Metabolist Movement between Tokyo Bay Planning and Urban Utopias in the Years of Rapid Economic Growth 1958-1964

高度経済成長期(1958 年～1964 年)における東京湾計画と
都市ユートピアの間のメタボリストの動向

2007 年 6 月

早稲田大学大学院理工学研究科

建設工学専攻　建築史研究

RAFFAELE　PERNICE
ラファエレ　ペルニチェ

In memoria di mio Zio
Antonio Pernice

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Metabolism in the Architectural Context of the World

More than 40 years have passed since the Metabolist Movement was promoted worldwide. By now the memory of this group of architects, in Japan as well as in the rest of the world, is a bit dimmed, both as the events that saw them are distant in the time, and as many of the early members have moved away, although never rejecting all the principles completely, from the original themes and the theories that were the basis of their proposals in architectural and urban design. Furthermore new generations of brilliant architects have spread in the recent years in Japan, moving the main interest of the architectural world to the current "New Japanese Wave", contributing to the acceleration of the process of oblivion and separation from those years.

In spite of the natural process of inevitable change that occurs to ideas through the years, some central ideas developed by Metabolism are extremely topical: first of all the matter of how to link the Japanese traditional culture (that is an Asian culture) to the Western models, as well as the necessity to blend modernity with the heritage of the national culture and to create an environment that could promote the harmonization and the cooperation of the different aspects of the contemporary society. And last but not least, how to structure the development of the cities in an age of huge and fast urbanism, driven by a spectacular economic growth, consequence of the massive industrialization accomplished at the turn of the second half of the XX century. All these themes are still topics of great importance, both for Japan and for the new developing countries, especially for those countries that, for economical and historical reasons can share some linkage with Japan, such as the Far East Asia (China, Korea, Malaysia, etc) that at the moment are moving fast to a similar unprecedented prosperity, and whose situation is similar from many points of view to that of Japan of the 60s.

In the past years several critics and scholars from all the part of the world have been fascinated and impressed by bold visions of Metabolism, and have prized and sometimes criticized their innovative design approach, as expression of the new modern Japanese architecture, and generally of the spirit of the rebuilt Japan. However, having mainly focused on the field of the theory of architecture and the issues related to the aesthetic style as expression of the cultural differences hidden behind the formal images and the contents of the architecture, so far the previous studies and the investigations conducted on Metabolism have often neglected a deeper analysis on their urban theories and on the fundamental relations which tied the architects of Metabolism with the specific socio-economical background and the cultural context which directly influenced their projects. In order to accomplish this aim, the investigation for this study has been mainly conducted by a double approach consisting in the analysis of the process of transformation of the Japanese urban system after the Pacific War, and the investigation of the social and cultural context in which Metabolism operated, with an special emphasis on the influence of the foreign architectural theories and the limits of Japanese city planning tradition as well.

The analysis of the events that can be traced since the dawn of the Metabolism shows that it coincided with the period of the fastest development of Japanese nation ever, and it spread in the span of a decade, when Japan reached the two targets of the economic recovery after the defeated in the Pacific War, and the official recognition as an effective member of the developed world previously only driven by western countries.[i] During the 1960s Japan was the stage of worldwide events that helped in his promotion abroad. The first of these events was also the springing board for the launch of the Metabolist Group and was the World Design Conference held in Tokyo in 1960. Others were the Tokyo's Olympic Games in 1964, and the last was the Osaka Expo in 1970. What it is amazing is that only a decade earlier Japanese were striving hard to rebuild the country and recover the wounds of the war in which the country was defeated. The central government stressed the importance of empowering the economy, thus the enhancement of the industrial system became the priority of national policy and the continuous improvement of the production became a sort of imperative for the entire Japanese population. The 1950s were decisive years for the future of modern Japan for many reasons.

The strategy undertook by the government was full of consequences for the future development of Japanese cities. The priority given to the industrial sector promoted a strong centralization of the factories near the cores of the cities, above all Tokyo. In the capital was the highest concentration of qualified skill labors, markets, and financial and governmental institutions, as well as the main infrastructures.

The logical consequence of this strategy was the beginning of an impressive emigration phenomenon that pushed people and activities into the main cities along the Pacific belt, from Kanto Plain, to Osaka, all the way to Fukuoka, in the what was called in the early 60s "Tokaido Megalopolis".

During the years of economic boom the urban growth accelerated so quickly that in the 1970 an amount of 72% of the total population lived in the cities. Just 20 years earlier the amount of urban population was about the 37%, witnessing the sharp shift of Japan from a rural society to an urban society compressed in a little span of time. The urban projects developed by Metabolist were mainly promoted as radical solution to the problem of crowded cities and as polemical alternative to all the previous city planning methodologies that were devised by the Modern Movement. But the origin of those futuristic projects lay more specifically in the efforts of contrasting the chaotic urban sprawl of Tokyo by means of reclamation.

Bases on numerosus writings of the period, the author is submitting the thesis that the main urban theories proposed by Metabolism were diretcly linked with the issue of reclaimed lands in Tokyo Bay and the plans for renewval of Tokyo carried on between the years 1958 and 1964, which eventually spread and enhanced towards more general urban and architectural theories while Modern Movement was officially set down. In this context Tokyo and Tokyo Bay became as a kind of methaporic laboratory for new urban proposals.

When in 1958 the president of the Japan Housing Corporation, Kuro Kano, proposed the filling in of the North side of Tokyo bay, aiming to recover land to be used as new grounds for the extension of the city, his proposal was rejected by most of the Japanese architects, whose alternative plans became the starting

point for the development of innovative projects that presented new dimensional scale and radical solutions both in structural engineering and architectural appeal. Among the others that proposed their ideas were Masato Otaka, Noraki Kurokawa and Kiyonori Kikutake.

The driving idea of the group was the recovery of Tokyo conceived by means of all sorts of the most advanced technology and engineering solutions, seen as the only way to overcome the inextricable chaos and the troubles of the real city. Since then onwards, all the subsequent urban projects concerning Tokyo (such as the plan for "Neo-Tokyo" designed in 1959, and the famous "Plan for Tokyo" designed by Tange in 1960) were all conceived by using massive megastructures and artificial land. The Metabolism movement was both an architectural theory aimed to resolve the problems of overpopulation of the crowed cities of Japan during a time of impressive economical growth, as well as a critical theory of the society analyzed from an architectural point of view. It tried to create a linkage between the Japanese culture and the contemporary architecture through the assimilation and the subsequent transformation of Western values in order to produce models suitable for the Japan's cultural tradition.

The main members of the movement were architects Kiyonori Kikutake, Noriaki "Kisho" Kurokawa, Masato Otaka, Fumihiko Maki, the critic Noboru Kawazoe, the industrial designer Kenji Ekuan and the graphic designer Awazu Kiyoshi. The architects of the original group presented their manifesto at World Design Conference in 1960 as a collection of independent papers in which they proposed ideas and concepts regarding their own vision of the city of the future.

It was the critic Kawazoe that promoted the usage of the word "Metabolism" as key word to present the ideas and the theories of the group; this word refers to biological world and generally to metamorphosis and transformation. It stresses the basic idea of an endless change that occurs inside organism and in its nearby environment. The Japanese architects that joined under this name promoted a flexible architecture and dynamic cities that could develop and grow through the elimination of their exhausted parts and the regeneration of new components in accordance with the necessity of the socio-economical environment.

For them the city was conceived as a metaphor of the human body, and was seen as a structure that is composed by elements (cells) that are born, grow and then die, whereas the entire body continues its life and development, ready for further cycles of "metabolic" changes.

Linking their theories with the Japanese cultural tradition of impermanence derived from the national heritage of Buddhism thought, metabolist architects believed the architecture shouldn't be static, but capable to undergo "metabolic" changes, and instead of thinking of fixed forms and functions, they developed structures and projects composed of mobile and flexible elements.

As stated by the same Kawazoe referring to the form of the city of the future: "…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 subsequent new creation. This "something" must be found in the form of the cities we are going to make-city constantly undergoing the process of metabolism".

The Metabolist city aimed at overcoming the fixity and the mechanical structure of the Modernist city,

whose principles were in a state of crisis since the last CIAM meeting in Otterloo held in 1959. Again Kawazoe refers as :"…the linkage between architecture and city is related to the issue of the interaction between order and disorder. The disorder of the social activities is the basis for the vitality of the modern cities. The philosophy of Metabolism must, concerning this reality, balance the disorder and the order of the city".

A foreign scholar of modern Japanese architecture, Botond Bognar, stressed that the ideology of Metabolism movement was founded on two major elements: the former was the concept of the society considered as living and mutable entity, with an inherent aptitude for change. The latter was the awareness of the members of the group to be able to lead the process of transformation of the whole society by means of the technology and their architectural and urban design.

High technological devices became a key feature common to most of the projects by Metabolists. Thanks to the innovative mix of futuristic technology and appealing forms that fulfilled their drawings, two projects presented at the World Conference of Tokyo were invited to participate at the exhibition of "Visionary Architecture" held at Museum of Modern Art (MoMA) in New York in 1961. Those projects were "Marine City" by Kiyonori Kikutake and "Agricultural City" by Noriaki Kurokawa. The new metabolists ideas relied on the use of a different approach in searching the solution of urban problems and showed many common aspects with the design approach of the European architectural movement of Team X, which had similar goals and conducted similar researches. Rejecting the methodology spread by the Modernists, based on the commands of Athens's Chart and the tool of master plan and zoning, the insight by Metabolism was an the attempt to control and plan the city through the industrial design methodology instead of the architectural principles.

This concept was well suited for resolving urban problems, as it permitted to consider the urban elements as goods produced by industrial factories, willing to change and modify quickly and directly when needed. The well-known idea of metabolic cycles of the metabolist architecture finds its explanation in the vision of the world of technology and the concept of assembly of line of the industrial production. By the way, it can be said that during the 1960s the entire Japan looked like a huge industrial factory, where the economy growth was the main concern.

Many of the projects by Metabolists presented high rinse mega-structures support clusters of prefabricated apartment capsules which were modified and replaced according to their life cycles and the social demand and fashion. The theory of capsules elaborated by Kurokawa during the 1960s was the final result of his studies in the field of containers production started at the beginning of the decade. Those researches were extremely interesting both for the government and the big housing companies that often hired professional architects to enhance the quality, the performance and the aesthetics of their products.

The issue of the aesthetics was of the most importance for the architects of Metabolism. In spite the orientation towards the biological metaphors of their drawings and the models of their projects, the necessary corollary for their ideas was the adoption of new materials as reinforced concrete, which became a typical mark that denoted the Japanese brutalism of the 50s, and the steel frame, to whom the

capsules, conceived as metallic boxes made of welded steel, exactly as the ship containers, were supposed to be placed. The results, at least in the few works completed, were rather far from the supposed flexibility and changeability announced in the early manifesto.

Surely any clue of formal reference to the traditional architecture is vanished. But, on the contrary, the weight of the ancient national architecture was still effective. In their meeting in preparations for the World Design Conference, and in all the writings published later, all the original members recalled the influence and the inspiration suggested from the analysis of the ancient shrine of Ise and the imperial villa of Katsura.

The concepts of endless reconstruction, taken from the former, and that of cyclical change, suggested from the latter, poured out both into the theory and the general metabolist methodology. Other elements of modern architecture, as the concept of standard, the use of module and the industrial prefabrication, suddenly appeared to them as "modern" tools that belonged to the national Japanese architecture for centuries. Japan, which so far was striven to reach the same level of West in most of the field of Culture, Technology, Science, a run started 100 years before, suddenly found itself in the field of architecture, for the first time, as "master" for the western countries. Pride and Aesthetic eventually became the main features that were recalled from the national cultural heritage.

The World Design Conference in Tokyo, whose main theme was the "visual communication" and joined together graphic design and environmental design experts, was an occasion for the public presentation of the Manifesto of Metabolism, published at their authors' expenses, and the final stage of a series of two years long informal meetings held by the members of the group since 1958. From the very beginning, the projects by the metabolist architects caught the attention of the western audience and the success of their futuristic and highly technological visions was, as stated before, so strong that some of these projects were invited (first Japanese ever) at the international exhibition at MoMA in New York.

The international recognition of Metabolism Group as the most important avant-garde movement in Japan dated from the first moment of its appearance, and since then Japan entered officially in the main stream of current architecture.

The sophisticated design methodology and intriguing name "Metabolism" played an important role in the promotion of the ideas expressed in the manifesto, filled with biological metaphors. So did also "…the simple theoretical program and the very attractive monumental forms of their huge visions" as stated by the critic Reynar Banham.[ii] However his opinion about the Metabolists, as well as all the architects that represented the heterogeneous movement of Mega-structuralists during the 60s, looks like quite superficial. Especially if considered that in his fundamental work about the rise and fall of Megastructures, referring to the Japanese metabolism, he presented Kenzo Tange, since the 60s the most famous and influential Japanese architect, as the main star of the whole group, when in reality he never joined the Metabolist movement, although many ideas where shared by both, as other critics have rightly noted. Anyway, if it can be said that a part of the notoriety gained by Metabolists ideas and his acceptance in Japan and worldwide, at least at the beginning, was alleged to the "supervision" of that great architect of the previous

generation, who supported actively the group; in return the Metabolists helped him in renewing his font of inspiration in the field of architecture and urban planning.

During the 50s the interest for the Japanese architecture and art was high, and fruitful contacts between architects and designers were frequent. Walter Gropius, who visited Japan in 1954, as a guest of Tange, invited all the young architects to "…forget Rome and come to Japan!".[iii] The issue of national identity, due to the traumatic changes occurred in Japan during the previous years (the war, the economic recovery), became the most fundamental for Japanese people during those years. The necessity to protect the traditional values of the past from the threats of the fast transformations of modernization (after surviving the destruction of the war) stimulated and spread a new interest for the traditional artistic heritage. Metabolist ideas tried to combine and balance the need for the modernity with the aesthetic values of the past of Japan. Although many other critics have found many analogies with other avant-garde groups, such as the British Archigram, most of the proposal by Metabolism cannot be clearly envisioned without a direct survey of the reality of Japanese society and history of those years.

It is somewhat interesting to note that from some point of view the spirit of reform behind the Metabolist architecture and its aesthetic language recalled the need for a break with a forced continuity with the past tradition of "historical styles" which animated the revolutionary movement of Modern Style in the first half of XX century (in the case of Metabolists it was intended as the rejection of pure Western models), which also refused the forms and the cultural values of the previous century, whose meaning had vanished due to the deep transformation of society led by the progress of the technology and industry.

Robin Boyd (1968) pointed out as the main reason that promoted the architecture of mega-structure by Metabolist group as an effective urban solution was the deep scepticism in the policy of government and local administrations in facing the chaos of the cities, and the growing awareness in the possibilities given by the new technologies. This obsession for the technology became a specific feature of Japanese culture because, according to Boyd, technology itself was the main reason for the impressive changes in Japan since the Meiji period.The influence of metabolism during the 60s was strong and spread from Japan overseas. In some case the influence was direct, as in the case of the French architect Paul Maymont, who studied in Kyoto in 1959 and had occasion to contact the members of the group, and exported in France many ideas of their original theories. In most cases the influence was through magazines and writings (mostly by Kurokawa) that spread concepts, ideas and drawings of Metabolism during all the 60s and the early 70s, when the movement had already declined. Expo's exhibition held in Osaka in 1970 (the first ever in Japan and in Asia) was officially the last occasion for Metabolists to praise the mechanical aesthetics of the industrial world with an optimistic feeling. For somebody the Japanese exhibition was a great success, for others, may be more aware of the changing mood of the international architectural trends and more sensible to the reality and limits of the mass society, it was just another useless repetition of the previous expo held in Montreal in 1968. The new interest for the history and the national culture, the spread of Post-modernism, the growing criticism towards the alienating society of mass-consumption, to which metabolist's ever changing urban and architectural models seemed to fit so well, and the danger for

the uncontrolled industrial pollution became new fundamental issues for the contemporary culture in every nations.

Furthermore during the second half of the 1960s a growing process of revision and criticism promoted by the theories of scholar Christopher Alexander hit the planning methodologies which reduced the composition of the city and the urban planning process to nothing less than a proud gesture of the designer, who proposed new urban plans as "architecture" lacking of the sense of complexity and identity peculiar of the city. In his "The City is not a Tree"(1967), Alexander argued that the limit of modern planning was that it couldn't create complex and composite urban structure as in the historical "natural" cities, composed by different elements combined together, because the current projects were just the expression of an individual designer who couldn't recreate those characters in his plans; in the same way, according to Isozaki, also Metabolism suffered from the same shortcoming and was unable to solve this discrepancy.

Since then on, everywhere the myths of mega-plans and the mega-structures as ideal gigantic mechanical containers of different functions, which could gather different mass activities and give order to the urban sprawl of the modern cities, were collapsing, and with them the illusions which presented the technology as the solution to all the problems of the modern society. In Japan the frequent cases of environmental pollution which spread mortal diseases, such Minamata (in the late 1950s), Ita-Ita in Toyama (1961), the air pollution cases in Yokkaichi (1960) and then Tokyo, Osaka, Nagoya, or the water pollution case in Miyazaki, reaching the peak in 1964-1969, led the public opinion to convince the government to revise the blind attitude of protecting the industry and of pursuing a fast technological development at the expense of natural environment, as well as the optimistic vision of a "good and fact-totum technology", an unconditional faith which was further and definitively corroded with the beginning of "Oil Crisis" in the early 1970s.

Literature on Metabolism

Considering the evaluation of the precedent studies on the subject, a very significant aspect of the literature on the Metabolism is the evident confusion of many foreign critics and scholars regarding the true nature of the movement, the links with the cultural, social and economic background and even the correct composition of the members of the group, which caused frequent misunderstandings especially due to the scarcity of works related to this subject until few decades ago.

In one of the most recent study, the American scholar Cherie Waldeken (2002) alleged that among the first authors who published on Metabolist Group theories and activities, and promoted worldwide their researches and outcomes, were Guenter Nietchke's reports in occasion of the Olympic Games in Tokyo in 1964 published on the British magazine *AD* (1964), Robin Boyd's "New Directions in Japanese Architecture" (1968), and Reyner Banham's "Megastructures. Urban Future of the Recent Past" (1976). According to her, those 3 publications had the merit to investigate and introduce to a Western audience the

new course undertaken by Japanese architecture during the 1960s, of which Metabolism was the most advanced expression and the movement which drawn most interest from foreigners.

Indeed few architects had the chance to visit Japan until then, and few English publications could present an effective and complete survey of the researches which animated Japanese architectural environment during those years. The success of the World Conference in 1960 witnessed a surge of interest for Japanese architecture, although the excessive distance and the difficulties for a long staying in Japan discouraged many to undertake the trip for a direct survey. In 1963 the British architect J. Richards published "A Journey in Japan", a work on his impressions of a 2 weeks trip in Japan and a survey on the recent development of Japanese architecture, and later Italian critic Manfredo Tafuri published his "L'architettura moderna in Giappone" (1964). In both the books, which presented a general portrait of the modern architecture in Japan of the time, (Richard's book was a diary of his 2 week's trip to Japan to survey the new tendencies in Japanese architecture, whereas Tafuri wrote an interesting essay on the recent history of architecture in Japan since the Meiji epoch) the authors stressed the important contribute of Japanese architects to the international debate on the modern architecture and presented Metabolism as a important avant-garde movement composed by young and brilliant architects, even though they were somewhat skeptic on the effectiveness of their theories and methodology, as the critic Tafuri refers to Metabolists group as an "Academy of Utopia".

The Olympic Games in 1964 drew again the attention of the international audience again to Japanese architecture, and in this occasion the reports written by Nietchke promoted the Metabolism as a movement whose theories were closely tied with the Japanese culture and tradition. Another German, Udo Kultermann published in 1967 a work of Tange's activity full of references with Metabolist group researches, followed by Robin Boyd, who, as many others since the late 60s, stressed the role of technology in modern Japanese culture and the strong influence which directly influenced on the nature of Metabolist theories, and then Paolo Riani, a former assistant of Tange who promoted an exhibition of Metabolist projects in Florence, Italy in 1969. The megastructural trend and the issue of utopian urban projects based on industrialization and new technologies were attractive subjects for several publications during the decade, and Metabolism became in many books the Japanese reference for this kind of visionary architecture. Emphasizing the technological and formal appeal more than the urban theories behind the plans, Justus Dahinden ("Urban Structures for the Future", 1970), Michel Ragon ("La cite' de l'an 2000", 1968), Charles Jencks ("Modern Movements in Architecture", 1973), and then Reynard Banham (1976) put definitely Metabolist projects into the imaginary of the city of the future, so that Japan became for everyone as one of the leading hyper-technological country of the world, and in the meanwhile the contemporary Japanese architecture and city became both synonimus of total artificial urban environment made of steel, concrete and glass, and controlled by sophisticated and advanced engineering and electronic systems, a kind of image (or stereotype) lasting till these days outside Japan.[iv]

In 1978 Michael F. Ross's "Beyond Metabolism: the New Japanese Architecture", which proposed for the first time a more complete survey on the latest tendencies in Japanese architecture and a fruitful survey

on the activities of Japanese building companies. Ross recognized as by the early 1970s many distinctive features which animated Metabolist theories were already passed away, and introduced the concept of a new generation of young architects "beyond the Metabolists", focusing on the development of methods for industrialized production of modern dwellings developed by private and public construction sectors, presenting many interesting insights about the development of the new trend in Japanese architecture, which was further investigated by Botond Bognar and David Steward in the 1980s, authors of: "Contemporary Japanese Architecture. Its Development and Challenge" (1985), and "The Making of a Modern Japanese Architecture. 1868 to Present" (1987), probably some of the most complete and exhaustive investigation on the Japanese architecture of the XX century, with a special emphasis on the role of Metabolist theories in the postwar years, written by foreigner scholars.

In Japan the Metabolist movement drawn main attention in particular from the government bodies (ministry of construction) and the big building construction companies (and as a matter of the fact, since the arly 1960s and for long time later, almost all of them worked as consultant or supervisor for these companies in many joint programs involved in research and in the construction activity in Japan), so that most of the publications about them were issued especially in the architectural and construction magazines, in general mostly available in Japanese language only, limiting a wider spread of the Metabolism's thought and criticism from a Japanese perspective. Indeed from the very beginning, the Metabolism appeared to be an international movement so few but basic theoretic booklets and publications were translated in English, such as the original Manifesto (1960). In the next years some influential works by Kawazoe written in 1968, who also wrote several articles along the 1960s, among the most important the articles titled "Metabolism I-II" published in the Japan Architect in 1970, and the basic works of Kurokawa which dated from the late 1970s (his "Metabolism in Architecture" was published in 1977), became the main references about the Metabolism especially for the international audience.

But inspite of this it was difficult to detect a comprehensive collection of studies and investigations on Metabolism group (apart some articles and references on single projects) by Japanese scholaors which dates back to the years between the late 1950s and the early 1960s, when the movement originated. Recent research on Metabolism achievements by Japanese scholars share mixed positive and negative evaluation; Hajime Yatsuka and Hideki Yoshimatsu's "Metabolim 1960" (1997) explores the origin and the evolution of the specific design approach of the members of the group focusing on their architectural design principles as well as the ties and the analogies with other foreign sources and methodologies, such as Structuralism and Aldo Van Eyck of Team X, and it is may be the most comprehensive survey on the subject so far, whereas in his writings the critic Asada Akira has rightly stressed the natural link of Metabolism with the economic boom and social changes of Japan in period of the 1960s.[v] Other scholars showed a somewhat critic and negative approach to the evaluation of Metabolism, such as pointed out by Hisao Kohyama, who in his "Toshikeikaku-ron" (2002) considers their proposals, basically influenced by Le Corbusier, as "cynical and aggressive ones" with just a critical power towards reality as a result.

Ironically it seems that the interest about the Metabolists, whose projects seemed to be appreciated

particularly outside Japan, and whose influence and acceptance connected abroad with a broader interest for the contemporary Japanese architecture and urbanism, developed especially in the second half of the 1960s, when the main creative period of Metabolist Movement was faded already and no group existed any longer. During that decade and later the Japanese critics had mainly a negative opinion of their theories and their design approach, in contrast with the more steady and realistic projects undertaken in Japan at the time.

Apart from the unespected success of WoDeCo 1960, any attempt to repeat the same success of the first meeting in Tokyo didn't come true as the attempts to rejoin the group in the following years (namely 1962-1963) didn't come true, and all the efforts of Metabolism to enlarge the original group and create an unified and coherent architectural Japanese movement which gathered the most advanced personalities of the contemporary architecture failed so that no new manifesto or other collection of writings was published in the next years, and instead every single author preferred to research his own way. May be this was the most evident sign of the difficulties which the movement faced in motherland, and it was one of the main symptom of weakness and internal hostility or even of unexpected indifference which later contributed to the progressive fade of the whole Metabolism as architectural movement during those years.

Chapter 1

Changes in Japan after the War and the Surge of Metabolism

Chapter 1 – Changes in Japan after the War and the Surge of Metabolism

This part of dissertation deals with the origin of Metabolism as architectural movement of avant-garde and proposes an interpretation of its architectural language and urban planning theories, as appeared since the publication of their Manifesto in occasion of the World Design Conference in Tokyo; furthermore it tries to emphasize the importance of the national cultural background as source of inspiration and re-elaboration of many architectural, urban planning and aesthetic concepts.

1-1. The End of a Millennial Era

The day after the peace treaty was signed between Japan and the US in 1945, an act that virtually concluded the Second World War, a new era started for the whole Japanese people.

Japan was morally, spiritually and physically defeated. The cities were completely destroyed and only very few elements of the previous urban landscape had survived. Everywhere piles of gray ashes recalled that just few years before those immense lunar landscapes were lively, large and busy cities. Japanese bombed cities presented a so striking view that it was common for observers stress as the destruction has been total, and the truth of this opinion was strengthened by the comparison with the ruins of the cities of the other nation responsible of the war: Germany. German cities also suffered the destructions of the air raids during the last years of the war. But in this case the type of destructions was different because the German cities were almost entirely made of bricks and stones. The blasts of the bombs caused the loss of buildings and architectures, but saved the general lay out of the urban plans, so that detritus kept the original boundaries of each construction and saved most of the historical sites of the cities. This fact was of the most importance and help in the moment of the reconstruction. But in the case of Japan, most of the architectures of the cities were made of wood and rice paper, so that the fires set up by the bomb's blasts were far more destructive. Literally Japan started from "ground zero" in the phase of the post-war reconstruction.[vi]

The process of democratization of Japan occurred during the post-war years, and it was an integral part of the program carried out by American occupation forces. Thanks to de massive support of US government in consequences of the Korean War, at the beginning of the 1950s Japan started an impressive economic and technological development that led the nation in few years among the most industrialized and rich countries in the world. The policy of Japanese government stressed the importance of an industrial development on a huge scale and the assimilations of more advanced technologies from abroad, and as consequence of her fast economic boom Japan witnessed a skyrocketing growth of the GNP since the middle of 1950s. The key point of this impressive economic growth, among the others, laid in the special predisposition of Japanese people in the assimilation of foreigners' technologies, together with innate sense of craftsmen skills, and in the general will of national rebirth (ideal and material) that

animated the nation during those years.

Many features of the traditional culture of Japan were adapted to the context of the new world order and most of the energies of the country were pushed in the modernization of the industrial system to strength the process of economy growth, seen by the authorities as a way to regain prestige and confidence.

The peak of this phase of transformation of the modern Japan occurred during the first half of the 1960s, when more evident were phenomena like the development of heavy industries, the emigrations from the countryside to the big cities, the process of urban growth, the fast change of the Japanese society from a country-minded culture to an urban-minded culture as consequence of the growing attraction for the urban–life style models. The high pace of this change in Japanese society, and especially the speed of the urbanization phenomenon that was lacking of any form of control, promoted some attempts of enacting programs of urban and environmental planning, promoted, directly or indirectly, mainly by the central government aiming at controlling the urban growth and stabilize the economic growth as well.

Most of these issues that characterized the economical and social transformation of post-war Japan flowed into the main ideas and reflections of Metabolism movement. The transformation of Japanese urban environment occurred during the years between the late1950s and the early 1960s appeared to the eyes of the young members of Metabolist group, all of them at the beginning of their carrier, a spectacular and stimulating event, announcing the start of a totally new world, a true new beginning for modern Japan.

Participating in the general atmosphere of optimism and euphoria that followed the economical recovery since the second half of the 1950s, by means of their projects they tried to face and resolve most of the problems and issues that seemed to challenge the development of Japan, both in the field of aesthetic and art, as well as in the field of sociology, urban planning, and architecture. Although in the following years every member of the group developed his own personal theory and projects independently from each other, most of the main concepts that formed the base of Metabolism theory appeared to be similar, at least during the early years of existence of the movement. Above all the aesthetical language of the architectural forms seemed to stress the main component of the metabolists visions, that is a sort of strong attraction for the new engineering technologies and the industrial production systems. This attitude combined with an aware refusal of the (Western) functionalist design approach and a schism from the contemporary Japanese architectural main streams, often too much tied to an outdated use of traditional forms. In fact it is generally known that Metabolism didn't approach the reevaluation of the ancient national architecture trough a copy of its forms, but it was more interested in the analysis of the aesthetic and compositional principles of functionality and the design techniques behind the origin of those forms.

Their approach toward the search for a new expression of the Japanese sense of art and architecture in the contemporary epoch further fostered the interest for the national architectural heritage during the 60s, stimulating the awareness of the necessity of new and deeper surveys on the traditional buildings to preserve this national patrimony, an activity that started since the second half of 1950s, but that was accelerated during the 1960s and led to a more detailed and aware definition of some fundamental

concepts, such as Ma (interval), Oku (depth) and En (in/ between), linked to the very nature of Japanese space and so essential in the field of the Japanese architectural culture.[vii]

The ideas of Metabolist group, promoted in occasion of the World Design conference of Tokyo in 1960, spread a vast interest and had an immediate and extensive success, especially abroad. This event put the members in limelight, promoting in Japan and overseas a new general interest for the works of the members and for their new architecture and urbanism conceived on a huge scale by using megastructures and the most advanced technological device.

1-2. Metabolism as Movement of Avant-garde Architecture

Metabolist movement was officially birth and developed since 1960. It wasn't only an architectural theory aimed to resolve the problems of overpopulation of crowed Japan during the period of fast economic growth, but also a "critic theory of the society analyzed from an architectural perspective",[viii] coherently with the development of the culture and the society of those years, that reflected the basically 2 of the main issues debated in Japan, regarding the architectural theories: the attention to the specific Japanese culture as well as the receptivity towards the Western culture and it use to create new models suitable for the features of Japanese culture and society.[ix] As noted by Japanese writer Toru Terada, during the 60s there were several cultural and economical conditions that could promoted the development of a new design and futuristic architectures in Japan as well as in the entire world. Especially in Japan some key factors such as the diffusion of a social architecture for the masses who converged from countryside into the large metropolises (hospitals, gymnasiums, offices, hotels), the fast transformation of the original rural society to a mass society, the big investments operated by capitalist power (above all financial and building companies) aimed to gain high profits in the future, fostering in the same time an impressive architecture representative of their growing influence in the society, the development of information networks for the publication and spread of news and information on the latest trend in the design and art which aroused the interest of the people toward the creativity of the architect-artist, were fundamental into the spread of a new taste and sensibility in architecture.[x] The diffuse sense of a coming "social revolution" as consequence of the atmosphere of political instability due to the radical and often violent opposition promoted by the left student movement (Zenkakuren)[xi] against the other conservative political factions, the growing economic prosperity of the nation, the development led by the big industrial companies in the field of the technology, by means of the new materials and the improvement of the civil engineering, were among the factors which promoted more variety and innovation in the architectural ideas, and prepared the field for the development of contemporary Japanese architecture in the 60s.

According to Tarada, the new forms appeared in architecture during those years were linked to the general "Desire for Deformation" so common among the Japanese people in the postwar years, and that was anticipated in the literature by the rejection of realism. The artists refused the reconstruction of the

world like it was before because it was seen as oppressive and suffocating, so that they rejected the prewar models. In architecture the revolution and the change of the models followed the same trend like in art and literature, confirming this "wish for the deformation" as the main component of the culture of the reconstruction years.[xii] From this perspective, Metabolism was an architectural movement which was symptomatic of a general atmosphere of renewal and departure from the previous cultural and artistic ideologies, whose crisis were perfectly evident also in the Western countries, and was attentive of the new directions of the contemporary culture, being what Reem Koolhas define as "the only non Western architectural avant-garde movement in 5000 years".[xiii] Kawazoe claimed that: "The development of city metabolism systems also means opening the way for the will of the masses to be reflecting in city planning"[xiv], recognizing the importance of the movement as deeply linked to the reality of the new Japanese society of the time, though Arata Isozaki noticed that Metabolism tried to create a genuine Japanese national architectural language as union between the flatteries of the commercial architecture which flourished in Japan during those years as consequence of economic boom, and the architecture as symbol and expression of the modern Japan.[xv] In particular it must be stressed that in spite many similarities in the concepts and the forms of the projects, Isozaki was not a member of Metabolist Group.[xvi]

In a later reflection on the meaning and the value of the whole movement in the early 1960s, he definitely considered that: "the problem of Metabolism is almost entirely summed up in the debate over what Christopher Alexander calls the "tree" and the "semi-lattice" structures. … The Limit of the 1960s was in the paradox that every effort at planning ended up becoming a tree structure. … Alexander went on to argue that architecture itself should be created as a city. To put it in contemporary terms, he began to argue that the process should involve others, so that diverse elements might be compiled into a composite structure. I don't think that Metabolism was capable of solving this problem. It was always about individual famous architects coming up with their own designs in the mode of the same old autonomous subject. Their work was nothing but their own signature."[xvii] It must be noted that projects developed from 1961 to 1963 by Isozaki, at the time when he was a member of Tange laboratory together with Kurokawa and Maki, recall many of the basic features of Metabolist schemes. In particular the project for his "Joint Core System" developed for "Shinjuku Project" (1961), the projects for "Peujeot Building Project" and "City in the Sky" (1962), as well as "Marunochi Project" (1963), all of them conceived as suspended structures made of tall shafts and branches with plugged in capsules shaped and modelled in brutalist concrete, and projected as a flexible labirintine structure to create an ordered system with casual development and aggregation (which recall the "Action Painting" technique by the Pollock), are evidence of the same formal and conceptual language, even though the meaning and the purposes are different. Whereas the Metabolists celebrated with optimism the new era of economic and social regeneration of postwar Japan, striving to concentrate only on the coming future, Isozaki was more critic of the megastructural approach of the group, and his schemes were more pessimistic, polemical and critical of this approach, and in general of the tendence to forget the value of the history and the lessons of the recent

past, as clearly stated in his famous sketch ("City in the Future", 1961) which saw the ruins as incubator of the new city according to and endless process of destruction and rebirth.[xviii]

The main members of the Metabolist group were the architects Kiyonori Kikutake, Noriaki (Kisho) Kurokawa, Masato Otaka and Fumihiko Maki, the architectural critic Noboru Kawazoe, the industrial designer Kenji Ekuan and the graphic designer Awazu Kiyoshi.

The movement had the first public appearance in occasion of the World Design Conference (WoDeCo) presented in Tokyo from 12th to 15th of May 1960, an international event held for the first time ever in Japan. This important meeting, whose main theme was the "Visual Communication" and joined together graphic design and environmental design experts,[xix] was a great occasion for Japanese architects and designers to promote outside the best of their works and ideas, as well as to meet and change experiences and opinions with professionals and colleagues from abroad.[xx] Among the other architects invited to join the conference were the architects Luis Khan, Paul Rudolph, Jacob Bakema, Alison and Peter Smithson.[xxi] The preparation of the meeting was carried out by the leadership of Takashi Asada as secretary-general, an engineer colleague of Tange Kenzo, who successfully promoted the commitment to host the conference in Tokyo but then left the task of the preparation of the meeting due to his teaching activity at MIT, and Noboru Kawazoe, who was an active element of the Metabolist group, that time journalist of the magazine Shinkenchiku (Japan Architect), recently forced to resign because his criticism to a respected architect of the prewar time.[xxii]

Stimulated by the World Design Conference, the group of the 5 original members, who according scholar Wendelken was: "(…) Marxist in orientation, international in its interest, and technocratic and scientific in its ideals",[xxiii] wrote independent essays which they published by their own expenses under the title: *"Metabolism 1960. The Proposals for New Urbanism"*. This booklet was their manifesto, and it gathered their reflections and ideas about the architecture and the urban planning they had developed during the years preceding the conference, when it was taken the decision to held the meeting in Tokyo.[xxiv] The critic Kawazoe was the first to choose the word "metabolism" as name of the group, referring to the biological phenomenon of the cellular metabolism, which keeps the life of organisms as the result (summa) of chemical changes that convert the nutritional elements in energy and the chemical complexes in cellular material through the continuous cycle of production and destruction of protoplasm. Indeed, it was a word that refers to the concept of metamorphosis and transformation, and endless process of change which acts inside the living organisms.

The Japanese architects and designers who chose that name aimed to develop an architecture and an esthetic language conceived as integral part of a dynamic environment, which is able to live, grows and develops like a real living being by means of the elimination of the worn parts and the regeneration of new ones.[xxv] The ideas and theory of Metabolism envision a biological metaphor according to which the city, exactly like the human body, is made of parts and limbs composed by elements (cells) that are born, grow and then die, meanwhile the whole body lives and develops continuously.[xxvi] It can be noted that the concept of transitory, endless change and metabolic cycles are based on the tradition of Buddhist

philosophy which is deeply rooted in the traditional Japanese culture. The architects of Metabolism believed that the modern architecture shouldn't be static, but instead capable of undergoing "metabolic" changes, and rather than think in terms of fixed functions and fixed shapes, they concentrated their efforts to create projects and models where it was possible to modify the inner spaces and the functions.

By means of the usage of new technologies and materials, they proposed new prototypes of cities and buildings whose elements were mobile and changeable. The earlier projects presented by Metabolist group were all conceived with a redundant architectural language which took many suggestions from the world of the advanced technology and industry, rejecting any influence of the traditional Japanese architecture as well as the rationalist language of the Modern Movement, as sponsored by CIAM. Their architectures and models of cities were the transfiguration of their vision of the post-war Japanese society, conceived as a living organism in continuous change and growth. With the aim of overcoming the problems and the inefficiency of the contemporary world, they suggested to surpass the limits of the fixed and static architecture and proposed a new type of architecture that could be easily adapted, at least in their opinion, to the technological and social changes according to "metabolic cycles".

The city in the visions of Metabolists was a structure that denied the fixity and monotony of the urban model proposed by the Modern Movement 40 years earlier. "…the problem that connects architecture to the city is the problem or order and disorder. The disorder caused by social activities is the basis of the vitality of modern cities. The philosophy of Metabolism must, from this reality, balance the disorder and order of the city…" maintained the theorist of the group, Noboru Kawazoe. The main idea, according to him, was the development of integrate urban system that "…could adapt to the problems of our fast changing society, and in the same time keep steady the lives of the people".[xxvii]

Two were the main points of the theory of Metabolism. The former point recalled the idea that the entire society, strongly connected with the architecture and the city, was considered as a changeable and living entity whereas the technology was conceived as an instrument which allowed the extension of human capabilities and the promotion, as well as the control, of the change enacted in the society. The latter point stressed the firm belief of the Metabolists that the change was a quality inherent the whole society and the field of architecture, so that it was possible and necessary (something like a moral duty) to drive the change itself by means of their projects and theories.[xxviii]

Metabolism was indeed a movement of architecture which criticized and in the same time tried to give response to the changes occurred in the society and the culture of modern times in Japan. Their theories suggested combining and balancing the need for modernity with the aesthetic values taken from the heritage of the traditional national culture, as well as their proposals sprang out directly from the vision of the real world that took shape in the years of post-war reconstruction, and were expression of the new Japanese urban environment in complete transformation.

The combined actions of economic development and uncontrolled urban growth caused a traumatic and deeper and deeper conflict between the traditional values of prewar culture and the new western models, which culminated in violent episodes of political turmoil, especially during the second half of

1960s. The issue of the national identity, due to drastic changes occurred in Japan in so little time, became the most fundamental for Japanese people during those years. The necessity to protect the traditional values of the past from the threats of the fast transformations of modernization (after surviving the destruction of the war) stimulated during the 1950s a new interest for the traditional art and culture, and encouraged Metabolists to think how the adapt this tradition with the needs of the modern society. The main feature of their urban projects was a general obsession for the interchangeable and flexible architecture, whose components were conceived as prefabricated elements produced by means of industrialized process, so that they could be easily replaced and modified during the time. The logic behind this approach was an attempt to control and plan the city, as well as the architecture, through the methodology of the industrial design instead of the architectural principles.

This concept was well suited for resolving the urban problems of Japan, as it permits to consider the urban elements as goods produced by industrial factories, capable to change and modify quickly directly when needed. The fundamental idea of metabolic cycles finds it explanation in the vision of the world of technology and in the tool of assembly line of the industrial production. And is not a case that Metabolism accepted the insight of industrial model as reference for its architectural and urban project, as Japan was the main source of this idea, being in the 50s and 60s like a huge industrial factory, where the economic growth was the main national concern. The necessity to face problems related to the urban sprawl caused by the cities growth (such as the need for balancing residential buildings and factories and permit the allocation of an impressive amount of new immigrants from countryside, safeguarding in the same time the growth of the economic production), as well as the problem of the lack of land, both for the shortage of physical space and for the excessive fragmentation of property lots, to allow further urban development, forced the Metabolists group to propose in their projects revolutionary engineering device by using artificial ground or platforms, and monumental and impressive urban megastructures, seen as the best way to resolve quickly the huge problems of housing shortage during the early 60s.

