METABOLISM/2022
メタボリズム/2022
the essence of a movement

ALEXANDRE BRON

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Directeur Pédagogique : Jeffrey Huang
Deuxième professeur : Elena Cogato
Maître EPFL : Christina Doumpioti

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TABLE OF CONTENTS

目次

PREFACE
序文

In future, more will come to join "Metabolism" some will go; that means a metabolic process will also take place in its membership.

Noboru Kawazoe
METABOLISM/1960, p.5

where is the manifesto? --------

WHERE IS THE MANIFESTO?

This thesis research started with an unresolved interest. One night, when I was living in Tokyo, I lost myself in the Ginza area and suddenly stumbled upon a tower made from pods. The Nakagin Capsule Tower. I instantly recognized it, and the night vision of this tower was more than intriguing. The capsules that were used looked like scattered rings of lights inhabiting a vertical structure. It conveyed a whole imagery, almost romantic, of what is Tokyo. An image that is almost unreal, but that lives in fantasy visions of Tokyo, with works like Akira spreading this image of the Japanese city. Populated by those megastructures, grasping, and expressing the bustling life of its millions of inhabitants.

I had heard about Metabolism, about its analogies between architecture and living organisms but through this tangible experience, I wanted to know more about it.

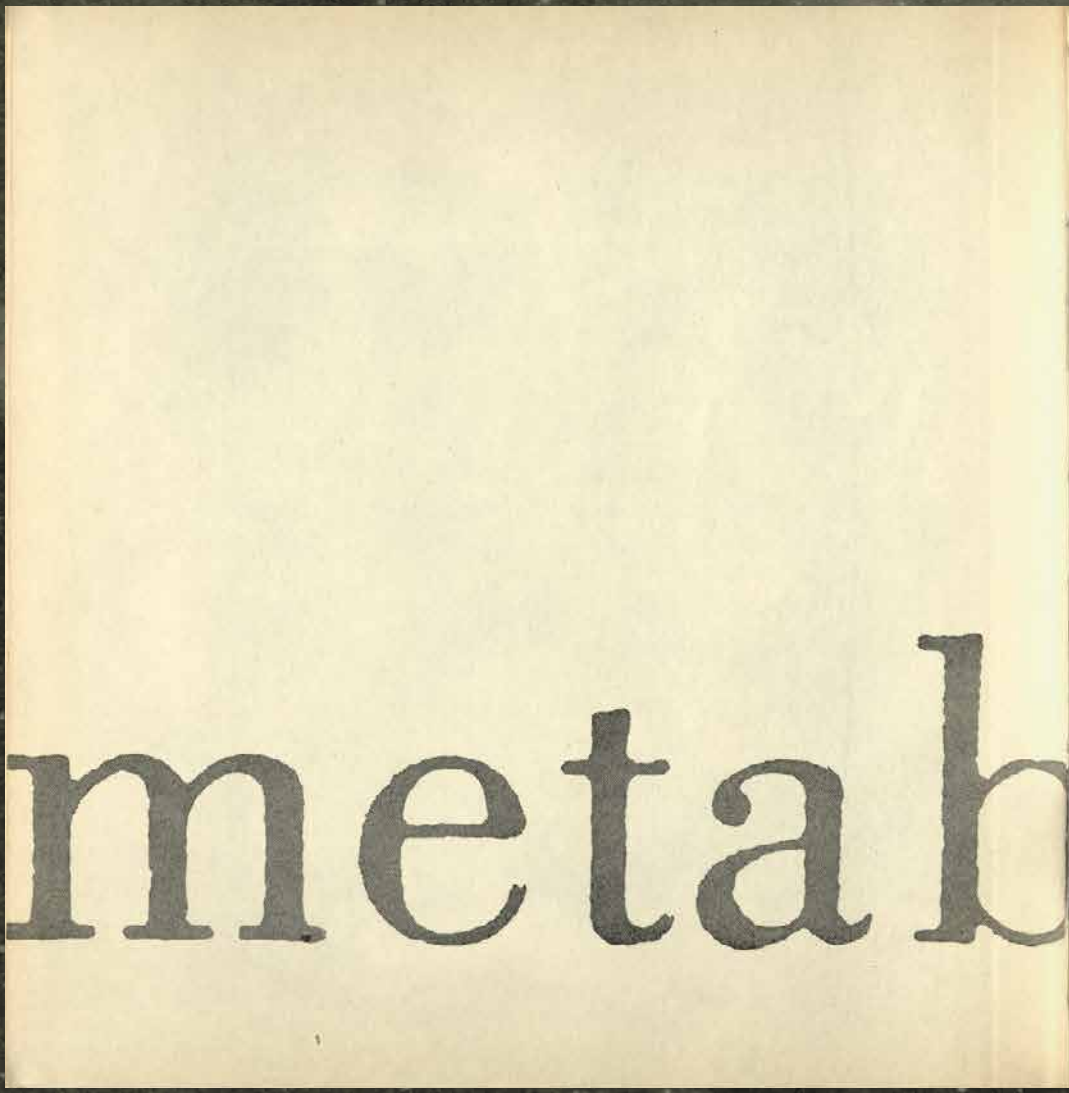
Fast-forward to this thesis debut, I soon enough learnt about the existence of a manifesto, a document published in 1960, called "METABOLISM/1960". That publication marked the birth of the movement. Directly written by the leading architects of the movement. I had to read it. But strangely enough, though it was referenced in many materials I was reading about Metabolism, the original manifesto was nowhere to be found. I searched what felt like the whole internet, legal and illegal, in quest of finding this document. Nothing came out of it. Even research in Japanese were unsuccessful. (Apart from

a reseller who put it up for 132'000 yens, and which actually ended up being already sold out). Trying to use contacts in Japan, I was able to locate some Japanese libraries that had it. But they didn't accept any visitors outside their membership ones. Even a contact I had from the University of Tokyo was not able to get access to it. And anyway the precious document would have been limited to a 15 minutes reading, with no possibility of taking notes. The request through the EPFL Library system also came back empty, not able to get positive answers from partner libraries.

While actively looking and not finding this manifesto in any shape or form I focused on other materials, specifically the book that is considered to be the Metabolism encyclopaedia, Project Japan, Metabolism talks… by Rem Koolhas and Hans Ulrich Obrist. Upon reading this book, at page 206 I suddenly encountered a low resolution, small sized, scan version of all the pages of the manifesto. After numerous efforts to try to rescan, upscale, recognize the text with AI, etc., I was only able to read painfully a few sentences from the manifesto. I had the pages in front of me, but the impossibility to read the document.

Finally, the quest continued through the EPFL library, Thanks to the perseverance of library staff, Julien Tanari. He contacted, what I suppose is a tremendous amount of libraries around the world, and out of them three answered positively and accepted to provide digital extracts of the book. Berkeley University offered up to nine pages. Then the Canadian Centre for Architecture accepted to send a whole chapter, and finally the Bibliothèque Kandinsky of the Centre Pompidou in Paris provided the missing two chapters. Through these three institutions we were able to reconstitute a full digital readable version of the manifesto. It felt like reading an exclusive rare piece of architectural history. And it offered a different narrative of Metabolism than what I was finding elsewhere.

Sharing this story of looking for the manifesto is a testimony to the rarity of this document, that despite its rareness, has marked architecture and influenced the second half of the 20th century greatly. This limited document sold 500 yens at the World Design Conference in 1960 in Japan has been revered for its powerful images of a futuristic world inhabited by modular elements plugged to megastructures. That's because these images circulated through other channels, through photos of exhibition models, through publications in Japanese journals, through exhibitions in museums abroad. But the actual text of the manifesto is often assumed more than known. This thesis will try to unearth the original principles of Metabolism.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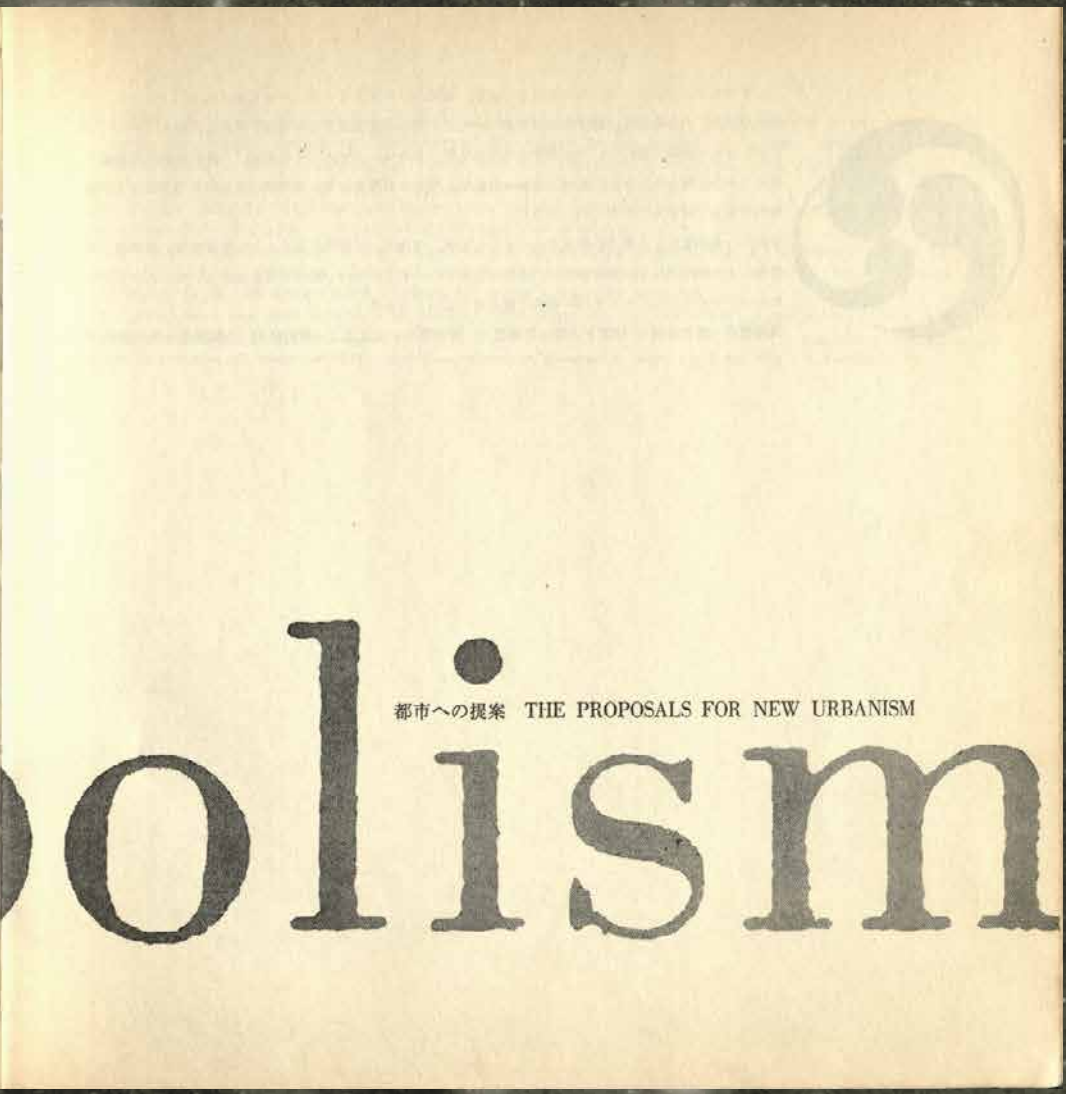


First page spread of "METABOLISM/1960"


2×4住宅・鉄骨ビル建築・地下室
銀

Nakagin Capsule Tower, view from outside in 2019.
No Capsules have ever been replaced since its construction in 1972

INTRODUCTION
前書き

We regard human society as a vital process—a con
ntinuous development from atom to nebula. The reason
why we use such a biological word, the metabolism,
is that, we believe, design and technology should be
a denotation of human vitality.

Noboru Kawazoe
METABOLISM/1960, p.5

what is Metabolism? --------

WHAT IS METABOLISM ?

Metabolism is an architecture movement launched in 1960 in Japan. For many architecture enthusiasts, it lives mostly in the images of daunting megastructures that could come to life and move accordingly to their needs. This image of Metabolism was vehiculed by a series of project, models and photos, but the most em-blematic one has to be the Nagakin capsule tower. A tower that embodies the concept of modularity with capsules plugging in and out of two central cores.[I]
But the written theory of the movement is still quite obscure. The rarity of the original manifesto, the vari-ous contents written in Japanese journals never translated in English, the poor translation of the manifesto, all are probably responsible for this architectural movement living mostly by imagery.

I. Jacquet and Souteyrat, *L'architecture du futur au Japon.* p.109-110

Metabolism can seem a surprising choice for an architectural movement name, especially from a group of Japanese architects with a very limited knowledge of English. So where does the name come from ?
Noboru Kawazoe gives the full story in his interview with Koolhaas and Obrist. It is taken from the Japa-nese word shinchintaisha (新陳代謝) which embodies ideas of renewal and regeneration. Upon looking in a Japanese-English dictionary, Kikutake found the word "Metabolism" as its translation.[II] Thus, it isn't a per-fect translation of what they wanted to precisely express. But the word Metabolism found itself

II. Koolhaas et al. *Project Japan.* interview with Noboru Kawazoe. p.235.

being a very powerful one, one that could easily generate an impression of understanding from the western point of view. There is an idealised view of Japan where the connection with nature, and harmony is sometimes romanti-cised. So, it worked perfectly. It carried, simply through its name, a philosophy that could already be present in the international collective unconscious knowledge of Japan. This combined with powerful imageries, photos of Kikutake's models at the World Design Conference made the movement very quickly relevant for the rest of the world, while it had initially a small echo in Japan.[III]

III.Ibid. p.237

But what about the original document that marked the creation of the movement, the publication "METAB-OLISM/1960". The document made for the World Design Conference 1960 in Japan was a conscious pro-motional material. It is fabricated with the intent of getting attention and doing so by compiling a few pro-jects from upcoming architects in Japan, while having original material and theory. All being distantly su-pervised by Japan architecture superstar of that era, Kenzo Tange.[IV]

IV.Ibid. p.175-177.

The 1960 publication will be referred as their manifesto, and it is the basis for this thesis. The objective of this thesis is to unearth the theoretical principles of Metabolism while trying to not overfocus the powerful images of megastructures that had seduced the world. I do not seek to precisely contextualize it in a histori-cal manner. The book "Project Japan" is already achieving this in a very thorough manner.

This thesis will try to highlight all the architecture theory that resides in those almost secret 90 pages of "METABOLISM/1960", try to understand them, to contextualize them to some extent, to get to their exact nature and purpose, and to

offer a vision of what Metabolism could achieve for us in the future. In a nutshell, it is simply trying to answer the following question: what is Metabolism?

This thesis unfolds in four parts:
EXPANSIONISM - MODULARISM - TRANSIENTISM and METABOLISM/1960.

These first 3 parts are my proposed 3 dimensions of what is Metabolism.

The first dimension is Expansionism. It delves into how this movement encourages an architecture that grows. And to explain it, it is necessary to go into the historical conditions of growth and shrinking that Japan has known, which led to the emergence of the movement.
This thesis is in no way an attempt to fully explain the historical background of Japan and its architecture in the modern world, but some historical contextualization appeared to be necessary to understand the notion of expansion in Metabolism. The expansionism dimension also allows us to reflect on future expansion that will happen hence, based on a 2022 perspective, and will try to give answers to how Metabolism could influence it.

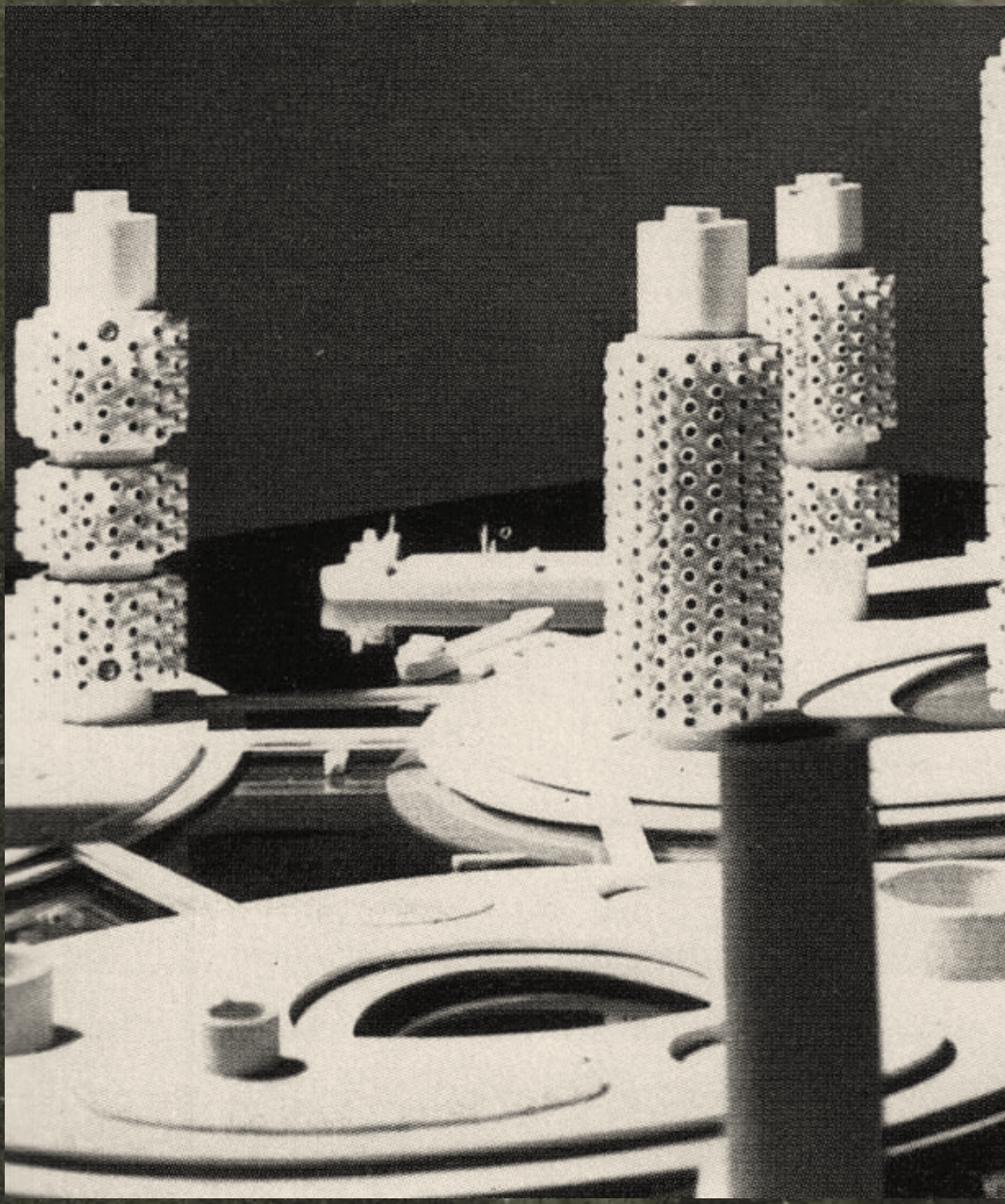
The second dimension is Modularism. This part explores the notions of movement and adaptability in Me-tabolist architecture. How parts not only grow, but internally move and adapt to human needs. This part is inherently more architectural as it will look more closely at the proposals from the manifesto to understand the logic of this modularity. It will try to also explore the genealogy of the presented elements, sometimes going into Japanese architecture and design history.

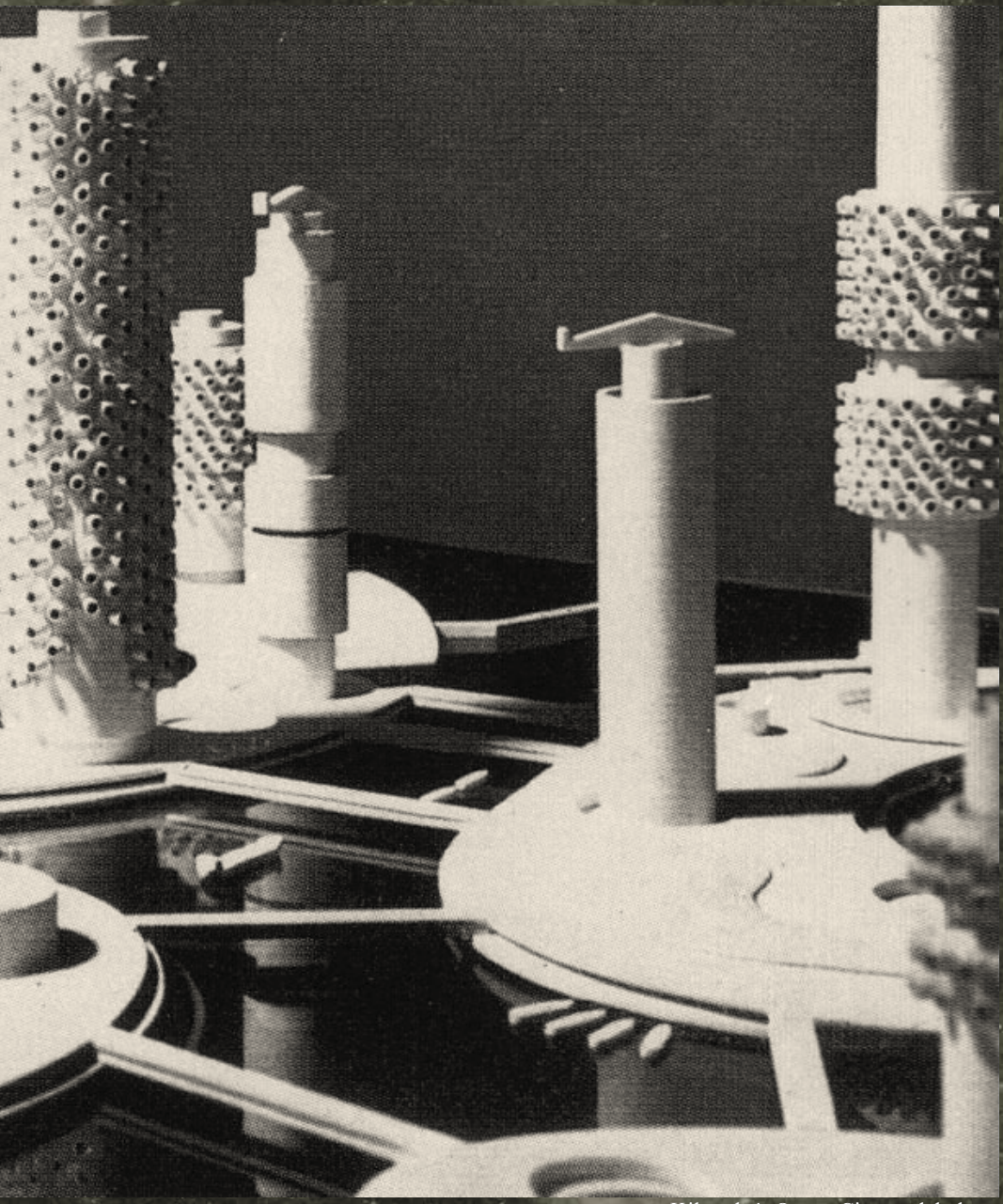
The third dimension is Transientism. Here it explores the underlying philosophical elements of the move-ment. A philosophy based on a Japanese tradition and culture, influenced by a radically different religious background than what we can find in the other Avant-Garde movements.[V] This part will also explore how the Metabolist philosophy is connected to new advances in technology and sciences.

