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The Capsule Living Unit Reconsidered A Utopia Transformed Reality

Gibert Michael*, Naziaty Mohd Yaacob and Sr Zuraini Md Ali

Faculty of built environment, University of Malaya (UM), 50603 Kuala Lumpur, Malaysia

ABSTRACT

The purpose of this paper is to seek a better understanding of why solely in Japan the concept of capsule living units has been perceived more than a mere utopia and seems to have "made sense" to a wide cultural audience as a possible housing alternative. For that purpose, a thorough literature review was conducted to bring about comprehensive understandings of this phenomenon through a historical review and a definition of the capsule as presented by the Metabolists in the 1960s, and through a comparison between its fundamentals and the one of its hypothetical ancestral precedent; the Japanese tea-hut.

Keywords: Capsule living unit, capsule hotel, Japanese tea-hut, Kisho Kurokawa, metabolism

INTRODUCTION

One of the solutions that emerged in the architectural discourse in response to the problems of overpopulation, shortage of land, and the increasing densification of cities was the concept for capsule-living units. Experimental proposals relating to such a theory have been presented and argued simultaneously in the West and in the Far East, but only in Japan the concept

developed further leading to the creation of an unprecedented typology; the capsule hotel.

It was the Metabolist architects—best known for their manifesto *Metabolism*, 1960—that stressed out the concept's potentials further. The main corpus to their ideology was to perceive the city and architecture as changing continuously and growing organically, borrowing the metaphor from biological processes that creatures undergo throughout their life (Kawazoe, 1960). With the analogy of the living cell, the concept of the capsule-living unit was to become one of their core principles alongside a penchant for megastructures and a search to create symbolic spaces.

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E-mail addresses:

mikegibert@gmail.com (Gibert Michael) naziaty@um.edu.my (Naziaty Mohd Yaacob)

zuraini_mdali@um.edu.my (Sr Zuraini Md Ali)

* Corresponding author

While the founding members of the Metabolist movement¹ were beginning their careers and all set to become prominent figures of Japan's architectural scene, their early works need to be understood in the context of the post-war recovery and the building boom that resulted from it. The specific concerns for the Metabolists were then primarily with mass housing issues (Cachola, 2005) and four members of the group in particular—Asada, Ekuan, Kikutake and mostly Kurokawa—orientated their research toward the capsule-living unit as a potential alternative to mass produce housing.

METHODS

For the purpose to explore why such concept succeeded to transform from a mere utopia into a sustainable reality solely in Japan, first the genesis of the concept in Japan up to Kurokawa's capsule declaration as published in 1969 is being reviewed. Through such review, the main theoretical characteristics and fundamental components of the concept as presented by the Metabolists are clarified. Second, the fundamentals of the Japanese tea-hut are considered through a review of Okakura Kakuzo's *The Book of Tea* (1906), a treatise that reflects on all elements of the tea ceremony and particularly the architecture of the tea-hut (Treen, 2011). Third, the fundamentals for both are compared in cross-reference (Table 1) and then

¹The Metabolist group was co-founded by Kawazoe Noboru, Awazu Kiyoshi, Kikutake Kiyonori, Kurokawa Kisho, Otaka Masato and Maki Fuhimiko in preparation of the Tokyo World Design Conference in 1960. They were joined soon after by Asada Takashi and Ekuan Kenji.

similarities and contradictions are presented. Finally, the significance of the Japanese teahut as the capsule's hypothetical ancestral precedent is discussed. According to Groat and Wang (2002) good treatises found their acceptance because they "make sense" to a wide cultural audience as the representative summary of that culture's worldview relative to aesthetic values. As such, it is fair to assume that innovative architectural proposals find acceptance because they are accepted as "logical" within the cultural milieu they are presented in. The discussion that follows aims to provide an insight of such phenomenon for the capsule-living unit in Japan: a utopia that transformed into a reality.

LITERATURE REVIEW

Early Capsules Experiments and Prototypes

Japanese scholars suggested that the feasibility of using industrialized capsules was demonstrated at first with the Syowa station for the Soya expedition to Antarctica designed by Asada Takashi in 1956 (Figure 1). According to Saikaku (2011), this temporary shelter was "Japan's first serious attempt to create industrialized housing." Because the Syowa station had to be shipped to site and erected in extreme weathered conditions,² Asada developed together with Misawa Homes³ an innovative prefabricated construction system applied for housing

²The Syowa station was constructed in Antarctica where temperature go below 50 degrees centigrade and wind up to 240 kilometres an hour.

