroom 02 Bedroom 03 Living 04 Dining 05 Bath W/C 06 Household Shelter

- Air-con Ledge
  Service Yard
  Kitchen
  Access Balcony
  Wash Area
  Lift Lobby

## LEGEND

- 01 Main Bedroom

- Main Bedroom
  Bedroom
  Living
  Dining
  Bath W/C
  Household Shelter

- 07 Air-con Ledge
  08 Service Yard
  09 Kitchen
  10 Access Balcony
  11 Wash Area
  12 Lift Lobby



Communal Living Room



PROJECT INFORMATION

O CLIENT Housing and Development Board

O TIME TO COMPLETE 44 Months

- $\odot~$  TOTAL FLOOR AREA 85.246 m<sup>2</sup>
- **CONSULTANTS**
- EXECUTIVE ARCHITECT LOOK Architects Pte Ltd
- O CIVIL AND STRUCTURAL ENGINEER KTP Consultants Pte Ltd
- M&E ENGINEER
   Gims & Associates Pte Ltd
- O QUANTITY SURVEYOR Arcadis Singapore Pte Ltd
- LANDSCAPE ARCHITECT Land Design One Pte Lto

## Making Quality Accessible

As LOOK puts it, "Public housing should strive for a higher level of quality that stands apart from private condominiums as a preferred alternative mode of housing which offers a greater sense of neighborliness as well as a greater sense of social inclusivity that gives a greater convenience to the day to day lives of residents".

By adapting architectural details that may commonly be found in condominiums, LOOK incorporates articulate detailing in an affordable way. Despite St George's Tower being a large development of more than 85,000 m<sup>2</sup>, the architect did not overlook the smallest details from the façade expression of the MSCP to the linkway design. Various permutations of the same design are also modified to suit different needs, for example, the railing design that is used throughout the estate is adapted as an interesting façade screen for the MSCP.

## **Shifting Perceptions**

What can boutique design firms contribute to the rigorously tested and standardised housing model we have? In the case of St George's Tower, LOOK has combined their expertise in precast construction and detailing to tackle the high-density, high-rise residential typology. They have created a unique identity for the estate and developed an alternative model of what public housing can be.

HDB's increased collaboration with local boutique design firms and willingness to push boundaries to enhance the quality of living spaces is heartening. However, the constraints and efficiencies required remain ever present. With strict guidelines to ensure buildability and quality, architects are constantly challenged to work within tight constraints to develop innovative solutions for the future.

O OTHER CONSULTANT

CONTRACTORS

O PLAY EQUIPMENT

Building System and Diagnostics Pte Ltd — Green Mark Specialist

O MAIN CONTRACTOR (BUILDER) Chang Hua Construction Pte Ltd

Playpoint (Singapore) Pte Ltd



Roof of MSCP Block



Shade structure on roof of MSCP



Landsdaped roof of MSCP



FEATURE

## **Familiarity / Differentiation**

WRITTEN BY Ar. Raymond Ang

DRAWINGS BY LAUD Architects and G8A

PHOTOGRAPHS BY Darren Soh Patrick Bingham-Hall Studio Periphery

Public housing is a key ingredient in Singapore's formula for a stable society. On the one hand, a high percentage of home ownership is enabled by an intricate system of enforced savings and subsidies. On the other, the housing for this majority, in terms of design and quality, sets a common benchmark of living and is seen as a great leveller.

This forms part of the rationale in how design elements are standardized by HDB. The resultant benchmarks and guidelines are then meted out to guide appointed Architects in the design process. As a result of all these levelling tools, can uniqueness in HDB estates come about?



Of Familiarity/Differentiation — A contrasting statement between old and current compressing time and memories of not-too-long ago.

In Tampines GreenRidges, the standardized housing layouts and prefabricated construction are all present. Yet, there is a rigour that goes beyond merely sensible permutations of these standardized items, and into a broader ambition to integrate and organise form, landscape and detail.

The man on the street will realize that in Tampines GreenRidges, while many things remain familiar and fall squarely and reassuringly within the HDB domain, there unique community identity.

With older HDB estates built in the early 1990s standing beside — in that most familiar red-painted brick and plaster in warm beige — the fresh green lines of Tampines GreenRidges rising up make a contrasting statement between old and current, compressing time multi-storey carpark (MSCP), the parking in Tampines and memories of not-too-long ago.

The green painted prefabricated horizontal elements aptly pays homage to the unforgettable mental image of stacked corridors in older slab HDB blocks. Such corridors were social interaction spaces most Singaporeans

intimately know, but over time became less common in newer HDB block typologies.

The familiar containing yet a difference is a key theme here.

The rectangular site is quite massive at about 70,000 sqm. The blocks singularly seem typical and familiarlooking as HDB blocks. To break down the otherwise wall-like effect of the fifteen HDB blocks, the blocks are is fresh new thinking that creates a HDB estate with a staggered on plan in order to break down the building mass into human-scaled gradations to be more visually 'digestible' as one moves within the estate, and allow overall plasticity in the landscape layout that straight building edges will not facilitate.

> To speak, for example, about the familiar and typically GreenRidges is flattened to 2 storeys, with the 1st storey slightly sunken to reduce the bulk of the MSCP, and therefore spread wider throughout the estate. This however results in a larger roof area that becomes a bigger and (being lower to the ground) more accessible canvas for landscaping.





3-D Green envelope carpeting the Central Space

With only 2 storeys of parking decks, carparking To Manuel Der Hagopian, Director, G8A — Singapore is navigation is easier for drivers compared to multiple a halfway house, a transition zone between regulated and storeys which can be trying for drivers to continuously mature Geneva, and Hanoi which has the young emergent negotiate ramps up in search for parking spaces. Vietnamese economy as the engine of rapid change.

Some have also observed that landscape gardens on top of MSCP and roof gardens in newer HDB estates are less frequently used than presumed as they are often perched too high. In Tampines GreenRidges, there is no such mental barrier discouraging access, as the landscaping is on top of a lower height of 2 storeys. The hardscape and softscape here are also lush and thoughtfully curated, of varying heights, textures and colours e.g. bright red ginger plant flowers, making it all the more inviting. Being elevated by this bit nonetheless keeps the residents above the busy traffic on grade and accords a feeling of being in a sanctuary.

In a design sketch, LAUD Architects and G8A envisioned a three-dimensional green envelope thoroughly carpeting the central space to embrace the residents, and in flesh the green envelope becomes the truly defining architectural design idea that ties together the entire estate.



MASTERPLAN



TYPICAL BLOCK PLAN

There are two such MSCP. Spanning between the MSCP is a landscaped skybridge, a key spine connector across the site, with a curved form that breaks the monotony of an otherwise straight bridge — This skybridge also shelters pedestrians passing below it to fulfill HDB's requirement to provide a complete covered network. This key spine connector terminates at the 2 ends of the estate, where in future a bridge will be built to link to other HDB estates under construction.

As a gesture of egalitarianism, the rental flat block in the southwest corner of site employ the same architectural design language, and it is not apparent that this block caters for the less moneyed.

This is an architectural project where the plan drawing is deceptively ordinary. On the ground, however, the building is much more enticing and multi-layered in sensorial experience, with well-proportioned spaces and spatial potentialities crafted to subconsciously appeal as a place one would call home.

Parallel to what is seen in Tampines GreenRidges, the familiar containing difference seems a recurrent theme of G8A (the Swiss architects who collaborated with LAUD Architects on this project) designing in this part of the world since starting offices in Singapore and Hanoi more than a decade ago.

He mused that Switzerland and Singapore are rulebased, thoroughly-regulated, and pride themselves on clockwork efficiency which inevitably carry over to the domain of architecture and public housing, and yet the outcomes today cannot be more different.

He explains that for both countries the presence of landscape as historical backdrop to weave into architecture is strong. However, in Switzerland the landscape is dominated by the Alps — pristine, sparse, tall and eternally un-changing, while in Singapore it is the merciless tropical weather and pervasive greenery that 'grows as one speaks' amidst urban 'flatness'.

Public housing is championed in both countries, but there are large differences. In Switzerland, public housing forms only 30% of total housing stock and is often mixed with private housing in a single site by a single developer. In Singapore it is over 80% public housing, making private



- PROJECT INFORMATION
- Housing & Development Board
- O TOTAL FLOOR AREA
- EXECUTIVE ARCHITECT LAUD Architects Pte Ltd
- O DESIGN ARCHITECT G8A Architecture & Urban Planning
- O CIVIL AND STRUCTURAL ENGINEER Beca Carter Hollings & Ferner (S.E. Asia) Pte. Ltd
- M&E ENGINEER Beca Carter Hollings & Ferner (S.E. Asia) Pte. Ltd
- QUANTITY SURVEYOR Turner and Townsend
- LANDSCAPE ARCHITECT HASSELL, with Earthscape Concepts as landscape consultants

SIGNAGE & WAYFINDING CONSULTANT THERE

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- LIGHTING CONSULTANT Arup Singapore Pte Ltd
- FAÇADE CONSULTANT Arup Singapore Pte Ltd

## CONTRACTORS

- MAIN CONTRACTOR (BUILDER) Chip Eng Seng Contractors (1988) Pte Ltd
- ALUMINIUM/FAÇADE SUB-CONTRACTOR Lee Hin Pte Ltd
- LANDSCAPE CONTRACTOR Nature Landscape Pte Ltd

housing a minority with its own separate discourse. Thus when one talks about 'housing' and 'living' in Singapore the most dominant conversations centre around HDB-based living.

Today the Swiss psyche still equate housing to literally, a house; and this psyche had been ingrained from a long time ago — thus an undeniable urban sprawl of low-rise houses is spread throughout Switzerland. In Singapore, there is deliberate densification over the years, very much government-led, where public housing now easily go to over 40 storeys compared to just 12–14 storeys thirty years ago. Certainly, there had been a quantum shift in the average citizen's mind who today can look forward to living higher than 40th storey in public housing.

Does such a contrast in cultural expectations form a fertile plain where HDB standards can be re-invigorated to create an architecture worthwhile to write and talk about? For Tampines GreenRidges, done as a collaborative effort between LAUD Architects and G8A, it appears to be.

# Insight

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## INSIGHT

## **Construction In Context**

Ar. Teo Yee Chin MSIA in conversation with KaTRIS

Photographs by Jason Lee Diagrams courtesy of Kajima

The imperative to reduce labour in construction, coupled with the objective of increasing precision and efficiency, are all part of the national efforts to increase productivity. As we explore the theme of buildability in this issue, we wondered if these concerns were unique to Singapore. To provide some perspective, we thought of looking to another culture outside of Singapore for comparison. Japan was an obvious case study, because of the well acknowledged quality of Japanese design and construction.

Incidentally, Japanese construction companies have been operating in Singapore since the 1960s. One such company is Kajima. Beginning with Maruzen Oil Refinery and Jurong Shipyard in the 1960s, Kajima<sup>1</sup> have gone on to realise notable landmarks such as OUB Centre, Resorts World Sentosa, Marina Bay Financial Centre and recently NUS SDE4. As early as 1949, Kajima set up the construction industry's first technical research institute (KaTRI) in Tokyo. Kajima Technical Research Institute Singapore (KaTRIS) was set up in 2013 as their only research institute outside of Japan.