V. Kurokawa, *Metabolism in Architecture*. p.7.

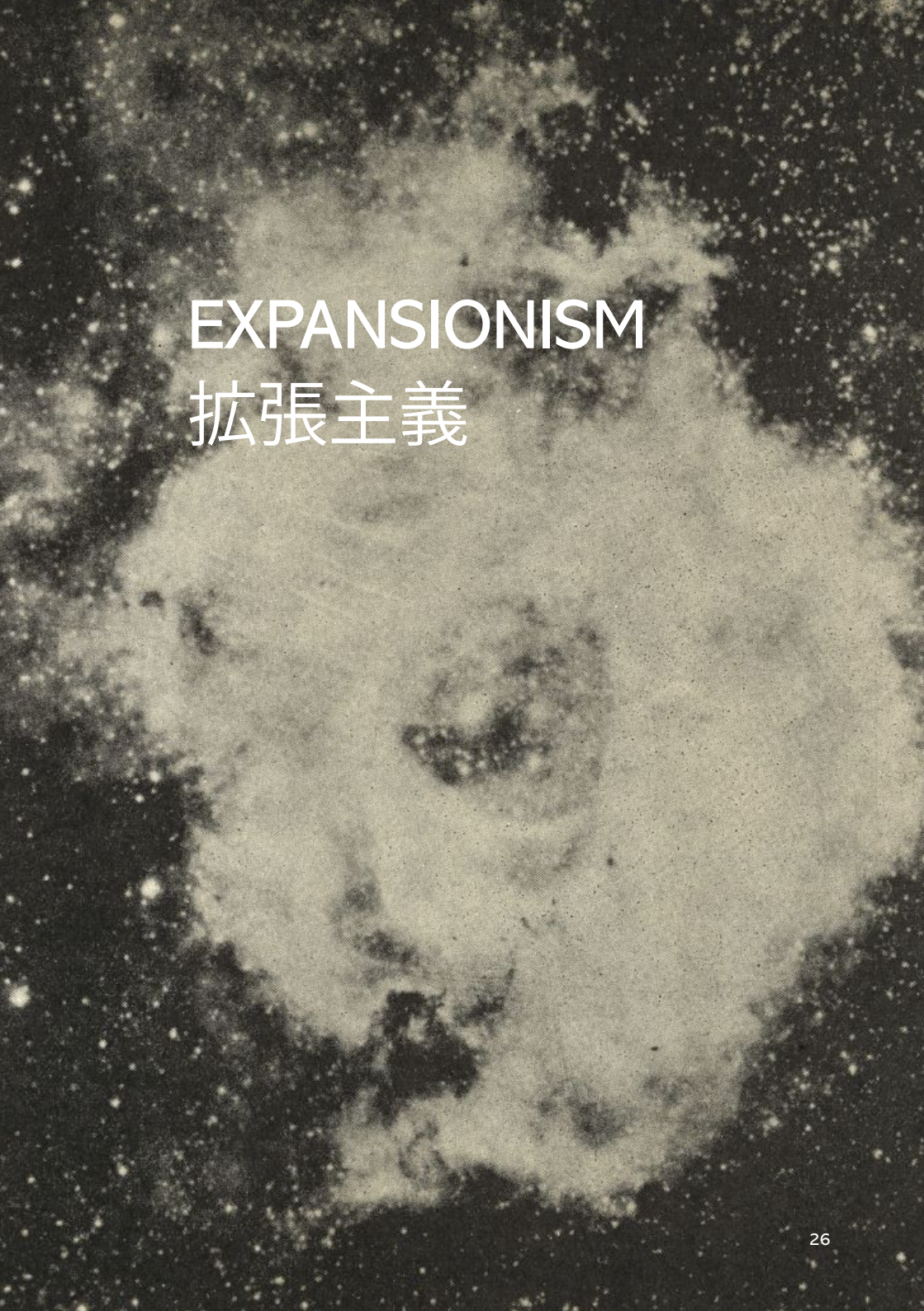
During these explorations constant references will be made to the manifesto of Metabolism : "METABO-LISM/1960". They are added as collaged text, making links between the original manifesto and the devel-oped thesis here. These extracts will appear with their original yellowish background taken from the mani-festo. The manifesto is originally written both in Japanese and English, but only the English version is being shown. The shown extracts are unedited and contain many spellings and syntaxes errors, result of difficult translation processes in 1960 Japan.

Finally, the fourth part of this thesis is a compilation of these extracts, the relevant parts from the manifesto are highlighted and shown in order. This part also includes commentary to understand and contextualise specifically what is developed in each section of the manifesto.
All these extracts are numbered by order of appearance in the original manifesto, that is why the numbers that appear when extracts are shown in the first three parts are not continuous.





Kikutake's Ocean City model photo



EXPANSIONISM
拡張主義

One of the main characteristics of modern age is the urge to expand toward the universe.

97.Kisho Kurokawa - Space City
METABOLISM/1960

1.POST-WAR

Destruction

A founding element for the formation of such an Avant-Garde movement in architecture is the possibility of a blank canvas. Japan is an old nation which must deal, to some extent, with the existing architecture. But destruction is also imbedded in Japanese architectural history. Whether it is earthquakes, tsunamis, typhoons, it developed an ability to adapt. But as the country developed itself and the population grew these destructions would take scales never seen before.

The first of such is the 1923 Great Kantō earthquake which ravaged Tokyo and led to fires burning down most of what withstood the earthquake. The nation is still mainly built with wood at that time and the damage are tremendous. The city went through difficult reconstruction, and as soon as 20 years later World War 2 has impacted the city again. The capital, Tokyo, has also suffered demolition to a great extent with the air raids and incendiary bombings. In fact, all of Japan has suffered a similar fate. In 1945 the capital is destroyed up to 51%. The mainly wooden structures made it very vulnerable to the fires spreading once again.[I]

I. Nijs, *Japan nation building nature.* p.65

This forced tabula rasa is what will feed the imaginaries of a whole generation of architects. It will feed into a necessity to plan on a different scale than before, to rethink resilience in the city not as a series of individual measures applied to each building but as systemic new planning methods. The

architects will take upon themselves the responsibility for rebuilding the nation, helped by a strong-willed bureaucracy, and an interested American occupation, to keep it under their influence, in a context of incoming Cold War. Leading this reconstruction will be architect Kenzō Tange.[II]

II. Koolhaas et al. *Project Japan.* p.78-83.

Reconstruction

Similarly, to most modern countries, after the war the country knows an exponential increase in population, the famous "Baby boom". To accommodate such a growing population Tokyo has evolved horizontally, unorganized, unplanned. Just trying to offer enough housing for the new population growing in the city. The infamous danchi, the public housing estates, became a symbol of this state led housing building programs.[III]

III. Dimmer, 'Tokyo's Incredible Path to Redevelopment'.

2. Kikutake, Ocean City

Tokyo, a huge city, is worn out with bad sickness. She has lost the proper control of city, because of her manmoth like scale.

3. Kikutake, Ocean City

The limitation of the horizontal city has far passed over from the ability of function of transportation and the living standard.

This chaotic environment culminates in the late 50's. Where most of the city infrastructures couldn't serve such a sprawled-out city, and where the accumulation of rapid messy reconstructions had reached its climax. Robert Whiting, Tokyo resident and journalist declares:

"in 1959, [...] the capital looked nothing like the gleaming high-tech megalopolis it would later become. It was an ugly sprawl of old wooden houses, scabrous shanties, cheaply constructed stucco buildings and danchi"[IV]

IV. Dimmer, 'Tokyo's Incredible Path to Redevelopment'.

Metabolism is a reaction to his uncontrolled situation. The movement is an expression of anger, as the first sentence of the first chapter expresses it.

We do not suggest a proposal of the future city. The state of confusion and paralysis in metropolitan cities and the inconsistency and luck of systematic city planning is forcing us to make this proposal.

Tokyo's Nihonbashi area in 1945

Land

One of the reasons of this highly criticized development is a very radical land-reform in 1946. Launched by the American SCAP, its intent is to restrict rich landowners to a certain amount of land they can possess, forcing them to sell the rest to the population. Such a structurally changing reform directly affecting the elites would have never been possible without a strong rule from Americans on Japan. The elites protested vigorously against it but it was passed anyway.[V]

V. 'Milestones: 1945–1952' Office of the Historian. USA dept. of State.

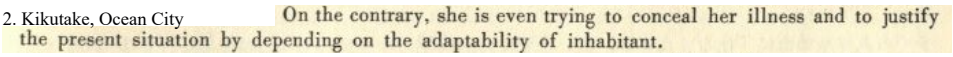
One of the results of the reform is that it fundamentally changed the organization of the whole country, especially rural areas. Land-owning families had a responsibility towards their local community and controlled the development of infrastructures in their respective areas. The reform was lived as a traumatism by many.

Kiyonori Kikutake, one of the leading members of Metabolism and writer of the first chapter "OCEAN CITY" in the manifesto, is a child of such land-owning families from Kyūshū. For the first time in his interview with Rem Koolhaas and Hans Ulrich Obrist he explains:

"My architecture was my protest, as a former landlord, against the dismantling of the entire landowning system. Landlords provided vital support for the local community. Take the landlord away and you undermine the entire social and cultural fabric of the community." [VI]

VI. Koolhaas et al. *Project Japan.* p.143

The responsibility was now put on the bureaucracy, not prepared to handle such land management, so ultimately this chaos appeared. In hist first lines, Kikutake points out that the city tries to put the responsibility on the individual. When in fact it was not able to administrate and handle the matter centrally.


On the contrary, she is even trying to conceal her illness and to justify the present situation by depending on the adaptability of inhabitant.

2. Kikutake, Ocean City

Artificial Ground

The artificial ground concept developed by Metabolists is the direct consequence of the land reform. The artificial ground is the conceptualization that the use of natural land necessarily leads to horizontal cities and disorganised developments. To protect it an artificial ground is introduced.

19. Kikutake, Ocean City

One of the new artificial land should be planned as a wall. By using such a wall, man is able to challenge the height. The vertical development of the city space is one of the propositions of this world. In order to use such wall, it must be studied and be solved the problem how to live in such a wall.

102. Kurokawa, Space City

Thus, horizontal artificial foundation and vertical artificial foundation will be ragarded as a new architectural base. Only then can architecture keep pace with the progress of society.

There is a form of realism in the Metabolists that have given up on the natural conditions of their country, where life on land has been historically very difficult due to natural events. There is an expression of the duality of the movement in the concept of artificial ground. On the one hand Metabolism is a proposal for organising urban life and linking it back to a form of nature, allowing a new form of resilience towards the catastrophes of this world. But the answer is to run away from it, in a form of pessimistic manner, considering the land already doomed and therefore just projecting extensions of the city that try to disconnect from it.

But a problem remains, the way artificial ground was projected in 1960 was through vast amounts of concrete to replace the natural land. How can a building be deemed Metabolic if a ballet of trucks, tons of concrete, and in final kilograms of CO2 and pollution are necessary to produce it. The erection of the artificial ground kills the natural ground. And the visible greenery of the natural ground is a façade of preservation where in reality, the project has destroyed what it has destined to preserve, or to escape.

Threat

The 1960 Metabolism movement was born amidst the world-wide tensions between the two hegemonic blocks, the Soviets and the Americans. Fear of imminent worldwide destruction haunts the minds of the people. Especially in a country which has been hurt twice by this weapon, the atomic bomb.[VII]

VII. Cho and Shin, 'Metabolism and Cold War Architecture'.p.2.

58. Kawazoe, Material & Man

Everything will come to an end if a nuclear war covers all the earth with a shower of radioactivity.

As suggested by American author, F.Fukuyama in his 1989 essay the end of history[VIII], the end of this opposition between USA and the USSR and the end of their possibly earth-devasting weapons, would be the beginning of a new era of peace. Thirty years prior, Kawazoe hints similarly to a same unfolding of history if the nuclear threat is tamed.

VIII. Fukuyama, 'The End of History?' p.8-9.

62. Kawazoe, Material & Man

If all mankind really came to believe that there will be no war, I think a new epoch would begin at the moment, and it will be an epoch of construction which aims at bringing happiness to everyone. We will be rid of uneasiness, distrust, and horror, we will become optimists.

Of course, the optimistic announcements made by Kawazoe in 1960 and Fukuyama in 1989 were not fully realized. But to some extent they hold some truth, as the nuclear weapons have frozen out of possibility any conflicts between developed nations. Kawazoe presents us Metabolism as being born from a burst of optimism in this threatened world. But the reality of the movement is that it also proposes a form of disconnection from that world. What is presented as optimism seems at some occasions like a way to escape the harsh reality of the land, especially from Kikutake. Metabolism is an embodiment of this duality.

30. Kikutake, Ocean City

Unfortunately, the civilization of continents have accumlated bloody struggles of human relations established within the limited land, so, it was a history of endless internecine war of man. Eventually, the civilization of continents has brought up the present opposition of two big continents which is terrifing everyday's life of the people of this world. The civilization of continents have brought nothing but such a largest opposition after its 5000 years' history. This most miserable fact which forebodes the end of the world is nothing else but the destiny of the civilization of continents, and this destiny had been ordained at that time when man had occupied, then, clung to and expected too much from the land.

Kenzo Tange's 1960 Tokyo bay plan

2.POST-COLONIAL

How did the nation of wood building have become this nation of concrete, building in scales never achieved with wood? Hope and aspirations were placed in this material there more than in any place, it even leads Metabolist architect Masato Ōtaka to declare: *"Concrete is our material. Concrete is a material which comes out of Japan"*.[IX]

IX. Steele, 'Constructing the Construction State: Cement and Postwar Japan'. p.6.

Expanding outwards

In 1931 Japan starts the invasion of Manchuria. It will be the start of a greater colonial and expansionist will.

As an island nation, Japan's topography is very mountainous and building in such a difficult terrain with few open plains has always been a challenge and has been formative of Japan's architecture. This colonial expansions for the first time confront the Japanese with wide open land, to a scale never encountered by them before. Through the newly formed puppet state of Manchukuo, the state mandated Japanese architects will have to produce new strategies of urbanism, land development and agricultural expansions, through new forms of constructions. Of course, these forms have to be a symbol of a Japanese domination, reusing some of Japan's architectural characteristic.[X]

X. Nijs, *Japan nation building nature.* p.115.

This first confrontation with a tabula rasa, and recent connections with the West will bring ideas of Modernism to be relevant for Japanese architects.[XI] Urban planning becomes a

XI. Koolhaas et al. *Project Japan.* p.62-72.

thoroughly studied subject amongst them with these new influences and opportunities. Architects, such as Kenzō Tange were to some extent involved in this architecture of expansion, even though he remained mostly silent on that part of his life. It is his experience and expertise in urban planning, made first as a student, and then through proposed projects in Manchukuo during the colonial expansion, that lead him to become this leading figure of post-war reconstruction.[XII] He will then use his leading position in Japan to foster and train a whole new generation of architects, from whom several will join and launch Metabolism during his absence, but through his continuous support.

XII. Stewart, *The Making of a Modern Japanese Architecture.* p.170-171

Auto-colonisation

The construction of Japan as a modern, internationally connected nation is a quite recent achievement. Japan emerges on the international community with the Meiji restoration in 1868, where it promoted quick industrialization and adopted Western methods and ideas. Before that it went through more than 200 years of isolation, known as the *sakoku*[XIII] during the Edo period. With the Meiji emperor arriving on throne 1868 the goal is clearly set; Japan will adopt the ways and ideas of the West. It is viewed as necessary to compete with the world and make Japan a modern country. A new focus on architecture will be also a nation building project, copying the methods of the West.[XIV]

XIII. this word translates literally to "locked country" (鎖国) and was the isolotioanist foreign policy of Japan during Edo period

XIV. Nijs, *Japan nation building nature.* p.51-52

Before the Meiji restoration, the profession of architect did not exist as such. Architecture was made by master carpenters, the *daiku.* But the arrival of Western architects to Japan suddenly made the Japanese self-aware of their own architecture.[XV] The British, upon seeing such fragile looking constructions made out of wood gave the impression of an undeveloped nation, that had an architecture that seemed like it wouldn't withstand the fires and earthquake.[XVI]

XV. Isozaki, *Japan-ness in Architecture.* p.3

XVI. Nijs, *Japan nation building nature.* p.52

Tokyo station after its completion in 1914, a large scale brick architecture

The new generation of Japanese architects got trained in a British tradition, using bricks and stone for the development of a seemingly "stronger" architecture. There lied the future of the country if they wanted to get on level with the West. The wooden tradition became an element of denigration for many Japanese as they tried their best to adopt the visible strength of the West.[XVII] The adoption of stone and bricks paved the way for the adoption of concrete a few decades later.

XVII. Ibid, p.52

Metabolism could be read as the fourth act of a four acts modern history of Japanese architecture piece. It first started with the great story of modernization in the Meiji restoration. It follows with the second act, the newly self-aware Japan, with a vision of its own specificities and culture put it out forward as a young powerful colonial force. Then an act of chaotic reconstruction after the war. And then the fourth act, Metabolism, where the architects are equally learning from the Modernist era and reconnecting to their own cultural idiosyncrasies and Japanese heritage. Metabolism is recognized by its founders themselves as a way of bringing a Japanese perspective to the Modern movement.[XIX]

XIX. Koolhaas et al. *Project Japan*. p.185.

Decolonisation

"Strong architecture has failed the people" these are the words of architect Kengo Kuma after the 2011 earthquake, tsunami and nuclear catastrophe.[XX] The situation was unequivocal, whilst the Shinto shrines near the damaged places subsisted, the great retaining walls that were supposed to protect Fukushima nuclear power-plant were crushed without effort. The path to modernization adopted by Japan felt like it had led to this dead end.

XX. paraphrased from The Japan Times, 'Born of Disaster.'

This would be the start of a shift in the attitude of some Japanese architects. More noticeably architects like Toyo Ito stopped using concrete to such extents and reconnected to

some form of tradition.[XXI] And architects like Kengo Kuma continued their paths to bringing an architecture as much as possible liberated from concrete.[XXII]

Once again, the ambiguity of Metabolism resurfaces in that context as it can offer a framework for rebuilding adaptive cities in a context of new tabula rasa. But on the other hand, its imagery of concrete megastructure is still a mark of Japan adopting the ways of modernity after its direct encounters with the West. These principles have mentally colonised Japanese architects since the Meiji period. And that imposed "strong architecture" on a Japanese land has a nature that keeps rejecting it.

XXI. 'Toyo Ito Interviewed by Julian Rose' Artforum international.

XXII. Personal experience in his office revealed to me that liberation from concrete is still sometimes more of a facade than a reality.

Space-colonisation

In December 2021 Yusaku Maezawa became one of the first space tourists, going to the ISS, and preparing for the first commercial flight around the moon in 2023.[XXIII] We can now see liberalism already taking place in the space colonisation. And it appears it is only the beginning of a new colonisation. But what should be the architect's attitude towards it?

For the first time colonisation is not a culture imposed on another. This is not anymore, the East looking to the West and finding answers for a new place in the known world. It is a matter of humans looking to every direction, with absolutely no referential in terms of expansion. And here Metabolism can become a powerful vision. It is not anymore, a cultural matter, where a specific geography and geo-morphology has shaped a certain culture with certain ways of practicing architecture. It is a matter of linking what we know us humans need to live, to the unknown conditions of exo-terrestrial life. In a way that is what Metabolism did in its own scale. It linked a Japanese heritage that developed closely with Nature, and that is embedded in our human nature[XXIV], with new materials and construction culture. And from this link a new form

XXIII. BBC News. 'Japanese Billionaire Blasts off to International Space Station'.

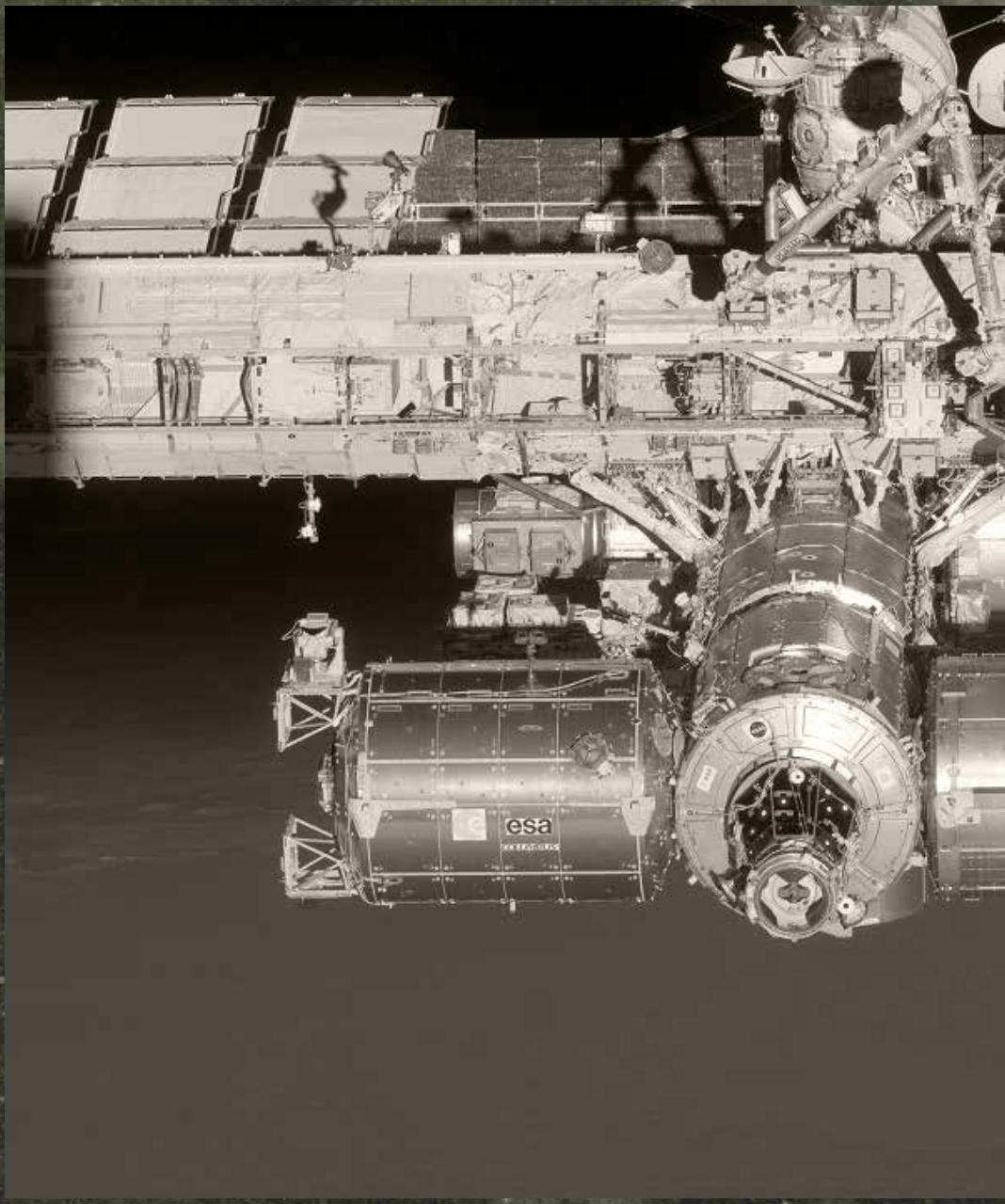
XXIV. Nijs, *Japan nation building nature.* p.12

emerged. A form that mesmerized the international community.