³Misawa homes, a prefabricated home maker, was directly contracted to handle all construction and is now a dominant corporation in this field.

purposes. If the introduction in Japan of such construction methods was arguably the main inspiration for the capsule-living unit, certainly it did provide the necessary technical framework that catalyzed its creation and can be thought of as one of its core characteristics.

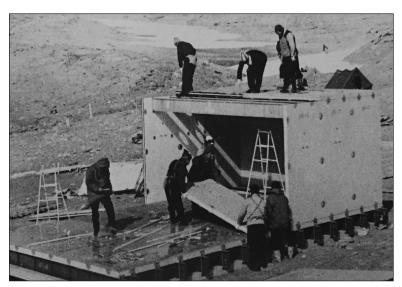


Figure 1. Syowa Station by Asada, 1956

It is also believed that Ekuan Kenji's early works were instrumental in defining the theoretical context that brought their group to develop the concept further. In Research into existing forms of living space and the development of new forms more suitable to contemporary society (1965), Ekuan presented a radical shift of perspective⁴ considering architecture as a piece of equipment instead of architecture as a constructed environment (Ekuan, 2014). He also emphasized the use of

mass produced prefabricated modules that were to be freely combined and arranged with maximum flexibility to answer the needs for personalization. In conclusion, he envisioned the capsule-living unit to be a significant model for new forms of living space more suitable to contemporary society even though he did realize only a few notable prototypes (Figure 2).

On Ekuan's foot-steps, Kikutake Kiyonori did experiment similar principles applied to mega-structures. The first large-scale capsuled housing scheme was presented as part of his *Marine City* in 1963 (Figure 3). This proposal was based on the idea that units would be craned up

⁴In the 1960s, industrial design was not yet recognized a profession in Japan hence Ekuan took the initiative of his own work to architecture as a mean to boost his career. Kenji Ekuan in an interview by the author, Tokyo, 2015.



Figure 2. Ski lodge by Ekuan, 1962

and plugged onto a main core and would keep on growing overtime with the arrival of new families (Mori Art Museum, 2011). Units would be replaced every 20 years and smaller living equipment—kitchens, bathrooms, or bedrooms—could be easily added, relocated, replaced, or removed to meet the evolving needs of the residents or advances in technologies. Now if Kikutake's ambitious experiments extended further the capsule debate, none of his capsuled schemes were ever realized.

From the four main protagonists, no one more than Kurokawa Kisho embraced the ideology of the capsule to the point that in the late 1960s he was often referred to as the "capsule architect." He received the pioneering proposals by Asada, Ekuan, and Kikutake and admirably assimilated these into his own work. Although he was not its inventor, he more or less patented the concept of capsule architecture (Jencks, 2013).

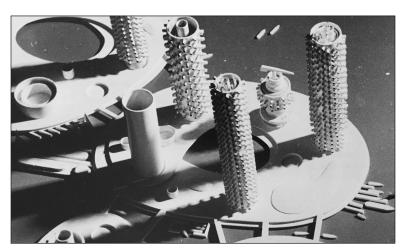


Figure 3. Marine City by Kikutake, 1963

The "Capsule Architect" and His Capsule Declaration

Kurokawa was equally inspired by his first publication Prefabricated House, 19605 that summarized his research on existing prefabricated construction systems for housing overseas. This publication was then in Japan an important contribution to the topic. Kurokawa was a fervent critic of how prefabrication processes were developed in order to only lower cost and shorten the period of construction (Kurokawa, 1977). His capsules instead were to produce a qualitative change in that the different parts could be replaced, similarly to Ekuan's and Kikutake's principles. Such a system—he termed a selective mass-production system sought to achieve a plurality of combination and hence to suggest a diversified society in protest to the uniformity of modern cities (Kurokawa, 1992).

Kurokawa theorized further pointing to the disintegration of the traditional family system (based on the married couple) and its replacement by an entirely new family centered on individuals (Kurokawa, 1977). Kurokawa finally synthesized his theorization of the capsule in the *Capsule Declaration*, a paper he published in 1969. It consisted of eight points summarized as follows:

- The capsule is architecture as equipment: it is cyborg architecture and an extension of man.
- The capsule is detached from ground:
- ⁵Prefabricated House was first published by Kurokawa in 1960 and re-edited with Noboru Kawazoe in 1964.

- it stands for the emancipation of a building in relation to the ground so that to adapt to the high mobility that became a pattern of life.
- The capsule is a protest against the norm: it suggests a diversified society and the protest of individuality against unification.
- The capsule is the creation of a new form of living: it intends to institute an entirely new family system centred on individuals (based on the assumption that the family system based on married couple will disintegrate).
- The capsule is for urbanites: its dwellers belong and satisfy their inner spiritual requirements in the heart of the megalopolis.
- The capsule is a refuge for the mind:
 it is a protective shield against
 information overload allowing an
 individual to recover his subjectivity
 and independence.
- The capsule is prefabricated: it is the ultimate form of a prefabricated building.
- The capsule is a protest against uniformity: it is architecture opposed to the uniformity of the modern city.

