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The Singapore Afterlife (1970–2007) of the Japanese Architectural Movement Metabolism (新陳代謝 / *Shinchintaisha*, 1959–1973)

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ABSTRACT

This paper employs the art-historical and descriptive-analytical methods to discuss the history of Metabolism in Singapore. Firstly, it discusses the conceptual and philosophical underpinnings of Metabolism with recurring themes of organic and technological terminologies to organize the modern city. It then reviews the current literature on Metabolism, emphasizing the contributions made to the analysis of Metabolism as a philosophy and an architectural movement. The paper then uses as examples the buildings which were designed and built in Singapore by Tange Kenzō and Maki Fumihiko. However, the influence of Metabolism was felt in Singapore even earlier through local architects who were inspired by its principles of designing residential and commercial spaces by means of incorporating modularity, communal living, and green urbanism into the design. Finally, the paper reflects on the influence of Metabolism on current green architecture movements in Singapore.

KEYWORDS: metabolism (architecture), Tange Kenzō, Japanese architecture, Singapore architecture, history of Singaporean architecture

...There is a powerful need for symbolism and that means the architecture must have something that appeals to the human heart. Nevertheless, the basic forms, spaces, and appearances must be logical. Designs of purely

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arbitrary nature cannot be expected to last long (Tange Kenzō 1987 Laureate Ceremony Acceptance Speech).

Introduction

Metabolism attained the peak of its popularity in the 1970s, but thereafter, it failed to take root in Japan as a dominant architectural style. However, its proponents continued to design monumental buildings outside of Japan. In the Middle East, there were projects conceptualized for what would become future cities in Bahrain, Qatar, and the UAE; it was similar in Singapore. This paper analyzes the development of Metabolism in Singapore from the point of view of art history. Metabolism is a Japanese avant-garde architectural movement that originated in the middle of the 20th century. It was both radically breaking with traditional Japanese architecture and rooted in Japanese cultural philosophy. It used biological metaphors and scientific terminology to describe its notions of organic architecture.

Metabolism as an architectural movement began in the ruins of post-war Japan. The fire-bombing of Tokyo and many other Japanese cities resulted in the widespread destruction of buildings. The destruction was exacerbated by the wooden nature of many Japanese buildings, which led to the further propagation of fire.

In the aftermath of so much destruction, there was the opportunity to change the architectural landscape completely. A new generation of architects would take up this challenge to remake the landscape, utilizing concepts which reflected new western architectural movements, such as brutalism, while reflecting the unique situation of Japan and its cultural background at the same time. Tange Kenzō, already a prominent architect, collaborated with several other architects who would later become crucial members and proponents of Metabolism, most notably Kikutake Kiyonori, Maki Fumihiko, and Kurokawa Kishō. In preparation for the Tokyo World Design Conference in 1960, discussions coalesced around the creation of a manifesto that would showcase their ideas. This manifesto would put into print not only their architectural designs but also the ideology behind them, rooted in how to solve problems such as Japan's shortage of usable land. The solution that the Metabolists found was rooted within traditional Japanese architectural concepts of change and adaptability, combined with notions of biological processes and evolution. The Metabolists, with this goal in mind, designed structures which would organically grow and could be reformed, remade, and adapted to changing conditions. Initially, the name for this architectural movement was *Shinchintaisha*, which, in essence, meant the continuous exchange of energy and materials between organisms.

It reflected the group's focus on modular and replaceable architecture. However, since this conference was international in nature, it was decided that an English word should be used so that the meaning could be more clearly understood. Eventually, Metabolism, as a direct translation of *Shinchintaisha*, was decided to become the formal name of the manifesto (Ota et al. 2011: 235).

While not formally one of the Metabolists, Tange was a mentor to many of the founding members. At the same time, the ideas of the Metabolists could be seen in the urban redevelopment plan of Tokyo that he presented in 1960. The plan was a radical reconstruction of Tokyo, involving building megastructures and a central highway on top of Tokyo Bay. Along the way, roads would diverge, which would lead to further expansion. Megastructures would serve as both residential and commercial spaces, and these "joint-cores" could be replaced as needed and added to the base towers as the population expanded. While this mammoth example of city planning would never be realized, Tange Kenzō later used this concept in other architectural projects as part of his idea that Metabolism could be adapted from single structures to multiple joined buildings and urban planning.