Here one could say we would need a similar approach to expand successfully in the unknown territory of space and other planets. We need to link to our inherent human nature, to our ways of arranging space and building that have evolved symbiotically with us, and to consider the new conditions of this new land that is spatial exploration.

What we see already developed is exactly the perfect filiation of Metabolism. Looking at the modularity of the ISS, with capsules connected to cores.[XXV] Disposable modules and capsules that protects the human body from a dangerous unknown world, which blends furniture and architecture to allow an intimate natural relationship between the human and the built form. It is Metabolism. Somehow it was rediscovered and realized by NASA and other space agencies.

XXV. Kitmacher, 'Design of the Space Station Habitable Modules'. p.9-10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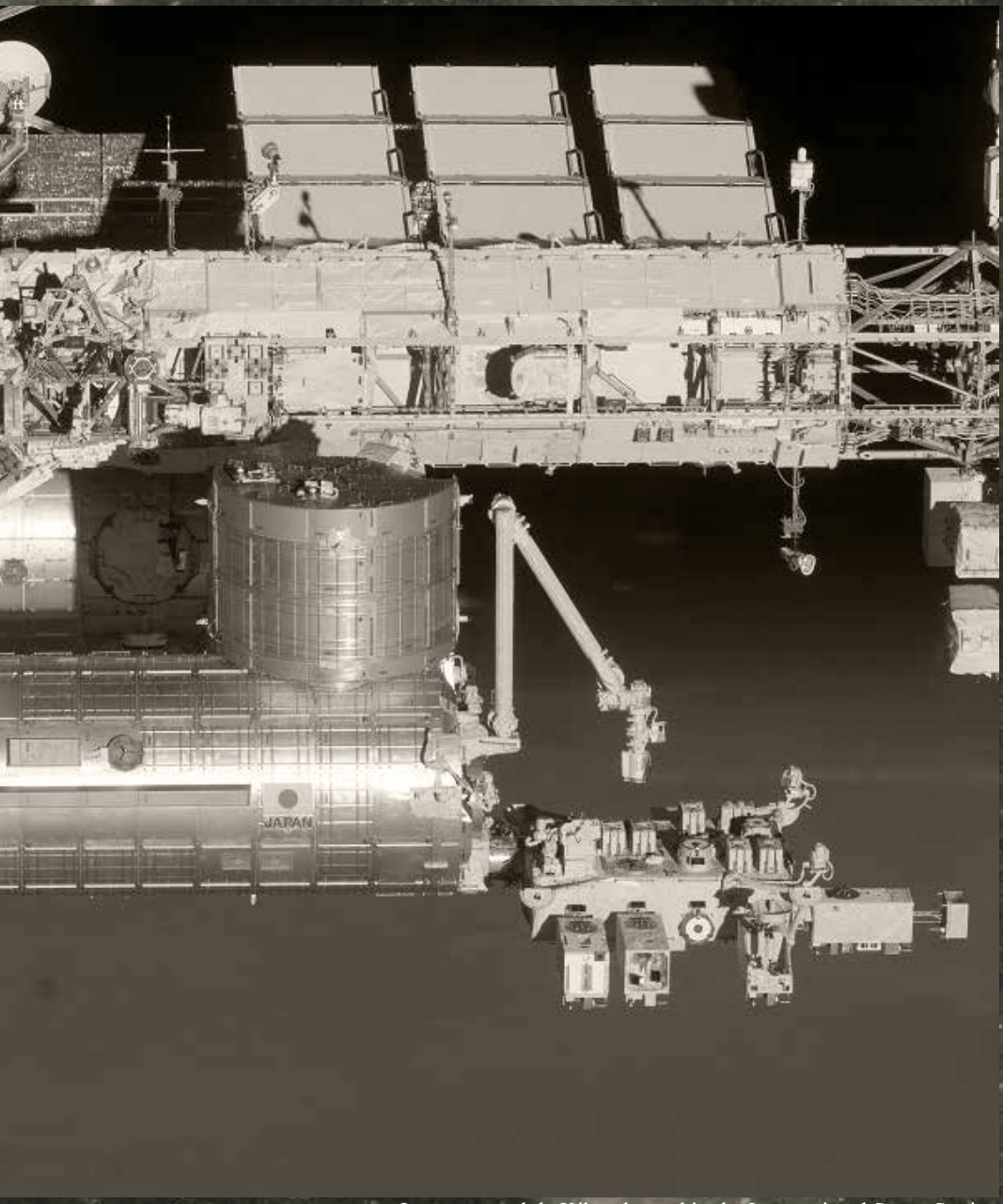


Japanese module Kibō plugged in the International Space Station

MODULARISM
互換主義

As trees come out new buds, turn red, then fall down leaves, in accordance with the circulation of the four seasons, the living unit will belong together with the inhabitant's life.

24. Kiyonori Kikutake - Ocean City
METABOLISM/1960

1.BIOMIMICRY

With biological analogies, the Metabolists analyse the defects and possibilities of the city. But those could be read as other than only mere metaphors, as some would suggest. They constitute a reading prism that allows for an identification of the problematic areas in urbanism and architecture that have not changed adequately with human evolution, while being a way of coming up with adequate innovative solutions.

2. Kikutake, Ocean City

Tokyo, a huge city, is worn out with bad sickness.

4. Kikutake, Ocean City

The new harmful tissue like cancer is spreading over the city.

Imitation

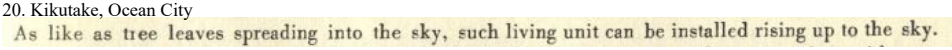
Biomimicry was defined as the "science that studies nature's models and then imitates or takes inspiration from these designs and processes to solve human problems" by Janine Benyus in 1997.[I] But learning from nature is evidently an old concept. It is difficult to determine to which extent human's evolution and vernacular elements have been derived from nature through imitative learning, this mechanism being at the core of our development processes.[II] When Metabolism is introduced to a modern western audience, the idea of biomimicry is the first one that resonates with Metabolism. But the approach of Biomimicry is by definition scientific and is therefore more often dedicated to an approach on form making. Thus, it would not be correct to say Metabolism is simply

I. Benyus, *Biomimicry : Innovation Inspired by Nature.*

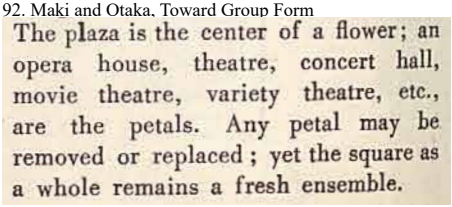
II. ScienceDirect Topics. 'Imitative Learning - an Overview'

a kind of biomimicry in architecture. The manifesto never references a scientific study of a living organism, but it learns from concepts, processes, sometimes forms, that are present in nature.

20. Kikutake, Ocean City



92. Maki and Otaka, Toward Group Form



Adaptation

"The art of life lies in a constant readjustment to our surroundings." Those words are from the Japanese scholar Okakura Kakuzō.[III] A culture could be read as a derivative from its nature, from its geo-morphology and material conditions. The Japanese culture has the idea of adaptation to nature embedded inside it, due primarily to its harsh ecological conditions.[IV]

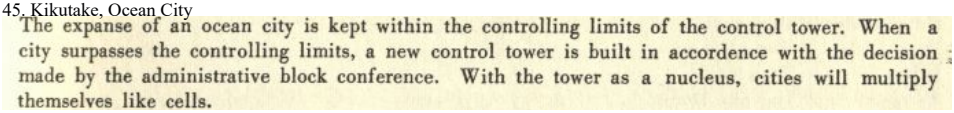
III. Okakura, *The Book of Tea.*

IV. Nijs, *Japan nation building nature.* Introduction, p.11-16.

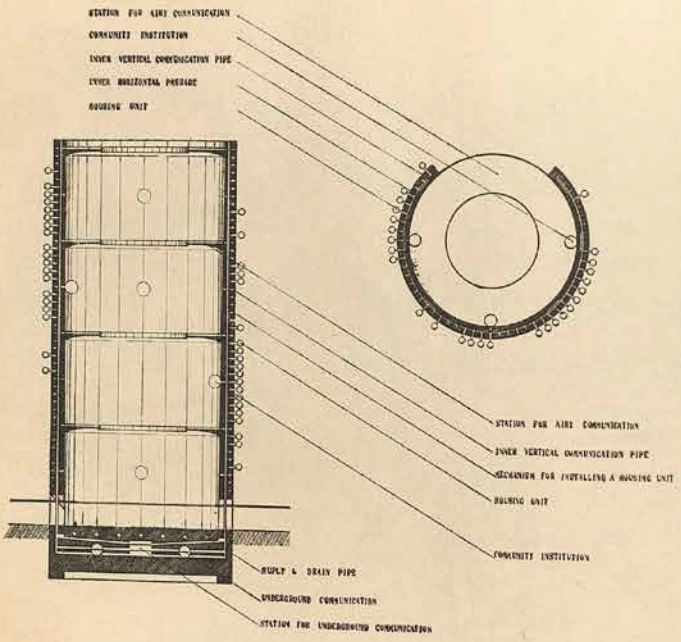
Metabolism derives from a philosophy, a certain idea of human's relation to the world, an idea deeply shaped by Japan's heritage, cultural and religious, that is explored in more details in the third part of this thesis. But through application of this certain idea of man and its relationship to its natural and material environment, biomimetics, as a system thinking, become a tool to shape the architectural for Metabolists.

Kikutake gives a prime example of basing his architectural proposal on the concept of cell division and replication.

45. Kikutake, Ocean City



Cell is the base element of any life, so to have an architecture that adapts to our lives by following this concept of division and multiplication, the mitosis, seems like it could be a perfect answer to adapt to human growth and decline in their urban environments. Learning from the adaptability and transformability of most elementary organisms is the way for Modularism.



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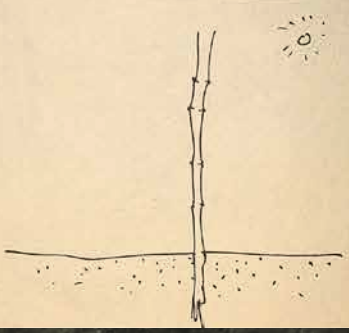

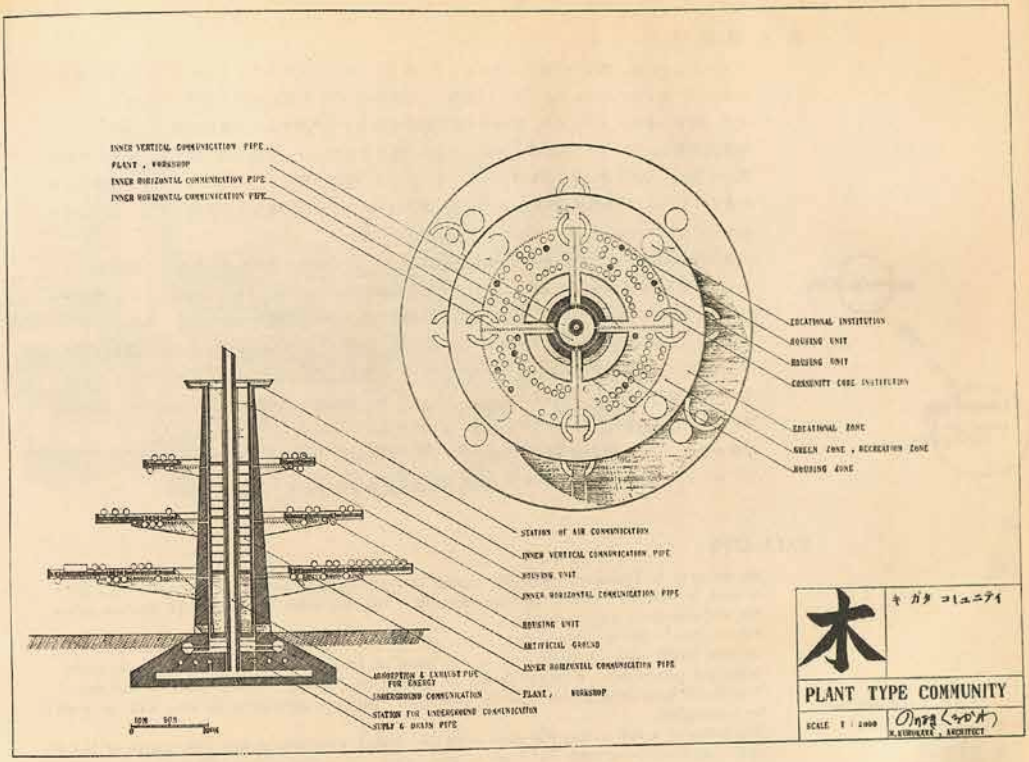

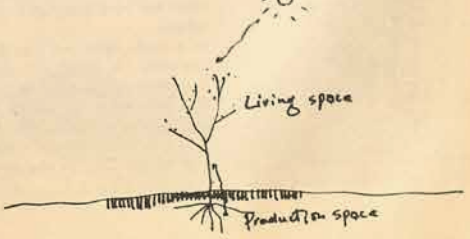

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METABOLISM/1960 last page spread,
examples of living strctures inspired from nature by Kisho Kurokawa

2.CAPSULES & CORE

Movement

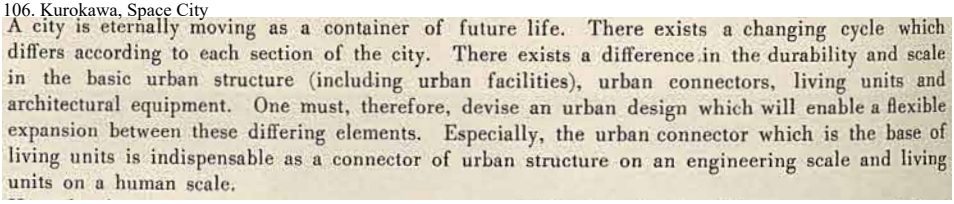
Let's try to define what is the capsule and why it is central to Metabolism. To make an architecture that is adaptable and that can move, there is a need to separate what will be movable and what will not. Architecture being bound by a presence in the material world, having to answer needs that require larger built scales than what human can move easily, it has constraints that you wouldn't see in industrial design for example. From the beginning, Metabolism first protagonists were obsessed with movement. The democratization of the automobile in the post-war era fed such an admiration for new means of free movement. Movement was a synonym to a newly discovered freedom.[VI] So how could architecture embody this movement? Through specifically the separation of what will be of movable size and what will not.

Kisho Kurokawa goes into such distinctions between parts near the end of the manifesto. Here the division is not so binary, giving more depth and complexity to this idea of the movable and the immovable.

V. Capsules have had a variety of names and forms in Metabolism, such as "move-net", here we will refer to it as "capsules" to address the general concept of it.

VI. Koolhaas et al. *Project Japan*. p.501.

106. Kurokawa, Space City


A city is eternally moving as a container of future life. There exists a changing cycle which differs according to each section of the city. There exists a difference in the durability and scale in the basic urban structure (including urban facilities), urban connectors, living units and architectural equipment. One must, therefore, devise an urban design which will enable a flexible expansion between these differing elements. Especially, the urban connector which is the base of living units is indispensable as a connector of urban structure on an engineering scale and living units on a human scale.

Expanding the body

Once you have decided upon this division in two elements (movable and unmovable), it must be specified what will move, to what extent, and in which manner. Let's continue with the car analogy. A car is an extension of self, when behind the steering wheel, it becomes an extension of your feet, of your hands. It is shaped around the human body. It is extending your natural function by specifically creating an interface between your natural movement possibilities and the movement of the car. The capsule is to be understood similarly. The difference is that a car is dedicated to the function of "moving" while the capsule is dedicated to the function of "living". But, as explored in the previous part, living also means the possibility of movement. And the capsule being defined by the mobile element of architecture it must create a direct interface between the body and itself. In the capsule the idea of furniture is as irrelevant as it would be in a car. The capsule is a closed object already prepared to host the functions for living.[VII]

VII. Kurokawa, *Metabolism in Architecture.* p.75

In a car, the human moves his body, the car captures it and moves, way faster, it concentrates all the absorbed movement from human body to enhance it in a focused goal.

In a capsule, the human act out the action of "living" through his body, the capsule captures it and acts it out in the way the architect has decided.

75. Kawazoe, Material & Man

I want be a *Kami* (god).
I hear the voice from heaven. I am a prophet or perhaps a god himself. I give orders to the architectectural world to make "universal architecture"—architecture of four dimension which drawings have to be cubic. Who will be an architect? Masato Otaka? Kiyonori Kikutake? Or Kisho Kurokawa? I am sure I am the one who can grasp precisely a four dimensional space. I deseryve to be a god.

Relation to the core

The core defines itself as the immovable part as explained before, but it has more complexity than that, as the extract 106 from Kurokawa showed. The core has different degree of adaptations, on a different scale and timescale than the capsule.

VII. Kurokawa, *Metabolism in Architecture.* p.75

Let's continue again with car analogy to explore the capsule-core synergy. In a car you have two interfaces, one between the human body and the vehicle, and a second between the vehicle and the road. The car is an object that captures the movement from the first interface to enhance and concentrate it to the second interface, in order to solve its function: movement.

A capsule is similar, you have an interface between the human body and the capsule, which captures, not only movement this time, but the whole action of "Living". Then a second interface is between the movable and the immovable, between the capsule and the core. This interface will transform the captured energy of living into a greater one, acted out through the transformations of the capsule. Of course, the relationship between each described parts is not as self-evident as the car one, the action of "Living" being much more complex that purely movement. Movement is actually contained inside the action of "Living". The reaction output of the capsule towards the captured actions of living are to be explored by architects. The possibilities are plentiful. For some it can be as simple as having more capsules plugging into the core when the family is growing, for others it could be having the architecture reading in real time the needs of the people dwelling, through AI vision, and thus adapting the spaces depending on what are the actions being done.

The reaction of the capsule towards the captured action of living is what is an expression of Modularism.

26. Kikutake, Ocean City

The living unit of the tomorrow should be studied as a unit of life instead of as a unit of housing.

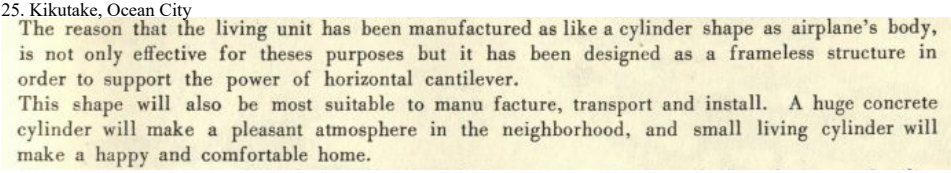
Made in Japan

In Project Japan, Koolhaas and Obrist try to know more about the origin of the capsule. Each protagonist offers a slightly different, so let's try to trace back the genealogy of this fundamental element of Metabolism architecture.

This fascination for the capsule, an element that is furniture, architecture, and an extension of body at same time can first be linked to the Zero Fighter. The Zero Fighter became a first symbol of Japanese pride, a made-in Japan machine could outclass western ones. This was a huge shift, one almost never seen yet. This made the zero fighter the pride of Japan and of its people, so after the war it was recycled by industrial designers. Its material was transformed into pots and pans, but the essence of Japan exceptionalism remained and marked a generation.[VIII] The architects of Metabolism are of such generation.

VIII. Koolhaas et al. *Project Japan.* p.481.

25. Kikutake, Ocean City


The reason that the living unit has been manufactured as like a cylinder shape as airplane's body, is not only effective for theses purposes but it has been designed as a frameless structure in order to support the power of horizontal cantilever.
This shape will also be most suitable to manu facture, transport and install. A huge concrete cylinder will make a pleasant atmosphere in the neighborhood, and small living cylinder will make a happy and comfortable home.

Next we can go back even further, it appears that this element of architecture as an extension of self could be traced back to the traditional Japanese tea pavilion.[IX] This place, being distinctive of Japanese architecture, was always conceived separated from the rest of the complexes. It was a place of disconnection for the mind, protecting the individual, but also connecting him to a greater whole.[X] Its design using a great number of natural elements served such a purpose. Kevin Nute even describes the tearoom as being "a subtle means of expressing the notion of the transience of existence."[XI] They were conceived to express a temporary character, that could change easily.

IX. Koolhaas et al. *Project Japan.* p.485.

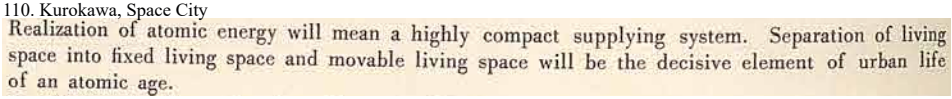
X. Nute. *Place, Time and Being in Japanese Architecture.* p.22-23.