We interviewed KaTRIS in their office, which seemed like a slice of corporate Japan in the middle of Parkway Parade. In the session we discussed several topics such as the cultural differences between Singapore and Japan, contractors taking on more design responsibility, and also their view of buildability.

## INTERVIEWEE

Ar. Teo Yee Chin MSIA — (YC)

The Singapore Architect

INTERVIEWER

Yuichi Takemasa, Ph.D, PE, PMP — (YT) General Manager

1 While Kajima has taken on construction projects in Singapore since 1962, Kajima Overseas Asia Pte Ltd was incorporated

locally only in 1988

**Junya Morita — (JM)** Principal Researcher

**Soungho Chae, Ph.D — (SC)** Principal Researcher

## Yee Chin: Tell us a bit about KaTRIS (Kajima Technical Research Institute Singapore).

Yuichi Takemasa: Our aim is to contribute to the development and prosperity of Singapore by using our technology and capability.

Currently half of our work is in research and half of our work is supporting actual projects at Kajima Technical Research Institute (KaTRI).

We are starting a network with researchers here. As a technical research institute, we aim to conduct technical research also here in Singapore and the rest of South-East Asia. We are already collaborating on some projects with universities such as NUS and NTU.

We are here largely to promote Kajima's technology to design offices and consultants and to provide technical support to the local design and construction subsidiaries in a timely manner. But beyond just supporting to our sister companies, we are also looking to provide this support to other design consultants outside of Kajima.

YC: KaTRI in Tokyo has many technical research facilities as shown in the brochure. How does KaTRIS work with Japan and make use of the facilities in Japan? What capabilities does KaTRIS have on its own?

YT: We don't have any experimental facilities in Singapore yet. Currently, we work together with our colleagues in Japan or collaborate with universities and research institutes in Singapore when we need experiments. KaTRIS has researchers with expertise from a wide range of research fields, so we can cover many research themes in Singapore and other South-East Asian countries by ourselves now. However,



when KaTRIS cannot cover the research field by itself, we work together with researchers at KaTRI in Tokyo, Japan.

- YC: The unspoken truth in the construction industry is that many architects rely heavily on their trusted builders for advice and guidance, but this is often behind the scenes. When does Kajima go beyond the traditional role of a builder and choose to put their technical expertise in the foreground?
- YT: KaTRIS provides services for a fee, as consultants do, even within Kajima.

Sometimes for tender, Kajima Overseas Asia (KOA) will include a proposal from our institute. Often this is as an option. If the client likes it, they will adopt it. A good example is NUS SDE4, the first purpose-oriented Net Zero Energy Building (ZEB) in Singapore, for which NUS and the consultants pursued ZEB from the design stage and KOA is the main contractor. During the tender, KOA proposed to provide the expertise and technology from KaTRIS to help the client and the consultants to achieve the Net Zero objective. After the project was secured, we supported them by providing advice, simulations and mockup tests for the hybrid air-conditioning system, using ceiling fans to meet the thermal comfort. We also conducted collaboration research with NUS on the performance of hybrid air-conditioning system through detailed subjective experiments based on the research agreement.

In Japan we have a big design team. Kajima is one of the biggest design firms in Japan. KaTRI in Japan is also a big consultant team for the design division, internally. We can do the same thing in Singapore, but this time not only for the internal design team, but also for the other consultants, even if their project is not constructed by Kajima.



Kajima Smart Future Vision seeks to improve productivity by changing all processes related to construction work. The Vision addresses today's shortage of construction workers and facilitates work-style reform.



The K-Field system logs information on onsite location and operating status of materials and equipment in real time, with beacons and sensors installed on site, improving safety and efficient use of equipment.





Yuichi Takemasa







Junya Morita



Guided use of drones and robots

We have been accumulating expertise from the base of a contractor, but we think we can be a "consultant for consultants".

- YC: You started technical research in this industry to respond to certain conditions in your country. How are the challenges different, between building in Japan and building in Singapore?
- Junya Morita: The Japanese market is considered to cater to the needs of the Japanese people in terms of detail. We understand that the standard is different in the international market. We would like to adapt our technology for global application, but it is a challenge for us to grow our technologies internationally.
- Soungho Chae: Technically speaking, Japanese construction technology itself could be applied to construction systems here in Singapore as well. The difference is the person using the technology. Even if the supervisors and skilled workers can easily adapt the technology in Japan, the adaptation of new technology in Singapore is not easy because the technology is developed under different construction conditions in Japan. The specific agenda for me is — How do we modify the technology and train the workers in Singapore?
- YT: In Japan, due to the risk of earthquakes, we often use steel structure. In Singapore, reinforced concrete is the norm. In terms of design, the climate is different because we have four seasons in Japan. We need different systems for heating and cooling in a building there. Here, because it is hot and humid all year round, we only focus on cooling. However, because the energy consumption for cooling is very large, you need to design very energy-efficient cooling systems.

## YC: So for the technologies you develop in Japan, is it relevant for use here?

- SC: As I mentioned, machines, equipment and devices can be adapted across countries with modification of technology and training of workers But Japanese management systems are difficult to bring over as it is because of the difference of culture and language. We need to translate everything into English with Singapore's method. Also, the division of labour on site and the definition of each person's duty are different, so it is not easy to just use a Japanese management system here.
- YT: Many systems developed in Japan can be used here, but because the climate is different, we have to select the technology we can use here. We can also learn about systems and new technologies from Singapore for example by attending seminars organised by the government agencies and other professional societies. We can use some of these technologies we learn here.
- JM: You can say Singapore is more coherent or logical than Japan, especially about management systems. In Japan, skill level and the trust between craftsmen and site managers are very important in the style of management. Therefore, the requirements for management systems such as information systems vary from site to site and are

often customized. It is good because it is optimized for each site, but when analyzing the overall statistical data, the difference in the quality and quantity of the data may be a problem. Singapore, on the other hand, is consistent and logical due to some standardized management procedures. Therefore, digitalisation is easier than in Japan.

- SC: If the level of experience in the average person on site is high, as in Japan, you do not need to specify in great "detail". You just need to introduce it and the person can adjust it to their work. So education would be an important element for deployment of new technology in the construction industry.
- YT: Our task is not just to bring Japanese technology to Singapore. Our task is also to bring Singapore technology to Japan. We select all the good things from both countries. We can use technology from Japan, but we can also use technology from Singapore. By mixing, we can innovate, and we should do better.

## YC: What are your criteria in approaching a project?

- SC: As a private company, the first priority of course is to get a reasonable profit from the project. However..
- JM:...there are 5 key values that every contractor always has to consider in a project — Quality, Cost, Delivery, Safety and Environment (QCDSE). And in each project the priority between these 5 values will be different, depending on the situation. We need to apply the appropriate method and technology to address the priority in the project, whatever it is.

## YC: What is buildability to you as a builder?

SC: For contractors, our basic duty is to build the valuable building based on the client's request. In general, the contractor should suggest how we can improve productivity while striking the balance of QCDSE. As contractors we need to understand the priority to improve the buildability and then to choose the most optimised method based on the rule. We would be happy if we can contribute to value engineering.

## YC: Is buildability about Quality, or is it going to benefit Quality?

JM: Since each technology has 5 values of QCDSE, whether or not "Q" is enhanced, it really depends on the technology used.



Guided use of drones and robots

- YC: I feel that buildability in Singapore should go beyond pre-fabricated boxes in housing. We sometimes wonder if PPVC is the only way to increase productivity?
- SC: Generally speaking, Japanese designers are not so familiar with PPVC. Contractors also have no experience. Singapore is aiming to improve site productivity, and I think PPVC is the most optimal way



at the moment. You can make these PPVC units in factories or the site, like in Malaysia or China, and bring them in.

- In terms of design variety, maybe if transportation regula change, and the capacity of cranes can increase, we can chan design of the units to have a greater variety. Moreover, we needed develop the method to improve the installing progress and c control for cost and time reduction.
- The large condominium project that we are currently constru may be different. We are collaborating with our construction to improve the installing process of very large and heavy PPV by applying Japan's PC (precast concrete) assembling techr
- YC: In Japan, the government does not do so much. Big contractor lot, for society, the industry and for the environment. Everyor their own research team, like Kajima. Why does the private sect on so much responsibility?
- JM: We actually ask the reverse question why does the govern do so much in Singapore? It is very unique, for us. The government pushes the sector to advance, driving the future of the sector, urging them to use technology for example. The government here leads the industry, that is very clear.
- In Japan, there are various characteristics in each region, and it is also necessary to consider natural disasters like earthquakes or typhoons. So, it is difficult for the government alone to specify details, and it is natural for the contractors to develop the solutions.
- YC: Do you find that with various companies carrying out research for the same problems, that there is duplication of effort and it is not productive?
- YT: Yes, we may be solving the same problems across different companies. So, in Japan the competition is very hard. In a way, the competition between companies drives the improvement in technology.
- SC: In Japan, trusted relationships with all stakeholders based on technical ability are very important in everything. Companies need to improve their ability to keep the technical strength. It is actually a responsibility to society that each company bears.

Aerial View of NUS SDE4 building, constructed by Kajima Overseas Asia

outside	YT: It is obvious that R&D is very important for manufacturers of cars and appliances. In Japan, construction companies also invest in R&D and that makes the construction companies more competitive.
ations	
nge the leed to quality	SC: In general, construction companies tend to bid on projects for construction. But in Japan, contractors are required to make proposals that solve their clients' potential needs, so it is very important to build trusted relationships with clients using their technology.
ucting	
n team C units nology. <mark>rs do a</mark>	YT: In the grand view of things, we develop our technology and use it to improve society. But first and foremost, in the construction industry it is very important to secure the quality to the project. Our research fundamentally supports the construction division to secure the basic quality on-site, like the quality of concrete.
ne has	
ortake	YC: How is Singapore a good place for technical research?
nment	JM: Since Singapore is open to technology holders around the world, the community is very rich. In addition, the government determines

the direction of technology development, and is actively promoting technology development by providing testbeds and funding support. In addition, I think that deregulation measures and the strong awareness of using new technology for users are also suitable for technology development and deployment.

## YC: Why not test-bed in Japan?

- JM: For one, Singapore is advanced in digitalisation. Maybe the robotics is advanced in Japan, but the utilisation of ICT and IOT is more advanced in Singapore. I think the main reason is language. In Japan, the support for the Japanese language is indispensable, so it takes time to introduce new products.
- YT: The government here plays a very important role in changing people's minds in a short time. In Japan we have to change by ourselves, and that is usually not easy. We can say that Singapore can change quickly and that is Singapore's strength.
- YC: I think your comments have helped to explain the strength and weakness of our society here. Thank you for the very interesting conversation.

INSIGHT

## Labour and Work in Architecture and Construction

WRITTEN BY Ar. Teo Yee Chin MSIA

Recently, some of us got into a vigorous discussion about architectural competitions. It was at the time the Children's Aid Society competition was being launched. One contention was that the competition was essentially a call for free proposals, while another commented that the fee may not be a sustainable one. Someone joked that the runner-up would be the real winner, as he/she gets the glory without taking on what could be an imminent two years of loss-making. We went away with certainty that for all our moaning, there would be a bountiful harvest of exciting proposals, out of which only several will be compensated for.

