

SEEDS magazine

an architectural publication February 2021 | ISSUE 1

REFRESH. RELOAD. LIFE AFTER 2020.

SEEDS Seeding Fresh Dreams

A Small World After All Restarting a Post-Pandemic City

Being Green, Being Well NUS School of Design & Environment 4



The Figure-ground

From the Editor of SEEDS

Michael Leong

Director, SAA Architects



Peter Drucker, dubbed the father of management thinking, once said that "culture eats strategy for breakfast". Though it sounds tongue-in-cheek, there is much wisdom in the quote. Culture is the reason behind camaraderie, pride and longevity. All ethnic groups, social communities, as well as great (not just good) companies thrive because they have strong cultures. It is the invisible energy that drives every team member to think, do and act in solidarity.

The success of an architectural practice is therefore predicated on the culture of its talent pool. Good talents are hard to come by, but a group of like-minded architectural talents is even more elusive, due to challenges like attrition and the silo mentality. However, when a large number of architects gather under one roof with a common goal to build a practice, amazing things can happen. Under the right care and conditions, we can expect a breathtaking scenario like "a hundred flowers blooming".

The SEEDS (Surbana Jurong's Enrich, Engage, Discover, Share) Movement came about to create such conditions. We aim to nurture our talents by Enriching the individual and Engaging the best in the industry, by **Discovering** new design solutions, and by Sharing our knowledge and experiences. But we also need patience, as the seeds we plant will need time to properly take root, grow and strengthen. With proper guidance, consistent effort and cross-fertilisation. we can expect the efforts to bear much fruit.

The cohort of architects across the practices under the SJ Group is now set to blossom. In their respective capacities, they have already been making their mark in the global arena, enhancing the environment and making an impact in shaping lives. After a year of wrestling with Covid-19 and the disruption and destruction it has wrought, it is time for us to put our skills – and scale – to good use.

The inaugural issue of the SEEDS Magazine you are reading now is launched at a time of global crisis, but we would like to sow hope. This issue is more than a collection of our optimistic works and our thoughts on how to head for clearer skies, it's also a commitment to creating a future generation of innovative and inspired architects across the Surbana Jurong Group.

Enjoy!

A word from the SJ Global Architecture & Design Council

Lee Kut Cheung

Chairman, SJ Global Architecture & Design Council



Since the acquisition of Sino-Sun, B+H Architects, SAA and together with the architectural practices in Surbana Jurong, the SJ Group counts over 1,000 architects, design and planning staff amongst its ranks, and a global footprint covering North Asia, ASEAN, Middle East, Australia and New Zealand, the Pacific region, the United States and Canada. Each of these architectural business units carries its respective strength, identity, history and heritage. The Global Architecture and Design Council (GAC) was formed to harness the power, collective resources, and talents within the whole Group, to further develop and grow the architectural business.

While the Council will continue to focus on strategies to develop the architectural practices and business, we also see the urgent need to prepare the next generation of leaders to be actively involved in bringing new and innovative ideas to the practice of architecture in SJ. We see a lot of talents among our younger architects – hence a Youth Wing was set up in 2019 to assist GAC to foster and nurture our up-and-coming architects.

We are glad that the Youth Wing leaders have given much thought to the actions needed to develop a culture among all in the pursuit of excellence in architectural design and practice. The SEEDS Movement will embrace all aspects of developing this culture through activities and the process of sharing and discovering new and innovative design solutions.

The Council congratulates the SEEDS Team for their excellent effort in coming up with the first issue of the SEEDS architectural publication, buttressed by a calendar of events that will help to build up excellence in architectural design and practice in the SJ Group. There is no better time to start than with the dawn of a new decade. Throughout 2020, the Covid-19 pandemic has caused unprecedented havoc to humankind, leading to new thinking by architects, engineers and planners who can reclaim a post-pandemic future. All countries need to relook every aspect of our lives from bigger issues like climate change and urbanisation, to the ongoing problems in the economy, healthcare and more. Aside from helping the community to recharge, we need to find ways to boost resiliency in the sector.

In SJ, we will continue with our mission of Building Cities, Shaping Lives in the new normal. And in our practice as architects and planners, we need to Refresh and Reload to redefine and reframe the new challenges in our profession. We shall put a challenging year behind us, prepare and get ready for life after 2020!

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Front Cover Image: National University of Singapore SDE 4 building -Overall view of the building

Back Cover Image: National University of Singapore SDE 4 building -View of south garden with existing trees conserved and integrated

(Image credits: School of Design and Environment NUS and Rory Gardiner)

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Refresh. Reload.

Image credits: Karthik S (Unsplash)

Seeding Fresh Dreams

Tracing the development of Surbana Jurong in the last five years, the group has grown in strength by the inclusion of vibrant architectural consultancies from across the globe. With Surbana Jurong's storied foundation in nation-building, the Global Architecture and Design Council aspires to seed a culture of innovation, learning, and exchange amongst the new member firms. The wonder of how a single seed grows into a towering, fruitful tree, begins with good soil and time. We have only just begun.

SEEDS is a movement intended to cultivate fresh ground for excellence in architectural and professional practice culture. As a multi-brand global design consultancy, we recognise that end-to-end design projects are now more complex in brief and design process. We believe

"Even a brick wants to be something... It aspires. Even a common, ordinary brick... wants to be something more than it is. It wants to be something better than it is."

Four thrusts encompass the main chambers at the heart of the SEEDS movement: Enrich, Engage, Discover, Share.

At the smallest scale – the foundational aim is to **Enrich** the growth of the individual. Our people are our value proposition and driving force for all our work. This ground-up energy will propel myriad possibilities, while the presence of mentors will aid to guide and sharpen ideas.

Engage connects and empowers us to reach out to fellow designers and various stakeholders – through collaborations and conversations that transcend the limitations of silos, disciplines, and geography.

– Louis Kahn

Any good idea has its beginnings in the impetus to delve into sensemaking. **Discover** is the exploratory arena for asking the necessary questions of Why, How, and What, that are integral to developing sensitive and meaningful innovation.

Finally, **Share**, built upon the three prior thrusts, will be the outreach platform across the SJ architecture community, to propagate new ideas and encourage dialogue beyond borders of rank and file, time and place.

This nascent design culture needs to first take shape in the heart of our movement, before radiating into a core value system over time. As a Chinese proverb goes, 十年树木, 百 年树人"It takes ten years to nurture a tree, but a hundred to cultivate people". that while expertise and innovation can be grown, it is a deeply connected and empathic human touch that will root our creative work within their unique community fabric. Coming together in SEEDS, we strive to create meaningful social impact through architectural and design interventions. Building lives and communities reside at the centre of our design purpose.

Ultimately, SEEDS will till new terrains across geography and time zones, as it embraces the four architectural group companies (at-present Surbana Jurong, SAA Architects, B+H Architects and Sino-Sun) in this endeavour.

By igniting a culture of mutual growth and sharing amongst our group ecosystem, SEEDS enables us to harness each member's unique expertise across cultural and geographic landscapes. There is strength and resilience in diversity – needed ever more in these times ahead.

Text: Debbie Loo

SEEDS CALENDER OF EVENTS 2021

SEEDS Launch

SEEDS Publication 1.1 Refresh. Reload. Life after 2020.

The inaugural issue of the SEEDS Magazine you are reading now is launched at a time of global crisis, but we would like to sow hope.

Virtual Architectural Study Tour

Learn and share knowledge across

the group, fostering interaction and

awareness to SJ's projects across

new ideas; as well as bringing

Rethinking Public Spaces, Welfare & Well-being

the globe.

Share

Community Outreach 1.1:

Gifting a Mural in the Marine Terrace heartland

Enrich

Stepping back from professional work, this creative exercise gives our designers a chance to express themselves in a new medium. We will design and paint a mural as a gift to Montfort Care, a community organisation.

Enrich Engage Discover Share





Kids Really Dig The Schools We Design In China! Engage

Connecting our architects with kindergarten pupils from both Singapore and China. Together, we dream of designing better schools for early childhood education to flourish.

Research Partnership

Designing & Building a Mini Project Through Creative Theme-Based Collaboration Discover

Collaborate with an educational institute to develop a thematic design idea and build it into reality with the intent to serve the more vulnerable amongst us. It will involve looking at conventional spaces with a new lens, look out for partners and get support from the community and agencies where needed.



SEEDS Inspirational Series:

Architects Talking About Architecture Engage

Stay tuned for our participation in this annual festival event and forum organised by the Singapore Institute of Architects.

01 SEEDS NEWS

Guest Critique Sessions

Feb/ Apr Series Sep/ Nov Series

Architects get involved in critique sessions at Singapore universities to offer industry perspective. A chance to sow seeds for conversations and future opportunities.

SEEDS Inspirational Series:

Share

The Architect's Napkin

Enrich

Architects from different BUs and across the globe will contribute their sketches on napkins for display. The exhibition hopes to inspire and create excitement with individuals sharing personal thoughts through their sketches.