In Singapore, Tange Kenzō, one of the founding members of Metabolism, was asked to design several buildings which would become the foundation of the Singaporean Skyline. These designs were eventually scaled back and redesigned, becoming symbols of corporate-modernist architecture. However, smaller projects, such as the Golden Mile Complex and People's Park, were designed by local architects inspired by Metabolism but also reflected other styles. This paper searches for a possible history of Metabolism in Singapore, laying a foundation for uncovering the strands and offshoots of Metabolism far from its origin and time.

An important contributor to the history of Metabolism is Koolhaas and Obrist's *Project Japan: Metabolism talks* (Koolhaas and Obrist 2011). Published in 2011, it features many interviews with Architects associated with Metabolism, some of whom have passed on since then. Moreover, Xue and Xiao's *Japanese modernity deviated: Its importation and legacy in the Southeast Asian architecture since the 1970s* (Xue and Xiao 2014) was the first article devoted specifically to the legacy of Japanese Architecture in Southeast Asia. Both articles provided the basis for this essay.

1. Metabolism in Singapore: Spreading Outwards

Quite suddenly, after the dizzying success of 'Expo 70 in Osaka, which broadcast Metabolist ideology and architecture to the outside world, Metabolism reached its nadir. In October 1973, the Oil Crisis began, with

the nations of OPEC embargoing the countries perceived to be supporting Israel during the Yom Kippur War occurring at the same time. Japan, with its ties to both the US and Israel, was deemed to be part of that group. The effects of the embargo were disastrous. The miraculous and sheer growth of the Japanese economy in the latter part of the 20th century required a steady supply of oil to supply it. The Japanese Government and its National Conglomerates, referred to as *Sōgō Shōsha*², had invested heavily in the Middle East to guarantee a steady supply of oil, as well as to increase oil production. The embargo hit Japan hard, leading to oil prices increasing by over 217% (Ohno n.d.) after the embargo. For the first time since World War 2, the Japanese economy contracted. The diminishing of Metabolism in Japan became an unintended side effect of the crisis. The movement, which had required the support of the Japanese State Bureaucracy for its projects to flourish, could no longer be sustained as Japan entered in 1974 with a negative growth rate of 0.8% (ibid.), leading into a new economic state of “stagflation”³. Contracts for projects inside Japan dried up as a result.

To secure the economy and its own oil supply, Japan engaged in diplomacy with OPEC members despite the warnings of the US. They supplied Middle Eastern countries with Japanese goods and loans. Tange Kenzō and other Metabolists are a part of this trade. Ironically, these countries became a second home for the Metabolists where they could articulate their ideas with the support of the dictatorial rule and strong, oil-backed economies of Saudi Arabia, Iran, Iraq, Bahrain, and other Middle Eastern countries (Ota et al. 2011: 591).

² General Trading Companies, which traded in a wide range of products and services. They were the successors of the *Zaibatsus* after they were dismantled in WW2. Notable *Shōsha* include Mitsubishi and Sumitomo.

³ Recession amid inflation.



Figure 1. Concept Plan for Singapore 2001, a development of Concept Plan for Singapore 1971. Source: Vvision 2005. CC BY-SA 2.0

After the second oil crisis of the 1970s and the Iranian Revolution, the instability led Tange Kenzō to focus his attention on Asia, in particular Nepal, Malaysia, and Singapore. In Singapore, he is invited by Lee Kuan Yew, wherein he is shown a map titled “Concept Plan”, a long-term plan for 40–50 years which will guide Singapore’s land use, infrastructure, and transportation. It is designed to address the needs of Singapore’s increasing population, such as the need for housing and commercial spaces for economic growth (Xue and Xiao 2014: 229).

It is here where Singapore’s similarity to Japan can be made most apparent: as a *Tabula Rasa*, a place where the possibility of avant-garde architecture, with themes of impermanence, change, and adaptability, can be realized. Tange helped to plan the development of Singapore’s iconic infrastructure, culminating in the construction of the first of five skyscrapers comprising the iconic skyline of Singapore’s CBD district.

2. Overseas Union Bank Center, UOB Plaza 1 and 2, City Telecommunications Center (1970–1995)

The Central Business District of Singapore is now an iconic feature of Singapore. Dozens of multinational companies have their headquarters or regional subsidiaries within the glass and concrete skyscrapers, all forming a part of the Singaporean skyline. Besides the thousands of office workers who transit to and from the CBD, tourists regularly visit and stay in hotels in the district; many tourist sites are located in or around it, including the Merlion and the Asian Civilization Museum.