This anecdote is only an example of how much architectural labour is eagerly expended in contemporary practice. It only scratches the surface, as labour in architecture should include all the activities necessary to sustain architectural production, from cleaning to drafting to submissions to administration.

What is being produced? We would call it the "work". To use Pier Vittorio Aureli's definitions of labour and work in architecture — "labour" comprises the totality of mental and physical efforts, while "work" consists of the final output of the labouring activitiy — what is acknowledged as "architecture"<sup>1</sup>. The work is the

1 Pier Vittorio Aureli, Labour and Work in Architecture, p.72, Harvard Design Magazine No.46 F/W 2018 "No Sweat" completed building, just as much as it is the public representation of it in photographs, lectures and books. Labour completely disappears in these representations, but as we all know, working in an office means a lot of one's time is actually spent performing labour, not work.<sup>2</sup>

To labour is to toil, to exert one's body in application to a task out of necessity, such as to make a living. There is no finished product that is relevant in labour. There is, however, always a finite end in work, when an object is made and it enters the world with its use. Generally, when one sees the big picture and finds meaning in the efforts, value is assigned and labour is elevated to become work. In construction, we often hark back, as we did in this year's Archifest, to "craft", because the craftsman has a clear vision of what he/ she is making. The reality is that most of the manpower used in construction today is considered as labour.

Increasing productivity is to get the same work done with the use of less labour. Labour is thus something that the system tries actively to eliminate from the process. The expanding sophistication of building engineering reduces the labour performed at building sites to de-skilled tasks and highly controllable operations<sup>3</sup>. While historically tools and machines have been used to make human life easier and labour less painful, in our context machines are also seen as the solutions to reduce foreign labour brought into society. This increases productivity, but by definition this is because the human work put in on site is devalued, perceived as labour and not work. Nonetheless, with the advancement of technology, it is unlikely that we will go back to a scenario where the construction site is full of skilled craftsmen.

Back in the studio, the long-held notion prevalent in design since the time of Vitruvius, that we make things to fulfil "Strength, Utility and Beauty", has to

2 ibid.
 3 Aureli, ibid. p. 81

be debunked. The continuous automatic process of manufacturing has done away with this assumption<sup>4</sup>, or at least complicated it. While these remain the standards of the world, the shape of things we build are now largely determined by the operation of the machine. Consider this — we design objects for the limitations of the machine as much as we design machines for the production of certain objects.

The basic source of frustration when architects design for manufacturing and assembly (DFMA) may thus be that while they instinctively feel that they should design for humans, they are actually designing for machines. This sense of alienation is exacerbated when there are compromises made in fitting space into prefabricated modules, unchangeable moulds and the like. Of course, such compromises should never be accepted. While designers constantly strive to find solutions, technology is closing the gap with higher levels of customisation.

We should not forget that there are advantages that technology can afford us. The earliest fibreglass bathroom pods in Japan showed ingenuity in its compactness and did away with joints and structural penetrations with a single moulded watertight envelope. There was a futuristic aesthetic embraced in these designs, or at least this was how it appeared to outsiders.

But if the exploration of an aesthetic derived from the age of mass production, such as Kurokawa's Nakagin Capsule Tower, was an interesting development in this history of building automation, it is an oddball trajectory that has largely petered out. Space even in prefabricated living units are increasingly being normalised in the image of what it "should" look like. The manager at a prefabrication yard was proudly showing me how their bathroom units could be customised and fitted with vanity counters, mirrors and marble look-alike tiles. Much to my surprise, regular tilers, carpenters and

4 Hannah Arendt, The Human Condition, p. 151–152, University of Chicago Press, 1958. plumbers come in and out of the factory to install their fittings into the concrete boxes. The industry strives to use their highly innovative techniques to produce completely ordinary looking modules!

The vision needs to change too. The centuryold reinforced concrete frame, together with other traditional techniques, should be rethought with the lens of innovation, fitness for purpose, and yes, beauty. Designers have a role to imagine new aesthetic expressions that reflects new processes, while understanding new sustainable materials such as cross-laminated timber.

Moving forward, the gap between visualisations and machine limitations would be gradually dissolved, until human labour in construction is taken out of the equation completely. Then, unless designers seize the agency to frame new outcomes, what remains would only be labour in the architectural office.



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Interior of one Nakagin Capsule Pod Showcased at Mori Art Museum. The application of creativity by designers in solving problems of efficiency in space, architecture and construction keeps designers from becoming labour themselves. The problem of construction must always remain a problem to be solved by design, not technocrats or builders. *Credits: Wikimedia Commons*  INSIGHT

## Perfect (Im)Perfection: Finding Delight through Architecture in a Digitalised Society

WRITTEN BY Dietmar Leyk and Sonja Berthold

SPACECOUNCIL: Sonja Berthold, Dietmar Leyk with Zuliandi Azli and Lei-Ya Wong

Defined by Aristotle as "that which is complete, flawless, and has attained its purpose," perfection, and its pursuit throughout history, has in many ways defined the legacy of architecture. In ancient Greece, this concept of perfection motivated the very definition of classical orders with measurable mathematical ratios: Doric, Ionic, Corinthian.

The connotation of perfection has changed over the past centuries, and by the advent of the First Industrial Revolution, advances in technology redefined perfection as swift, inexpensive production on a mass scale serving rapidly expanding cities — with dire aesthetic and social consequences.

Now, as we are well into the Fourth Industrial Revolution, what does architectural perfection mean?

-Fabricating Parfection SPACECQUNCIL (2019)



## **Digital Future**

While benefiting a large number of people, innovation in technology has historically brought with it a host of severe and unanticipated side effects. Take Berlin during the First and Second Industrial Revolutions. As the city's population boomed to more than one million people, the urgency to accommodate the influx of workers led to highdensity mass housing typologies, known as Mietskasernen (tenement blocks), distinct in their indistinctiveness, with dim courtyards and poor sanitation. Efficiency in form and use was placed above all else, with Berlin's overcrowded living quarters setting off a wave of infectious disease.

Today, technological innovation is accelerating. The storage capacity of computer chips has increased a thousandfold in the last ten years and it will continue to amplify the power of 3D-software exponentially in the coming decades. Naturally, this affects each step of the architectural process and allows us to envision future habitats in any shape, or to prefabricate, even 3D-print, parts of buildings or entire buildings in any location on demand. Parametric-influenced design may not be anything new, but AI-driven design decisions are close to reality, leading to our ever-improving ability to process and incorporate a large amount of data into the planning stages.

In both design and manufacturing, we see prevailing shifts in physical processes, both material systems and mechanical systems. The push for productivity and efficiency in a globalised building industry has inspired novel modular and prefabricated designs. As much as this age of rapid construction and mass production has sparked a democratization of living standards, it has also invited a homogeneous appearance to the cityscape as well as creative complacency.

Now that it is supported by computation, mass production has increased our capacity to customise and express individuality. We can now introduce difference to repetition, and handle the interrelated complexities better. We are thus, already also in an age of mass customisation.

The organic curve of a building structure can now be easily buildable, because thousands of individually different tailor-made pieces are not necessarily much more expensive than a straight structure. With the help of digital construction methods such as 3D-printing and robotic assembly processes, we have bridged a gap between design and its realisation. Indeed, in our increased ability to will a vision into reality, we can say that we have mastered perfection, in the physical sense of the object.

## **Bespoke Fabrication**

If mass production sparked an unadorned and utilitarian aesthetic, mass customisation, interestingly, has also utilised technology to fulfill the desire of returning to nature-inspired design, at times favouring form over function. With breakthrough software like Grasshopper in Rhinoceros, which can generate infinite variations of forms yielding to factors ranging from weather to consumption trends, designers can get lost with too many options and be too quick to decide. Computational design methods can generate spectacular expressive forms, but they often do not sufficiently reflect parameters such as context-related forces. Paradoxically, this much optimisation can be at the expense of purpose.

Radical new design possibilities hardly guarantee that concepts translate into formidable buildings. Ultimately, technology can only support, not replace, the complex structure of highly subjective mind-based decisions. In other words, the smartphone does not replace the photographer's eye. As architects, it is imperative that we take these developments as an opportunity to meaningfully explore the dynamic relationship between architectural structures and the people that inhabit them. This should take into consideration the full scope of human psychology and cultural shifts.

## **Operational Beauty**

From a professional perspective, when we discuss beauty, we talk about form, geometry and the shape of architecture and the built environment. Aside from such 'formal aesthetics', we need to distinguish another category of aesthetics, which we may call 'delightful experience'. While the former has various manifestations and always relates to the shape of architecture, the latter refers to the space which demands your presence. Beauty in architecture is not so much about the form and shape of buildings, but rather about the experience it offers to people.

In this sense, architectural perfection, or what makes a place perfect, is less connected to its physical shape than to a performance that transcends function. Delight cannot be directly manufactured. Rather, it must be evoked. It is a mood, an opinion — a feeling. This thinking shifts

spatial production from a meritocratic orientation to a performancebased one, with its qualities evolving less according to an object's size and programme (scale) and more according to how it is experienced over time (intensity). Furthermore, the passer-by's opinion determines an object's relevance and dissolves linear causalities between spatial production and intended effects. Hence, qualities are not achieved simply by mastering technicalities, but rather by using the architect's cultural and social knowledge and their design skills to find common consensus on what is considered valuable.

## **Delightful Experience**

## "Perfection is achieved not when there is nothing more to add, but when there is nothing left to take away." — Antoine de St. Exupery

There is certainly still a pureness in reaching the maximum with an economy of means. We believe the essence of great design lies in the balance of forward-thinking innovation and soulful craftsmanship. We believe there is a way of producing many one-of-a-kind moments while enabling mass production and even mass customisation.

There are plenty of examples in history. Take the Case Study Houses 1945–1966, which, though bound by budgetary constraints and the ability to be mass-produced, still embodied rich cultural ideas. They have come to define Californian minimalism and set the bar on thoughtful indoor-outdoor living even for today. Pierre Koenig certainly provoked a unique iconography with his Case Study House #22 (Stahl House) in 1959. Craig Ellwood was anticipating a complete mechanisation of residential construction methods, due to increasing labour costs and the decline of craftsmanship, when he openly designed his Case Study House #18 in a completely prefabricated manner in 1958. Richard Neutra was inspired by the American Dream when he envisioned a house with a yard and a pool for everyone, illustrated in his Case Study House #20 (Bailey House) in 1948.

But the question of form versus experience, or simply of how both sides interplay, only captures part of how we define perfection in architecture. What breathes life into a building and makes it transcend its beauty and function into a structure that both influences and offers delight to the community around it is the designer's ability to connect the architecture with an occupant, and a passer-by.

Great design may mean sacrificing flawlessness, efficiency and aesthetics in order to serve an exciting passion between architecture and people. This connection needs to be on an emotional level when architecture exudes vibrancy and gravity beyond the local community.