SEEDS Magazine Issue 2

Keep abreast on urban and design thought-leadership from our global business units. Listen in on our architects' Dialogues. Stay tuned for the second issue!





Enrich Engage Discover Share







Understanding User-Experience

Discover

Feeling the Ground: Understanding How Users Experience Design

Designing targeted surveys and heading out to field to test the impacts of our design assumptions on the users!



SEEDS Participation in URA's CUBE Event



This year SEEDS will ramp up our participation, getting more of our young architects to mentor the JC/ Poly students, as they plan & design their own visions of the built environment.

Community Outreach 1.2:

Mustard Seed Welfare - Improving Life & Homes for Those in Need

Enrich

Part Two of community outreach, where architects and designers visit the less fortunate and put their skills to use by designing and performing upgrades to homes of those in need.





Being Green, Being Well

NUS School of Design & Environment 4

When environmental wellness and wellbeing meet

By: Alakesh Dutta, Senior Executive Architectural Associate, SJ Architecture Project by: Surbana Jurong with Serie+Multiply Consultants Pte Ltd and Transsolar Energietechnik GmbH





02 Feature



Figure 1: Massing diagrams showing programmatic spaces; Green layers woven into building programmes; Laboratory functions as part of the school's solar shading research.

(Image credits: Serie+Multiply Consultants Pte Ltd)

Previous Page:

The Forum is a central crit space enclosed with glass walls on all sides. It visually connects the speaker to a larger audience.

Left:

The architectural form creates a series of overlapping projections that shade the user spaces.

(All image credits: School of Design and Environment NUS and Rory Gardiner)

Located within the National University of Singapore's School of Design and Environment (SDE), SDE4 is an addition to the School's existing three blocks. It is a sixstorey building that adds around 8,500 sqm of floor area to house studios, labs, seminar rooms, workshops and office spaces. The building has gained global recognition since its completion in December 2018, as a model example of design for a highperformance and net zero-energy building in a tropical climate, as well as for creating a space that promotes occupants' health and wellness.

Its design was a collaborative effort of a consultant team comprising of Surbana Jurong together with Serie+Multiply Consultants Pte Ltd and Transsolar Energietechnik GmbH. The team adopted an iterative design process that was driven by a series of design charrettes. Each charrette acted as a milestone to make important decisions and move the process forward. All deliberations at these charrettes focused on the two aims of achieving a net-zero energy balance and occupants' comfort and wellbeing. Other important aspects like floor area, floor efficiency, and spatial organisation likewise, revolved around these two central themes. Occupant behaviour was also vital to the functioning of a high-performance building and played a significant role in affecting several design-related and operational decisions.

The building's overall design thus adopted these key features and concepts which were instrumental in shaping the form and achieving the desired performance. In the two years since its completion, the building's performance has continued to operate as it had been designed and planned for.

A Contemporary Interpretation of Tropical Design Principles

The building is envisioned as a porous architectural structure. Its footprint is kept narrow, with the shorter sides facing east and west and the massing being broken down into a series of smaller 'boxes and platforms' which are placed within larger shaded volumetric spaces. This allows all the programmatic spaces better access to natural light and ventilation – reducing its energy needs. The completed building is therefore seen as incredibly open. The boundary between the outside and the inside spaces is ambiguous, lending each space an interface with the external. In doing so, the design attempts to challenge the commonly assumed notion that an energyefficient building must be compact and opaque.

The juxtaposition of its different volumes also creates a variety of incidental shared spaces in the form of plazas, terraces and corridors, which create opportunities for informal occupation by students and faculty throughout the day. These allow the users to have chance encounters or designate impromptu functions to them.

Re-defining Thermal Comfort

The approach to achieving the net-zero energy design was two-fold. The first was to reduce the building's energy consumption and the second was to produce the required energy within the building's own footprint. The former presented a greater challenge.

A series of design iterations and operational decisions optimised the energy consumed by the various systems, the most critical was the ACMV system. This always accounts for the largest portion of a building's energy demand and is critical to a building's thermal comfort.

The design team came up with an innovative hybrid space cooling system that worked in sync with the architectural design to deliver the required comfort. The hybrid system, illustrated in figure 2, is a single-pass system (100 percent fresh air with no return air) that supplies rooms with pre-cooled fresh air, at higher temperature and humidity levels than in a conventional system, and augments this with an elevated wind speed by using ceiling fans. This cool circulating air creates a thermal comfort condition that is significantly better than that of an over-cooled space and results in a considerable

amount of energy savings. It dovetails perfectly with the building which has more than 50 percent of the total area being ventilated naturally and most of the rooms having the provision to open up to the prevailing breezes. The circulation spaces placed on the building's perimeters further augments the thermal performance by acting as thermal buffers, thus emulating the signature tropical verandas.

The expansive roof of the building catered to the second part of the equation which was to produce enough clean energy to offset the demand. It provided the vital horizontal plane best suited to put the required number of photovoltaic (PV) panels. Several iterations were evaluated in deciding the optimum configuration of the PV panels, including putting them on the facades. The final decision factored in the performance efficiency of the panels' vis-a-vis the cost and several aspects pertaining to statutory compliances.





Figure 2: Concept diagram of the hybrid cooling system

(Image credit: Transsolar Energietechnik GmbH)



This cool circulating air creates a thermal comfort condition that is significantly better than that of an over-cooled space and results in considerable amount of energy savings.

Left: The circulation spaces are naturally lit, well-ventilated and centrally placed.





Figure 3 - Longitudinal section

(Image credit: Surbana Jurong and Serie+Multiply Consultants Pte Ltd)

SDE4 offers a deeply biophilic experience for its occupants, connecting them with natural systems and processes: from uninterrupted views of greenery to the visibility of energy and water systems, and access to daylight and air.

Left:

All user spaces look out to a lush landscape. The full-height shaded glass facades also bring in ample natural daylight into these spaces.

(All image credits: School of Design and Environment NUS and Rory Gardiner)

Designed for Wellness and Health:

The 100 percent fresh air supplybased hybrid cooling system is also vital to accord a salutogenic character to the spaces and promotes occupants' wellness. Floor-to-ceiling sliding panels in all rooms allow the occupants the flexibility to naturally ventilate the space when desired. These design elements and considerations have found even greater resonance in light of the Covid19 pandemic where the availability or ability of a space to access fresh non-recirculated air is viewed as a vital parameter for healthy habitation. For SDE4, understanding the salutogenic model was key to designing the 100 percent fresh air supply-based hybrid cooling system in relation to the building spaces. A salutogenic approach to design is focused on understanding the factors that support human health and wellbeing, rather than the causes of disease (pathogenesis).

The design for SDE4 also attempts to augment user behaviour and perceptions. For instance, we have become accustomed to entering an indoor space on a hot sunny day expecting a blast of cold chilled air on our face (together with a misconception that a lower air temperature implies it is fresher). However soon after our bodies have cooled down within a few minutes. we soon begin feeling uncomfortable as such spaces are always continuously over-cooled. The hybrid cooling system, on the contrary, provides the optimal thermal comfort² to users without over-cooling and necessitating us to wear 'winter wear' indoors – a sight not so uncommon in tropical Singapore. However, to realise the various benefits of this novel cooling system, it requires the occupants to also change their common expectation of air-conditioned space and adapt their behaviour accordingly.

This dialogue between the building and its users is sustained further by other similar suggestions in the design of the spaces and systems, to encourage subtle changes in behavioural tendencies of everyday lives. Another example is the central staircase that is placed at the heart of the programme spaces to encourage active movement between levels using stairs rather than lifts (with the lifts being tucked to the periphery of the building). All circulation spaces, including staircases, are also brightly lit with natural daylight, offer views to both the outdoor greenery and indoor plazas, and are naturally ventilated to make their use subconsciously enjoyable.





Biophilia and Active Learning:

Another vital aspect of creating salutogenic spaces is the landscape. SDE4 offers a deeply biophilic experience for its occupants, connecting them with the natural systems and processes: from uninterrupted views of greenery to the visibility of energy and water systems, and access to daylight and air.

The landscape also makes visible the natural process of improving water quality as rainwater from the roof is channeled through a series of bio-retention basins. Water manifests itself mostly after rain, and this is made visible through two ponds located in the upstream and downstream ends of the landscape profile. The journey of the water between these two ponds creates a sensorial experience for the occupants that is both therapeutic as well as pedagogical.

Through its design and operation, SDE4 strives to make a case for healthy high-performance buildings that are considerate to both the health of the occupants as well as that of our planet.

SDE4 has won multiple awards since its completion. These include the Architecture MasterPrize 2020 in Institutional Architecture Category, and Blueprint Awards 2019, Best Public-Use Project with Public Funding. It is also the first university building in the world to achieve WELL Certified™ Gold, and the first building in Singapore to be conferred the WELL Certification. It also became the first building in Southeast Asia to be awarded the stringent Zero Energy Certification by the International Living Future Institute (ILFI), one of the world's most prestigious sustainability organisations.