XI. Nute. *Place, Time and Being in Japanese Architecture.* p.78.

Core

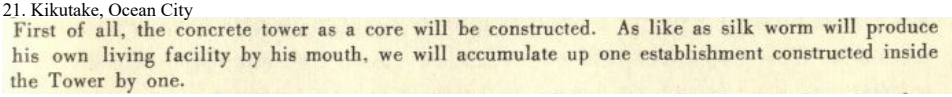
If we continue the car analogy developed in the previous part, the core is to the capsule what the parking and road are to the car. It allows it to accomplish its function. It is its interface. It allows the capsule such modularity. And it unites the capsule in a community.

110. Kurokawa, Space City


Realization of atomic energy will mean a highly compact supplying system. Separation of living space into fixed living space and movable living space will be the decisive element of urban life of an atomic age.

The core is defined as an element of slower adaptation since it's linked to the community and not the individual. Therefore, it means it has different degree of growth. For example, a tree can grow, but on a different time scale than leaves. Here again Metabolists use natural comparisons to express the possibilities of the core, but link it with practical solutions, like having a unit of production in the inside of the core.

21. Kikutake, Ocean City


First of all, the concrete tower as a core will be constructed. As like as silk worm will produce his own living facility by his mouth, we will accumulate up one establishment constructed inside the Tower by one.

The core as a trunk

The tree trunk is one, if not the, most primitive element of place making in Japanese architectural tradition. It is an element used in many cultures, but Japanese have pushed it beyond its primitive form to a great extent. It is the central element of the first Shinto shrine, and it is still visible in several ones.[XII] The Japanese pagoda also fulfils this role of marking an architecture, a place, through the use of a central tree trunk, as a splendidly ornamented pillar.[XIII]

So here again Metabolism has connected back to Japanese earliest architectural roots to reveal new possibilities of development, even for the seemingly most static elements, as static as tree trunk. As Kenzo Tange explained in 1959, making the architecture become a "living tree".[XIV]

XII. Nute, *Place, Time and Being in Japanese architecture.* p.28.

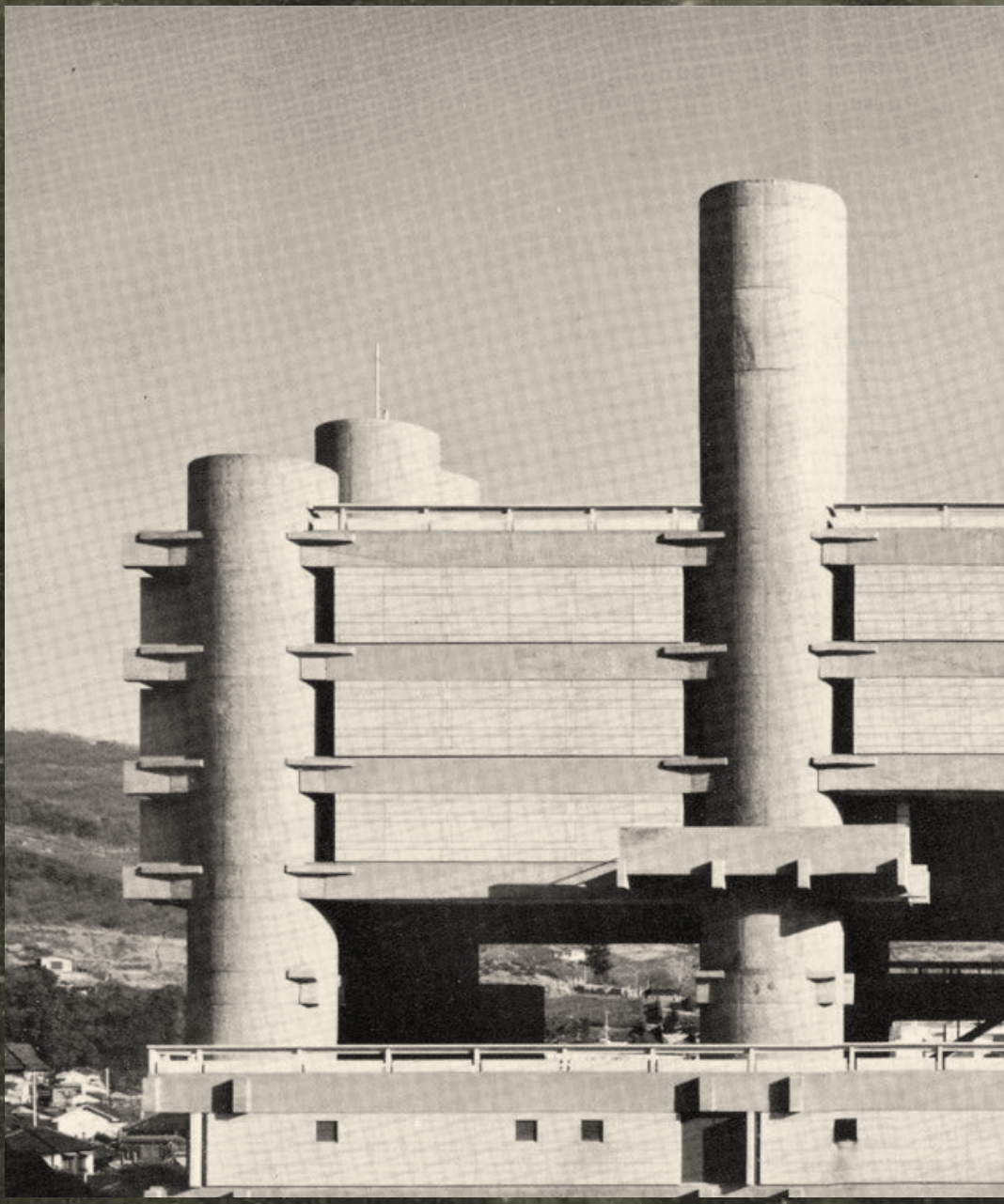
XIII. Inoue, *Space in Japanese architecture.* p.22.

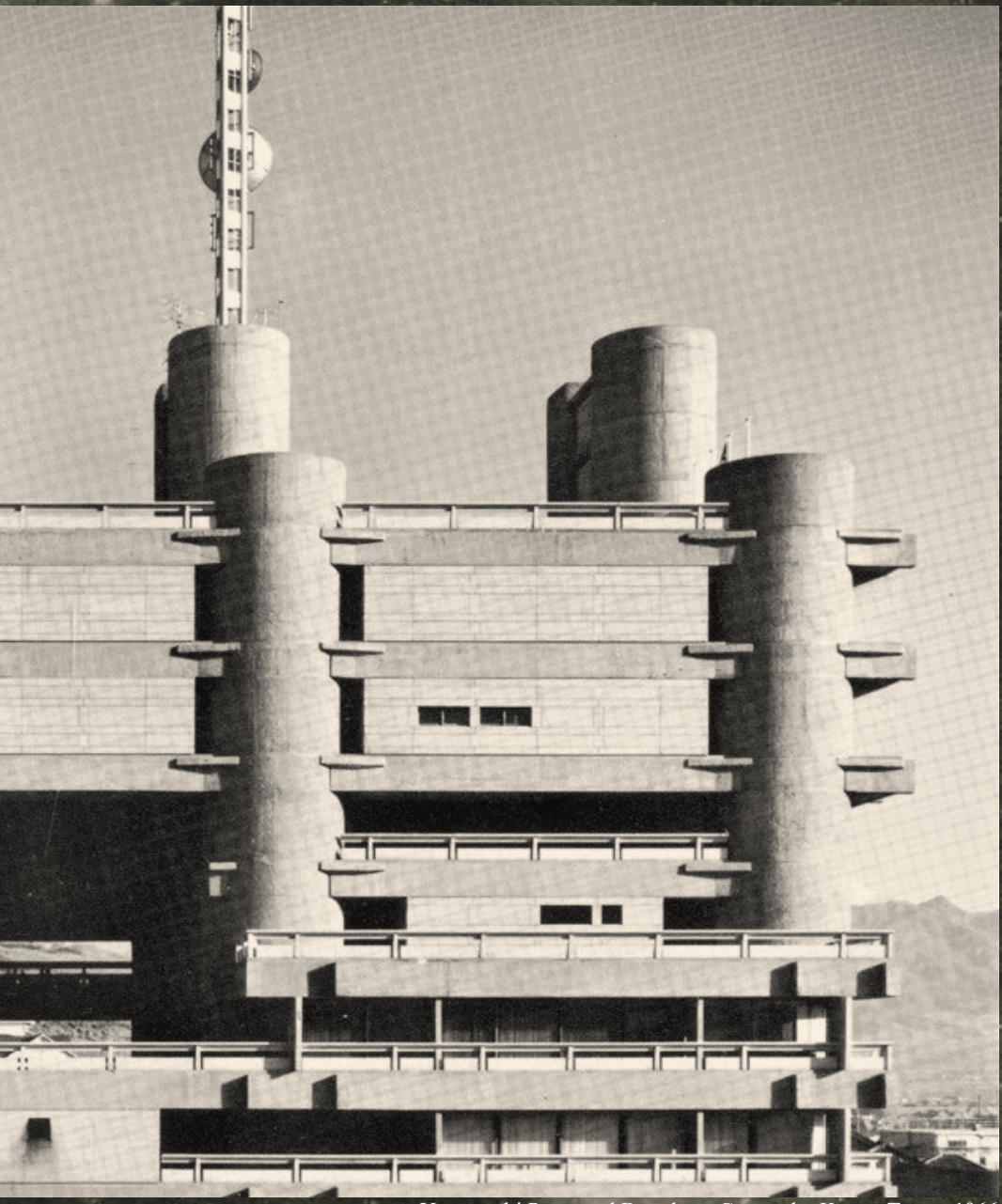
XIV. Newman, *CIAM '59 in Otterlo.* p.186.

Transcending the capsule

As explored in the first chapter, the expansion to space reserves a special necessity for the capsule. It is the ultimate element. The capsule thought as an intimacy barrier between the individual and the outside world become highly relevant when the outside world is an environment that is not habitable. The same ways tea-pavilions have expanded minds, the cars and airplanes have expanded movement, now the capsule will expand the reach of humans to spaces first thought as unliveable.

Nakagin Capsule Tower by Kisho Kurokawa, inside of a capsule





Yamanashi Press and Broadcast Centre, by Kenzō Tange, 1966

TRANSIENTISM
泡沫主義

The universe is constantly engaged in creation. Nebulae are born one after another from a tiny atom to the greatest nebu la, every piece of matter is a dynamic body ever changing and developing. We are all included in the process.

66. Noboru Kawazoe - Material & Man
METABOLISM/1960

1. IMPERMANENCE

Mujō

I. Nijs, *Japan nation building nature.* p.37.

To introduce the concept of impermanence in Metabolism let's start by looking at the Japanese word for impermanence: Mujō (無常). More than a word, it is a whole concept present in Japanese culture and that has been originating from Buddhism. It embodies the idea that life is by essence transient, that everything will disappear, that life and death are of the same essence.[I]

67. Kawazoe, Material & Man

Extinction is at the same creation. We can see the duality of the process not only now but in the history of the past. In the coming age, however, this process must be practiced systematically and rapidly, especially in cities where civilization and culture are centralized. This is where tomorrow's city planning starts.

A significant architectural materialisation of such concept is the Ise Grand Shrine. The shrine is located in the Mie prefecture in the centre of Japan. What makes it particular is that it has been rebuilt every 20 years since the 7th century. We are now at the 62nd iteration. The site is divided in two similar parcels, so that the rebuilding happens at the same time the other one is in use. The shrine alternates between those two.
Noboru Kawazoe himself, one of the leading figures of Metabolism, wrote about this typical Japanese philosophy in a most concise manner:
The Japanese do not seem to have any philosophy like "eternity" or "perfection," but believe that nature and society are flowing on all the time. For them change or flux is the sole reality.

Beauty

While in the west the concept of beauty was theorised as a belief in the material of objects, taking form in an artform that seeks immortality and immobility,[II] there is instead in Japan a tendency to seek beauty in the transformation of the material world. A typical example of appreciation of such beauty is the *hanami* (花見). It is the traditional act that consist in going out during the cherry blossoms season and enjoying the view of flowers, the *sakura* (*hanami* meaning exactly "flower viewing"). This is just one simple and famous example of such conceptualisation of beauty in the Japanese culture. Of course the cherry blossoms make up a beautiful picture, but it is specifically their transient nature that give them its distinctive beauty, where reflection on the nature of life and death joins the view of the beautiful.[III]

II. Wikipedia, 'History of Aesthetics'. Plato.

III. Sosnoski, *Introduction to Japanese culture.* p.12.

Metabolism is of the same essence. It doesn't seek eternal form. It precisely seeks this ephemeral beauty that is appreciated when the material world is undergoing constant transformations. The transformations happening in the architecture of Metabolism are a reflect of ongoing life, of the ongoing society, and it magnifies it, it expresses it through the movement and the constant adaptation of its units. This is the beauty of Metabolism.

73. Kawazoe, Material & Man

What will be the final form? There is no fixed form in the ever-developing world. We hope to create something which, even in destruction will cause a subsequent new creation. This "something" must be found in the form of the cities we are going to make—cities constantly undergoing the process of metabolism.

Resilience

Fear of the end of the world in 1960 was a strong reality as explored in the first chapter. But this fear of destruction harms our mind in a different way today. The radioactivity continues to be a threat. Chernobyl in 1986, and the most recent

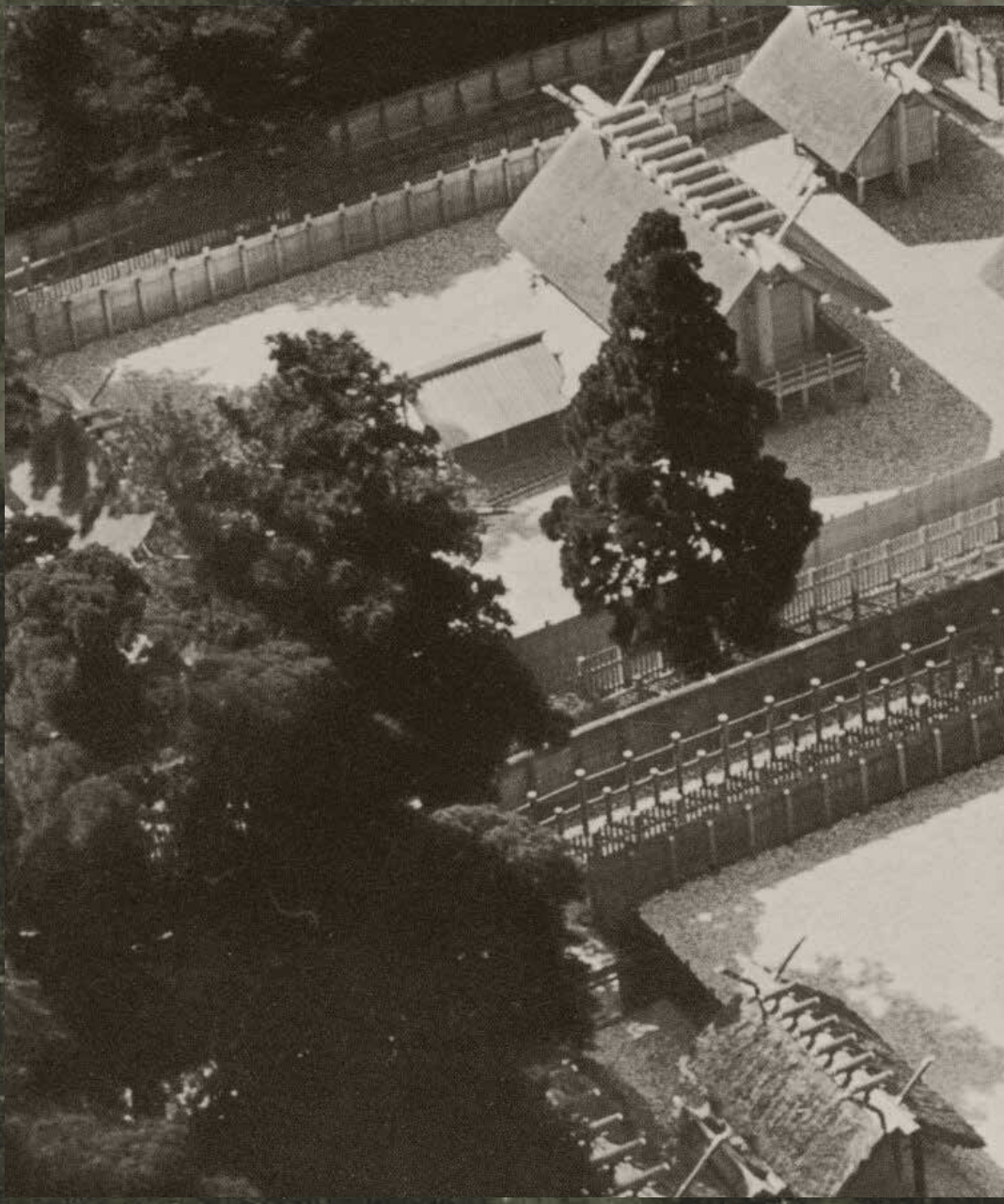
episode, Fukushima disaster in 2011 are more than warnings. Seeing how this fear makes societies unable of any movement forward, Kawazoe declares this:

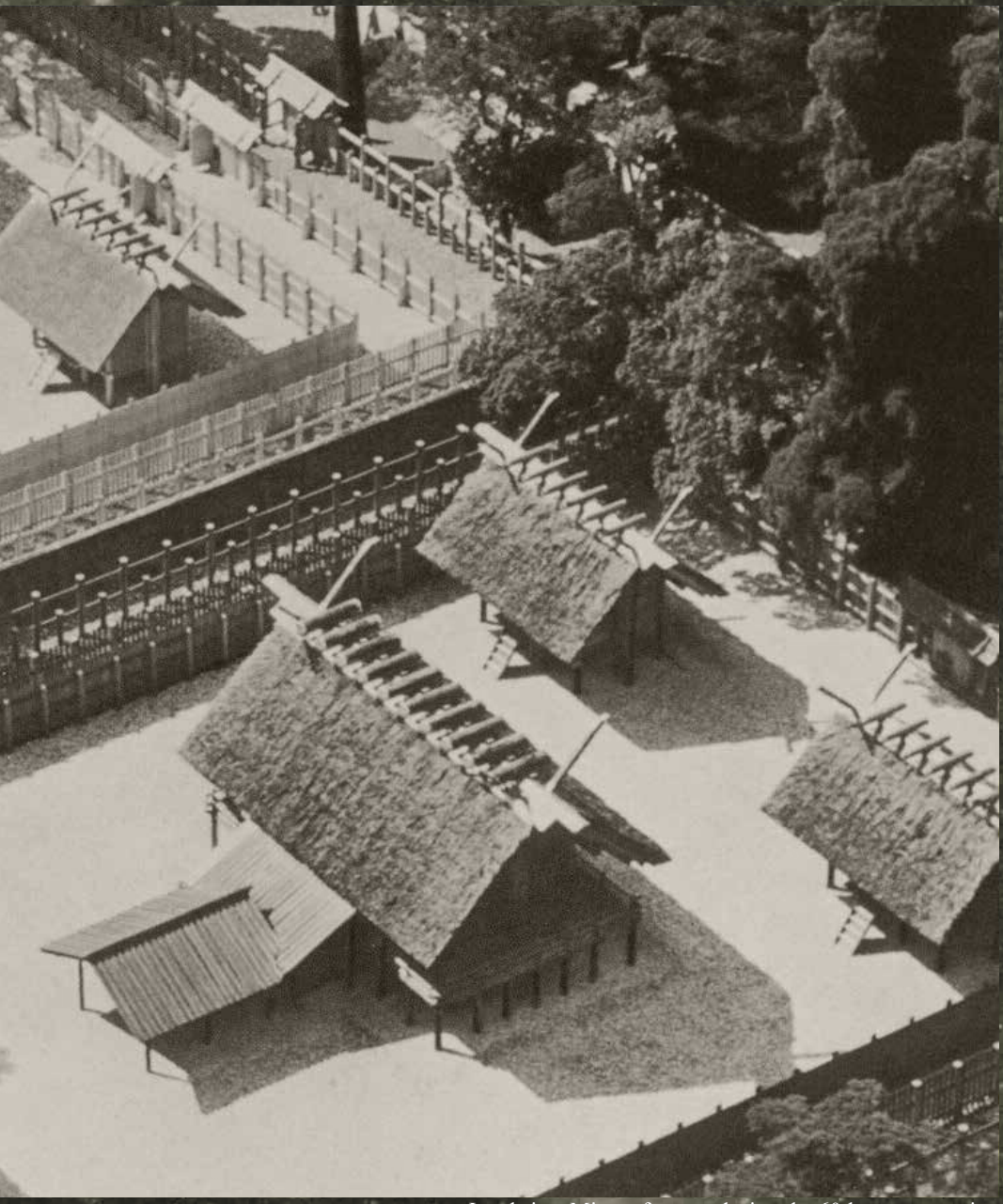
60. Kawazoe, Material & Man

Redioactivity harms people's mind before it affects their bodies.

But since, radioactivity did not only harm our minds. It harmed lands, it harmed seas, and it harmed bodies. The strong and unadaptable concrete-built environment showed its limits with Fukushima. The material presence of our world should have had embodied a form of resilience to such event. But the endless, wasted ruins created by such catastrophe proved otherwise. Instead, concrete showed its inability to be linked with the transient nature of life in our environment. If the built environment is made to adapt to impermanence, only then it will be a true form of resilience.[IV] And this is precisely the intent of Metabolism.

IV. Schalk, 'The Architecture of Metabolism. Inventing a Culture of Resilience'.





Ise shrine, Mie prefecture, during the 60th reconstruction

Fukushima Daiichi Nuclear Power Plant in March 2011

2.SYMBIOSIS

Kyō sei

Symbiosis not only as a scientific phenomenon but as a concept also finds a very special in Japan, under the concept of *Kyō sei* (共生). It combines the ideograms for the words: together and life. It originally embodies the idea of humans living harmoniously with nature. But since the 1960's it has been used by various companies in Japan to try to promote a better environment, more connected to the world, but also where every member of the company is connected to each other. Each contributing to a global growth being at the heart of this ideology.[V] The concept has had a strong influence on Metabolism thinking and more precisely for Kisho Kurokawa. He launched a political party in the 70's based on this concept. The "New Kyosei Party".[VI] But already in 1960 as a young architect, we can find in Kurokawa's chapter of the manifesto, a will to connect architectural elements to a form of greater whole.