In this sense, as architects, we have to ask ourselves, how can perfect experiences derive from physical perfection? INSIGHT

## **Buildability Without BCA**

## Perspectives from a Small Practice

WRITTEN BY Ar. Wu Yen Yen MSIA

PHOTOGRAPHS AND DIAGRAMS BY Genome Architects



SBG Kios

The words "buildable" and "buildability" cannot be found in the Concise Oxford English Dictionary. They are, however, big words in the construction industry, here and abroad. In Singapore, the Building and Construction Authority (BCA) legislates minimum scores that certain buildings need to achieve, "the extent to which (its) design facilitates ease of construction techniques and processes affect(ing) the productivity level of building works"<sup>1</sup>.

The key reason for this drive is "to raise productivity ... and reduce reliance on foreign workers"<sup>2</sup> by "moving as much construction work off-site to a controlled manufacturing environment as possible and minimizing work on site"<sup>3</sup>. BCA's aim is to mechanize the building of standardized components offsite, so that building construction would consist of just a few workers piecing together repetitive parts. On/Off-site, it is a paradigm shift for architects to regard buildings as products assembled along a factory line.

## A Window Of Opportunity

Guidelines are imposed on large projects in order to reduce the industry's dependence on labour. In smaller projects, BCA has waived such guidelines, perhaps acknowledging that their definition of buildability cannot apply to all across the board. I see this omission of smaller buildings as an opportunity, as this allows and invites architects to define buildability in other ways.

Away from the spotlight of codes, small practices willing to engage with the pertinent discussion, is able to explore the role of aesthetics within the ambit of buildability on their own terms. Nonetheless, considering that owner-imposed cost and time efficiencies are still very real in small projects, what remains is a slim space that may still allow for design ideas to be tested and built.

## **Buildable Aesthetics:** Natural Materiality

Buildability is centered around modularity, prefabrication and ease of assembly. In spite of a repetitive and mechanized process of construction, the outcome does not need to look mechanical. The right selection of component materials can still bestow a tactility to the assembly.

With the advent of renewable materials, architects ought to explore new materials that have structural properties and material authenticity, such as crosslaminated timber and resin composites for 3D printing. We should think of pre-fabricated structure as one that can be tectonically and materially expresseive, without need for ornamentation.

If the discourse on buildability can shift away from skin-deep facade treatments, such as aluminum panelling and green wall systems, and onto new load-bearing building materials beyond concrete, we can achieve a beauty derived from intrinsic material property (such as timber). This offers another way to save time as such materials hardly require further finishing. The choice of natural texturally-rich components would hit both bases of buildability and beauty. A component-based architectural construction would also give us more avenues to use prefabricated sustainable products from local and global sources.

Code of Practice on Buildability, Building and Construction Authority, 2017 Edition
 Code of Practice on Buildability, Building and Construction Authority, 2017 Edition
 Code of Practice on Buildability, Building and Construction Authority, 2017 Edition

## Buildable Componentry: **Designing The Joints**

Some construction methods by the authority's definition may truly be unsuitable for small projects. For example, one may not find the space to hoist a precast volumetric module into place. However, it will be an oversight to not re-interpret buildable design as one that is also tied to other scales, for example, at the level of a joint.



Stone Sun Screer ofThio Lav Hoor



Stone Sun Screen Detail



Sentosa Precast Modules Axor

Nuts, bolts, beadings, lippings, grouts and corner guards commonly occupy joints in floors, walls, and ceilings. These components are indispensable and easily procured yet each moment of interface can become an expression of thoughtful assembly. In the larger scheme of things, the cost of these jointing products is relatively negligible. Builders will also tell you that the ubiquity of these products and the ease of their installation mean they have minimal impact on labour and time. Creatively working with the cheapest and most widely available components of joinery can often yield delight, without resorting to parts customised at great pains.

Finding some nudge room here, architects can segue from the banality of large buildable components to meaningful profiles and detail joints where, arguably, the performance of process and making can be most poignantly expressed and celebrated.

## Buildable By Builders: Redefining Craft And Workmanship

As new proprietary products are continually being introduced, understanding how to put different systems together has become a core expertise that architects have to constantly update.

In turn, what is buildable is determined by how complex the designed construction system is and who has the skill to do it. As the traditional role of builder possessing good craftsmanship and workmanship is being replaced by mechanic precision, a beautiful outcome could now be defined by the clarity with which a complex construction sequence is communicated to relatively unskilled workers.

For instance, current prefabricated concrete panels may require a simple match-slot-fix-seal procedure for workers on site. Given a more sophisticated design, builders can still be taught to assemble in a similar 4-step process, as long as the complexity is contained in the part and not in the joint. For a well-designed outcome, this requires a rigorous process to develop and rationalise the design into modules and jointing sequences.

If achieved, then rendering this process of assembly visible can be one of beauty. Current on-site installation of prefabricated parts tends to erase joints which robs the end product of an intrinsic visual pleasure from the expression of componentry and joints. We now have undifferentiated monoliths, rather than architectures that extrapolate the joy and optimism of dynamism and possibilities.



SBG Kiosk Off-Site Steel Fabrication

Imagine if the enduring visual delight in modular architecture, such as Moshe Safdie's Habitat 67 and Paul Rudolph's The Colonnade, can also be done swiftly and simply as buildable public housing. In such a world, traditional attachment to skilled craftsmanship and time-intensive workmanship will be re-framed as an appreciation of a builder's finesse, made possible by the design assembly manual provided by those who designed them.

## Buildable Techniques: **Designing For Controlled** Variety Fabrication

Instead of accepting that precast concrete moulds will be cookie cutters, buildability can mean early involvement of architects in the designing of the fabrication process off-site. In 2015, together with LWC Alliance Pte Ltd, Heatherwick Studio and CPG Consultants prefabricated and hoisted into place 1,200 precast concrete wall panels<sup>4</sup> for the NTU Hive project. No two panels were the same.

Without correspondingly having 1,200 concrete moulds, but rather a series of adjustable moulds that produced 10 discrete facade curvatures, the architects were afforded "limitless combinations"<sup>5</sup> and could thus achieve the eventual "highly organic form"<sup>6</sup> that also had different aggregate finishes. Embedded within the casting process is a design intelligence that allowed for mutation, variety and eventually an aesthetic representation of organicity achieved through controlled prefabrication.

Other possible design plays include creating stops in casting sequence, permutability of a smart mould, casting of weather-able or time sensitive materials etc. All of these paves the way for a gamut of attractive design possibilities built into the design of the moulds.

## Equity Of Building And Material Knowledge

We can also look at the economics of construction through another lens: common knowledge amongst builders. Let us use interior fitting out works as an example. It is true that interior works, in many ways, are faster and easier to construct than buildings. Plywood has always been the material of choice in interiors because it is pliable, inexpensive, renewable, easy to handle and most importantly, because everyone knows plywood. The widespread knowledge of certain materials makes them, in effect, considerably more buildable.

In contrast, pre-fabrication and precast concrete construction is considered more specialized and therefore there are fewer precast yards serving us as compared to the number of carpentry workshops. This begs the question — is something more buildable because of a material or technique even if it was more uncommon and expensive, or is it more buildable if it

uses a material or technique that can be constructed by most workers with average skill? If the latter were true, plywood construction, despite its intricacies in customization, would be considered more buildable than precast concrete but this is not the case.

Indirectly, this also points to our corresponding reliance on builders to up-skill. It is only with their increased proficiency in using different materials, that we will see more different trades of prefabrication liberating our limited buildable palette. Ultimately, design will benefit from more possibilities in the expression of beauty through different materials and techniques.

## Buildable — Shifting Scales

The various approaches to buildability that I have outlined above are alternatives that do not conform to the official definition. With these ideas, we as an industry can take on a more expansive view of productivity in building, while keeping top of mind, the human values of delight and beauty.

In a milieu soon to be defined by DfMA<sup>7</sup>, architects are called on to re-think architecture as a product of components. Through reinvention and a change of perspective, we can align ourselves to buildability and find the beauty in these processes, uncompromising in the aestheticism and authenticity that we hold dear. In the end, we must be willing to re-think scale, material and methods of buildability in the same breath. Shifting scales and building smart is what we must do.

- Success Story: LWC Alliance Pte Ltd Making Concrete Look Cool, IDF e-Newsletter (I) Issue October 2015, International Development Group, 2015 https://www.bca.gov.sg/ ExportServices/others/IDG\_eNewsletter\_Int\_Issue\_01\_LWC.pdf
- Nanyang Technological University Learning Hub The Hive https://pci-projects.interactivetwist.com/project/nanyang-technological-universityearning-hub-the-hive/?search=%2Fproject-profiles-pci-pc%2F&pctemplate=one\_
- Nanyang Technological University Learning Hub The Hive https://pci-projects.interactivetwist.com/project/nanyang-technological-university learning-hub-the-hive/?search=%2Fproject-profiles-pci-pc%2F&pctemplate=one\_

7 Design For Manufacturing and Assembly





## **Defining Contemporary Professionalism: For Architects** in Practice and Education

Edited by Alan Jones and Rob Hyde

Reviewed by Ronald Lim MSIA RIBA

The architectural profession is evolving rapidly and there is no shortage of challenges to confront. The professional terrain is becoming increasingly complex, with wicked problems and rapid change driven by inter-connected issues. The business environment for architects is also becoming fraught with issues of fees, liability and delivery while the advent of new technology threatens to upend livelihoods. Given this situation, there is an urgent need to interrogate the nature of professionalism in our day and age — and explore how architects can bring value to the table in ways that remain original and relevant.

Contemporary Professionalism: For Architects in Practice and Education, edited by Alan M Jones (the current president of RIBA) and Robert J Hyde, is one such attempt at encouraging emergent and ongoing discourse on the diverse nature of professionalism in our day and age. This book compiles 63 highly readable essays by practitioners, educators and allied professionals covering broad issues currently pervading the profession. These "short essay" opinions fall mainly into four broad categories that overlap: Practice + Business, Education + Research, Rules + Regulation and Technology + Innovation. The contributors are not superstar names but many are knowledgeable experts in their own right.

One can look at this collection of essays — whose contributors come from the UK, US and Australia — as a broad compendium of practice wisdom and perspective. While it is easy to assume that these practitioners operate in a very different Western context, the issues that they address are highly relevant, and even overlooked here. There are such provocative essay titles as "Artificial Intelligence and Professionalism", "Architecture is in breach of social contract" and "Architecture's Ethical Function." Also raised are some deep-seated universal issues that we have not started to confront - issues like wage transparency, fair working hours and gender equality. There is even an essay on how to set up an employee-owned firm that distributes profits equitably. (Any takers?)

The collective wisdom and values embodied in this book reinforce the idea that we must be "Reflective Practitioners." In this day and age, there is no single definition to what being an architect means. It is therefore all the more important for us architects to reflect and be intentional about how we want to practice and what values should guide us. The many experiences and opinions compiled in this book suggest that there may be no easy answers to the wicked challenges facing our profession, but there are definitely ways to respond intelligently and authentically so as to better serve society.

# THE SECOND DIGITAL TUR

## The Second Digital Turn, **Design Beyond Intelligence (2017)**

Written by Mario Carpo

Reviewed by Mary Ann Ng

Mario Carpo's The Second Digital Turn, Design Beyond Intelligence carries a tone of urgency, for those of us within the architectural field cannot be left behind in the eternal race of technological change. Published by The MIT Press, as part of the Writing Architecture series, this piece of written work comes most timely as we are on the crux of the second digital turn. Carpo's latest work is concise with arguments easy to follow. The book is furnished with an extensive transdisciplinary historical tracing of technology, its advancements and its concepts, supplemented by personal anecdotes that make this a curious read.