Very similar to these solutions were some projects by Arata Isozaki developed between 1961 and 1963, and above all the design approach of Tange Kenzo, who also proposed in occasion of the World Design Conference his famous plan for Tokyo bay. The importance of the event drew the attention of an international audience, and Tange (who introduced his theories referring to the principles of "Structuralism") and Metabolist's proposals truly witnessed the vitality and boldness of the new modern Japanese architecture, supported for the first time ever by a spectacular economic prosperity and growing financial power, together with a collective feeling of spiritual rebirth.[xxix]

The optimism for the bright future of Japan poured in the World Design Conference, which became a milestone in the history of modern Japanese architecture and presented Metabolism and Tange's Structuralism as the main Japanese architectural trends, similar in the purpose of structuring the fast growth of the Japanese city but independent from each other.[xxx]

The unexpected great success of the meeting generated a fruitful and extensive debate on the modern city and its problems which drew much interest and attention especially abroad (works by Kurokawa and

Kikutake were invited to exhibit at MoMA in New York), and furthermore convinced the members of the group to prepare another booklet entitled "Metabolism 1961", this time intended to be a volume on methodology and execution. New members joined the original group, such as city planning expert Takashi Asada, painter Hiroshi Manabe, photographer Shomei Tomatsu, and Ekuan Kenji (who however didn't participate in the publication of the original manifesto). However, as the same Kurokawa explained: "Opinions differed within the group on how to respond to these social circumstances [it is worth noting that 1961 was the year of the implementation of the "Double Income Plan" promoted by the Japanese government to enhance economic prosperity, and furthermore in Japan this was a period of frenetic construction investments] and as result publication of the new manifesto was postponed a year. We held further discussion and planned every year to bring out the projected publication, but it never appeared".[xxxi]

After the exposition held at Seibu Department Store in Ikebukuro in the Autumn 1962 and titled "Life in the City of the Future", further attempt to extend the participation of other members to the original group of Metabolism failed. As a matter of the fact in the same year it was planned the formation of a so called "Team Tokyo" composed by original Metabolist group and Kenzo Tange, Arata Isozaki, Takamasa Yoshizaka, Yoshinobu Ashiara, Koji Kamiya, but "…this [group] met only once. (…) Further plans to publish a book didn't materialize because of the growing diversity of opinion among the members of the group. Each member continued his work actively, pursuing his own goal, and many published individual works".[xxxii] Indeed it seems that from the very beginning the many contradictions and basically different views of the urban problems of the contemporary city, in spite of the efforts to come up to a common strategy and a corpus of theoretical principles and methods, exerted a stronger influence over the members, so that also the planned meetings and publication for upgraded manifestos planned in the following years (namely 1962, 1963 and 1965) failed completely and signed the real decline of the Metabolism as compact and unified movement, even though the occasional meetings of the former founders, who still continued to use the original name, gave the opposite impression.

1-3. Metabolism as Symbiosis of Tradition and Modernity

The Metabolist Manifesto, published in the April of 1960 and presented in May in occasion of the Tokyo's World Design Conference, was a collection of reflections and projects about the contemporary city, and aimed to propose alternative solutions to the problem of the urban sprawl in the Japanese cities, overrun by un uncontrolled tide of immigration and an exceptional phase of economic growth and industrialization.

Metabolist Group's proposals were based on two main cultural tendencies. On one side they departed themselves from the all previous methodologies proposed by Functionalist approach, rejecting the guidelines of Athens's Chart, which was the basis of the Modern Movement town planning design, as well as the tool of master plan and zoning;[xxxiii] and furthermore they moved a strong criticism to the western

cultural system and strived to set up a theory and a design methodology aware of the identity and exclusiveness of Japanese native culture.[xxxiv]

As noted by the scholar Steward, the entire Tange and Metabolism's theories and ideology, which were based on the vision of the reconstruction and reorganization of the city by means of giant units and mega-structures, flowed directly from the decline of CIAM.[xxxv] The criticism against the rules introduced by the Athens Chart began in occasion of the CIAM meeting in Aix-en-Provence in 1953. In that occasion some members of the new modern generation of architects, led by Alison and Peter Smithson, Jacob Backema and Aldo van Eyck, questioned the validity of the 4 main city functions as prescribed by the Chart: living, working, recreation and transportation. Following the status of decadence of the CIAM, officially declared during the last meeting in Otterlo in 1959, whose universal design principles for the urban growth were rejected by the critical revision of Team X, who stressed the importance to preserve the values of local cultures and identity,[xxxvi] the Metabolists took polemical action against the false propaganda of "universalism" proposed by the Modern Movement since 1920s. In particular they refused the notion of the supremacy of Western world and European culture, and explained that: "…the inspiring source of the Metabolist movement, then, may safely be considered as the need to felt to inlay a multi-dimensional value system into contemporary architecture which has been built on a mono-dimensional Western cultural value system".[xxxvii] Above all Metabolism claimed a new role for Japan in the architectural context of the world, as many writings by Kawazoe and Kikutake had frequently emphasized, and tried to introduce the new concept of integration or, as referred by Kurokawa, "symbiosis" of different foreign cultures, stressing the importance of the contributions from intellectual sources other than the European or American.

Kurokawa himself was the most critical of the group concerning the cultural influence of Western culture in the world and in Japan, and conceived the Metabolism thought as an alternative to that system. In his writings he often recognized the importance of the Western system of values for the overall development of modern society of the entire world, but he has also stressed the needs for the recognition of the cultural independence of the minor cultures aliens to those set of values. Referring to the case of the Japanese city, he claims the presence of the "invisible tradition" of Japanese culture that pervades the streets and the blocks of her physical form, keeping alive centennial traditions and philosophy, although shaped in modern design and made of more advanced materials; Kurokawa explained that the typical Japanese aesthetics can be called a "mind-only" aesthetics, and it is in contrast with the materialistic approach of the Western art and architecture and its search for eternity, because it points to the realm of the esthetic sensibility that is non material.[xxxviii]

His indefatigable eloquence claimed Metabolism as a pure creation of the Japanese culture, generated from the combinations of several elements of the national tradition, such as the philosophy of Buddhism, the sensibility towards the nature, an original sense of the architectural design which perceived the overall building plan as a succession of interior spaces expanding trough extrusions to keep spatial continuity with other rooms,[xxxix] a pantheistic vision of the universe and a special ability for craftsmanship

and the predisposition in the assimilation of alien and superior techniques, together with the modern shapes of the mechanical world of engineering sciences and the processes of industrialized production. The combinations of these cultural factors and the attention to the peculiarities of Japanese environment, an isolated land with exclusive geographical and climatic features, often hit by natural disaster like typhoons and earthquakes, gave the Metabolism his fundamental Japanese character showed not in the exterior forms of the projects, but in the conceptual structure and the methodology that generated those forms, that was the expression of "…the rediscovery of a hidden invisible tradition".[xl]

The esthetic language of Metabolism thought can be related to the influence of six main factors: the acceptance of the concepts of cycles of existence and impermanence of the reality connected with Buddhist philosophy, the heritage of Japanese traditional wooden architecture and her relation to modular order of the building components and the system of proportion (kiwari)[xli] as well as the prefabrication and standardization of architectural elements, the modern processes of industrial prefabrication of building components, the studies on new building materials end engineering structures based on modern technologies, the awareness about the characters of Japanese urban environment and the morphology of Japanese territory, the criticism to the Rationalist tradition and the engagement in the research for a new (national) architectural language in parallel with the suggestions derived from the research of Team X.

All the projects of Metabolists group, both the architectures and the proposals for new models of city, were characterized by the central idea of growth and rebuilding, the same concepts that were inherent the construction of the traditional Japanese wooden architectures for centuries. The idea of impermanence and temporariness that derived from the building traditions as well as the influence of Buddhist philosophy,[xlii] so rooted in the Japanese culture, were manifested through the material forms of capsules and tall core shafts, long term and short term architectural elements, as expression of modern technology, that created a overall fascinating and effective representation of this ever-changing architecture as fundamental element of a urban environment in endless transformation.[xliii] Metabolist architects believed that the architecture for the modern city should deny the fixity of forms and functions as conceived by the Modernist approach, and on the contrary should develop structures composed of mobile and flexible elements.

As stated by the critic Kawazoe referring to the final form of the city of the future: "…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 subsequent new creation. This "something" must be found in the form of the cities we are going to make, city constantly undergoing the process of metabolism".[xliv]

The "modernity" of the Japanese traditional architecture was something noted since the first half of the XX century. According to the German architect Heino Engel, who visited Japan in 1953, the particular features which had been characterized the traditional Japanese house for 300 years were "the modular order of the system and form, the flexibility of space partitions and room functions, the compository potential of the floor mat, the expressive diversity within comprehensive standardization, and the integrative quality of Japanese architectural forms", and they seemed to be better suited to be employed as guideline for the design of contemporary housing than "any other form of residential architecture".[xlv]

Especially the concept of modular coordination (the comprehensive coordination of all building activities and building components) was a pride of the traditional Japanese architecture made of wood, and it had a long lasting history that led Japan to the concept of standardization before the Western architecture;[xlvi] Metabolist architect Kikutake stressed as the base of his design methodology was his studies of wooden architecture he undertook after graduation, and from that experience he learned that: "…wooden architecture possesses a superb structural system: the possibility of dismantling and reassembling it. In other words, a recycling system had quite ingeniously been developed. …My outlook on Japanese architecture, especially wooden constructions, began to evolve at this point".[xlvii]

In ancient Japan the concept of architecture was something quite different from the literal meaning present in the cultural tradition of Europe or the rest of world, and showed some relationship with engineering and carpentry activities. According to Noboru Kawazoe the main difference laid in the fact that: "…In ancient Greece and other areas of Europe, where massive castles gave rise to cities, the concept of architecture embraces not only building but also civil engineering and military technology (the pyramids of Egypt being an early case in point). In Japan, however, the construction of castles and huge tumuli was not necessarily regarded as architecture. The Japanese word for this type of construction consists of the two characters for earth and wood, and is quite distinct from architecture. It is usually translated as civil engineering but might better be called agricultural engineering. The major distinguishing characteristic of Japanese architecture is its intrinsic link with shipbuilding and the technology of wood".[xlviii]

The traditional Japanese house has been considered as a master piece of elegance, carpentry skills and functionality since the last century, when Japan opened its gates to the world and several scholars could visit the country, either for research or guest teachers, invited by Japanese government. The interior of the traditional house showed and high grade of flexibility by means of the subdivision of the house plan into independent rooms through the use of tatami (whose size was standardized since the Edo epoch) as well as different kind of slide panels (shoiji and fusuma), and creating a clear hierarchical system of spaces by setting a difference in the height of the floors, which determinates a sequence of spaces which flows from the less important level to the most important. Moreover also the furniture of the traditional Japanese house was designed to fit with the overall flexible interior environment of the house, and was thought to be easily carried and moved away in the case of removal ("When a family decided to move, not only chests, but tatami and all other fittings as well were removed, loaded on carts, and taken to the new house…").[xlix]

The ancient wooden architectures, their elegance and the fragility which so sharply contrasted the strong and monumental western architecture made of stone, became the main references for the modern projects of Metabolism. In particular the architectures of Katsura villa in Kyoto, whose main building body was erected since 1617, and Ise Shrine, a structure dedicated to Shinto indigenous religion since the end of VII century A.D., were the main models and source of inspiration. Both of them were the representation of the very soul of traditional Japanese architecture, and both also embodied the

fundamentals concepts of progressive change, endless transformation and "metabolic" cycles that they wanted to pour in the modern architecture. Katsura and Ise monuments became world wide representative icons of the "modern spirit" of the traditional Japanese architecture thanks to the famous reports of Bruno Tout in the 30s, who presented those architectures as anticipatory of the main characters of functionalist architecture of Modern Movement. Apart from this recognition as "model" for the western world, the encouragement in searching the key for the modern architectural solution in the national architectural heritage became a strong stimulus for the Metabolists, who conceived Katsura villa, which grew for successive addition of different parts in a span of 150 years, and Ise shrine, rebuilt every 20 years always with the same identical shape, as ideal images for their theories. Especially Katsura, as wrote Noboru Kawazoe, became the main example of the Metabolist's sense of modern space which introduced a kind of architectural space which denoted some similarity with the anti-functionalist approach promoted by the theories of Team X, and in particular its plan showed analogies with Luis Khan's "Richards Medical Research Building" (1957-1961), based on the separation between master spaces and servant spaces, and Charles Herbert Aslin's "Infant School" (1947-1952), with its design approach based on the use of clusters of prefabricated components.[1]

Moreover both those architectures were made of wood, and both of them had to challenge the danger of the age, natural disasters, climatic turbulences and human destructions during the centuries.

The impermanence of the Japanese architecture was the consequence of the physical factors as well psychological factors present in Japanese archipelago. In the history of Japan many destructions caused by wars, fires, earthquakes and floods forced every time the people to rebuild their homes and cities, generating a suspicion of the eternal, a predisposition toward an acceptance of the natural course of the existence and general sense of powerless and passiveness, to which Buddhism gave a philosophical support.[li]

The memory of the destructions caused by both natural and human events determined in the Japanese a collective and innate awareness of temporariness of the all the aspects of the human life. In the early history of Japan there was a time when the ancient capitals of the empire moved from one places to another, during the epoch of the so called "itinerant capitals", before the first "fixed" capital was set in Nara (Heijo-kyo) in the 710 A.D.; then in Edo epoch there was the ritual of "Sankinkotai", a custom devised by the Shogun to control the feudal lords, who were obliged to leave their homes to reside every other year in Edo. These historical events had a deep influence in the Japanese culture, enforcing the sense of detachment and temporariness of every aspect of existence of life, as well as their lack of interest in the monumentality of the forms (as perceived by western esthetics' sense), both in architecture and in the field of town planning. Especially evident is the difference with the Western view of the urban space, which, as seen by many scholars, is fundamentally different from the Japanese; in fact, while the Japanese aesthetic sense was oriented towards the cult of asymmetrical, irregular and light forms, in the Western culture, "…the beauty in visible as in everything else consist of symmetry and proportion", as said by the philosopher Plotinus since III century.[lii] Moreover the theme of length of time and the symbolic value of

the buildings was another main concern of the West, which was also different with the Oriental approach, especially with Japanese one, as rightly observed by Arata Isozaki, who noted as these two cultures presented the extremes, the former being monument or object oriented, and the latter being anti-monument or anti-object oriented.[liii]

Most architectural principles in the western city, in particular those developed during Renaissance and then the Baroque, led to urban compositions where some monument or relevant architectural object became (such as a statue, a church or the governor palace) the visual focus of the whole urban fabric. The magnificence of the architecture (her materials, size, and decorations) was intended as celebration of the power of the authority of the city, and the materials of the buildings were supposed to be long lasting. The aim of western architecture was the eternity, and the same can been said for the form of the cities.

As noted by the American researcher Vance: "…So much attention has been given to the biological and psychological conditions that they will be considered only as they bear up the other eternal verity of the city, the physical form. That form persists for one of several reasons. The first would be the simple fact that properties of the physical world are basically unchanging: stones are stable entities under unfortunates and unusually destructions forces. The raw materials available for the making of the cities changed little from the time of Pericles, who died in 429 B.C., to that of (US) President Grant, who died in 1885. Thus, the plasma of cities has been transformed more often in the last century than in the all previous urban history. City form -morphology- tends to change less rapidly then many human institutions because it is non-generational, lacking the definite life span of the human organism. Although few seventeenth century buildings remain in North America, and fairly few even in the most old world areas, their death was low, overlapping the new constructions that normally followed precedent in material and design to a degree sufficient to perpetuate the basic element of form. The housing tract structure of today is close in form to the houses of colonial America, though the religion and sexual mores of the two times differ greatly".[liv]

In other words, the concept of continuity of the things in the material word appears to be conceived in different way in the Western world and in Japan, the former being oriented toward the use of resistant and long lasting materials whereas the latter strived to assured the eternity of their architecture trough the continuous renewal of their material elements.

In ancient times the occupancy of a site and its persistence in the centuries was due to religious and mystical considerations, in respect of city temples and shrines, as well as to minimize the cost for reconstruction of new fortifications and defensive systems which the community should have sustained in the case of moving to another place. Thus, materials like stones and bricks were the favorites in the constructions for several reasons, above all for the resistance and the durability of the structures.[lv]

Furthermore, the urban fabric of the Japanese city tended to be more irregular, following a random like general lay-out, which organized the wooden houses along narrow streets without any reference to a clear boundary or dominant center. Terenobu Fujimori, referring to the traditional Japanese city and comparing it with the Western city, argued that the former resembled a cabbage, with her structure wrapped in soft, protective layers, and the latter resembled an egg, encased in hard shell, whereas Shuji

Takeshina argued that basically the western space in the city was a whole organized entity, unlike the Japanese space that was more fragmented and various.[lvi]

The Japanese cities had the impact of different socio-cultural features. An interesting character of the Japanese urban system is that many ancient cities in, the previous centuries very powerful and populated, declined inexorably especially due to the consequences of the destructions caused by the wars, or for the sudden transformation in the economical geography of the country caused by political decisions.

Whereas the ancient urban systems in Europe, China or India, where many contemporary cities stands on the sites of more ancient cities (developed in the Medieval times or earlier), kept the continuity with the historical roots of the original urban complexes, in Japan, with very few exception, the present Japanese urban system of the cities is more younger, and for many modern cities their origin dates back to Edo epoch (XVII-XIX century).[lvii] The Japanese feudal city founded in the XVII century was especially an economic hub and stood in strategic places in selected regions, and had the function as military and administrative center for the policy of the central government (Shougunate).

In the history of urban Japan, very few cities had the protection of walls, whereas the European, Muslim, Indian and Chinese civilization had their cities protected by massive shields of stone (or less frequent wood).Especially the Japanese cities developed during Tokugawa Epoch were left without protection from outside invaders (both native or alien), relying on the idea of the coasts of the archipelago as the true defensive shields of the nation. Traditionally all over the world the walls rapresented in the history of the city as the most preminet elements as defensive structure against invasion; in the X century in the medieval Europe the castles, and the fortified cities became the typical elements (together with the churches) of the urban landscape, and the reason was the necessity to survive during an age of general warfare and (from some points of view) cultural regressions. The walls of European cities became the ultimate defense for the population from the physical and cultural destruction caused by armies of alien cultures, and preserved the lives of the population, as well as their culture and identity. In the X century an European city without wall was a city condemned to the destruction.[lviii] But, on the othe hand, the walls also rapresented the most evident sign of economic, social and political boundary between the inside space (and especially the market site for the exchange of goods, such as food, tools and fabrics) and the outside space. In other words, the walls were meant also as the phisical representation of the difference of laws (here the use of a kind of “city law”), political power (such as that necessary for taxation, to control the transit in and out the city, or to define religious power and influence) and social ties between the citizens inside, ruled by different kind of (sometimes) free and independent governments, and the villains outside, ruled by feudal laws with no legal power behind that boundary. Truly then, as commonly said during the middle ages in North Europe, the “air of the city makes you free”.

In the Japanese feudal city of the XVI century, where only one rule was accepted (the Imperial rule), no walls was needed to protect the commoners houses; on the contrary, in case of immediate danger of invasion or attack, the houses of the lower social castes, craftsmen, merchants and servants, were the real defensive barrier protecting the fortified residence of the feudal Lord (daimyo), who safely dwelled the

castle built in the middle of the city, and there was no hesitation in burning them in the eventuality of enemy strike or siege.[lix] In medieval Europe the castle represented the key point of the military defense system aimed to defend all the urban system, but in Japan was only the safety of the castle to really matters. The houses of commoners usually were rebuilt after the city was off of danger. The feudal laws promulgated in Edo epoch were very strict concerning the usage of the public space for the construction of commoner houses. Only a little extension of land was allowed to be use for the construction of houses and shops of urban population, and this situation promoted the development of housing typologies and architectural models, characterized by small exterior dimensions and with inner spaces extremely compact and flexible. In the end, several social and cultural factors, such as the rigid society based on the system of caste order, which directly promoted a strict sense of hierarchy according to the logic of "everyone owns its own place",[lx] joined to shape the basic pattern of the main cities of the time, for example the feudal Edo, which reproposed the clear division of the urban districts (a kind of early zoning following the social separation of the classes), marked by definite borders and edges carefully controlled by checkpoints and restrictions on the flows of movements, and defined a spatial structure of enclosed and self-contained areas connected through an intricate and labyrintine system of streets.

The necessity to exploit in the best way so little quantity of space due to the numerous limitations of imposed by the daimyo rules, such as those concerning the fire preventions or the materials used for some kind of decorations,[lxi] eventually led, combined with the influence of the Buddhist Zen aesthetic and philosophy, to the development of a sober minimalist style that became the typical feature in the traditional Japanese architecture specialized in the constructions on small plots of land. From this source also moved Metabolism group, which, by following this tradition, intended to perpetuate the basic attitude toward the creation of a flexible architecture and maximize the usage of every corner inside the building.

On a larger extend, the same issue of maximize the correct use of the available space and create a design system that forecasted the evolution and the transformation of the same overall system was applied by Metabolists to their studies about the city. The Japanese cities at the end of the 1950s experienced a total uncontrolled growth due to an urbanism caused by the economic performance of the postwar recovery. The surge of the urban population during the decade from the end of the 50s to the end of 60s was impressive for the rapidity of the phenomenon and the amount of the population involved in this process. As matter of the fact in 1950 about 37% of the all Japanese population used to live in the cities; in 1972 the urban population passed to 72% of the total, meaning that Japan doubled the urban population in just a span of 20 years, with the result that 2/3rd of the total Japanese population were living in the cities.[lxii]

The urgency to find an accommodation to so impressive number of people and the necessity to tackle the total lack of coordinate town planning led by central government during the initial stage of fast economic growth were among the main concerns of Metabolists. Especially the ineffective town planning policy of the government caused the urban environment to be fragmentary and promoted the chaotic landscape that became the main feature of modern Japanese city. This led to the acceptance of the most various and extravagant architectural language, often in evident contrast with the surroundings, due to the

lack of any stylistic control and visual reference present inside the chaotic urban fabric.

The general factors that had more influence, both in the proposals by Metabolists and in those by Tange, were doubtless the need for proposing alternative plans for the control of the urban sprawls, the study of new building techniques, especially those based on the industrialized methods of production that promoted fast assembling processes and high standard of safety, and the necessity to face a dramatic lack of space in the city, in particular in Tokyo, that during the 50s and the 60s promoted some issues such as the "Reclaimed Lands" and artificial lands to create more available space on which set new buildings. Furthermore, the policy of the central government during the years of the Rapid Economic Growth to fill the technological gap that dived Japan from the other industrialized nations, especially the US, spread a great interest in the study of new techniques, instruments and the most advanced research knowledge from abroad, to modernize the production methods of the nation and become more competitive on the foreign markets.[lxiii]

The result of this cultural milieu on the Metabolist group was an architecture whose esthetic language was somewhat expression of the power of industry and modern technology. The dynamism of the modern society and the enthusiastic phase of reconstruction and economic recovery of Japan pushed the imagination into the realm of the mechanic world. Especially the concept of "metabolic cycles" was suitable to be expressed by means of the new developing technology which was based on prefabricated industrial components. This technology was in part inspired to the Metabolists by the ideas of Konrad Wachsmann and his theory of "flexible structures", which originated from prefabricated wooden construction system and showed some affinity with Japanese building tradition. Wachsmann gave some lectures in Japan in 1955, which were attended by young Kurokawa, Kawazoe and Isozaki, who also had the occasion to meet Luis Kahn, the other influential architect for Metabolists in 1960. Kahn's concepts of servant space and served space in architecture, and his anti-functionalist approach in urban planning, shown in his plan for center city in Philadelphia of 1959, where an "architecture of movement" was created by elevated viaduct streets, also revealed to be major components of Metabolist theories.[lxiv]

As the historian William Curtis noted: "…There was much in the Metabolist position that recalled the (Italian) Futurist's suggestion that the modern city be made into a dynamic machine of moving and variable parts".[lxv] Furthermore, in both cases, one of the main goals of those avant-garde movements was the promotion of an independent "national" language in architecture which was completely split from the influence of current streams.

Structural engineering dominated most of the earlier projects of Metabolist group, also as mirror of traumatic changes that Japan was experiencing in those years of fast re-industrialization that caused a strong alteration of the natural environment. This tendency was not a new experience for Japan, as during the early stage of Meiji modernization (that for many Japanese meant "westernization") the necessity to create new areas for the expansion of the industrial plants, housing complexes and new infrastructures as ports, dams, railways, required heavy works in the old blocks of the cities, aimed at reshaping and modernize the infrastructures and empower the economy. This policy caused the transformations of most

of the original urban fabric of the old cities and especially of the natural environment, in particular of the coasts and harbors, to allocate modern production poles in geographical sites where it was easier the import of rough materials and the export of manufactured goods.[lxvi] The endless environmental transformation, that in Japan occurred by far faster than similar experiences in Europe or America, was another of the imagine absorbed by architectural language of Metabolism, based on the acceptance of the constant change in the physical world (a concept, as seen, extensively present in Japanese culture thanks to Buddhism) as a key to creation of a better environment. Cherie Weldelken stressed as Metabolism movement's theories were the results of a sort of spiritual nihilism, sprang from the ruins of war destructions, and reflected the anxiety of cultural and economical rebirth of new Japan. In her opinion Metabolism's way towards this re-generation of the Japanese nation was the creation of a new set of cultural values to be found outside the memory of the national tradition of the pre-war feudal society, responsible for centuries of inhumane submission of the masses and for the nationalism which led the country to the defeat. Due to this ideological position their projects negated any historical context and sought to find a new cultural order from the ashes of the bombed cities and Hiroshima and Nagasaki's Atomic blasts.[lxvii] The obsession for the technology has been a distinctive feature of Japanese since the Meiji reforms, and it became stronger during the postwar years mainly "because technology has done so much so quickly to change Japanese life";[lxviii] the dawn of the Space Age, Atomic Age and the technological revolution in the 50s became some of the most influential factors of the cultural background shared by Japanese people and Metabolists. The baby robot Atomu and the monster Gojira became popular characters in movies and comics (manga), contributing in the spread of a new image of the future, both amazing and ultra technological advanced, as well as scaring and insecure, reflecting the general sense of the hopes for a better future started with the reconstruction, and the anxiety about the memory of the recent past. Noboru Kawazoe called for a direct inspiration of the image of the future architecture from the source of the science fiction, instead of the tradition. "Scientists and Engineers! The future is yours, but the present is ours. We would create the present according to your future…" claimed the writer, pointing out as the designer and the architect couldn't remain insensitive to the deep transformation occurring in the contemporary civilization of mankind, and introduced by events like the rockets sent on the moon.[lxix] The world of engineering and technology became (resembling in some ways the attitude shown in Europe in the second half of XIX century, during the phase of strongest industrialization of the continent) the source of new forms for the inspiration of the modern architecture and city.

The creation of a new Japanese culture, the issue of the national identity, the regeneration of the spirit of modern Japanese architecture and the consequent reshaping of the urban environment, thought completely different from the previous one, were a moral task as well as a necessity for the coming generation of architects. The device to put into reality this change was mainly by means of the power of the industry and new technologies, which gave the architect the capabilities to operate on the natural environment to change it, and even the power to create a new total artificial urban environment for the welfare of his society. Optimism for the extraordinary possibilities given by the new technological

instruments of the modern times and the general euphoria for the recovery of economics and the growing national gross product, mixed together with the ingenuity for the flattery of consumerism imported from America, created the cultural milieu which posed the fundamentals of most of the imagination of Metabolist projects.

Metabolism tried to revolutionize both the contemporary society and the concept of modern architecture in Japan. It was the first time that such a radical change was promoted by an independent group instead of the government. As matter of the fact their designs were a protest against the situation of the Japanese urban environment The intense expressionist touch and the brutalist approach of many of those architectural projects were seen by the Italian critic Manfredo Tafuri as a sort of symbolic protest against the lack of planning promoted by the political authority, as well as against the chaos and irrationality of the reality of the contemporary Japanese city. The tool to overcome the limits posed by the bureaucracy was the power of the technology and industry, which led to create the amazing visionary shapes of their science-fiction world. Tafuri remarked as the development of an "academia of utopia" in Japan during the 60s was the logical consequence of the powerlessness of the Japanese architects in their attempts to change the urban landscape of the real world, so that they escaped from the reality by creating many artificial worlds.[lxx] On the other hand, the position of Metabolism for many reasons was similar to those of its European colleagues because both shared the same atmosphere of crisis which derived from awareness of the failure of the modern architecture since the early 50s and the transformation of the contemporary society. As noted by the scholar Simon Sadler, the imperative for the architects at the end of the 50s and especially during the early 60s was the search for an architecture that would express "its inhabitants supposed desire for continuous changes", as they supposed that "…if society grows and changes, so should its architectural containers".[lxxi] According to Sadler: "Two key models, the frame and the stem, were in theory infinitely extendible, and boasted a certain capacity for remodeling after construction. [While the frame found his prototype in Cedric Prince's "Fun Palace" project (1961) and Yona Friedman' "Architecture Spatial" (1958-1961)]… in the 60s the stem found its most extreme advocates amongst the Japanese Metabolists and its most popular image in Peter Cook's "Plug-in city" project (1964), exemplifying the drive to purify architecture into a sophisticated, dedicated servicing and circulation that could support its clients' needs with equanimity".[lxxii] The Metabolism's projects which sought an accelerated socio-architectural organicism, however, had few chances for success, and the group's efforts to create a modern architecture as expression of the dynamicity of the contemporary society had little chances to be carried out.

The merit of Metabolism lays especially in the efforts to revolutionize and chance the contemporary society and the concept of modern architecture in Japan. It was the first time that such a large change was promoted by and independent group and not by the government. Their designs were a protest against the situations of the Japanese city, and they tried to use the power of technology to overcome the troubles and the limits of the bureaucracy. The Italian critic Manfredo Tafuri remarked as the development in Japan of an "academia of utopia" during the 60s was the logical consequence of the powerlessness of the Japanese

architects, so that their only escape was the creation of artificial worlds.[lxxiii] It can be said that this observation was with cognition of the exclusive reality present in Japan. The real value of the Metabolism was, surely, at least, in its tentative to give a new identity to Japanese architecture in the years during the recovery from the shock of the last war, and to act against the forces that generated the urban sprawls in the Japanese urban environment, especially the obstacles represented by the absence of effective urban planning instruments and laws, declaring through their projects their willingness in finding a solution to the evil of the modern metropolis, more and more overwhelmed by commercial architecture with a poor quality design.

Furthermore Metabolism had the merit to move the attention of the worldwide criticism to Japan, being what Robin Boyd remarked as a sort of "Japan's declaration of independence in architecture",[lxxiv] in spite of the fact that the season of genuine creativeness of the group lasted just a span of a decade and faded mainly when each member of the group, in search for an original and independent stylistic language, began their mature professional activity.

1-4. Metabolism between City Planning and Urban Utopia

The proposal of Kuro Kano for the filling of Tokyo Bay coasts in the late 1950s had the important consequence of shifting the attention of Japanese architects and engineers from the debate about the relation between tradition and modernity in Japanese architecture towards the interest in the advanced construction systems which could support the economic growth of the country; the awareness of the new possibilities spread from the change in the society driven by industry, the discovery of new materials and better technologies suggested a progressive departure from more conventional and traditional urban forms and architectural expression.[lxxv] After that Masato Otaka had proposed his solution to the issue of reclamation of Tokyo Bay,[lxxvi] many other projects announced the beginning of a new approach in urban design inspired by the industrial design and mass production philosophy, that means projects oriented towards a much bigger dimensional scale than before. For example, the projects of Kikutake titled "Marine City -Unabara-" and "Tower Shape Community", which were published in the magazine "Kokusai-Kentiku" (International Architecture),[lxxvii] also proposed the development of an independent, self-contained city within the water as a system of interlocking islands with a multi-functional and very flexible structure. Kikutake conceived these artificial islands as a sort of micro-cosmos, a complex of new territories for a kind of "improved" society, so that according to him this kind of advanced structures were a definite solution to the problem of land shortage as he argued the modern technology and new engineering techniques gave reasonable warranty on the possibility that those big and complex structures could be built and managed. To assure a high grade of feasibility to his projects, Kikutake studied deeply into the science related to ocean engineering and the newest construction techniques and experimental structures applied to coastal engineering for the protection from waves, tides, winds and marine currents;

the outcome of his studies and researches were evident in the overall structural shape of his proposed marine city, which reveals evident formal and technical analogies with the structures of offshore oil rigs, anchored to seabed and built with prefabricated components resistant to the heavy ambient conditions of the ocean waters. Most of these projects didn't show fixed design principles concerning the final urban form as all of them were intended just as examples to demonstrate to public opinion and government that even without heavy reclamation it could be possible to achieve the same result of creating modern, economic and comfortable sites for urban growth avoiding the spoliation of the natural environment of the Tokyo Bay. Indeed the first publication of these projects at the end of 1958 and early 1959 on Japanese architectural magazines, 2 years earlier than the publication of Metabolist Manifest, clearly showed the design tendency and some of the main characters of the aesthetic language and urban theories proposed by Metabolist Group from then on. Starting from the criticism towards inefficiency, pollution, and congestion of the urban centers which were more and more hit by the negative consequences of their fast and chaotic growth, and in search for more complex and flexible urban schemes that can fit to a more complex society, Metabolism strove to promote a new philosophy in architecture and urban design, based on the awareness that any particular function in the cities can grow in the time, and the city herself, following a "metabolic process", goes through a series of internal metamorphoses which enable her to be more adaptable to external factors and transform her basic schemes and organization as consequence of unpredictable changes.

The themes of "Marine City" and artificial lands, which occupied most of the visionary projects based on Metabolism's urban theories were related to the main problems of Japan of that time, in particular to the shortage of physical flat space for further urban growth and the creation of new urban models that could fit the cultural transformation of modern Japanese society led by technology and economic prosperity based on industrial development. The creation of a new city on artificial land into the sea relied widely on the use of the most modern technology and sophisticated engineering; to face problems such as the protection from natural disaster as well as those connected with the logistics and energy supply to support the urban functions of the city, the new urban settlement into the ocean was supposed to be equipped with advanced infrastructures and other high-tech facilities.

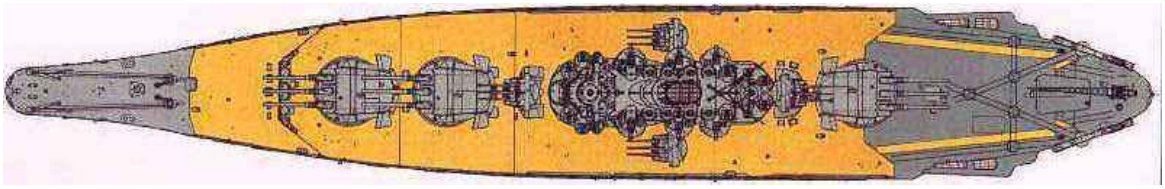
The "New Urbanism" proposed by Metabolism sprang from a multiplicity of social and cultural factors which influenced directly their intent to find a linkage between architecture and technology to propose an innovative urban environment where it was possible to enhance the quality of life. Although keeping some salient aspects of Modern Movement thought, such as the concern for the social responsibility of the architect and the interest for the potentiality in the new building technologies and industrial process of prefabrication of components to cope with the problem of mass housing, concepts well present in Japan and enforced after the seminars of Walter Gropius, Konrad Wachsmann, Buckminster Fuller, Louis Kahn and others held during all the 1950s, the architects of Metabolism firmly also departed from the Modernist urban methodology, rejecting the "Athens Chart's" principles and its urban compositional strategies based on zoning, as well as Le Corbusier's "Ville Radieuse" concept.

Instead, their awareness of the importance of their contribute as urban designers and professionals who can elaborate a comprehensive architectural and urban plan through a creative process which requires a wide range of competences in different fields such as art, economy and engineering, was a steady base of their criticism towards the process of degeneration of the modern Japanese city mainly due to the poor control on land use, general ineffectiveness and weakness of building codes and laws, and the speculative interest of powerful and influential business and political lobbies. Their proposals were supposed to be an intellectual attack and a polemical response to the inefficient urban policy of the government which was apparently unprepared to control the urban sprawls of the big cities especially because of the inadequacy of the city planning methodologies. The criticism towards the powerless urban policy of the government which generated most of the problems of modern city, was indeed one of the facts behind the visionary proposal and "utopian" spirit of Metabolist (but not only theirs) proposals; even though the boldness and massive forms of their architecture were the main reasons which impressed the audience of architects and critics, the attitude of metabolists towards a over-simplification of the main themes of real world (in the field of economy, society and art) made their projects unrealistic and, for this reason, really "utopian", in the same way of similar proposals of Archigram, Friedmann, Rudolph and others during all the 1960s. In other words, the utopian character of such architecture derived not so much from the massive use of a scientific approach and advanced technological devices, but in the attempt to apply to the urban scale systems of urban organization and structural models derived from the studies on smaller scale (buildings and small communities), confident that such solutions could fit to the entire city and resolve in one moment all the problems and contradictions of contemporary society. Evident is also the strong confidence in the industrial system of production, which means the introduction of the concepts of flexibility, changeability and unlimited extensibility of the architecture which basically connected with the production of goods derived from the industrial design created for mass consumption.[lxxviii] In the case of Metabolism the refuse of the lesson of the history and the search for a total new urban environment were linked with the recent past of the destruction of the war and in the same time with the enthusiasm for the possibilities of the "beginning" of a new world to be achieved with industry and technology; the lesson of the forms of the tradition wasn't kept in the external appearance of the architecture (but according to them was kept in the "spiritual" and hidden meaning of those forms), as a new world needs a new esthetic language. Metabolism approach towards the creation of new urban form had some similarity with that of Renaissance architects such as Antonio Filarete and Francesco di Giorgio Martini, who envisioned many models of ideal cities, more than the "visionary" architects of European Illuminism in the late XVIII century and early years of XIX century; while the latter, such as the projects of Etienne Bulle, Claude Ledoux during the French Revolution and the housing complexes built by Charles Fourier and others "utopians" during the early stage of Industrial Revolution, were tangible expression of a strife for a social reform which meant a transformation of the previous economy, cultural structures and social hierarchy, as appears evident in the architecture such as the Fourier's "Phalanstere", as a willingness to reach a radical transformation of reality (which requires a new form of architecture), the former tried to create new urban

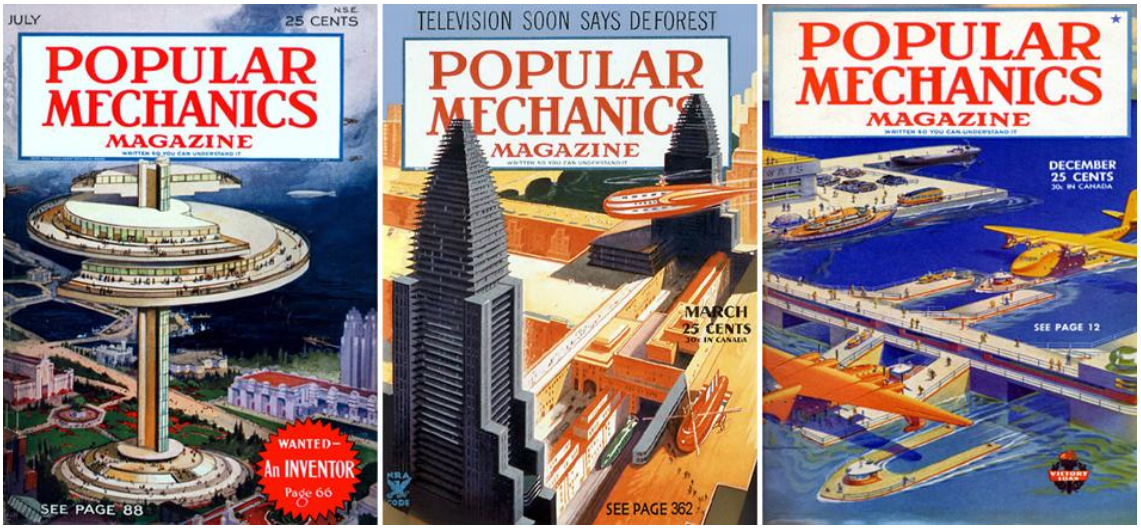
settlements based on the concepts of balanced development and social order inside the social structure of the time, avoiding any kind of total revolution.[lxxix] Like the Italian architects of Renaissance, Metabolists didn't intend to transform radically their society and its economic system, but strove to improve that society and shape the city according to the necessities of her new modern structure and organization and, especially from the middle of 1960s, adapting their research to satisfy the requests of the government and the powerful companies of construction industry after a big interest aroused around their works.[lxxx] In fact it seems evident that a great influence on the projects of Metabolism came undoubtedly from the cultural and social environment of the time, which witnessed a diffuse sense of enthusiasm and pride for the success of economic miracle. By late 1950s Japan had become a new industrial power, and her policy towards the economic development in early 1960s was empowered by the "New Long-Run Economic Plan" issued during the years 1958-1962, by the "Double Income Plan" issued in 1960 by Minister Ikeda Cabinet (1960-1964), promoted to achieve a even faster economic growth based on massive public investment in social infrastructures in area of Tokaido, and by "The Act for the Promotion of Construction of New industrial Cities" issued in 1962 for the development of 21 new coastal industrial zones. The spasmodic activity poured into many public works financed by government gave many possibilities to architects and engineers to practice and expose their personal ambitions, but most important of all, gave also chances to propose experimental projects to resolve the new problems arouse with the fast changes in the economy and society which could threat the engine of economic growth. The rush toward modernization was evident in Japan as well as in other countries during this period, and at the time many architects were confident in the possibilities to resolve the contradiction of the modern city and drive the transformation of the society which mainly came from economic boom and technological improvements. New avant-garde movements and research groups (Archigram, Urbanisme Spatial, etc.) took shape on the wave of the deep changes happening in the worldwide architectural context. The meetings of CIAM (Congres Internationaux d'Architecture Moderne) in 1956 and 1958 declared the progressive decadence of prewar Rationalist principles and the official crisis of Modern Movement. The new complexity of real world invested architecture and city planning by the wind of reform and a new generation of architects, planners and designers strove to find new methods and principles which could cope with modern society. Louis Kahn and Sigfried Giedion in US promoted reflections and new conceptual schemes which led towards new ideas in architecture and promoted further investigations on the nature of urban and architectural forms spreading worldwide new concepts and targets, such as the need for a new monumentality and the importance of technology, being in the same time less concerned with functionalist unity and clarity in the compositional process. In Europe Team X called for new urban design and architectural projects made of complex relations and mobile structures, flexible models of exapandible buildings, emphasizing the mixed use land in the urban areas, the small scale elements in the design and the importance of the lessons from the historical city. Aldo Van Eyck in particular promoted a methodology[lxxxi] which focused on the importance of the places for social interaction, such as the streets, and stressed the role of intermediate and transitional spaces and of the complex organization of the urban systems as fundamental elements for the urban quality and the livability of the city.[lxxxii] In Japan, where the main theme

during all the 1950s was the resolution of the intimate contradiction between the new modern culture and the heritage of national tradition aimed to the development of a national architectural language, new groups of architects and designers also elaborated new theories and proposals about contemporary architecture and city, following the models of Western counterparts. The occasion was the World Design Conference to be held in Tokyo in 1960, where the drawings and the theories expressed in the independent essays of each member of the Metabolist group were a condensation of many suggestions and considerations on the theme of modern technological city. The authors, like many others in the following years, had chosen Tokyo to present their design ideas and for their city planning experiments and the technological appeal of their works reflected the great impact that industrial and economic power introduced into the capital. Influenced by the theses spread by Paul Rudolph and Louis Kahn, as well as Alison and Peter Smithson, Aldo van Eyck and the other members of Team X such as Giancarlo De Carlo and Jacob Bakema, and supported by Kenzo Tange, Metabolist group envisioned futuristic projects which conceived the city as the mirror of the far reaching transformation occurred into the society during the postwar period, and sought to introduce into the city a new structural order based on a balanced development by means of technological devices Scholar Akira Asada pointed out that: "Metabolism represents architecture and urbanity as mechanical in organization. […] In fact, it might be argued that metabolism is simply a catalyst for modern functionalism, it that it tries to satisfy both a modernist sensibility for logical organization and a more progressive inclination for issues of diversity and complexity".[lxxxiii] The new urban forms introduced by Metabolists showed awareness for the importance of the rapid changes in the urban environment and the society, which were occurring on an unprecedented scale, and denoted their attention toward the new challenges of modern and advanced technology and industrialized architecture, even though the theories behind their utopian schemes lacked of a deep social consideration, as well as economic and political analyses, as many critics both in Japan and abroad have noted,[lxxxiv] being basically a kind of academic experiments which protested against the disordered growth of the cities, the problems of weak laws and the delays in the implementation of the plans which paralyzed any effective attempt to solve the urban problems, and declared the need for a change in the urban form and architecture and urban design. The themes of artificial lands as clusters of marine cities, the huge high-rise buildings over preexistent buildings, the development of huge transport networks spreading as infinite and colossal web into the cities, the attention paid to the concepts of cycles of changes, became issues directly taken from the reality of Japanese industrial cities of the time. Furthermore the projects proposed by Metabolists, Tange, Isozaki and many others, posed for the first time in Japanese architectural context the issue of a comprehensive planning based on architectural and aesthetic considerations. Following the method introduced by Le Corbusier, the design process conceived different scales of intervention, from the house to the whole city, and gave high importance also to aesthetic factors, polemically in contrast with the traditional city planning methods that in Japan were of competence of bureaucrats and engineers. Through their works, finally, they spread a new interest and attention by foreign audience towards Japan, whose expanding urban environment became later source of further analysis and investigations both in Japan and Western countries, especially

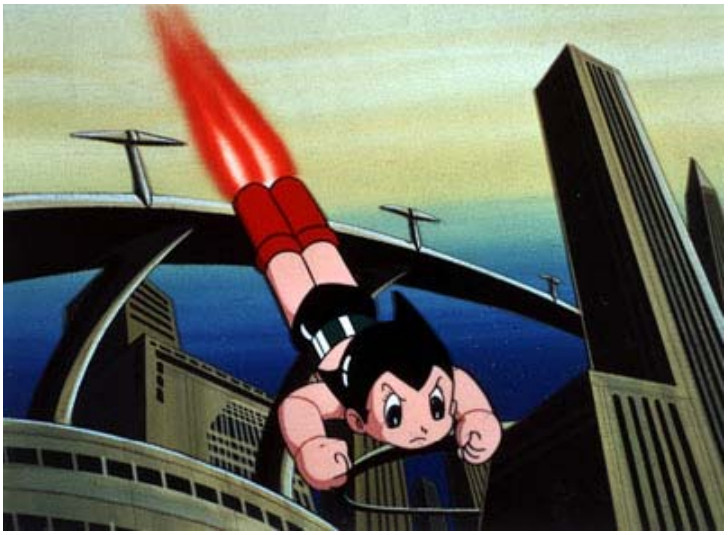
concerning the theme of the new urban model of contemporary megalopolis.



