

TOKYO'S NEXT METABOLISM

Lai, ho fung

17000356@brookes.ac.uk
Oxford Brookes University

CORE METABOLISM of 1960s'



Fig 1. The World Design Conference 1960 in Tokyo

Metabolism Architecture was first appeared in the World Design Conference 1960 in Tokyo (Fig 1) as part of the manifesto proposed by a group of Japanese architects, known as the Metabolists. Young architects Kiyonori Kikutake, Kisho Kurokawa, Fumihiko Maki, Masato Otaka and the architectural critic Noboru Kawazoe, led by Kenzo Tange, had similar beliefs to suggest a new urbanism proposal which promoted a cityscape composed of replaceable components adapting to the changing environment.

The world influencing concept particularly repented to the post war situation of Japan. As being Japan's capital city, Tokyo was targeted to be attacked during the war. A series of firebombing air raids were conducted by the United States Army Air Forces (USAAF) during the Pacific campaigns of World War II between 1942 and 1945 (Fig 2). Following by the explosions of the world's first and second atomic bombs on the Japanese cities of Hiroshima and Nagasaki respectively, Japan announced its intention to surrender which brought the end of the Second World War on September 1945 (Gruhl, 2007).



Fig 2. Two-fifths of the city were completely burned in the firebombing air raids



Fig 3. Tokyo Bay Project Proposal by Kenzo Tange

The Metabolists believed that it was an opportunity to build something better rather than restoring the original ones based on Tabula rasa concept. "... when we saw our national land turned into scorched earth with sporadic burnt concrete structures, we had a dream and hope of drawing a new city as if over a blank white sheet..." as stated by Kenzo Tange, reflected the intention to rebuild and radically transfigure the nation as a whole (Fig 3) (Tamari, 2014). Moreover, All of the Metabolists belonged to the generation that witnessed the destruction of Japan cities and the collapse of imperial Japan. They had

witnessed the tragic situation of the nuclear holocaust in their country during World War II, even for the youngest member of the Metabolists, Kisho Kurokawa, who was 11 years old when the atomic bombs exploded in 1945. These series of catastrophes caused extensive and severe damage to their psyche. They were undoubtedly shocked and traumatized by those unprecedented incidents. The profound tragedies they experienced would reflect their perception of the future world. They could no longer believe in an eternal stable society. Futuristic utopianism offered them a compensatory escape from the tragic reality. The more catastrophic the society in which they lived, the more they needed a utopian fantasy. As a result, based on the concept of "megastructure" with a strong belief in technological innovation (Banham, 1976, p.45), Core Metabolism Architecture suggested that the city was going to be constructed with permanent infrastructural core and plugged in with replaceable component units such as capsules (Fig 4). In case of damage or decay, the replaceable components could be unplugged and replaced with a new ones. The buildings were therefore renewable and the urban fabric was sustainable over time.