Before jumping into the unpacking of the second digital turn, the book begins by establishing the relationship of designers and their tools, claiming that the advent of the digital fuelled the architect's postmodernist dreams, allowing them to enact digital design and fabrication, and eventually digital mass customization in the 1990s. It is repeatedly noted throughout the book that if the digital style of the first digital turn is characterized by the spline and parametric design, then the opportunity is there to birth a new digital style of design. The subsequent chapters seek to build the climate of the present day digital landscape, by identifying the critical shifts in ways of thinking about the digital, and how technology has progressed to allow for new ways of doing. Interestingly enough, in chapter 5, there is mention of city-states, where Singapore makes an appearance in the endnotes, as a push towards a nonstandard society.

While Carpo's book does not seem to offer any direct solutions or answers on what to expect from the second digital turn, it is still a valuable read on how designers have negotiated beyond just fabrication and have come to embrace a new way of thinking. He ends the discussion on an amicable note that "each to its trade, let's keep for us what we do best", and in doing so, become closer to designing beyond intelligence.

## REVIEWS



## 03

## **Maintenance Architecture**

## Written by Hilary Sample

Reviewed by Ar. Quek Li-En

The book is pleasantly slim and the font is highly readable. It is not a technical manual about maintenance but rather a considered analysis of the relationship between maintenance and architecture, a book written by an architect for architects. Hilary Sample looks at maintenance across a range of agendas, from the impact it has on the urban experience to the social division between the facade cleaner and the building occupants within.

The chapters read like a series of ruminations, insightful reflections on specific buildings or technological innovations in maintenance. For example, in relating maintenance to the image of the city, she notes that the dissemination of architecture is carried out primarily through photographs; the static image captures the building in a state of newness, perpetuating the illusion that architecture can be effortlessly sustained in this manner. The reality is that a large amount of effort is required to maintain this expectation of cleanliness, and alternative ways of looking at durability are in order.

Throughout the book, Sample turns to art to explore critical ideas about maintenance. The artists provide refreshing viewpoints which allow us to contemplate the built reality of architecture, subject to the vagaries of climate, people and time. The conversation is not limited to artists either; the cleaner, the person who is most perceptive about the actual workings of the building gets a word in too. By understanding architecture through different lenses, alternative narratives for maintenance in architecture may be envisioned.

However, just when I was getting invested in the ideas presented, the book pivots to a new topic (there is a touch-and-go feel to the essays). What the book does achieve is that it brings up issues which have here to fore not been widely integrated into architectural discourse. Maintenance has always been considered an essential part of building design but it is seldom looked at as an architectural opportunity. As building forms become more complex and the scale of buildings increase, the architectural potential for maintenance will likewise grow, and Sample's contribution provides a welcome inroad into this field.



In Conversation with LOOK Architects

# Studio

## In Conversation with **LOOK Architects**

Interview by Ar. Ronald Lim MSIA RIBA

Ar. Look Boon Gee MSIA Managing Director

## **Editor's Note**

Ar. Ng Sor Hiang MSIA

Directo

Almost twenty years ago, LOOK Architects broke new ground with a modest building — Gemmill Lane shophouse — that pushed the limits of how precast technology could shape design. Since then, the firm has gone from strength to strength, delivering such milestone buildings as the Bishan Public Library, Fuzhou Park Connector and St. George's Tower.

In a wide-ranging conversation, TSA's Practice Editor Ronald Lim MSIA RIBA speaks with the directors Ar. Look Boon Gee MSIA and Ar. Ng Sor Hiang MSIA on their rich experiences as a practice.

INTERVIEWER Ronald Lim Practice Editor

The Singapore Architect

INTERVIEWEE Ar. Look Boon Gee MSIA — (B) Managing Director

Ar. Ng Sor Hiang MSIA — (S)

PRACTICE INFORMATION LOOK ARCHITECTS PTE LTD ○ YEAR OF FOUNDING

○ NUMBER OF EMPLOYEES

2 Directors 8 Associates / Architects 4 Architectural Graduates 6 Technical 2 Admin Support

## **Background & Beginnings**

Thanks for agreeing to this interview. To begin, could you share with our readers your personal journey as an architect - where you studied, who you worked for, and what led you to start LOOK Architects?

Look Boon Gee: This is the 26th year of LOOK Architects. Time really flies. Both of us founded this company in 1993 when we were much younger with ambition. We both trained in Australia and returned here to work in 2 different offices. I worked for a firm called KTB Architects while Sor Hiang worked with William Lim Associates. The journey started with two of us looking at this context we returned to, which I call the "Asian context."

## Which is?

B: Very soon after we returned, we realized that what we studied and learnt in Australia did not apply here. Back then, Australia was a well-developed economy and country, and the way they did things were very different from Singapore. We soon realized the complexity of working here. We quickly did some interesting minor projects and were also chosen to do a Master program RMIT under Leon van Schaik.

Leon invited a few Singaporean architects into his program, which basically involved our own respective practices and how one achieves mastery in one's own practice. I shared with him the difficulty of working in Singapore and the larger Asian context. My thesis topic was "Multi-Reading," which addresses the complex and sophisticated society that we operate in.

This may be a good moment to quote what Leon van Schaik wrote about you:

> "His mastery was two-fold. His peers admired his ability to interpret the by-laws controlling development in Singapore to the satisfaction of the authorities, which he did in such a way as to open up possibilities for innovative design. He was also adept in the language of modernism, and his

B — Look Boon Gee S — Ng Sor Hiang

buildings were adroit combinations of elements from a range of sources... He has shown — as no one else in his generation has — a new way for architecture to respond to the new Asian urban condition"

## What is your response hearing this 14 years after he wrote it?

## \*laughter\*

B: His observation was very true. We adopted the position that we could not use just one method to address the complexity of a given situation. It must be a "multi-reading" of the set of challenges being presented. It's about how we then rethink our solutions creatively to solve the demands or challenges that we face in this Asian context.

Could you further clarify what this "Asian context" refers to? Are you referring to just the regulations or the different ways in which clients interacted with architects, or the need for the projects to have a local identity?

B: At that time during the 80s and 90s, Singapore was transitioning from a developing to a developed economy. We noticed that despite our aspiration to be world class, we had plentiful unskilled labour unlike Australia. This condition was challenging to reconcile.

The challenges were also regulatory. At the beginning of our practice, I wrote an open letter to SIA appealing for the prescriptive URA regulations on landed housing to be relaxed. You had to follow a pitch and there was no attic but you had to express the attic. We were very against this idea of "attic control" and that was my pet project. At least today it's "envelope control."





Looking at how regulations have evolved from then to now — and architects my age are complaining about today's regulatory requirements — do you think the era when your practice emerged was maybe a better time for young architects than it is today?

## \*nodding with understanding\*

B: It has changed to a very different regime. The challenges are definitely not lesser. But when we first started practicing, we were responding to those very prescriptive regulations. For example, our Gemmill Lane project was

an Envelope Control project within a conservation area and we were asked to design a shophouse - so we tried to challenge convention by creating a modern language within a conservation area, which was groundbreaking back then.

## **Reflecting on the Asian Context**

I would like to return to Leon van Schaik's invited Master's program at RMIT. Interestingly, he invited a few Singaporean practitioners back then - Mok Wei Wei, Richard Hassell, yourself. He based it on this idea that if you have attained some level of mastery as a practitioner and are seeking your creative voice, you'll want to be in a community of other creative individuals to reflect on what you have done. Could you describe what it was like to participate in the program — to interact with other practitioners and present your built work as though you were in school? How did that lead you on to your milestone projects?

B: That "Master by Research" programme by Leon van Schaik was useful to question your own architectural direction. It was a discovery of one's own methodology and design thinking — with self-criticality, self-appraisal, and self-searching to question what you are doing and why. The jury included architects like Fumihiko Maki and other Australian heavyweights and there was a rigorous dialogue surrounding the presented work. I was the only Singaporean architect in my section trying to present the idea of practicing in an Asian context. Having trained and set foot in Asia, we felt that the issues were larger and more demanding and we needed to develop our own ways to deal with this complexity.

Do you feel that this is still relevant today? In the late 90s and early 2000s, William Lim wrote a lot about Asian New Urbanism with a parallel discussion on the Contemporary Vernacular. Back then, your generation of architects probably had a strong sense of architecture needing to be tropical, contextual or Asian. Whereas today, with this widespread acknowledgement of Singapore as a contemporary global setting with infrastructure that has a tropical aesthetic, this need to suggest that our urban reality is "Asian" like the Kowloon Walled City or Bangkok is no longer as strong. Is this Asian distinction still a very important one for you?

B: Yes, very much so. Today if you were to transport yourself from America to this part of the world — Southeast Asia or China — you can feel that the aspirations are different. While there was a tendency towards tropical regionalism during our time, we felt that our urbanism was very unique. We realized that whenever we talked about the streets and squares the way we learnt in the European model, those ideas were not as strong in Singapore. Where are the streets, squares and plazas here? The way we use the public spaces here are very dynamic — it could be something in the morning and something else at night. So there is a multitudinous complexity that is different.

## It's definitely different, right down to how we plan B: It was a self-initiated project and not driven by any the city.

- Ng Sor Hiang: In fact, very recently, when we did this urban design in Fuzhou, there were a lot of challenges and cultural dimensions that made it different and Asian.
- B: So I'm quite glad to have gone through this programme. A lot of what Leon said was true and that prepared us to face a project like the one in Fuzhou that obtained 3 international awards last year. We took 4 years to plan this trans-urban connector because it is more than just a landscape. It encompasses social, physical planning, architecture, and an understanding of the complex challenges in a fast-growing Chinese city.

So this interest in Asia explains to some degree why you have projects in China and Vietnam?

B: Yes, you can say that



## Early Experiments with Buildable Design

Moving on to your early milestone projects, we are very interested in the fact that your Gemmill Lane shophouse from 2000 was a pre-fabricated project and that you bothered to find out about those technologies without BCA telling you to do it. How did you come to do it?

regulations. For that small project in a conservation area, we looked to technology and happened to know a precaster who knew of this idea of a master mould. Basically, you have a big plate and then you come up with permutations of a flat plate that can interlock.

## So you happened to know a precaster and your "Asian conditions" included low-skilled labour, so technology was a way to manage that?

S: It's also our background. Being trained in Australia, we believed in a holistic approach where design involves going beyond the facade to think of its materials and how it is constructed. That was really our training — from design through to detailing — we see it as a continuous process until the project is complete. At that time when we were doing Gemmill Lane, besides the envelope control design challenges, we adopted this approach towards construction as well.

5 Gemmill Lane (2000) is a small shophouse in Chinatown that featured the innovative use of prefinished and precast technology to achieve a contextual fit. The project was groundbreaking for its progressive use of technology, and remains worthy of study to this day

Image courtesy of Mr Zhou Yue Dong

## (Bottom)

The Bishan Public Library (2006) was another milestone project for LOOK Architects. This civic building features hanging pods that resemble slotted books creating personalized spaces that animate the library façade.