The technology developed by Japan before the Pacific War was fundamental in the creation of a great a powerful army and Navy. Yamato battleship (1937) was the biggest ship ever built and far more powerful than the contemporary Western warships. The same could be said about the Zero Sen fighter, which witnessed how the Japanese had always had a special interest in the field of technology, and used their knowledge and experience based on pre-war military industry and research to rebuild their modern and new industrial system after the war.



Comic-fiction played and important role in 1950s and 1960s for the promotion of a new urban environment oriented towards futuristic and imaginative new landscape. The new vision of the city, as envisioned in comics such as Flash Gordon and Superman, was inevitably influenced by industrial technology and the myths of the hero's of the Space age which peaked from the end of 1950s, but had started since the beginning of XX century in Europe and America with the studies about the new urban utopias.



Cartoons, movies and comic books based on fantastic stories populated by monsters and robots were very popular in Japan at the end of the 1950s. Among the others, monster Godzilla-Gojira (1955-above) and comics like Atomu-Astroboy (1951-upon left), Genjin (1960-upon right), Tetsujin (1963-left) well witnessed the anti-traditional and future-oriented culture predominant at the time, as expression of the anxiety of the new generation of young Japanese to remove the wounds of the recent past and restart form the beginning (metaphorically represented by the recurrent theme of the "destruction" faced by the city in the movies), as well as of their passion for the new advanced technologies which announced the dawn of the fascinating techno-society of the future.
(photos: www.japanhero.com)

Chapter 2

Japanese Architecture and Urban Planning in Postwar Years

Chapter 2 - Japanese Architecture and Urban Planning in Postwar Years

The postwar period during the 1950s was fundamental for the origins of a true modern Japanese architecture and new urban design methodologies in Japan. This chapter in particular presents a short overview of the most representative architecture built during the decade of the 1950s, with special emphasis on some basic themes of the period, such as the design of prefabricated dwellings and the introduction of industrial production of housing components, the causes of of the urban sprawl of the Japanese cities (as consequences of the phenomena such as immigration and concentration of industries in the big cities) and the housing policy of Japanese government. Furthermore it is reported the contribution of the works of Kenzo Tange, as theoretician and mentor of Metabolist group, and the development of his architectural principles for the future course of the modern Japanese architecture.

2-1. Current of Architecture in Japan during the 1950s

It has been noted that the architecture developed in Japan during the fifties and the sixties is the final stage of a process started exactly 100 years before by opening new relationships with the outside world after 250 years of cultural and geographical self-isolation of the country.

When the American captain Perry, who leaded an USA fleet to Japan in the 1853, compelled the Shogunate to start economic relationship with America and then with all other Western countries by signing trade agreements, Japan realised in short time how the western outsider world was advanced especially in the fields of technology and science and probably dangerous for the his safety as independent country. As a matter of the fact from the very beginning of the complex relation between Japan and the Western world, the main feeling that distinguished the Japanese policy was both a sentiment of fear and admiration. Because the delay of the country in the matter of technology was evident, from then start the beginning of the Japanese modernization that was intended as “Westernization”. The American and European cultures, that during that time ruled the ¾ of the world territories by means the great colonial empires, were systematically analyzed and studied by Japan and became the ideal model in the development of the science and the art, producing a true revolution in the previous social and cultural order of Japan.

2-1-1. The Pre-war Time in Japan

After the opening of her gates to the influence of foreign countries, the main target of Japanese was basicly the uncritical study and assimilation of the techniques imported from various part of Europe and America, in the field of the science as well as the visual art and the architecture. Regarding the architecture the main target was the study of the new techniques of construction by using new materials such as steel, bricks and concrete that by then started to be promoted especially by European engineers. In

Japan in little time stood many new buildings that resembling the contemporary eclectic style from Europe, so that in this stage can be said that the passive imitation in architectural language (both for the style and the techniques) was the main character of the Japanese architecture of that age. This stage anyway was really fast thanks both the activity of many European professionals working in Japan (mainly invited from Britain, Germany, Italy and France by Japanese government to teach in the universities) and the contemporary trips of the best students to European universities (trips promoted by government again) where the can learn the topics that eventually them self could teach when come back to Japan.

At the end of the XIX century for the first time professors Ito and Ikino set up a course of comparative history of architecture in the Japanese university and in the same time in the Japanese architectural environment it grow more and more the awareness to break with the plain copy of European eclectic style and start in searching a true style more close to the national heritage and culture, in an effort to set up a new national style.[lxxxv] In 1910 a congress of the Japanese Institute of architecture for the first time officially promoted the issue of the style, and most of the fellows agreed to surpass the imitation of the styles imported from Europe in favour of a more national style.

After the First World War the Japanese architectural environment presented two different tendencies following a trend already appeared in all the coutries of Europe: from one side it stood a movement which strove for the spread of Modern (Functionalist) Architecture and principles, and on the other side there was what could be called a local movement for the revical of a modernized vernacular "National Style". In 1918 an avant-garde group noted as "Bunchika Kechiku-ku" (Japanese Secession Group; the name on purpose has been taken from the more famous Austrian group), promoted by their works ideas that spread the new modern tendencies in Japan.[lxxxvi] The publishing of many new architectural magazines and books helped in the diffusion of the new Rationalist style. It was merit of the Secession group if Japan could be opened to the new architectural style of Modern Movement; furthermore Japan saw the activities of 3 important architect that, in different ways, gave a great contribution in helping the diffusion of the International Style.

The first one was F.L. Wright, who designed the Imperial Hotel in Tokyo in 1918, that had the merit of demonstrating the superiority of the concrete frame engineering in occasion of the Great Kanto Earthquake in 1923. That was a great success for the developing of the modern technologies and modern engineering building systems, so that from now and until the 1930s developed in Japan a tendency to emphasize the structural frame of the building and the use of the new material like steel and concrete, that took to consider the architecture as engineering.[lxxxvii]

The second one was an early assistant of Wright during the construction of the Imperial Hotel, and his name was Antonin Raymond, who came to Japan in 1920 and was probably the first to discovery the conceptual modernity of Japanese vernacular architecture and show to Japanese people "…the timeless significance and contemporary validity of their own architectural tradition, especially those of their timber-built domestic architecture".[lxxxviii] He set up his own studio in 1921, and that was the place where the new generation of Japanese architects could have a direct experience of the new Modernist

architectural language and techniques, among them especially Kunio Maekawa and JunzoYoshimura.

And last, but not least important professional from Europe, was the German architect Bruno Tout, who went in Japan in 1935 and resided there some years where conducted his personal research on the local art and culture. Here he studied the traditional building of Imperial villa of Katsura and the Ise Shrine, publishing same report on his research and stimulating more the spread of Modern Style. The activity of Tout was important also due his critic of the current Japanese architecture of the time. Although he praised the traditional architecture as forerunner of the modern ideas on architecture, in the same time he blamed the contemporary architecture of Japan since its lack of memory on the geographical and climatic characters: "…As far as I know - he wrote in 1936- in all Japan there are no schools, universities or offices of recent construction […] that show the most minimal sign of an intent to adapt to the Japanese climate […] Japan cannot have its own architecture unless it is developed with the climate in mind […] In architecture, style and character are developed in such a way that the forms are born in harmony with needs. In modern Japan nothing of the sort exists as yet".[lxxxix]

On the other hand, in spite of the fast development and diffusion of the modern ideas on architecture, as witnessed by the set up of some organizations as the "Kenchikutai" and "Shinko Kenchukaka Remmai" (Association of young architects), and the growing publication of report by architects and professors (such as professor K. Jmai from Waseda University) who could contact directly the masters of the International Style by travelling in Europe, in particular Le Corbusier , Walter Gropius and Ludwig Mies.[xc] The 1920's were still a time during which prevailed a spirit of attentive assimilation of the lesson coming from abroad, and not yet a period in which blossomed an original language in architecture. This time was a stage of summary and re-elaboration of the modernist repertory of the masters from Bauhaus, De Stjil, Le Corbusier and others.

The experience of the architecture of the decade of the 30's was an important bases on which was set up the development of the future modern Japanese architecture in the post-war time, and during those years began the professional education of a new generation of architects that will lead the Japanese architecture to a more mature and independent language in the next years.

In 1929 was set up the JIAA (Japan International Architects Association), based on the inspiration from Gropius, and in 1937 was constituted the Japanese Werkbund (Kosaku Bunka Renmai). Both Sutemi Horiguchi, author of "Wakena House" in 1938, the first example of razionalist residential building inspired to the Dutch group "De Stjil", and Kunio Maekawa, that has been assistant of Le Corbusier and Raymond, were fellows of this group. In 1937 Junzo Sakakura, who was in that time assistant of Le Corbusier in France, built the Japanese Pavilion for the French Expo in Paris of the same year, and it was the first big international success for the early modern Japanese architecture.

Other important authors in those years were Tetsuro Yoshida and Togo Murano. The former, that was a critic and professional architect, built the buildings of the General Post Office in Tokyo in 1931 and Osaka in 1939, both works inspired to a monumental interpretation of the rationalist principles, and wrote an important essay on the traditional Japanese house in 1935, the latter was author of the building "Sogo

Department Store", characterised by modernist compact and blind fronts.

The diffusion of the International Style in Japan lasted about a decade. At the end of the 1930s this style was defeated by the more rhetorical and anachronistic nationalist style "Imperial Crown", named so because each building made of concrete-steel or bricks frames got on top of the structure a roof made of tiles resembling the shape of a traditional pagoda, like a crown.[xci]

The new nationalist policy of Japan caused the exclusion from the competitions of the entire group of architects who supported the International Style and their projects were rejected from the competitions, such as the project by Maekawa for the New National Museum of Fine art in Tokyo for the competition in 1931. After the outbreak of the Pacific War the Modern Movement style was completely rejected, and all the architects were compelled to accept the nationalist style. The collapse of the earlier stage of the modern architecture in Japan was total until the defeated of Japan in 1945, and it could arose again and with a new effective impact only after the establishment of new and more democratic institutions during the years of post-war reconstruction.

2-1-2. Reconstruction and Representative Architecture during the Early 1950s

The end of the Pacific War lets the resumption of the principles of the Modern Movement in the Japanese architecture. After the war Japan lied in a traumatic and shocked situation. The atomic bombs on Hiroshima and Nagasaki, the defeated of the national army and the consequent invasion by a foreign country were the beginning of a totally new era for the people of Japan.

Together with the physical destruction of the cities arose a general feeling of despondency trough the society. Million of people were without a shelter due to the total or partial destruction of almost all the cities, all covered by the ashes of the burned houses. The urgency of a fast reconstruction was evident from the very beginning, but the lack of building materials and economic support delayed the start of the construction activity only after several years. For this reason the government incited the population to start a self-reconstruction of their own houses for the entire period of early post war years.[xcii] This policy lasted about some years after the end of the war, and was the main reason that most of the ancient cities of Japan could keep the previous historical urban fabric. By the way the reconstruction started at once also because the people used the traditional wooden architecture that lets to build very quickly their houses and because the ashes that covered the cities could be removed easily (the situation was very different in Europe, where before rebuilding it was necessary to remove mountains of bricks). The self-reconstruction policy was a useful way to give the people an house in a very short time, and lets to keep the previous city layouts with all their rich historical value, but in the same time prevented to carry out a more functional and modern planning, so that it was the main reason for the urban problems that will arise as consequence of the industrial development of Japan in the next years.

Because of the shock of the defeated and the general shortage of building materials, the main target of the architects in the first years of the peace time was giving a refuge to all the people that still lived

without a safe shelter, therefore these years saw the development of various prefabricated systems for houses made of wooden, whose main characters were both a very dense interior space and a fast and easy assembly. One of the most famous wooden prefabricated houses was Maekawa's "Premos" model, based on tatami module, which was produced during 1945 and 1950 and could be assembled in just one week.[xciii] The theme of the prefabricated housing based on "existenz-minimum" concepts was the principal tendency among the architects that tried to introduce some elements of the western culture by means of new architectural standards. Many houses designed during those years were very simple in the plan because the necessity to reduce the costs of production and the time of assembly, furthermore the attempt to introduce a western style of life suggested using doors instead of shoiji in the separation of the spaces, and avoiding the use of tatami to cover the floors. Moreover almost all the new houses had the dining-kitchen space, both to stress the more democratic current of Japan and to save more space in the tiny shelters.

Examples of such a kind of houses were the "minimum prefabricated houses for a couple with a baby", a project by Kiyoshi Ikebe, and the project of a "minimum house" by Makoto Matsuawa, both designed in 1950.[xciv] Anyway, beside this main architectural tendency that aimed at the introduction of a western style of life and of the design element of, by now accepted, International Style, others architects tried to revive and fit the traditional architectural design and shapes into the contemporary times. One of them was Kiyoshi Seike, an architect that designed houses by using traditional architectural wooden methods, with tatami mats floors and sliding screens (shoiji), which had the double merit to revival the traditional cultural heritage and in the same time to create houses with larger interiors.

In general terms until the early '50s the shortage of building material such as steel and concrete, due to government rationing policy, caused the delay in the economic recovery and the lack of commissions from private sector. The little chances for building urged the architects to be mainly involved in theoretical activities and independent researches centred on the analysis of the contemporary Japanese society. The "New Architect Union", an avant-garde group of architects was set up in 1947 to achieve this aim.[xcv]

Among the firsts architect that restart their professional activity above-all was Kunio Maekawa, who built the "Kinokuniya Library" and the "Keio Hospital", both made of wooden in Tokyo in 1947. In 1950 the outbreak of Korean War was the main reason for the development of Japanese economy, due to the investments from America which recognized the strategic geographical position of the Japanese archipelago. Indeed the consequence of this situation caused a strong flow of capitals from USA to Japan that in short time helped to recover the Japanese economy and fostered and promoted a long period of growing development and walfare for the Japanese with noteworthy reflexions also over the urban environment of Japanese cites and their architectures.

The new potentiality of the industrial system increased the production of construction materials so that government stopped the rationing of concrete, steel and glass and the architects could restart their job. The growing wealthy of Japan due to the growth and the development of the economy, together with the necessity to achieve the programs of reconstruction planned by the central, regional and local governments,

was the background for the arising of countless buildings all around the Japanese cities, that in few years were filled out with new libraries, city halls, hospitals, museums and (of course) residential buildings. Later also the privates started in place an order for the construction of banks, office buildings and clubs.

The large scale of industrial prefabrication of the building elements became a standard procedure in the construction activity, and the most used material was the reinforced concrete. By the way it is important to stress that the main aim of the Japanese government was to develop and improve further the infrastructure system of the country as well to support the rebuilt industrial system. For this reason the cultural situation was suitable for a massive use of the principles of Modern Movement in architectural design, that were the best choice in that time for a functional architecture in behalf of a fast development of the whole Japan. The first building that witnessed the new phase in the Japanese economical development was the "Office Building of the Readers' Digest", designed by Raymond and built in Tokyo in 1951.[xcvi] In 1952 Kunio Maekawa built the head-quarter for the Sogo Bank in Tokyo, made of a steel frame covered by prefabricated concrete panels, at the time a new and advanced technological construction process for Japan. The interior of the building was really innovative in comparison with the Japanese standard of constructions due to the use of panels made of holed play-wood for the protection against noise, and acoustic ceilings made of aluminium slabs. In 1954 Maekawa again designed the Concert Hall and the Library of Yokohama, with an expressionist use of the reinforced concrete that sign the beginning of his mature style of the next years that evoked the Le Corbusier's brutalism, following a trend also very popular in US and Europe. The lesson of the great European master is evident also in the works of Junzo Sakakura. His first important work after the war was the Museum at Kamakura, built in 1951.Subsequently in 1954 he completed the building "Tokyu-Kaikan" in Shibuya, a multifunctional structure that presented an urban scale as a pivotal traffic node in centre of Tokyo. The main concept for this proposal was convoying and exploiting the flow of the people to the transportation stations gathered in that area.[xcvii] As well as Maekawa, also Sakakura has been a disciple of Le Corbusier in Europe, and during those years the global influence of European Modern Movement was reinforced by the first participation of a Japanese delegation to the CIAM meeting of 1951 in London. Among the participants were the architects Maekawa, Tange and Yoshizaka.[xcviii]

Other authors as Togo Murano, that was a pioneer of the early Japanese modernist architecture, resumed in a more modern and mature style the typology of building in reinforced concrete frame with partial blind exterior walls (as for the Sogo Department Store in Osaka in 1935) in the project for the branch of Takashimaya Department Store in Tokyo in 1952, and next in Sogoh Department Store in Tokyo in 1957. The latter expressed by the totally blind walls the attempt to conciliate suggestions from the traditional Japanese architecture with a modern architectural language.

2-1-3. Japanese Architecture in the Second half of 1950s

During the half of the 50s the issue of the original Japanese interpretation of modern architecture arose and grew strongly; at this time 2 different trends had been spread in Japan: the former that looked back in the anachronistic restoring of the traditional architectural language, the latter, proposed by the most progressive elements of the architectural environment, that tried to melt the most important functionalist values (that at that time was more and more worldwide criticized) with the national culture to achieve an better integration and set up a new Japanese architectural style.

The peace treaty drown up in 1951 (that gave back Japan the independence) gave a strong confidence to the people and new creative energy to architects, that started in the exploration of new possibilities in artistic languages, eventually independent from the European and American influence, aiming the development of new and original shapes in architecture by the research of new artistic values and concepts more close to the traditional Japanese culture.[xcix] Examples of the former tendency are the works by Sutemi Horiguci such as the "Hotel Hassokan" in Nagoya, in the middle of 1950s, that proposed a total resume of the traditional building techniques and style, and in the works by Kiyoshi Seike. As many others architects he promoted, in the respect of the modernity of the time, the development of a creative and more modern expression in architecture, even if he stressed the importance of the lesson of the traditional style taken from the ancient buildings, that were inestimable values for Japanese culture that needed to be saved and to reinterpreted in a modern language. An example of his trend was in "Dr. Saito's House", built in Tokyo in 1951.

Indeed, those projects were still somewhat far from reaching a good balance between the modernity and the tradition so long searched in Japan, and despite their attempts to save some valid elements of the spatial concepts derived from the traditional national architecture. These works still showed some characters of compromise and didn't reach a mature integration of architectural modernity and tradition. According to many critics,[c] the right balance between modernity and tradition appeared for the first time in the works of a group of architects named as "the New Japanese School", that designed their works since the second half of 1950s, and that promoted the Kenzo Tange as a new master among the new generation of Japanese architects. His plan for a Peace Park in Hiroshima, built on a design for a competition held in 1946, gave him an international fame as an emerging talent in the Japanese architectural environment. This project, as stressed by the Italian critic Manfredi Tafuri, already spread with success the attempt to merge both suggestions from the traditional Japanese architecture and the tradition of the Modern Movement, and was expression and representative of the dawn of a new phase for the Japanese architecture which in the middle of the 50s searched for its specific contribution to the development of the Modern Movement into the world.[ci]

Hiroshima park's project was composed by a green park wherein stands some pavilions. These are made of brutalist exposed reinforced concrete arising in the air by means of pilotis, resembling the Le Corbusier style, and showed also the deepen influence of the traditional Japanese architecture style by

using structural elements of the fronts planned in accordance with modules and dimensional ratios more or less directly taken from the historical buildings.[cii] It is important to consider that for all the decade during the 1950s, the main target of the architects was aimed to conciliate the spirit of the modern age, based on the power of technology and industry, with the traditional national culture, and set up a new true national style in architecture. The efforts to reach this target often didn't achieve convincing results. The works by Hiroshi Ohe, such as Miki Building in Tokyo, and by Yoshinobu Ashiara, such as Chuo Karun Building and The Woman Center in Yokohama, all built between the 1953 and 1957, revealed a formalistic usage of the International Style language, that in the opinion of Tafuri: "…revises…repertories and styles from different origins, melt together in an vague eclectic synthesis, nevertheless quite expressive…".[ciii] According to Tafuri, it seemed evident as the fundamental lesson from the Modern Movement was still resisting in Japan although it was the beginning of a more severe world-wide criticism about its indiscriminate use. It can be argued that historical context, the International Style appeared to be the most appropriate solution (concerning the methodology and the construction techniques) in architecture for Japan because of the necessity to satisfy in short time and in the cheapest way possible the fundamental problem of shortage of residential housing, and also because it was a psychological element of cultural connection with the pre-war rationalist experience.

During the 1950s it became more and more evident the general awareness of the crisis of the Functionalist approach, although Japan wasn't touch immediately by the awareness of the same crisis because it was too much involved in the resolution for the development of a national style.

The crisis of the Modern Movement was had very complex reasons but it can be said that fundamentally the main reason for its failure was the failure of its ideological support, based on the analysis of the social, political and economic situation of Europe between the end of the XIX and the beginning of the XX century. Basically, the Modern Movement arose as reaction to the ornaments and decorations in architecture, which was expression of the eclectic style, as well as attempt to promote the diffusion of more hygienic and comfortable living conditions to the masses of the crowded European people, whose environment was wasted by the Industrial Revolution. The bases of the methodology in the research, from what the Europeans developed the design approach, relied on the same ideology that now was found not completely reliable. The Japanese architects were completely distant from that ideology, being interested especially in the assimilation of the engineering techniques and the formal aspects of the modern art.[civ] For this reason they didn't feel so much involved in that crisis, but they poured their energies in the attempt to resolve the complex problem of a Japanese original language. Being busy in the research for a balance mix of traditional and modern, the Japanese architects looked back to theirs historical roots, but became more and more interested in other extra-Europeans culture, so they glanced to their Asian neighbours, to Africa and Latin America.

The new political course of modern post-war Japan required more appropriate public buildings, which could be capable to reflect to the population the new democratic values of the society. The needs of the citizen became important elements that architect ought to be held into consideration in their work, and that

could influence directly the shapes and the inner lay-out of the buildings. The architecture started to be regarded as a symbol of the progress of the Japanese society. Beside the development of an impressive infrastructural system, the government started a construction activity to give other public facilities to the people.

The main features of these buildings resembling the brutalist style of Le Corbusier, by means the concrete surfaces freely exposed in their plastic expression, that resembled the late style of the master's works, such as in chapel of "Notre Dame du Haute" at Ronchamp, the monastery of "Saint Marie de La Turette", and the set of buildings planned for the complex of Chandigard in Punjab.[cv] From this moment the brutalist exposed concrete became the main element that distinguished the typical modern Japanese architecture. The great ability by which the Japanese architects were able to create shapes, together with the fact that the structural system of the concrete buildings is similar to those of the traditional ones (based on the beam-post frame), allowed them to stress that: "…concrete is ours!".[cvi]

The second half of the 1950s pointed out the development of a third stage in the history of the modern Japanese architecture, that eventually overcame the stage of passive assimilation of the International Style, and Japanese architects went ahead into the development of a mature national style. It was the beginning of that movement that Tafuri named "New Japanese School" and the British critic Robin Boyd called "New Japan Style".[cvii]

Among the early examples of this new trend in Japan, there were the new "Tokyo City Hall", by Kenzo Tange in 1957, the "Sogoh Department Store", by Togo Murano, both designed in the same year, and the "International House", by Kunio Maekawa, Junzo Sakakura and Junzo Yoshimura. The new Tokyo City Hall (now demolished) was one most representative work of this time. It had a clearly a 2 parts elevation:"…the basement, connected the streets, pedestrian areas and the garden, denoted the specific urban function of the whole building. Together with the necessity to stress the importance of the new public function as a service to the citizen, a new concept for the Japanese society (that is also an expression of the modern age), there was the awareness of using traditional architectural elements…" as Tange himself said, noticing that his ideal reference for the project had been the ancient Kyoto Imperial Palace.

The building by Togo Murano still showed the typical style of the author, close to rationalist method of design, with its massive walls without windows on the exterior, so that the whole body of this building had a very monumental shape. About the latter project, the "International House", it denoted again the strong influence of the architectural language of Le Corbusier in the plan and in the exterior style, melted together with the details and modules of architectural elements that belonged to the traditional architecture.[cviii]

Therefore, in all those works is evident, for the first time, the wish to combine together exterior shape, techniques of construction and ideological purpose. Above all is stressed the attempt to pass the new value of contemporary society and architecture on to all the people. This means also introduce a new concept of life and a new style of collective living. The proposal of new, huge apartment complex tried to present to

Japanese citizen an attractive and convenient alternative to the traditional way of housing. Emblematic is the example of multi-dwelling "Harumi Apartments" complex, by Kunio Maekawa, built in 1959 with many changes from the original project of 1955, which was a forerunner of the collective housing blocks in Japan and whose form and brutalist appeal recalled Le Corbusier's famous "Unite'" built in Marseille few years earlier. Maekawa building contained Japanese style lodgings gathered in a high and big collective structure, something roughly new for the Japanese society. By the way another reason to propose such a kind of large housing complex was the necessity to resolve the problem to give a shelter to an amount of population that concentrated in the few flats areas of the archipelago, and that crowded more and more the cities. This fact stimulated the use of new construction technologies and new building materials, as well as the necessity to face the danger of earthquakes and the typhoons that periodically threaten Japan. Before completing this project, Maekawa built the "Nippon Sogo Bank", the first public building in 1953 completely based on the use of prefabricated elements, with soldered steel frame, exposed glasses set in aluminium frame, and exterior concrete walls. In 1960 he completed the Kyoto Hall, made of exposed concrete. But in this project Maekawa denoted more and more the evolution from the early functionalist approach, especially in regard of the refuse of using a "structural box", to a more expressive and aware use of the concrete, creating buildings that were distant from the rigidity of geometrical shapes. This tendency is present also in Junzo Sakakura`s works, such as the "Kure City Hall", completed in 1962, as well as in many others professionals in Japan and in Europe.

2-1-4. Tradition and Modernity in the Social Architecture of Kenzo Tange

As many scholars and critics have pointed out, the most important Japanese architect in Japan during the years of economic boom was Kenzo Tange, who undubtly exerted a fundamental influence over the younger generation of architects, and especially over the members of the future "Metabolist Group". The first project that gave him international fame was an urban design project, the masterplan for a "Peace Park" in Hiroshima, an urban park complex composed by a museum, a civic centre, an exposition pavilion and a ceremonial monument. The importance of this project lie especially on the fact that it was an early attempt to melt traditional style and modern architectural language, and because it can be seen as the first post-war example of urban planning that tried to create an urban core, which, according to Tange, was a symbolic centre of the city as well as a community place for the people. Tange's constant interest for the symbolic value of the modern architecture, as means to convoy to the people the awareness of the new post-war democratic society, is another element that made him a pioneer of the new Japanese architecture. During all the decade of 1950`s, his projects for social purpose, such as the of city-halls, from "Shimizu City-Hall", to "Tokyo City-Hall" (1957), "Kagawa City-Hall" and "Kurashiki City-Hall" (1959), showed a progressive evolution from the early International Style influence to a self development of a new style that tried to connect with the traditional architectural repertory of Japan. The constant interest of Japanese architects for the heritage of their architectural roots along the 1950`s is particularly deepen in Tange, that

started an independent research on the Japanese traditional architecture, and studied, as well as Tout about 20 years before, the fundamental architectural examples of Katsura villa and Ise shrine. The historical analysis by Tange focused 2 mains architectural culture in ancient Japan: the Jomon Age (8000 a.c.-300a.c.), whose architecture was rude and rustic, but also full of vitality and exuberant, typical expression of the common people, equivalent to "Dionisiac Age", and the Yayoi Age (300a.c.-300a.c.), whose architecture was elegant and refined, with a typical aristocratic taste, that represents the "Apollinean Age".[cix] According to Tange, the whole Japanese architectural creativity has been always undecided between these 2 tendencies, and it originated from their never-ending clash.

Tange's main goal was the creation of a modern architectural language based on the historical roots of the native culture of Japan, aiming to keep the traditional heritage without give up the modern progress, and indoing so he surely spread a great deal of suggestions and insights among the younger Metabolists. More this tradition was re-discovered, more there was a rejection (apparently in more the forms than in design approach) of the plain Functionalist concepts, in Japan as well as in other cultural context of the world. Also in the urban planning it was possible to realize that a big changing was in progress, and the urban theory was pointing to new direction. The main solution in the town planning theory developed by Modern Movement was the application of the 4 points of "Athens Chart", whose principles were elaborated during a famous meeting held in Athens in 1933 by the masters of Rationalism regarded the layout of the functionalist city as directly derived by the analysis of the 4 main activities/functions of the human beings in the city: work, living, movement and fun.

According to Tange, although these points still kept a general validity, it was necessary to improve the 4 original points and modify the functionalist approach because of the impressive technological progress of the contemporary age. He was the first that introduced in Japan the concept of "Civic Center", stressing in the same time its importance as central symbol of the city, and as a place that the people could fell as a collective entity.

The occasion for Tange to deepen his reflection on urban planning was his activity as visiting professor at MIT, Boston-USA, in 1958. In that occasion, Tange developed together with his students a project for a settlement in the Boston Bay that gathered all his architectural and planning concepts in one project. This mega-structural project became the reference for his fundamental project a year later, the plan of development of Tokyo on its Bay.[cx]

The problem of the town planning methodology became more and more important in Japan during the second half of 1950s, due to the impressive and fast development of the industrial factories and the consequence economic growth, which caused an uncontrolled expansion of the cities. In fact during all the 1950s and the 1960s, the government policy gave priority to the development of an efficient and functional infrastructure to assure a fast recovery of the economy after the war, as witnessed by Ikeda's Plan to double Japanese income issued in the 1960. Succeeding in this aim became the main target of Japanese government, and as consequence it was sacrificed the improvement of the quality of the housing and of the urban environment during all the decade of 1950s. But besides this, a strong contribution to the

disorder of many Japanese cities such as Tokyo or Osaka was the consequence of the lack of the town planning and economical development programs. For example, in the case of Tokyo, after the great Kanto earthquake in 1923, there was the chance to carried out a program for a more rational and orderly reconstruction which failed due to many private interests. Another occasion was in 1945, after the bombings during the Pacific War. Many parts of the city were destroyed, exactly as elsewhere in Japan. Unfortunately, the bad economic situation, the lack of any clear urban planning and the careless of the respect of building regulation prevented to start a more regular reconstruction, so that the city still again took shape of a huge, disorder and chaotic metropolis.

Furthermore, the government policy to support the self-reconstruction during the early years of the peace time produced an evident uncontrolled urban expansion. The waste of the environment, as well as the urban development, grew more and more in parallel with the economic growth. The expansion of industrial factories attracted more and more people from countryside to the main industrial districts, promoting a very fast urban growth in the main conurbations. This was the background for the developing of the first planning policies planned by government. In 1956 was set up a special commission for the development of a plan for Tokyo which was officially presented few years later.

The proposal for a plan for Tokyo by Tange was thus developed in that context and, together with similar revolutionary planning proposals by (untill that moment) an unknown avant-garde architectural movement, the Metabolist group, presented at Tokyo Design Conference in 1960. The necessity to front the fast development of Japanese cities and to allocate a growing amount of newcomers in the suburbs was the main reason for the development of many different prefabricated building systems all around Japan. This tendency was supported by the presence competent building companies of long tradition, such as for instance Takenaka, Shimizu, Kobayashi, as well as the contemporary influence of the traditional architecture based on the use of standardization of the building components and their industrial prefabrication.

2-2. Urban Sprawl in Postwar Japanese City

2-2-1. Post-war Reconstruction

Metabolism took much of his ideas and inspirations from the direct vision of the change that occurred in the city developed during the years of recovery from the end of the Pacific War. In 15 years, from the conclusion of the conflict to the preparation for the World Design Conference, the urban landscape of Japanese cities was drastically reshaped, as well as their social, cultural and economic atmosphere.

After the war millions of people were without a shelter. The works for an urgent and speedy reconstruction of dwellings became the priority for the government, but this task was too huge for a defeated nation with little resources. A systematic reconstruction of the infrastructures, production plants and accommodations for the population was difficult especially for the lack of a coherent and effective

planning policy by the central government, other than the shortage of building materials and financial founds. The building activity and other interventions by the central government were paralyzed for almost 2 years. To face the delay in the preparation and realization of urban plans for the reconstruction of the most damaged cities (with the exception of the city of Nagoya and Hiroshima), the government encouraged the families to rebuild their own homes by the formula of "self-reconstruction". Especially it must considered that the reconstruction proceeded slowly at the beginning due to the small budget that Japanese government could afford in the earlier years after the war, and for the opposition of Allied Forces of occupation, which limited any efforts of the Japanese to proceed speedy in the task of reconstruction.[cxi] However this initial stage of reconstruction was carried out in little time, since the preferred (but basically the only available) building method and material used was wooden, so that the architectures referred to the traditional architectural style. Most of the dwellings were rebuilt on the previous sites and in doing so the ancient plan of the cities was preserved. Although this decision had the merit to give a rapid and economical solution to the serious problem of the shortage of accommodation for the population, on the other hand it was among the main reasons that led the Japanese cities to the urban chaos in the next years, as the lack of any well elaborated city planning programs denied the possibility of any improvement of the preexisting urban facilities, creating the conditions for several problems in the future, in particular traffic congestion and lack of parks and green.[cxii]

Besides, the need for shorten the length of time for the reconstruction and restart the economic activities as quickly as possible, fostered the government in enacting plans where, regarding the typology and standards of the public housing, the emphasis was laid on quantity rather than the quality, though it also fostered new studies in the architectural design, especially in the field of the prefabrication and standardization of compact housing models. However the during the first half of the 50s, the shortage of steel, iron and concrete, together with the low level of industrial production, pushed the usage of the traditional building techniques made of wood, more economical and of easy construction. But the efforts made to introduce new typologies of housing units and improve the industrial processes, especially those for the production of prefabricated components in the field of architectural design, became an important bases for the future development on a new generation of architects, whose main activities since then was the provision of a large amount of public services and infrastructures, such as railway stations, office buildings, factories, hospitals necessary for the economic recovery of Japan.[cxiii]

2-2-2. Housing Policy of Japanese Government during the Years 1945-1955

According to Ishida Yorifusa, American military administration was responsible for some important changes in the reform of the Japanese planning system of post war years which had a strong impact on the reconstruction.[cxiv] The main changes introduced by Americans were the abolition of the practice of Land readjustment, which had been the main tool used for the urban planning, which they declared

unconstitutional, their policy of requisition of land, buildings and facilities for use of the Allied Forces, which created serious obstacles to the redevelopment of the damaged cities in the following years, and at last the housing demand for the Allied militaries and their families, which compelled the Japanese government to build additional housing units and burdened its financial expenses with additional costs.

Government strategy in the resolution of the housing problem was characterized by 3 key features, and were aimed to contain the flux of people returning into the main metropolitan areas and control and restrict the demographic pressure in the main cities: the first was the distribution of economic resources to local industries instead of metropolitan regions, the second was the policy led to maximize the number of supplied houses and apartments units without considering their quality, and , as said before, the last was the decision to not increase the public housing supply in the war-damaged cities with the clear intention to stimulate the practice of "self-reconstruction", conducted both by the homeless families and by local governments and housing corporations.[cxv] This dramatic situation stimulated the necessity to develop methodologies to produce cheaper and easy-to-build housing units, which could be rapidly built and produced, so that the prefabrication of houses was seen as the most reasonable solution. In October 1946, the "Prefabricated House Association" was established, and many architects, among them Maekawa Kunio and Urabe Shizutaro were engaged in the design of prefabricated houses. The first model of prefabricated house was, as already mentioned, Maekawa's "Premos", a tiny house made of standard wooden panels which assembled in different ways could create several different styles of houses,[cxvi] whose first prototype was built in 1946. However, as noted by the scholar Yorifusa, those models of prefabricated houses were originally built for the workers of peripheral regions (such as miners of coal industry), rather than the workers and employees of the metropolitan regions. Only later those dwellings were introduced in the metropolitan areas, but improved versions of them were still reserved for rich people and foreigners, and not for poor.[cxvii] From this point of view, it seems correct the opinion of Ann Woswo, who stressed as the policy of Japanese government during this time kept a continuity of its prewar policy of "…subordination of housing policy to the interest of economic performance of the nation (now in peace, rather than war)".[cxviii]

From 1945 to 1950 only 10% of the whole housing supply was built by local governments. In 1950 and 1951 two fundamental laws were enacted. The former was the "Housing Loan Corporation Act", which mainly intended to support housing construction by the private sector, and the latter was a "Public Housing Act". Both demonstrated the new interest of the government in the private sector's activity as important partner in its housing policy, following a strategy that aimed to promote the home ownership in urban areas. The aim of the central government to strengthen the economy of the nation had a direct impact in the housing legislation, which granted subsidies to the local authorities for public housing units.