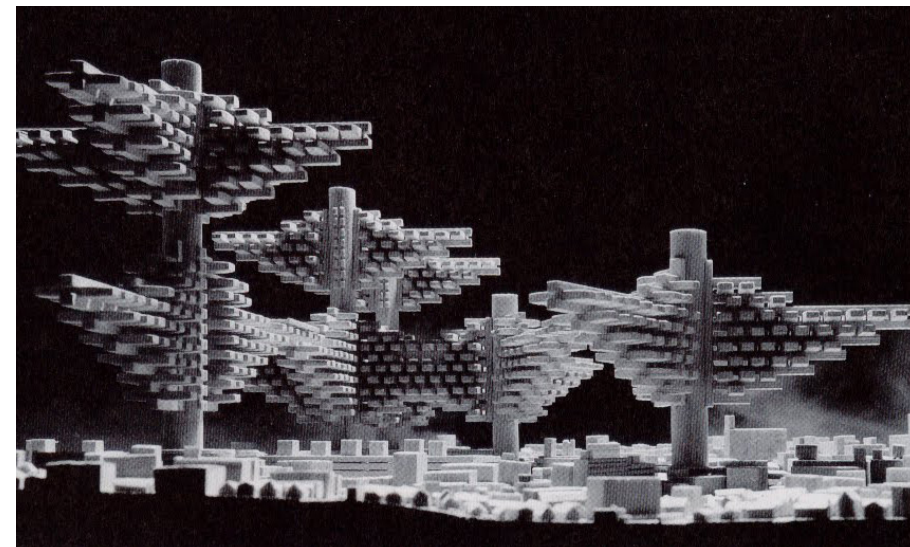


Fig 4. Clusters in the Air of 1962 by Arata Isozaki

NEXT METABOLISM of the projected future

The projection is certainly based on the principle that those unknown determining factors remain unchanged, such as the policy of birth control and the policy of inheritance tax. Afterwards, the induced effects were pushed to the extreme. It may not be the truth in the future as the unknown determining factors may vary but at least the imagination provides us with a scenario based on the direction in which the society is approaching. The next Metabolism Architecture which keeps evolving can then be moulded against the backdrop. Certain main characteristics of the future city can be drawn. These include:

1. The population of the city is shrinking, which results in lower affordability of the inheritance tax, smaller family size and lower demand for residential housing;
2. The urban subdivision is being maintained as the affordability of the inheritance tax is lower which causes smaller lot area;
3. Property is getting smaller as restricted by smaller lot area. At the same time, smaller family size has a greater tolerance for smaller living space;
4. Detached houses are being demolished when they come to the end of their renovation cycle without inheritors or inhabitants, as a result of lower demand for residential housing;
5. Urban space is enlarging as more and more detached structures are demolished.