Thermal comfort is the condition of mind that expresses satisfaction with the thermal environment and is assessed by subjective evaluation. It takes into account the ambient atmospheric condition as well as an individual's metabolic rate and clothing insulation; all of which one's perceived thermal comfort. See, ANSI/ASHRAE Standard 55-2017. Coined by Aaron Antonovsky, a professor of medical sociology, 'salutogenesis' is concerned with the relationship between health, stress, and coping, and refutes the traditional dichotomy of health and illness. The salutogenic framework has been adopted in contemporary approaches to healthcare architecture. See, Antonovsky, A. "Health, Stress and Copy". San Francisco: Jossey-Bass Publishers, 1979.

Right:

The student spaces are softly lit with diffused daylight and offer views of a lush landscape outside

Left:

Many of the existing trees were conserved. They have become integral elements of the building's spaces.

(All image credits: School of Design and Environment NUS and Rory Gardiner)

On this page: Battleship super-hospital. How naval history can inform the future of hospital design. L

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(Image Courtesy of Thomas Park on Unsplash)

Healthcare

Lessons from Military History

Lessons learned from advancements in naval technology can help shed light on current vulnerabilities in hospital design - and inform how we can shape a stronger, more resilient, and flexible future in the wake of Covid-19

By: Chris McQuillan, Healthcare Principal | B+H Architects

In the 19th Century, rapid technological advancement gave rise to the birth of the battleship. Like our modern-day "super hospitals", integrated healthcare facilities designed and built to provide highly specialised quaternary (or tertiary) care services in addition to acute care medicine to patients on a massive scale, the battleship represents the "all in gambit." Battleships were strategised and equipped with the largest guns, the thickest armour, the best technology. From the first, the HMS Dreadnought (1906), to the last, the enormously powerful Yamato (1945), each met their fate as a pile of scrap metal by the end of their short lifespans.

The interesting question here is not what happened to these ships, but why they were built in the first place. Built to gain a tactical advantage in size, speed, and military prowess for coastal defence, what appeared "revolutionary" at the time is now understood to be, at best, folly. Both ships were obsolete long before they were put to sea.

The battleship represented the pinnacle of military technology. It was considered invincible until it wasn't. Covid-19, and the communicable diseases that preceded and will follow it, present similar challenges to the healthcare sector as to those faced by the battleship.

Evidence of Vulnerability

Like the unforeseen enemies of the battleship, the submarine and the aircraft, our super hospitals are similarly under attack by unpredictable forces: unknown viruses, climate change, natural and human-caused disasters, and exponential technological change.

Today our hospitals are bigger than ever, packed with so many ancillary components we need to include, such as food courts and shopping malls. Billions of dollars of physical and (more importantly) human capital are focused on a large and vulnerable target. There is no better proof of the frailty of our hospitals than the suspension of their services and the rapid construction of field hospitals in their parking lots. Many of the most advanced medical systems in the world have been paralysed. The US spends close to double (per capita) on healthcare and is one of the hardest-hit nations in the ongoing battle against Covid-19. We are doing something wrong. Because of the over-centralised nature of massive resources within a singular campus, these large hospitals are low-lying targets vulnerable to attack from the very people they seek to help.

The battleship, which had evolved to exceed over 260 metres in length, could reach 50 kilometres per hour and possessed 45 Calibre artillery – the largest ever fitted to a ship – by the mid-20th century, was eventually

Because of the over-centralised nature of massive resources within a singular campus, these large hospitals are low-lying targets vulnerable to attack from the very people they seek to help.

thwarted by unforeseen enemies. Submarine warfare in WW1 foreshadowed the battleship's unsuitability for its task. Battleships were too slow and their weaponry ill-adapted to a submerged enemy; their design was adapted in response. Then came another new threat – a small, quick assailant that could attack as a group with speed and stealth from all directions - the airplane. The seemingly invincible battleship made for a very large target. Similarly, our emphasis on large singular hospitals places our healthcare systems at the mercy of attack from a nimble, stealthy and pervasive adversary.

One Size Misfits All

It is well documented that hospitals have struggled to cope with the sheer volume of patients, which have been affected by Covid-19. The phrase "flatten the curve" was coined to help reduce the burden on hospitals by evenly spreading the number of patients over a longer period. However, even if there were sufficient physical space to accommodate the patient numbers, there would be other issues which impact the delivery of appropriate care to these patients, such as the shortage of medical staff, supplies, and equipment.

As a disease that attacks the respiratory system, large numbers of Covid-19 patients require mechanical ventilation, and many remain on ventilators for several weeks before they are well enough to be extubated. Intubated patients are typically cared for in an intensive care (ICU) or high-dependency environment which is specifically sized and equipped to deal with this level of high acuity care. These rooms are larger than a typical patient room to allow for the additional equipment requirements such as multiple piped gas valves, other service outlets for connecting life-saving equipment, and ample

02 Feature



Top: The ongoing pandemic is a reminder that our healthcare system must transform to eradicate cross-exposure

(Image credits: Courtesy of B+H Architects)

space for close monitoring and care by staff. The number of ICU beds in a typical hospital is a relatively modest proportion of the overall bed number, which may suit the maximum patient load on most days of a typical year but is severely insufficient to deal with the patient surge or average length of intensive care presented by this crisis.

As a contagious disease that can spread through the air as well as through droplets and contact surfaces, patients should be cared for within an isolated environment with negative air pressure – meaning that the contaminated air in the room cannot pass to other spaces in the hospital. Much like ICU spaces, such a specialised air ventilation system is typically provided only in a certain proportion of patient rooms within a hospital – this can range anywhere from 5 percent to 20 percent of rooms – rendering it impossible to accommodate all Covid-19 patients in such an environment and therefore increasing the risks of crosscontamination, most often to frontline workers who have suffered enormously during this time.

Adapt to Survive

Covid-19 has been a lesson in universal unpredictability. Collectively, we need to shed our arrogance and be humble in our inability to anticipate the future, a future in which designing for flexibility

Designing spaces with a high level of adaptability will allow physical structures to flex and respond accordingly as situations dictate.

has never felt more crucial. Advances in technology, medical equipment, treatments, and even patient expectations, render confident predictions regarding healthcare irresponsible. Instead, designing spaces with a high level of adaptability will allow physical structures to flex and respond accordingly as situations dictate. The Navy's response to the battleship's unsuitability for the task at hand was to rethink their strategy completely. Navies took a leaf from the enemy's book and adopted aircraft and autonomous tools (like missiles and drones) together with stealth to replace the overt force concentrated in large vessels. Most ships have become smaller, quicker and more focused in their functional roles. With less invested in each component of the strategy, it has created greater flexibility and the opportunity to rethink interfunctionality on a fluid and ongoing basis as new challenges arise. We are ready for a similar transformation in healthcare. This need for flexibility in built structures must extend far beyond our hospitals and it requires us to reassess our healthcare infrastructure.



The crisis wasn't in our hospitals but in the health infrastructure outside of our healthcare facilities and we must build resilience by harnessing other assets within our built environment.

The future is already here

Much like how the behemoth battleships were replaced by technologies more easily adaptable and flexible, our healthcare system must transform too. There is evidence all around us that this current health crisis has driven rapid adoption of many technologies and more progressive outlooks on how we approach the practice of medicine in our society. Now, more than ever before, expertise is mobile. Diagnostics can be performed anywhere. Outpatient procedures now form the majority of those performed. The system relies on data collected remotely and shared electronically. Collaboration is mainly virtual. What's more. Covid-19 has also accelerated patients' comfort with virtual health visits. Many tests can now be performed at home, at a pharmacy, or in other places outside our hospitals.

Globally, we've seen the acceleration of nascent technologies and widespread innovation. Israel's Leumit Health Services Organisation designed and deployed a mobile testing unit in partnership with the Israeli Army. China's Ping An Good Doctor booths employ a combination of AI and real-time links to healthcare professionals coupled with on-board diagnostics that serve over three million users. A built-in pharmacy vending machine fulfils over 100 common medications. Robotic surgery techniques mean the surgeon can be working in the next room - or half the world away. Care that was only recently available in a hospital lab and nephrology department is now a sticker on your

arm communicating with an app. Medical diagnostic and treatment equipment that used to need its own room is now pocket-sized. Studies using AI to do radiology and pathology diagnoses are outperforming human experts and we are all collecting vast data sets of our own longitudinal health, revolutionizing preventive care.

Therefore, it is crucial to understand that the crisis is not in our hospitals, but in the health infrastructure outside of our healthcare facilities, and we must build resilience by harnessing other assets within our built environment.