However, in the 1970s, this reality had not yet been finalized. Singapore experienced rapid population growth in the post-war period. The country would need more economic opportunities as well as public housing for its population.

Tange Kenzō was invited by Lee Kuan Yew, the prime minister of the newly independent Singapore, to see the conceptual plan of Singapore. He is invited by the Singapore government to shape the iconic skyline of Singapore. The skyline at its core would consist of five buildings. All in all, it would take over a decade for the first building to materialize, OUB Center. The entire process of construction would not conclude until 1995, as Tange Kenzō was invited to renovate buildings in his own architectural style, as was the case of UOB Plaza 2 (Xue and Xiao 2014: 229).

For a Japanese architect to lead the direction and vision of what the future Singapore will look like may seem like a curious choice for the newly independent Singapore. But the decision to leave many such designs and architectural decisions to foreign firms was a conscious one. Local architects were perceived as not having the experience to design modern architecture, nor were there enough architects at the time to entrust these projects to them. Instead, transfers of technology, technical expertise, culture, and ideas would be facilitated through Singaporeans cooperating with and working for foreign architectural firms. In the 1990s, Tay Kheng Soon, who had constructed the Metabolist People's Park Complex bemoaned this decision: “[On the Singapore government's preference for foreign architectural firms in government building projects] Soon believed that Singapore's young architects would never mature without the experience to deliver their own building theories and creativity, and that the government's indulgence of foreign practices would destroy local historical significance” (Xue and Xiao 2014: 227, 236).



Figure 2. Present-day Singapore skyline. Note OUB Center in the middle, flanked by UOB Plaza 1 and 2 Source: Ong 2006. CC BY-SA 2.0

The construction of both Overseas Union Bank Center (now known as One Raffles Place) and City Telecommunications Center (now known as Comcentre) began in 1980 and was finished in 1986 (OUB Centre Limited 2014). The construction of United Overseas Bank Plaza 1 began in 1992 and was completed in 1995 (National Heritage Board 2009). UOB Plaza 2 had been constructed in 1973, but in 1995 it was reconstructed and renovated in conjunction with the newly built Plaza 1 (National Library Board 2020).

Tange Kenzō, who had the full backing and permission of the Urban Redevelopment Authority, was commissioned to design and construct these four buildings. At the same time, however, his plans for the buildings were also dictated not only by their purpose as headquarters for Singapore’s leading banks and telecommunication companies but also by the rapidly emerging popularity of corporate and postmodernist architecture (Ota et al. 2011: 636). Rather than concrete, these skyscrapers would be made of glass and steel. Only a few glimpses of Metabolist’s influence on Tange’s design can be seen: UOB Plaza 1 and 2 are linked by a large open atrium near the Singapore river. It features a large skylight, and in effect, it functions as a “City Room” as conceptualized by Maki Fumihiko: an urban atrium that allows for different activities and uses of the space to take place simultaneously (Xue and Xiao 2014: 229).

These buildings were not successors to Metabolist Architecture but rather a new phase which left very few traces. On the other hand, Tange was also responsible for designing the Nanyang Technological University. It is there that he was given a freer hand in the design and where Metabolism begins to emerge.

3. Nanyang Technological University (1986)

Nanyang Technological University formally began as the Nanyang Technological Institute in 1981. The land it was on was formerly used by Nanyang University, a Chinese private university. In 1980, the university was merged with the University of Singapore and became the National University of Singapore. NTI was set up in order for there to be a university that could use those grounds. It was only in 1991, with the addition of more schools, that it was renamed Nanyang Technological University (Kusolpalin 2016).

In the 1980s, while working on the skyscrapers of the CBD, Tange Kenzō was also entrusted by the Singaporean Government with the master planning and design of Nanyang Technological University, specifically what was then known as the Yunnan Garden Campus, now commonly known as North Spine. To get an idea of the size and scale related to the design of NTU, it is important to note that the entire NTU campus occupies 0.2% of the land in Singapore. Given the increasing population and land scarcity⁴, it was a lot of land area to be delegated to just one university.

NTU is in Jurong West, an hour and a half away by train from the Central District. Given this distance, master planning of the overall expansion of the NTU campus emphasized self-sufficiency and the conception of the campus as a “Mini-City”. Additionally, shared spaces between schools were emphasized as a way of maximizing space and efficiency.