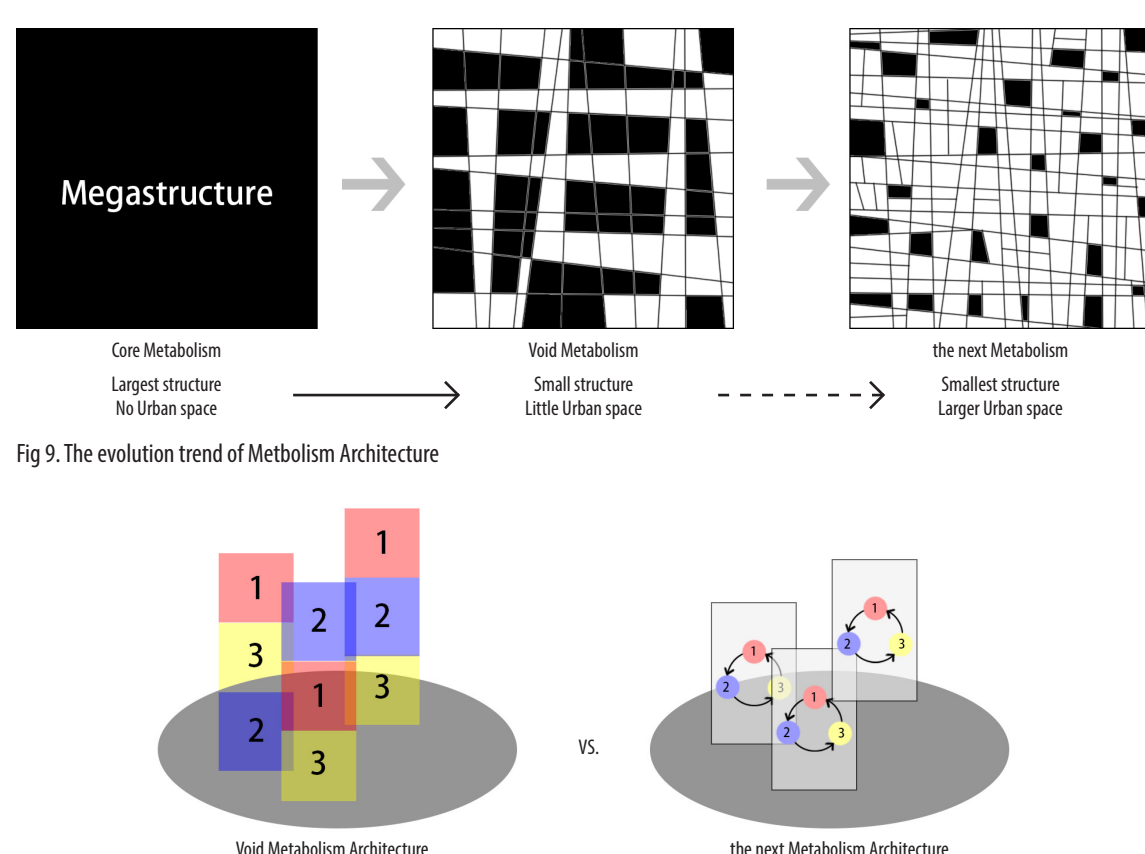


Fig 9. The evolution trend of Metabolism Architecture

The trend of Metabolism Architecture evolution was projected. From Core Metabolism to Void Metabolism, the size of structure reduced while the urban space is released. Based on this precedent trend, the next Metabolism model was projected as smaller size of structure with larger urban space (Fig 9). There will be less and less structures sitting on the urban land in the projected cityscape of Tokyo in the future after loops of renovation cycle have passed. Indoor activities are thus influenced and restricted to the remaining buildings, in terms of location and size. As the number of houses is decreasing, it may

VOID METABOLISM of 2000s'

Yet, Tokyo was developed in a totally different way in which there were no replaceable components. It related greatly to the mitigation of population expansion. Because of the great improvement of medical conditions throughout Japan after the war, the life expectancy of Japanese has been increased since the pre-war period. With the combined effect of low birth rate, the pressure on dwelling demand and thus the need of megastructure actually has not ever existed over the last half-century. The government refined the policy that encouraged individuals towards landownership, which turned to create a drive to construct their own private homes. Detached houses formed the city as a result after the war.