Ultimately, our 21st century "battleships" are our super hospitals. Covid-19 forced us to re-evaluate the purpose and functionality of our buildings - from our homes and workplaces to airports, hotels, and public spaces - and the quality of human activity we expect from them. The question now is not about how designs will be shifted to defend against the pandemic, but how the pandemic will cause a fundamental shift in our notion of design thinking and elicit greater introspection about why and how we design for our future.

Battleship wisdom points to the healthcare system of the future being founded on a distributed network of physical and virtual infrastructure, closer to home. We won't lose the human touch, we will just experience it differently. E-medicine will allow us to access all ranges of specialty care. Distributed networks and increased virtual access will strengthen our response to the next "Covid-19." Visits to venues of care could involve much less crossexposure as smaller facilities will cater to smaller community units. Unaffected communities might be spared any impacts. Basic care may become completely personal and involve no contact whatsoever.

Doubling down on the next superhospital – bigger than the last and kitted with better versions of tools and tech – is a risky proposition. In the same way that, by necessity, our front-line caregivers have adapted tools to fight Covid-19 and in the same way that large portions of our economy have shifted to new technology and re-defined norms of interaction and exchange, we can create a new, robust and eminently more effective healthcare system. The super-hospital can join the battleship as a curiosity of history and a lesson that big dinosaurs are indeed an evolutionary dead-end.

Notes

Mobile Testing Unit: <u>https://www.calcalistech.</u> com/ctech/articles/0,7340,L-3816992,00.html

China's Ping An Good Doctor: <u>https://asia.</u> <u>nikkei.com/Business/Health-Care/</u> <u>Ping-An-Good-Doctor-s-first-half-revenue-</u> <u>jumps-amid-pandemic</u>

Robotic Surgery: <u>https://www.</u> <u>roboticstomorrow.com/article/2020/05/</u> <u>the-doctor-will-see-you-now-exploring-the-</u> <u>future-of-surgical-robots/15226</u>

Pocket0sized Studies: <u>https://hitconsultant.</u> <u>net/2019/08/22/</u> <u>ai-tech-beats-radiologists-in-stanford-chest-x-</u> ray-diagnostic-competition/

An earlier version of this article was published on B+H Architects Perspectives, <u>www.</u> <u>bharchitects.com</u>

03 Project Showcase Cultivating Wonder

Shenzhen Children's Hospital Science & Education Building - a healthcare environment guided by empathy

Project by: B+H Architects



"All grown-ups were once children, but few of them remember it."

- Antoine de Saint-Exupéry, The Little Prince



03 PROJECT SHOWCASE

PROJECT

Shenzhen Children's Hospital Science & Education Building

LOCATION Futian, Shenzhen, China

SIZE 120,000 sqm - 700 beds

STATUS U/C

CLIENT Shenzhen Municipal Government

COLLABORATORS: East China Architectural Design & Research Institute (ECADI)

BUSINESS UNIT B+H Architects

PROJECT LEAD Stephanie Costelloe





Children unlike adults, live in the present and experience each moment very intensely. Sights, sounds, scale, touch, colours, and patterns hold delights and surprises that we as adults often overlook in our rush to keep up with daily tasks and demands. An amazed child becomes a marvelling adult, for whom the thirst for discovery and learning can never be extinguished. By embedding this sense of wonder into every corner of the project, the designs aim to encourage the natural curiosity and delight of children, whilst providing the means for adults to fondly recall their childhood in a similarly playful and excitable manner.

The Shenzhen Children's Hospital has been a landmark in the Futian area of Shenzhen since it was established in 1998, occupying a pivotal site on the edge of the iconic Lianhuashan Park. Its new Science & Education building takes inspiration from the mountains in the distance and adopts a gently terracing approach with the upper floors stepping back to create multiple sky gardens.

An "urban living room" connects the hospital to the community on the ground floor. It plays host to public spaces and activities for patients, visitors and passers-by. The vision of creating a unique micro-landscape within and around the building, from the ground to floor to rooftop gardens is achieved through the introduction of the vertical 'secret garden' intended to enthral young eyes and to provide a welcome distraction to patients and their families during the healing process.

Top Right:

The hospital's lobby encourages play and wonder upon entry

Bottom Left:

Re-connecting patients and the community back to nature in the 'Urban Living Room'

Content & image credits: B+H Architects

Text: Chris Cheng Wai Look

03 Project Showcase Weaving Communities with Nature

Tampines Greenweave - Knitting new communities in a mature estate

Project by: SJ Township Studio 1

Lush landscaping creates a park like environment for residents.





Top: Concept of weaving green ribbons through the site

Bottom: The roof of the carpark features lush planting, a jogging track and various other facilities



03 Project showcase



Top: Layout plan

PROJECT

Tampines Greenweave

LOCATION Tampines North Drive 1, Singapore

SIZE 55,463 sqm

STATUS Completed

CLIENT Housing Development Board

BUSINESS UNIT Surbana Jurong Consultants P/L, Township Studio 1

PROJECT LEAD AR Foo Siew Mun

PROJECT TEAM AR Patrick Lee, Lily Leong Located in the heart of Park West District of Tampines North, this public housing development, comprising of over a thousand units, aims to seamlessly integrate nature with lifestyle. The precinct is conceptualized as an interlace of green and social ribbons created in the urban fabric. Greenery is drawn in from the nearby park in the form of three bands of linear greenery and is woven throughout the site via ground and upper level connections to create a verdant living environment.

As abundant greenery weaves through the site, landscaping is brought close to the residents for a park-like living environment. In addition to lush planting and a sky park on the roof of the carpark, greenery is drawn to the residents' doorsteps by the extension of greenery into the void decks, upper level link bridges, roof gardens and sky lobbies. As the site is surrounded by other developments, there was careful consideration in seamless connectivity and blurring of the boundaries. The driveway is kept away from the perimeter of the development to allow for a pedestrian-friendly integration with neighboring developments. Commercial facilities are placed along the edge of the site to create a lively shopping street that continues to adjacent precincts. As the development is also integrated with playgrounds, fitness stations, an integrated jogging track and other social-communal facilities, one does not have to venture far in search of recreational spaces, facilities and provisions in the new normal.

Content & image credits: SJ Township

Text: Chris Cheng Wai Look



03 Project Showcase Techparks Get Savvy

JTC Bulim Square brings futuristic solutions for infrastructure & industry

Project by: SAA Architects

Bulim Square is one of 5 precincts in the Jurong Innovation District (JID). It is situated in Singapore's western manufacturing belt, with key industries such as advanced manufacturing, robotics, urban solutions, clean technology and smart logistics, which will provide a testbed for innovations.

Designed for Industry 4.0 and future-proofed for automation, the integration of logistics handling occurs at an estate level with a logistics network and off-site distribution center connected via underground roads, which can cater to both manual and automated delivery vehicles.

In the automated scenario, real estate is optimized for tenants.

Storage space can be located at a production buffer in the basement, freeing valuable tenant space for other purposes. Goods can be pulled from the underground buffer via an automated last-mile doorstep delivery using Automated Guided Vehicles (AGVs).

A Common Services Space (CSS) ring configuration in the basement of Bulim Square allows the sharing of infrastructural routing to networked plots within the estate, solving the challenges of infrastructure provision at an estate level.

In crafting a progressive paradigm and vision for future industrial tech parks, a sustainable and conducive work environment for R&D talents should be considered. An elevated Mobility-Deck (M-Deck) separates pedestrians from the road below, creating a car-lite experience. People commute safely around the estate on the lushly planted M-Deck via an autonomous people mover system and cycling network.

In Bulim Square, the connectivity encourages an eco-sustainable environment and active community that comes together to share ideas, knowledge, space and values.

Content & image credits: SAA Architects Text: Alakesh Dutta


03 PROJECT SHOWCASE





PROJECT JTC Bulim Square

LOCATION Singapore

SIZE 161,764 sqm

STATUS U/C

CLIENT JTC

COLLABORATORS TYLIN, BECA, AECOM, IO Consultants, Arcadis, Vertix, BSD

BUSINESS UNIT SAA Architects

PROJECT LEAD Lim Hong Kian, Aidil Shukor

PROJECT TEAM Louis Wong, Fang Yuan, Low Sui Ying



Top: A heart of innovation Bottom Left: A sustainable vision for new paradigm industrial techparks Bottom Right: Axonometric concept diagram



03 Project Showcase Bracing the Sanya Waterfront

010

A three-tiered Eco-Park proposal envisioned to heal and protect the Yazhou Bay

Project by: SJ Landscape Architecture



03 PROJECT SHOWCASE





PROJECT

"Life - Ecology - Growth" -Ecological Wetland, Resilient riverfront park and coastal belt

LOCATION

Yazhou Bay, Sanya, China

SIZE 135 ha

STATUS Design Development

CLIENT

China Merchants Group (Sanya Deep Sea Technology City Development) Sanya Yazhou Bay Technology Administration (Local Government)

BUSINESS UNIT SJ Landscape Architecture

PROJECT LEAD Oliver Ng Boon Lee

PROJECT TEAM Irvan Nugraha, Pengzhou Lu, Vivien Qu Yawei With economic and social viability at the forefront, the masterplan of this Waterfront Eco-Park is unique. Combining three sensitive ecosystems (Wetland, Coastal and River) in proximity, it explores the integration of man and nature in a semi-urban setting. The project aims to achieve a planning solution with an urbanism that flourishes and protects the existing ecology at the same time. Reflecting Life-Ecology-Growth, a 3-tiered concept including a Coastal Belt, a Wetland Park and a Riverfront Park was used.