V. Nijs, *Japan nation building nature.* p.134-136.

VII. Ibid. p.135.

104. Kurokawa, Space City
The ceiling with a sky-light makes us realize the expanse of the universe.

This inherently Buddhist concept of all things being connected to nature, and to a greater whole had a special resonance after the 2011 events. In a post-Fukushima context, Doryu Hioki, Rinno temple priest and chairman of the Greentide Embankment association had the following words:

"The Great East Japan Earthquake taught us this lesson : Science and technology are not meant to control nature, but to be used as pieces of wisdom making it possible for us to co-exist with nature... Now is a turning point of history. We have to shift from the age when materialism was central to an age where every life and soul will be loved tenderly."[VIII]

VIII. Lin, *Kenzo Tange and the Metabolist Movement.* p.200-201.

These words resonate deeply with the declarations of Kawazoe in the manifesto.

71. Kawazoe, Material & Man

The metabolism of our life will be operated in such a way as to follow the order of Nature, while Nature will be developed at the hands of men. Men and Nature will be unified into one, and the whole earth will become one huge living thing.

72. Kawazoe, Material & Man

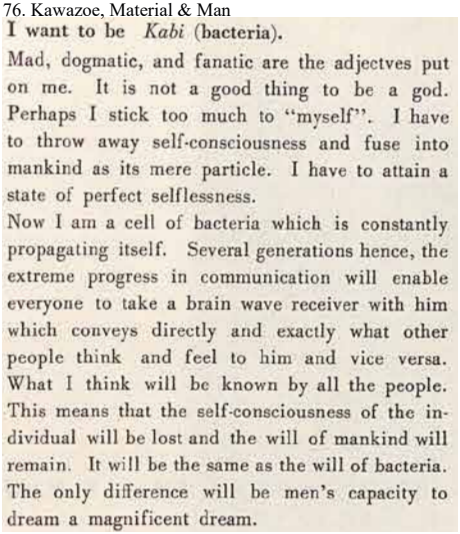
Ever since life came into existence on the earth, various kinds of creatures have covered the surface of the earth and have established a sort of balance. Even the lower animals have tried to change their environment for a better one. Men have gradualy succeeded in controlling the order of Nature and turned it to their own advantages. Just as a shell is a part of a shell-fish, man-controlled nature—architecture, and cities,—are a part of men. And Nature itself is a part of men. When we look from the side of Nature, men is a part of Nature, just as shells and shell-fish are.

Endosymbiosis theory

The 1960's will also know revolutionary scientific discoveries that analyse the evolution processes through the scope of symbiotic elements. This theory is more specifically the endosymbiosis theory by Lynn Margulis. It proposes a new origin of evolutional processes, not founded solely on Darwinian theory, but where the origin of mitosis and developments of different species are argued to be done through symbiotic processes.[IX] It precisely connects to the theories pointed out by Metabolism, where traditional principles such as Kyō sei, harmonious living with nature as a form of philosophy, are being linked to the understanding of a symbiotic evolution in the world of unicellular living organisms. Kawazoe develops similar notions near the end of his chapter Material & Man. His philosophical words embody the concept of endosymbiosis that would come out 7 years later, in 1967.

IX. Margulis, 'On the Origin of Mitosing Cells'.

76. Kawazoe, Material & Man


I want to be *Kabi* (bacteria).

Mad, dogmatic, and fanatic are the adjectves put on me. It is not a good thing to be a god. Perhaps I stick too much to "myself". I have to throw away self-consciousness and fuse into mankind as its mere particle. I have to attain a state of perfect selflessness.

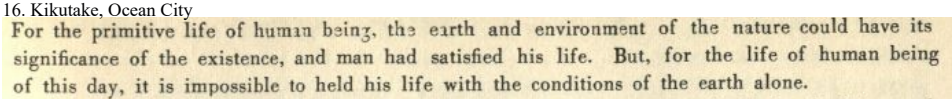
Now I am a cell of bacteria which is constantly propagating itself. Several generations hence, the extreme progress in communication will enable everyone to take a brain wave receiver with him which conveys directly and exactly what other people think and feel to him and vice versa. What I think will be known by all the people. This means that the self-consciousness of the individual will be lost and the will of mankind will remain. It will be the same as the will of bacteria. The only difference will be men's capacity to dream a magnificent dream.

Cybernetics

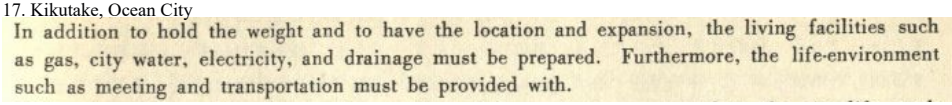
In an increasingly connected world cybernetics have become an area of science more and more explored. This word refers to the science and theory behind the organisation of complex systems. And it is perfect to establish the link between our natural and environmental systems, with our complex technological ones.[X] A cybernetic world could be in that manner understood as the scientific evolution of the ancestral Kyō sei notion, even including the digital. In that way cybernetics are a way to understand the system Metabolist architects tried to put in place to organise the "action of living". With help of a quick industrialization in the 1960's they tried to connect biological systems to architectural ones, and ultimately technological ones. Looking at Metabolism through the prism of cybernetics can help understand how it tried to connect living system, with building and architectural systems, and finally societal systems. Kikutake in his chapter of the manifesto explores the connection between the natural world and the artificial one, looking at the human as a form of systems.

X. Makarieva, 'Cybernetics'.

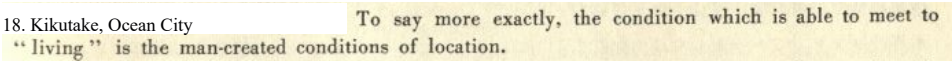
16. Kikutake, Ocean City



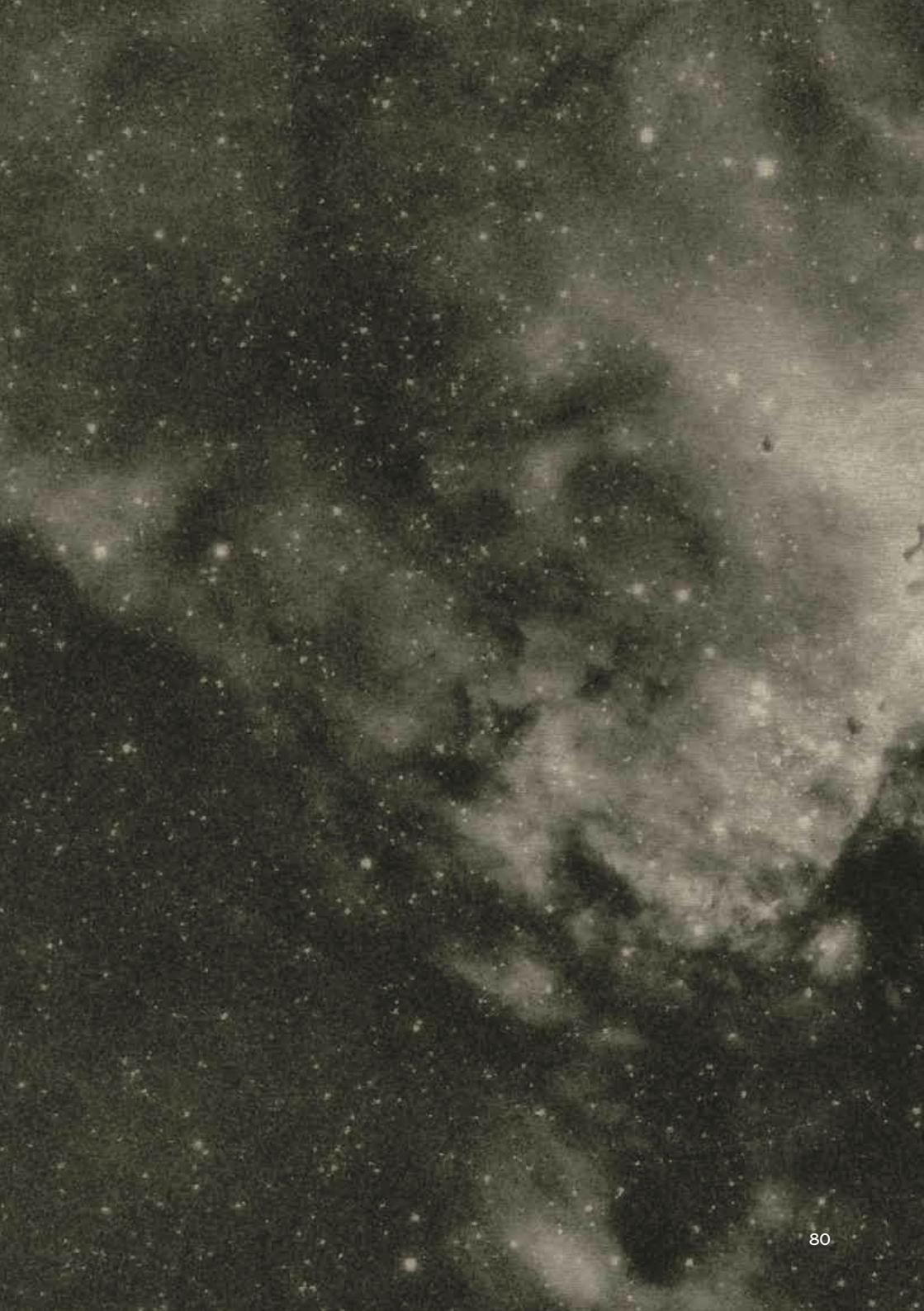
17. Kikutake, Ocean City

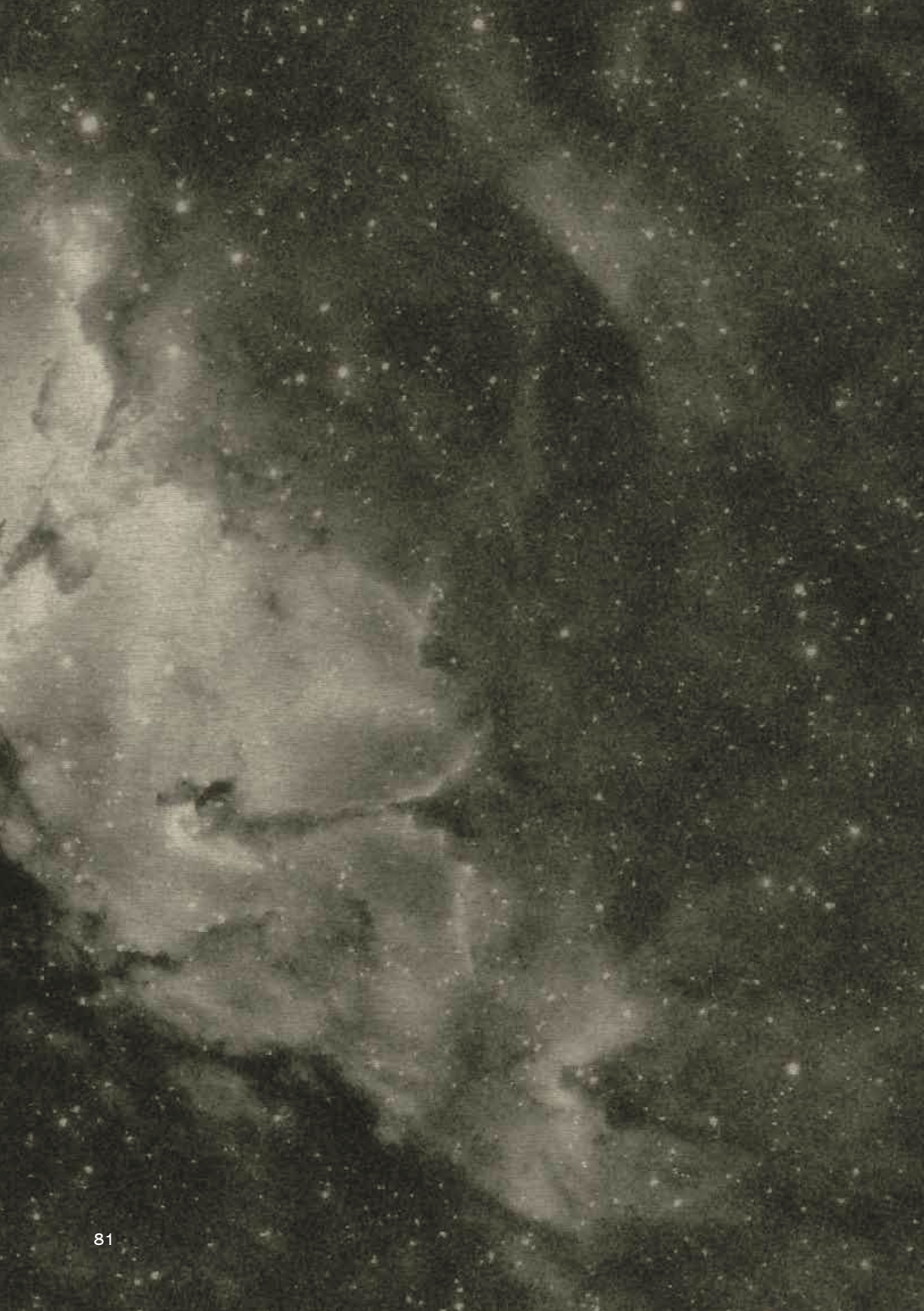


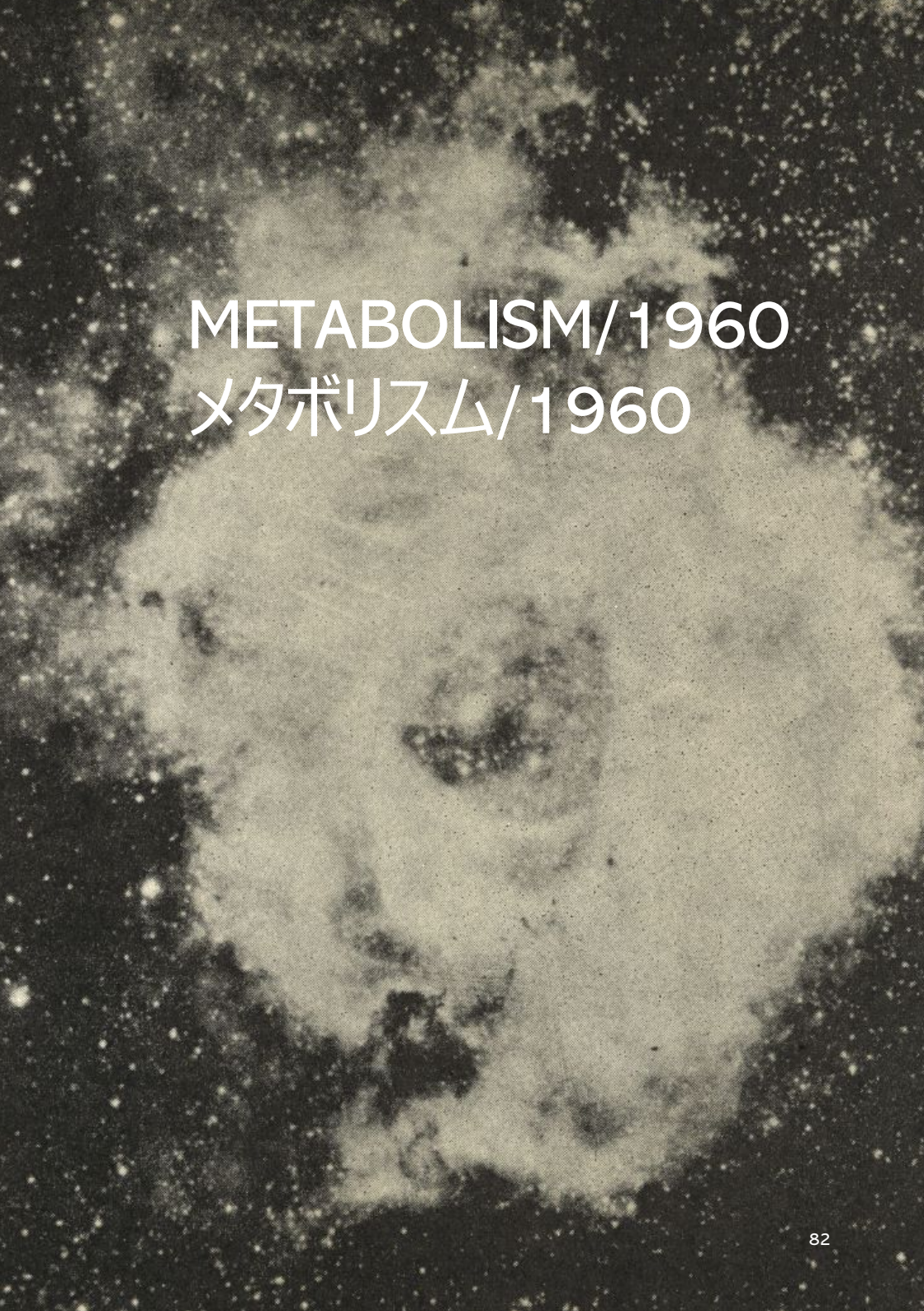
18. Kikutake, Ocean City



This provides us with framework for projecting a digital Metabolism, where symbiosis between man and technology will be found.







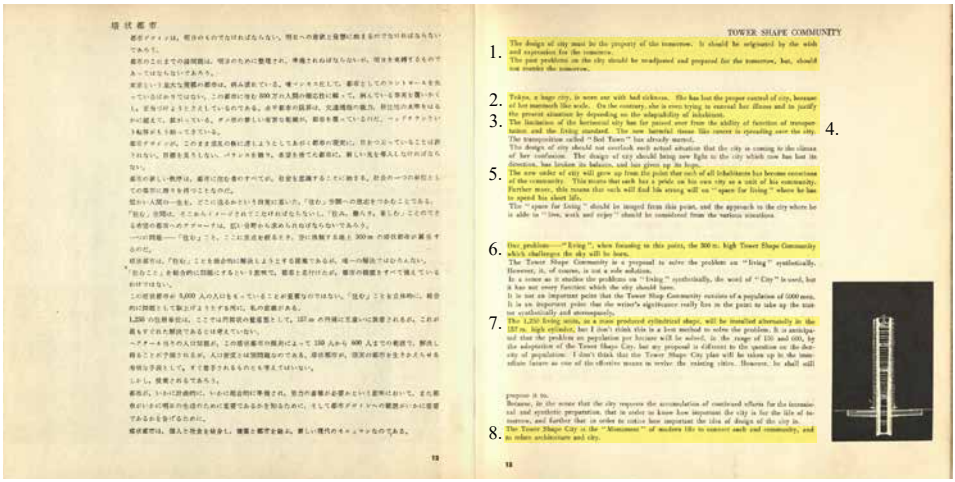
METABOLISM/1960
メタボリスム/1960

This volume mainly consists of the designs for our future cities proposed only by architects. From the next issue, however, the people in other fields such as designers, artists, engineers, scientists, and politicians, will participate in it, and already some of them are preparing for the next one.

Noboru Kawazoe
METABOLISM/1960, p.5

OCEAN CITY/ K.KIKUTAKE

The first part of the manifesto is dedicated to works by already established architect in 1960, Kiyonori Kikutake. It is the longest of four parts and is more like a compilation of his works. It is by far the most architectural part of the book. It showcases more precisely the use of 2 concepts previously explored in the thesis: the artificial ground, and modularity.
Three projects are presented in this first part called "OCEAN CITY".
The first project is the Tower Shape Community. The artificial ground is treated as a vertical one. The city is organised in towers that hosts cylindrical living units, that adapt to the people inhabiting the tower. People don't live on the natural ground anymore, it is liberated from the action of "living" and is turned into wide green open spaces where people can enjoy nature, rest, and play. This idea of urban planning is somewhat in alignment with Modernism principles advancing similar arguments in favour of a vertical life. But the modularity of the units colonising these vertical structures is a specifically Metabolist concept.
Secondly, Kikutake presents his Marine City project.
Finally, and mainly, the Ocean City project is presented, it is a synthesis of the 2 previous projects, adapted to the whole scale of Japan. Many details are given to the possible modularity of Metabolism architecture, especially through the use of the "Move-nets", living units similar as capsules.



TOWER SHAPE COMMUNITY

1. The design of city must be the property of the tomorrow. It should be originated by the wish and expression for the tomorrow.
The past problems on the city should be readjusted and prepared for the tomorrow, but, should not restrict the tomorrow.

2. Tokyo, a huge city, is worn out with bad sickness. She has lost the proper control of city, because of her manmouth like scale. On the contrary, she is even trying to conceal her illness and to justify the present situation by depending on the adaptability of inhabitant.

3. The limitation of the horizontal city has far passed over from the ability of function of transportation and the living standard.

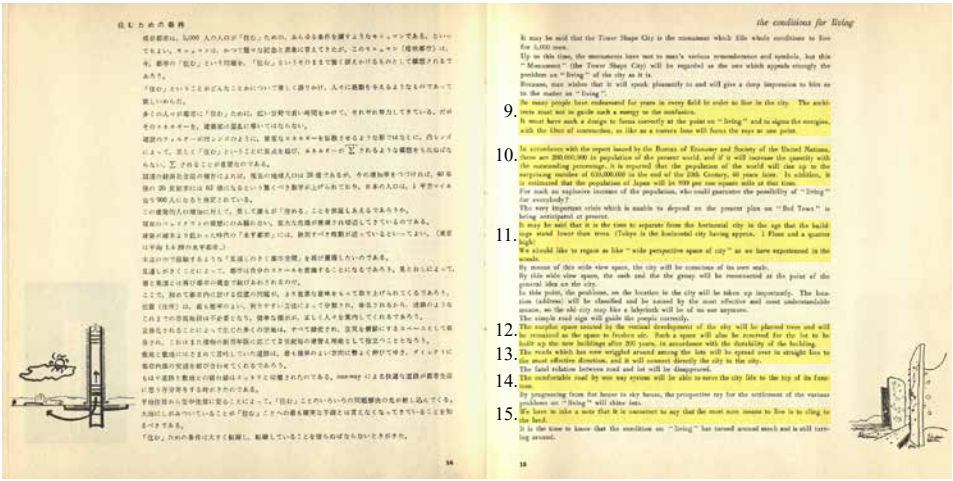
4. The new harmful tissue like cancer is spreading over the city.

5. The new order of city will grew up from the point that each of all inhabitants has become conscious of the community. This means that each has a pride on his own city as a unit of his community. Further more, this means that each will find his strong will on "space for living" where he has to spend his short life.

6. One problem——"living", when focusing to this point, the 300 m. high Tower Shape Community which challenges the sky will be born.

7. The 1,250 living units, as a mass produced cylindrical shape, will be installed alternatelly in the 157 m. high cylinder,

8. The Tower Shape City is the "Monument" of modern life to connect each and community, and to relate architecture and city.