In the early 1950s two types of public housing units were eligible for such subsidies promoted by the Public Housing Law: the "Type 1", which had a floor size of 356 square feet in wooden construction or 498 square feet if made of concrete, and the smaller "Type 2", which were 285 square feet in wooden structures and 256 square feet in concrete. Access to those housing was limited to person whose income

was sufficient to pay the rent. The small size of both the units was a Japanese Construction Ministry's decision to maximize the production of such dwellings that could be subsidized with the public funds and face the housing shortage of the years.[cxix] Woswo pointed out that: "That type 2 units lagged behind type 1 was in part because the Welfare Ministry itself had had relatively small units of 269 square feet in mind in its initiative, in order to insure low rents within the limits of rent assistance that could be provided under the terms of the "Livelihood Protection Law", and roughly this scale of provision was simply tacked onto the final legislation. But a more fundamental reason was the official in the Construction Ministry believed, as did many other members of the Japanese establishment, that households with the lowest incomes deserved lesser housing precisely because their incomes were so low".[cxx] Government gave the priority to the production system of the nation and the recovery of the economy and as a consequence of this policy many of the public housing units which received state subsidies were given to the employees of the big industrial companies and private enterprises, who "…could contribute to the Japan's reconstruction".[cxxi]

In other words, it seems plausible to argue that among the reason that promoted same basic features of the Japanese urban landscape of the 1950s and the early 1960s was the combined effects of a governmental strategy aimed to foster the growth of the economy of the industrial factories by means of state subsidies and assistance, and the concentration of many new housing units in the center of main cities, which empowered and fostered the integration and the cooperation among the different levels of economic activities in the urban districts, but caused a growing urban sprawl and didn't resolve the housing shortage in the metropolitan areas. Moreover the rush to achieve in the shortest time possible the recovery of economy had as worst consequence the juxtapositions and the visual incoherence of many cities throughout the country. This happened because of many factors, and mainly due to the soaring and grasping interests of the big business companies, especially the private railways companies,[cxxii] which exploited the zoning and subdivision land laws for the construction of their profits, the excessive division of the land into minute lots, which arose the average price of the land and prevented the accomplishment of rational and long-term high scale projects, as well as the limitations introduced by fire code laws, which further exacerbated the development of a random-like urban fabric and produced the chaotic shape and the lack of aesthetic quality of many urban environment of the Japanese cities.

2-2-3. Urban Sprawl in the Japanese Cities

The transformation of Japan from a mainly agricultural based economy to an industrial and service sectors based economy in just a span of less than a decade caused a strong phenomenon of immigration of people in search of shelters and jobs, and moved a wave of movement from the countryside and the less developed regions towards the main urban conurbations along the Pacific Rim, which in turn enacted a fast and uncontrolled process of transformation of natural environment, with progressive alteration of the waterfronts through reclamation, and expansion of the suburbs fringes into the rural areas of the main

industrial metropolises to allocate new housing settlements and factories.

By the early 1960s all the economic plans promoted by the government were completely fulfilled, and Japan became one of the most dynamic and advanced industrial power among the developed countries.[cxxiii] However, if the economic advancements had as main valuable outcomes the development of modern infrastructures, an improvement of living standard, better alimentation and a general increase in the national wealth and technological progress, on the other hand new serious problems arose as direct consequences of that fast growth, posing a severe threat to the social life of the citizens of the Japanese metropolises. Phenomena such as the environmental destruction and the spread of several cases of pollution contaminations in degraded urban districts were mainly caused by both by the combination of poor city planning regulations and the evident priority given to economic growth over the citizens' welfare promoted by the central government. In his investigations the scholar Andre Sorensen noted as the presence of ineffective instruments in the planning system in Japan was mainly the consequence of the central government's policy. In particular he stressed as the government exerted a strong control over local authorities, and regarded the national economic development and the protection of public land and other urban areas from disasters as a top priority, so that on purpose it didn't strive to correct the shortcomings of this kind of city planning "deregulation". In fact till the late 1960s the Japanese zoning system counted for only 4 zones: residential, commercial, industrial and quasi-industrial, and "…within zoned areas land development was as-of-right, with no requirements for basic urban infrastructures before land development, no subdivision control, nor any minimum housing standards".[cxxiv] Whereas by 1960 the worst cases of environmental contamination was basically due to the lack of governmental pollution standards and regulations, what made the levels of pollution more acute and dangerous for the citizen health was the presence of high concentration of factories and industrial plants in urban areas with high density of population placed in the big industrial cities, caused both by the rapid urbanization of the previous years driven by economic growth and by the fact that in Japan the industrial complexes tended to be located in small geographic areas as integrated clusters of interrelated industries close to each other and to the workers's residential areas (kombinatos).

Furthermore the pace of accelerated urban growth and the fast urbanization of large rural lands generated a massive extension of disordered areas and uncontrolled urban sprawls in the outskirts of all the industrial cities, which caused 2 main problems: the chronic shortage of many public services and facilities faced by the growing number of their residents (such as the lack of parks and libraries, inadequate roads, sewers and water supply systems), and the awareness that the inefficient land use in the vast extensions of congested and undeveloped/unplanned urban areas created serious obstacles for any attempt of further improvement and urbanization according to rational plans, because of the higher costs to be paid for the construction of the infrastructures and the lack of space for effective improvement works.[cxxv]

Eventually the rampant and widespread urban sprawl in the early 1960s became a matter of serious concern to the Japanese government, which indeed had as main responsibility the narrow vision of city

planning (toshikeikaku) just as a simply process of planning and supply of public infrastructure as functional and necessary elements to sustain he process of economic growth (and for that reason of exclusive competence of bureaucrats, technicians and engineers), and without any interest or real attention to issues related to the environmental embellishment and quality improvement in the urban life of the citizens, so that the real planning technique in the Japanese city turned out to be almost exclusively regulated by and based on the land readjustment (kukaru seiri) methodology, a key planning instrument in Japan since the Kanto Earthquake which hit Tokyo in 1923.[cxxvi] The consequences of this tremendous mix of ineffective building standard laws, inconsistent city planning approach and political unwillingness caused the fast, chaotic and largely unplanned and development of vast low quality urban areas in the main industrial districts of Tokyo, Osaka, and Nagoya, creating a set of specific and less specific issues concerned with the expansion of the urban model of industrial metropolis, especially regarding the problem of shortage of houses, which called for a response likewise rapid and effective.

2-2-4. Economical Houses in Japan

In 1955 the "Japan Housing Corporation" was established as state agency for the development and the construction of apartments and other housing facilities in the main metropolitan areas. Its priority task was the resolution of the tremendous housing shortage which year after year becoming worst due to the massive immigrations of population from the small towns in countryside into the large industrialized metropolitan areas. The lay-out of the new towns and new developing suburbs were mainly structured as "kombinato", a urban center which gathered factories and housing complexes called "danchi", which was composed of groups of housing blocks called "kodan jutaku", which were buildings 4 floors high and with apartments type 2DK (Dining-Kitchen), made of reinforced concrete and built by semi-public agencies. The scarcity of land within the city for new buildings and their soaring costs suggested the JHC to develop large scale danchi in suburbs areas where the prices were lower, and usually along railways lines, targeting middle-income employees of enterprises in the major cities. This situation led to the further investments in the development of the infrastructures necessary to support the growth of peripheries in terms of transportation and power, and prompted the design and the construction of low cost housing units, which fostered the research about new building materials (during those years many new buildings were built in concrete instead of wooden) and techniques, based especially on the industrial prefabrication processes.[cxxvii] Scholar Woswo noted as Japanese postwar housing policy was directed by three main institutions, The "Japan Housing Corporation", the "Housing Finance Bank" (a state corporation founded in 1950 for the provision of low interest loans for private sector residential construction), and "Public Housing Provision", which together produced almost 1/3rd of the total number of housing units built in Japan between 1945 and 1973, and by the presence of several small and big construction companies, some of them in posses of advanced technological knowledge. The main target of housing policy enacted by

Japanese government during all the decades from 50s to 60s was the resolution of the housing shortage in all the areas of Japan, a goal that was successfully achieved in early 70s and hailed as "housing miracle", which, as in the case of post war reconstruction of France, revealed the construction sector as one of the main engine which recovered the economy of Japan and proposed the housing as an instrument of national economic regeneration[cxxviii]. The main consequence of this housing policy, in spite of the important results achieved in terms of quantity, was however the limited space and the (often) extremely low quality of the interior of the houses, if compared with the Western standard. Boyd alleged that the reason for the persistence of smaller size of the dimension of the houses in Japan was partly economic, partly because the shorter stature of the Japanese and partly a folk habit.[cxxix] In any case, the issue of the small dimension of the houses was above all a necessity justified by economic reasons, such as the shortage of building materials, although it also was a feature deeply rooted in the Japanese culture. Several architects were engaged in the design of low-budget houses for mass production by means of prefabricated industrial elements. The projects developed in this period followed this design approach. Among the most representative models there were, as said before, especially the "Premos", designed by Maekawa, then in the first half of the 1950s the houses designed by Kyoshi Ikebe, Kyoshi Seike and Kenji Hirose, who were authors of many different models of single-family houses destined to industrial production. According Kawazoe a real pioneer of domestic architecture in Japan was Yo Ikeda, whose study had a great influence in the process of modernization and rationalization of the housing design in Japan. Seike distinguished himself for the traditional Japanese style of his works, which he filled with shoiji sliding doors and tatami floor, elements which could assure a flexible interior open-space, and in doing so he reacted to the passive acceptance of models which appeared in contrast with the basic needs of Japanese society and culture. On the other hand the projects designed by Ikebe were inspired by the studies on the module and the minimum houses conducted by European Functionalism in the 20s, and reflected his awareness of the exigencies of standardization oriented to the mass production of low-cost housing based on industry. From this point of view it was merit of Hirose the development of the first prototype of house for the mass production, the "SH-30", whose parts were made of standardized elements and used steel instead of the traditional wooden. His steel-framed prefabricated house was a source of inspirations for other architects, among them Ikebe and Bunzo Yamaguchi, and for industrial companies which developed new and more advanced models of standard prefabricated houses.[cxxx] The innovative elements of those houses were both the materials used for the construction, which shifted from the traditional wooden to the reinforced concrete or steel-frame (whose construction system, after all, had some affinities with the technology of the wooden frame), and the modern typology of the interiors, inspired to the concept of privacy and comfort which taken from the Western style of life, proponing to the Japanese architects the issue of the combinations of different cultural values into the residence. The improvement of the quality of life and the awareness of the necessity of new types of dwellings suited for the revolution that was occurring in the Japanese society, first of all the advancement of the social position of the Japanese women, led to development of models of family housing which emphasized the separation of rooms for the members of

the family (both for the couple and children) and the separation of the function of eating and sleeping spaces, aimed to give a new sense of dignity to the house works and in the same time to stress the passage from the pyramidal hierarchical order of the traditional family to the democratic values of the modern times.[cxxxi] New standards for the housing were set to face those changes. One most prominent transformation in the house in order to reduce women's work and assure a more functional arrangement of the living spaces was the introduction of the DK (dining-kitchen) unit, which moreover promoted the new concept of separation of sleeping and eating areas inside the Japanese house, which until then occupied the same space.[cxxxii] In particular DK unit could be considered as the Japan version of the famous prototype developed in Germany by Bauhaus during the 1920s, known as "Frankfurt-kitchen", which had further versions in the next years (the most common type of housing unit during the 50s and 60s was the so called 2DK, composed by two rooms and a dining-kitchen space)[cxxxiii] and soon became the basic standard for both the public and private urban housing, although the small size of the rooms continued to be main handicap in all the models.[cxxxiv] The recovery of the economy proceeded faster and faster during the entire second half of 50s and the next decade, and this situation produced a growing sense of optimism and a strong orientation toward private consumerism which of course influenced also the search for more comforts and improvement in the house. Among the many manufactured goods that caught the interest of Japanese people was the Television set, which by the 1962 was owned by 45% of all the households (television was first broadcast in 1952). Some scholars have observed as: "The 'three sacred treasures' of Japan, anciently the mirror, the jewel, and the sword, became in the late 1950s the television, the refrigerator and the washing machine. In the early 1960s a new set of consumer 'treasures' were designated the 'three C's', the car, the color television , and the 'room cooler', and by the late 1960's there were the 'three V's', the villa, the vacation, and the visit to a foreign country. The Japanese media described the new privatistic orientation toward home and possession as 'my home-ism' and my 'car-ism'."[cxxxv] One of the main consequence for this tendency of Japanese people toward the possession of their own house, together with the issues of the building costs and a the need for a reasonable length of construction time, was the extraordinary development of the researches in the field of modular coordination. The studies on the modern modular coordination in the 50s undertaken in Japan, led the young Japanese architects to deepen their knowledge about the similar activities of European colleagues, especially by Le Corbusier and his studies about the concepts of "modulor", standard and prefabrication. How this subjects became extremely important to Japanese architects and construction industry sector was well evident in an editorial written in the magazine "*The Kokusai-Kentiku"* by Tanabe Kazuto in 1958, who pointed out that: "After the war, around the year 1950, there began the work of reconstruction of destroyed cities, requiring a great number of responsible architects, naturally lending itself to the revival of the study of modular coordination [which in Japan started in the years prior the World war II]. What was most shocking in this period of time was the introduction of "Le Modulor" by Le Cobusier. Le Corbusier's idea immediately caught the attention of groups of Japanese architects. It was just at this time that others turned to re-examine the module in system Japanese wooden architecture, with a view to

improving it into a more modern shape. And there were still others who devoted themselves to a study of a new module, from their own point of view. However, it took some time before the individual scholars were called upon to engage in joint studies in this subject".[cxxxvi] The importance of the development of systems of modular coordination to improve the performance of national architectural industries led to the establishment in 1955 of a small scale organization called "Modular Society", composed by architects, professors and researches, exclusively for this subject. In the 1957 the Modular Society received officially the task of studying the modular coordination by the Japan Housing Corporation, which meanwhile took up modular coordination as its theme of study, aiming to the modernization of prefabrication methods.[cxxxvii] On the other hand, the researches conducted on the modern studies about module, standardization and prefabrication processes, fostered a re-evaluation of the national traditions in these fields, which gave new interests in the prefabrication methods used for century in the construction of the ancient wooden architecture. This orientation was further enforced by a general sense of awareness of the necessity to protect the traditional culture and the Sense of national identity, and stop the frantic process of transformation of the urban environment that was occurring during the recent years. The general cultural atmosphere promoted the spread of movements for the preservation of the national Japanese heritage, especially for the protection of traditional architecture and monuments. Many surveys of old buildings and other research projects were implemented from the middle 1950s, and also the legislation moved toward the same direction with some laws aimed at the protections of antiquities.[cxxxviii] Influential architects and critics such as Tange and Kawazoe contributed in the improvement of the knowledge of the traditional architecture by publishing in 1961 an influential book titled "Ise: Prototype of Japanese Architecture", emphasizing the superb centennial tradition of Japanese carpentry and its sense of proportion and the modernity of its technological approach in the design.[cxxxix] Previously, researched conducted by Kyoshi Ikebe revealed that the European modules developed by Functionalists architects, such as the module of Le Corbusier or that of Bauhaus, based on the proportion of the human body, differed just a few millimeter with "Kujirajuku" (cloth measure), which was a Japanese unit of measurement used in the fashion for centuries.[cxl] Tafuri noted as Le Corbusier's theories and projects were the main reference and source of inspiration for the new generation of Japanese architects, especially because of his search for "…a quality into the standard and the symbolic value of architecture",[cxli] so that the great European master became the catalyst of creative autonomous forces inside the modern Japanese architecture, in particular trough the aesthetic inspiration spread by his later works.[cxlii] Hence the new post-war Japanese architecture derived from a process of evolution and further development of several factors, above all the improvement of technological housing standard and the search for a modern language which bound the architectural influence of International style with the repertory of traditional architectural forms and building techniques.

2-2-5. Technology Advancement in Construction Sector in the Postwar Time

A very important point in the phase of rebuilding of Japan was the issue of technological innovation pursued by Japanese companies and sponsored by the government, so that it was possible to fill the gap with the products of foreign countries and restart the economy of the nation. Scholar Hiesinger stressed the importance of the role of Japanese government, which especially during the 50s continued a policy which had been already fruitful at the time of Meiji epoch, when Japan promoted the modernization of the country by importing knowledge and competences from the other Western industrial nations.

Referring to the development of postwar Japanese design, she alleged that: "…the government, in cooperative relationship with business and industry, guided its course with the aim of promoting exports and building a domestic market. The institutions it established or revised for this purpose in the 1950s remain largely in place today. The Japan External Trade Organization (established in 1951 as the Japan Export Trade Research Organization and known as JETRO), an operating arm of the Ministry of International Trade and Industry, provided the government with information on foreign markets by sending students abroad to study design and inviting foreign experts in design to visit Japan. The industrial Art Institute (…), a testing and research institute attached to the Ministry of International Trade and Industry, had as its objective to develop and promote exports by serving as a research and development resource for Japan's medium and small size industries. (…) Trough the Ministry of International Trade and Industry (commonly known as MITI), and the Ministry of Finance, the government encouraged growth industries by guiding and controlling the import and use of foreign technologies and the availability of foreign currency to firms…".[cxliii]

The government program of modernization of the Japanese industrial system proceeded also by means of the transformation of the prewar military factories for the production of weapons. For example it was this the case of the factories Nakajima Aircraft which during the late 30s produced the famous airplane "ZERO fighter", and whose technologies and know-how were converted in the production of modern peaceful products such as automobiles, kitchen appliances and so on. As a consequence "…many of the engineers who developed engines for carmakers Honda Motor Co., Nissan and Fuji Heavy Industries Ltd. after Japan's 1945 surrender to the Allied Forces were those who had lost jobs at Nakajima Aircraft, according to Kazutada Okamoto, a former researcher at the Imperial army's aviation technology institute".[cxliv]

On the other hand, the relationship between Japan's imperialism expansion and national industry, in particular construction industry has been stressed by other scholars. According to Brian Woodall, the 6 main Japanese building companies (Taisei, Obayashi, Takenaka, Kajima, Shimizu, and Kumagai) grew since the Sino-Japanese war (1894-95) and Russian War (1904-05), and later after the invasion of Taiwan and Korea (1920s), China and Manchuria (1930s), and all the region of South-west Asia, in consequence of the military-related works and the development of several infrastructures in those countries, such as roads, railways, electric power projects, mining facilities and so on. The end of the war caused deep

changes and reforms inside the structure of the construction companies; subsequently they enacted a process of modernization, above-all in the field of technology know-how, which benefited from the domestic reconstruction boom during the 1950s and 1960s.[cxlv] Japanese government again had special merits in the development and success of the thriving building companies in the postwar years. "The construction industry built the infrastructure for the Japanese economic miracle. In this regard, the [Prime Minister] Ikeda cabinet's New Industrial cities Policy offered incentives that benefited contractors throughout the country. The [Prime Minister] Tanaka cabinet's program to "remodel" the Japanese archipelago bequeathed a similar, albeit ephemeral, bounty".[cxlvi]

In his research about the relation between architecture and authority in Japan, also the scholar William Coaldrake alleged that the two main characteristics of the past half century were the importance of the construction sector as a fundamental element in the growth of GNP, and the dominance of the cities as main concentration of people, capitals and activities.[cxlvii] Hence it can be said that both the development of modern industrial technology (supported by many members of the Japanese industrial system) and the growth of extensive metropolises, whose extension and density were unknown in the rest of the world, were among some of the main characteristics that shaped the modern Japanese culture and urban environment in those years.

The combination of advanced systems of research and production, and the high concentration of people in limited and compact areas became a mix which fostered the development of radical and innovative solutions, both in the technology used and in the aesthetical forms; the urban development and the building activity had a so high pace during that period that the construction industry accounted for 30% of the total gross expenditure of Japan, and became the foundation of Japanese economic growth as one of the main industry of the country, a trend continued for many decades since then on.[cxlviii]

One of the most important achievements during those years was the progressive construction of rental apartment house complexes called "danchi", which government sponsored as the typical housing blocks for the urban working classes. The spread of this type of housing accelerated in the second half of 50s, when throughout the country there was the spread of high rinse multi-unit dwellings block in the suburbs of the main cities (mostly built by Japan Housing Corporation after 1955) and in the planned new tows. Even though some criticism arose about the small size of the apartments, however the overall space was larger in comparison with those of the apartments built by private firms, and also the quality of the interiors was better thanks to the improvement of some facilities, such as the kitchen sink, which introduced higher standards of comforts.[cxlix]

The private firms were capable to satisfy public demand for better quality and cheaper housings with the development of prefabricated houses and condominiums (named as "mansions"), but had to face also many obstacles present in the Japanese cities, in particular the overcrowded spaces, the small dimension of lots of land, as well as the limitations and annoyances posed by many legal restrictions (such as those regarding the property of land and the fire codes). The efforts to overcame all these problems and compete on a very competitive housing market, fostered the construction companies to improve their technologies

and develop new design methods suitable to be insert in this difficult urban environment. Inabe and Nakayama referred that among the ingenious design solutions of the private firms to face the shortage of building land and create attractive homes and apartment houses, were the use of courtyards, pilotis, open wells and core systems. According to them: "Houses and apartments with courtyards are eminently suitable to city life in that they incorporate light, air and an outside view while maintaining the privacy of the inhabitants. Houses or offices risen on pilotis or stilts make advantageous use of limited lots by creating open space beneath the structure that can be put to various uses. Houses with open wells spanning to several floors can create a sense of unconfined space that would otherwise be difficult in a small structure; skylight at the top of the well can also introduce light and promote the aura of expansiveness. Structure employing a core system – whether homes or office buildings- concentrate certain facilities in one area for economical construction or for protection against earthquakes and fire."[cl]

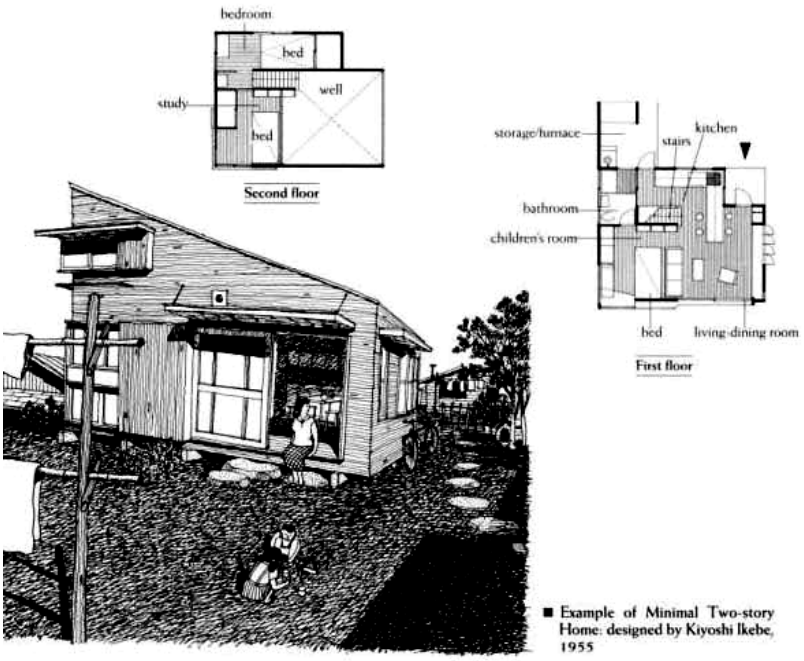
Moreover the Japanese government stimulated directly the research in the field of advanced building techniques and the development of more economical solution to housing problems by means of design competitions. To make these competitions more interesting (such as the "Pilot House Project", undertaken in 1970 as an experimental project for the design of single-family and multi-dwelling systems to be built in a new town, and the "Ahiyahama High-Rinse Housing Competition", held in 1973, for the construction of high-rinse apartment units to be built on the reclaimed land in the suburb of Osaka) for the construction companies was the fact that competition winners were awarded building contracts by the Japan Housing Corporation.[cli]

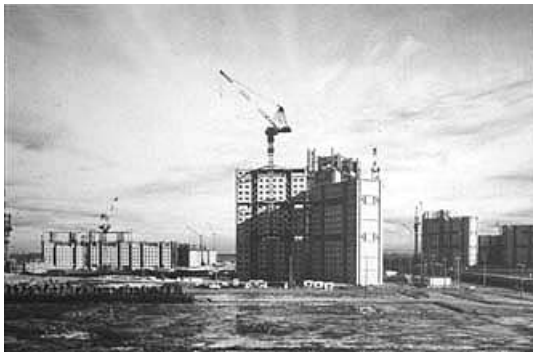
Indeed several researches and investigations were conducted in the field of building technology for the development of various efficient and economical construction systems to be used in the development of the dwellings of the spreading new urban communities, and those researches were generally promoted and finacied by national universities, public agencies and private firms and industrial companies. Among the most influential prototypes were the housing systems designed and developed by Yoshichika Uchida, professor of architectural technology at Tokyo University, who in the early 70s developed several housing models (the most famous was the GUP VII), based on open system of industrialized prefabricated components, and the "TOS System", a flexible precast-concrete townhouse system composed by a set of modular interlocking components designed by Taisei Corporation with the supervision of Kisho Kurokawa.[clii]

The bombing of Japanese cities during the last stage of Pacific War caused the total destruction of many urban areas. The fire cancelled entire districts, above all because the main material used for the buildings was still wooden, while only few prewar constructions could survive. After Kanto Quake in 1923, Tokyo witnessed her most disastrous experience in XX century and experienced a sharp drop of the population. Because of the shortage of materials after the end of the war, Tokyo was rebuilt for many years by its population without any official planning or preconceived form.

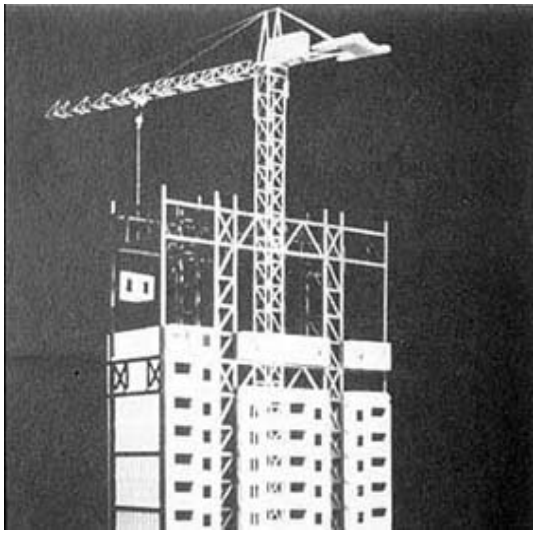
(source photos from: www.thehistorychannel.co.uk)

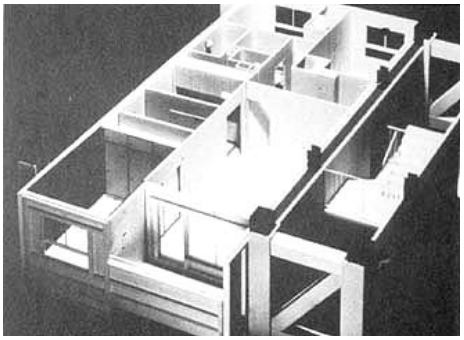
A vast desert of ashes and ruins spread out in Tokyo metropolis after the American air raids of 1945. Those raids destroyed most of the city because the fire hit mainly the districts whose houses were built in wooden. The works for the reconstruction started after the end of the war, but the shortage of building materials fostered the search for economical, fast and easy to built housing typologies, such as the prefabricated models proposed by architect Kyoshi Ikebe since the early 1950s, still inspired by traditional wooden techniques but enhanced with a functional and modern layout.
(photo from Kazuya Inabe, Nakayama Shigenobu, 2000)





Japanese Government was interested in the application of metabolist principles in the field of mass prefabrication and industrialization of multi-dwelling housing units.
A typical and somewhat later example is the project for Ashiyahama High-Rise New Community, built by Takenaka Corporation in 1973 in collaboration with Fumihiko Maki.
(photos from Ross, 1976)





The steel structure of Ashiyahama New Community was developed as innovative system to accept wide variety of plug-in prefabricated housing units, and showed the advanced technology of Japanese construction industry.

Chapter 3

City Planning and Urban Development of the Japanese City during the 1950s and the Early 1960s

Chapter 3 - City Planning and Urban Development of the Japanese City during the 1950s and theEarly 1960s

The national pride and the industrial capitalism, which characterized the economic growth of Japan during the 1950s and 1960s, were mainly centered in the metropolitan areas. The unprecedented phenomena of urbanism and the concentration of activities and functions in the main cities of the archipelago, particularly in the industrial and commercial cities of the Tokaido Region, caused many problems concerning the management of an urban organism that became more and more complex and disordered following the changes occurred in the social, cultural and economic spheres. From the necessity to achieve a more balanced development of the urban settlements and stop the urban sprawls during the post-war years, attempts it was wittenssed in Japan during the 1950s a growing awareness of the necessity to reform the city planning methodology and to pilot the fast and disordered urban growth process, which was more and more influenced by the interests of political lobbies, private corporations and industrial companies

3-1. Introduction on the Origin of the Postwar Japanese Urban Environment

The invasion of Japanese territory by American army concluded the Pacific War in 1945. The total alteration of Japanese pre-war urban environment due mainly to the destruction by American bombings caused years of economic and social depression which lasted until the end of 1940s. After more than 5 years of severe control and limitation in the works for the reconstruction, the American government enacted a policy aimed to transform Japan as an Asian demo-liberal country so that it supported Japan with financial and technological assistance (following as model the “Marshall Plan” which was simultaneously enacted in Europe), and reforming the constitution and promoting changes in many social and administrative fields. The necessity to restart the economy of the country at first suggested Americans to plan the reconstruction of a system of (light) manufacturing industries, and then by the end of the 50s it was planned the development of a new system of heavy industries, based on the production of iron, steel, petrochemical, and the construction of new modern plants for power. The main reason behind the policy for the promotion of the development of Japan, as well known, was the strategic role of Japanese archipelago in Far East Asia in the context of the “Cold War” between US, Soviet Union and Communist China, started with the war in Korea in 1950. Americans saw Japan, seen as a natural barrier against the spread of Communism in East Asia, as new close allied and fostered Japanese government to strengthen the national economy and develop a new efficient industrial system. The development of a competitive industrial system became the priority of the new democratic government of Japan, and its policy was aimed to the assimilation of know-how and new technologies from US and Western European countries. The new industrial factories rapidly spread into new urban territories with more intensity than the Meiji epoch, and their position was chosen to respond to the growing request for goods by national and

international markets.[cliii]

3-1-1. The Growth of Urban Population

The growing importance of industry as effective engine for the recovery of economy of Japan and the development and the expansion of the industrial factories led and influenced heavily the development of Japanese cities during the 1950s and 1960s. Those years were known as the period of the "Rapid Economic Growth", and posted a time of impressive and rapid development for Japan. Together with the economy also the cities witnessed a period of endless growth and amazing urbanization of the territory, so that the suburbs of the big metropolises tended to overflow in the surrounding countryside.

In 1940 there were 4 cities with more than 1 million of inhabitants: Tokyo, Osaka, Nagoya and Kyoto. The population of only those cities together equals to 17, 2% of the total population of Japan in that year. In 1950, 5 years after the end of the Pacific War, the same amount of population fell to 11, 4%, but then arose up sharply again in 1960 as consequence of the massive phenomenon of immigration. During the years of economic growth the urbanization of Japanese territory further intensified as well as the economy development. In 1945 it was 28% of total amount of population who lived in the cities, an amount which became 37% in 1950, and that eventually reached a peak of 72% in 1970, showing a drastic shift from a prewar rural society to an urban-oriented society, a phenomenon occurred in few decades in the postwar time.[cliv] As stressed by the Japanese scholar Miyamoto Kenichi with understandable pride, this transformation compressed in just 25 years an urban experience that in US developed in 100 years.[clv] During those years there was a decline of the labor force in the primary sector from 41% to 21% and started a massive emigration form rural to urban areas, where the concentration of factories and other companies gave many jobs opportunities in the secondary and tertiary sectors and assured a modern environment full of facilities. Many emigrants flew into the industrial belt along the Pacific coasts, in particular into the 3 main industrial areas developed at the beginning of the XX century during the Meiji era: the conurbations of Nagoya, Osaka and Tokyo.

The urban population of these 3 regions was about 35 million in 1960, and reached the amount of 50 million in 1975. The main reason for this concentration of people of course was linked to the more opportunities to find a job, higher incomes, more attractive style of life and in general the efficiency and the variety of facilities and services typical of an urban environment.[clvi] The phenomenon of emigration from the countryside and the surge of the price of the land in the central areas of the main cities were the main reason for the development of high rinse buildings and new typologies of dwellings (often lacking of some basic comforts such as the private toilets) which extended the boundaries of the suburbs and promoted a progressive urban sprawls in the metropolitan areas in particular from the second half of the 1960s. As already mentioned previously, the massive flow of population into the large urban Japanese districts in so little span of time brought further congestion especially to the city of Tokyo, Osaka and Nagoya, whose territories accommodated the main economic, administrative and cultural functions of

Japan and for this reason they drawn more and more people from the other regions.[clvii] As consequence by 1970 it was recorded that those three metropolitan regions accommodated about the 45% of the whole Japanese population, and furthermore 52% of the all National income went to those areas.

Those urban systems which geographically are located between the north of Kanto plain and the coasts of Inner Sea (Seto Nakai) accommodated most of the Japanese population as well as almost all factories and the main industrial complex of the country. Roughly 80% of all the Japanese industry was located on those territories, together with the administrative headquarters, the main national networks (television and newspapers), almost all the most prestigious universities and the most advanced research centers, especially in the area surrounding Tokyo. The presence of so many fundamental activities was the main reason of the surge of the prices of the land and for the rent of the apartments, which caused a process of expulsion of the residences from the central areas toward the outskirts.[clviii]

During the 1950s, the central areas of the cities were the places which absorbed most of the flux of immigrants form the rural region of Japan. From the second half of the 1960s, immigration moved toward the peripheries of the cities where the prices of the houses were more reasonable. Since 1965 Tokyo and Osaka metropolitan areas reached their peak in the amount of population in the central core of the city, and from then on they entered in a phase of development which geographers generally call of “absolute decentralization”, a definition which described a phenomenon of progressive growth of the suburbia and a contemporary slowing down in the increase of the population in the central areas.[clix]

3-2. Historical Background of Japanese Urban System

Many of the elements that currently define the Japanese urban landscape and its extraordinary economic power derive up to the following years immediately following the end of the Second World War. In recent years many economic operators have stressed as Japan is a country that offers numerous economic advantages in comparison to other nations, above all due to its economic environment rich in facilities and full of enormous capitals easily obtainable; besides Japan presents a remarkable high degree of knowledge concerning techniques and methods of industrial production, as well as human resources well-prepared and trained. Besides it is important to stress that, at least recently, urban Japanese environment, considered as social contest, is far more pleasant and comfortable in comparison to other developed countries. From recent studies and analysis it can be argued that modern Japan has built its reputation of advanced and economically prosperous nation thanks to the creation of an impressive industrial system that has developed for one century and has reached its peak during the years 1950s-1960s, the years of the reconstruction after the war.

Those years were therefore of crucial importance to understand not only the dynamics of development of Japan in economic field, but also those related to the social, environmental and cultural fields. Nevertheless, many of the dynamics of development that have been previously mentioned, in particular

those related to the phenomena of economic transformation and urban expansion, are grafted in a process of socio-cultural transformation that finds origin in antecedent years, and of which it is correct and necessary to give a brief mention. Already in Edo epoch, during the centuries of forced isolation that saw Japan closed to any other contact with the outside world, the cities reached a condition of relatively equilibrium concerning their physical and demographic dimension. Practices as "mabiki", the infanticide, periodic bans against immigration in the cities and several laws and other feudal barriers that limited the possibility of movement inside the fiefs territories, had as a result the stabilization of the population in numerical terms and a stasis (with the exception of Tokyo metropolis) in the physical development of many of ancient Japanese cities.[clx]

Socio-economic equilibrium of the period Tokugawa twisted when Japan restarted relationships with the external world, particularly with western countries. During Meiji period (1868-1912) the change of the political system eliminated the barriers inside the country and gave further mobility to the citizens. Besides, at the end of the XIX century (especially around 1880) the expansion of the earlier industries prompted an increase of the phenomenon of urban growth. It is interesting to observe as the urban growth in the early years of the fall of the feudal regime of the Tokugawa Shogunate could be seen as the first consequence of the abolition of the aforesaid restrictions on the urban immigration and on the free choice of the job as well, previously forbidden by law to the commoners.

Especially in the case of Tokyo, historian Terenobu Fujimori pointed out that 3 forces were the main angines which drove the transformation of the city: the "Occidentalists", who strove to spread the new Western ideas and systems, the Home Affairs Ministry, which introduced new reforms like the fire prevention law land rezoning plans to provide the new capitals with more efficient traffic networks and sewage and water supply systems, and the entrepreneurs, who promoted a harbour construction program and the development of a new business district to foster their activities.[clxi] The achievements of these combined but independent activities became fundamental in changing the shape of the new capital, casting a solid urban pattern for the further development and transformation of the old Edo in the new Tokyo.

From the beginning of the XX century, Japanese urbanization was tied up to the freedom in the movement of the people and to the increasing industrialization in the cities. In fact, the process of industrialization of the country was cause of a strong influence on the urban growth only after the war with Russia in 1905, which stimulated the development of the heavy industry for the production of machineries and ships. In this phase of industrial development the population of all the cities started to grow substantially, thanks to industrial activities.[clxii]

The development of the commerce with foreign countries promoted the growth of the cities whose sites were situated in advantageous position for the commercial trade by ship, and it started a process of decadence for those ancient urban centers set in unsuitable areas for such a type of commerce. Already in 1920 the principal harbor-cities of Japan were the centers of the main industrial areas of the country, especially the areas of Tokyo, Osaka, Nagoya and Fukuoka.

From this moment on, the principal infrastructures of Japan were located in these 4 industrial districts,

and their main cities became the most important hubs for the production and the delivery of goods and technological innovation, promoting as consequence further installations of new factories in the those areas (that were already the most densely populated) and baiting a process of ulterior attraction of new industrial plans and other manufacturing activities, with the consequent increase in both the population and the services in the same cities. In this historical phase datable up to the burst of the Pacific War (1941-1945), Japan was for many verses fundamentally still a country with an agricultural economy and with a rural population, and only a small part of Japanese lived in urban areas (it was around 28% in 1945, but in 1940 it had reached the 37.9 %), despite the huge progress shown in the technological and scientific fields, that made the country the most industrialized non-western country.

In this context it is particularly interesting to note how the dynamics of the urban expansion in Japan resulted somewhat different in comparison to that seen in the European industrial countries. In fact whereas in these ones the urban development was promoted by the installation of the industrial factories in areas where it was more easy the provisioning of raw materials and energy, with consequence to recall masses of workers, in Japan the industrial development was piloted from the power of the functions of the cities where the factories were set up, with the consequence of taking advantage of an ample, immediate and sure market for the goods. In turn the industrial development promoted subsequently the urban growth.[clxiii] At the beginning of the Pacific War, Japan was surely on its way toward the development of an industrial society, to a rhythm that, after the end of the hostilities, it had to twist completely the traditional landscape of its cities and to reach a higher position among the developed nations.