The Capsule Declaration's great importance was to crystallize a philosophical background to the concept; Kurokawa's capsule after all had been envisioned as a tool with which man could assert his individuality and freedom, a revolution in itself in a society that is reputed for being the most conformist in the world (Jencks, 2013).

We find the first capsules in Kurokawa's work in *Prefabricated Apartment House* in 1962. If the scheme's main focus remained on a more conventional prefabricated construction method to produce apartment units, it also featured plugged-in bath units intended to be adaptable according to the occupant tastes and needs. That scheme was never realized and it took him 8 more years before he could complete his first prototypes, notably his *Takara Beautillion*⁶ and the *Mid-Air Capsule* (Figure 4) for the Osaka World Exhibition in 1970.⁷

The *Mid-Air Capsule* in particular was a full-scale model of a home for the future and was the ultimate realized version of Kurokawa's Capsule Declaration. The prefabricated individual units—all equipped with a single bed, a private kitchenette, and an integrated unit bath—were plugged onto an information core equipped with the latest broadcasting technologies that came in replacement of the standard living room. Soon after Kurokawa's research culminated with the realization of his notorious Nakagin Tower (1972), the first capsule building realized for actual use. Kurokawa then developed a system where the units were detachable and replaceable. They were fully fabricated at factory (modified from shipping containers), transported at site by trucks and lifted in place by crane. It consisted of 144 units fully furnished that were all assembled onto a reinforced concrete core in less than a month.8

⁸All works at Nakagin were finished in 30 days. See *Project japan, metabolism talks* ..., Taschen, Spain, 2011. p. 388

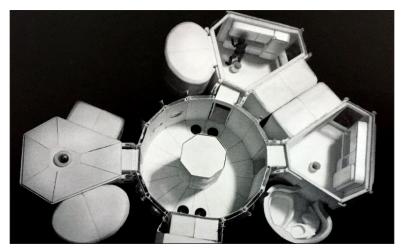


Figure 4. Mid-Air Capsule by Kurokawa, 1970

⁶Kurokawa collaborated with Kenji Ekuan for this pavilion. The prefabricated structure was complete in one week and later dismantled in only 2 days. See *Metabolism, the city of the future*, Shinkenchiku-sha Co., Ltd, Tokyo, 2011, p. 202

⁷Kurokawa was appointed four pavilions at the Osaka World Expo that provided an ideal stage for Metabolists to realize some of their earliest dreams and inventions. See *Metabolism, the city of the future*, Shinkenchiku-sha Co., Ltd, Tokyo, 2011, p.183

The *Nakagin* was a true success since all units were sold within a month of launching and later became an icon for the Metabolist movement. It was equally a true failure as none of the capsules have ever been replaced over 40 years and thus remained a prototype. In summary, it failed to create the new tradition it intended to.

A Model that Proved the Correctness of the Capsule Analysis

A follow-up of the capsule theme was to be found in an unprecedented typology that demonstrates the correctness of the capsule analysis. The first ever-realized capsule hotel was completed in 1979, the *Capsule inn Osaka* (Figure 5), not surprisingly a Kurokawa design again. Kurokawa converted an existing building—previously an apartment building—into a hotel fitted with 410 capsules. The hotel is still operating today. The particularity of the sleeping capsules is their absolute minimal

⁹The Nakagin has been listed as an architectural heritage by Docomomo since 2006. See www.kisho. co.jp

dimensions—each capsule is 950 mm high, 950 mm wide, and 1,910 mm deep-and despite this very limited space, they are all fully equipped with built-in mini television, radio, and alarm clock. According to their web page (2016) guests have also access to various facilities including locker rooms, showers, restaurants, vending machines and have on offer a wide range of body treatments (saunas, Jacuzzi, an indoor pool, outdoor baths, and all types of massages). According to Nakano (2015)—manager and grand-daughter of the founder—this whole new style of accommodation was created with the idea of making the sleeping space extremely compact while providing customers with the comfort and services of luxurious hotels.

Such hotels became very successful even though their popularity remained vested for decades with salary men who missed their last train home—the target group for which they were originally conceptualized. However, we recently notice a shift of services and designs attracting



Figure 5. Capsule Inn Osaka by Kurokawa, 1979

now travelers seeking exotic experiences or again design enthusiasts (Figure 6). While the model has now reinvented itself entering a second generation of use, there are capsule hotels all around the country and the concept even started to spread worldwide.¹⁰ This unprecedented typology

¹⁰With facilities launched in Australia, Singapore,

that originated with the Metabolists' vision for the capsule-living unit has since become a true icon for contemporary Japan and successfully transformed from a mere utopia to a sustainable reality.