This conception cannot be seen more clearly than in the design of the Yunnan Garden Campus.

⁴ Singapore has the second greatest population density in the world; most of the population lives on just 7% of the land available.



Figure 3. The Academic Spines of NTU, which branch out from the “servant” spaces of the Campus. Source: Aloysiustwz 2015. CC BY-SA 2.0

The design of the Campus by Tange clearly draws upon his earlier work, from the Plan for Tokyo 1960, Yamanashi Culture Chamber to Shizuoka Press and Broadcasting Centre. What can be seen is the joint-core system applied on a micro-scale similar to the Yamanashi Culture Chamber and Shizuoka Press and Broadcasting Centre. Unlike those projects, however, NTU was not a single building but a large campus that would house many colleges. Metabolism was not just an architectural style to be applied to a single building but to a whole typology of organization. Tange noted that “The building is at once a single spatial type capable of change and growth, and a space established within a three-dimensional communications grid. This is a proposal for both a single building and for urban design” (Lin 2010: 183).

The original design of the 1986 NTU Yunnan Garden incorporated what Tange Kenzō called the “Tree-Trunk Axes” or the “Core and Bridge system”. This structural design could be seen in his earlier projects from the 1960s, including the Shizuoka Broadcasting Tower, Yamanashi Culture Chamber, and the mega structural form, in the Plan for Tokyo 1960.

Tange saw this design as a way of not only maximizing space but also creating shared spaces which could lead to collaboration and the infusion of new ideas. The impetus for this design can be described as dividing the space between “served” and “servant” spaces. Like the other designs, the first floor was vacant, with the functional space relegated to the floors above (ibid., 181).

The design consists of core points which contain the “servant” spaces, referring to social spaces, sanitary restrooms, cafeterias, and restaurants. The “served” space branches outward from the core in different directions. It contains educational facilities, classrooms, and laboratories. These “branches” were made so that additional space could expand through unoccupied void spaces which could be infilled. Tange compares this layout to that of a city layout in a two-dimensional space:

Some plots of land in a city are vacant; others are scheduled for the expansion of existing buildings. We made it possible for people to have the spaces they require within a multidimensional composition... Though it seemed incomplete, the building had an organic unity (ibid., 183).

This basic pattern could be applied from a single building to a network of buildings, all the way to the city level. The megastructure would generate similar buildings, which would grow to take over and lead again to expansion (ibid., 188).

However, just like its earlier predecessors, the construction of this building did not lead to the surrounding development of the campus into similar mega structural forms which establish linkages with each other. Instead, future architectural firms working on successive buildings place them in a compositional form – as related to each other but with no ordered layout. Once Metabolism passed its apex as an architectural style, the remaining structures became outdated, and both the symbolism and functionality of the movement became less effective. In the case of the Nakagin Capsule Tower, it was discovered that because its capsules had been constructed on-site, replacing them would be a far more expensive procedure. Capsules that needed replacement would need to have capsules above and below them also lifted out of position before they could be replaced. The capsules themselves were designed only for single and double occupancy. A modern conventional floor layout would have resulted in at least doubling the amount of usable space (Lambiasi 2022).

Was there a response to Metabolism and its mega-structural form? The answer would come decades later, in the form of the construction of Republic Polytechnic in 2007.

4. Republic Polytechnic (2007)

Maki Fumihiko criticized the structural form utilized by Tange Kenzō and the Metabolists. The structural form and the later group form created and utilized by Maki Fumihiko were both plans for a cohesive building form. But Maki specifically criticized structural form and how it encouraged the emergence and construction of Metabolist Architecture which could only be made possible from the top down, through the patronage and support of financial and political powers. Both in Singapore and Japan, Metabolism was only made possible through bureaucracy and the direct support of their respective governments. Much of the support for Metabolism in Japan came from Shimokōbe Atsushi, a senior bureaucrat and Administrative Vice-Minister of the Ministry of Land, Infrastructure, Transport, and Tourism from 1977 to 1979 (Ota et al. 2011: 14). From 1962 to 1998, he drew up and revised the Comprehensive National Development Plan, which included several large-scale construction projects. He played a key role in national development projects in Japan. In 1998, the plans stopped being developed following the criticism of wasteful government spending on public works projects (Japan Times 2016).