9.
So many people have endeavored for years in every field in order to live in the city. The architects must not to guide such a energy to the confusion.
It must have such a design to focus correctly at the point on " living " and to sigma the energies, with the filter of contruction, as like as a convex lens will focus the rays at one point.

10.
In accordance with the report issued by the Bureau of Economy and Society of the United Nations, there are 280,000,000 in population of the present world, and if it will increase the quantity with the outstanding percentage, it is reported that the population of the world will rise up to the surprising number of 630,000,000 in the end of the 20th Century, 40 years later. In addition, it is estimated that the population of Japan will be 900 per one square mile at that time.

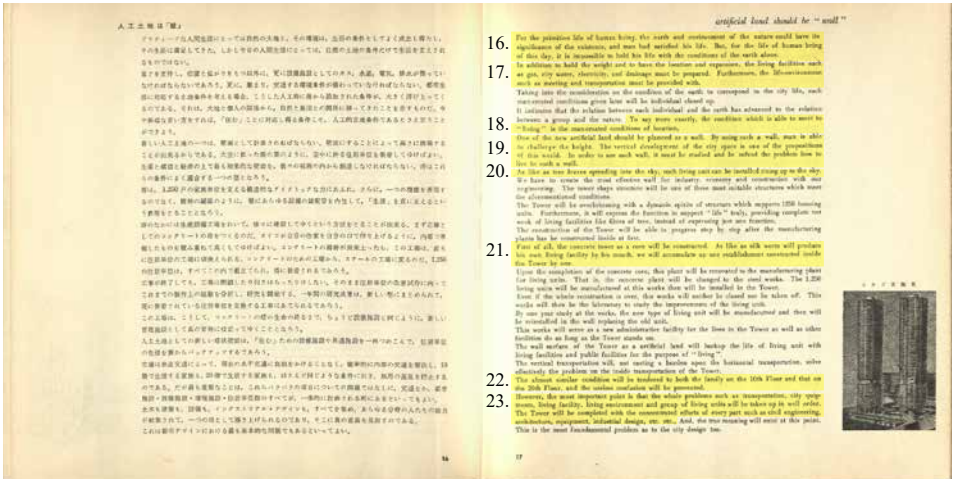
11.
It may be said that it is the time to separate from the horizontal city in the age that the buildings stand lower than trees. (Tokyo is the horizontal city having approx. 1 Floor and a quarter high)
We slould like to regain as like " wide perspective space of city " as we have experienced in the woods.

12.
The surplus space created by the vertical development of the city will be planted trees and will be remained as the space to freshen air. Such a space will also be reserved for the lot to be built up the new buildings after 200 years, in accordance with the durability of the building.

13.
The roads which has now wriggled around among the lots will be spread over in straight line to the most effective direction, and it will connect directly the city to the city.

14.
The comfortable road by one way system will be able to serve the city life to the top of its function.

15.
We have to take a note that it is uncorrect to say that the most sure means to live is to cling to the land.



16.
For the primitive life of human being, the earth and environment of the nature could have its significance of the existence, and man had satisfied his life. But, for the life of human being of this day, it is impossible to held his life with the conditions of the earth alone.

17.
In addition to hold the weight and to have the location and expansion, the living facilities such as gas, city water, electricity, and drainage must be prepared. Furthermore, the life-environment such as meeting and transportation must be provided with.

18.
To say more exactly, the condition which is able to meet to " living " is the man-created conditions of location.

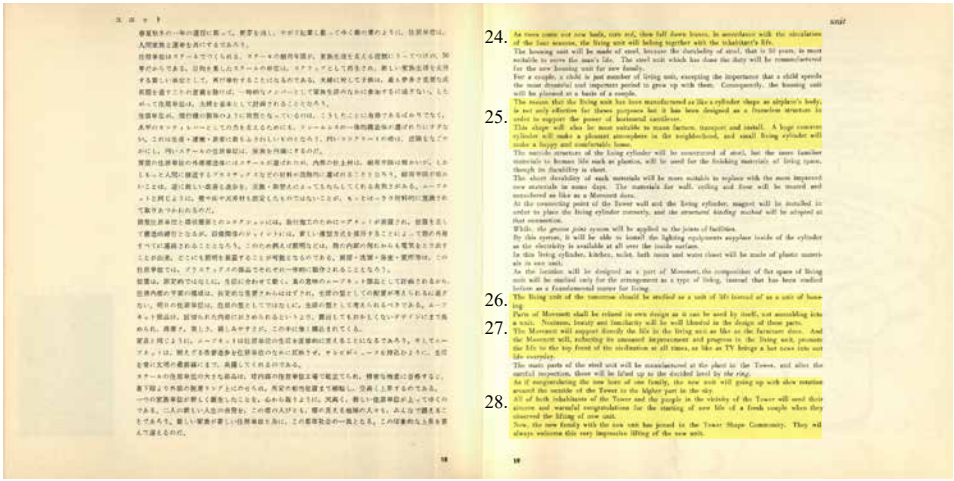
19.
One of the new artificial land should be planned as a wall. By using such a wall, man is able to challenge the height. The vertical development of the city space is one of the propositions of this world. In order to use such wall, it must be studied and be solved the problem how to live in such a wall.

20.
As like as tree leaves spreading into the sky, such living unit can be installed rising up to the sky.

21.
First of all, the concrete tower as a core will be constructed. As like as silk worm will produce his own living facility by his mouth, we will accumulate up one establishment constructed inside the Tower by one.

22.
The almost similar condition will be tendered to both the family on the 10th Floor and that on the 20th Floor, and the useless confusion will be prevented.

23.
However, the most important point is that the whole problems such as transportation, city quipments, living facility, living environment and group of living units will be taken up in well order. The Tower will be completed with the concentrated efforts of every part such as civil engineering, architecture, equipment, industrial design, etc.



24.

As trees come out new buds, turn red, then fall down leaves, in accordance with the circulation of the four seasons, the living unit will belong together with the inhabitant's life.

25.

The reason that the living unit has been manufactured as like a cylinder shape as airplane's body, is not only effective for theses purposes but it has been designed as a frameless structure in order to support the power of horizontal cantilever.
This shape will also be most suitable to manu facture, transport and install. A huge concrete cylinder will make a pleasant atmosphere in the neighborhood, and small living cylinder will make a happy and comfortable home.

26.

The living unit of the tomorrow should be studied as a unit of life instead of as a unit of housing.

27.

Parts of Movenett shall be refined its own design as it can be used by itself, not assembling into a unit. Neatness, beauty and familiarity will be well blended in the design of these parts.
The Movenett will support directly the life in the living unit as like as the furniture does. And the Movenett will, reflecting its unceased improvement and progress in the living unit, promote the life to the top front of the civilization at all times, as like as TV brings a hot news into our life everyday.

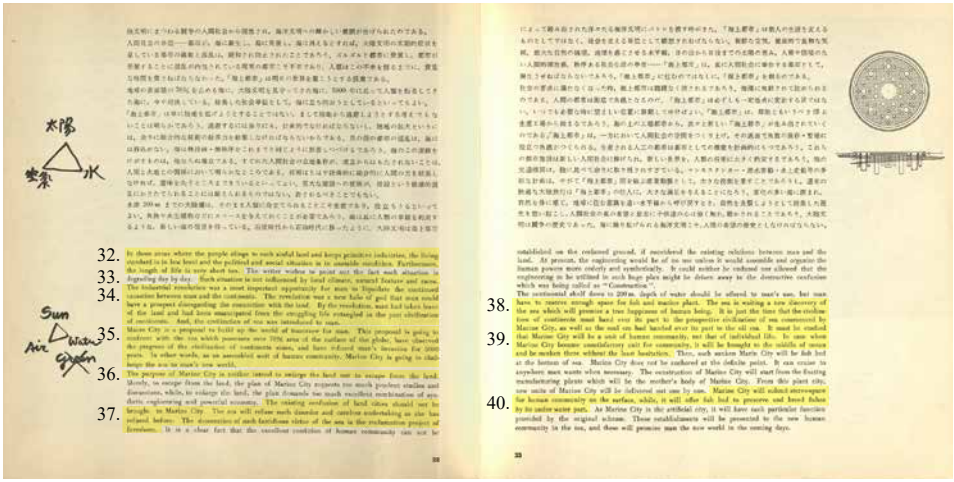
28.

As if congratulating the new born of one family, the new unit will going up with slow rotation around the outside of the Tower to the higher part in the sky.
All of both inhabitants of the Tower and the people in the vicinity of the Tower will send their sincere and warmful congratulations for the starting of new life of a fresh couple when they observed the lifting of new unit.
Now, the new family with the new unit has joined in the Tower Shape Community. They wil always welcome this very impressive lifting of the new unit.

29.
The history of civilization of the world may be considered as so-called the civilization of continents established, and prospered on the land. The continents have held man on the land in safety and have promised happiness and hope, and it seemed that as if the continents would meet man's expectation.

30.
Unfortunately, the civilization of continents have accumlated bloody struggles of human relations established within the limited land, so, it was a history of endless internecine war of man. Eventually, the civilization of continents has brought up the present opposition of two big continents which is terrifing everyday's life of the people of this world. The civilization of continents have brought nothing but such a largest opposition after its 5000 years' history. This most miserable fact which forebodes the end of the world is nothing else but the destiny of the civilization of continents, and this destiny had been ordained at that time when man had occupied, then, clung to and expected too much from the land. Notwithstanding the land did not increase, the population increased much rapidly.

31.
Asia is a typical continent of this question. The present poverty of Asian countries have its root in the unbalanced increase of population and agricultural products and also in the inefficient primitive husbandry in these countries. Such fact will be regarded as a truth even if man devide the land by the boundaries, speak different languages, and use particular currency within an individual state. In past, the map of the world had been revised again and again, but man could never overwnelm the deep-rooted internal contradiction of which the continents embodied.



32.
In these areas where the people clings to such sinful land and keeps primitive industries, the living standard is in low level and the political and social situation is in unstable condition. Furthermore, the length of life is very short too.

33.
Such situation is not influenced by local climate, natural feature and races.

34.
The industrial revolution was a most important opportunity for man to liquidate the continued causation between man and the continents. The revolution was a new halo of god that man could have a prospect disregarding the connection with the land. By the revolution, man had taken leave of the land and had been emancipated from the struggling life entangled in the past civilization of continents. And, the civilization of sea was introduced to man.

35.
Maine City is a proposal to build up the world of tomorrow for man. This proposal is going to confront with the sea which possesses over 70% area of the surface of the globe, have observed the progress of the civilization of continents since, and have refused man's invasion for 5000 years. In other words, as an assembled unit of human community, Marine City is going to challenge the sea to man's new world.

36.
The purpose of Marine City is neither intend to enlarge the land nor to escape from the land.

37.
The existing confusion of land cities should not be brought to Marine City. The sea will refuse such disorder and careless undertaking as she has refused before. The desecration of such fastidious virtue of the sea is the reclamation project of foreshore.

38.

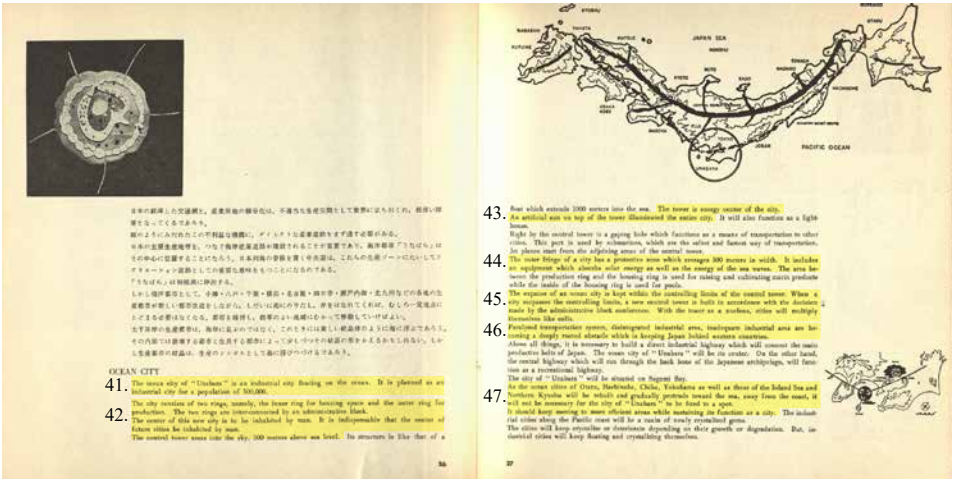
The sea is waiting a new discovery of the sea which will promise a true happiness of human being. It is just the time that the civilization of continents must hand over its part to the prospective civilization of sea commenced by Marine City, as well as the coal era had handed over its part to the oil era.

39.

It must be studied that Marine City will be a unit of human community, not that of individual life. In case when Marine City became unsatisfactory unit for community, it will be brought to the middle of ocean and be sunken there without the least hesitation.

40.

Marine City will submit stereo-space for human community on the surface, while, it will offer fish bed to preserve and breed fishes by its under water part.



41. The ocean city of "Unabara" is an industrial city floating on the ocean. It is planned as an industrial city for a population of 500,000.

42. The city consists of two rings, namely, the inner ring for housing space and the outer ring for production. The two rings are inter-connected by an administrative block.
The center of this new city is to be inhabited by man. It is indispensable that the center of future cities be inhabited by man.
The control tower soars into the sky, 500 meters above sea level. Its structure is like that of a

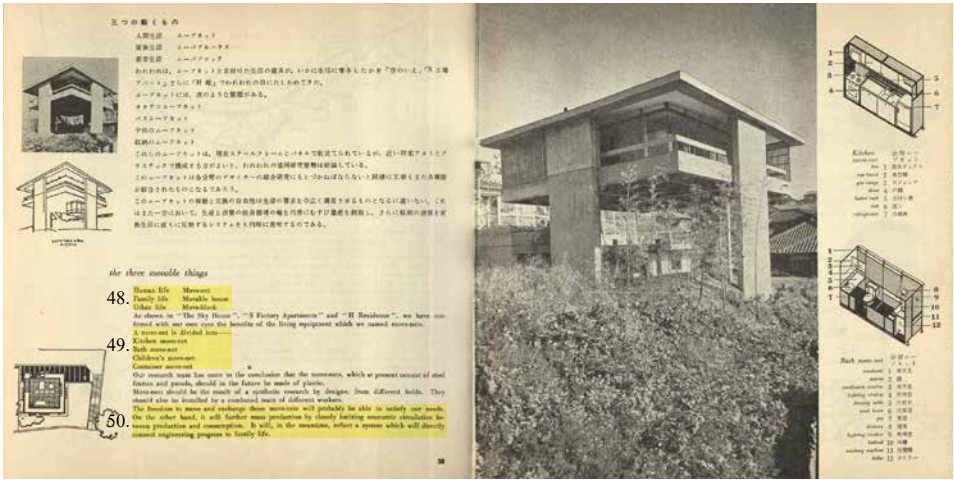
43. The tower is energy center of the city.
An artificial sun on top of the tower illuminated the entire city.

44. The outer fringe of a city has a protective zone which averages 500 meters in width. It includes an equipment which absorbs solar energy as well as the energy of the sea waves.

45. The expanse of an ocean city is kept within the controlling limits of the control tower. When a city surpasses the controlling limits, a new control tower is built in accordence with the decision made by the administrative block conference. With the tower as a nucleus, cities will multiply themselves like cells.

46. Paralyzed transportation system, disintegrated industrial area, inadequate industrial area are becoming a deeply rooted obstacle which is keeping Japan behind western countries.

47. As the ocean cities of Otaru, Hachinohe, Chiba, Yokohama as well as those of the Inland Sea and Northern Kyushu will be rebuilt and gradually protrude toward the sea, away from the coast, it will not be necessary for the city of "Unabara" to be fixed to a spot.
It should keep moving to more efficient areas while sustaining its function as a city.



48.

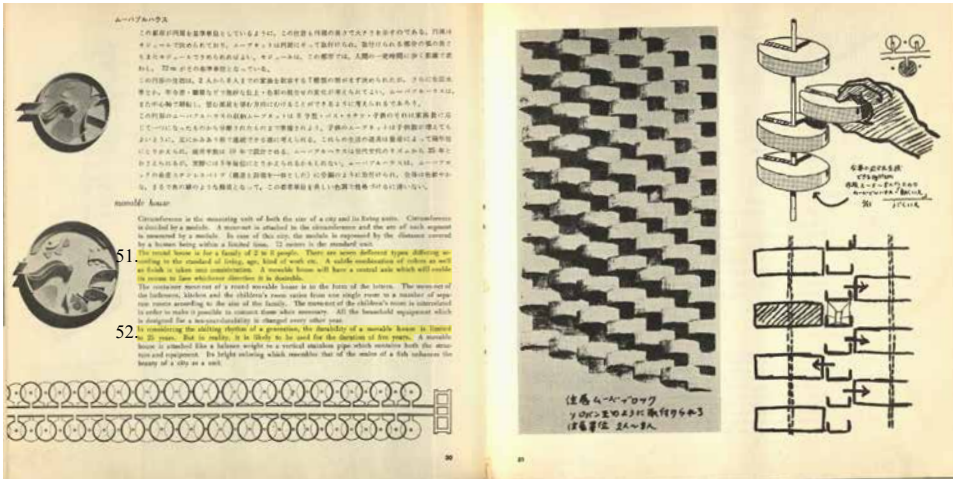
Human life	Move-net
Family life	Movable house
Urban life	Mova-block

49.

A move-net is divided into——
Kitchen move-net
Bath move-net
Children's move-net
Container move-net

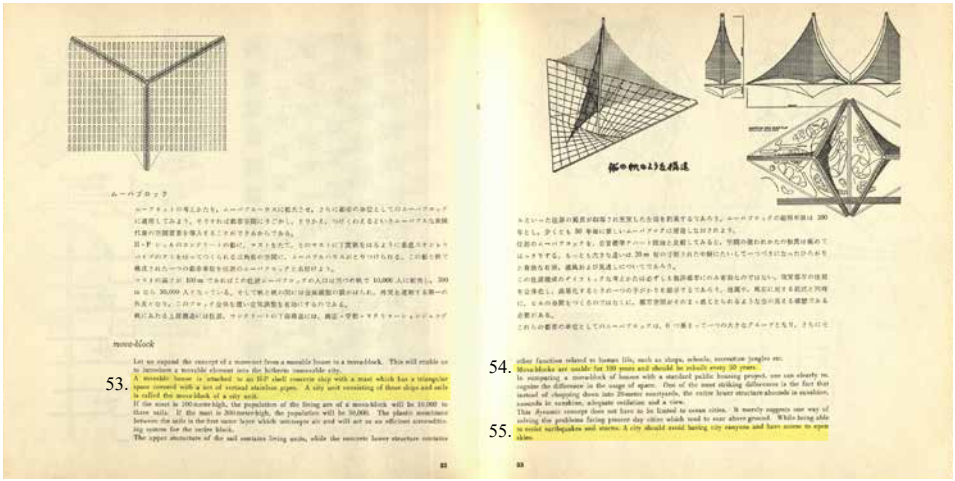
50.

The freedom to move and exchange these move-nets will probably be able to satisfy our needs. On the other hand, it will further mass production by closely knitting economic circulation between production and consumption. It will, in the meantime, reflect a system which will directly connect engineering progress to fomily life.



51.
The round house is for a family of 2 to 8 people. There are seven defferent types differing according to the standard of living, age, kind of work etc. A subtle combination of colors as well as finish is taken into consideration. A movable house will have a central axis which will enable its rooms to face whichever direction it is desirable.

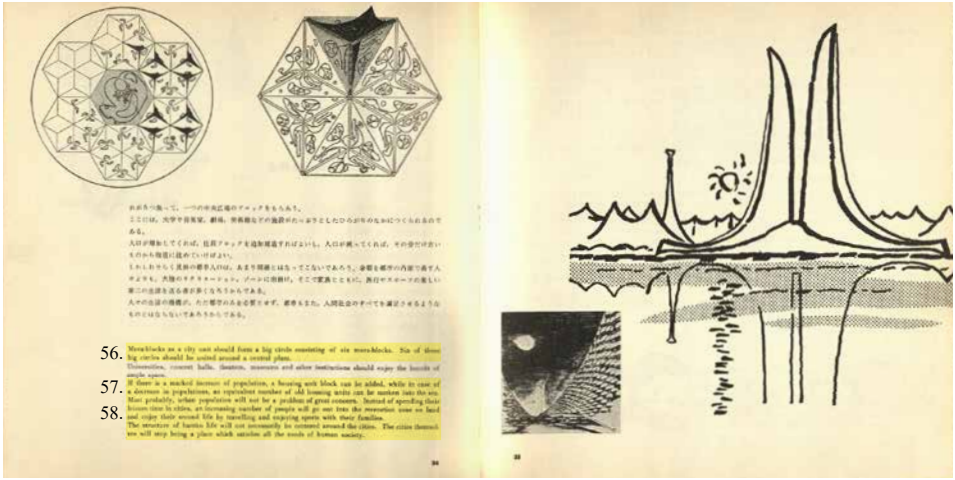
52.
In considering the shifting rhythm of a generation, the durability of a movable house is limited to 25 years. But in reality, it is likely to be used for the duration of five years. A movable



53.
A movable house is attached to an H-P shell concrete ship with a mast which has a triangular space covered with a net of vertical stainless pipes. A city unit consisting of these ships and sails is called the mova-block of a city unit.

54.
Mova-blocks are usable for 100 years and should be rebuilt every 50 years.

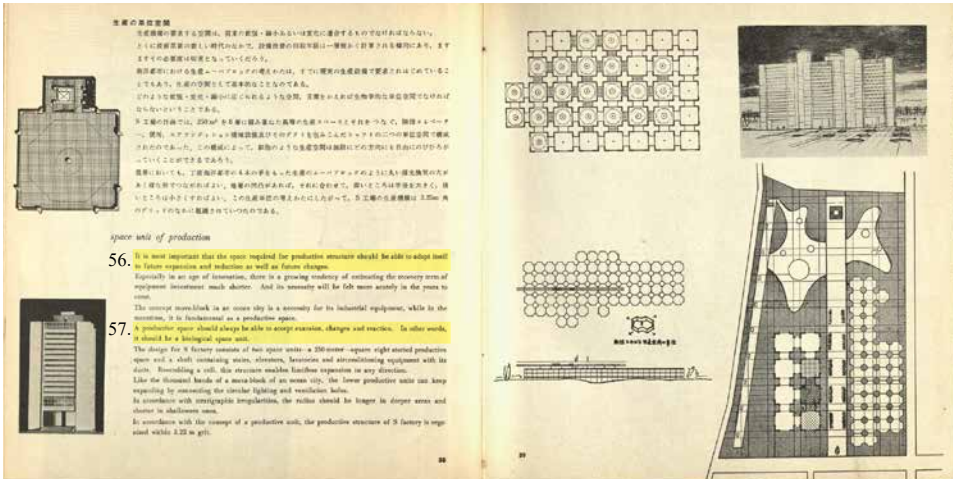
55.
A city should avoid having city canyons and have access to open skies.