Extinction through decay, natural disasters, pollution, soil erosion and limited economic viability are serious concerns of the site. Sustainable design concepts serve as solutions to mitigate these issues while enhancing the quality of the ecosystems. The project site is located at the new district of the deep-sea science and technology city in Yazhou Bay. The layout explores the genius loci of the site while remaining people-oriented. Human activity coexists with biodiversity and other natural elements, enhancing the quality of life of this landmark project in Sanya City. Through the economic feasibility of eco-tourism, waterfront activity is coupled with sensitive space-making.

Top Left: Wetland area concept diagram Top Right: Overall view Bottom Left: Coastal area - an active beachfront

Content & image credits: SJ Landscape Architecture Text: Liao Muqiong



03 Project Showcase Industrial Revolution 4.0 in Subang

Smart and sustainable urban growth in Subang city Project by: SJ Malaysia & Indonesia

PROJECT

Subang Smart & Sustainable City

LOCATION Subang, West Java, Indonesia

SIZE 2,200 ha

STATUS Design Development

CLIENT PT. Suryacipta Swadaya

COLLABORATORS SJ Malaysia (design) | SJ Indonesia (PM) | SJ Singapore (Smart City)

BUSINESS UNIT SJ Malaysia & Indonesia

PROJECT LEAD Nanxi Su, Bernard Low Boon Yong, Bess Ng Yi Fung Subang Smart & Sustainable City is an integrated industrial estate development in Subang Regency. It is a refinement on the Subang City of Industry Conceptual Master Plan proposed in 2018. In addition to the 2,200ha masterplan update, detailed urban design will be carried out for three smart core districts, which will be planned as paradigms of future smart cities to prepare Indonesia for the upcoming 4.0 industrial revolution.

The primary design challenges for this project are grouped into 4 main categories :

 Transportation: The site, located along Cipali Toll Road, does not have open toll interchange. It also lacks direct railway access.

- Need for Resilience: The site faces flooding risk due to the multiple rivers flowing through it.
- Land Ownership: The existing villages are characterized by fragmented ownership which lacks any consideration for planning and sub-division.
- Topographic Conditions: The existing terrain has level changes of up to 30m.

Considering the above challenges, the project proposes to preserve and integrate the existing rivers with retention ponds, and thus creating an iconic central lake. The proposal provides a central ring road to enhance land efficiency with vibrant riverfront activities. Lake-facing



03 PROJECT SHOWCASE

buildings maximize the views and commercial value, creating an iconic skyline in the South Smart Core. At the same time, the buildings around the central lake also serve as visual guides for vehicles from the highway.

As the first development among the three smart-core masterplan, the South Smart Core aims to become a new high ground in innovation and R&D, a hub for learning and exchange, a living lab and leading smart city. The smart core districts will also be a pilot for the future development of smart cities in Indonesia.

Content & image credits: SJ Malaysia & Indonesia

Text: Liao Muqiong





Concept diagrams - Districts



Concept diagrams - Open Space, Green & Connectivity



Concept diagrams - Building Heights



A Small World After All

Restarting a Post-Pandemic City

By: Tan Eng Kiat, GM (Urban) SJ Malaysia | Nanxi Su, Principal Planner Mohd Nizar Bin Pawan | Muammar Adam Sabil Bin Mohd Taufik | Tan Jee Khium | Sidney Wong Ming Xhia



As cities entered lockdown and daily lives got upended, major urban centres found themselves cut off from the world. This article seeks to reimagine the recent constraints of a seemingly smaller world into urban possibilities for a resilient city.



Image 1: The Covid-19 pandemic precipitated a move towards deglobalisation and diversification of supply chains to new regions.

(Image Credits: Authors)

Many countries might now consider it viable, even imperative, to pivot manufacturing towards sectors in which it lacks a strategic comparative advantage, in the effort to produce what it can no longer import. At the same time, more companies will reconsider centralized production out of the need to diversify risks.

04 COVID-19 FEATURE

Reduced flow of immigrants giving cities the opportunity to re-shape their own unique identity and increase its competitiveness.

> Slower localized & sustainable overall economic growth as countries are more self-sufficient and regionally connected

As the pandemic raged in the past year, pictures of New York, London, and Shanghai being devoid of crowds during the pandemic sent a chill down many spines. Major business and financial districts were hollowed out as commercial, retail, and international travel came to a standstill. The global and regional pandemic response of city lockdowns had exposed a weakness in the modern urban developmental model of high-density urban zoning and a centralised planning approach. As businesses and cities shuttered. these unexpected changes revealed the vastly different ways in which we navigate and experience urban life.

However, all is not gloom and doom. Princeton economist Esteban Rossi-Hansberg notes: "If you think about pandemics in the past... they didn't destroy cities." With the shift in the prevalent order of global supply chains, especially in terms of goods, services, and food security, what changes might we expect in postpandemic economies and urban centres? Flowing from this, how can city planning reimagine these opportunities and build resilience?

Opportunity in Crisis: Regionalisation and diversification

The pandemic's unyielding spread was exacerbated by the highly internationalised nature of modern trade, travel, education, and even the supply of goods and services. Highly internationalized urban centres such as New York, London, Paris, and countries which rely heavily on tourism, such as Italy, were the most severely affected.

It is for this reason that the immediate response to the pandemic has been to dial back on travelling. With borders closed and travel restrictions in force, the close interactions and flows of people among countries will not likely return in the near future. Even with vaccination programs and protective measures in place, epidemiologists expect newer virus strains to remain circulating within populations as the Covid-19 coronavirus mutates and changes.

Economies that relied heavily on global trade and foreign investment are most deeply impacted by this pandemic. Even as the pandemic revealed certain failures in global supply chains and caused the demise of vulnerable sectors such as tourism and food and beverage in certain regions, it triggered the opportunity for diversification of traditional industrial and food supply chains. This saw a reconfiguration of supply chains towards regional or alternative sources of raw materials and manufacturing. During the initial outbreak emerging from China, the disruption arising from the shutdown of major Chinese manufacturing cities severely affected the industries of numerous countries. One key example was the worldwide shortfall of medical supplies such as masks, personal protective equipment, and ventilators. The disruption was debilitating for many countries' frontline efforts to fight the pandemic.

This forced some governments to re-examine the possibility of diversification away from an overreliance on specific regions for goods and services. For example, Singapore's ST Engineering had pivoted to manufacturing medicalgrade surgical masks for frontline healthcare workers since early 2020, whereas just ten years before, surgical mask manufacturing had been a sunset industry in Singapore. Many countries might now consider it viable, even imperative, to pivot manufacturing towards vital sectors in which it lacks a strategic comparative advantage, in the effort to produce what it can no longer import. At the same time, more companies will reconsider centralised production out of the need to diversify risks.

Driven by factors such as increasing labour costs and the impact of geopolitics (such as the US-China trade disputes), global manufacturing capacity had been decentralised and production shifted to non-traditional regions such as Southeast Asia and Africa, to harness cheaper labour force and a large potential market, as part of the globalization of valueadded manufacturing.

Emerging economies in Africa and Asia, especially in Southeast Asia, are entering a new era, as cities like Manila, Jakarta, Ho Chi Minh City and other secondary cities usher in even more development opportunities. In the past five years, industrial development take-up in Southeast Asia has accelerated, with large industrial parks being developed to meet the demand of industrial development driven by the US-China trade disputes and accelerated by the rising labour cost of workers in China. The huge population and consumption potential in Southeast Asia will accelerate rapid development of the economy and urbanization in the region, as it expands in global connections.

But at the same time, the pandemic has also prompted governments to look into import substitution and decentralised manufacturing to ensure that disrupted supply chains will have a minimised impact on In the next few decades, we should be prepared for more planning opportunities for satellite cities, port, rail, and air transport infrastructure, logistic centres, and industrial parks in Southeast Asia countries.

domestic supply, especially for essential goods and food. This will greatly impact supply-chain planning in various companies and manufacturers, with redundancy built into their manufacturing strategy.

In the next decades, we should be prepared for more master-planning opportunities for satellite cities, port, rail, and air transport infrastructure, logistic centres, and industrial parks in Southeast Asia countries.