Image courtesy of Mr Patrick Bingham Hall

B — Look Boon Gee S — Ng Sor Hiang



B: So the construction becomes the aesthetic of the building. Because the panel could be pigmented, we had yellow and black because those were the two cheapest pigments that we could afford. And because they could do cast-in groove lines and cast-in indentations, the aesthetic is very much driven by the understanding of precast technology. Even by today's standard, it is still relevant.

Would you say that actually back then it was much easier to do custom details — to custom and control the detail to the extent that is hard to do today. Let's say if I had a PPVC or pre-fab project today, my ability to control how they resolve a corner detail or what a particular look would be is much more constrained — that today, we wouldn't have that much control over customization to achieve a particular look?

- B: I think it would be much easier today. Back then this was really an unchartered area and we wanted to push the idea of how you can derive the aesthetic from an understanding of construction technique. Whereas today, it is a lot easier as the technology is widely accepted.
- S: For customization, specialized details like a special door handle may be elaborate. In this case however it's a new technique of construction. The precast, pre-finished pigmented technique that we used can be worked into

the fabrication process. Back then, there was a lot of precast for HDBs but we had not reached a point where this technique was prevalent, so it was really a breakthrough.

## So it's really about using technique as craft to create an aesthetic.

B: I think back then we were very much interested in exploring the architect's approach to precast, as opposed to it as a construction engineering technique. For us as architects, we asked the question of how we can assemble it in an aesthetic, pleasing and contextual way - which was very much from our own angle. Whereas for other engineers, it's probably just 4 or 6 walls and components that come together.



## Urban Connections through a Kit of Parts

## Is pre-fabrication still a prevalent theme in your work today?

B: Yes, very much so. For the Fuzhou Trans-Urban Connector sensitive as well. project for example, we were able to achieve such a big urban scale in double quick-time in a Chinese context And your client for this project was... where every project needed to be finished yesterday at breakneck speed. In this situation, pre-fabrication B: And not to mention the complexity because it's not a clean or modularization becomes the key to unlock this slate, mind you. Our site was really a green mountain within 19km stretch. a densely populated old city and acquiring all that land.

project?

## So the technology behind this urban project was pre-fabrication?

B: Design for Manufacturing Assembly (DfMA), a kit-of-parts approach. If you look at the project, it's so simple that it is made up of only 5 possible components. So to be able to pull off a project of this nature in so short a time is not simple. If we were to customize each 1-kilometre stretch, it would take years. This was finished in a very short period of time because we stuck to very simple components.



## And compared to the Southern Ridges project?

B: That project also adopted a "kit-of-parts" approach. It was also pre-fabricated to minimize danger to the natural context. Here, the kit-of-parts approach was conceived to protect nature. You do not want to bulldoze. You want to hoist and launch components in a systematic way. It's interesting that in both cases — at an urban infrastructural scale — you're operating in a natural context but pre-fabrication technology actually helps you stay sensitive to nature. It's definitely a very different dimension to the use of technology.



## B: And not to mention the complexity because it's not a clean slate, mind you. Our site was really a green mountain within a densely populated old city and acquiring all that land involved a heavy price. There were trees that needed to be relocated, people had to be relocated from orchard villages and there were military training areas that were

## Navigating Cultural Differences

B: The language definitely, but it's more than just the language. It also involves the way you approach the project

How challenging is it to work on a China or Vietnam

- because whatever can go wrong will go wrong. So luckily my team had a group of talented and devoted architects who had the ability to go out and understand the project challenges and take the stress and rise up beyond this difficulty. The mayor could easily make a phone call and decide not to do this or that.

Your firm is impressive for having entered the Vietnamese and Chinese markets. Everybody says that Singapore firms must internationalize but I suspect it's not as straightforward. Many firms choose to involve themselves in delivery and implementation in order to preserve the Singapore "brand" or reputation in architecture — but delivery is resource intensive. Culturally, these clients are also more demanding and you have to turn around much more quickly. Considering the amount of resources you have to sink in to manage that situation in a different cultural environment, how do you pull it off?

## (Opposite page)

(2017) is an urban design that transcends the physical barrier of a hilly mountain to create people-oriented spaces that promote resilience and well-being within a dense Asian city. Most of the connector is con out of just 5 standard components nage courtesy of Mr Zhou Yue Dong

## (Bottom)

nnectivity and inclusivity A universally design walkway and pedestrian bridge within a forested and hilly park.





- B: With great difficulty, of course. I remember once we were working on the design for a Vietnam project and we walked back to our hotel from our office at 4am in the morning. It's that kind of intensity.
- S: And that kind of scale and speed. The design just has to take place so quickly.
- B: And it's cross cultural. We speak in English, we understand the Chinese. Sometimes we have to communicate from Singapore to Vietnam. So we're not operating mono-culturally but managing the differences between these cultures.

## How difficult is it to really maintain a satellite office in How large is your firm currently? Vietnam or China? It must involve a lot of resources. B: We faced a lot of teething problems, including cultural ones. 30 plus. At one time we had mass resignations from the Vietnam

office because they operate differently. So suddenly we had to deal with new sets of problems because we're culturally different. We just have to walk the journey, including the challenges that come our way.

## And you have a business development manager?

B: For an overseas market, you really need someone who is well-versed with the Vietnam, Malaysia or China markets. Although I can get by in Mandarin, my language ability is not "up there" enough to deliver at the same level of polish as the locals. Therefore I need people — talented architects actually - who can cross that hurdle and bridge that gap.

## 101

(Opposite page) Façade of Bliss at Kovan, residential apartments Image courtesy of LOOK Architects

## (Top)

Nanjing Biz Park (formerly Nanjing Audit University). This ongoing project was commissioned by Vanke China. New buildings are carefully designed and introduced into an existing campus context to open up vistas and improve ground-level connectivity. Image courtesy of LOOK Architect

Interestingly, many firms find it very difficult to fill this niche business development role. It's usually only the partner of the firm, or an architect who knows enough about the business of architecture, who can assess a potential client — or whether a project lead can translate into the right scope for the office to take on.

B: We did it through trial and error. There's no bed of roses wherever you go. We were in the China market for almost ten years before we landed this big project. It never happens suddenly.

## **Current Firm**

B: We used to have 40 but have since downsized to about

From your earliest to your recent projects, how would you describe the consistent themes and values that define your work? Is there a way to describe what sets LOOK Architects apart from its peers?

B: Taking a step back, our work is gradually amalgamating all the understanding of architecture — not just as a stylish envelope — but very much as a civic concern, about a public architecture that engages the urban realm. I think this larger civic concern sets us apart. Our hearts always go out to projects with a public character.



Singapore University of Technology & Design (SUTD) Students & Staff Housing (2014). This design adopts extensive pre-fabrication age courtesy of Daniel Swee

This leads me to a difficult question. Your portfolio covers a huge range of project types — from residential to institutional and even industrial buildings. Is this a situation where the projects that interest you are too few and you need to take on other projects to support the firm?

- B: Yes. We did not focus on a single project type and ended up taking whatever projects that came our way. The good thing is that it allows you to take a fresh and innovative approach to each project - but it means you have to master all the parameters within a very short period of time, and we have to shorten our learning curve. I think it is a difficult way of practicing.
- S: Yes. I must say that makes us very versatile, because you are dealing with a range of scales from that of a house to that of urban design. It trains us how to deal with scale, because the detail for urban design is very different from that at the scale of a house.
- B: Of course, from a resource planning point-of-view, it is a lot easier to focus on one project type. You can recycle and repeat certain details. Whereas for us, each time we have to rethink and reinvent ourselves, so it's a lot more challenging.

## What are some of the biggest challenges confronting your firm right now and how are you coping?

B: Singapore has become a very difficult place to practice. There is a lot of regulatory control, and also because of available manpower and related costs. Unfortunately, the condition is such that as we become more developed, the ground becomes more regulated. But having said that, it's how we can then get ourselves out of that situation.

I do not have the solution. All of us are in the same situation, but for younger generation, you all have other areas which are unchartered and interesting. I compare myself with my bosses. They had a pretty good time but the opportunities that I have today, my ex-bosses did not have. He did not think about going into China, but I was forced to go into China and other overseas markets.

## So we'll all be okay because we will do what we are forced to do, which will give us new opportunities and ways to survive.

B: Absolutely. So it's not a zero-sum game. One door may be closed on this side but other doors will open. So you just need to seek out those doors and windows.



![](_page_50_Picture_17.jpeg)

## **Final Reflections**

On hindsight, if you had to do it all over again, is there anything you would have done differently, or wish you knew 20 years ago rather than today?

B: I would have polished my mandarin speaking skills.
I under-estimated the importance of the Chinese language, and feel inadequate in expressing myself in that language and setting. That is one thing that I hope — if I were to re-do all over again — I wish I could master that language.

And are there any important early decisions that you made, early in your career that you do not regret — that you feel helped you get ahead.

B: I think one of the temptations at that time was to do things in a casual way. We took it the hard way. We took every project seriously and did it diligently. Some advice we received back then was to build up a track record first, then focus on design. But we wanted to focus on design and do it well for every project, and through that build the track record. Back then, there were opportunities to do massive housing projects which were run-of-the-mill that could allow you to earn a lot more fees. We did not choose that path and do not regret it.

So whatever you set out to do, it's important to have that perseverance and do what you believe in. It's as simple as that.

Very wise and encouraging words indeed. Well, thank you very much for this engaging and enlightening conversation.

B & S: Thank you.

![](_page_51_Picture_10.jpeg)

![](_page_51_Picture_11.jpeg)

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## 105

# Practice

p106 Prefabricated Bathroom Units Written by Jax Tan

PRACTICE

## **Prefabricated Bathroom Units**

WRITTEN BY Jax Tan

When we think about precast, we are typically quick to quip components that can be cast off-site and then installed at a construction site much like lego pieces to a lego sculpture. As architects, we are easily familiar with the parts such as columns, walls, or even the staircase as part and parcel of the entire construction process. Yet as the extent of what is prefabricated grows, so does the extent of the architect's role in its design, planning and management.

Over the past 5 years, local building construction has advanced in such a way that rooms may now be pre-fabricated and installed as finished components in a construction site. Enter the prefabricated bathroom unit (or, PBU in short): "a bathroom unit, which is pre-assembled off-site complete with finishes, sanitary wares, concealed pipes, conduits, ceiling and bathroom cabinets, before it is delivered and installed on site<sup>1</sup>".

Since 1 November 2014, PBUs are mandatory under the Government Land Sales (GLS) Programme, in all residential non-landed including those part of mixed-use developments. Meanwhile, by 9 November of the same year, all other residential non-landed development that wish to apply the Balcony Bonus Gross Floor Area (GFA) scheme are to adopt 80% PBUs in the development, a major draw for developers wanting to maximise GFA.With regulatory agencies being the major pushfactor to this advancement, these days, the design of prefabricated components have very quickly fallen within the architect's purview. We visited Greyform, a manufacturing facility specialising in prefabricated building elements, to learn everything we need to know about the design of a PBU.