53.
Mova-blocks as a city unit should form a big circle consisting of six mova-blocks. Six of these big circles should be united around a central plaza.

54.
If there is a marked increase of population, a housing unit block can be added, while in case of a decrease in populations, an equivalent number of old housing units can be sunken into the sea.

55.
Most probably, urban population will not be a problem of great concern. Instead of spending their leisure time in cities, an increasing number of people will go out into the recreation zone on land and enjoy their second life by travelling and enjoying sports with their families.
The structure of human life will not necessarily be centered around the cities. The cities themselves will stop being a place which satisfies all the needs of human society.

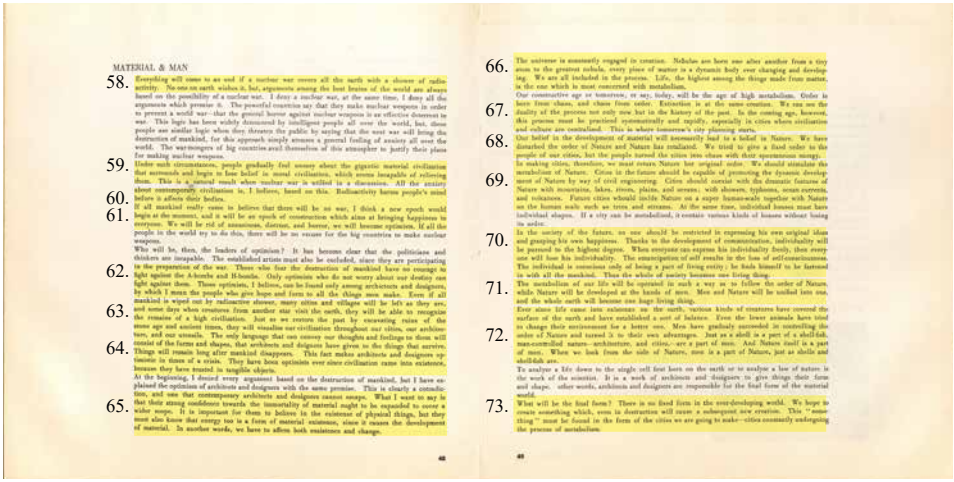


56.
It is most important that the space required for productive structure should be able to adapt itself to future expansion and reduction as well as future changes.

57.
A productive space should always be able to accept exansion, changes and reaction. In other words, it should be a biological space unit.

MATERIAL & MAN / N.KAWAZOE

Kawazoe, an architectural critic and writer, introduce with only four pages most of the conceptual and philosophical basis of Metabolism.
He explores the relation between modern man and his environment. This starts by reflexions on the global state of fear the world is living in at that time. The atomic bomb fear. From this he extracts what should be the attitude of the architects, how civilization should answer to a possible end of times. Exploring this possibility of destruction upon the world, upon life, upon architecture it connects with the essence of living, the cycles of creation and destruction. Here the connection with Japanese cultural and religious elements is very strong. The influence of Buddhism, the nature of life and death and human's relation to it is similarly explained by Kawazoe here that in Buddhist principles.
His second part is organized around three statements: I want to be a Kai (seashell), I want to be a Kami (God), I want to be a Kabi (bacteria). One could read here a form of trinity in the relationship between man and nature. A first, where man is just part of a world greater than him that he has no control on and that he needs to accept. A second, where he takes nature into his hand and shape it, give form to it, and finally a third, where he is part of a symbiotic system, where all life is connected, and he only exist as being part of a greater whole.



MATERIAL & MAN

58. Everything will come to an end if a nuclear war covers all the earth with a shower of radioactivity. No one on earth wishes it, but, arguments among the best brains of the world are always based on the possibility of a nuclear war. I deny a nuclear war, at the same time, I deny all the arguments which premise it. The powerful countries say that they make nuclear weapons in order to prevent a world war—that the general horror against nuclear weapons is an effective deterrent to war. This logic has been widely denounced by intelligent people all over the world, but, these people use similar logic when they threaten the public by saying that the next war will bring the destruction of mankind, for this approach simply arouses a general feeling of anxiety all over the world. The war-mongers of big countries avail themselves of this atmosphere to justify their plans for making nuclear weapons.

59. Under such circumstances, people gradually feel uneasy about the gigantic material civilization that surrounds and begin to lose belief in moral civilization, which seems incapable of relieving them. This is a natural result when nuclear war is utilized in a discussion. All the anxiety about contemporary civilization is, I believe, based on this. Radioactivity harms people's mind

60. before it affects their bodies.

61. If all mankind really came to believe that there will be no war, I think a new epoch would begin at the moment, and it will be an epoch of construction which aims at bringing happiness to everyone. We will be rid of uneasiness, distrust, and horror, we will become optimists. If all the people in the world try to do this, there will be no excuse for the big countries to make nuclear weapons.

Who will be, then, the leaders of optimism? It has become clear that the politicians and thinkers are incapable. The established artists must also be excluded, since they are participating in the preparation of the war. Those who fear the destruction of mankind have no courage to

62. fight against the A-bombs and H-bombs. Only optimists who do not worry about our destiny can fight against them. Those optimists, I believe, can be found only among architects and designers, by which I mean the people who give hope and form to all the things men make. Even if all

63. mankind is wiped out by radioactive shower, many cities and villages will be left as they are, and some days when creatures from another star visit the earth, they will be able to recognize the remains of a high civilization. Just as we restore the past by excavating ruins of the stone age and ancient times, they will visualize our civilization throughout our cities, our architecture, and our utensils. The only language that can convey our thoughts and feelings to them will

64. consist of the forms and shapes, that architects and deigners have given to the things that survive. Things will remain long after mankind disappears. This fact makes architects and designers optimistic in times of a crisis. They have been optimists ever since civilization came into existence, because they have trusted in tangible objects.

At the beginning, I denied every argument based on the destruction of mankind, but I have explained the optimism of architects and designers with the same premise. This is clearly a contradiction, and one that contemporary architects and designers cannot escape. What I want to say is that their strong confidence towards the immortality of material ought to be expanded to cover a wider scope. It is important for them to believe in the existence of physical things, but they must also know that energy too is a form of material existence, since it causes the development

65. of material. In another words, we have to affirm both existence and change.

66. The universe is constantly engaged in creation. Nebulae are born one after another from a tiny atom to the greatest nebula, every piece of matter is a dynamic body ever changing and developing. We are all included in the process. Life, the highest among the things made from matter, is the one which is most concerned with metabolism.

Our constructive age or tomorrow, or say, today, will be the age of high metabolism. Order is born from chaos, and chaos from order. Existention is at the same creation. We can see the duality of the process not only now but in the history of the past. In the coming age, however, this process must be practiced systematically and rapidly, especially in cities where civilization and culture are centralized. This is where tomorrow's city planning starts.

67. Our belief in the development of material will necessarily lead to a belief in Nature. We have disturbed the order of Nature and Nature has retaliated. We tried to give a fixed order to the people of our cities, but the people turned the cities into chaos with their spontaneous energy.

68. In making cities, therefore, we must return Nature her original order. We should stimulate the metabolism of Nature. Cities in the future should be capable of promoting the dynamic development of Nature by way of civil engineering. Cities should coexist with the dramatic features of

69. Nature with mountains, lakes, rivers, plains, and oceans; with showers, typhoons, ocean currents, and volcanoes. Future cities whould invite Nature on a super human-scale together with Nature on the human scale such as trees and streams. At the same time, individual houses must have individual shapes. If a city can be metabolized, it contains various kinds of houses without losing its order.

In the society of the future, no one should be restricted in expressing his own original ideas

70. and grasping his own happiness. Thanks to the development of communication, individuality will be pursued to the highest degree. When everyone can express his individuality freely, then everyone will lose his individuality. The emancipation of self results in the loss of self-consciousness. The individual is conscious only of being a part of living entity; he feels himself to be fastened

71. to with all the mankind. Thus the whole of society becomes one living thing.

The metabolism of our life will be operated in such a way as to follow the order of Nature, while Nature will be developed at the hands of men. Men and Nature will be unified into one, and the whole earth will become one huge living thing.

Ever since life came into existence on the earth, various kinds of creatures have covered the

72. surface of the earth and have established a sort of balance. Even the lower animals have tried to change their environment for a better one. Men have gradually succeeded in controlling the order of Nature and turned it to their own advantages. Just as a shell is a part of a shell-fish, man-controlled nature—architecture, and cities,—are a part of men. And Nature itself is a part of men. When we look from the side of Nature, men is a part of Nature, just as shells and shell-fish are.

To analyze a life down to the single cell first born on the earth or to analyze a law of nature is the work of the scientist. It is a work of architects and designers to give things their form and shape. other words, architects and designers are responsible for the final form of the material world.

73. What will be the final form? There is no fixed form in the ever-developing world. We hope to create something which, even in destruction will cause a subsequent new creation. This "something" must be found in the form of the cities we are going to make—cities constantly undergoing the process of metabolism.

58.
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If all mankind really came to believe that there will be no war, I think a new epoch would begin at the moment, and it will be an epoch of construction which aims at bringing happiness to everyone. We will be rid of uneasiness, distrust, and horror, we will become optimists.

62.
Those who fear the destruction of mankind have no courage to fight against the A-bombs and H-bombs. Only optimists who do not worry about our destiny can fight against them. Those optimists, I believe, can be found only among archictects and designers, by which I mean the people who give hope and form to all the things men make.

63.
Even if all mankind is wiped out by radioactive shower, many oities and villages will be left as they are, and some days when creatures from another star visit the earth, they will be able to recognize the remains of a high civilization. Just as we restore the past by excavating ruins of the stone age and ancient times, they will visualize our civilization throughout our cities, our architecture, and our utensils.

64.
The only language that can convey our thoughts and feelings to them will consist of the forms and shapes, that architects and deigners have given to the things that survive. Things will remain long after mankind disappears. This fact makes architects and designers optimistic in times of a crisis. They have been optimists ever since civilization came into existence, because they have trusted in tangible objects.

65. What I want to say is that their strong confidence towards the immortality of material ought to be expanded to cover a wider scope. It is important for them to believe in the existense of physical things, but they must also know that energy too is a form of material existence, since it causes the development of material. In another words, we have to affirm both exsistence and change.

66. The universe is constantly engaged in creation. Nebulae are born one after another from a tiny atom to the greatest nebula, every piece of matter is a dynamic body ever changing and developing. We are all included in the process. Life, the highest among the things made from matter, is the one which is most concerned with metabolism.

67. Extinction is at the same creation. We can see the duality of the process not only now but in the history of the past. In the coming age, however, this process must be practiced systematically and rapidly, especially in cities where civilization and culture are centralized. This is where tomorrow's city planning starts.

68. Our belief in the development of material will necessarily lead to a belief in Nature. We have disturbed the order of Nature and Nature has retaliated. We tried to give a fixed order to the people of our cities, but the people turned the cities into chaos with their spontaneous energy.

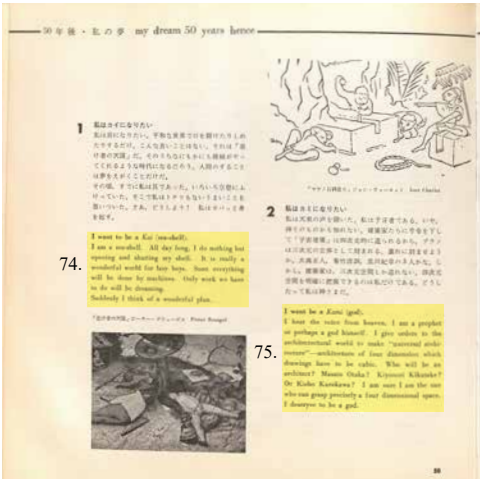
69. In making cities, therefore, we must return Nature her original order. We should stimulate the metabolism of Nature. Cities in the future should be capable of promoting the dynamic development of Nature by way of civil engineering. Cities should coexist with the dramatic features of Nature with mountains, lakes, rivers, plains, and oceans; with showers, typhoons, ocean currents, and volcanoes. Future cities whould inclde Nature on a super human-scale together with Nature on the human scale such as trees and streams.

70. In the society of the future, no one should be restricted in expressing his own original ideas and grasping his own happiness. Thanks to the development of communication, individuality will be pursued to the highest degree. When everyone can express his individuality freely, then everyone will lose his individuality. The emancipation of self results in the loss of self-consciousness. The individual is conscious only of being a part of living entity; he finds himself to be fastened in with all the mankind. Thus the whole of society becomes one living thing.

71. The metabolism of our life will be operated in such a way as to follow the order of Nature, while Nature will be developed at the hands of men. Men and Nature will be unified into one, and the whole earth will become one huge living thing.

72. Ever since life came into existence on the earth, various kinds of creatures have covered the surface of the earth and have established a sort of balance. Even the lower animals have tried to change their environment for a better one. Men have gradualy succeeded in controlling the order of Nature and turned it to their own advantages. Just as a shell is a part of a shell-fish, man-controlled nature—architecture, and cities,—are a part of men. And Nature itself is a part of men. When we look from the side of Nature, men is a part of Nature, just as shells and shell-fish are.

73. What will be the final form? There is no fixed form in the ever-developing world. We hope to create something which, even in destruction will cause a subsequent new creation. This "something" must be found in the form of the cities we are going to make—cities constantly undergoing the process of metabolism.



74.

I want to be a *Kai* (sea-shell).
I am a sea-shell. All day long, I do nothing but opening and shutting my shell. It is really a wonderful world for lazy boys. Soon everything will be done by machines. Only work we have to do will be dreaming.
Suddenly I think of a wonderful plan.

75.

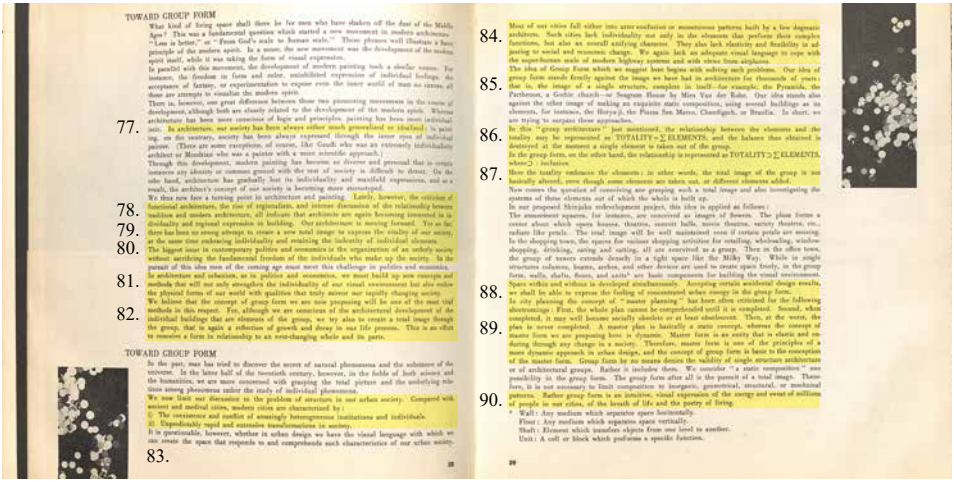
I want to be a *Kami* (god).
I hear the voice from heaven. I am a prophet or perhaps a god himself. I give orders to the architectectural world to make "universal architecture"—architecture of four dimension which drawings have to be cubic. Who will be an architect? Masato Otaka? Kiyonori Kikutake? Or Kisho Kurokawa? I am sure I am the one who can grasp precisely a four dimensional space. I deseryve to be a god.

76.

I want to be *Kabi* (bacteria).
Mad, dogmatic, and fanatic are the adjectves put on me. It is not a good thing to be a god. Perhaps I stick too much to "myself". I have to throw away self-consciousness and fuse into mankind as its mere particle. I have to attain a state of perfect selflessness.
Now I am a cell of bacteria which is constantly propagating itself. Several generations hence, the extreme progress in communication will enable everyone to take a brain wave receiver with him which conveys directly and exactly what other people think and feel to him and vice versa. What I think will be known by all the people. This means that the self-consciousness of the individual will be lost and the will of mankind will remain. It will be the same as the will of bacteria. The only difference will be men's capacity to dream a magnificent dream.

TOWARD GROUP FORM / F.MAKI + M.OTAKA

The third chapter of the manifesto is the only one that is a collaboration of two architects, Fumihiko Maki and Masato Otaka.
At the time of publication Otaka is already a renowned architect, while Maki is a bit the outsider of the group, he spends most of his time in the USA and has a vision on the current global architecture discourse not only based in a Japanese culture, but also on a Western one.
Together they explore what they call "Group form". A way of expressing a whole composition. This is also based on natural analogies, such as the stars and nebulas that compose together the image of a night sky, where the total image of the sky stays the same while each of its individual elements can appear or disappear. A similar analogy is made with a flower and its petals.
In the second part, they introduce their Shinjuku redevelopment project and connect it with their previously explained theory of group form. The total image they tried to compose with this project, where each individual element has some modularity is an expression of the "group form".



77.
In architecture, our society has been always either much generalized or idealized;

78.
Lately, however, the criticism of functional architecture, the rise of regionalism, and intense discussion of the relationship between tradition and modern architecture, all indicate that architects are again becoming interested in individuality and regional expression in building. Our architecture is moving forward.

79.
there has been no strong attempt to create a new total image to express the vitality of our society, at the same time embracing individuality and retaining the indentity of individual elements.

80.
The biggest issue in contemporary politics and economics is the organization of an orderly society without sacrificing the fundamental freedom of the individuals who make up the society. In the

81.
In architecture and urbanism, as in politics and economics, we must build up new concepts and methods that will not only strengthen the individuality of our visual environment but also endow the physical forms ef our world with qualities that truly mirror our rapidly changing society.

82.
We believe that the concept of group form we are now proposing will be one of the most vital methods in this respect. For, although we are conscious of the architectural development of the individual buildings that are elements of the group, we try also to create a total image through the group, that is again a reflection of growth and decay in our life process. This is an effort to conceive a form in relationship to an ever-changing whole and its parts.

83.
We now limit our discussion to the problem of structure in our urban society. Compared with ancient and medival cities, modern cities are characterized by:
i) The coexistence and conflict of amazingly heterogeneous institutions and individuals.
ii) Unpredictably rapid and extensive transformations in society.

84.
Most of our cities fall either into utter confusion or monotonous patterns built by a few dogmatic architects. Such cities lack individuality not only in the elements that perform their complex functions, but also an overall unifying character. They also lack elasticity and flexibility in adjusting to social and economic change. We again lack an adequate visual language to cope with the super-human scale of modern highway systems and with views from airplanes.

85.
The idea of Group Form which we suggest here begins with solving such problems. Our idea of group form stands firmly against the image we have had in architecture for thousands of years; that is, the image of a single structure, complete in itself.

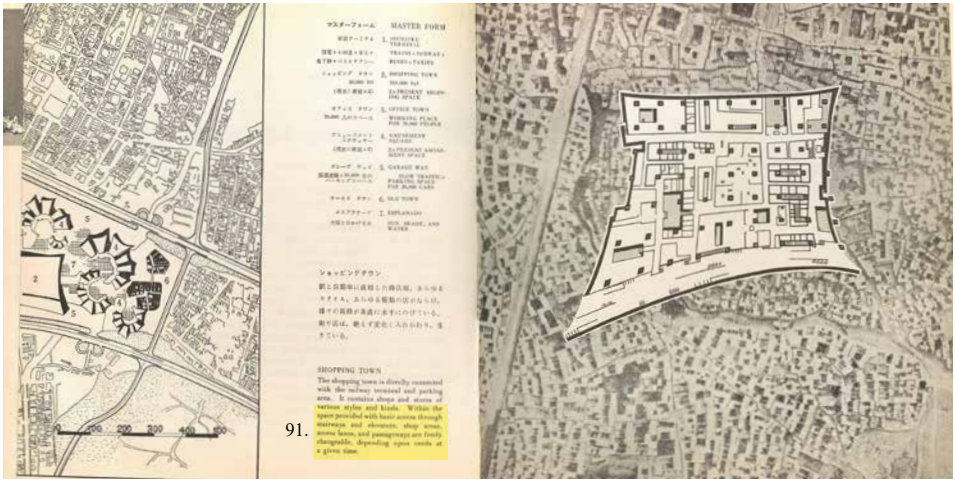
86.
In this "group architecture" just mentioned, the relationship between the elements and the totality may be represented as TOTALITY $= \sum$ ELEMENTS, and the balance thus obtained is destroyed at the moment a single element is taken out of the group.
In the group form, on the other hand, the relationship is represented as TOTALITY $\supset \sum$ ELEMENTS, where $\supset$: inclusion

87.
Here the totality embraces the elements; in other words, the total image of the group is not basically altered, even though some elements are taken out, or different elements added.

88.
Space within and without is developed simultaneously. Accepting certain accidental design results, we shall be able to express the feeling of concentrated urban energy in the group form.

89.
In city planning the concept of "master planning" has been often criticized for the following shortcomings: First, the whole plan cannot be comprehended until it is completed. Second, when completed, it may well become socially obsolete or at least obsolescent. Then, at the worst, the plan is never completed. A master plan is basically a static concept, whereas the concept of master form we are proposing here is dynamic. Master form is an entity that is elastic and enduring through any change in a society. Therefore, master form is one of the principles of a more dynamic approach in urban design, and the concept of group form is basic to the conception of the master form.

90.
Rather group form is an intuitive, visual expression of the energy and sweat of millions of people in our cities, of the breath of life and the poetry of living.