Urban possibilities for a resilient city

Just as the globalised world had shifted towards a more regionalised economy, our cities had likewise experienced a scale-back in urban and economic activities during a lockdown. As the world has seen, highly urbanised and densely populated megacities tend to be incubators of communicable diseases, which can spread rapidly within large populations and along flows of human movement. Cities may need to become more localised and self-sufficient to reduce the risk of future pandemics.

The Superblock

The proposition of localisation and self-sufficiency in rethinking city planning is one way to boost a city's functional resistance against epidemics. In most cities, vehicular traffic permeates nearly every single acre of the city. This creates an urban landscape that is an obstacle to walkability and creates physical barriers to easy access to goods and services. To address this, we sought to create a prototype that allows for limited access to vehicles, and at the same time create a district that caters to most of the residents' daily needs.

We took the prototype of a 1km by 1km plot with a community of 20,000 inhabitants – named the "Superblock" – to test the possibility of achieving the dual aims of selfsufficiency and convenience. The Superblock module provides a density that forms sufficient critical mass for the economic viability of most daily sundry and urban services. All this while maintaining a physical scale that makes it



commutable by foot or non-motorised transport, within the radius of a "20-minute" neighbourhood. The notion of a "Superblock" takes its inspiration primarily from Barcelona where a key feature was its trafficcalming function. Each cluster of Superblock modules represents an easily walkable city grid, interspersed with essential urban services and transport nodes.

This Superblock prototype also recalls the township master plans of Singapore, where each "New Town" is planned to be self-sufficient. The Superblock concept allows this intent to be incorporated into not only greenfield sites, but also allows it to be retrofitted into the existing city fabric. In some cases, it will create a scenario where streets become one-way, or access-limited, discouraging opportunistic drivers looking for a shortcut away from the congested thoroughfare.

The Superblock township plan considers these aspects of resiliency – self-sufficiency and convenience. To achieve self-sufficiency, it needs to attain reliable and sustainable sources of energy provision and ensure food and water security. To provide convenience and accessibility to public amenities and services, it promotes a healthier, greener, and more activated urban streetscape.

Sustainable energy sources and renewable energy

At this prototype level, the provision of energy is generated from the main grid as the primary source, while augmented by localised microgrids such as increasing use of photovoltaic panels to create dualsource resilience and to shift towards renewables as a primary energy source in the future.

Above: The Superblock, a prototype of a 1km by 1km plot with a community of 20,000 inhabitants to test the possibility of achieving the dual aims of self-sufficiency and convenience.

(Image credits: Authors)



Left: Microgrid Central Energy Management is one way cities can move towards being self-sufficient in energy and control supply.

Left: Photo-voltaic panel energy source can be ramped up and deployed in significant numbers in the near future. This is possible as costs of silicon solar cells are expected to decline with improvements in technology and efficiency.

(Image credit: Authors)

Food and water security

The disruption to the global supply chain brought about by Covid-19 has forced us to take a harder look at our dependency on external sources for food supply. The Superblock module proposes self-sufficient food supply interventions that include urban farming and vertical plantation, as these are the most easily integrated into the city fabric. Vertical farms also enable cities to contribute to reduction of carbon footprint arising from supply chains and logistics. Other measures such as rooftop fish farming can also help to address the need for more diversified food

sources. Rooftops are an efficient way of using unusable spaces. The development of 'smart home farming' technology could spell the future of the food industry, where individual homes and offices can plug a gap in the food supply chain.

Water is an essential lifeline in a city and a key resource that is in short supply across the world. Reducing water needs and recycling water within the community alleviates the strain on the municipal network. Furthermore, future sustainable city models should involve building groundwater wells and underground water treatment plants. When an urban site is being redeveloped, the water demand must be managed carefully to ensure it does not exceed the water supply capacity of the area.

Convenience: a people-centred city

The Superblock is a paradigm shift towards a people-centred city. Within the 1km by 1km module, it ensures that daily needs are addressed through the provision of public amenities and urban services. The diverse mix of amenities within each Superblock ensures that each cluster is vibrant and active, supports environmental sustainability and a healthy lifestyle through access to open green spaces. These are necessary for physical and emotional wellbeing, and particularly vital during interminable lockdowns.

Traffic network is re-routed at the external periphery of the Superblock. Each cluster of modules represent an easily walkable city grid, interspersed with essential urban services and transport nodes. This prioritises and promotes pedestrianfriendly streets which are the main circulation network within the block.

Urban logistics and the compact Superblock

Covid-19 accelerated certain lifestyle trends that were surfacing before the pandemic. Despite the compactness of the superblock, there is still a need to avoid contact with one another in this pandemic. Contactless delivery heralds an era of decentralised goods distribution, allowing people to get the things they need without interaction with another. The Superblock prototype grid size supports this generation of urban logistics. It is likely that after the pandemic, large corporate retailers will shift from a network of mega distribution centres to multiple, smaller facilities placed closer to their retail outlets and customers.

In due time, the future of retail would rely more heavily on modes of goods distribution. Visibility of products is increased as brands provide consumers with wider options of contactless shopping and pick-up locations. The proliferation of cashier-free convenience stores or shopping kiosks set up in multiple







(Image credit: Authors)



Top and Left: Each Superblock is comprised of a diverse mix of commerical, residential, retail and amenities provision. The clusters are vibrant and active, supporting environmental sustainability and a healthy lifestyle through access to open green spaces.

(Image credit: Authors)

Left: Covenience and reduced vehicular traffic within the Superblock promotes pedestrian-friendly streets.

(Image credit: Authors)

- Main Road Network
 - One Way Access (Pedestrians Priority)

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Left: A central warehouse distribution model creates delays and complications in delivery and route scheduling.

Management of goods could be a challenge especially when delivered as a bulk. Time taken for a household to receive their groceries could take days or weeks.



More centralized warehouses could create an opportunity for 3rd party delivery services or individual households to deliver or obtain groceries.

Left: A decentralized hub-and-spoke goods distribution network with neighborhood-level distribution points reduces delivery times and allow for self-collection as well.

(Image credit: Authors)

locations, will serve as decentralised goods distribution centres. These can be deployed within residential neighbourhoods and residential buildings as well, making the shopping experience even more convenient.

No more Mr Postman

Parcel lockers such as Hive Box, JD.COM and Cainiao are already ubiguitous in China and will get more popular throughout the world. Urban infrastructure such as lockers and drone or robot delivery services will contribute significantly to the contactless delivery during the pandemic. Drivers can quickly access multiple orders from a single locker via their smartphone. This software-driven approach reduces exposure by removing any face-toface interaction. One such example is Colombian start-up Rappi, that piloted a service for homebound

customers who can order and pay for meals digitally, while robots make the last-mile delivery. Each machine is then disinfected before the next use.

Even as the grip of the pandemic relaxes, and our lives slowly return to normal, consumers will continue to embrace their new habit of online shopping for food and consumer goods as they enjoy greater convenience and can avoid crowds.

Better lives in a 'smaller' world

More than the devastation of world economic crises, this modern-day global pandemic had precipitated a fundamental change in society and how we live – globalisation is not seen as the end-game. Covid-19 shifted the gears of many countries and cities back to some form of self-sufficiency – both at the city and household level.

These ideas explored in the selfsufficient superblocks, urban farming, and revolution in urban logistics are not necessarily a unique response to this pandemic. Many of these trends have been accelerated because of our collective social, behavioural and economic responses to the impact of the lockdowns and social distancing measures. What remains despite the isolation and distancing, is the perennial basic human needs for food, water, and energy, and the desire to enjoy open public spaces for emotional and physical wellbeing. A Superblock city prototype could provide a resilient model for integrated access to urban services and goods, and healthy lifestyle choices for city dwellers - pandemic or not.

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Post-Pandemic Architecture

Staying Relevant for the Future

By: Tan Eng Kiat, GM (Urban) SJ Malaysia | Bernard Low Boon Yong, Senior Principal Architectural Associate Suhana Noordin | Nur Syaza Binti Azrudin | Juliyana Binti Baharudin | Farkhan Bin Hasan | Saunder Fong

Could architecture have played a role in stopping the transmission of the virus? How can architecture mitigate the challenges arising from the pandemic?

Left:

Naturally ventilated public plaza marked with yellow tapes for social distancing as a short-term architectural response to the pandemic. Covid-19 was first traced back to the South China Seafood Wholesale Market of Wuhan City - an enclosed space where a wide variety of animal species ranging from domesticated to wildlife was traded. The unsanitary conditions in which bodily fluids and fecal matter of wildlife could intermingle allowed viruses to jump from wildlife to humans. This begets the question – could architecture have played a role in stopping the transmission of the virus? How can architecture mitigate the challenges arising from the pandemic?

High transmission rates of Covid-19 may be exacerbated by the vector of architecture, especially when spaces are enclosed, and crowds gather for an extended amount of time. As a communicable disease spread by small droplets in the air – such spaces offer the perfect petri dish.