![](_page_53_Figure_9.jpeg)

## Types of PBU

There are many types of PBU but more commonly known locally are these three:

A. Precast Concrete Volumetric Bathroom Unit B. Precast Lightweight Concrete Bathroom Unit The most original form of the prefabricated bathroom A lighter alternative to the volumetric PBU, Greyform unit — Created from a formwork arranged in the layout specialises in lightweight concrete walls cast in L-shaped of the bathroom, with pre-determined door and window modules and then assembled to form a full PBU unit. openings. Once cured, the formwork is removed and the This reduces the amount of formwork modules as the module is flipped over, before the floor is cast thereby L-shape formwork may be repeatedly used for different completing the PBU shell. Each variation in layout module types. will constitute a new formwork module, making this an intensive exercise in projects with many varied bathroom modules.

![](_page_53_Picture_14.jpeg)

1 Prefabricated bathroom unit: <u>https://www.bca.gov.sg/BuildableDesign/pbu.html</u>

Casting of volumetric bathroom unit Image courtesy of EBS Precast

## Prefabricated parts to a building mage courtesy of HDB

![](_page_53_Picture_22.jpeg)

From left to right: Lightweight concrete PBU parts, precast lightweight L-shaped walls Diagram & Photos of Greyform

## Sequence of work

Work sequencing is brought off site into the factory, with stages incorporating checks for quality control.

![](_page_54_Figure_5.jpeg)

## C. Preassembled Steel-frame Bathroom Unit

The most lightweight of all bathrooms, these bathrooms are constructed of steel frame and infilled with drywall panels, much like interior partition work. As required locally, the use of drywall panels is governed by stringent tests to ensure that they are suitable for wet areas.

![](_page_54_Picture_8.jpeg)

From left to right: Lightweight concrete PBU parts, precast lightweight L-shaped walls Diagram & Photos of Grevform

## Installation of PBU

Generally, there are two methods of installation:

![](_page_54_Figure_12.jpeg)

From left to right: Lightweight concrete PBU parts, precast lightweight L-shaped walls Diagram & Photos of Greyform

## 1. Critical path installation (Stacking)

PBUs are installed as each building storey is constructed, hence the installation process is strongly tied to critical path to ensure adherence to the construction programme.

## 2. Non-critical path installation (Slide-in)

Prior to installation of facade, the PBUs are pushed in from the building envelope into the designated bathroom location. As the structural shell of the building has been completed, installation of PBU is unlikely to be on the critical path as works to other parts may persist, regardless if it were at the lower or upper storeys of the building.

## **Planning & Design**

Regardless of types, the architect's considerations for the planning and design of the PBU are these:

- Modularisation and standardisation in design
- Location of waste closet (WC) as close as possible to the dedicated waste shaft for efficient connection to the main waste pipe
- Accessibility of the dedicated waste shaft from outside of the bathroom as maintenance access
- Good floor-to-floor height so that there is enough space beyond the ceiling height for pipe connection works

## A Prefabricated Future

In our conversation with Bathsystem Singapore, Technical Manager Mr. Alan Heng shares the ideal vision for the PBU; a futurist perspective of a bathroom or kitchen unit as something so ubiquitous and easy that it may be conveniently purchased off the shelf of a supermarket. All one has to do is to connect the drain pipe and power, and the "machine" whirls into being, becoming a part of our daily lives. Over a decade, when the "machine" is aged, or when its owner decides to overhaul, it may easily be unplugged and replaced with a brand-new unit, likely with updated functions. "Ideally, this is what it (the PBU) was intended for", he tells me.

This concept brings to mind the Nakagin Capsule Tower that is designed as a series of modular rooms "pluggedin" to the core. Such a world will require much logistical considerations and universal consensus on size for it to achieve the economics of scale for mass production; for instance, the bathroom typologies may be reduced to fixed sizing much like one considers beds in scales of Single/Queen/King-sized.

This certainly begets the question of our role as architects, where design solutions to modern construction will have to be provided through an increasing negotiation with new technology and regulations. It remains to be seen if this logical and systematic way of conceiving rooms as finished products available for purchase wholesale, may be a viable future. But for now, designing PBUs is a reality in which are rules architects will have to play by. Architecture may be transformed, one bathroom at a time.

# Heritage

p112 Beauty in Harmony — The Role of Conservation in Making a City Beautiful Written by Ian Tan HERITAGE

## **Beauty in** Harmony — The Role Of **Conservation in** Making a City **Beautiful**

WRITTEN BY lan Tan

IMAGES BY Urban Redevelopment Authority

![](_page_56_Picture_6.jpeg)

![](_page_56_Picture_7.jpeg)

This year marks 30 years of conservation efforts in Singapore, championed by the Urban Redevelopment Authority (URA). Ian Tan looks back and charts the significant developments in this journey.

Images courtesy of URA

Alberti the Renaissance architectural theorist reminded us that "beauty is the reasoned harmony of all the parts within a body, so that nothing may be added, taken away, or altered, but for the worse." To create a beautiful cityscape is to achieve a harmonious urban composition, striking a balance between buildings humble and monumental, commonplace and sacred, as well as those historic and modern. Conservation is essential to accomplish that, by accommodating a range of buildings constructed during different periods of development and rejuvenating historic areas to remain relevant with the public.

Thirty years since the Urban Redevelopment Authority (URA) started gazetting conservation areas and buildings, its policies and practices have changed to keep up with the times. However, it remains guided by a steadfast mission to keep historic buildings as a valuable link to Singapore's built heritage.<sup>1</sup> The spirit of conservation is perhaps best articulated by Mr S Rajaratnam, the country's founding Minster of Culture. In a provocative speech to open the first-ever seminar on adaptive reuse, the minister rallied architects and civil servants in attendance.

Neil Road 1985

Neil Road 1989

Urban Redevelopment Authority (URA) Conservation Principles Undated. http://ura.gov.sg/Corporate/Guidelines/Conservation Conservation-Guidelines/Part-1-Overview/Introduction

## **Beauty and Finesse**

Mr Rajaratnam's impassioned call received lukewarm response from the private sector. Despite the altruistic motives behind conservation, property owners were invariably more concerned with the economic viability of keeping rundown shophouses, neglected for years under the Rent Control Act as owners are dis-incentivised to maintain their buildings. Many preferred to replace old shophouses with high-rise complexes to maximise property value, following successful government-led efforts to redevelop the city centre into a gleaming metropolis. Stakeholders then were also largely sceptical about available expertise to undertake restoration projects and the commercial significance of having restored shophouses in the Central Business District.

For conservation to succeed, building professionals and owners had to be convinced of the feasibility and appeal of historic buildings. To do so, URA took a two-pronged approach. Firstly, it unveiled a plan to conserve shophouses in the city centre as part of its Central Area Structure Plan in 1986. An exhibition was held the following year to seek public buy-in. Only after an extended period of consultation and finetuning did URA announced in 1989 the gazetting of ten conservation areas that formed most of the historic districts and residential historic districts today.<sup>3</sup>

Secondly, URA initiated pilot projects in the late 1980s to restore disused state-owned buildings. The first project was 9 Neil Road, a shophouse which took four months to repair.<sup>4</sup> Mrs Koh-Lim Wen Gin, who was then part of a URA plan developing the Conservation Master Plan, recalled how the project "demonstrated (the) government's commitment to set an example to the private sector that dilapidated shophouses can be beautifully adapted for new uses".<sup>5</sup>

Support from government agencies, training institutes and opportunities to collaborate with conservation experts were instrumental. Overseas experts like Mr Didier Repellin, a noted French conservation specialist, were engaged to advise on conservation standards and provide training for craftsmen on traditional building techniques. Didier coordinated the first international restoration project locally in collaboration with the Construction Industry Development Board (CIDB), the predecessor of BCA Academy.<sup>6</sup> Seven CIDB instructors, recruited for their experience in traditional construction, were paired with French experts to restore 53 Armenian Street, a dilapidated shophouse steps away from the former Tao Nan School, now the Peranakan Museum. Working side by side, the team of local and French craftsmen used just ten days to replace the timber roof and gutters and repair deteriorating stucco mouldings on facade walls.7

Pilot projects launched during the onset of conservation not only convinced stakeholders of the economic potential of conserved shophouses but were also instrumental in revealing their hidden beauty, obscured by years of neglect but resurrected in the hands of skilled craftsmen.

"...to preserve as much as possible of our transplanted cultures embodied not only in the language, culture and beliefs of the diverse peoples of Singapore but also in their temples, churches, mosques, houses, street names and localities.

These constitute a people's collective memory: an awareness of their history, brief though it may be...we should try to save what is worthwhile from the past from the vandalism of the speculator and the developer, from a government and a bureaucracy which believes that anything that cannot be translated into cold cash is not worth investing in."<sup>2</sup>

- April 1986, p.17
- 4 Chia, Annie. Tg Pagar in days of yore. The Straits Times. 23 February 1987, p.12
- Koh-Lim Wen Gin, "The Singapore Conservation Story—Lessons transcript, accession number 248-2016. Singapore: Centre for ole Cities. 2016. Quoted in Melic, Katyana. Urban System Studies: Past, Present and Future: Conserving the Nation's B Heritage. Singapore: Centre for Liveable Cities. 2019. <u>https://</u> olc.gov.sg/docs/default-source/urban-systems-sti onserving-the-nations-built-heritage.pdf
- n in training skilled crafts ness Times, 17 April 1987, p.2
- Back to its old glory in just 10 days. The Straits Times. 17 April 1987. p.14

![](_page_57_Picture_16.jpeg)

![](_page_57_Picture_18.jpeg)

Cathedral of the Good Shepherd (After)

Cathedral of the Good Shepherd (Before)

<sup>2</sup> Speech by Mr S Rajaratnam, Second Deputy Prime Minister Foreign Affairs), at a Seminar on "Adaptive Reuse; Inte al Areas into the Modern Urban Fabric" Held at the Shangri-la Hotel on Saturday, 28 April 1984 at 10.30 am Speeches@Archives Online. Document Number: sr1984 National Archives of Singapore. 3 Govt to designate 10 areas for conservation. The Straits Times. 1

![](_page_58_Picture_2.jpeg)

![](_page_58_Picture_4.jpeg)

72 Club St (Before)

![](_page_58_Picture_6.jpeg)

![](_page_58_Picture_7.jpeg)

Capitol Theatre (After)

Capitol Theatre (Before)

![](_page_59_Picture_2.jpeg)

The Warehouse Hotel( After

![](_page_59_Picture_4.jpeg)

320 Havelock Road (Before

## **Beauty and New Meanings**

Lessons gleaned from these pilot projects demonstrated the appropriate use of restoration techniques, the types of materials suitable for structural repair and the sensitive integration of new environmental and infrastructural amenities. Such knowledge was methodically collected and published as a set of conservation pamphlets in 1993.<sup>8</sup> The now-familiar Top Down Approach and 3R principles in conservation, namely Maximum Retention, standards for shophouse and bungalow.<sup>9</sup>

Historic districts such as Chinatown, Kampong Glam Sensitive Restoration and Careful Repair, first appeared and Little India have long been associated with ethnic in these pamphlets that covered conservation objectives, celebrations such as Lunar New Year, Hari Raya Puasa planning parameters for alterations works and restoration and Deepavali. More recently, other conservation areas like Boat Quay and Bras Basah — Bugis also played host to popular cultural events such as Singapore River Festival Yet investment in skills training, regulations and and Night Festival. Collaborating with business owners standards, would be futile without developers' and their and agencies like National Heritage Board and Singapore project teams' willingness to revitalise buildings for new Tourism Board, these festivals allow organisers and artists uses without sacrificing its historic fabric. Signature to showcase new interpretations of historic buildings projects spearheaded through public-private partnerships and draw inspiration from the historic surroundings for in the early 1990s such as Tanjong Pagar, Clarke Quay and artistic expressions. For instance, the Neoclassical façade Empress Place Building demonstrated the possibilities to of Former General Post Office, now the Fullerton Hotel, breathe new life into old buildings. In most, if not all cases, has been used as a backdrop for projecting 3D displays the historic settings complemented new programs that during Singapore's Golden Jubilee. Armenian Street, a pulled crowds into new restaurants and family attractions. pedestrianised street surrounded by Peranakan Museum and conserved shophouses, provided the perfect outdoor The Architectural Heritage Awards (AHA), now in its setting to recreate an wedding procession complete with groom and bride dressed in authentic Peranakan finery, accompanied by a boisterous entourage of Babas and Nyonyas.