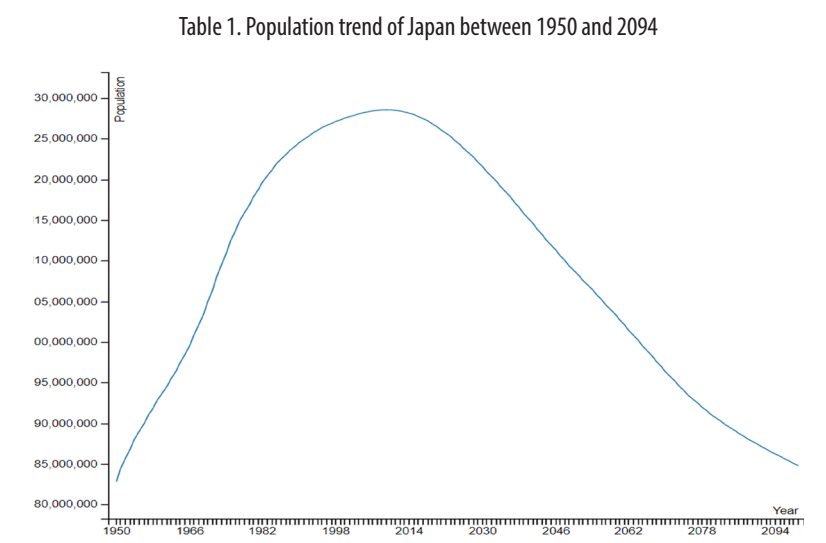


Table 1. Population trend of Japan between 1950 and 2094

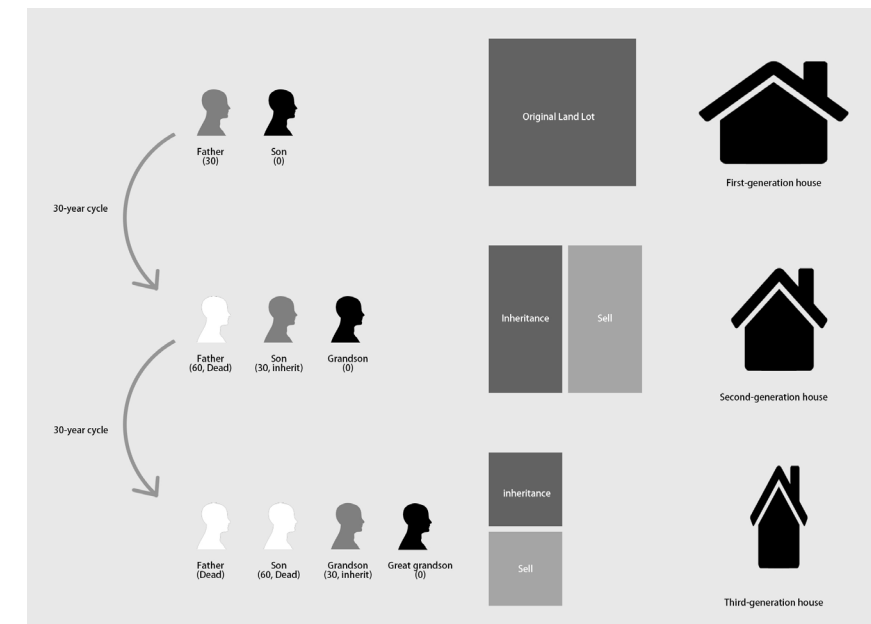


Fig 5. The Japanese, urban land and Japanese housing are sharing a time scale of 30-year cycle

the exterior wall of the structure towards the boundary of the lot. The spaces in-between the properties, which were originally big enough to allow for a garden—the place where inhabitants usually spent time outside of the house, became gaps without social life. Yoshiharu Tsukamoto of Atelier Bow-Wow stated it was the urban spaces of the city that metabolized throughout generations, rather than the solid buildings. He responded to this phenomenon and derived Void Metabolism Architecture to alive these gap spaces in the urban. Taking his own property as an experiment, House & Atelier Bow-Wow designed in 2005 was deliberately allocated towards the gap, so that a virtual extension of the gap penetrated the centre of the house. This created a sense of living in this gap and bringing the inside life outside to permeate in the streetscape (Fig 6 & Fig 7).

An inheritance tax is imposed when the head of a household changes in Japan. With the mitigating population growth in the 2000s, an only child would have to afford the whole amount of the imposed inheritance tax of the property received. The high inheritance tax becomes unaffordable for a single child who by necessity must resort to measures such as subdividing and selling the property (Kitayama, Tsukamoto and Nishizawa, 2010, p.38). The higher the tax assessment becomes, the more likely it is for a large property to be subdivided. The continuous sub-divide of the urban land results in smaller property sizes, which turned to push



Fig 6. A narrow gap leads up from the bottom of the slope in the lot to the house

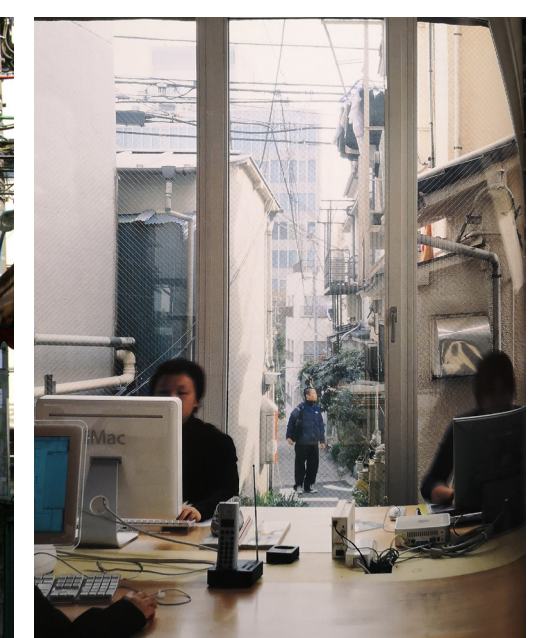


Fig 7. The house was oriented so that the gap penetrated the centre of the house, creating a sense of actually living in this gap