Thailand, Malaysia, India, China, Russia and certainly many more to come.



Figure 6. 9-hour Capsule Hotel Kyoto, 2015

An Ancestral Precedent for the Capsule-Living Unit

If Saikaku's thesis posits the Syowa station as the main inspiration for the model of the space capsule living units, the Metabolists preferred instead to refer to the Japanese traditional tea-hut. Kurokawa, for example, utilized the ideal floor size of a tea-hut (4.5 *tatami*¹¹ mats) for all capsules at the *Nakagin Tower* and the *Capsule House K*, a private summer residence he designed and built for himself in 1973. There he even inserted the reconstruction of a 17th century style teaceremony room in one of them (Figure 7). According to Jencks (1976), proportions for all built-in furnitures both at *Nakagin* and *Capsule House K* were also based on ancient

conventions and Kurokawa here again was traditional when we may have thought he was most futurist.

Not only Kurokawa utilized *tatami* proportions, but also Ekuan (1998) literally described his capsule as no less than a prime model of a tea-hut for the future. According to Kurokawa Masayuki¹² (2015), the ancestral archetype of the tea-hut was conceived from a conflicting relationship between the supreme tea master *Sen-no-Rikyu* (1522–1591) and the lord *Hideyoshi Toyomi* (1537–1598) who was the imperial regent of Japan from 1585 to 1591. *Rikyu*—who was a merchant class descent, the lowest cast in Japan—was teaching the art of the tea ceremony to *Hideyoshi*—the

¹¹¹¹ tatami mat is roughly 3 feet × 6 feet

¹²Younger brother of Kurokawa Kisho

highest ranked individual at the time. While *Rikyu* was a man of simple taste ("Sen no Rikyu", 2015) this conflicting relationship brought him to create the *Tai-an*, the first

ever-realized Japanese tea-hut¹³ that was originally built in *Hideyoshi*'s castle in Yamazaki in 1583 (Mahiques, 2011).

¹³The *Tai-an* is the oldest tea-hut and one of only three in Japan designated as national treasures (Mahiques, 2011)



Figure 7. Reconstruction of a 17th century style tea-room Capsule House K, 1973

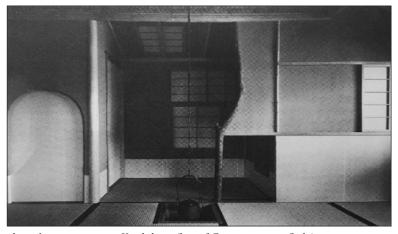


Figure 8. Kurokawa's own tea room Yuishikian (hut of Consciousness-Only)

The fundamentals of the tea-hut were based on the principles of simplicity, purity, and the minimization of space *Rikyu* posited in contradistinction with the opulence of the architecture of the lords. Its true significance

stands in the creation of an unprecedented tradition associated to an aesthetic of refined poverty that has now generally been considered the epitome of Japanese aesthetic (Kurokawa, 1988). The main

characteristics of the traditional Japanese tea-hut as described in Okakura Kakuzo, *The Book of Tea (1906)*¹⁴ are summarized into the following six points:

- The tea-hut is a temporary refuge for the body (based on Buddhist theory of evanescence).
- It is a protection from the vulgarity of the outer world (manifest through purism and simplicity).
- It is a protest against the distinctions of the class system.
- It is the creation of a new tradition (transferred since the 16th century up to the present day).
- It is smaller than the smallest of Japanese houses.
- It is an ideal of refined poverty (and unimpressive appearance).

On a technical ground, most construction elements of *Rikyu*'s *Tai-an* were also prefabricated, carried to and assembled at site. Thus, it can as well be perceived a precursor of industrialized construction methods. These techniques were later translated to vernacular houses and some of them even massed-produced. Sliding screens, posts, walls, and windows, for example, are still today produced on the ancestral standardized proportion system of the *tatami* mat that underlies most of Japanese buildings (Jencks 1976).

Aside from the evident metaphor that permitted the Metabolists to culturally connect their works to past traditions,

the capsule main characteristics must be reviewed in comparison with the fundamentals of the Japanese tea-hut to analyze further their correlation.

Analysis of Similarities and Contradictions between the Capsule and the Tea-Hut

The narrative for the concept of the capsule-living unit was certainly charged with technocratic traditions inspired in particular by the recent space travel breakthroughs that climaxed with the *Apollo 11* mission to the moon (1969).