Maki Fumihiko developed his group form as a rebuke and criticism of Metabolism. Instead of a megastructure and iconic building with branches in all directions, Maki Fumihiko built his architecture as a collective of buildings linked to each other. Instead of a “tree”, Maki employed the metaphor of the interior parts of a cell, all of which constantly shift and yet connect to each other spatially. Maki specifically refrained from making one part of the architecture its focus, instead diffusing its elements throughout the structure (Rakshit 2015).

On March 22, 2005, Tange Kenzō died in Tokyo, Japan. Two years later, Republic Polytechnic’s Woodland Campus in Singapore opened. It was designed by Maki Fumihiko, and it is there that the author draws a comparison between Nanyang Technological University and Republic Polytechnic as representatives of their respective forms.

Republic Polytechnic is composed of 11 “Learning Pods” straddling two decks, which Maki refers to as the “Agora” and “Lawn”. This design reflects his ideas about spatiality combined with interspersed forms, making efficient use of the space (Cairns, Chee and Jacobs 2014). The underground Agora contains public spaces such as libraries, cafes, and courtyards. The

aboveground Lawn contains green space, bridges, and covered corridors, which become the linkages between the separated buildings. This design helps to create shared spaces between structures while minimizing the flow of traffic between them, so everything is accessible from the center. More importantly, it is a high-density design, which is still able to have green spaces. The 11 Learning Pods have a modular system that allows for different permutations and combinations of labs, facilitator offices, and study clusters (DesignSingapore Council 2009).



Figure 4. Republic Polytechnic Woodland Campus. Source: Republic Polytechnic 2006. CC BY-SA 2.0

Given the recent construction of the building, one cannot foresee how the space will be further expanded in the future. In 2009 it was awarded Design of the Year during the President's Design Award, held by Design Singapore and the Urban Redevelopment Authority. The jury cited the Agora and Lawn as key design features that stood out from an aesthetic standpoint. It also stood out as an efficient use of space which encouraged collaboration:

Easily the most identifiable innovation in the Republic Polytechnic campus, the Agora is reminiscent of the marketplace in ancient Greece, where goods and ideas were exchanged freely. Envisioned as a democratic, student-oriented and experimental public realm, the Agora is a large, continuous,

multi-tiered space that encourages cross disciplinary interaction between students and the public, unifying the Learning Pods situated above. Together with the Lawn, the Agora is one of the campus' key design features, and effectively extends the physical learning space beyond the conventional classroom. The Lawn also effectively replaces the greenery displaced by the campus' footprint, thereby camouflaging the bulk of the campus (DesignSingapore Council 2009).

Aside from this, Republic Polytechnic also contains several green features, such as a thermal energy storage system, solar panels, and a waste conveyance system.

While Maki's design has clearly utilized several technological developments that were not present in 1986, the campus of NTU has also been updated to benefit from these features. At present, however, it seems that the Yunnan Garden Campus has reached the limits of its expansion. On the other hand, Republic Polytechnic Campus still has space for expansion, retaining the influence and architectural language of Fumihiko Maki and his conception of "group form" while following its own architectural language.

Japanese Architects are proven to have had a significant influence on Singaporean Architecture, especially its national projects. This influence extended to some of Singaporeans' greatest and most influential architects, such as William Lim and Tay Kheng Soon.

5. People's Park Centre (1970), People's Park Complex (1972), Golden Mile Complex (1973), and Golden Mile Tower (1974)

William Lim, born in 1932, graduated from the AA School⁵ in 1955. During those four years studying at the school, he was enticed by his mentors toward the architectural style of Brutalism. Afterwards, in 1956, he was awarded a Fulbright Scholarship to study at the Department of City and Regional Planning at Harvard University in the United States (Lim, Han and Zhuang 2016). Tay Kheng Soon graduated in 1963 from the Singapore Polytechnic School of Building and Architecture, becoming one of the first locally trained architects in Singapore. What they had in common was that both men studied with Maki Fumihiko at Harvard. Their experiences led them to embrace Maki's ideas and form the Architectural Think-Tank Singapore Research & Urban Planning Group (SPUR) in 1964. SPUR drew up proposals for the future of Singapore. One of the SPUR's proposals was the

⁵ Architectural Association School of Architecture in London, which is still one of the most prestigious architecture schools in the world.

“Asian City of the Future”. Utilizing Metabolist Architecture such as the A-Frame, SPUR integrated residential, commercial, and businesses into one zone (Ota et al. 2011: 637).