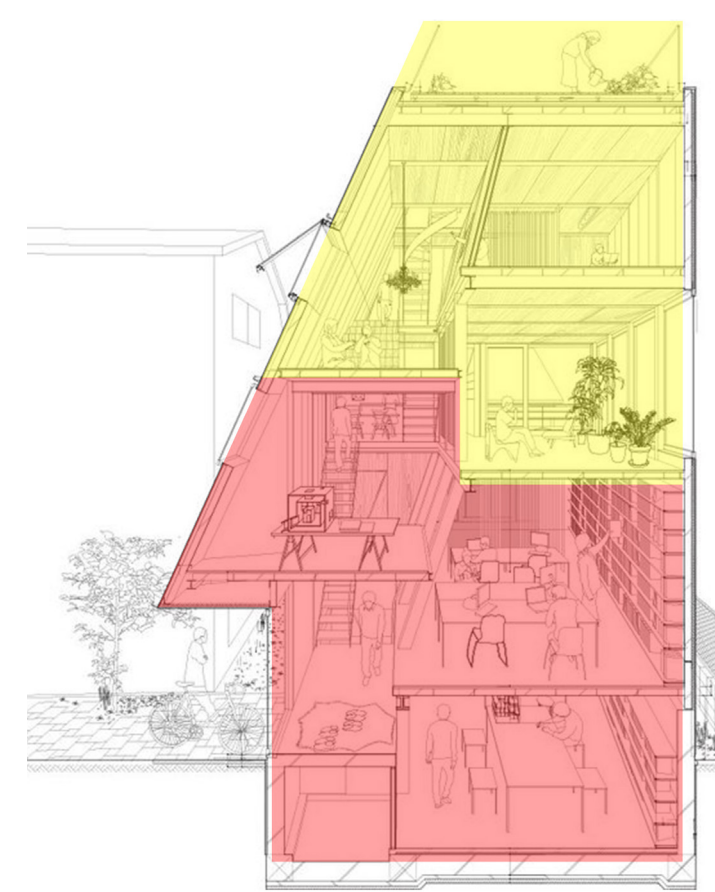


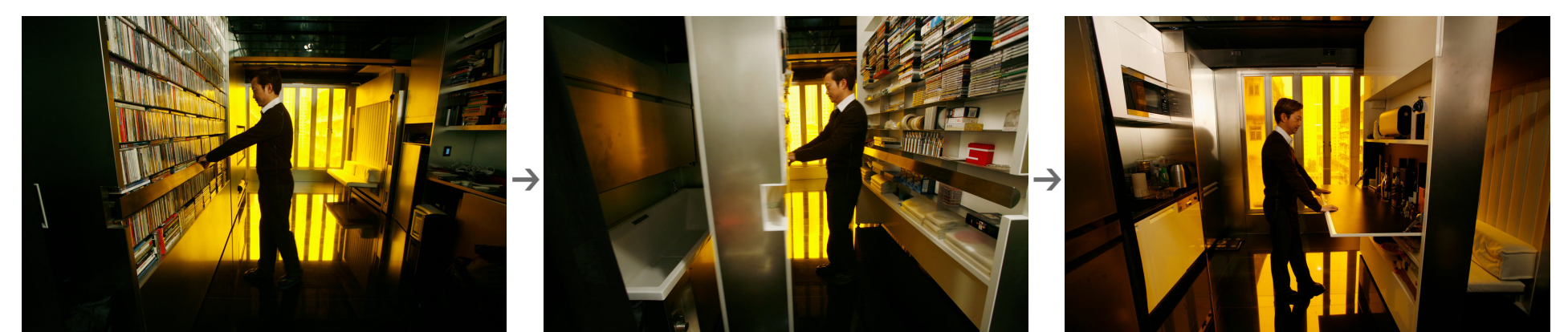
Fig 8. Spaces of two usages are stacked up to form a continuous vertical space in House & Atelier Bow-Wow



Fig 9. In House & Atelier Bow-Wow, the first floor and below are working space while the second floor and above are living space. Different kinds of people are engaging in the house in a natural manner