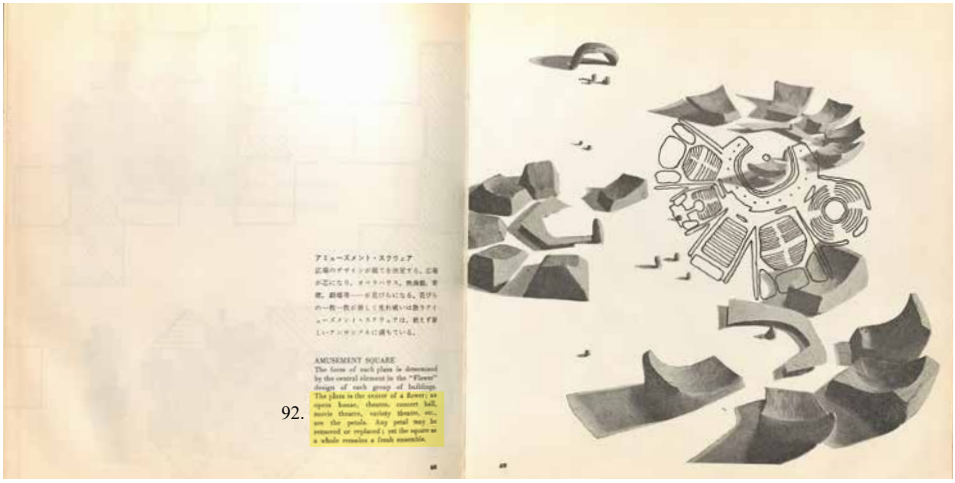
91.

91.

Within the space provided with basic access through stairways and elevators, shop areas, access lanes, and passageways are freely changeable, depending upon needs at a given time.

92.

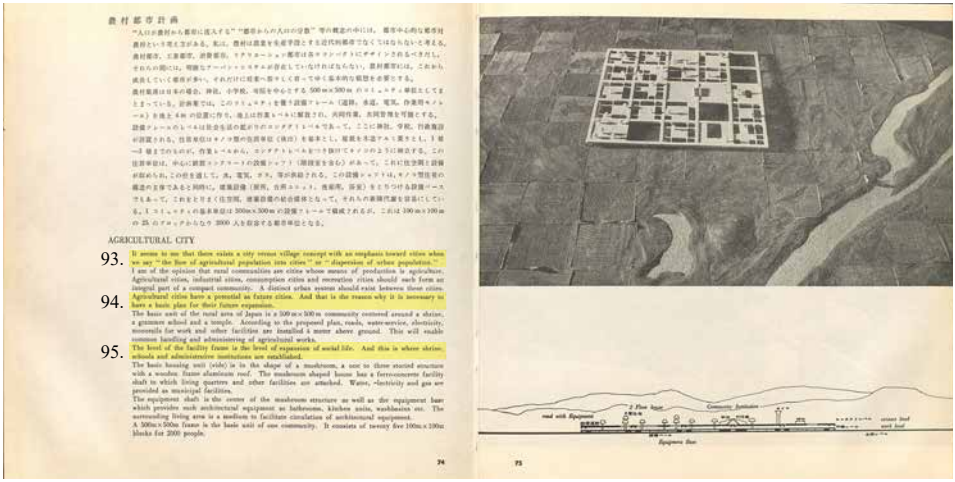
The plaza is the center of a flower; an opera house, theatre, concert hall, movie theatre, variety theatre, etc., are the petals. Any petal may be removed or replaced; yet the square as a whole remains a fresh ensemble.



92.

SPACE CITY

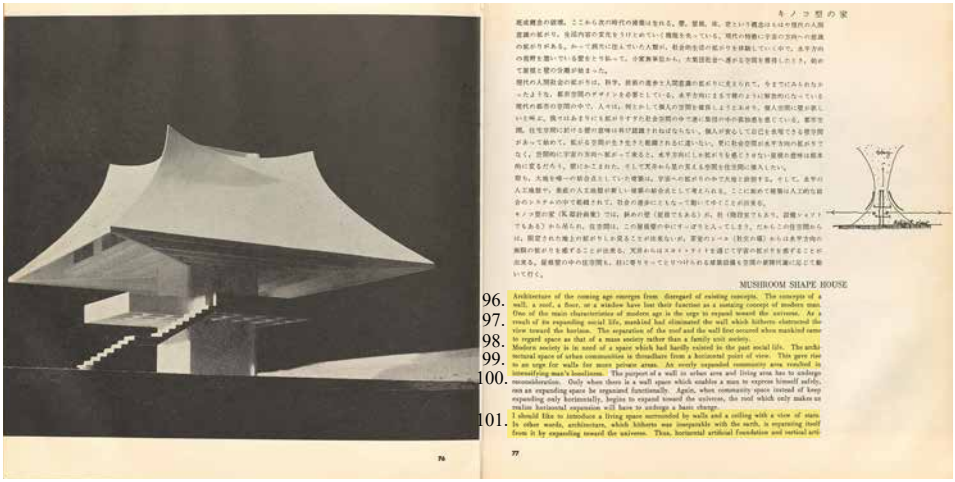
In this last section of the manifesto, the youngest member of the Metabolists, Kisho Kurokawa, reveals several of his projects and proposals.
Going first on the rural and urban scale, with an expansion plan for rural cities, he then gets to the detail of the house that will populate his Agricultural City. Strongly based on modernist principles, Kurokawa puts a strong emphasis on social matters, he tries to reinvent the basic architectural elements, such as wall or roof to link them with modern social problematics of the city, and thus to find new possibilities to replace such elements.
He then finishes with his Wall City project for Tokyo, a proposal that tries to separate the different elements of the city, living, transportation, recreational, so that they can each grow separately and according to their own needs. It is an attempt to bring order to the 1960 Tokyo that has been criticized throughout the whole manifesto for its total disorder.
The manifesto end with living units proposals, formally based on simple abstraction of natural elements such as bambbo or trees. He copies literally the structure of a main trunk and branches to organise the section of a proposed building for housing.
This ends the manifesto the same way it started, with strong visual architectural proposals that explore translations of natural forms into architecture.



93.
It seems to me that there exists a city versus village concept with an emphasis toward cities when we say "the flow of agricultural population into cities" or "dispersion of urban population."

94.
Agricultural cities have a potential as future cities. And that is the reason why it is necessary to have a basic plan for their future expansion.

95.
The level of the facility frame is the level of expansion of social life. And this is where shrine, schools and administrative institutions are established.



キノコ型の家

MUSHROOM SHAPE HOUSE

96. Architecture of the coming age emerges from disregard of existing concepts. The concepts of a wall, a roof, a floor, or a window have lost their function as a sustaing concept of modern man.

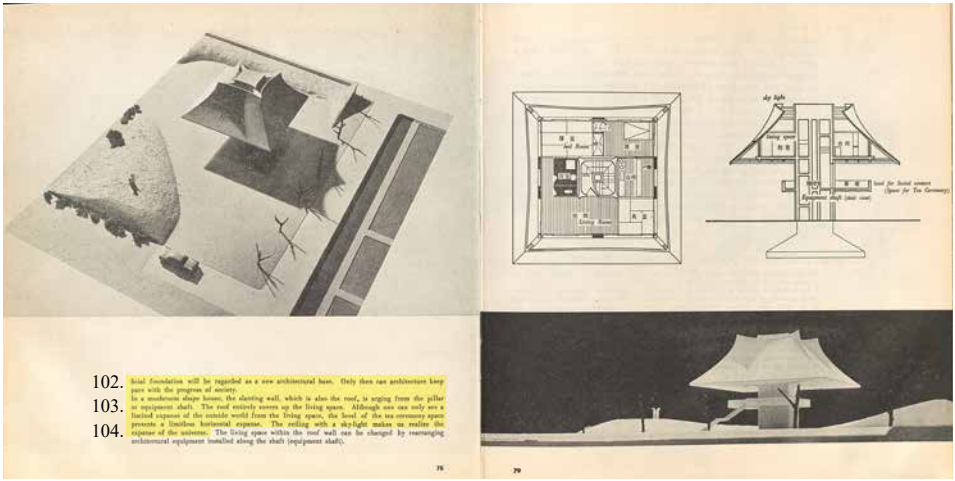
97. One of the main characteristics of modern age is the urge to expand toward the universe. As a result of its expanding social life, mankind had eliminated the wall which hitherto obstructed the view toward the horizon. The separation of the roof and the wall first occured when mankind came to regard space as that of a mass society rather than a family unit society.

98. Modern society is in need of a space which had hardly existed in the past social life. The architectural space of urban communities is threadbare from a horizontal point of view. This gave rise to an urge for walls for more private areas. An overly expanded community area resulted in intensifying man's loneliness. The purport of a wall in urban area and living area has to undergo reconsideration. Only when there is a wall space which enables a man to express himself safely, can an expanding space be organized functionally. Again, when community space instead of keep expanding only horizontally, begins to expand toward the universe, the roof which only makes an realize horizontal expansion will have to undergo a basic change.

99. I should like to introduce a living space surrounded by walls and a ceiling with a view of stars. In other words, architecture, which hitherto was inseparable with the earth, is separating itself from it by expanding toward the universe. Thus, horizontal artificial foundation and vertical arti-

100.

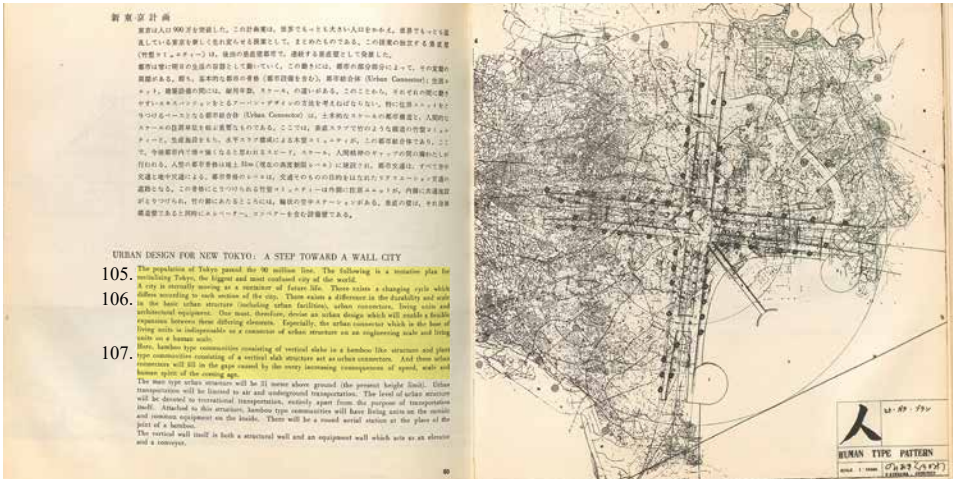
101.



102. Thus, horizontal artificial foundation and vertical artificial foundation will be ragarded as a new architectural base. Only then can architecture keep pace with the progress of society.

103. In a mushroom shape house, the slanting wall, which is also the roof, is urging from the pillar or equipment shaft. The roof entirely covers up the living space. Although one can only see a limited expanse of the outside world from the living space, the level of the tea ceremony space presents a limitless horizontal expanse.

104. The ceiling with a sky-light makes us realize the expanse of the universe.



新東京計画

東京は人口 900 万を突破した。この計画案は、世界でもっとも大きい人口をかかえ、混乱でもっとも混乱している東京を新しく生れ変らせる提案として、まとめたものである。この提案の独立する基本要素（物質マトリックス）は、後期の都市建築形式として発展した。

都市は常に明日の生活の容器として変っていく。この考えには、都市の部分部分によって、その変化の周期がある。従って、基本的な都市の骨格（都市設備を含む）、都市総合体（Urban Connector）、生活ユニット、建築設備の間には、耐用年数、スケール、の違いがある。このことから、それぞれの間に適やかなスペースシェッドをとるアーバン・デザインの方法を考えねばならない。特に社会ユニットとをつなぐベースとなる都市総合体（Urban Connector）は、土木的なスケールの都市構造で、人間的なスケールの住居単位を結ぶ基盤となるのである。ここでは、高成スラブで空中のような構造の空間マトリックス、生産施設をもち、水平スラブ構成による大型ユニットが、この都市総合体である。ここで、今後都市内で増々強くなると思われるスピード、スケール、人間精神のギャップの問の調和がしが行われる。人間の基準寸法は地上 30m（現在の高度制限レベル）に確認する。都市交通は、すべて空中交通と地中交通による。都市骨格のレベルは、交通でのものの目的をはなれたリクリエーション交通の道路となる。この骨格にとりつけられる住居ユニットは内部に設備ユニットが、内側に共通施設がとりつけられ、竹の節にあたるところには、機能の空中ステーションがある。垂成の壁は、それ自体構造壁であると同時にエレベーター、コンベアーを含む設備壁である。

URBAN DESIGN FOR NEW TOKYO: A STEP TOWARD A WALL CITY

105. The population of Tokyo passed the 90 million line. The following is a tentative plan for revitalizing Tokyo, the biggest and most confused city of the world.

106. A city is eternally moving as a container of future life. There exists a changing cycle which differs according to each section of the city. There exists a difference in the durability and scale in the basic urban structure (including urban facilities), urban connectors, living units and architectural equipment. One must, therefore, devise an urban design which will enable a flexible expansion between these differing elements. Especially, the urban connector which is the base of living units is indispensable as a connector of urban structure on an engineering scale and living units on a human scale.

107. Here, bamboo type communities consisting of vertical slabs in a bamboo like structure and plant type communities consisting of a vertical slab structure act as urban connectors. And these urban connectors will fill in the gaps caused by the every increasing consequences of speed, scale and human spirit of the coming age.

The man type urban structure will be 31 meter above ground (the present height limit). Urban transportation will be limited to air and underground transportation. The level of urban structure will be devoted to recreational transportation, entirely apart from the purpose of transportation itself. Attached to this structure, bamboo type communities will have living units on the outside and common equipment on the inside. There will be a vessel aerial station at the place of the joint of a bamboo.

The vertical wall itself is both a structural wall and an equipment wall which acts as an elevator and a conveyor.

80

HUMAN TYPE PATTERN

105.

The population of Tokyo passed the 90 million line. The following is a tentative plan for revitalizing Tokyo, the biggest and most confused city of the world.

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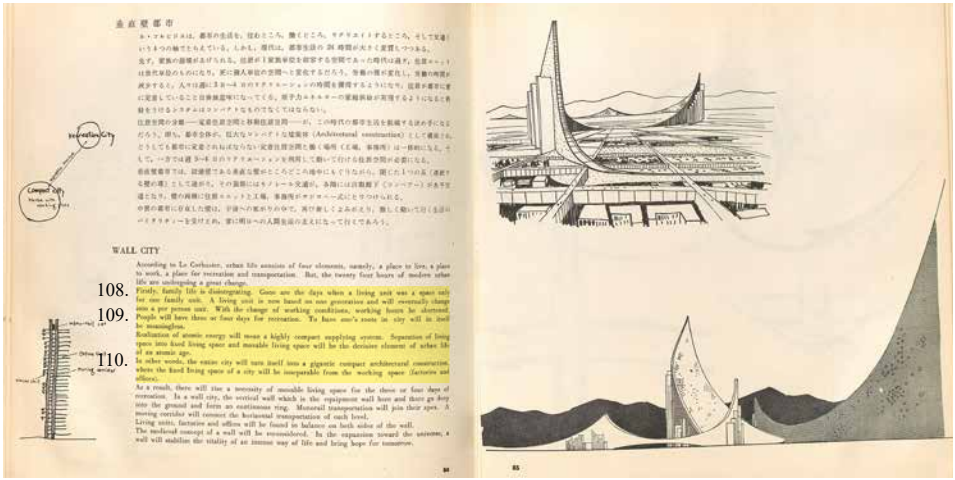

WALL CITY

According to Le Corbusier, urban life consists of four elements, namely, a place to live, a place to work, a place for recreation and transportation. But, the twenty four hours of modern urban life are undergoing a great change.

108. Firstly, family life is disintegrating. Gone are the days when a living unit was a space only for one family unit. A living unit is now based on one generation and will eventually change into a per person unit. With the change of working conditions, working hours be shortened. People will have three or four days for recreation. To have one's roots in city will in itself be meaningless.

109. Realization of atomic energy will mean a highly compact supplying system. Separation of living space into fixed living space and movable living space will be the decisive element of urban life of an atomic age.

110. In other words, the entire city will turn itself into a gigantic compact architectural construction, where the fixed living space of a city will be inseparable from the working space (factories and offices).

As a result, there will rise a necessity of movable living space for the three or four days of recreation. The medieval concept of a wall will be reconsidered. In the expansion toward the universe, a wall will stabilize the vitality of an intense way of life and bring hope for tomorrow.

108.
Firstly, family life is disintegrating. Gone are the days when a living unit was a space only for one family unit. A living unit is now based on one generation and will eventually change into a per person unit. With the change of working conditions, working hours be shortened. People will have three or four days for recreation. To have one's roots in city will in itself be meaningless.

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CONCLUSION
結論

Only optimists who do not worry about our destiny can fight against them. Those optimists, can be found only among archictects and designers,

62.Noboru Kawazoe - Material and Man
METABOLISM/1960

what can Metabolism be? -------

WHAT CAN METABOLISM BE?

Through this study of Metabolism organised in three different dimensions, a global picture of what is Metabolism starts to appear. Expansion, modularity, transience, these three main axes put together could be applicable to systems other than only architecture. By understanding the historical, architectural, and philosophical context of the movement, with an effort each time to linking the unearthed concepts with contemporary problematics, Metabolism appear as a form of framework to some of them.
Of course, the architecture projects presented in their original manifesto don't embody perfectly these three essences. The digital environment that we have now feels like a Metabolist dream if it was applied to architecture with the same initial intentions as these 1960 architects had.
This will be the goal of next semester's project. A Metabolist city project, using the digital tools and answering the problematics of our time.

To conclude, perhaps an element of Metabolism we could learn from is an attitude. In today's construction environment where every action seems already unreasonable. Where sustainability and modern norms have restrained any possibility of change in architecture due to pressing conditions of our modernity. Where the city also knows its form of chaos, overpopulation, and inability to offer a place to sleep to each.

For Metabolism, when the city was turning into a form of cancer, when the task seemed impossible to solve as architects, this group of rather young architects, powered up by their government, their experiences, their culture, their will to serve their country, found a way to bring a new vision of the metropolis. Did it work? I will let it to the reader's discretion to judge on the Metabolic architecture that has been produced. But it did bring a form of order to a Japan seeking a new organising prism. Their brave attitude towards an impending daunting end of the world with the threats of nuclear bombs, was one we could learn from.
In a world threatened by a collapse of our societies, where the ecological disaster is becoming a reality each day passing, maybe we could get inspired by Kawazoe's words from the manifesto.

Architects and designers must be the leaders of optimism.

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page 16-17
Nakagin Capsule Tower, 2019
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page 24-25
Marine City model, around 1960
by Kikutake Kiyonori

page 30-31
Tokyo after the war, 1945
by US Military
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page 36-37
Kenzo Tange's Tokyo Bay plan, 1960

page 40-41
Tokyo station, 1914
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page 46-47
ISS Japanese module, 2011
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page 62-63
Nakagin Capsule Tower interior, 2012
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page 72-73
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Fukushima Daiichi Nuclear Power Plant, 2011
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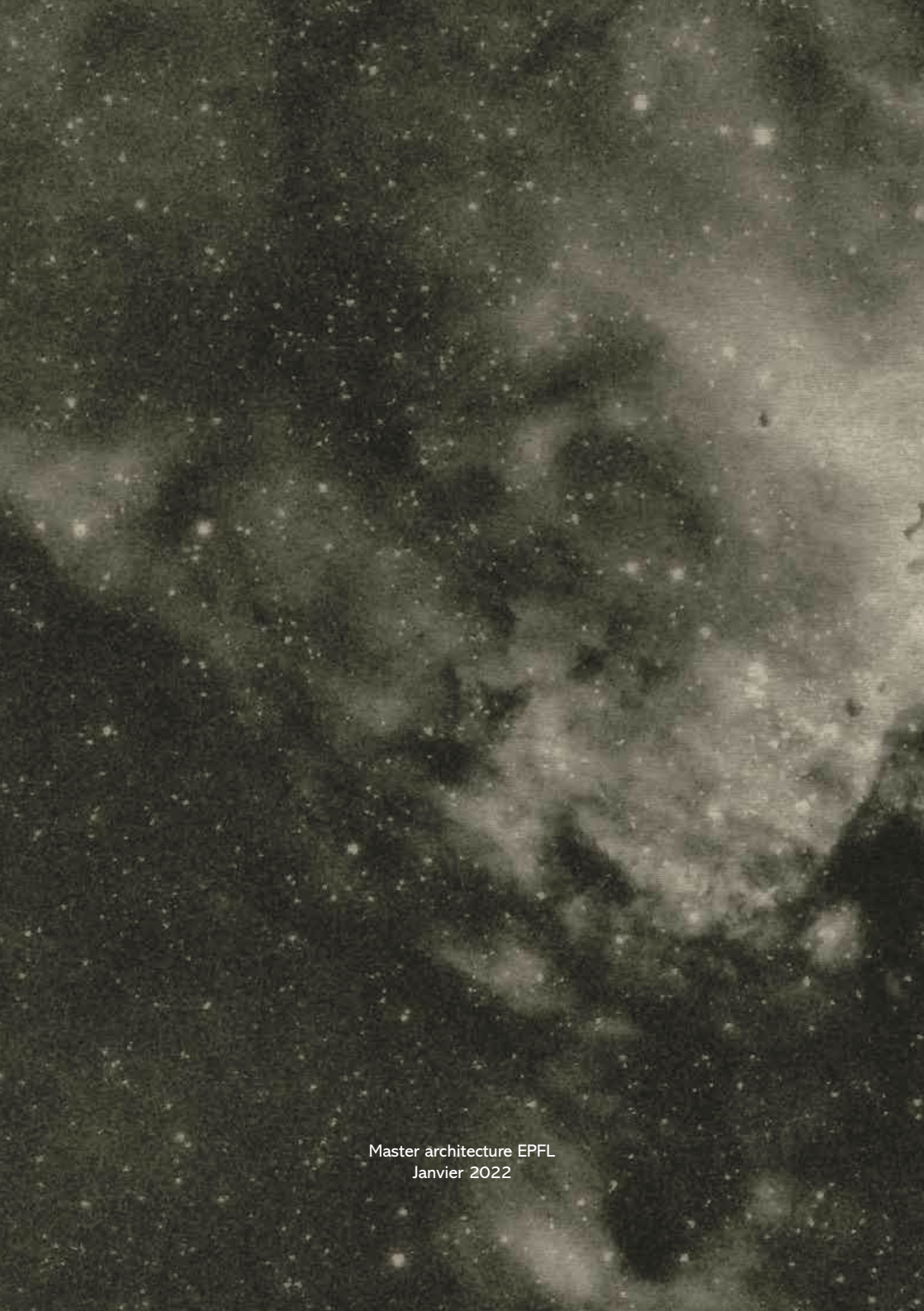
Thanks for reading.



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