The Covid-19 pandemic and the ensuing lockdowns implemented in various cities have altered how we live and interact with one another within and around our built environment. While not all lockdowns were the same, they nonetheless forced people to return to basics in terms of their daily routines, physical necessities, and social needs. This has prompted architects and designers to relook the functions of our residential, retail, and public spaces.

Flexibility and adaptability in homes

In a bid to flatten the curve and slow the spread of infection, lockdowns were rolled out globally. A home must now allow occupants to live, work, study and play. Flexible designs, with serious considerations for sanitation, need to be included for what is defined as a 'pandemic-ready' apartment - whose occupants may need to be quarantined. The home that we are familiar with now will have more considerations that architects need to design for.

The pre-entry area of an apartment may require a reconfiguration to incorporate a washing zone to ensure outside contaminants are eradicated before contact with one's personal spaces. The integration of a basin for hand washing and a lower basin for our feet limits the 'contamination' area to the entrance only. This design intervention serves to instill critical hygiene practices and habits, both during and after the pandemic.



From left to right:

This is an illustration of how a larger living room with flexible partition can be repurposed for work, life and play.

The flexible partition could help enclose an area for office/ study when needed.

Balconies could function as an outdoor dining area if the weather is good.



The need for a separate office/study space takes on a new level of importance – not just for working adults but also for children who are studying remotely. Flexible or informal partitions can be incorporated within the apartment, with more generous apportionment of the area to the living room when the need arises.

Spaces may need to have a duality of uses to allow for a 'pandemicready' apartment. The integration of balconies within the building envelope would offer greater flexibility of use. A balcony could even be offered as a configurable extra room, or an extension of the traditional living area. This could be an opportune time to review authority guidelines for adaptations to enclosing balconies. Flexibility and adaptability are highly-sought-after traits which incorporate resilience in architecture.

Moving people, keeping safe protocols: The future of retail spaces

Global lockdowns with people staying home have resulted in the large-scale loss of footfall from mass transit, with immediate and devastating effects on the businesses and commercial offerings positioned with them. There needs to be a more flexible approach in defining the relationship between physical retail, movement and mass transit.

Social distancing and movement control procedures have revealed the inadequacies of our current thinking of the public realm. Many public spaces are unable to adequately adapt to these new social protection measures in the short term - with ad-hoc measures such as seats often marked by an 'x' or stacked away both in retail and dining areas to comply with social distancing restrictions. The assumption that linear movement through supermarkets and stores is an efficient solution to manage patron flow is also being challenged. The implementation of access control and screening measures have resulted in bottlenecks at entrances and exits, risking additional exposure to potential viral agents.

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From left to right: What a linear grid layout of retail entails

and how a break can be introduced for dispersion and segregation of crowds

Retail spaces will require more breakout spaces to cater to physical distancing. In Singapore's climate, shelter is essential for such spaces and GFA guidelines will need to be reviewed for these new needs. A change from a linear to a grid layout can increase the space available for personal distancing. Breaking up the conventional linear retail frontage discourages crowds from congregating and minimises risk of exposure to air-borne diseases.

Many commercial or retail businesses have looked to the availability of large outdoor spaces, community areas and parklands for a solution to distancing protocols. The key focus remains on the management of footfall versus accessibility amidst social distancing. The added benefit of natural ventilation provides an alternative for owners to conduct their businesses. This gives them respite in a time where they would face a significant reduction in footfall as the public shun away from "high-risk" indoor shopping areas. A similar model was explored by Dutch studio Shift Architecture Urbanism, for a street food market model, where people can buy fresh produce without coming into contact with one another.

In the long term, 'New Arcades', where retail and commercial spaces are re-oriented along common pedestrianised connectors, away from vehicular circulation may prove useful. Having these connections integrated with open plazas can offer a huge potential in creating pandemic resilient spaces. With these semi-outdoor connectors, the current impression of large malls as virus hotspots can be mitigated through the simple principle of ample circulation and natural ventilation in outdoor areas. These considerations could invariably alter the future of how retail architecture may look.

The key focus remains on the management of footfall versus accessibility amidst social distancing. The added benefit of natural ventilation provides an alternative for owners to conduct their businesses.



Openness and public social spaces – the benefit of natural ventilation

The need for social interaction cannot be understated. Covid-19 has accentuated the inadequacy and unequal access to green spaces. Interlocking pocket gardens with any mass public surface increases the public's access to these areas. These green pockets can be placed with steps to maximise flow and function as informal seating during non-pandemic periods, whilst steps can be replaced with plants that provide a natural barrier while encouraging social distancing. The global increase in statistics of people returning to nature after the easing of lockdowns shows how much people desire to be connected to nature.

This same alternate layout of green pockets could also be applied to public dining areas and transform dining spaces to accommodate social distancing amongst seats. Open plazas with integrated shading from large trees, turfing and creative water features may provide alternative spaces for retail. The future typology of retail and residential architecture may benefit greatly from the integration with outdoor spaces.



The approach to designing for the future therefore is not to revolutionise, but rather, to keep up with evolving pandemics. Constant re-evaluation of how architecture performs alongside evolving lifestyle trends ensures that architecture will always stay relevant.

Informing architecture through a crisis

Qualities like fresh air-flow and good ventilation arising from ample provision of outdoor spaces are especially important in high-density dwellings and buildings where city-dwellers engage in close-range interactions.

If we look back in history, Tuberculosis was responsible for a major design revolution in modern architecture. Alvar Aalto's Paimio Sanatorium, a facility for tuberculosis treatment, was born out of the necessity to promote recovery in the patients - from lighting, heating to colour of the Sanatorium - was specially designed for this purpose. The patients were placed at the centre of the design decision along with an informed understanding of the disease. Covid-19 has brought about massive changes in human behaviour and our interaction with our built environment. The approach to designing for the future therefore is not to revolutionise, but rather, to keep up with evolving pandemics. Epidemics come in various forms.

There may not be a silver bullet or a one-size-fits-all solution to the spaces we live in. What is critical to note, is that design and architecture, when thoughtfully considered with the human person at its centre, will be able to positively nudge the person towards healthier outcomes. Constant re-evaluation of how architecture performs alongside evolving lifestyle trends ensures that architecture will always stay relevant.





05 Dialogue

Dialogue

Developing a Culture for Architectural Excellence

As SJ Group expands, there has been a need to nurture a culture of growth and curiosity within the architectural business units. In this inaugural SEEDS issue, we gather the SEEDS Thrust Leaders to share their vision for mentoring this movement. At this time of crisis, the leaders also share their perspectives on the profession and advice to our young architects as we Refresh and Reload to brace the new challenges of 2021.

Interviewees

Thrust Leaders

Kenny Chen SJ Architectural Associate

Michael Leong SAA Director

Ng Cheng Ngai SAA Associate **'Enrich' Thrust Leader**

Rick Yeo SJ Global Township Director **'Engage' Thrust Leader** Alakesh Dutta SJ Snr. Exec. Architectural Associate '**Discover' Thrust Leader**

Jasmine Teo SJ Snr. Principal Architect **'Share' Thrust Leader**

SEEDS – SJ Enrich Engage Discover Share

Enrich

Enrich every architect in professionalism, design skills, ethos, fulfilment, overall development.

Engage

Engage fellow designers, clients, end users, builders, community in the design process.

Discover

Discover novel design solutions, making breakthroughs and raising quality of design.

Share

Share acquired knowledge openly, become influencers and advocates of design ethos.



MICHAEL LEONG SAA Director

As a young architect, I am curious about what brought you into this field of architecture?

RY: As far as I can remember, I was always drawing buildings as a child; intricately composed doodles of multiple buildings and people on travellators etc. Looking back as an adult, the young me was actually curiously sketching the built environment and the people within it. I hope to think that this curiosity has survived till now.

ML: In my opinion, architecture is as challenging as the other professions. However, one unique feature of it is the concern with 'Beauty', and I found that attractive as a profession because it suggests something that can be both serious and enjoyable at the same time.

AD: I toyed with the idea of being an architect in high school when we were being taught geometry and I realised how much I loved it.

JT: I used to doodle and draw in senior high school, and one of my uncles who was quite concerned



KENNY CHEN SJ Architectural Associate

about my education and career, suggested that I enter architecture. I didn't know much about architecture at that time, but it seemed quite interesting to be able to design buildings.

CN: It was a childhood dream. I come from a large extended family and during school holidays I would go house-hopping and stay over at various relatives' places to spend time playing away with my cousins. I recall my Primary One English teacher asking us to write and draw what our ambition was... I wrote 'Architect' because I wanted to design and build a big house with many floors to home my favourite cousins and their families.

On this topic of architecture as a profession, 'doodling' and 'sense of beauty' is something which we've commonly identified in our responses. Indeed, from a simple doodle to design detailing, the use of drawings as a tool to convey ideas plays many roles in our creation of the built environment.