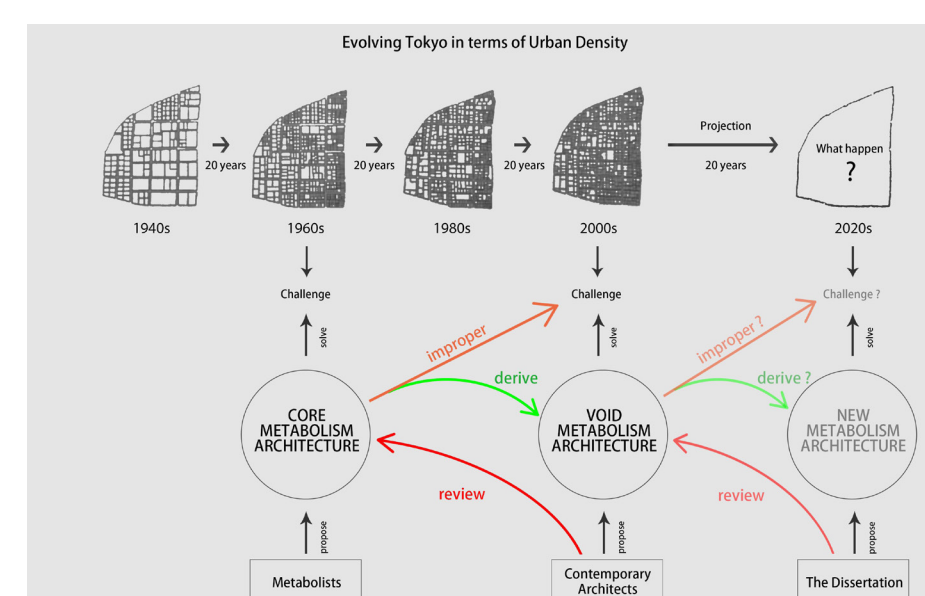
Besides the gap spaces among the city, it became more and more difficult to invite people home as it seemed to cause discomfort for anyone outside the family to be in the house because of the policy of individual home ownership. To reverse this spiral of intolerance, multiple usages of the spaces of the house was introduced, as a result, not only non-family members can engage with the house to make the house more open, but also the quality of the spaces can be improved as it is determined by activities on the time scale of the city in Tokyo.

become impossible to have one structure accommodating only one activity or use. As a result, different activities will be forced and confined within a single structure. Property size in the future, however, is getting smaller to the minimal for living as a result of the continued urban subdivision. Rather than being stacked up to form a new continuous vertical space with different sections, the spaces of different usages will merge together to become one sharing space (Fig 10). Different activities will happen chronologically according to their corresponding cycles in the same space. In the sense of Metabolism, the spatial usage, here, within the architecture is evolving. As it depends on human activities, it changes according to a much faster cycle, in hours or days, in comparison to that of Void Metabolism Architecture and even Core Metabolism Architecture.



Domestic transformer apartment, designed by Chinese architect Gary Chang in Hong Kong, is one of the examples to demonstrate the evolving of the spatial use in the house. By adopting flexible facilities, "House moves, I don't move. House moves for me" (Dirksen, 2013).

METHODOLOGY



LITERATURE CITED

- Banham, R. (1976) *Megastructure: urban futures of the recent past*. London: Thames and Hudson.
- Dirksen, K. (2013). *Extreme transformer in Hong Kong: Gary Chang's 24 rooms in 1*. Available at: <https://faircompanies.com/videos/extreme-transformer-in-hong-kong-gary-chang-24-rooms-in-1/> [Accessed 16 Jan. 2019].
- Gruhl, W. (2007). *Imperial Japan's World War II, 1931-1945*. New Brunswick, New Jersey: Transaction Publishers.
- Koolhaas, R. and Obirst, H.-U. (2011) *Project Japan: metabolism talks...*. Edited by K. Ota and J. Westcott. Köln: Taschen.
- Lin, Z. (2010). *Kenzo Tange and the Metabolist Movement: Urban Utopias of Modern Japan*. London: Routledge.
- Tamari, T. (2014) "Metabolism: Utopian Urbanism and the Japanese Modern Architecture Movement," *Theory, Culture & Society*, 31(7-8), pp. 201-225. doi: 10.1177/0263276414547777.
- Tsukamoto, Y. (2012) "Void Metabolism," *Architectural Design*, 82(5), pp. 88-93. doi: 10.1002/ad.1466.
- Tsukamoto, Y., Fujimura, R. and Shiner, E. (2008) "Typo-Morphology of Tokyo," *Perspecta*, 40, pp. 32-41.