3-2-1. City Planning Tradition in Japan

In his work "Contemporary Japanese Architecture" written in 1968, Noboru Kawazoe assumed that the fragmented and provisional character of Japanese city planning was the consequence of the lack of legal means, such as Land Expropriation Law, as well as the necessity for the city to spend much of their budget for land procurement, so that: "… it will take a fairly long time to carry out a plan for a city in its entirety".[clxiv] His analysis on the Japanese urban environment focused the fact that: "…The most difficult aspect of city remodeling in Japan is the problem of land. A city is essentially artificial and public, for land without public utilities such as water, drainage, gas and electricity cannot be called land for city planning purposes. Nevertheless, land is still regarded as natural and private among general public and in law".[clxv] As stressed also by Kawazoe, it appeared clear that the main causes of the urban problems of the Japanese city at the period generated from a combination of inefficient laws, excessive land fragmentation into small private plots, and the great and influential economic power of the big business companies and the aborn importance of the big private railways companies. In particular the latter where responsible for pushing an extensive and irregular urban growth of the suburbs of the main metropolitan areas because of the search for new and cheaper building lands, which promoted a "leap-frogging" effect of urban growth,

since the raising value of the new land (after housing and services are settled) called always for a further search of new areas for residential development, with a "turbo-cornutns growth" pattern which turned to be also a decisive phenomenon in the sprawl of the Japanese city for all the 1960s and over.[clxvi]

Somewhat similar to Kawazoe's analysis were the opinions of British scholar M. F. Richards, who detected 3 main factors which prevented the development of an effective city planning in Japan and represented the most serious obstacles to carry on any tentative to modify the present urban sprawl. According to Richards the random and chaotic aspect of Japanese city was the direct consequence of the fast and uncontrolled post-war reconstruction which produced a high pace of urbanization, a process further stimulated by an economic growth accomplished without any effort to improve the lay-out and the footprint of the existing cities. Another factor detected by Richards was a political one, and it referred to the specific lack of efficient planning legislation and in particular the lacks of effective laws for public expropriation. About this topic he noted that in Japan, after the introduction of new democratic principles, there was "…a special reluctance to embark on planning legislation that implied the use of dictatorial powers. (…) But positive town–planning, which gives first consideration to the interest of the public at large, involves to some degree riding rough-shod over the private interest. Reluctance to do so shows itself in Japan in many ways. If a new city highway is planned and a single property-owner proves unwilling to sell, the project is held up because compulsory purchase would savour of past dictatorial behaviours".[clxvii] However in his research Richards noted that some legislation on compulsory acquisition of property in the public interest already existed in Japan in the early 60s, even though "…these particular powers have not yet been used".[clxviii]

The last key factor as major cause which explained the difficulties in the Japanese city planning approach was the absence of a corpus of professionals specifically trained in the field of town-planning disciplines. Richards pointed out as the first course in town planning activated in a Japanese university started in 1962 at Tokyo University as a brach of the faculty of Engineering. By that time the town planning regulations had been administered exclusively by officials who often were without any academic preparation both in the architectural design and city planning theories.[clxix]

The history of the modern Japanese urban planning dates back to the beginning of XX century, although the first contact of Japanese with European urban theories occurred in the second half of XIX century, when many western professionals were invited to work in Japan and Japanese delegations visited Europe and imported the lesson of Haussmannism as well as that of German urban planning ideas.[clxx]

According to scholar Stephen Ward, after the conclusion of Japanese-Russian war the imperialistic expansion of Japanese Empire fostered both process of industrialization and urbanization of Japan. The necessity to deal with the growth of their cities induced the Japanese to investigate on the town planning methods developed in the Western words. Among the earlier ideas imported from foreign countries there were the concept of garden city, translated in 1907 as "den-en toshi", which indicated a far more rural urban environment conceived as high-class garden suburbs, showing a kind of misunderstanding about the genuine concept as developed by Howard.[clxxi] In 1910 a delegation of Japanese architects was invited to

attend a conference on town planning at Royal Institute of British Architects in London. Here the Japanese delegation had the opportunity for a closer contact with their western colleagues and passed to use a direct translation of the English terms of town planning to describe this new subject, which describe well the strong influence of British model during the early time.[clxxii] Soon however Japanese architects introduced a Japanese term for town planning (in 1913 it was used the word "toshi keikaku"[clxxiii]) instead of the English litteral translation, which marked a further shift from the initial influence of English planning models towards new foreign models, especially the new German planning methods. Indeed Germany became one of the most influential foreign countries for Japan. During the phase of modernization in Meiji Age, Germany revealed to be a fundamental reference for Japan, and in fact the Prussian constitution was chosen as model for her new constitution. Other things were borrowed from Germany, and among these, also many of the Germans planning tools and legal instruments on building lines, zoning and lens readjustment, drawn the attention of Japanese officials, stressing an influence which became even more significant in the following years.[clxxiv]

During the 1920s and the 1930s it appeared clear that urban planning principles imported from Europe and America couldn't be implemented due to the existence of land ownership laws, the lot division and weak planning powers, which made the Japanese urban environment hard to change. As matter of the fact, since the end of Meiji Age and until the early Showa Age (1900-1920) most of the land of the larger cities, and especially of Tokyo, was possessed by few former feudal landlords. Because of the pressure of higher taxes on the land promoted by the government,[clxxv] the large-scale landlords progressively sold most of their lands to the privates by means of subdivision into smaller lots. This trend became considerably more and more relevant and continued and spread its effects especially during the postwar period, creating the typical fragmented urban landscape of Japanese citites, characterized by an amorphous urban structure and irregular city form which denoted the apparent total lack of any organic city planning activity carried out during the previous years, which was especially difficult exactly for the evident interests of the small landowners.[clxxvi]

As noted by some scholars, among them the German Carola Hein, a rare opportunity for Japanese planners to use the principles and the methodology of modern planning was in the Japanese colonies overseas: Taiwan, Korea and above all Manchukuo [Manchuria], "…which offered and important laboratory for the development of modern planning in Japan. In the colonies, planners could try out the new planning concepts they had sampled in the West: neighbourhoods modeled on Radburn, green belts and zoning became central design ideas, sometimes combined with modernist architecture. Military power in the colonies allowed for the realization of urban plans impossible to realize in Japan."[clxxvii]

Among the most notably examples of Japanese colonial city planning, apart several plans for smaller villages and agricultural colonies, there were those prepared for the Chinese cities, such as the monumental plan for the city of Shinkyo (1932-1935), the capital of Manchukuo, the plan for Dairen, developed from 1920s until 1935, and for Datong, also in Manchuria, prepared during the years 1938-1939. All these projects presented a lay-out with a geometrical and concentric urban pattern, and

incorporated many other advanced (by the tume) western urban ideas, such as for example the notion of satellite towns and planned neighborhoods units.[clxxviii]

An important achievement of the colonial planning was the process of improvement of all urban and building standards, especially for housing, undertaken by Japanese architects and urban planners, such as the widespread of central heating, suburban subdivision with large houses, flush toilets, underground utilities, wide streets and boulevards with separated walkways and so on, a result impossible to be reached in Japan at that time, so that became a goal of the same planners for postwar reconstruction.[clxxix]

After the conclusion of the war, although it appeared evident that Japan didn't offer the same freedom of design and the same scale of opportunity of colonial territories, the planning experience gained during those years contributed in the further development of a Japanese city planning tradition, and demonstrated to be especially influential in field of planning education and law, rather than in the application to real construction.[clxxx] Indeed in the specific field of urban planning methodology applied to the concrete reconstruction of destroyed cities, the Japanese approach appeared to be far more pragmatic and less concerned with the visual and aesthetic concepts than in the Western countries were regarded of vital importance both concerning the discipline of city planning and architecture as well;[clxxxi] as a matter of the fact it seems evident that after the war western city planning methods and visionary schemes and ideas didn't play a key role in the process of reconstruction, differently than many European cities (Germany, Poland); instead the main tools for the reconstruction carried on by central government were the extensive and sometimes almost exclusive use of land readjustment practice[clxxxii] (which in Tokyo was applied especially in the areas along the JR Yamanote Line), and the development of gigantic projects for the construction and the development of basic civil and industrial infrastructures, with the consequence that any attempt of introducing urban reforms, such as the land-use planning and a more precise and detailed zoning, failed, poning a heavy burden on the future balanced growth of the all the Japanese cities.[clxxxiii]

3-2-2. Social and Economic Changes in Japan during the Years of the Rapid Economic Growth

At the end of the war, Japan had to face its most serious catastrophe during all its millennial history. All the main cities had been destroyed, and with them a large part of the residential areas and the totality of the industrial factories. Japan left again from the "ground zero", but an appearance of real reconstruction was seen only to since 1948, when, at the end of the recent shock, the Japanese started to strive to remove completely the rubbles of the destroyed buildings (but it would be more correct to speak of heaps of ash, being the cities built almost entirely in wood). This phase of transition was very interesting as well, since it underlined as the possibility of a reconstruction of the cities destroyed by the bombardments occurred during the war, which could have been based on a planned projects, was not exploited at all, leaving subsequently that the population, comprehensibly interested in getting a shelter and a roof as soon as possible, began quickly the work of reconstruction that caused the development of chaotic urban fabrics,

just because of the lack of modern and rational planning, that could have been feasibly introduced at the moment of the reconstruction.

The development of the industry preceded slowly during the first five years, but from 1950 the burst of the War of Korea and the beginning of the Cold War caused a change of the Japanese economic policy. Japan became the principal supplier of materials to the United States, and besides it became the principal strategic base of the Americans in Far East, as a bulwark against the communist block that was trying to expand in Asia. Therefore the Americans promoted the development of a heavy industry and, during the three years of the war, Japan begun an impressive work of modernization of the on the industrial equipping and of assimilation of technologies from abroad.[clxxxiv] The expansion of the economy, which became for many years the top priority of the Japanese government, appeared to be as the main feature that directly influenced the structure of the future urban order of Japanese archipelago in the following decades.

According to the analysis on postwar Japanese cities pursued by Norman Glickmann, the Japanese tendency to the urbanization during the years from 1950 at 1970 went with at least others four phenomena worthy of interest: the first was the concentration of population and economic enterprises in the central region of the archipelago, along the coastal region of the Pacific slope from Osaka to Tokyo, note currently as "megalopolis of Tokaido";[clxxxv] the second was a phenomenon of emigration of rural masses toward the region of the Tokaido (called process of "centralization", with the growth of the core of the big cities), particularly in the years between the 1950s and the 1960s, followed by a relative emigration from the big industrial centers in the suburbs (called phase of "suburbanization", with the growth of the main urban peripheries) during the 1970s; the third phenomenon was a following stage of further development of the suburbs in consequence of a phase of delocalization of population and activities in the surrounding areas of the big metropolitan centers. And fourth and last factor was the progressive surge of further cases of congestion and pollution episodes in the large cities.[clxxxvi]

After 1955 the economic growth of Japan assumed very elevated proportions among the most industrialized countries. In this period the GNP reached values of around 9% annual at the end of the sixties, much superior to that recorded from developed western countries. Actually the economic growth will truly become the engine that will push the growth of Japanese urban development.

The fast and complete transformation of the Japanese economy from a mainly primary sector to secondary sector promoted the transformation of the traditional country-based rural society to an industrial urban-based society. In 1950 about 48% of working Japanese population was engaged in agriculture, fishing and forestry occupation, and in 1960 this share became 32,5%.[clxxxvii] In 1955 the government led by Prime Minister Hatoyama's administration issued a long term national economic plan aimed to achieve the economic independence and the full employment in all Japan; these targets were completely fulfilled in just 2 years, hailing the official conclusion of postwar period.

The growth of Japan in those years was above all consequence of the sacrifices made by the workers of the middle class, prepared and competent, as well as the development of big resources of public and

private capitals through the saving of the Japanese families; but it was also the merit of the policy of economic incentives promoted by the national policy of the central government which aimed towards the creation of an efficient net of infrastructures and modern and equipped fittings to support and foster the development of the private companies and national enterprises in the field of technological innovation.

Therefore at the end of the fifties started a phase of rapid and dramatic transformation of the organization of the economy, represented by the change from a primary industry to secondary-tertiary sectors. This transformation determined an abrupt change of the distribution of the population and the working activities on the territory, as said before, particularly concerning the industrial factories, which since then will be gathered in the area of Tokaido. As the incomes of the workers of that area will become soon the highest of Japan, the need of labors, together with the attraction of higher salaries, it will activate an enormous mechanism of emigration from the rural areas toward the industrial metropolises in reconstruction, located in the heart of the country. The logic consequence of this mechanism was the depopulation of some territorial areas of Japan in behalf of the large industrial cities, whose urban development continued a trial that was already delineated in the 1920s.[clxxxviii]

As easily imaginable, the strong attraction of the big metropolises determined in short time a phase of extreme concentration in the central areas of the cities (urbanization), during the years from 50s to 60s, followed by a next phases of sub-urbanization, characterized by the growth of the suburbs areas, phenomenon evident especially during the first half of the sixty, and followed at the end of the same decade by a phase of de-urbanization (counter-urbanization, decentralization) of the big metropolitan regions. The phenomenon of urban concentration in Japan will be stopped only during the seventies.

The metropolitan decentralization (as said before the phenomenon of growth of population in the adjoining district areas next to the big urbanized centers), at least for the areas more intensely populated as Tokyo, began during the 1960s. Varied factors favored this phenomenon. At the beginning of sixties there was a continuous deceleration of the growth of the population that resided in the central areas; subsequently the peripheral external areas started to grow more quickly that in the past, and at great average in comparison to the central areas that started to lose population. These ones, besides, had a lower economic growth in comparison to the peripheral areas of the territory. As a result the migration from the peripheral areas of the archipelagos toward the centers declined with the time starting from the beginnings of the seventies. Above all the emigrations toward the centers of Tokyo and Osaka declined notably, while in general a kind of inside migration started from the centers of the main cities toward the external suburbs.

In other words, during the seventies it assisted a deceleration of the growth of the main industrial areas, in special way of the cities of Tokyo, Osaka and Nagoya. In general, the process of concentration of population in the large Japanese metropolitan regions started already before the beginning of the Pacific War and continued even more quickly in the following years as there was a rapid development of the national economy that caused the location of the greatest part of the economic activities in the Tokaido Megalopolis region.[clxxxix]

Masses of labors devoted initially to the agricultural activities had pushed to move to Tokyo or other big urban industrial centers to get more elevated incomes and better jobs, also because simultaneously it verified a sharp decline in some agricultural activities in their origin regions.

After a phase of development of the central areas of the big urban complexes, the activities and the residence of the population started to be placed toward the more peripheral areas of industrial cities.

Also in Japan it developed what it is defined "Donought Phenomenon" that generated a process of progressive decentralization of population, functions and activities in the suburban areas.[cxc] The dynamics that presided to the evolution of the aforesaid phenomenon in Japan also deserves one detailed explanation. It was fundamentally determined by the progressive emptying of the urban center of the city, as direct consequence of higher and higher prices that pushed out the residents from the most central urban areas. During the second half of the fifties and in the first sixty, the Japanese government, through the Japan Housing Corporation, a public corporate body that was dealt with the resolution of the problem of the lodgings, built many big residential complexes located in adjacent areas of the big cities, being those peripheral areas gifted of lower prices of the grounds. The logic of the decentralization therefore is born from the double necessities to face the problem of the elevated requests of lodgings and to build as many as possible economic residences for the people, trying in the same time to reduce the rapid growth of the urban populations in the central core of the cities, whose principal effect was the increasing paralysis of the activities and the traffic in the rush hours, other then the awareness of the rapid environmental pollution.

As seen in the next years, the solution contrived by the government was the development of some regional plans for the creation of satellites cities as bed towns, such as those planned for the suburban areas of Tokyo and Osaka, tightly connected to the central cities by functional relationships, being these ones the principal terminals toward which the citizens commuted daily both for job and study. Above all, to regulate and to menage the flows of immigrated from the rural areas and to resolve the problem of the disparity of incomes among the different regions, the public authorities undertook varied initiatives of development and gave fiscal facilitations and direct loans to the economically depressed areas of the country.

Nevertheless the central areas continued to develop, and at the end of 60s there was an increasing desire from the populations for a better urban environment, healthy and rich of equipments and services, evident sign of the increasing cultural evolution of Japanese people, that confirmed as in very short time occurred a shift from rural to urban life. Many large municipalities decided for the development of new social equipments as gyms, auditoriums, public buildings and of recreation facilities. The phase of increasing material comfort for the Japanese society was the consequence of the expansion of the economy that serves as catalyst to the urban development. The high building density of the metropolitan areas of the cities was further exacerbated by political initiatives, that through new laws that abolished the restrictions on the height of the buildings in 1963 (the preceding limit was 30 meters), allowed the development in height of the buildings for offices. This law, together with the improvements in the

developed of building technologies for the construction of safe buildings, important issue for a territory like the Japanese at risk of periodic seismic events, pushed up the cost of the urban grounds in the central areas, and enacted an even faster process of expulsion of residential functions or non production activities from the larger urban centers.[cxci]

3-3. Growth of the Japanese Megalopolis in the 1960s

Between the end of the years 60 and the beginning of the years 70, the wave of emigration that had upset so much quickly and heavily the principal Japanese metropolitan areas was over, and left the urban landscape of Tokyo, Osaka and Nagoya substantially transformed.

From many points of view the emigration was only the most evident aspect of a deeper transformation which involved the whole Japanese society, economy and culture. The high level of growth that the Japanese economy experimented after the war was the main tool that recovered in short times the wounds of the defeat and piloted the urban reconstruction which eventually transformed Japan in a sort of "industrial archipelago".

3-3-1. The growth of Metropolitan Areas

This growth, as remembered previously, led to some important structural changes of the society promoted by a drastic reduction of the proportion of population employed in the primary industries (agriculture and fishing) together with a simultaneous strong emigration from a rural context to an urban environment in a fairly short temporal span if compared with analogous experiences in the western countries. This structural transformation, according to the scholar Norman Glickmann, had at least 3 important consequences in the Japanese regions. First, it carried out a notable depopulation of a lot of rural areas and these areas (around a 1/3 of the whole Japanese territory) were unable to sustain their economies and to guarantee a decent income to their populations, composed primarily from workers in the agricultural field. Second, there was contemporarily an overcrowding of the big cities that determined in many of them the well known phenomena of pollution and congestion. Moreover, and third consequence, there was an increasing fracture between the rich regions based on industries and those rural. The central government was demanded to resolve the problem of the poor regions. Initially some regional plans were produced, as a part of a wider national planning and activated planning, from the end of the fifties. Subsequently it was decided to undertake a fiscal policy that facilitated the areas poorer areas through a taxation of richest ones, whose proceeds were distributed then by the central government on the base of the needs of each city. Until then, the instruments adopted by the Japanese government for the matters related to national planning were constituted by the policy of the "regional-planning", based on the

development of new industrial cities, according to the dynamics of the planning and the development of new towns already experimented in Europe, together with a policy of public investments in relation to the specific demand of the local economies, based on the taxation of the regions economically developed whose proceeds were picked up by the central government and then distributed to the less rich local governments according to theirs needs.

From the end of the war the appointed targets of the government in the field of the national economy were the maintenance of the economic growth, an effective policy of public investments and an industrial production directed to the export. These points were regarded of vital importance for the Japanese economy in view of the national survival in economic field. To sustain this policy was therefore necessary to strengthen and to sustain the development of the economic heart of Japan, represented by the central region of the archipelago. To do so it was necessary to make more efficient the economic environment inside of which the maximum part of the national wealth was produced.

The "Efficiency" as understood in Japan of the 1950s, indicated a national policy which aimed above all to a properly use and the advantageous coexistence and interaction of the numerous economies in the private sector that were particularly strong in the region of the megalopolis of Tokaido. Accordingly, the public investments were assembled in that region and the economic development spatially was encouraged in that area with all the means, particularly by installing of heavy industries factories (production of steel, petrochemical and naval industries). In other words the goal was to integrate and strengthen the economy of the urban areas which saw the highest concentration of industrial factories and other productive structures.

A further reason whereby the area of the megalopolis of Tokaido had an enormous economic development was also the advantage of its geographical position that supported the economic policy of the exports, being the principal commercial hub on the Pacific route with destination USA.[excii]

It seems evident as the main negative consequences of this economic policy were the several regional problems that caused the overcrowding of Tokyo together with the other large conurbations, and the consequent emptying of the rural areas in peripheral territories, with constant migrations toward the industrial metropolises which lasted several years. To oppose this tendency it was necessary to develop new plans to foster the economic development of the poorer regions (Hokkaido, Tohoku, Kyushu) so that it could be possible to reduce the disparity of income between rich and poor regions and to slow down the spiral of emigration.

As noted by Glickmann, the resolutions proposed by government were double. The former consisted in the adoption of a policy of urban decentralization, through the lay out of new towns based on the industry (NICs) and the creation of special areas of development (SASs). This program was pursued together with the activation of a plan for the construction of an impressive series of public infrastructures as roads, harbors, artificial basins, etc. Besides contemporarily it was decided the start of a policy of taxation and programs of benefits to help the less developed regions.

Nevertheless, despite the rhetoric of decentralization effected by the government in the attempt to

assuage the problems that tormented the industrialized central regions, actually the majority of the public investment continued to be poured to these regions up to the end of the 60s, while only later it will be a different destination of the public financings toward other regions. The problem was the search of equilibrium between the priority of "efficiency" of the industrial engine and "equity" of the incomes among different regions. In general the efforts of the regional planning developed by the Japanese government were used for increasing economic efficiency through public investments spatially assembled in a specific area (the megalopolis of Tokaido) to expenses of the equity in the distribution of incomes and services among different regions. And when decrement of the economic disparity of the regional incomes occurred, this is not happened, despite the decentralization of the activities of the population, for worth of the government regional plans but to causes of "natural" economic factors in economic field.

In conclusion, for the decade between the half of the years 1950s and 1960s, the plans of the Japanese government concerning the urban and regional planning were focused on search for economic efficiency, and its priority was the growth of the PIL. Besides this justified the imposing massive amount of public works for the creation of modern and functional infrastructures, pursued for the whole decade of the 60s. The policy of the new industrial cities and the policy of development of the poles of growth in the decentralized areas were pursued in ambiguous way, since the greatest part of the public investments continued to go toward the industrial areas of the big metropolises for reasons of economical efficiency, becoming a direct reason for the excessive urban growth of those regions.[cxciii]

It was only during the following decade and after the Oil shock of 1973 that it will occur a real demographic decentralization directed by the government initiatives, consequence above all of the pressure of the public opinion that had taken conscience of the worst aspects than the industrial development and the fast growth of the cities: pollution, traffic, lack of services, excessive overcrowding.

3-3-2. Megalopolis of Tokaido in the Vision of Kenzo Tange

The first architect who created an urban plan for the massive expansion of a contemporary mega-city (Tokyo) during the late 1950s, based on precise and rigorous economic and technical anaylis, was Kenzo Tange. He was the first architect that understood how such new urban structure cannot be planned using the methodologies elaborated by rationalist architecture (master plan), which consider the city as a kind of containers of functions and objects physically determined (and determinable) or fixed. Underlining the importance of factors such as the flexibility and the transformability inherent of the urban settlements of 10 thousand or more persons, he was undoubtedly among the architects who widened the concept of city, adjusting it to the contemporary scale of enormous social and technological transformations occurred in the half of the XX century, and scholar Steward noted that was the influence of Kikutake's projects that fostered the awareness of Tange about the necessity for a urban planning for the masses, conceived by means of mega-structures and other hyper-technological device[cxciv].

According to Tange the huge scale of mega-city was not an evil, or something to be rejected "a priori", but somewhat the natural consequence of the economic transformations and the technological development in the contemporary society.

Therefore he envisioned the Mega-city essentially as an organization that sustained the activities of the tertiary industries (services and distribution of goods), and it was the natural consequence of the radical economic transformation that from 1955 and for all the next decade promoted the passage from a society economically based on the agriculture to another one, based initially on the industry (secondary activity) and then on the tertiary activities. Particularly it was expression of the post-industrial economic expansion, as an economic system which conferred great importance to the distribution rather than to the production of the goods. Moreover mega-city was place in which the cardinal functions were essentially based around the distribution of goods and services.

Besides this, it was the contemporary center, for the reasons expressed previously, of government bureaucracy, of the international financial management, of social and cultural activities and the main place for the production and the consumption of goods of mass production.

The essence of the megalopolis as conceived by Tange laid therefore in systems of communication and the connections between the varied functions presents inside her boundaries. It was the center in which stronger were the interrelations between the fundamental functions of the contemporary society. The theories of Tange about the mega-city derived mainly from the analysis on the reality of the metropolis of Tokyo, which to his eyes appeared at the beginning of the years 1960s as an enormous organization-pivot whose the purpose "…was to determine everything in Japan, to produce values, to develop ideas and to maintain relationships with the outside world".[cxcv]

The existence of the mega-city such as Tokyo, as well as that of other cities with population of 10 thousand persons, was the consequence of the cultural development and the economic growth of the postwar period. It was the center of vital functions for the contemporary society, and besides it was expression of the attraction of the persons toward works in the tertiary activity. Tange considered Tokyo as the center for the gathering of functions that seek mutual relationship (centripetal tendency for working activities in general). This caused the leaving of activities not tied to remarkable or desirable economically functions, as for instance the residential function. As a consequence there was an expulsion of persons that are pushed out in the suburbs where the ground was cheaper (radial development of the residential outskirts). The policy of the "new-towns" that the government had promoted since the second half of 1950s, just created some simple models of "bed-towns", dormitory places for workers that commuted between their residences and the center of Tokyo, where their work places were situated.

The creation of these centers caused longer commuting time for their residents. In fact the growth of the suburbs had as consequence the economic development of the urban core of the metropolises, which became an enormous CBD, and was supported by the extension of the web of communication as well as the contemporary growth of the length of the trips. The commuting phenomenon, in turn, was sustained by the development of mass transportation systems, above all trains and subways. As the flow of persons in

the city had regular schedules, it caused in the cities huge phenomena of congestion, chaotic traffic and general confusion during the rush hours. The modern systems of communication (highways, subway lines, railways and monorails) derived from the development of the most advanced technologies, and the new urban model of mega-cities was therefore an organization composed by population of individuals seen as mobile persons who could communicate directly fundamentally through the systems of transportation. It was therefore the mobility of the masses, in the opinion of Tange, which conferred to the open organization of the Mega-city its organic life. The confusion of the modern cities was not caused by the flow of traffic of people, but from the fact that the urban structure of the traditional cities was not able to sustain the new challenge contemporary age.[cxcvi] In particular, it was the typical radial structure of many historical cities (both in Japan and abroad) to cause their failure as contemporary urban settlements. The megacity rapresented a new urban model whose massive scale and new complex and intricate functions inevitably promoted a general attention especially towards the creation of a new extensive ans sophisticated system of transportation, because its population was in constant flow and was this flow of masses that gave life and allowed her to grow and to evolve. And above all Tange saw in the appearance of the automobiles (the typical example of technological innovation of the transports of the XX century) as one of the main factors that have altered the precedent equilibrium of the life in the traditional cities, whose introduction in the city context caused the development of highways which with their huge scale didn't harmonize with the old urban system. The confusion of so many cities contemporary, according to Tange, was generated from the incompatibility between the systems of roads and automobiles, which need further improvement.

Tange was aware that the mankind is entered in a phase of enormous change of the environment physically built, of dynamic growth in social and economic circle, and of "metabolic" transformation.[cxcvii]

He also recognized that at the beginnings of 1960s the world seemed to have entered in a new rich age of expectations but also of unknown. He considered two cardinal phenomena: the revolution in the energy and that of the information. The former constituted the continuation of the industrial revolution of the XIX century that has transformed the techniques of production and has determined the Rapid Economic Growth of this century, carrying element of the phase of big urban expansion and presupposition of the genesis of the mega-cities. The big revolution in the field of the information instead was based on the development of the new means of communication of mass (computer, television, and telephone). These devices were promoting a radical transformation of the society, more and more based on nets of exchange of information on long distance.

The result of the revolution in the methods of production was an acceleration of the economic expansion on world scale. It has caused a demographic explosion and a notable rapid transformation of the physical environment. The growth of the population has produced an acceleration of the urbanization as a result.

Tange observed as in this century the same concept of "city" has evolved, and has developed from the phase of genesis of the city-metropolises to that of the megalopolis. He described a chronology in the

evolution of this concept, so that according to him the 1900 was the period of the development of the cities of a million persons, 1960 was the period of the cities of 10 thousand persons, and eventually he prognosticated the year 2000 as the period of the development of the cities of 100 thousand persons.

Also the revolution of the information, of the technology and of the systems of information, phenomenon defined as “the Second Industrial Revolution”, was cause of a depth change of the human relationships, thanks to the new instruments for private communications, which didn’t need a physical contact. Inside this dynamics, it must be stressed the importance of the development of the systems of transport, that has allowed a progressive evolution of the society, and that Tange indefatigably pointed out.

The growing importance of the new systems of mass communication in the contemporary urban areas has promoted the creation of nets of relationships among individuals and places similar to that of the nervous system of the living organisms. Continuing in this biological metaphor, it was possible to interpret the huge metropolitan areas and the megalopolis as the brains that regulate functional activities for the body of the modern society.

Concerning the solution to the chaotic development that the big metropolises are suffering during the last decades, Tange didn't hesitate to refuse the solution represented by the system of the satellite cities as “bed towns”. The justification of his opinion appeared from the consideration that such a structure would promote a strong dispersion, limited interchanges between the elements of the over-all system, weaker functional and other communication relationships, resulting in an a little sophisticated scheme and full of divisions inside territorial-urban area. Moreover he criticized also the policy of the “urban poles” promoted by the Japanese government during the 1960s. This attitude resulted clear since 1958 through his criticism of the National Capital Plan, a proposal which mainly relied on the old concept of the development of a system of satellite-towns as a costellation of pheripheral small poles around Tokyo, and required the development of larger infrastructures such as rail networks, streets, water supply and sewage systems, with higher cost for the purchase of the lands and longer communting time for workers (as the main factories were in the center of Tokyo). Against this sort of plan, Tange proposed the development of Tokyo in tha bay, stressing that such a urban solution could furthermore benefit from the close presence of the several factories and industrial complexes, the relatively low cost for the lands reclaimed from the waterfronts of the bay and the development of all the urban infrastructures (much cheaper than the cost for purchase of expropriated land on the soil), aware that the new construction technologies, at the basis of the ideas of the “marine cities” and “cities in the skies”, could for sure cut the total costs and assure high grade of efficency and flexibility for the future development of the city and her society.

Later in 1960s, in consequence of his studies on the socio-economic and urban development in Japan, he proposed the development of the whole nation as a single highly evolved urban organism: “Megalopolis of Tokaido”. With this word he conceived the Japanese archipelago as a whole immense and continuum urban extension, with an inner structure much more sophisticated, rejecting again the satellite-town scheme proposed by government as reference for main model of the Japanese urban system. From his analysis on the objective fact that in Japan the persons and capitals had been assembled in

Tokaido region mainly around the urban poles of Tokyo, Nagoya and Osaka, he developed a scheme based on a territorial organization that presents a structure in shape of "ribs and backbone". He created his scheme through the development of road and railway connections with the purpose to strengthen the bond between these pivots of the system. The purpose was clearly to strengthen the flow of persons and commodities inside the national territory, based on a system of transportation which could guarantee efficient and rapid communications.[cxcviii]

Tange proposed 6 points to determine the development of the megalopolis of the Tokaido. He proposed the construction of 2 enormous express-ways wide 500 meters extended from Tokyo to Osaka, which would connect the two areas of the Pacific Ocean and the Sea of Japan, and able to conform themselves to the inevitable transformations of the means of transportation. The aim was to assure efficient communications between south and north of Japan. To an urban level he also proposed the development of a new urban structure suited for sustaining the traffic of autos in the city center. He refuses the centripetal model (radial) of roads, in favor instead of an axial system of roads able to decrease the traffic, which resembled the concept used in the plan of Tokyo of 1960. To assure difference and mix of functions he underlined importance to create compact buildings and to locate them in areas more dense, so that it could be favored the variety of choice inside the city. Psychological, functional and economic reasons (especially related to matter of the costs) were, according to him, in favor of this solution.

Following a biological metaphor actually somewhat popular at the time which he shared with the Metabolists, whose biomorphic forms (specially in the case of the projects by Kurokawa and Kikutake) and concept of cyles had a great deal of influence on the refinement of his later works, Tange compared the whole urban system to a tree, whereby the main frame was the system of transports (roads and railroads), which like a shrub supported and sustained the branches and the leaves, as secondary elements of short duration (composed of buildings for residence and for different activities and services).

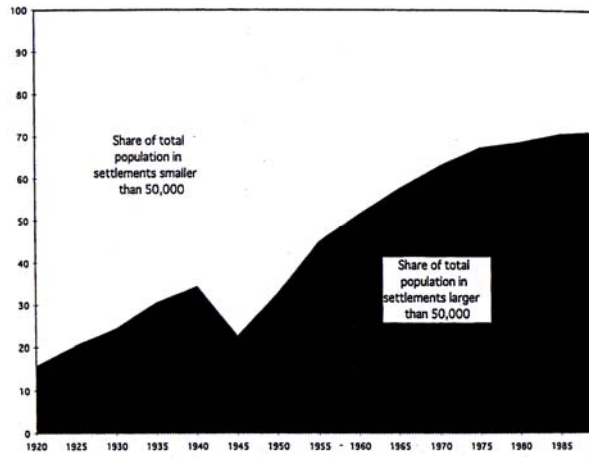
The whole urban structure was composed of elements of longer duration, that could needed less technological transformations during the time (such as trains and subways), and those of shorter duration, subject to great modifications during their cycle of metabolic existence (such as residences and others buildings). Eventually Tange underlined the necessity of plans that aimed to the compactness of the urban environment as way to assure the preservation of the nature and the external areas of the urbanized territory, limiting the excessive dispersion of the city and promoting the development of artificial space as main infrastructure which could accommodate high density buildings.

Doubtless Tange's urban vision was one of the most striking and influential of the modern urban history, and, both in the Tokyo Bay plan and in the Tokaido Megalopolis concept, the ultimate goal (for Tange as well as the metabolists) was the creation of organic unity of society and architecture, as well as the creation of an aesthetic for the mass society. However, his concept of "archipelago-city" presented also not few negative factors, above all the fact that a similar proposal could inevitably appeared as an authoritarian and conclusive plan, theoretically plausible and efficient but in reality not so flexible and even expression of a tyrannical society, in this sense perfectly fitted to the capitalistic economic system of

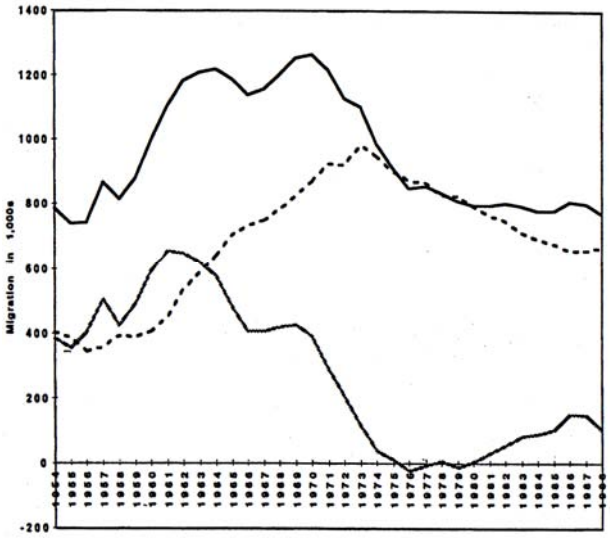
contemporary age. Regarding this issue, architect Peter Smithson of Team X had this to say in 1964: "One should be free to opt out, or work in ways that might in the long run redirect the economy. That would be a real open society. The centralized nation-city seems to be the opposite of this [real open society]".[cxcix] A similar kind of criticism to Tange's (and Metabolist's) theories came also from Fumihiko Maki, who in his projects always rejected an urban design base solely on the technological and engineering oriented megaforms in favor of a more contextualist and soft "urbanist"approach pointing out that it is difficult to predict when and where the changes in the city will occur, and especially from Aldo Van Eyck, who in 1966, concerning the concept of rigid separation in in long term and short cycles of existence of urban and architectural elements of the contemporary city, observed that: "We know nothing of vast multiplicity - we cannot come to grips with it – not as architects, planners or anybody else. (…) If society has no form, how can architects build its counterform?".[cc]

However, apart from the consideration on aesthetics and architectural styles and focusing the attention on the functionality and efficiency of the urban machine, which were the priority of Tange's project, it is important to note as the Megalopolis of Tokaido is under the present economic and social systems an extremely efficient and dynamic urban region on a global scale. The geographer Yasuo Masao stressed the importance of the development of transportation systems in the metropolis of Tokyo especially after the Pacific War, and described this megalopolis as a huge "railroad city", which is characterized by high density of inhabitants (because "… [its] residents must live near the stations"), who make full use of mass transit systems,[cci] and indirectly confirmed the reality of the phenomenon of "megapolitanization" of the Japanese urban environment which, even thought in different forms due to different historic and cultural background, has begun to emerge elsewhere and especially in other Asian nations as an effective way of expanding city in the second half of XX century.

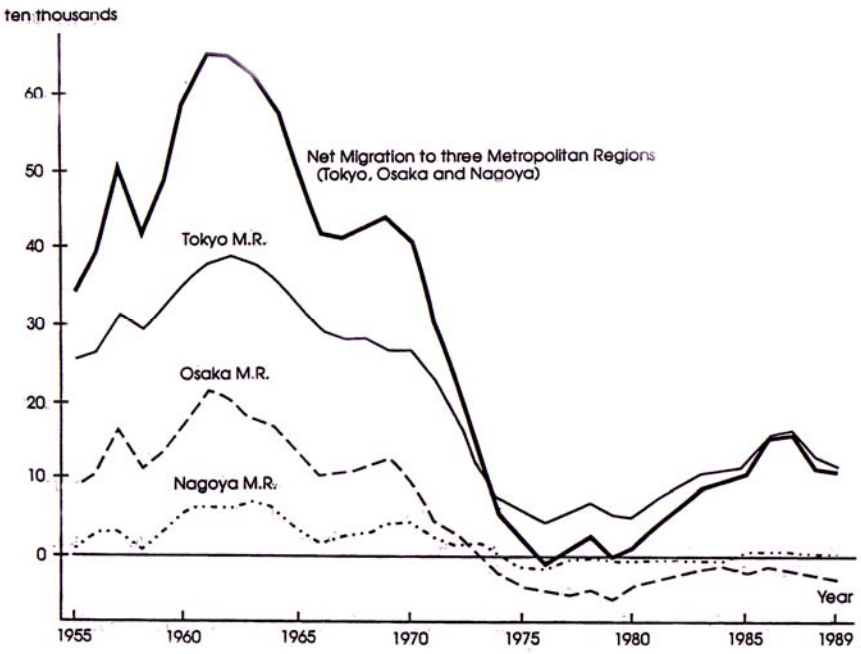
TheTokaido Megalopolis showed exactly the validity and success of this new model of urban growth populated by "urban nomands", under many aspects different from the Western model, and with many unique features; it proves to be a success for the Japanese model of urban growth which is related in special way to the concept of transience and impermanence, as concepts deeply rooted in the traditional culture and lifestyle of Japan, which, according to the German historian Gunter Nitschke, spread its influenced also into the development of modern city in this century, as he pointed out that: "…As Japan rebuilt her devastated city after 1945 and lunched the high-growth economy, the sense of transient resurfaced on a gigantic scale and in a complete secular mode. The Japanese city of today is largely a haphazard, interchangeable mosaic of postage-stamp land parcel that seem rather messy form the view point of classical aesthetics. Yet it is hygienic, efficient and very adaptable to rapid change, and hence an important underpinning of the world's second largest economy. The Western concept of "City Beautiful" and even "Urbs Eterna", centered on the civic square with splendid and hardly changing public institution, has as his counterpart in Japan the "City Vital", flexible and energetic with constant easy access to entertainments and information. While the masses indeed sleep in "rabbit hutches" they work and play in cities that have no equal anywhere for liveliness, visual complexity and social dynamics".[ccii]



The concentration of population in the Japanese city grew steadily since the beginning of XX century, slowing only during the years of the Pacific War.



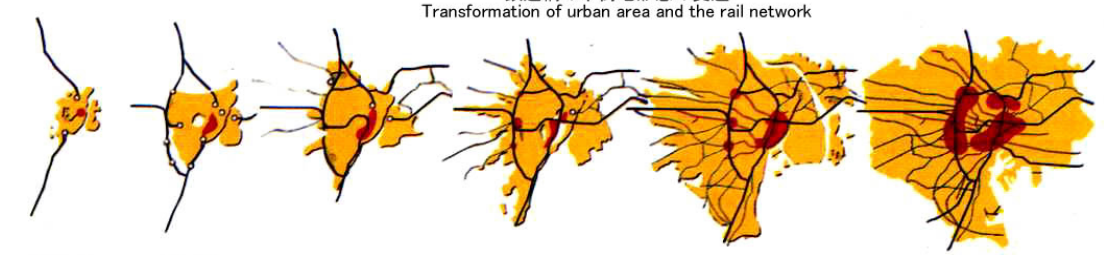
After the end of the Pacific War the recovery of Japanese economy proceeded at a slow pace till the outbreak of Korean War in 1950; the substantial aids from the Americans promoted what was the economic boom of the 50s and 60s, whit significant process of urbanization mainly in the Tokaido region due to emigration boosted by the concentration of services and infrastructure of those urban areas.
These diagrams show the data on the urban population and immigrations in Tokyo and the main metropolitan areas in Japan.
The peak of the urbanization in modern Japan was the early 1960s.
(diagrams from Sorensen, 2002)



The urban growth of Tokyo from early XX century to 1953 followed the industrialization of the country and assumed an high pace and chaotic trend especially after the end of Pacific War due to self reconstruction and the economic development promoted by the central government. The urbanism was further led by the spread of modern transportation infrastructures, especially trains, subways and buses lines, and by private companies, and great attention was put over natural disaster prevention by means of specific prescriptions for new constructions.
(photo from Kultermann, 1970-left; photos from TGM, 1993)

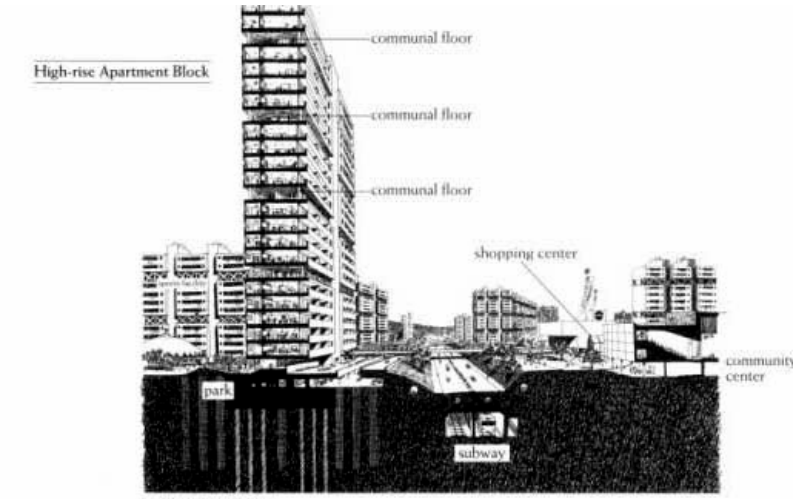
東京都市計画図（震災復興図）
Design of the Tokyo City Plan (for earthquake recovery)

鉄道網の市街地形態の変遷
Transformation of urban area and the rail network



明治初期 Early Meiji era
明治中期 Middle Meiji era
大正時代 Taisho era
昭和初期 Early Showa era
昭和30年代 30s in Showa era (1955—1964)
昭和50年代 50s in Showa era (1975—1984)

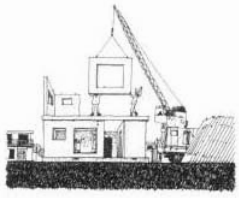
資料：「土木学会誌」



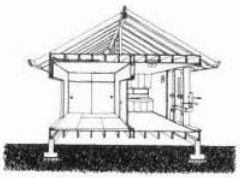
■A "New Town"

As consequence of the urban growth and of the evolution of the industrial building methods devised during the Rapid Economic Growth, since the late 1950s many new towns were developed by the central government in the periphery of big metropolitan cities, where the land was available but which caused long commuting (above). The growing wealth of most of the Japanese families boasted the dream of comfortable house filled with the most modern domestic equipments. Since then in Japan the new consumerist society followed the same models imported mainly from America. (photos: Inabe, Nakayama, 2000)

Housing Developments
Housing developments are a predominant sign of the urbanization of the countryside. The sites, carved out of what was agricultural or wooded land, often have many disadvantages, such as a lack of proper community facilities. Demand, however, remains high among people who dream of owing a home of their own.