25th year, remains an important platform to showcase outstanding restoration and conservation projects. Initially established as a "Good Effort Award" for wellrestored buildings in 1994, the judging criteria for AHA expanded the following year into two categories, namely Conservation areas are also energised with new leases Category A for restored monuments and fully conserved of vibrancy through place management. This urban strategy buildings and Category B for developments that integrate fosters active collaboration between URA and local historic structure with new elements.<sup>10</sup> More recently in stakeholders to activate underutilised spaces and quiet 2016, award categories A and B were renamed the Award periods with pop-up events such as Streets for People for Restoration and Award for Restoration and Innovation and Car Free Sundays. Shophouse districts are popular respectively to differentiate the awards and to highlight for family day-out with its low-rise buildings of eclectic the latter's recognition of bold interventions to bring styles, intimate streets and a curious mix of traditional historic buildings up-to-date. An additional award for New trades and hipster establishments that make them ideal Design in Heritage Contexts, conferred since 2018, further platforms for heritage, culture and people to mingle. encourages architects to draw inspiration form the historic setting to create harmonious designs and new relevance The most evident change in Singapore's thirty-year for contemporary use.

## Beauty and Identity

However, the conservation journey for each project does not end with the completion of restoration works or the garnering of AHA or other architectural awards. Nowadays, conserved buildings and conservation areas play an active role in enlivening cultural life and promoting living heritage. As Singaporeans become affluent and travel more frequently to overseas cities rich in arts and heritage, there is a growing appreciation for Singapore's shared heritage embodied in historic buildings and conservation areas. The rich cultural life of different communities, represented by places of worship and ethnic spaces, are recognised not also as key contributors to our identity as a cultural melting pot and but also important landmarks that add to the diversity of a variegated urban mosaic.

conservation journey is perhaps the shift from convincing property owners and building professionals of the need to conserve to working with these same stakeholders to encourage and excite more people about Singapore's

 <sup>8</sup> Urban Redevelopment Authority. Our heritage is in our hands. Singapore: URA. 1993
 9 Kong, Lily. Conserving the Past, Creating the Future. Singapore: Urban Redevelopment Authority. 2011, p.254
 10 Ler, Seng Ann and Michael Koh (eds). Architectural Heritage Singapore. Singapore: URA.

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multifaceted built heritage. Architects, conservation specialists, urban planners and even place-makers are united in a common goal to use conserved buildings as living artefacts to tell the story of Singapore's development and to sustain public interest in heritage. As Mr Desmond Lee, Second Minister for National Development, describes the future direction of conservation, it is clear that.

"Conservation is not just for the conservation and heritage community but intended for the benefit of the wider public... Heritage buildings and their stories belong to all of us. When the community steps forward to participate, it sustains and bolsters efforts to protect our built heritage."<sup>13</sup>

The project continues. Much good work has been done and the city is better for it. In the meantime, the stock of significant buildings continues to grow every year. The focus must eventually shift to a serious evaluation and ultimately gazetting of architecture from our recent modern past as well.

## The Unsung Heroes Of Conservation

In celebrating URA's thirty-year journey in conservation, it is important to acknowledge the efforts of officers working within the bureaucracy to lay the foundation for conservation to take root once the economic imperatives driving rapid urban renewal during the early independence years gave way to a more holistic masterplan that envisioned revitalised shophouse areas juxtaposed against modern skyscrapers to form a dramatic visual contrast in the skyline.

In the early 1980s, URA officers were tasked to study derelict shophouses and old neighbourhoods which had seen better days. Planning executives Doris Lee and Wong Yoke Khien went around documenting buildings to produce sketches and measured drawings for thousands of buildings earmarked for conservation. Another officer, Richard Tong was assigned to shoot pictures of old buildings, taking more than 10,000 photographs over six years to form URA's first inventory of historical buildings.<sup>14</sup> A selection of these rare composite façade images is published in the following pages.

![](_page_60_Figure_9.jpeg)

![](_page_60_Figure_10.jpeg)

The collective efforts of these and other "unsung heroes" culminated in the conservation of over 3,000 buildings in Chinatown, Little India and Boat Quay in 1989 and followed in 1991 by 2,000 more at Beach Road, River Valley, Jalan Besar and Geylang.<sup>15</sup>

![](_page_60_Figure_12.jpeg)

Types of Building Conserved

![](_page_60_Picture_14.jpeg)

250 BUNGALOWS/FREE STANDING HOUSES

14 Kong. 2011, p.62

15 Yeow, Stephanie. Urban Warriors Battle to Save Old S'pore. The Straits Times. 28 August 2006, p.11

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![](_page_60_Picture_20.jpeg)

600 TERRACE HOUSE

40 RELIGIOUS BUTI DTNGS

![](_page_60_Picture_23.jpeg)

30 SCHOOLS

15 INFRASTRUCTURE

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<sup>13</sup> Speech by Desmond Lee at the URA Architectural Heritage Awards 2017. Urban Redevelopment Authority. 31 October 2017. <u>https://www.mnd.gov.</u> <u>sg/newsroom/speeches/view/speech-by-2m-desmond-lee-at-the-ura-</u> <u>architectural-heritage-awards-2017</u>

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Ar. Quek Li-En MSIA (M. Arch, National University of Singapore) is a registered architect practicing in Singapore. He is inspired by interesting situations in everyday life and founded Quen Architects in 2016 to pursue the integration of architecture, art, landscape and interior design

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Ar. Raymond Ang is a practicing Architect who has worked in Hong Kong, Australia and Singapore on projects ranging from the iconic to bread and butter types

Now and then he participates in civic discourses on Architecture and writes about it, and hopes by doing so he can somehow contribute to publicizing the work architects do in a less inscrutable way, and be appropriately valued by the general public.

One pet peeve of his is that art and architecture are no longer closely linked, unlike during the age of the Modern Masters. Raymond actually understands Millennials. In his spare time, Raymond jogs and dotes on his young daughters.

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Yen Yen has showcased her work at and spoken as invited panelist at Archifest events, Board of Architects seminars, NUS Construe and Construct Speaker Series and at the SIA Paper Architecture: Unbuilt Dreams. She has published numerous articles in design publications and has been teaching at the NUS Department of Architecture since 2009. She has also been serving as Council Member at Singapore Institute of Architects since 2016 and is currently the Honorary Treasurer and Co-Chair of Design Thrust.

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Dietmar is a registered architect. He collaborates with international premium companies, teaches and researches at renown universities like ETH Zurich, the Berlage Institute Rotterdam, and Singapore-ETH Centre: The Future Cities Laboratory.

Dietmar has more than 25 years of experience in the fields of architecture and urban design strategies, urbanisation, high-density mixed-use cities, knowledge space architecture, campus architecture, large-scale urban projects. He has been responsible for numerous large-scale interdisciplinary projects in research, development and design. Dietmar has an extensive experience throughout all aspects of design, development and implementation until developing global standards and research projects in urban and real estate developments.

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Sonja received her master-degrees in Architecture and Urban Design from ETH Zurich and the Architectural Association in London, and a PhD from the Singapore-ETH's Future Cities Laboratory and the National University of Singapore. With close to 20 years of architectural design and research experience for leading organisations, she is a visiondriven change agent and a proven talent for creating innovative architectural designs.

Sonja's expertise spans architectural design, sustainable urban design, design research, education, client relationship management, infrastructure development, and comprehensive planning. As a dedicated professional, she is keen to achieve maximum impacts with minimum resource expenditures, as well as incorporating technological innovations to improve everyday life

Jax Tan is an architectural associate at a local firm. optimistically aspiring towards her architectural license. When she eventually retires, she hopes to start a creative social enterprise to serve the less fortunate in designing their homes to suit their needs.

Mary Ann Ng graduated with a Bachelor of Arts in Architecture and a Master of Architecture degree from the National University of Singapore in 2018. She is currently Research Assistant at the School of Design and Environment, NUS. Her research interests stem from observations of the contemporary individual, their subsequent emergent lifestyles and new cognitive behaviours within space.

Cheryl Chan received her Bachelor of Arts in Architecture and Master of Architecture from the National University of Singapore. Her Masters Thesis takes inspiration from the neglected ruins of Istana Woodneuk and is about the rejection of decay in the Singapore landscape. Her thesis drawing was also selected as one of the finalist for the Architizer's One Drawing Challenge. Currently, she is an architectural associate at Forum Architects and recently completed the NUHkids Specialist Centre with its focus on play. Curious about the experiential aspect of architecture, she often remembers spaces by how they made her feel. She particularly adores the Teshima Art Museum within the Benesse Art Site Naoshima.

lan Tan is a PhD candidate at the Department of Architecture, University of Hong Kong, His research focuses on iron structures found in British port cities such as Singapore, Hong Kong and Calcutta. In particular, he is interested in technology transfers and the flow of craftsmanship from Britain to her colonies and vice versa. He also runs Forward Heritage, a heritage consultancy offering advisory services in planning, architectural conservation as well as interpretation and research.

![](_page_61_Picture_24.jpeg)

The rise of User Experience (UX) as a field of expertise reaches beyond mere functionality for an enhanced level of intuition and comfort catering to how one carries out certain activities, backed by relevant data gathered from surveys and research. This trend of pandering to a user who is entitled not to think, may be only a symptom of a society determined increasingly by data and algorithms.

While architects pride ourselves on designing for people, are there perhaps blind spots overlooked that have opened up new domains for new consultants such as placemakers and UX designers? Is there then some aspect of practice that needs to be reclaimed? Or is this new attention to "detail" inevitable as a result of structural shifts in technology and communications?

Related to this is the emergence of new modes of client-centric representation such as augmented reality. The advancement of software and smart devices has moved design process from abstraction to hyper-real show and tell. We also look at temporal programs such as exhibition design that have become core to some practices.

## ANNOUNCEMENT

**THE SINGAPORE ARCHITECT 18** 

## Experience

Does UX mean anything to you? If it doesn't, look out for the next issue where we will explore the emerging rubrics of evaluating a space, or even a building.

![](_page_62_Figure_0.jpeg)