However it is believed that its fundamental ideology was deeply rooted to the ancestral model of the tea-hut and that in such a nexus could stand an explanation as to why the model has been successful solely in Japan.

According to the set of relationships identified in the tabulation below, we can trace various similarities and contradictions between the two models. It is sensitive to foresee that most contradictions lie in principal with new technologies that were introduced in the periods that separate them, and in particular during the industrialization and modernization of Japan.

First, the shift of materiality is evident in the use of steel and/or fiberglass in place of traditional timber structures, tatamis, and thatched roofs. Ekuan's vision toward architecture as equipment was also in response to the creation of industrial design and the strong influence this had on the field of architecture. Also, the notion of flexibility needs to be understood with

¹⁴A classic essay on the role of the tea ceremony in Japanese aesthetic

the purpose to tailor products in a mass consumption society to answer the needs of personalization. This, however, could arguably recall memories of the tea-hut since when being constructed with all sorts of standardized elements some other parts were also customized. In particular, the nakabashira, a naturally crooked timber pillar was located right at the middle of the tea-hut. Traditionally, the tea master went to the mountain and search for a nakabashira specifically for that particular hut to symbolize the spirit of its master (Kurokawa, 2015).

Table 1
Characteristics of capsule-living unit concept in comparison with the Japanese tea-hut

Characteristics	Metabolic group early research and experimental works	Kurokawa' Capsule Declaration & experiments	Capsule hotel	Traditional Japanese tea- hut
Flexible	О	О	О	
Architecture as equipment	О	О	О	
Prefabricated	О	О	О	О
Detached from ground	О	o	О	О
The creation of new form of living	О	О	О	o
A protective shield	О	О	О	О
A protest against the norm	О	О	О	О
Compact		О	0	0
An ideal of refined poverty				o

Besides what is shown in Table 1, numerous similarities are also readable. If the tea-hut eventually can be seen a precursor for prefabricated construction methods, both models certainly correlate with their minimized proportions, their detachment from ground, and their ambition for the creation of a new form of living and a protest against the norm. In regards to the notion of a refuge, the capsule was designed to protect its occupant from information overload while the tea-hut also attempted to protect from the vulgarities of the outer world.

But above all, the Metabolists engaged with the capsule typology in a form of protest of the individual against the uniformity and globalization of the modern era as penned in Kurokawa's Capsule Declaration. Alike Rikyu's conflicting relationship with the lord Hideyoshi, the Metabolists conceptualized the capsule to protest against the limitations of a bureaucratic ruling class that still maintained a strong control over Japan's society and indirectly the development of its future cities. The capsule architects were attempting to design the city through a reevaluation of

the significance of individuals and advocate for a better democracy. Alike the tea-hut of *Sen-no-Rikyu* that had been a form of moral resilience toward the establishment, the capsule concept is showing similar ambitions and this is here in retrospect that the link between the two is the strongest.

CONCLUSION

It is noteworthy to also recall here Rem Koolhaas' own interrogation in regards to the unique Japanese cultural trait that combines at the same time modernity and traditions central to the hypothesis of this paper:

'Yet what's puzzling for me is the combination of being extremely modern and radical on the one hand, and so completely dependent on or related to tradition on the other. It's a combination that exists only in Japan, as far as I can see, I've never seen anyone in any other culture claim modernity and at the same time claim tradition and history' (Koolhaas, 2011).

Kurokawa (1997) also pointed out that all traditions were composed on one hand of what he called the visible traditions styles, ornaments, or again symbolic representations—and on the other the invisible traditions: ideas, philosophies, aesthetic sensibilities... According to him, Japanese culture in particular transmits its traditions with greater stress on its spiritual aspects rather than on physical objects. The modus operandi to transmit invisible traditions through contemporary architectural forms was to become a pillar of Kurokawa's theory. Such a method is also perceptible in the capsule-living unit as demonstrated above and it is here that we may find the explanations as per why it has been successful solely in Japan through the creation of the capsule hotel typology. Even though the capsule-living unit appeared at first rather alienating, it is believed that it had been conceptualized as an invisible tradition in continuity of the tea-hut explaining why in Japan it has been accepted by the public and so transformed from a mere utopia into a reality!

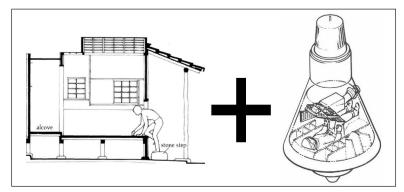


Figure 9. Space travel capsule and Japanese tea-hut, the true inspirations for the capsule living unit

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