NG CHENG NGAI SAA Associate

Would architecture be a profession you'd recommend?

RY: Yes! Over the years, I've shamelessly recommended and even 'strong-armed' my relatives, friends and colleagues into sending their kids to Architecture school. I truly believe that an architecture education is the most well-rounded degree out there, teaching you everything under the sun!

CN: I would encourage my younger peers to pursue it if they are passionate in chasing their dreams. I always ask, "Is it your passion or your niche?" as a gauge to help them determine the career they want in life.

To me, having a passion means it is something that you wake up every day feeling excited and happy to do, though you may not excel in it. It will require a lot of effort and vigour but is fulfilling.

Having a niche means having something as your natural strength and you require very little effort to achieve great results, but you may

05 Dialogue

not like it. And you certainly do not look forward to challenging yourself in it.

So, if you can be passionate about architecture, then yes, I would say go for it.

ML: Most certainly. Our education system should make the profession more accessible to our youth so we can better tap on the population's talent pool.

So, tell me, if you were not an Architect, what would you be? And why?

ML: I would likely be a city planner because that would give me an excuse to travel around the world! But seriously, it is because that's the closest you can get to creating the environment without being an Architect.

RY: I went by the 'all or nothing' route – Architecture was my first and only choice. Looking back, I would have probably put down 'Communication Studies' as my second choice... which is interestingly the other half of what I enjoy so much about being an architect: communicating a design to an audience and persuading a client to feel the value of the design.

CN: Maybe a chef? I love food and I cook well. But this is more like a hobby rather than a job, so if it turns into a job, I may not enjoy it as much as I do now. Or a scientist? I enjoy memorising formulas and doing experiments, but it may become a desk bound job and I love to move around too much!

JT: I might be a lounge pianist or a piano teacher since I had some experience giving lessons to children.

Our completed works directly impact the lives of people using them and that thought is very powerful as being an architect carries a lot of responsibilities.

-Jasmine Teo

Architecture is frequently referred to as one of the toughest majors and a long, challenging profession.

What design philosophy carried you through your years in the profession?

ML: To steal the title from the book of the same name, my philosophy is 'Design Like You Give a Damn'. I believe that we need to find meaning in our work. If our efforts do not improve the lives of people, the challenges of our profession will outweigh the rewards one day.

RY: Design is an architect's response to solving a client's or end-user's problem. Design is also a human's response to making another human's life better. Through the years, I have realised that the physical parameters of a building can have textbook answers but addressing the issues of user's satisfaction is what truly matters.

JT: I think so too. I have come to realise that our completed works directly impact the lives of people using them and that thought is very powerful as being an architect carries a lot of responsibilities.

Communication with the user (client) is important as we bring our understanding of our clients' needs

and our unique ideas together to create an architecture that can bring fulfilment to the users.

How has your work as an architect evolved since the first day you started?

RY: If we strip away the obvious changes that technology has brought in terms of our design processes; I think what we do is actually the same. I appreciate how we get to design concurrently with other parallel/downstream specialist consultants now, such as sustainability experts, unlike some 15 years ago. Another difference I've felt is that opportunities for architects today are so much more global than before.

AD: I think that today, as architects, we are no longer just limited to designing buildings. Our work encompasses many aspects and fields of work which need design thinking, problem solving, coordinating amongst various disciplines and bringing all these multi-disciplinary inputs together into a whole that is greater than the sum of its parts.

Our work encompasses many aspects and fields of work which need design thinking, problem solving, coordinating amongst various disciplines and bringing all these multidisciplinary inputs together into a whole that is greater than the sum of its parts.

- Alakesh Dutta



RICK YEO SJ Global Township Director

On the topic of the evolution of the profession, we are now launching the SEEDS Movement this year, to refresh and reload in the face of new challenges in our profession. What is your aspiration for SEEDS?

AD: SEEDS is a new offering from SJ Architecture, aptly launched at the beginning of a new year and decade, and after a difficult year. We want to look ahead. We hope SEEDS will be a platform which will carry SJ's architecture projects and thoughts, perspectives and capabilities to a global audience, and help to put our stamp on thought leadership and design ideologies.

RY: To me, the SEEDS initiative is ultimately about finding a common ground between the different architectural entities within SJ – a common ground to identify with and build a design- and architect-centric work culture. And going about it the right way. Every country, every region, every business unit is facing existential challenges from 2021: we need to RELOAD our relevance but be mindful not to burn out.



ALAKESH DUTTA SJ Senior Executive Architectural Associate

ML: This is a crisis not to be wasted. Post Covid-19, this is our opportunity to create a new culture of working as architects whereby we see our world afresh through engaging in research, community outreach, and various initiatives beyond practice. The SEEDS movement aims to bring about a change in the mindset of our architects, especially through this magazine which lends them a voice for the issues they are concerned with. My hope is that the movement becomes a platform for them to participate in developing this new culture of thought and engagement.

JT: It has been a challenging time; we need new energy to refresh and reload. I hope that SEEDS will thrive on the synergy and energy of the architects, especially the young ones, from different business units to come together to engage, enrich, discover and share.

CN: As we step into 2021, SEEDS is set up as a movement to motivate and ride on the wave of 'restarting' economies, workflow processes, and protocols as we climb up against the tide into a post Covid-19 world. This



JASMINE TEO SJ Senior Principal Architect

is the start of a movement for new opportunities, and I hope my peers and I will not be afraid to volunteer and try new initiatives.

What do you hope to see as the future of architecture?

CN: There has been a movement and trend to decentralise planning and massing and breaking superscale urban plans and cities. This will be further fuelled and driven by the current pandemic, as patterns and user habits morph towards high redundancy that is ready for pandemic resilience. There should be a new typology of buildings that has the propensity to change and adapt to a few multi-use complexes that can cater to different users and stakeholders with minimal downtime and reconfiguration works.

ML: Architects need to take advantage of the technological advancement to refocus their energy on humanistic designs. While technology is advancing by leaps and bounds, communities in crisis This is a crisis not to be wasted. Post Covid-19, this is our opportunity to create a new culture of working as architects whereby we see our world afresh through engaging in research, community outreach, and various initiatives beyond practice.

- Michael Leong

are also growing exponentially. We need to leverage these future trends to regain our dignity as Architects.

AD: I hope that in the future, our professional practice evolves to allow for a better balance between the rigours and strains of project delivery vis-à-vis room for our passion for design to develop and thrive.

As architect Frank Lloyd Wright once said, "an idea is salvation by imagination", let's now imagine... If you were a superhero with the capability to change this world, what is one such change you would want to see?

RY: Ah... a non-architectural question! I would like to see a world without extremism of any kind. For example, politics, religion, fanaticism etc. 99% of our problems are caused by the extreme 1%.

CN: I would like to change the way we use the model of financial asset – Money. The current world functions heavily on monetary gains and losses. This drives everything in all

cultures and industries. People lose the human touch and we become selfish to ensure our own livelihood.

JT: I would like to create a world where the environment or air is somehow purified where undesirable virus (like this Covid-19 coronavirus) and germs cannot thrive and be transmitted. So that we can breathe in fresh air freely without wearing masks.

ML: I would like to have the power of Storm, the X-Men character who can control the weather! I would use the power to eliminate climate change and its damage to people and the environment. But I'd probably need the mind-control power of Professor X to change the behaviour of people too!

One last question ...

Reflecting upon each of your own experiences, do you have some encouraging advice for our young practitioners out there? **ML:** Go beyond the job description and find what you believe in and want to fight for. Find joy in what you do. It is then that your designs will be much more powerful.

RY: Be a keen observer of how the world works; and find value in everything you encounter. As an architect: go and truly understand the unique value that our profession brings, whilst at the same time give credit to all our consultancy partners. We're literally designing the same building together, but from different (but equally important) angles of the human equation.

CN: 3 sentences...

Do what u love, love what you do.

Never regret not trying.

Do not be afraid to try, and do not be afraid to fail!

It has been a great pleasure speaking to everyone here. Thank you!

There is no medicine like hope, no incentive so great, and no tonic so powerful as expectation of something better tomorrow.

~ Orison Swett Marden



06 Viewpoint

> During the pandemic, most have flocked to seek respite at parks and open spaces. A post-pandemic city will have to consider the access and ready availability of green spaces for everyone.

Image & Text by: Chris Cheng Wai Look

Taken: Along East Coast Park Area E, Singapore



Surbana Jurong

Surbana Jurong Group is a global urban, infrastructure and managed services consulting firm, with over 70 years of track record in successful project delivery. Headquartered in Singapore, the group has a global talent pool of 16,500 across Surbana Jurong and our member companies AETOS, Atelier Ten, B+H Architects, KTP, Prostruct, RBG, SAA, Sino-Sun and SMEC, based in more than 120 offices in over 40 countries. They include architects, designers, planners, engineers and other specialists driven by progressive thinking and creative ideas to help shape a better future.



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