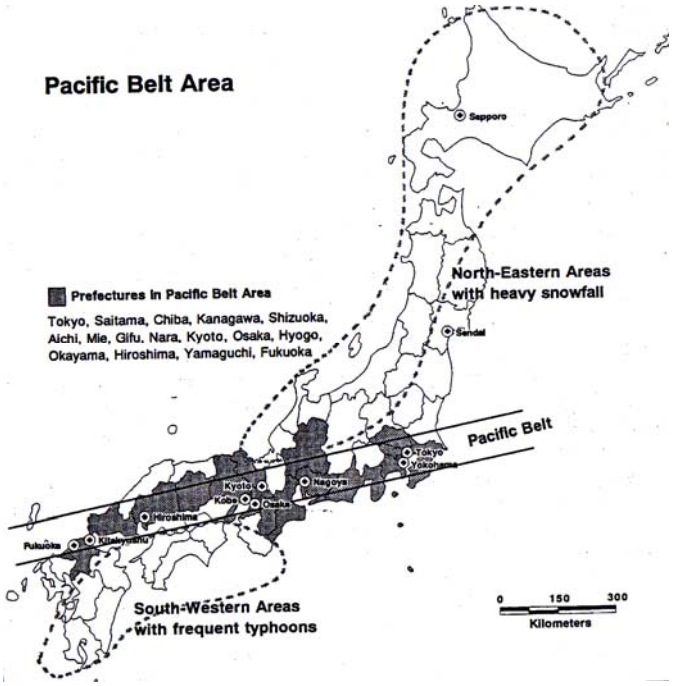


Prefabricated Homes
Built by assembling factory-made sections, these houses aim to combine better quality with cheapness, but costs often remain high, while standardization makes them unadaptable to the varied needs of their inhabitants.

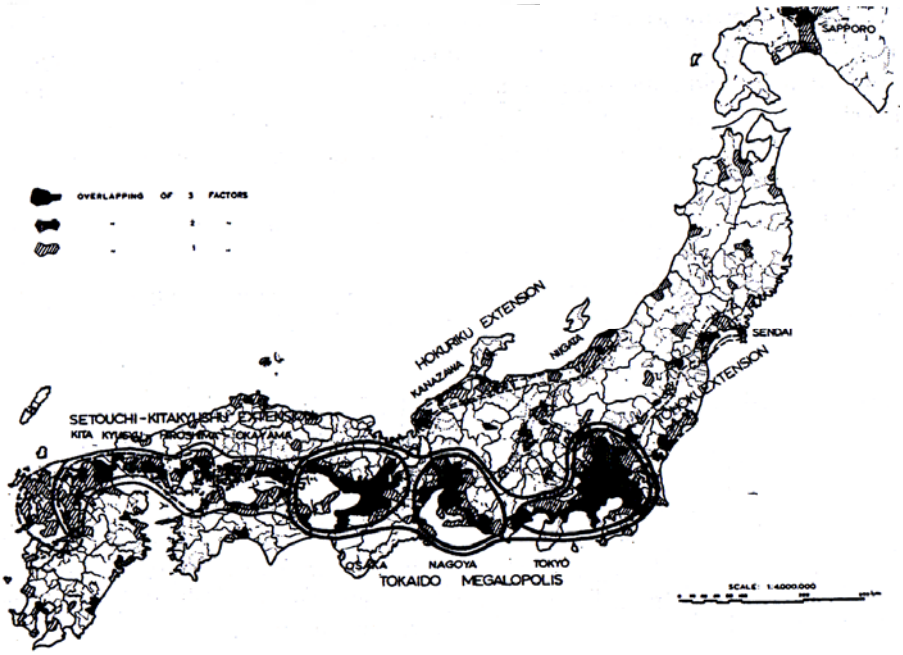


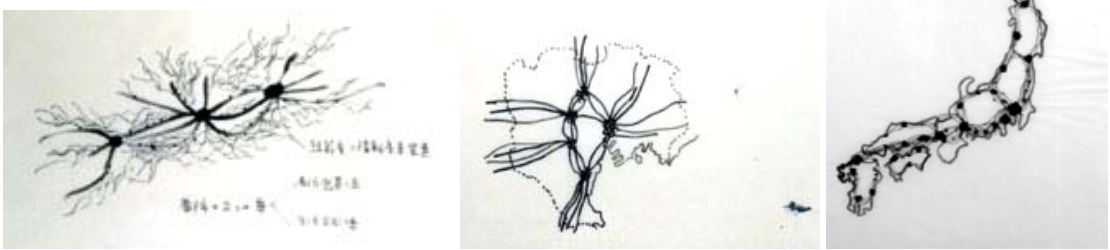
"Two-by-four" Homes
The "two-by-four" frame construction method, imported from the United States, involves the use of standardized lumber that is usually two inches thick and four inches wide. It has the advantage of cheapness and simplicity, but has yet to adapt itself fully to the Japanese scene.

Capsule Apartments
This method entails attaching mass-produced compartments, not unlike space capsules, to a basic framework. It has the advantages of saving time and reducing construction costs, but many problems remain concerning interchangeability and replaceability.



The Japanese Megalopolis, or Tokaido megalopolis, developed since the early 60s and covers the main industrial districts of the country from Kitakyushu to Chiba; it is a long and interconnected web of areas where most of the urban population of Japan is concentred, and its concept was inspired by the famous research by Jean Gottman (1961) on the large integrated conurbation of the American cites of East Coast.
According the Metabolist and Tange's propositions and biological metaphors, the whole Japanese archipelago could develop as a huge mega-urban complex starting with the connection of the areas of the main cities through a system of mass transport (such as the bullet train), developing a biomorphic form which follows the same pattern of growth that nerve cells use to connect each other in an organism.
(photos from: Sorensen, 2002; Kultermann, 1989; sketches by Kisho Kurokawa, 2001)





Chapter 4

Urban Transformation of Tokyo as Origin of Mega-projects in Japan

Chapter 4 - Urban Transformation of Tokyo as Origin of Mega-projects in Japan

During the 1950s many large scale urban renewal schemes for the development of seaside industrial districts got under way in Japan and fostered further bold plans for comprehensive and radical reorganization and transformation of the city pattern of growth and the creation of modern idustrial complexes. Since immigration and a strong economic development fueled the urbanization, new plans where set to face the urban sprawls which hit the main industrial areas of Japan, and especially the capital Tokyo. In the case of Tokyo, some projects were proposed to contain the problem of traffic congestion and to prevent, inside the urban territory of the capital, any further concentration of industrial plants and residential settlements by means of a policy of decentralization. Basically all those plans featured the development of a constellation of new towns around the main metropolitan area separated from the central urban core to absorb the growing population. Aside the official plans proposed by the authority, new and revolutionary plans by youger architecs were put under exam, especially in relation with a possible development of the city into the shallow waters of the bay through reclamation. Since 1958 Tokyo and Tokyo Bay became a huge laboratory for the development of radical urban ideas and experiments, which showed a strong relationship between the geneses of the innovative architectural and urban models proposed by a new generation of architects and the cultural and social changes of postwar Japan, at the dawn of its economic miracle.

4-1. Planning Postwar Tokyo

Planning for the future structure of Tokyo began in the 1956 with the establishment of the "National Capital Region Development Law" by means of which a committee was set up the study a strategy to control the development of the whole Kanto Region (all the territory economically and functionally connected with the capital) up to a radius of 100 km from Tokyo Prefecture. The committee prepared the National Capital Region Development Plan which was approved in 1958.[cciii] To make more efficient the plan in the long turn, in the same year was approved a law to control the development of the new towns, and in the following year another law to define and control the establishment on new industrial plants and public services in the residential areas.[cciv]

The goal of the plan was to prevent, inside the urban territory of the capital, any further concentration of industrial plants and residential settlements by means of a policy of decentralization, aiming to contain the problem of traffic congestion. Inside the regional territory were identified 3 mains areas, different for characters and functions: an existing urban area, a greenbelt and a peripheral zone. The existing urban area, where was possible an intensive construction activity, extended for a radius of 15 km from Tokyo Station, was intended for residential use only. In the green belt, extended more than 10 km beyond the urban area and acting as physical boundary between Tokyo and its satellite cities, was forbidden any further

edification of residential suburbs, whereas the preexisting ones were equipped as "new towns". In the peripheral zone, which surrounded the green belt as far as a radius of 100 km from the central urban area, was planned to settle the new satellite cities, autonomous urban entities filled with services and other economical activities. The overall ambition of the plan was to reach a rational decentralization of Tokyo metropolitan region, based on the development of new towns, the delocalization of industrial plants and universities (understood as the major attractions for migrants to Tokyo) and a new set of governmental laws.[ccv]

The general feature of this plan was directly connected with some previous European experiences, such as the concept of a permanent belt of agricultural land around the major cities, elaborated by Raymond Unwin, but in particular with the plan for the "Grater London" elaborated by Patrick Abercrombie in 1944.[ccvi] The success of English experience suggested the Japanese government to enact a similar urban scheme for the development of Tokyo, hoping to put under control the impressive and fast growth of the capital. Anyway, the lack of concrete legal measures to enforce provisions for the plan and active local opposition of landowners and governments condemned the plan to the failure, especially concerning the proposed greenbelt.[ccvii] Apart form the technical problems that caused the plan for the to be revised, the main reason for the failure of the First Capital Region Plan relied first of all in the uncritical acceptance of a planning method that was outmoded already in the middle of the 1950s, when the plan for Tokyo was set up. "…It was perhaps the most famous instance of inappropriate transplant of Western planning thought to Japan" as stated the scholar Michael Hebbert.[ccviii] However it should be pointed out that a similar proposal for a greenbelt that was a part of a previous plan of 1939, the "Metropolitan Green Space and Air Defence Open Space", which was also based on British concepts of town planning and proposed the creation of a greenbelt and of a network of green corridors.[ccix] The plan was never put in act because of the war, but the same concept was again reconsidered in the preparation for the post-war reconstruction of Tokyo in 1946, known as "Ishikawa's Plan", which pushed the greenbelt deep in the urban area. This plan, whose ambition and massive scale contrasted with the shortage of materials and financial aid from the government (and that caused its failure), proposed many new broad tree-lined boulevards, green corridors and green open spaces within the densely built urban area, which would serve as parkways, public open spaces and firebreaks and would divide the city into many self-contained units between 200.000 and 300.000 populations On the outskirt the green open spaces (unzoned areas) were conceived as agricultural areas and formed the permanent greenbelt where building activities were restricted.[ccx]

In response to the fierce opposition against the First plan of 1958, a new plan was put under exam and in 1968 was approved the new version of the National Capital Region Development Plan, which eliminated the greenbelt and designated as "Suburban Development Area" the entire area outside the existing urban area and within 50 km radius from Tokyo Station, while retaining the satellite cities in the northern part of the region.[ccxi] Furthermore the abolition in 1963of building–height restrictions in the 23 wards was another feature of the plan, that also reflected the intense pressure on the space in Tokyo region,

and started the era of skyscrapers in Japan, the first of which was Kasumigaseki building completed the same year second NCRDP was approved.[ccxii]

4-1-1. The Bay of Tokyo and the Issue of Reclaimed Lands

The necessity for Japan to strengthen the development of a strong industrial sector oriented toward the export was the seen as the basis of national economic survival. The slogan used during the years of economic growth was "Export or die", well representative of the trend of policy of Japanese government of the period, which encouraged the concentration of factories and industrial complexes in the Pacific Belt region to foster the efficiency gained from the agglomeration economies, and achieve higher exports. Heavy and chemical industrialization, sophistication of the industrial structure and general strengthening of the foundation of industry became the goals of the "New Long-Run Economic Plan" promoted during the years 1958-1962. For the sake of efficiency most public investments such as that in roads, ports, land reclamation, and railways was concentrated along the Pacific Belt coasts, where was encouraged the economic development in some strategic industrial sectors such as steel, petrochemicals and shipbuilding. The state was very important in the development of integrated industrial complexes on extensive landfills in tidal bays throughout the Pacific Belt region, providing large sites at low cost for the expanding factories. The "Double Income Plan" of 1960 also was promoted by the government to achieve the rapid economic growth, and was based on massive public investment in social overhead capitals for roads, water supply and port installations in that region, contributing in arising the concentration of industries and activities especially in the area of Tokyo.[ccxiii]

The interest in the new building technology related to the reclaimed lands and port and harbor construction was strongly connected with the theme of "marine cities", which more and more began to be considered no more an idea that visionary architects drawn from comics, but a concrete possibility as an alternative solution to the lack of building sites and uncontrolled urban spralws, particularly urgent in the case of Tokyo and other large and chaotic metropolitan areas.

As matter of the facts, the issue of the reclamation of the coasts along the water of Tokyo Bay became a popular subject that promoted a lively and extensive debate in Japan on the new principles and methodologhy of urban planning, especially concerning the future urban form consequence of the spread of the capital. In Tokyo the increase of population and the abnormal development of industrial factor were leading towards a shortage of land for residential and industrial purposes. The supply of the new lands was searched along the coasts by adjusting and reclaiming the foreshore of the harbor, as it appeared clear that the reclaimed areas in that area could be the most favorable site (and the only one enogh close to the urban and political center) for the settlement of larger factories, gas plants, central markets, sewerage facilities and power houses pushed out of the older part of the central city. All these factors, together with the growing the higher cost of available lands for industrial plants, the true engine of the Japanese economic miracle of the time, suggested the development of the "Kombinatos", clusters of industrial and residential

complexes, along the waterfronts of the Bay through engineering works of coastal filling, a process that had a similar course for the areas around Osaka Bay and Ise Bay. In Tokyo Bay the amount of land reclamation during the period of high economic growth (1956-1975) was 13.000 hectares, for a share of 27 % of the national total, and concentrated 44 % of all Petrochemical plants and 37 % of all Oil plants of Japan, making the capital the fundamental core of Japanese industrial economy.[ccxiv]

The former idea of the development of Tokyo on the water of the Bay originated during the Tokugawa Era, when some works for the reclamation of the coast were started to create more soil to be used for the residences of both working class and aristocrats. During the Meiji era (1868-1911) there was the start of a progressive phase of over concentration of functions in Tokyo. As pointed out by Heita Kawakatsu: "The Meiji government decided to absorb European culture and institution through the Bay of Tokyo. It founded the Tokyo Imperial University to serve as window for European intellectual system and built several factories resulting in the concentration of people to Tokyo… Tokyo Bay was at the heart of the promotion of the industry as well as national prosperity and defense. The centralization on Tokyo was not a natural process but the result of government policy".[ccxv] In 1880 Tokyo Governor Matsuda Michiyuki proposed as urban renewal policy of the capital the development of new Tokyo center in the harbor and produced a rough plan for the construction of a major international port which emphasized the role of Tokyo also as commercial center. However this already advanced proposal wasn't implemented because part of leading members of the government opposed.[ccxvi] In the early years of XX century harbor construction works continued along all the coasts of Tokyo Bay and paired with the development of industrial plants which witnessed the crescent role of Japan as commercial and industrial power, even though until the Pacific War Japan lacked of a comprehensive city planning policy for all its main cities, including Tokyo. Despite 1940 was scheduled as the year of the Tokyo Olympics and the Tokyo International Exposition, a great occasion to improve the image of the capital and both its infrastructures and general lay-out, it was another missed occasion as no major change was carried out,[ccxvii] except for some reclamation works long the coast and few other improvements carried on throughout the capital, especially for the supply of green areas and parks. The ground for the exposition site was created by reclaiming waterfront lands in some areas of both Tokyo and Yokohama, following the same process of growth of land surface of the city already started since Edo Epoch. Then during the Pacific War most of the urban fabric of Tokyo was hit by air bombings and many areas of the city were destroyed by fires. Other projects for a comprehensive redevelopment of Tokyo were drafted only after the end of the conflict.

In the second half of 1950s, the requests for new lands to sustain the economical growth became more and more a priority. Apart from the need for new industrial facilities such as piers and chemical or cement plants, another important problem was the necessity to contrast the land speculation and the surge of land prices. In the April of 1958 the president of Japan Housing Corporation, Kuro (Hisaaki) Kano proposed the land filling of the north side of Tokyo bay, by using a system of dams inspired by the Dutch experience, to gain more than 83.255mq of new land for building activity, almost 1 time and half the total extension of the Tokyo Metropolitan area. The structure of the plan for "New Tokyo", whose main intention was the development of a new urban pole on the east side of Tokyo bay, destined the left side of the bay for

industrial use, facing on the opposite side a strip of land, along the west edge of the reclaimed area, where Kano proposed the creation of docks, electric power plants, an airport, oils tanks and piers for ships (the water of the bay was supposed to have an average deep of 20 metres and to be protected by tsunami), and the residential area, stretching along the north-south axis, divided into 2 blocks by a channel linking Tokyo to Chiba. Most of the reclaimed land was supposed to be use as green area.[ccxviii] The spirit behind Kano Kuro's proposal matched completely with the aims of the government, which saw the reclaimed lands just as "trays" on which lay as many objects as possible. The reclamation counted for almost half of the total surface of Tokyo Bay: the long strip of land facing the sea would be used as site for factories, commerce facilities and other plants, because directly linked to the international sea trade routes. Just a small parallel zone, separated by a green belt and facing a larger green area on the east side, was reserved for residential use. This project spread much interest and fierce opposition and criticism from many parts, especially due to the drastic action of infilling the bay, and because many observers expressed their skepticism regarding the possibility that such plan could avoid the phenomena of land speculation responsible for the present chaos of Tokyo.[ccxix]

4-1-2. Improvement of Costal Engineering in Japan

Following the double trend of coping with the technological progress of the modern world of Atomic Age and the innovation of industrial systems of production of goods for economic purposes (extremely fostered by the government policy), many Japanese architects and planners became highly responsive to the inspiration brought by the new available technology taken from the fields of the coastal engineering and the constructions of ports, breakwaters and harbors, which during those years could benefit of the improvements occurred in the new techniques developed in the field of oceanic engineering and port constructions.[ccxx] Under many aspects the fast development of coastal engineering in Japan during postwar years was especially fostered by the necessity to face the threaten of natural disasters that could hit the reclaimed lands which, as said before, concentrated the factories and the other infrastructure of the major cities, whose protection was object of constant concern for the government.

In Japan the harbor and coastal engineering witnessed a growing interest since 1953, when a powerful typhoon hit the north side of Ise Bay causing many damages and showing the inefficient protection of the coasts and the ports from such unexpected natural disaster. The Japanese government and other local public authorities promoted research activities in the field of coastal engineering to study how to prevent natural dangerous phenomena like typhoons and tsunami from causing destruction to the harbors in the future, so that the coastal disaster prevention became the priority in the coastal works. New construction systems were studied and tested for the protection of the port-cities, and a new law (Sea Coast Act) was issued in 1956, which gave local government direct responsibilities for preserving their coasts and prescribed unified standards for the coastal structures built to protect the coasts.[ccxxi] Since the middle of the 50s, the outcomes of the researches in the field of ocean engineering for the protection of coastal fronts

were available to both civil engineers and architects, and spread fruitful insights among them by means of the numerous publications and conferences held yearly. Improvement in the engineering studies led to a wider usage of the land reclamation activity carried on by the national and local and private authorites, so that Tokyo and the other Japanese port-cities had the main part of their heavy industry and trade complexes built on landfill. The popularity gained by this subject which involved also other considerations in the field of science, technology and economy led many architectural magazines to pay attention to this topic. The interest in the new building technology related to the reclaimed lands was more and more strongly connected with the theme of the "marine cities"or other similar urban and industrial developments on articial lands in the water, which eventually were seen as the most pratical and rapid solution to the urban sprawls of maritime cities city like Tokyo or Osaka, and fostered furhter researches and investigations in the fields of architecture techniques and city planning methodology.

The massive scale of mega-engineering works undertaken by the government to reshape the offshore of Japanese coasts for economic purposes during those years, together with the general impression of an innovative spirit of the contemporary architecture derived in Japan mainly by the lectures and influence of some masters of architectural design such as Kahn, Rudolph and Fuller from America, and Wachsmann, Gropius, the Smithsons and Van Eyck (Team X) from Europe, whose recent works were responsive to the modern trend which called for a renovation of architectural language and design approach and principles, in particular regarding the issues of monumentality, symbolism and the need for a larger scale of structural forms, became some of the main factors which generally influenced not only the central ideas of metabolist projects but also those of other Japanese architects sensible to the need of design and planning innovation in Japan.

4-1-3. The Utopian Projects for Tokyo Bay's Reclaimed Lands

The theme of the reclaimed land and the plan proposed by Kuro Kano were the 2 main factors that attracted the interest of architects and planners and pushed them in searching alternative solutions and urban models in the planning the future development of Tokyo city on the bay.

Among the numerous proposals presented to avoid Kano's plan (or similar plans which some critics blamed to be based simply on the uncritical usage of reclamation land of natural sites to gain artificial land for building construction, such as in the case of "kombinato"complexes sponsored by the government) could be carried on, worth of note for the boldness of the schemes and the completely new vision of the concept of modern city were the some projects elaborated by young architects belonging to the new generation, and in particular those by Kiyonori Kikutake, an architect graduated from Waseda University, Masato Otaka, an associate architect in the Kunio Maekawa's studio, and Noriaki (Kisho) Kurokawa, architect graduated from Kyoto University.

In his plan for the Tokyo Bay, Masato Otaka questioned the project presented by Kuro Kano and proposed his alternative solution to the theme of reclaimed lands, published in February 1959.[ccxxii]

According to his opinion, the necessity to dig the foundations of the buildings made the decision to reclaim land from part of the Tokyo Bay inappropriate and expensive. Furthermore he argued that the total lack of any planning coordination (as in the case of Kuro's proposal) would lead the new territories to a disorderly urban development like in the present city. His alternative plan sought to find new principles in urban planning, and envisioned a system of slabs shaping a horseshoe structure along the coasts of the Tokyo bay, by planting a great number of posts into the sea surface, and put on theses posts the buildings and all the urban facilities. The final effect of this idea made the urban structure quite new and the landscape somewhat similar to a lagoon city environment.

"Design of Marine city "Unabara"", "Tower Shape Communty" and "Marine cities" were the titles of 3 proposals by Kiyonori Kikutake published in the magazine "Kokusai-Kentiku" (International Architecture) in December 1958, January and February 1959. In those articles[ccxxiii] the author proponed his own solutions to the desperate situations of the modern cities (but in particular for Tokyo), overwhelmed by traffic congestion, shortage of land for new buildings, lack of a good urban facilities and poor quality of the public housing construction by means of artificial platforms made of concrete to be set into the sea and used as basement on which tall towers could arise. Kikutake explained the concept of his early models of cities floating on the sea, as well as the project for a cylindrical tower as sub structure to allocate steel capsules as housing units, and introducing many interesting insights such as the theme of artificial environment, the cycles of life of architectural elements, the linkage with industry and the flexibility of the room, he posed the base for the ideological theory of Metabolist group.

Noriaki Kurokawa's plan for Tokyo was published by the magazine "Kenchiku Bunka" (Architectural Culture) in September 1959.[ccxxiv] In this project Kurokawa also stressed the concepts of changing cycles as well as a difference in the durability and scale in the basic urban structures. His proposal intended to build the fabric of the new urban dwellings as communities in the air in the shape of tall vertical cylinders, which contain capsules as housing units and communal facilities, as represented in the schemes for "Tree-type building" and "Bamboo-type building". His first proposal was followed by other projects, such as those for Tokyo-Ginza and Helix City in 1961, which suggested the development of the new urban dwellings in the shape of tall vertical cylinders as communities in the air, as well as in the water of Tokyo Bay, applying a design process reminiscent of that of industrial production for modular components. This approach was shared with most of the other metabolists, who together with others presented their. theories aimed to expand the land for construction as manifesto of Metabolist movement in occasion of the World Design Conference held in Tokyo in 1960.

The works proposed by Otaka, Kikutake and Kurokawa were the mirror of the general interest about the possibilities of the new technologies and techniques of building construction applicable in the creation of new artificial urban landscape. The unprecedented extensive exploitation of the natural sites, led to new opportunities of creativity for architects thanks to the innovative and advanced technologies in the field of construction. The theme of marine cities became a new exciting subject which gave numberless possibilities of expression to the imagination of the architects because based on new available technology

taken from various fields, such as engineering of dam constructions and harbour constructions, trade ports and other marine building equipments.

Many architectural magazines started to pay attention on this topic. The issue of reclaimed land was strongly connected with the theme of marine cities, and in doing so fostered the creation of a new field of research in architecture and town planning, conceiving the creation of a futuristic urban vision based on artificial land on the sea, combining both the production facilities and the residential complexes.

For example, in the April 1959 in Kokusai-Kenkiku was published the project "The proposition of the Tokyo Bay Canal", by 2 young architects, Soitsu Nonomura and Shuichi Tsubata.[ccxxv] This project was very similar to the proposal by Otaka (published just few months earlier), especially for the general shape of the channel's plan, and emphasized the vision of the new marine city as network of links between the strategic poles of the new city on the artificial land and the urban fabric of mainland coast. The reclaimed land was divided in 2 main areas: the outsider side destined to allocate industrial factories and the insider side the residential quarters, so that the whole ring-structure of the plan was conceived to facilitate the foreign and domestic trade activities of Tokyo area by ship and by rail. The reclaimed lands was divided in 2 areas: the main outsider side, facing the channel and destined to the industrial factories, and the (quieter) insider side, facing the sea, used for residential quarters, so that the lay-out of the plan was structured especially to facilitate the international and domestic trade activities of Tokyo by ships and by rails. It can be noted that the zoning of the plan is a reverse of Otaka's scheme, as the residential area is placed in the inner side of the reclamation, whereas the (most important) industrial area is placed on the outer side, so that can integrate with the facilities scattered across Tokyo Bay.

The same attention due to the strategic position of the Tokyo bay as a fundamental economic terminal was poured also in another example of futuristic vision in the planning the redevelopment of Tokyo during the years of Rapid Economic Growth, such as the "Neo-Tokyo Plan" presented in the July of 1959 by the Industrial Planning Conference, a private lobby group established by the Electric Power Central Research Institute, a semi-private body charged with the development of the nation's electric power and energy sources. This lobby group tried to use its huge financial resources to generate support for its proposal to transform Tokyo bay into a vast new urban industrial area to link Tokyo, Kanagawa and Chiba by means of massive reclamations along the coasts. Likewise Kano Kuro's plan, also the feature of this proposal reveals a fundamental concern for its potential economic outcomes. The group tried to transform Tokyo bay into a new vast urban industrial area by linking Tokyo, Kanagawa and Chiba by means of massive land reclamations along the coasts, and by creating a new regional transport hub in an artificial island put directly in the middle of the bay to replace Tokyo Station; in the island it was planned to set up an airport and the terminal of a new central rail and new motor transport facilities.[ccxxvi] This ambitious urban plan, which put the emphasis on the creation of a system of concentric ring roads and transportation links around the bay, wasn't implemented for several reasons, but nonetheless it revealed to be influential in the following years, and spread another wave of interest and a large debate among architects, designers and planners, so that since the date of its publication and for the next decade the Ministry of Commerce

adopted its main elements as official policy and started survey works on Tokyo bay circular highway, major new landfills and engineering studies for two major new bridges from Chiba to Kanagawa.[ccxxvii] Although the plan wasn't realized as proposed, some basic ideas such as the plan for the cross-bay tunnel and bridge was reconsidered thirty years later, during the years of the "bubble" economy, and eventually completed in 1997.

In the early 60s a further stimulus for the proposal of large scale projects for Tokyo was the designation of city as hosting of the Summer Olympic Games to be held in 1964. When in the in 1959 Tokyo was selected by the international Olympic federation, the choice was hailed with a sense of high national pride by Japanese, symbolizing the formal re-entry of Japan into the community of nations, and the public debut of its renewed capital city.[ccxxviii] This event required enormous preparation and the government took this opportunity to foster officials, architects and planners to build new needed urban infrastructures such as streets, expressways, monorail, sewers and water supply plants, and improve the existing ones to reshape the overall image of Tokyo especially regarding the problems of traffic congestions. Indeed the main goal of the government policy was to present the capital city in the best light possible, and this common target gained the public support for another planning proposal for Tokyo, presented in 1960 and released in 1961, by Kenzo Tange, that simultaneously proposed to ready the city for Olympic Games and resolve all its urban problems.[ccxxix]

Tange's proposal for "Tokyo Bay 1960" was a project that presented many conceptuals analogies with similar ideas proposed during the same years, especially those presented in the project for "Neo-Tokyo" published in 1959, and in the plans by Otaka and Kikutake published also in the early 1959. However the unquestionable inventive in the design of the details and the futuristic and suggestive lay-out of the urban plan made the proposal by Tange far more attractive and subsequently his project gained the praise of most of the international observers as a masterpiece which summarized and expanded precedent concepts, experiences and ideas promoted by bureaucrats, planners and architects in the previous years.

4-2. Tange's Research in urban planning: the Projects for Boston 1959 and Tokyo 1960

Kenzo Tange reached a preeminent role in the development of urban design principles and methods in Japan during a period when the concerns for the growing urban probles drawn much interest and attention. He was undoutbly a real master and mentor for the younger generation, and his influence on the members of the Metabolist Movement was surely of great importance. For this reason it should be useful and instructive proceed in a brief survey of his main works and research in the field of urban design and theory of the time. Tange as architect and urban designer took the attention of international audience in occasion of the international architectural context in 1949 when is proposal for a Peace Center in Hiroshima won the 1st prize at the national competition. At the end of the 1940s many architects participated in the reconstruction planning works, and contributed in the development of plans for the reconstructions of the

destroyed city throughout Japan. Hiroshima was regarded in a special way (it was the first time in the Japanese planning history budget priority was given to reconstructing peripheral areas ahead of Tokyo), as a symbol of the violence and brutality of the War, and the process of reconstruction gathered pace with the designation in 1949 of the Hiroshima Peace Memorial City to commemorate the victims of the nuclear bombing. A competition was held to for the design of a peace memorial park close to the hypocenter of the bomb blast, and Tange was the winner of the competition.[ccxxx]

During the years before the war he was working in the office of Kunio Mayekawa. In 1942 he quit his job and returned to graduate school to study city planning, and in 1943 he designed the project for Japanese House of Culture in Bangkok. After the war, during the years 1947-1947, he was actively involved in the plans for the reconstruction of the war-devastated cities and together with his team made land investigations at Hiroshima, Maebashi, Isezaki, Fukushima, Wakkanai and many other towns and cities.[ccxxxi] In 1951, invited together with Kunio Mayekawa, Tange presented at CIAM's meeting in Hoddesdon his project for a park in the city of Hiroshima, and again he attended the last CIAM meeting in 1959 at Otterloo, where he introduced to the audience the young architect Kiyonori Kikutake.

Though strongly influenced by the old European modernist methodology, he became more and more interested in the new ideas proposed in Europe by the younger generation of the Smithsons and Team X since the tenth CIAM conference in Dubrovnik in 1956, where the new concepts of "association", "cluster", "edge"(in/between spaces) and "mobility" begun to be discussed. By then he started to reconsider and rethink some of the basic aspects of the methodological approach of functionalism, striving to give more emphasis and meaning to the relation between the concepts of "humanity" and "technology".

4-2-1. Boston Bay Project (1959)

The first project that signed Tange's official departure form a strict functionalism, based on his more objected monumentality of Hiroshima (completed in 1956) and the beton brut expressionism of Kurashiki Town Hall (1958-1960), was the design for a residential complex standing on an island in Boston's Back Bay in 1959.[ccxxxii] Thanks to his great personal success, Tange was invited as visiting professor at MIT in Boston from September 1959 to February 1960 to teach urban planning.

The theme proposed by Tange to the fifth year students was the design of a living unit for 25.000 people over Boston Bay as exercise to clarify some aspects of the relation between the contemporary city and the influence of the new technologies and the transformation of the modern society. Besides the theme was also a preparatory step towards the Plan for Tokyo-1960, so that it was functional in clarifying some of his reflections about some problems related to general issues on urban planning: the concepts of "growth and change, a system for connecting long-term and short term cycles, organization and replacement systems for major structure and minor structure, sequential structuring from human scale to super-human scale, and structuring between urban communication spaces to architectural communication

spaces".[ccxxxiii]

Tange's reflections on the reality of the contemporary human settlements firmly stood on the necessity of the integrations and balance between the human activities, both as individual and as people, and the new technologies, which caused drastic changes in the natural environment and social structure. In his opinion, the architect is responsible to create new prototypes of urban settlement to compose that duality. He observed that: "…There are many breaks today, social phenomena and human settlements models are in a state of crisis, in the second half of XX century, due to the progress of the technology…Overcome these breaks is responsibility of architects and urban planners. I think we have to face theses responsibilities, which generate problems that can't be overcome with the methods and instruments of the present days. We need to create new prototypes. The city must be used for dwellings, working, to have some recreation and as place of communications which links all these activities…The most important issue is the creation of a method which concerns the linkage of different functions. The house, the street, the district, the city constitute various level of community which shape the human settlements. Each level must keep a degree of unity and perfection and in the same time must be opened towards the upper level, so that it creates a larger entity. Then we must to solve the issue of the identity of the levels and, in the same time, we must make understandable and simpler the meaning of each individual element inside the whole system. Modern transportation systems open new possibilities to reach a higher degree of communitarian life. Expressways are creating a new formal and functional system of association, but their super-human scale lack of homogeneity with any other architectural form of the present days.

This doesn't mean that the super-human scale must be rejected, instead we must find a system that harmonize with the human scale…Whereas the basis system in the cities is represented by long-lasting constructions, such as expressways, residential unit changes in short span of time, and the industrial products change in a even shorter cycle of time. From this point spring many questions. Can't architecture build a long-lasting structure which defines the whole system? Couldn't the houses, designed as short-lasting elements, be built by using industrial components? Couldn't it be possible to find an order that links both the things? Couldn't it be possible to conceive a primary structure and a secondary structure which were unified, like the trunk and the leaves of a tree, but able to change according to different cycles (of length)? Couldn't the primary structure have the same capabilities of growth like the trunk of a tree?".[ccxxxiv] At the end of the course seven teams of students proposed their own projects, but only one proposal was indicated as the most in conformity with Tange's thoughts. This project was elaborated by George Pillorge, Edward Haladay, Ted Niederman and Gustave Solomons. The new city proposed by the students was divided into 2 main primary residential structures with a triangular-shaped frame which supported 2 series of platforms: the former facing towards the inner (covered) court of the primary structure, and containing different levels of streets for cars, the latter oriented on the other side of the structure, on which were placed, also on different levels, the dwellings made of industrialized components. The primary communication network was planned at the base of the primary structure, and it was organized on 3 different levels according to different means of transportation: the subway in the basement,

the expressway on the ground floor, and a monorail above the ground linked directly with the lower level of the platforms. The secondary communication network, planned on different height to reach every level, linked directly to the primary structure network by means of flights of stairs. All the system followed a rigid sequence of spaces planned in hierarchical order.[ccxxxv]

The gigantic triangle-shaped frame was thought to be the long lasting structure of the project, determining a new urban landscape, and was conceived as prototype of new human settlement for the contemporary city generated by the possibilities of the modern technology. It combined into a single structure the different scales of the human activities, from the super-human scale (the scale of the technology), to the scale of people (the scale of human interactions), and the scale of individual.

Inside the triangular shaped frame there were many spaces for the activity of the community (scale of people): schools, churches, markets. Every 3 level was provided with pedestrian streets and along these were rows of independent houses, whose type and form was chosen directly by the owners. The whole project is based on conceptual separation between the primary frame of the structure destined to last for a long cycle of time, thought not much as an artificial land but as a "new nature" created by the man according to the spirit of the epoch (zeitgeist), and the secondary structure composed of houses which can modify their shape and style according the personal taste of the individuals, as they are thought changeable in short cycles of time.[ccxxxvi] It appears clear that this complex living machine recalled many previous solution promoted by Rationalism, which tried to resolve problems and conflicts of the society by means of architecture and town planning (in particular some of the functional solutions of the project were similar to those proposed by Le Corbusier for "Plan Obus" in Algeri-1931, and "l'Unite` d'Habitation"-1951), and the lacked of any consideration regarding other important issues as the property of the land, the building codes, the construction techniques. Anyway it is indeed generally accepted that the fundamental importance of this proposal laid in his didactical value, as the main intention of Tange was not the creation of a real building, but the search for a new methodology in the field of urban planning, that be able to reinvent the traditional order of the city according to the impressive scale of social and economic phenomena occurred in the contemporary civilization.[ccxxxvii]

4-2-2. Tokyo Bay Project (1960)

In 1958 the Japan Housign Corporation, a main governamental agency founded in 1955 and aimed to manage and resolve the housing problem of the Japanese, ivited Tange to design a project for the redevelopment of Tokyo. The project for Boston Bay was the theoretical basis of a proposal for the new urban reorganization of Tokyo, which Tange and his team (Koji Kamiya, Arata Isozaki, Sadao Watanabe, Noriaki Kurokawa and Heiki Koh) introduced at World Design Conference held in May 1960 under the title: "A Plan for Tokyo, 1960: towards a Structural Reorganization".

The theory of Structuralism, to which Tange referred, had its roots in the works about Linguistics by

Ferdinad the Saussure, Roland Barthes and others, and then was further developed by anthropologists Claude Levi-Strauss and Jean Piaget. The structure of the human language, according to Sassure, is composed of grammatical or code system (language), which are the language's backbone and are fixed, and the basic rules and channels of speaking (words), which convey the endless variation of messages. As consequence, the messages or information constantly changes in content, while by contrast the "unconscious" element is relatively fixed in the pattern of grammar (rules).[ccxxxviii] Bognar concluded that: "Following the language analogy, Tange found that the basic structure of spaces with various functions could be the communication channels, along which the space units are able to change in both the space and the time. This also suggests that the meaning or content of the information borne by these architectural space units is allowed to change as well, while still generated by, and dependent on, the overall structure".[ccxxxix]

Tange pointed out that: "Association and cluster are only used in terms of expression. To make them somewhat more general, we introduced the concept of "structure". It is probably that the linguistic concept of structuralism played a part in our thinking, which was direct toward examining the structures in architectural and urban spaces….The proposal for structural reorganization in the Tokyo Plan-1960 was our first turning point away from a functional approach and toward a structural approach. In this plan we attempted to grasp all the structure of Tokyo in terms of mobility and communication taking place in it."[ccxl]

Thus the urban scheme of the whole city was conceived on mass movement, automated communication and speed, which promoted the network of transportation systems (cars, railways and monorails) as the primary frame of the project. Rejecting the fixity of the master plan, Tange sought a form of urban organization more responsive to the needs of the modern time, above all responsive to the dynamic pattern of the urban flow and changing function, based on precise analyses of people's commuting by means of mass transport systems as well as of urban and economic activities gathered in the metropolis. He conceived the urban environment as a living organism subjected to endless cycles of growth and changes (an idea derived from Team X, since the tenth CIAM meeting in 1956, and being developed at this time by the Metabolist Group, whose Noriaki Kurokawa was a direct member), following an approach he started since the teaching experience at MIT in Boston, and further developed an 1965 with the project for a "Tokaido-Megalopolis".

In a long report (at the time published under the title "Technology and Humanity") he explained the philosophical and ideological reasons of his proposal for Tokyo: "The technological revolution of the twentieth century, and particularly of its latter half, is causing drastic changes in economic structure, in social system, and living environment. Technical systems involving huge energy, such as that produced from the atom, and electronic controls are rapidly improving the industrial structure and furthering his organization. As a result, the circulation that occurs before and after production, as opposed to production itself, is becoming a more and more important part of the economic process. In order to control economic cycles in our capitalistic society and to encourage uninterrupted growth, it is becoming increasingly

necessary to plan and organize this circulation. In the capitalistic societies the ties between government and business are becoming stronger, and in socialist countries they are already stronger than that. (…) The functions that are gathering together in the cities of the ten million (people) class are the pivotal functions of this tertiary phase of industrial production, and the people in the cities are the people who perform these functions. They are the organization men. In response to the higher level of consumption, it is only natural that the tertiary functions of consumption, such as sales and services, should concentrate in the cities. Again, in Japan, which depends upon imports for raw materials, the factories concentrate in the costal area around the cities, in pursuit of the capital and the consumptive demand centered there. The factories, however, do not constitute the source of energy for the cities of 10.000.000. The source of energy is, after all is said and done, the tertiary production function. (…) The city of 10.000.000 is an aggregation of a moving, flowing population.

Tokyo, then, is not merely a collection of people and functions. It is also an open organization in which the various function communicate with each other and create the total function. What gives this organization its organic life is the flowing movement of the 10.000.000 people who are engaged in the communication of the function. (…) Communication is the factor that gives organic life to the organization that is Tokyo. This city of 10.000.000 is, in effect an open complex linked together by a communication network. As the technical means of communication improve, men instinctively feel the need of direct communication, and since transportation is necessary for direct communication, the transportation system is the basic physical foundation for the functional operation of the city."[ccxli]

According to Torenobu Fujimori, the early draft for Tokyo plan proposed by Tange in 1959 was based on some basic concepts drawn from Kano's original plan, as he pointed out that in the first version it was evident the emphasis put on the reclaimed lands instead of the civil axis and the communication system, which in this early project still lack of importance and relevance.[ccxlii] Indeed probably it was the direct influence of architects like Kikutake and other members of the Metabolism Movement,[ccxliii] as well as the international research activity held with the students of MIT in Boston in 1959 and the interest in the new discoveries in the filed of Linguistic, which caused a decisive shift of Tange from the early Kano's concepts and led to the well known final version released in 1960.

The main feature of the new version of the project was the rejection of the traditional radial pattern of urban growth, which dated since the foundation of Tokyo and that had been proposed for the post-war reconstruction plan of the city, and the substitution of this centripetal model of expansion with a linear model of development across the Tokyo Bay, inspired by the European tradition of linear city since the end of XIX century. Furthermore Tange proposed to convert the core of the city from a "civic centre" to a "civic axis". In 1959 the most recent model of linear urban development by using a civic axis was the French project for the district of "La Defense" in Paris, whose works started in 1958.[ccxliv] This project was carried out to create a new business district (in the middle of 1950s Paris needed more space for offices and business activities that couldn't be located in the old CBD because French laws are restrictive in the demolition of buildings in the historic core of the city) conceived as an "urban axis" by extending the

boulevard of Champs Elysee from the monument of Arc de Triomphe, and connecting this side of the old urban fabric of Paris (the core of the historical city) with the new area of urban development on the other side of river Seine, where there was a proliferation and concentration of office towers since 1956.[ccxlv] In a similar way Tange proposed to concentrate the new urbanized areas away from the historical nucleus of Tokyo, and stretched the new civic and economic core of the capital in the bay following a linear pattern of expansion instead of the radial structure based on the system of satellite towns. The urban structure of the new city was thought as synergy of 3 level (scale) systems: an urban system generated by plazas, parks and green areas, CBD, residential districts intended as public facilities, an architectural system composed of individual buildings for live and works, and the traffic system, which gathered all the mass transportation networks such as expressways, railways and subways.