During the 1970s, they got an opportunity to put these plans to fruition, starting with the People’s Park Center and People’s Park Complex in 1970 and 1972, respectively.

Both of these buildings were built with the intention to follow the principles of Maki Fumihiko’s “Group Form”, where individual buildings would form linkages with each, maintaining overall consistency. Another key feature was the use of “City Rooms”, also conceived by Maki, which were indoor atriums designed to hold a variety of functions within them. Their purpose was to replicate not only urbanity but also a bustling street indoors. The People’s Park Complex features four of these city rooms, one on top of the other. Both the complex and the center were linked with each other through walkways and corridors, and it was hoped that the building would become the nucleus of further development. However, the direction of urban development did not take into account these structures. During the early 2000s, the old shophouses were rehabilitated, and glass canopies were built to protect shoppers from the rain. As a result, pedestrian traffic shifted from buildings to the outside. Today these spaces are mostly seen as containing immigrant, predominantly Chinese, neighborhoods. Instead of expanding outward, the space has crawled inward instead (Guan 2017).

The Golden Mile Complex was intended to have the design most reminiscent of Metabolist Architecture, featuring the A-Frame seen in “Asian City of the Future”. Its location on Beach Road was to facilitate outward expansion towards the east of Singapore, and the building was to be connected with soon-to-be-constructed similar-looking office towers, a so-called “Metabolist Mile”. Due to size constraints, only half of the Metabolist A-frame was completed. The ground floor housed a giant rectangular atrium, with the upper levels housing residential units. However, the construction of new highways and metros redirected the expansion of the city, leaving the Golden Mile Complex and Golden Mile Tower isolated. Similarly to the People’s Park Complex, they have become home to numerous ethnic migrants to Singapore, most notably Thai immigrants (ibid.).

Conclusion

Until recently, the fate of the buildings described in the paper has been up in the air. The Golden Mile Complex has been facing sell-off and closure for decades. As modern office towers and hotels were being built around it, it had to face the irony that its architecture could not adapt to the changes

around it. Its expansion was not organic, and rather than replicate its style, the following development took inspiration from the architectural trends that were common at the time. However, its fate changed on October 9, 2020. After a two-year study, the URA decided to propose that the building be gazetted as a conserved building for its importance to the heritage of the urban design of Singapore (Ng 2020). A year later, on October 26, 2021, this proposal was finally adopted (Ng Keng 2021). Considering that unit owners within the building were anxious to sell off because of market pressures and the rising cost of land in Singapore, the URA decided to offer incentives to the owners to make the prospect of selling units in the building more attractive to potential buyers. Besides being one of the few buildings not from the colonial era that is being conserved, it also signifies renewed interest in Modernist and Metabolist architecture within Singapore, with even a speculative film about Metabolism being shown at the Red Dot Design Museum (Red Dot GmbH & Co. KG 2020).

While other Southeast Asia countries such as Malaysia and Indonesia also invited Japanese architects for building projects, Singapore was singularly unique in its ability to leverage its bureaucracy and resources to allow these architects to put their ideas of expansion and adaptability into action. But these projects were not always received favorably. The Singapore Indoor Stadium, built in 1989, was criticized for its high cost and the Singapore government's preference for foreign architects over local designs (Xue and Xiao 2014: 234).

The capsules of the famous Nakagin Capsule Tower were estimated to be replaced every 25–30 years (Lambiasi 2022). But ironically, Metabolism could not adapt fast enough to suit rapidly changing times. The said capsules were hard to replace, with the replacement requiring that the capsules above and below them be moved as well. The makeup of cities are known to change completely every 10–15 years⁶. Metabolism's current reputation is regarded as being out of date, cold and inhuman. Despite this, the increasing attention it has received in architectural schools around the world shows that it still has lessons to teach, especially when it comes to modularity and replacement in the service of green urbanism. Architects today may not follow the form of Metabolism, but they certainly take to heart its spirit and themes of change, impermanence, and growth.

Abbreviations

CBD Central Business District

⁶ NTU's current Campus Master Plan is also slated to last 15 years.

GRIPS	National Graduate Institute for Policy Studies
NTU	Nanyang Technological University
OUB	Overseas Union Bank
SPUR	Singapore Research & Urban Planning Group
UOB	United Overseas Bank
URA	Urban Reconstruction Authority

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