The teaching experience in Boston was significant from many aspects; at the time of Tange visit Boston had the most extensive public transportation network in the US, a solid tradition as "incubator" of new inventions in transportation technology (subway engineering, bridges construction, etc) and moreover for many decades the city had developed as a fundamental regional hub of transportation facilities by means of broad and impressive expressways and highways systems, complex channels for the uninterrupted movement of motor vehicles, which were further empowered with the completion of the "Central Artery" high-way in 1959. The monumental scale of Boston's large transportation networks, with the abundance of elevated structures and bridges as main solution to the problems of traffic congestion, eventually strongly influenced the revision of early project developed for the expansion of Tokyo in water of the Bay. The final version for Tokyo's Plan, which stressed the importance of communication channels based on mass-transportation systems and massive and huge structures of suspended bridges and artificial floating platforms, revealed an evident shift from the earlier version, inspired to Kano's basic scheme of reclaimed lands, and appeared to be a "summa" of several ideas, experiences and thesis drawn from different sources, from the original drafts of Metabolists projects to the images of gigantic Boston's expressways, all conceived through the forms of impressive megastructures.

In Tange opinion the new pattern of urban growth for Tokyo was the consequence of the importance of transportation system in the modern times, especially of the car: "In our age the automobile has altered the relationship between streets and buildings, but the old system remains in existence. The confusion that prevails in our cities today results largely from the fact that the automobile and the street system are incompatible. (…) There is need of a new sequence (of urban spaces) in which the automobile moves from high speed highways to low speed highways and then to parking spaces from which the passengers into the automobile can approach the buildings. In other word, there is need for a new organization in which the urban system, the traffic system, and the architectural system are organically unified.

In response to this problem, the architectural pioneers of the early twentieth century developed the pilotis as a means of releasing ground space. Their ideas was to create a public space on the ground where the movement necessary to the modern society could take place and a quite private space above ground where men could live and work. The pilotis area would serve as a link between the two types of space, and the automobile would move about the ground without disturbing life within the private space above."[ccxlvi]

It seems evident as the urban vision proposed by Tange is somewhat influenced by some Modernist projects and theories developed between the 20s and the 30s, such as "Ville Contemporanine" (1922) or "La Ville Radieuse" ("Radiant City", 1935) by Le Corbusier, whit their sharp separation of functions and spaces (ground for green and buildings arose in the sky for working or living), or the project for a "Vertical City" (1927) by Ludwing Hilberseimer, which stressed the importance of the cars as determinant component of the urban environment, further proved by the realization of the plan for Brasilia (1956) by Lucio Costa.

The plan for Tokyo was directly influenced by technological and architectural issues: the choice of a main structural frame based on the usage of pilotis is both the consequence of the necessity to reduce the works for the foundations in the bay (as also proposed by Otaka and Kikutake in their projects for Tokyo a year earlier), as well as to create a space for the circulation of cars, keeping the remaining areas for public buildings surrounded by green areas. Thus, the result is an urban space divided into 2 levels: a lower level for the cars, an upper level for the pedestrians, a solution already used for the plan of Hiroshima Peace Center. Since the main intention was the emphasis of the whole urban complex, all the buildings designed by Tange, both the public facilities and the residential buildings, were conceived as Megastructures. The core system of their shafts, containing all the services facilities and made of concrete because intended to carry the load of the buildings partially or totally, were thought as integral parts of the circulation of the overall urban structure (containing all the services facilities), becoming as branches of the urban transportation "…and service arteries, so that architecture would be integrated with the urban system. In our plan for Tokyo, we have devised means of unifying the core system and the pilotis. As we envision them, the cores of the buildings take the place of columns, creating "column less" pilotis areas under the buildings. This system is unified with the cyclical transportation we propose".[ccxlvii]

It seems plausible that the experience as teaching professor in US during the previous year probably gave Tange boldness in approaching new building techniques and a wider sense of dimension in the urban planning principles shown in his project, especially considering the scale of the bridges, whose prototype, according to Banham, was the sequence of the bridges Oakaland-Bay in San Francisco, which connected the public facilities of the central spine with the residential platforms (whose triangular shapes were slightly variation of the project developed for the Boston Bay), which branched out in perpendicular from it and extended deeply along the surface of the water of Tokyo bay;[ccxlviii] furthermore it can't be denied that some kind of influence regarding the issue of the reclaimed lands which spread in Japan at the end of 1950s, and originated by the lively spirit of technological audacity expressed by the younger generation of architects, inspired Tange a new vision for the contemporary city. It was in particular the contact with the members of the Metabolist group, such as Kiyonori Kikutake and Noriaki Kurokawa, which influenced Tange most and brought his design methodology more "…needed vitality and enhanced imagery".[ccxlix]

Indeed other scholars have noted as the the Plan for Tokyo was a substantial a deepening of a study started with the experience of Tange at MIT in 1959, and continued trough the influence of a international cultural trend developed during those years which he named "redemption of utopia". According to him

this cultural trend aimed to discover a new approach in the urban design as the consequence of the awareness among the architects of the failure, or at least the inadequacy, of the previous models of urban planning. Tange's plan, as well as others projects of futuristic cities, bore directly from the sense of disillusion and skepticism about the value of the rules of the traditional models of the urban design, and they expressed their search for a larger scale of intervention in urban planning as consequence of the larger scale of the socio-economic changes in the society of the contemporary world.[ccl] Indeed Tange basic urban philosophy's key elements were the rejection of principles of decentralization and satellite cities on the model of Howard's garden city, seen as a kind of degeneration of the industrial city,[ccli] and the necessity to welcome the new super-urban model of megacity on which structurate the new urban environment composed by individual (human scale) componets, such as the residences, and collective (super human) facilities, such as transportation infrastructures and public facilities, aiming to balance and resolve the dichotomy between technology and humanity of contemporary society.

As a matter of the fact, though the intention of Tange was the creation of an urban environment more appropriate to the democratic society of the modern times, the result was a rigid scheme filled with huge buildings, characterized by the uniformity and redundancy of their architectural elements, which appeared even more centralized and authoritarian than Functionalist urban prototypes. The lack of human scale and sense of place of the project arose some criticism, as expressed by the Team X's member Peter Smithson, who maintained that: "…It is ludicrous to think one can hang all these enormous slabs around the place, and hope that the small things below on the ground have the same attractiveness of the small scale things on the ground, as they are now, undiminished".[cclii]

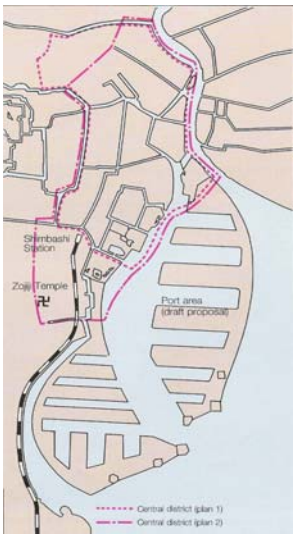
In spite of the criticism, the Plan for Tokyo was a turning point of the urban planning in the XX century due to the immense scale of its urban vision, being truly what Frampton called "the last utopian city plan of the modern era"[ccliii]. Nothing comparable to his grandiosity had been elaborated in this century and, although it was clear from the very beginning that the chances of realization were extremely low, the Plan for Tokyo was praised without exception, from Europe, where its scheme had some influence in the proposed "Pampus Plan" by Bakema and Van den Broek for the urban development of Amsterdam (1965),[ccliv] to America, promoting the theme of mega-structures as a new course in the architectural design especially in the academic filed.[cclv] Tange's project was the first urban scheme which showed the necessity for contemporary millionaire cities to move from rigid master plan, whit their fixed models, to an "open town planning", flexible and changeable, and the passage from the concept of metropolis and conurbation (basically conceived on the model of central main city–satellite city system) to those of mega-city, a city generated especially by the flow of the masses as consequence of the socio-economic transformations under way in the contemporary world. In 1961 Tange and his team developed further the organic structure of architecture and transportation system of Tokyo Plan in the Project for Tsukiji (1960-1964). This project was followed in 1965 by the proposal plan for the "Tokaido Megalopolis", which was the further development of the concept of central axis but promoted to a regional level, aiming to unify organically the Japanese archipelago in one super huge urban system by connecting the main cities thourgh a network

of bullet trains.[cclvi]

This futuristic and bold proposal once again spread interest and attention among burocracts and planners, who were stimulated to conduct further investigations and surveys on a macro-regional level; his research, inspite of beeing focused mainly against decentralization based on a system of satellite towns in behalf of megalopolis's growth as a compact urban settlement,[cclvii] became the conceptual basis for a study promoted by Japanese government which fostered a group of scholars to conduct a survey of the Japanese territory, and eventually led to the publication in 1968 of a paper with the the results of this investigation.[cclviii] The result of the Research Commission suggested the decentralization of productive plants and cultural centers from the excessive dense centers of Tokyo, Osaka, and other crowded metropoles in behalf of the minor cites, and improvement of the transportantion systems to link the main urban centers with the peripheral areas of the counutry as a major priority for Japan to keep going the higher rate of economic development of the time.

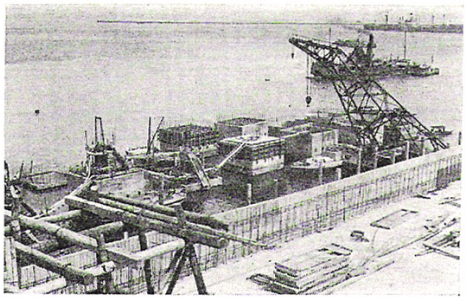
Few years later, in 1972 Prime Minister Kakuei Tanaka used the same research as main source for his pamphlet "Nihon Retto Kaizoron (A Plan for Remodeling the Japanese Archipelago)", which immediately became a best-seller in Japan, which again urged Japan to improve its communications systems of motorways and railways, to enact effective measures to control the excessive growth of the big and congested urban centers by promoting the decentralization of the universities and industrial complexes to foster the development of the cities in the less crowded urban regions, and to proceed in a process of complete modernization by means of the usage of the newest technologies.[cclix]

Inspite of some suceessful proposals toward this direction, such as the foundation and the development of Tsukuba Newtown as the first modern Japanese university-city, the plan proposed couldn't be implemented completely because the sharp crisis which hit Japanese and worldwide economy due to the famed Oil Crisis of 1973. However the plan presented by Minister Tanaka once again showed as the proposals and urban studies conducted just few years earlier by Tange on the necessity to enhance the web of infrastructures for communications (especially the fast mass transportation systems such as the bullet trains) and to create an integrate macro-territorial urban system on the Japanese territory were a huge source of effective and inspiring insights and ideas for architects, planners and burocrats.

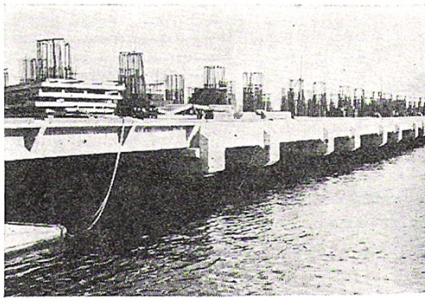


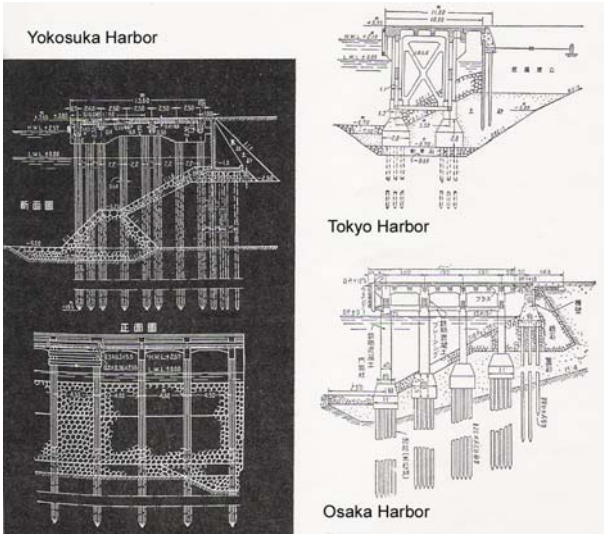
Land reclamation in Tokyo Bay was undertaken since Edo epoch; in 1880 a plan for a new port for productive activity was under study but didn't materialize. After the war massive public works developed coastal industrial zones which were based on heavy industry and chemical and oil plants, forming a concentration of "kombinatos", industrial and residential areas, in the core of Japanese archipelago, and further expanding the amount of available lands into the water of the Bay by reclamation and harbor construction thanks to the new building techniques in the field of coastal engineering. Especially the area of Tokyo Port was a key element for the industrial archipelago of Japan; Tokyo Bay counted for a total of 13.000 hectares of reclaimed lands (27% of national share) from 1956 to 1975, and the facilities along the coasts were mainly used to import rough material and export finished goods. (Sources photos: Prof. Kenichi Miyamoto, Osaka University, 1993; Tokyo Metropolitan Government, 1993; Kokusai Kenchiku, February 1959; National Geographic Magazine, 2002)

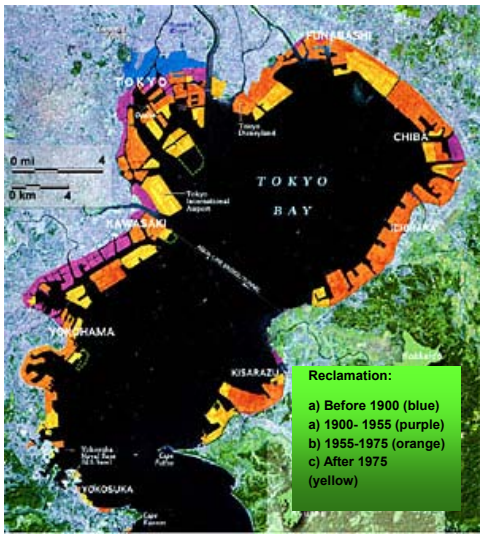
B. 現場に到着したケーソン(7突イーストサイド施工中。1953. 8)。

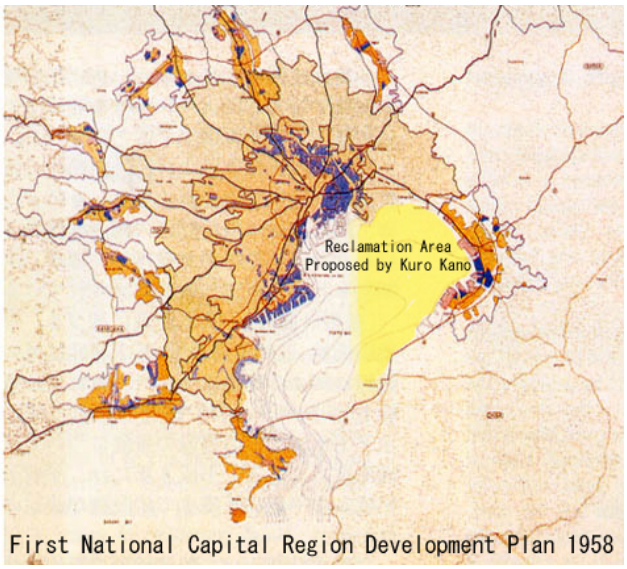


C. 梁をのせスラブを打つ(8突ウエストサイド。1958.12)



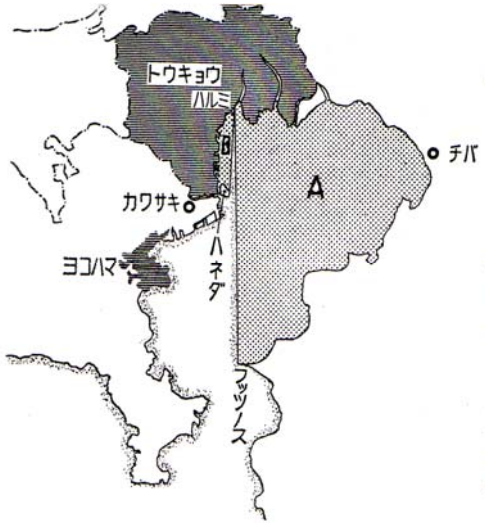






First National Capital Region Development Plan 1958

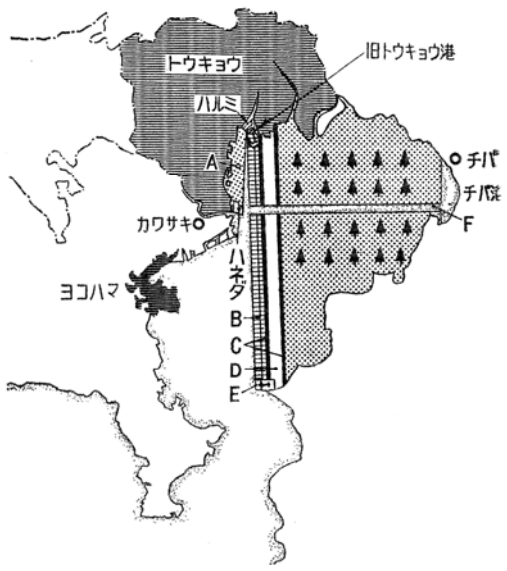
Kuro Kano's proposal for the reclaimed lands in Tokyo Bay, 1958 (below) and the comparison with the scheme proposed by the First National Capital Plan issued in the same year (left picture; note that the reclamation area is simply overlapped to the map issued by the Tokyo metropolitan government, and didn't constitute a part of the official plan). In a sense, the proposal of driving the urban development of Tokyo in the shallow waters of the bay, as suggested by Mr Kano, at the time president of the Japan Housing Corporation, was a direct consequence of the opposition against the National Capital Plan and the difficulties arose in implementing it. The necessity to give order to the urban structure of the capital and to challenge the economic forces which caused congestion and chaos proved to be a great stimulus for further bold plans linked with the issue of reclaimed lands and artificial lands. (photos from Kokusai Kenchiku, N.15, September 1959)

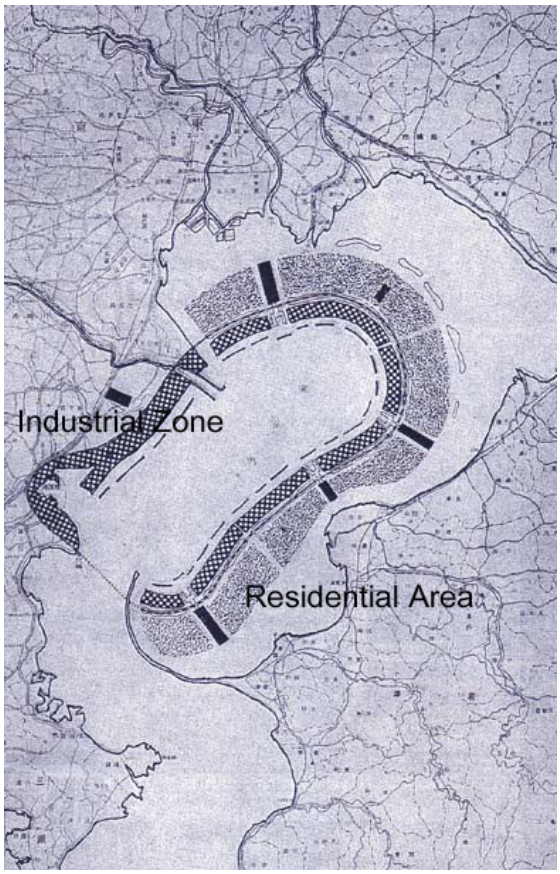


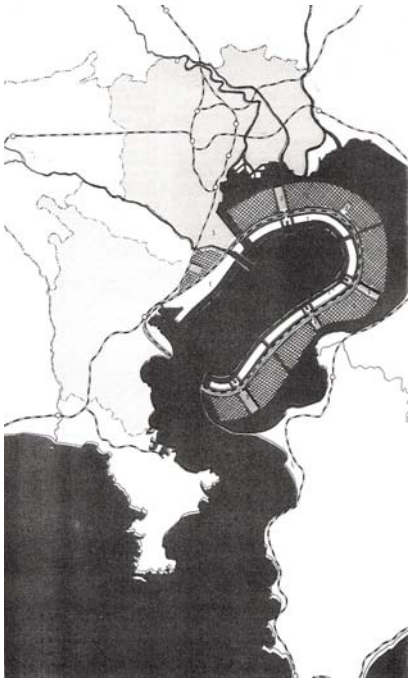
CITIES INTO THE RECLAIMED LAND

左・加納久朗住宅公団総裁の提唱する「東京湾埋立による新東京建設」案。(1958.4.14.)
新東京　A：243.0 百万坪
B：9.5 百万坪
計：252.5 百万坪
現東京　23 区：175.0 百万坪
下・東京晴海埋立地の住宅公団団地を海側から。（藤森健次撮影）
右・同上、高層アパート断面。

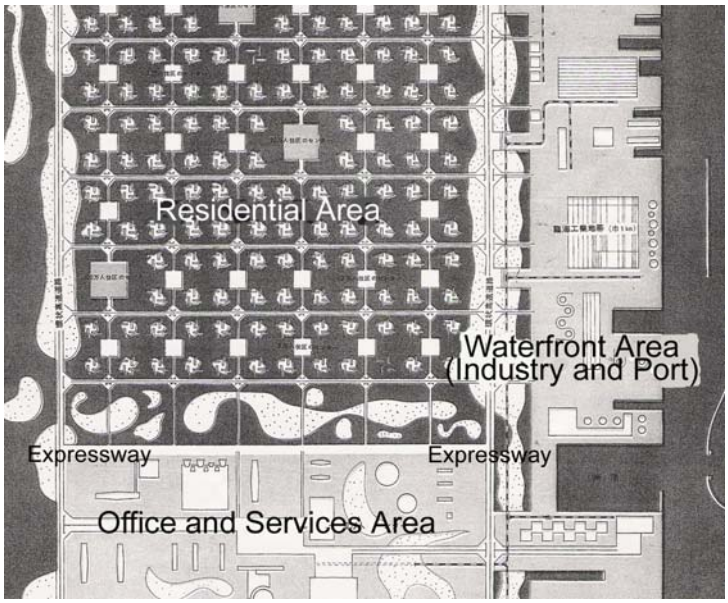
「新東京」の地域分布（加納構想）
A.……工業用地
B.……工場地帯・ドック・油タンク・発電所・全岸壁船着ドック（水深 20 m）
C.……森林ベルト
▲……森林地域（1 森林 10 万坪ノモノ 20 カ所）
D.……住宅地域
E.……空　港
F.……東京千葉間運河（水深 20m）

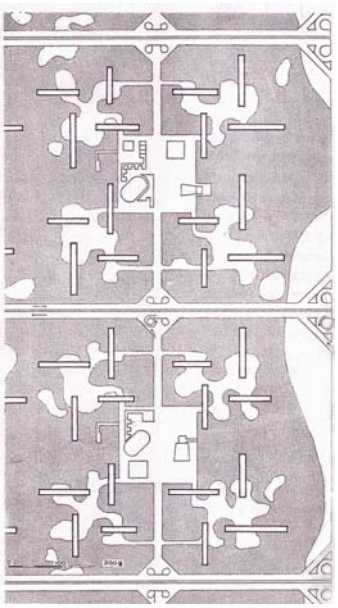


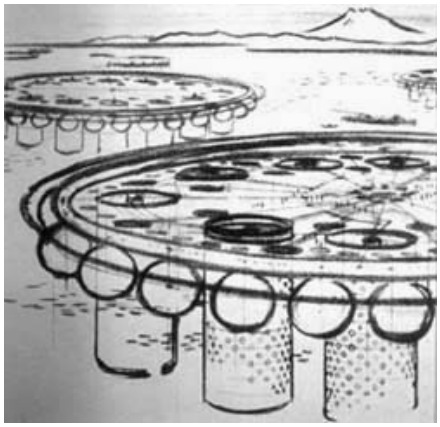


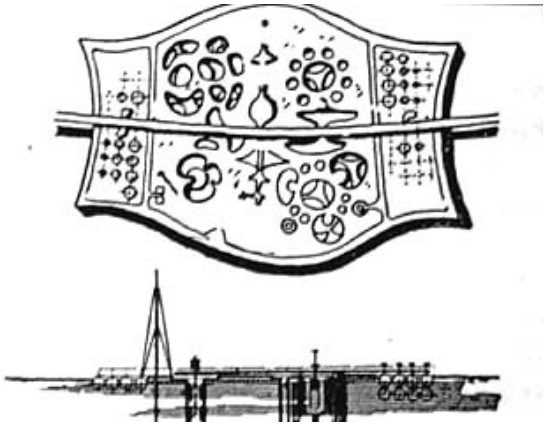


Masato Otaka's Plan for Tokyo bay (1959). His proposal was somewhat inspired to the city of Venice, and envisioned the development of Tokyo on the bay by creating communities on slab-islands wich host blocks of tall buildings on the model of "Harumi Apartments" which stood on huge pillars post in the water of the bay, and form clusters of residential towers connected to service areas. The plan showed a special care for the residential solutions and communication/transportation network over the pure industrial concerns.
(photos from Kokusai Kenchiku, February 1959; Kenchiku Bunka, February 1959)

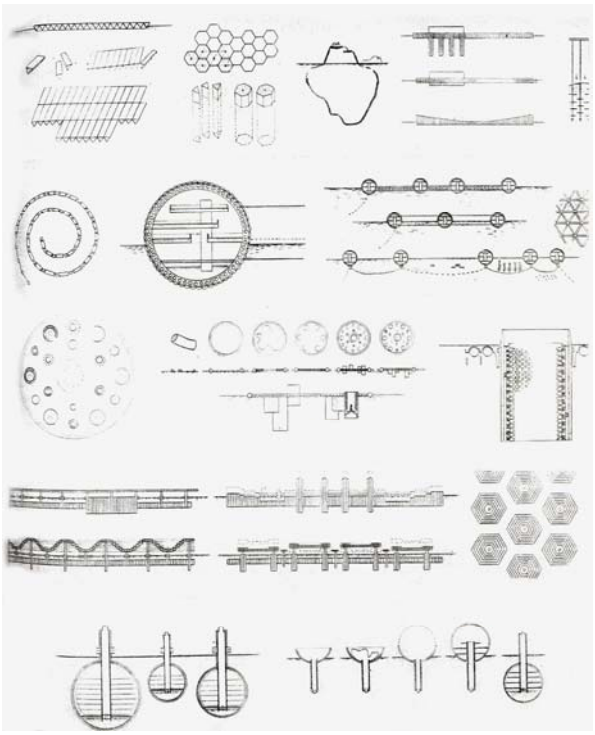




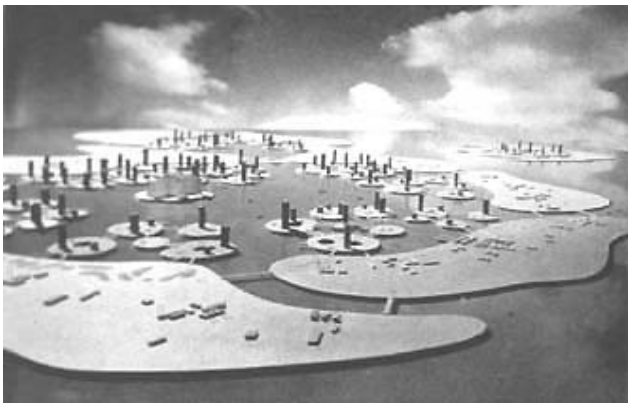


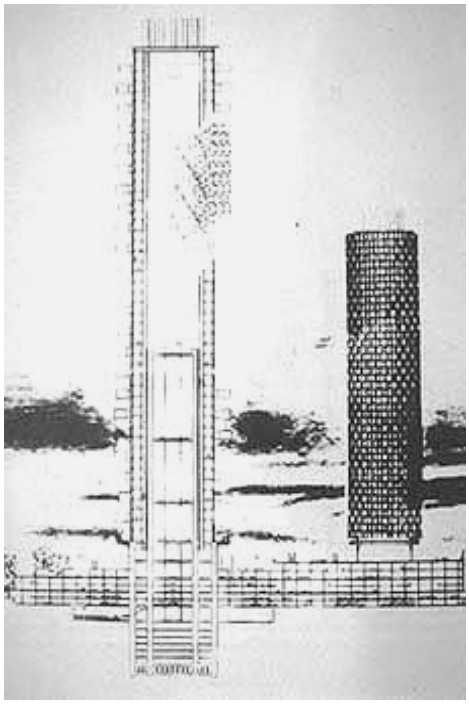


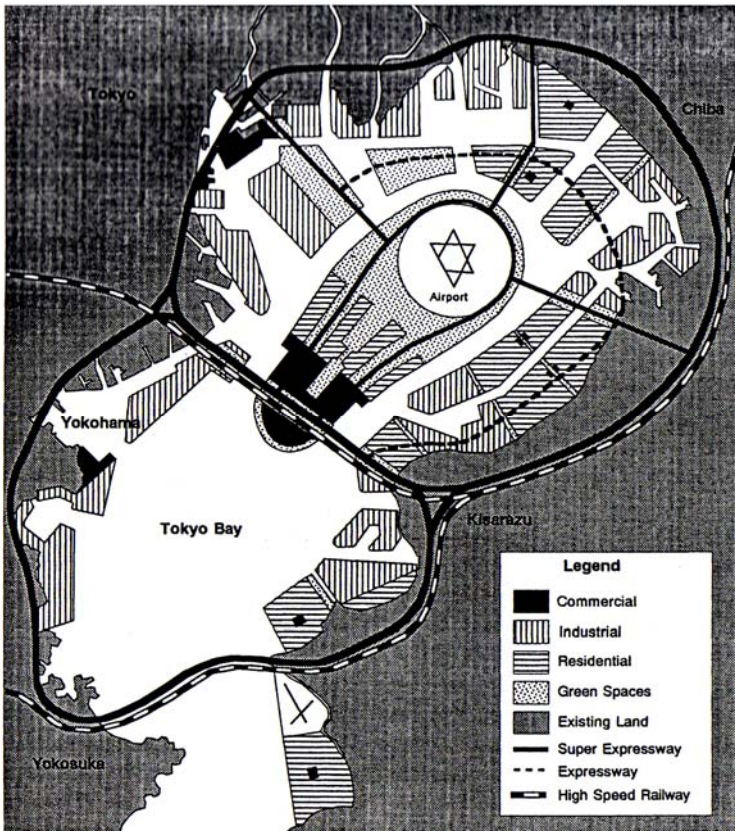
Marine cities developed by Kikutake (1958) had several versions and further development in Ocean City (1961-1963), and became a source of deep study on marine architectures (below some sketches by Kikutake on different types of floating structures-1975) as refinement of many other concepts present in Metabolist theories (photo by Kikutake, 1960, Ross, 1976)



Tower Shape Community (1958-below) as main early project of Kikutake based on the idea of high rise housing which fused with the concept of the floating platform of the project of marine city 1958 to give birth to the project of "Ocean city" in 1961 , which was further developed in "Marina City" in 1963 (below-left) The city was based on studies of experimental floating structures conceived thanks to the advances in the field of coastal engineering and the offshore oil rigs platforms, kind of structures designed to face extreme weather turbulences and material stress (sketches-left). Photos from Vitta, 1997; Bognar, 1985, Kikutake, 1971.



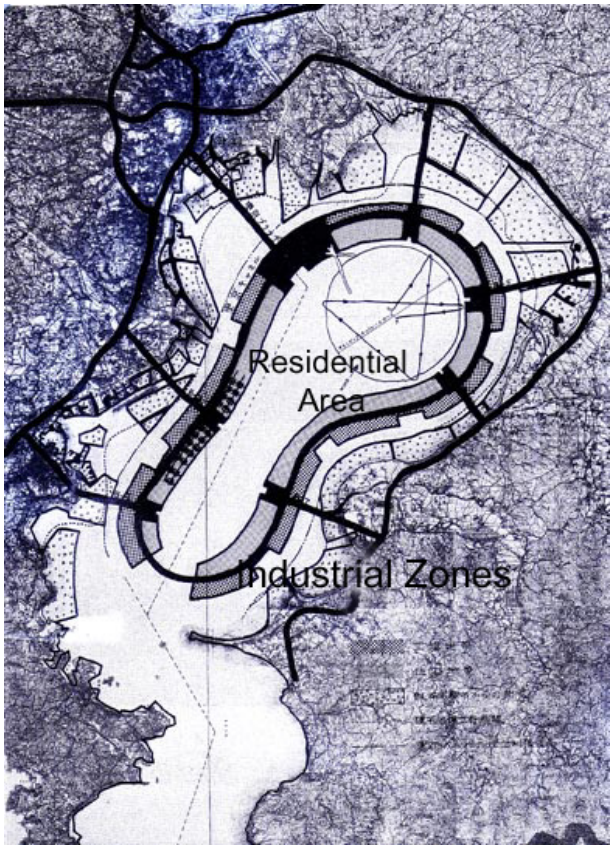




Neo Tokyo Plan was proposed by a private lobby group established by the Electic Research Institute in 1959, and aimed at the creation of a huge industrial area in the middle of the bay, linked with central Tokyo, Kanagawa and Chiba.

The feature of the plan basically aimed to transform the center of the bay in a new regional transportation hub for Japanese archipelago, and to strengthen the industrial and service sector of the capital by relocation industrial factories and residential activities in the reclaimed lands along the shores facing the water of the sea.

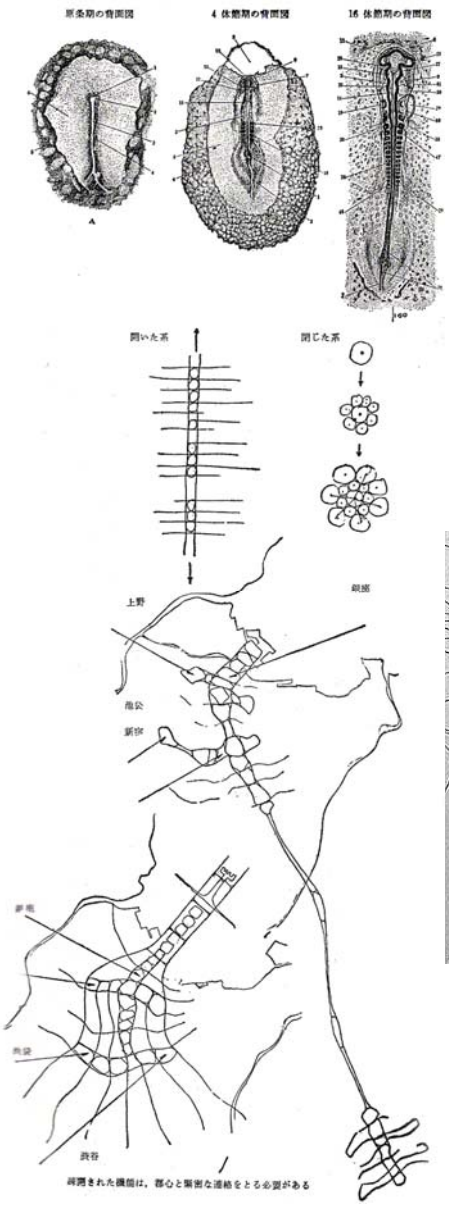
(photo from Sorensen, 2002)



The “Proposal for the Tokyo Canal Bay” by Nonomura Soitsu and Tsubata Suichi, resembles much of the plan proposed by Otaka (especially the general lay-out of the urban footprint), which was published just few months earlier..

Their plan also aimed to balance the residential function with the productive and industrial functions of the capital, and made massive use of reclaimed lands.

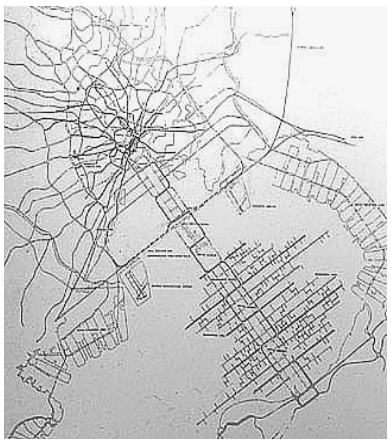
(photo from Kokusai Kenchiku, April 1959)



The early plan for the urban reorganization proposed by Tange in 1959 (above-left) was mainly inspired by Kuro Kano's ideas; the final version of the plan showed a revision of the same concepts. The whole urban structure of "Tokyo Bay Project 1960" was intended as a huge transportation network which linked residential areas and the main "service and communication spine" in the middle of the new city.

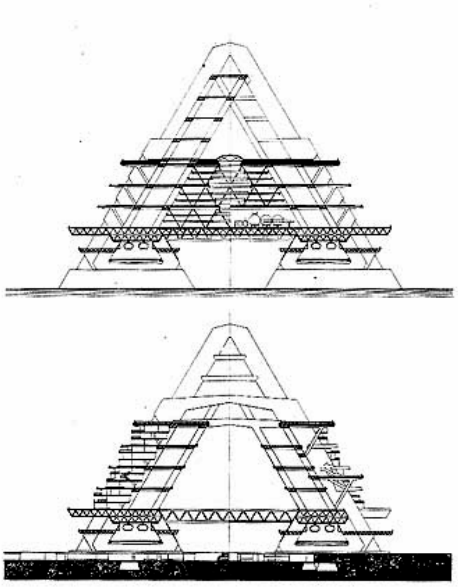
According to Tange, the scheme was the consequence of the attempt to change the urban development of Tokyo from a radial pattern, based on the creation of new towns all around the main urban center of the capital, to a linear pattern. Because of the modern means of transportation, such as the cars and the subways, the streets took the shapes of gigantic motorways, and also the residential block were conceived as Mega-structures which, likewise the whole urban layout, could develop and modify following a biological model of growth.

Photos from: Fujimori, 2002; SD, N. 8010; Shinkenchiku, March 1961



The Structuralist approach of Tange emphasized the mass transportation infrastructures and the use of huge freeways networks, and it became more evident after his teaching trip to Boston in 1959, when the "Central Artery", the main element of the new expressway system of the city, was officially opened (above-right).

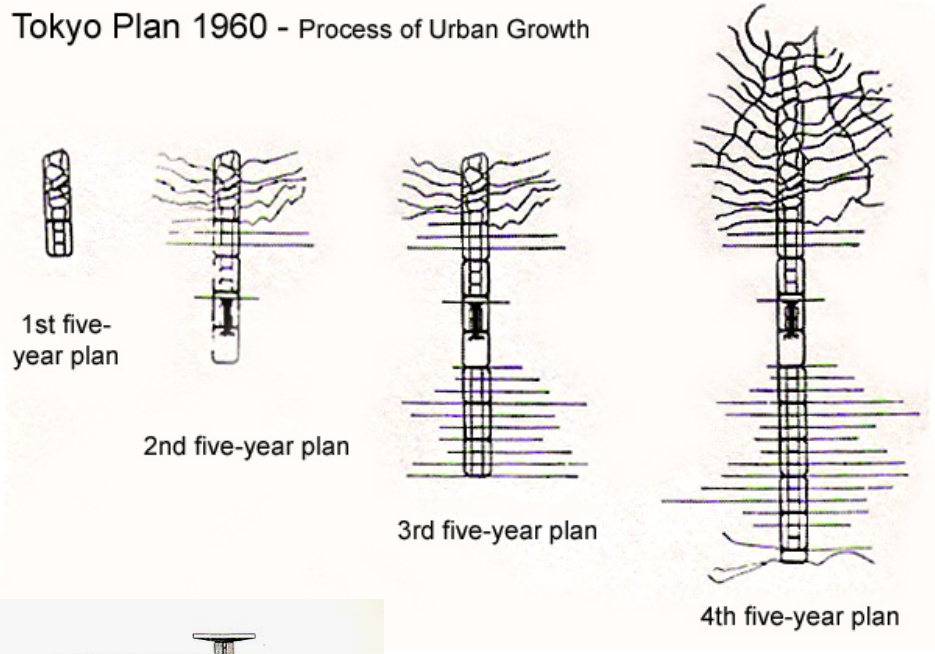
Photos from: Kultermann, 1970; Boston City Hall, Map Archives.

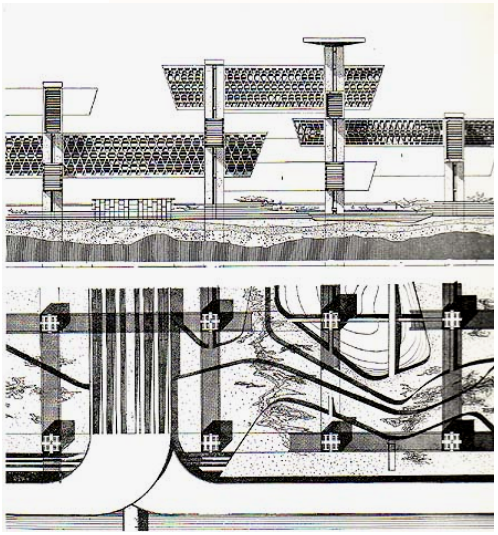


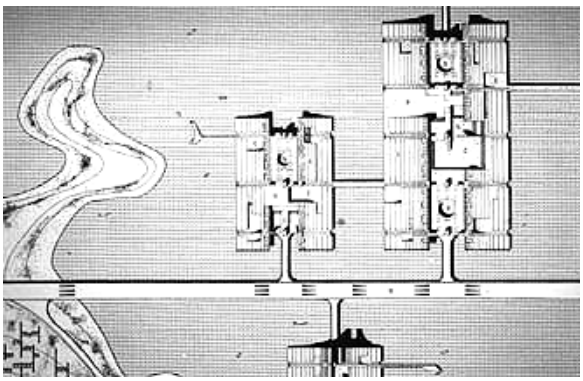
The Project for Boston Bay was developed by Tange in 1959. The structure with "A" section shape (left) is conceived as the first prototype of a modern megastructure which balance and gather many functions for the masses; the hierarchical order of the elements follows the principles of cyclical changes maintaining the overall form of the gigantic structure. The shape of office buildings (whose shapes resemble gigantic Japanese "Torii"), and of housing blocks developed for the project of "Tokyo Plan 1960" (below) were directly influenced by the early studies conducted by Tange, in Boston and reproduced the concept of cyclical and ever growing structure present also in the whole layout of the city.

The main idea was the creation of an total artificial environment in Tokyo Bay thanks to the new techniques of building construction and coastal engineering.

(photos from Udo Kultermann, 1989; Charles Jencks, 1986; Manfredo Tafuri, 1964)







Chapter 5

Main Urban Proposals of Metabolists in the Years 1958-1964

Chapter 5 – Main Urban Proposals of Metabolists in the Years 1958-1964

Since their first appearance at World Design Conference held in Tokyo in 1960, Metabolism's architectural and urban projects were sensitive to the changeability of space and functions, in opposition to the sense of immobility of fixed forms and functions of conventional modernist design, and severely critical of the principles of Athens's Chart (statically based on zoning and master plan) as basic tools to control the design of the modern city, and put a fundamental emphasis on the issues of the artificial land, the basic infrastructures (such as for circulations and transport) and the mass housing solutions, as the main concerns of Japanese city at the time. With few exceptions, the Metabolists extended the principles and the methodology of architectural design and composition to urban design, conceiving the expansion of the city by means of the repetition of industrial elements and the use of modular parts which envisaged apparent organic forms. Indeed the main feature of metabolist approach to urban design was basically the rejection of the traditional form of public urban spaces (squares, streets, neighborhoods) for a totally artificial urban environment.

Trying to express the vitality and the creative spirit of the modern postwar society, the metabolists adopted the newest technological devices available, and conceived a city whose urban architectures was composed by megastructures which denied any visual linkage with the preexisting urban environment and showed indifference to the physical context. Their urban schemes lacked of any recognizable clue of the formal order of the traditional city, either Japanese or Western, and expressed a strong opposition towards the memory of the recent history of Japan, as well as her urban environment, indeed promoting, with a touch of ingenuity and simplistic vision, an extreme and radical departure of city form towards a technological (better and optimistic) future shaped like in the pictures of the fiction science publications, so popular during the 1950s, which praised and exalted the achievements, the wonders and the promises of the contemporary atomic age.

5-1. Kiyonori Kikutake

Kikutake had already reached fame and notoriety as architect before join the Metabolist group, at first as outstanding student of the School of architecture in Waseda University, which gained an international reputation as winner for 3 consecutive years at San Paulo Biennale, then as third place winner (the first prize wasn't awarded), in the competition for the Hiroshima Catholic Peace Cathedral in 1948.[cclx] After an internship in Murano and Mori studio in 1951 and an activity as researcher in Waseda University in the laboratory of Professor Motowo Take in 1952, Kikutake set up his own independent studio since 1953. During this time his first projects were the design of collective houses in Tonogaya and Kunitashi, where he employed brutalist forms and an architectural language full of expression (an approach also used in the project for Shimane museum in 1959), and designed an interior which mixed Japanese room tatami and

modern services such as electrical appliances, stressing the importance of the theme of modernity and tradition in the contemporary Japanese house, a theme which was a stimulus also to the project of Harumi apartments by Meakawa and Otaka.[cclxi]

In occasion of the CIAM meeting in Otterloo, Holland, in 1959, 2 works by Kikutake were introduced by Kenzo Tange to the general session, although as an addendum following Tange's discussion of his own works.[cclxii] The works by Kikutake presented in this occasion, were the project of the architect's own house, the "Sky House", and a prototype of floating city whose title was "Ideas for the Reorganization of Tokyo City" or "Land for Man to Live, Sea for Machine to Function".[cclxiii] The latter was a modified and mixed version of two previous projects dated 1958: "Marine City", whose rough sketches proposed cylindrical residential towers immersed into the sea, set under concrete circular slabs, and "Tower Shape Community", whose scheme, which had been conceived still in the purest vision of Modernist approach, as seen from the emphasis on the idealistic and rational concept of an urbanism based on the methodology of "tabula rasa" and the obsession with the total, rigid and the detailed planning and programming, from the architectural to the urban scale, was based on long-term tall service-towers arisen from concrete islands on the water which supported small short-term capsules. At the presentation of Kikutake's projects, Tange fixed all the key points of Metabolism theory, such as the problem of the urban growth of Tokyo due to the lack of available land for new buildings and the consequent need for artificial land to be searched on the sea, the separation between permanents and temporary architectural elements (as a tree and his leaves) and their relation inside the urban structure thought as a system of changeable entities, although Tange himself never used the word Metabolism since the group was officially presented just a year later.[cclxiv] Although those 2 preliminary urban schemes had further development during the years 1959-1960 and eventually gave birth to the project for "Sea City-Unabara" (which was published in the Metabolism's Manifesto in 1960) and others more refined and comprehensive versions in the 1960s (such as "Ocean City", presented at Museum of Modern Art of New York in occasion of the exhibition "Visionary Architecture" in 1961 and at at exhibition "Mirai no toshi ten-Future Metropolis" held at Seibu Department Store in Tokyo in 1962, and further developed in 1963, again as "Marine city", simplifying the scheme to cylindrical towers growing directly out of the ocean)[cclxv] and in the 1970s ("Hawaii Floating City", 1971; "Aquapolis",1973-75); doubtless it seems clear that the central idea behind those projects was rooted in the researches pursued by Kikutake during the years when Kano Kuro's proposals spread so much interest and criticism among Japanese architects and planners, and the theme of artificial land, or man made land, as well as the issue of reclamation lands, were seen as an key elements in the search for alternative and effective solutions to the uncontrolled urban growth of Tokyo.

5-1-1. Marine City (1958)

In the articles published by Kokusai Kentiku in the period December 1958-February 1959, Kikutake

presented his architectural and urban models for a new form of living. The projects for a floating city and a community tower, whose studies focus the attention especially over the floating systems and the collective housing, were part of the central idea proposing a new urban environment as expression of the new possibilities of the technology and evolution of society in the modern times. As preface at his project for a prototype of marine city in 1958, Kikutake wrote: "This proposal for marine cities is the first of its kind in the world. It was the Soviet success in shooting their Sputnik rocket into space [1957], which led to the publication of this memorable proposal. (…) Continental civilization has been continuously troubled with strives over territory. Going into the latter half of the twentieth century, however, we can establish cities able to move to wherever necessary by producing as much artificial land as is needed. We should made these floating marine cities such that bring the peaceful oceanic civilization to mankind".[cclxvi]

The mention of a continental civilization as responsible for the urban chaos of the contemporary city, and its fate of decadence which will lead to the uprise of a marine civilization (which is the ideological and cultural basis of the marine city), it is curiously similar in some parts to the theories proposed by Carl Schmitt, a German politician, philosopher and legal scholar (1888-1995). In 1942 Schmitt wrote an essay in german titled "Land unt Mer" (Land and Sea), where he postulated that the history of the mankind is the history of the endless struggle between the land civilization and the marine civilization, namely the war between the countries which economically base their power on the productive activities on the land (such as Germany), and the countries which base their survival over the trade and commercial activities on the sea routes (such as Great Britan). This struggle is metaphorically rapresented by the fight between the biblical monster of the seas "Leviathan" and the monster of the land "Behemonth". According to Schmitt (and also as suggested by Kikutake himself), the marine civilization will eventually reach a kind of supremacy over the continental civilization. However whereas in his essay Schmitt forecast that Britan and US will be the main powers which will make this vision come true, Kikutake, because of the traditional link of Japan with the sea and the evident economic power and international preminence Japan reached during the XX century, and probably with a touch of pride, forcast that eventually Japan could also be a possible alternative candidate to cover that leading role in the context of a fast changing world.

In this perspective, the project for a marine city is indeed presented as an alternative to the model of city (chaotic and wasted) expressed by the previous civilization built on the land. It aimed to give happiness and hope to people threatened by the fear of an atomic war, and in the same time to resolve the serious problem of shortage of land for construction and to face the increase of population in the cities (both due to immigration and demographic growth), but it also aimed to foster a deeper awareness for the necessity of a efficient and balanced planning activity (toshikekaku), as well as of a correct urban design (machizukuri). As explained by Kikutake himself, "…The marine city is a proposal to build the world of tomorrow. (…) (It) is not simply an attempt to expand the land. It is also clearly not an idea to escape from the land. As for escape, the planning is too great, and as expanding the land, the concentration of composite technical and economic power is too great. The sea will likely continue to reject unplanned and disorderly projects. It is reclamation which desecrates this love of cleanliness of the sea. That the

condition for the establishment of a superior society cannot be brought about by reclamation is clear from the relation between man and land. It may be said that technology will lose its meaning unless man's power is concentrated deliberately and coordinately. Techniques for colossal construction cannot bear to be used and must not be allowed to be used for destructive confusion in the name of construction."[cclxvii] In other words it is a project that required carefully advanced planning and design and a higher spirit to live in, so that it was thought as an urban model which rejected the confusion of the existing land cities and aimed to promoting a new sense of order and urban control, as well as the improvement of society and engineering technologies. Furthermore marine city was conceived as a temporary device: "Marine cities will be extinguished without any hesitation when they become unnecessary or cease to satisfy the needs of society. (…) The "marine city" is not necessarily anchored at any fixed place. It may be shifted to any desirable location necessary. The marine city is a mobile city."[cclxviii]

Kikutake proposed 5 main models of marine cities,[cclxix] all of them intended to be artificial environment built by floating manufacturing factories, and capable to regenerate themselves or to promote a process of self-propagation. The models of marine cities varied according to their shapes and the structure they were built. Proposal 1 was a marine city floating on the sea as a water lily, a type of city made by assembling units of equilaterally triangular and air-tight concrete unit firmly joined to make an artificial foundation for the city; Proposal 2 was a floating city in form of spiral, built connecting globular and cylindrical blocks made of steel or concrete to form a spiral body, and used for marine agriculture, storehouse of food and docks or refuges for ships. Proposal 3 (which was submitted at the 1961 Exhibition of "Visionary Architecture" at Museum of Modern Art of New York) called for legs stretching into the sea just like Jellyfish (the reason of its name), whose construction could start by assembling prefabricated parts delivered by ships directly into the sea. The legs, intended as artificial land and destined to allocate the open space for men's activities as well as the residential units, took cylindrical form and could be made deeper or shallower, according to the function of the city.[cclxx] Proposal 4 was based on a hexagonal structure (or other forms such as pyramidal or conical shapes) composed by aluminum and plastic pillars and provided 2 main spaces: the former open in the air and destined to the human society, the latter below the sea and destined for marine activities. The whole structure was conceived as marine factory but also suitable to accommodate residential units. The proposal 5 was for a buoy-like city, almost entirely hidden from the sea and planned as a bulb in the sea, only a portion of it protruding out into the air. To balance the gravity of the bulb and adjusting its movement and floating an operation room was provided at the base of the bulb. This kind of city was thought to be utilized as factory in the sea or for several other utilizations such as lighthouse, unmanned meteorological observatory, a storehouse for food, material and energy sources. All these proposals were intended to be a collection of technical ideas to foster the interest in the execution of real models of floating cities. As pointed out by Kikutake, the ideological (and somewhat utopist) base of marine city, thought as human community units as opposed to individual and independent living, lied in the conviction that the this new artificial environment could be a place of peace and hopes for mankind as well as an inevitable consequence of the historical trend of the human civilization in this

century, as terminal stage of a process of development of from Industrial Revolution, passing by Megalopolitan Revolution, to Environmental Revolution. Although all the sketches of the projects lacked of any technical details and construction plans, for the most they were inspired by building techniques taken from purely functional engineering structures such as dams, canals, roads, tunnels and floating platforms for extracting oil and coal from the bottom of the sea, which had to carry weights from above, and most needed to defenses against wind, earthquakes, or water pressure. The vision of the industrial world and the concept of replacement of natural land with artificial land contributed on the same level in resolving the urban problems. One of the original sketches for a marine city was a project as artificial industrial city, built in the Bay of Suruga, characterized by deep waters, created as floating city to replace the industrial factories of the mainland. The structure of the city, whose principal production-related systems were fixed deep in the sea, was thought as a circular platform with a diameter of 4 kilometers floating on the surface of the ocean and protected by waves of any size.[cclxxi]

5-1-2. Tower Shape Community (1958)

The project for a residential tower 300 meters tall and 50 wide was the other basic architectural element that Kikutake used as fundamental component for his urban plans, and the result of the concentration of knowledge from civil engineering, architecture and industrial design for the promotion of a new environment. The origin of this proposal sprang from the observation that: "…The dominant idea then was that of industrial cities, and the living environment of the people was only an afterthought. As antithesis to this idea the following project was proposed in 1958 from the viewpoint that cities should be planned with the primary emphasis on housing".[cclxxii]

The project focused on a prototype of high and masssive housing unit shaped as a "Tower City", as architectural and urban solution to the problem of the modern living in the crowded city (the shape was suggested by considerations regarding factors like visibility and sunshine, the capability of the structure in resisting the strength of the wind and others meteorological phenomena, as well as in prevision of future production by means of the available technology). Kikutake stressed as "Tower Shape Community" (as well as "Marine City") is a gigantic and monumental building capable to create a new kind of urban space which is something needed due to the change in the way of life of the modern society, and in doing so he devised a scheme which contained and anticipated the basic features of the future metabolist projects, such as the clear and neat separation of the architectural and structural componets in permanent elements (the main structural vertical shaft for services as metaphor of the tree) and temporary elements (the dwelling units or capsules as the leaves of the tree).

Furthermore Kikutake pointed out (with a sensible awareness towards the social responsibility of the architect, in a way completely similar to the approach of the Modernists, in particular Le Corbusier) that the new society, regenerated by the by the industry and technological revolution (supported by economic

growth), required new architectural spaces for working, dwelling and recreation, but the lack of land for new buildings was a major cause of overcrowded urban environment and chaos. The alternative space for construction was found in the artificial land created expanding space vertically. There were several references and ideal schemes for this urban prototype developed by Kikutake. Among the most influentials precedent similar concepts, which probably Kikutake knew, there was an idea for an utopian dwelling tower noted as "Mile-long Skycraper" by Frank Lloyd Wright (drawn in 1956), then another project sketched by Paul Rudolph in 1954, for a residential high rise building built around four supporting cores, from the roof of which couples cantilevers (two for each side of the core) branched out, sustaining prefabricated housing units,[cclxxiii] and the project by Bertand Goldberg for two multi-functional residential towers built in Chicago named quite surprisingly "Marine Towers" (1959-1964), which, as in the intentions of Kikutake for Tokyo, were a response of architects and engineers to the massive immigration to the suburbs of Chicago and were designed to be an all-inclusive place to live, with apartments, parking lots, office spaces and others public facilities which made the 2 towers appear as a self contained citadel inside the city.[cclxxiv] Similarly to the latter project, Kikutake's tower gathered inside the main vertical structure all the functions of a city, and in the same time its monumental proportions was thought to emphasize the sense of community for the dwellers, who could enjoy a better quality of urban life, and as polemical manifest of the "new living culture" of the contemporary society, as opposed to the urban environment in the old cities laying on the surface of the ground. [cclxxv]

Kikutake's model refused other similar proposal based simply on the technical consideration about the need for high rinse housing complex for land speculation and pushed for the renovation of the townscape and the necessity of giving visual coherence and organization to the urban environment: "Vertically, however, should not be like that seen in New York. It must take advantage of this opportunity to revive the space structure of the city for man. (…) We must restore "high visibility city space" with visibility such as experienced while walking through a cluster of trees. Visibility enables the city to be conscious of the scale of itself, and visibility again binds individuals and groups within the idea of the city".[cclxxvi]

The tower structure, surrounded by green belts which occupied the empty spaces created by the vertical development, was supposed to contains 1250 dwellings for a total of 5000 people and be visible from any point of the city. The main frame of the tower was a thought as a service core, on which many prefabricated housing units were plugged in and replaced when needed.[cclxxvii] As Ross pointed out: "It was the first scheme that proposed independent, unconnected capsule towers, about one year [sic] before Archigram's Warren Chalk refined the idea into his Capsule Homes Tower, and nearly ten years before that concept was finally realized in several locations in Japan".[cclxxviii]

Indeed the basic elements of the Metabolist theories during the next years, such as the concept of the cycles of change in architecture and the endless visual flow of the architectural images, are all rapresented in the features of the project. The service core inside the main frame of the tower was filled with public utilities and facilities as supporting space for each housing unit. The function of the shaft was to contain and coordinate the shopping spaces, administrative facilities such as health offices, police stations, post

offices and public utility systems such as electricity, water sewerage and general machinery rooms of the architectural organism. Theses facilities should have been connected with sports centers and schools located around the tower on the "natural" land. The housing unit is designed as shelter for the family and in particular for the living of the parents, as the children are supposed to be just temporary members. The durability of the unit, which was made of steel and took the shape of a cylinder, too, supported by horizontal cantilevers units, was 50 years, a length of time considered long enough for the life of the family as well as the steel. The basic concept of cycles and replacement were the other key factor in the project: "As a tree puts forth buds, grows leaves, puts on autumnal tints, and loses its leaves according to the natural order of the four seasons, so will a housing unit share its life cycles with the family living in it".[cclxxix] All the floors, walls, ceilings and furniture inside the unit , which Kikutake defined as "movable tools of living" (movenets), were not fixed and had a shorter durability so that they could both be easily adapted according to the needs of the family members and allow the new improvement and development through replacement. In general the emphasis over the search for a better quality of the dwellings for mass housing through new design concepts, like in this project, and the attempt to revive a sense of community and identity on the model of the traditional Japanese neighborhood (machi),[cclxxx] more and more in danger into the confused contemporary city, became elements which Kikutake tried to combine with a comprehensive urban approach based on new building technologies and materials.

This project was further developed by Kikutake in the following years as research for industrialized technologies applied to the field of mass-housing prototypes.[cclxxxi]

5-1-3. Sea City "Unabara" (1960)

Marine city "Unabara" ("Ocean City") could be considered, as Kikutake remarked, a true model of "Metabolic Space" and, summarizing many of his previous architectural and urban planning concepts, was published as the architect's contribution to the Metabolist Manifesto in occasion of the World Design conference in 1960, which counted for nearly the half of the total number of pages of the booklet (more than 35 pages of a total of 87). This project, whose main elements ("Marine City" and "Towers Shape Community") had been in precedence presented at CIAM conference in Otterloo a year earlier as separate panels under the title "Land for Man to Live, Sea for Machine to Function", was actually Kikutake's proposal for an industrial city built on an artificial island in the Bay of Sagami, between Izu and Miura Peninsulas, just outside Tokyo bay. The basic concept of this prototype of city, as well as in the other models of marine cities and for the project for "Tower Shape Community", was to show an alternative solution to the congestion of the modern cities, whose land in the central areas were too expensive, without order and basically already destined by the market to business activities, creating an unattractive urban environment for residential buildings. Unabara was a floating city 24 km large for 500.000 people where, according to Kikutake, the people could live in the centre enjoying the benefits of a complete controlled system of urban development. The city was developed as representative of the industrial power

of Japan and structured as on organized system of assembled elements produced by the big Japanese industrial corporations, such as the Nihon Oil and Nihon Chemical Corporations, Asahi Kasei Industry, Showa Denko Co., Nihon Zeon Co. and others. It was conceived as urban system aimed to combine residence and production activity, and in fact it was composed of 2 correlated parts, one area for residential function, with the beauty of the view of the sea, and the other for industrial production, thanks to the easy axcess to maritime routes for export of goods and import of rough material.[cclxxxii] The quantity of population of this self conteined city was supposed to be contained within 1.000.000 people, following a concept of limitation in the further urban growth which directly referes to previous urban models of colonial cities and new towns as proposed by Ebnezer Howard in this century and goes back in the history till the Greek colonization of Mediterran Sea in the classic age. To avoid the city could grow too much, if the population exceeded this limit, then the city would split generating a completely new urban entity capable to continue this endless process of birth and growth: "(…) it is inconceivable that this sea city will expand into a metropolis with a population of, say, two or five million. While it is expected to grow as large as 40 km in circumference and une million in population, it is thought that a second city will be born within the city if it grows larger. The original city will split into two cities, each continuing its activity as a new city unit. The sea city will keep splitting whenever it exceeded a certain limit, in accordance with the law of biological birth and growth…".[cclxxxiii] This biological-type space was composed by fixed and movable elements, and this principle was applied to the city on a larger scale.

Following the exemples of other masters of modern architecture, first of all Le Corbusier and Tony Garner, Kikutake created a city in which he organized the whole urban and architectural system, from the biggest scale to the smallest, from the lay out of the public plazas and the factories to the furniture inside the apartments. From the urban scale to the architectural scale, the first element that Kikutake promoted as main element of the urban environment was the "Mova-Block" (Movable–block), a super-block which contained 10.000 people and that was intended to be a section of the city by whom all the city could be built. Mova-block was a structure which, according to Kikutake, had as main function containing all the apartments (individual units) following the principle of short lasting elements (the round house units were supposed to last 25 years) and long lasting elements (the mova-blocks were supposed to last 50 years). He described one type of mova-block as kind of framework made of vertical stainless pipes, forming a like a net, which hang from suspension cables connected with 2 concrete pillars (the posts of this net) which contained all the facilities of the mova-block (escalators and other conducts for energy). Round movable houses were attached to this stainless pipes, hung at 9 meters of intervals, like "…abacas beads or weights" so that "...Sunshine, air, and water (green is no longer needed thanks to the light composition) are supplied to each house as to each leaf of a tree".[cclxxxiv] On the ground at the bottom of the mova-blocks were put many other collective facilities such as schools, play-grounds, offices and shops, which are integrated with the residences as in most projects by Le Corbusier, who called these service areas close to the residential blocks as "extension of residences".[cclxxxv]

Likewise Le Corbusier, who envisioned the residential prototypes of his Radiant City as a collection

of self-contained huge expandible buildings (such as the "Immouble Villas" and the "Unite d'Habitation" units) scattered in the natural green of endless parks, Kikutake proposed his model of city as big residential frames detached over floating concrete platforms scattered in the blue of the ocean.[cclxxxvi]

The mova-blocks were gathered three by three forming a sub-system of 3 sails. This sub-system connecting with 6 other similar systems formed a star-shaped urban structure which, connected to another 6 star-shaped units formed a larger system united around a central plaza.[cclxxxvii] The smallest unit of the city was the movable house, a round capsule whose diameter ranged between 7,5 meter (single couple) and 8 meters (couple plus a child). In the former case the surface of the dwelling was 42 square meters, a dimensional space that modernists considered sufficient for a standard family (according to the research on "Existenzminimum" by Modernists during the 20s and 30s). The capsule, whose "cake" shape recalled the Buckminster Fuller's "Dymaxion House" (1927)[cclxxxviii], was made of aluminum and plastic, was able to revolve on its own axis by means of power[cclxxxix] and was filled with movenet units (functional appliances and equipment units, which were supposed to last 5 years , while the others elements of the urban scheme were supposed to live longer: the capsule-apartment unit for 25 years and the mova-block for 50 years, that sometimes took the shape of private room capsules and facility capsules attached to the circumference of the dwelling) consisting mainly of kitchen unit and bathroom unit that could be easily removed and replaced. In this model the main effort of Kikutake was the promotion of the idea of continuous renewal of the indoor environment (following the identical process for the renewal of the traditional wooden architectures) as fundamental quality of the inner space, so that it could be possible for it to adapt to the "vital rhythm" of the inhabitants.

The whole urban and architectural system was thought as a complex urban environment whose element were completely interconnected to each other; the city took the form of a huge structural frame where the apartment, the block and the complex of blocks created a hierarchy of spaces and elements. The smallest element was supported by (and contained in) the bigger one, according to a scheme clearly present in the Unite d'Habitation and evocative of Le Corbusier's "principle of bottle-rack".[ccxc] One of the most interesting insights of Kikutake presented in Sea City was the aspiration to ever changing city as consequence of the instability of the human living condition as consequence of the fast pace changes in the contemporary technology, economy and society and also considering that the cities and the architecture built in a specific time (and yet supportive of the functions, way of life and cultural values of the society living in that historical time) sometimes became oppressive for the next generations of men who live in a completely different environment. He alleged that: "The time has come to reconsider what unchanging and immobile things mean to cities and architecture. People excessively pursued the immobile and unchangeable in cities and architecture, and people held too firmly the belief that these are unchangeable. Cities and architecture have had to be permanent, and use despite age has been considered to be mark of excellence in architecture. While such a concept is certainly not wrong, we would like to point out that the status quo of old cities and buildings, many of which are still being used by people even after having completed their missions, is beginning to cause inconveniences. We should like also to conclude in our

perspective the contradictions of cities and buildings which are too strong and stable. We would like to question why we still stick to the great concept that cities and architecture are measure of civilization. The concept that they must be the monuments of a certain age and that they are index of civilization may be convenient for historians, yet it can not do anything for the people who live then and there."[ccxci] Although the intention of Kikutake wasn't of course the destruction of the historical buildings, but the denunciation of the vanity of the expression advocating the permanency of cities and architecture (which should follow the principle of replacement that exist in the system of traditional wooden architecture), it can be said that his thinking showed somewhat similarity with the theories of Italian avant-garde movement of Futurism. Futurists like Filippo Tommaso Marinetti, Antonio Santa Elia and Mario Chiattone also advocated in their Manifesto the rejection of the past and the total destruction of the old cities together with the ancient monuments, as expression a "tabula rasa" necessary to set up the "New City" ("La Citta' Nuova") as modern city for the new generation of men living in the machine age.[ccxcii]

The search for a model of urban space and architecture capable of process of rebirth led Kikutake to theorize some "laws of regeneration" of the spaces, useful to develop a design method to create a more human space and essentially conceived on the idea of daily, seasonal and generational cycles, which he identified as characterized by "Humanism, Incompleteness, Unitality, Interconnectedness and Temporal Inclusiveness".[ccxciii] Moreover Kikutake's aversion for the a model of fixed city as intended by Modernist tradition also linked his thought to the Team X, whose researches opposed both the Athens' Chart and the New Monumentality, in search of a new model of urban organization (based on integration and the development of urban infrastructures and communication systems and " the possibilities offered by "throw-away" technologies to create a new sort of environment with different cycles of change for different functions"[ccxciv]), and created a reference in the Japanese urban planning which later had a further development in the 80s trough the concept of "Amoeba-city" promoted by Yoshinobu Ashihara to describe the metropolis of Tokyo by suggesting the existence of a "hidden order" inside the Japanese city,[ccxcv] which is able to renew and keep its own shape alike the flame of a candle.[ccxcvi]

As Michel Ross pointed out, Kikutake "... was the most persevering and indefatigable of the floating city enthusiast".[ccxcvii] His research in the field of marine city technologies lasted several years and gave a fundamental contribution in the spread of metabolist urban landscape vision worldwide. The critic Kenneth Frempton alleged that "Kikutake's floating cities are surely among the most poetic visions of Metabolist movement. Yet, despite the proliferation of off-shore drilling rigs with their working complement dedicated to the extraction of energy, Kikutake's marine cities seem even more remote and inapplicable to everyday life then the megastructures of Archigram".[ccxcviii] This opinion wasn't the only one which expressed reserve and skepticism about the real value of this architectural project and was shared with other points of view similar in the tone. Italian critic Tafuri also stressed as marine city projects revealed a basic similarity with some proposals by Le Corbusier, which are indeed "…exalted and tied to an ingenuous social utopia";[ccxcix] but, as he noted, even though Kikutake and other metabolists were sincerely engaged in the searching of new architectural solutions, their works discussed the great

sociological issues mainly on a metaphorical and abstract level, preventing any further development of a methodology applicable to the reality. More drastic was the opinion of Banham, who complained about the lack of technical details of the drawings and about the lack of precise information on technological devices to be implemented in the capsules and structural frames of the buildings, a criticism directed both to Kikutake as well as to all the other metabolist projects, and on the contrary praised the abundance of details shown in the pictures, drawings and modesl of Tange's Tokyo plan or Archigram's works.[ccc]

5-1-4. Design Methodology: Three Stages of Ka, Kata, and Katachi

The idea of a determined life-cycle for each material and element of the house was connected with the prewar wooden tradition of the Japanese house, which Kikutake learned during the time of his post graduation apprenticeship. This idea was circulating in Japan since the 1955 in several books by master carpenter Tsunekazu Nishioka, who praising the traditional wooden architecture blamed the current trend of concrete architecture.[ccci] Kikutake however adapted the same concept of flexibility, growth and adaptability of the traditional wooden architecture in modern forms in his "Sky house", completed in 1958, as attempt to resolve the contrast between modern and tradition and trying to select the best from both. In this regard, he proposed in his essay for the publication of Metabolism manifesto "The ideology of Replacement", which set the replacement as an essential concept for the establishment of new human environment: "I had introduced the theme that the ideal of permanently concluded architecture, which had been the objective of conventional modern architecture, may have been delusory. Additionally, the essay stressed the necessity of correctly repositioning the problem of "Replacement", which had accumulated within the system of wooden architecture of our country".[cccii] The turning point in the search of a new design methodology occurred in 1959, when Kikutake discovered the theories developed by the American architect Luis Khan, and the Philosophy of Science by Japanese Physicist Mitsuo Taketani.

In the May 1960, in occasion of the World Design Conference, Louis Khan made his only trip to Japan. On 13th of the same month he was invited to the Sky House, residence of Kikutake, by a group of Japanese architects to discuss about architecture. Among the others there were Kikutake himself, Noriaki Kurokawa, Fumihiko Maki (who served as interpreter), Noboru Kawazoe and the president of the Japanese publishing firm "Bijutsu Shuppan", Mr. Oshita, who sponsored the Metabolist group. As Watanabe pointed out: "Although Kahn's ideas were couched in typically enigmatic language, some of what he said evidently got through to his audience. Kahn's influence over the ordered and clear functional separation of spatial components can be detected in subsequent Metabolists works; e.g. Kurokawa's "Helix Plan" (1960), which echoes Kahn's "City Tower" project for Philadelphia, and Kikutake's characterization of design as a three-staged process - ka (order), kata (type), katachi (form)- which is a more structured rendering of Kahn's poetic thoughts".[ccciii] Kikutake alleged that the disclosure of the design method of Khan had important consequences with the adjustment of his individual methodology for the practical development of architectural design, which eventually led him to employ a 3 stages

method through the definition of Ka (Image), Kata (Technology) and Katachi (Function). Although the issue of the methodology in the architectural design had been one of his major concern for long time, the definitely refinement of his 3 stages approach came with the reading of Mitsuo Taketani's "Questions concerning Dialectics" in 1959. Kikuate refers that, after his encounter with Kahn, when he started employing the methodology of definition of Ka, Kata, Katachi, he talked about this concept to Kawazoe, who suggested him the lecture of Taketani's manuscript. The Marxist Philosophy of Science (the first ever developed in Japan) called also "Three Stages Theory" was developed by Physicians Taketani and Sakata, which was developed during the 30s but became very popular after the war. According to their theory, the scientific approach (and scientific history) was based on 3 subsequent stages of knowledge: Phenomenal stage (description of experience), Substantial stage (analysis of the structure of the object of experience) and Essential stage (synthesis of the previous 2 stages) following a never-ending process in a spiral pattern of advancing and development.[ccciv] This theory had a great success and influenced several scientists in Japan during the 50s in different fields of study. "Thence I started to think a way to apply this method to architectural design, which led to the emergence of "Three Stages of Ka, Kata, and Katachi".[cccv] According to Kikutake, the first attempt to use his methodology of Three Stages in architecture was in occasion of the Kyoto International Center Competition held in 1963, and all his following design activity during the decade of the 60s (starting with his contact with Kahn as well as Taketani's methodologies in 1960) was concerned about the development of this methodology in architectural and urban field. His research led him to the summarize the problems which arose during the design process into seven design hypotheses which he described as follow: "1) Identical function are to be placed on identical levels (floors); 2) Unification of light , sound and air; 3) Construction should follow the order of replacement , and the finished structure should allow replacement; 4) Space used most by inhabitants becomes of major interest; 5) Artificiality must be given value by naturalness; 6) Mobile parts should be attached as equipments; 7) Control system of building maintenance".[cccvi]

This methodology was applied both to the architectural design and city planning. Among the best early works where Kikutake adopted his architectural methodology were the projects for Izumo Taisha office building (1962) and Hotel Tokoen (1964), both designed in cooperation with the graphic designer Kyoshi Awazu, former member of Metabolist Movement, in the spirit of the brutalism approach, with their unfinished concrete surfaces and the extensive use of prefabricated elements, giving a new sensibility to traditional architectural forms by means of a balanced combinations with the modern metabolist language (such as the clear separation between structural skeleton and box-like room units).[cccvii] Kikutake interest in the field of mass housing prototypes led him in the proposal for "Kata housing system" which combines the flexibility of the design methodology (which according the ka-kata-katachi approach assured architectural patterns and models which can adapt to different situations) with the possibilities of a fast construction process and big dimensional scale of the buildings assured by advanced technologies. As noted by the American scholar Ross, the project for "High Rise Tree Kata Housing" units (1972) disclosed still some similarity with the model of tower city proposed in the projects of Marine city and Tower Shape

Community. In the new version proposed by Kikutake it was still effective the basic structure of the building, designed as a vertical shaft containing the facilities and the communication channel in the core, and surrounded by modular units branching out from the central body.[cccviii] Something new is a further development of the "move-nets" units, which in this project upgrade to a function of communal open spaces top create a web of communication and interaction places for the habitants of the building. Ross described this network of interactive spaces as units which: "…connect the high-rise towers with potential stepped elements which can be inserted into the web at any elevation. The various models that Kikutake built are visually intriguing, but the details were never as clearly thought out nor well articulated as they were in other proposals…"[cccix] The application of the Three Stages was applied by Kikutake also to the urban design, which eventually led to the development of concept of "Multi-channel Environment" and "Channel Development System Method" (1965-66), as attempt fix some basic point in the process of urban design to fill a historical gap in the Japanese urban planning methods, which lacked of any solid and effective methodological approach in comparison with the long European tradition in this field.

Kikutake explained that the "Multi channel Space"'s theory was a concept based on the Japanese lifestyle tradition of flexible spaces which assure various living environments for people; in this way the possibilities of various spaces permit multiple choices to their inhabitants and on turn diversified environments that are able to present a wide range of urban and architectural solutions.[cccx]

According to his approach, and reversing the sequence ka-kata-katachi order in the practical process of design, the first step necessary in the cognition of the city is the katachi, or "sensory perception" of the city morphology or form,[cccxi] which means the knowledge of the material aspect of the city, such as the skyline, the buildings, the plazas, and all its spatial elements. Following the katachi step there was the kata step, the stage of "substance of the city", which involved the knowledge of the technical aspects of the city, aiming to reach a deeper understanding both of the city and its territory, and its evolution trough the time as well. This stage involved historical, geographical, ecological, social, economic and (industrial) political understanding, as well as the knowledge of the communication and transportation systems and the fundamental issue of the new development in the field of technology and how these can cooperate together to improve the quality of urban design.[cccxii] The next and last step was the ka, the stage of "image", which involved the meaning of the "essence of the city" as awareness of the city as expression of human civilization. Kikutake explained his methodology of urban design as a system of interrelations which he expressed in the form of a triangular structure. He pointed out that: "The first is that we should think of a city as an evolving and moving Form. The second is that development appears as an increase in various channels, and third is that increase in channels advances by antagonistic contradiction. We have obtained these subjects by our methodology, and have illuminated the methods of urban design using the concept and approach of opening channels".[cccxiii]

Kikutake described the urban development as a process promoted by a system of interrelations and mutual cooperation (the channels) of several factors present inside the city .[cccxiv] Facilities and (social, economical, functional, and so on) phenomena create internal and external pluralistic relations that create

the urban condition, and are strongly connected to each other, forming a "…necessary and organic system. We would like to understand the city, such as a system and in itself, as a certain number of channels. A channel system is a framework made up of a network and key points. These channels have a development of their own, or their own movement pattern. A city undergoes a metabolic phenomenon because of the movement of these channels".[cccxv] The autonomous development and modification of the channels is promoted by the differentiation of the elements inside the urban system or by a different coordination of them (such as the separation or specialization of functions inside a district), which give different character to the various zones and on long term promote actions which determine evolution and modification of the whole urban system. However Kikutake stressed as the channel development system design method was an open project and that one of its pre-requisite was that the community of citizen should be involved in the design process on a base of voluntary participation because: "…[this] method is a way to stimulate the creation and the development of a new environment. In some detail, this can be carried out as follow; by establishing in one area a channel necessary to city redevelopment, or a multi-strata system consisting of a certain number of key points in a network, we can obtain wider variation and choice in our life. As a result, the total amount of information increases, thus stimulating further activities. The characteristic of this method is that planned and factors take unplanned, spontaneously [growth]…, thus promoting development in a chain reaction".[cccxvi] In other words, the basic element of this method was that it contained a component of rational planning and another of completely free and casual evolution which could promote the enlargement of the system from the part to the whole.

The Channel Development Method had an undetermined element of further spontaneous development and growth, promoted spontaneously by citizens according to their needs, although the process of development was conceived as a deliberate planning elaborated by the designer.[cccxvii] The Whole process is thus based on three key factors: the participation of the people in the shaping of the urban environment, a gradual development of the environment planning and urban design through the cooperation of the initial planning stage and a subsequent spontaneity stage of change and adaptation, and the presence of a spatial environment (urban milieu) which is suitable for the growth and the multiplication of the channels. The implicit attempt behind this methodology was the rejection of a planning method which decided and coordinated all the aspects of a project, and prevented the free development of individual characters of the spaces and of the buildings to create a more human environment.

The importance of preserving the people's own identity while keeping the urban structure of the city was a mayor concern for the planners during the 50s and already promoted since the CIAM meetings in Hoddesdon (1951) and Aix-en Provence (1954), which reveled a soaring criticism regarding the functionalist approach of the "zoning" in the urban planning (which eventually led to the crisis of the CIAM and the achievement of the theories of Team X in occasion of the last CIAM meeting in Otterlo).

In Europe the Italian architect and urban designer Giancarlo De Carlo developed in Italy, like Kikutake was trying to do in Japan, the new paradigms of "open design", "plan-process" and "flexible growth". In his attention to the need for new architecture for a dynamic society, he devised an architecture

which divided the buildings according to a dubble system of zones: a system designed as a self-contained functional nucleous, which contained basic function and was not further expandible, and a system of external zones, like the petals of the flower, which can be changed and modified in time to face future expansion of the building (a process showed in the residential projects in Terni and in Mazzorbo). In urban design he stressed above all the concept of the "participation of the users in the choices", in the attempt to integrate together in a single process architecture and urban design, which resulted in the design and the realization of the projects for the modification of the city of Urbino during the 1960s.[cccxviii]

On the same level, Kikutake's efforts to break with the Functionalist establishment and theories fostered his research for the refinement of the "Three Stages Method" both in architecture and city planning toward the realization of an environment which could offer multiple choices to the people and enhance the quality of their life. His interest in the problems of the modern cities led Kikutake to further development and a deeper study in the causes that worsen the urban environment. The last step in his decennial research about an organic architectural and urban design method has been his idea-project for "Habiter-Ecopolis", which is a synthesis of his design concept and in the same time a step ahead, promoting a new vision of the contemporary city by means of a diversified environment defined by flexible "multi channels spaces" created by "the combination of Japanese tradition (lifestyle and techniques) and the logic of the artificial environment" to propose solutions for the problems of contemporary cities at the end of XX century.[cccxix]

5-2. Noriaki "Kisho" Kurokawa

With his 26 years, Noriaki Kurokawa was the youngest of the original Metabolist group to take part in the publication of the movement's manifesto. However, in spite his young age, by that time he has already had several practical training both as researcher and as architectural designer. In 1960 he was a member of Tange's team at Tokyo University (where he got his doctorate), and since 1959 he has been working for the magazine Kokusai-Kentitku on a series of reports about the town planning methods in foreign countries. In 1959 he had published a book on industrialized housing in Soviet Union, based on his direct surveys and travels in the various regions of that country, and since then his interest in the industrialized architecture for mass production evolved, through his research on prefabricated elements and his work with the manufacturers of shipping containers, as a distinct feature of his "capsule-architecture" style,[cccxx] which in the early years was highly influenced by the works of Luis Kahn.[cccxxi]

The projects he published as contributor of the Metabolism group were "Agricultural City", "Wall City" and his proposal for a plan for the renewal of Tokyo, "Neo Tokyo Plan", which dated back to 1959. Apart from the proposal for the "Agricultural City", a project which recalled the idea of artificial platform over a preexisting urban environment already put forward by Otaka and Maki, which was accepted for the exhibition "Visionary Architecture" held in New York, the others proposals published in the manifesto appeared to be, although he stressed the existence inside the city of "changing cycles which differs

according to each section of the city",[cccxxii] as an early tentative to focus the main problems and limitations of the contemporary city and envision a schematic and conceptual solution from the point of view of the architectural design rather than the methodology, proposing as panacea for all the urban chaos the adoption of "bamboo-like" communities and "plant type" communities, "[the former] consisting of vertical slabs in bamboo like structures and [the latter] consisting of a vertical slab structure [which] act as urban connectors. And these urban connectors will fill in the gap caused by the every increasing consequences of speed, scale and human spirit of the coming age".[cccxxiii] In these projects Kurokawa made an extensive use of capsules although he didn't refined the drawings with the details of their structures (the precision of his drafts was for sure much less than the proposals by Kikutake) and he limited his urban proposals for a "Wall City" to a generic compact city, presented as an urban mega-structure, similar to other famous projects of Le Corbusier (such as the linear city for the Plan Obus for Algeri, 1931, and the Unite` d'Habitation, with its "rue interiour", interior streets), as a wall like structure which combined and supported mobile capsules for offices and houses, adjusted on each side of the wall in the attempt to create a closer relationship between residence and work place, and contained a monorail and other devices for the interior transportation, such as a "moving corridor". In "Neo Tokyo Plan", which shocked Paul Rudolph at the World Conference, the main theme is of course the need for artificial land, a stimulus for this urban proposal as well as for the projects of other architects, and Kurokawa imagined the plan of the city as a huge cross in the center of Tokyo which he filled with tall buildings as primary structure, which contained and supported all the necessary services for the community as secondary elements, the public services in larger spherical capsules, the individual houses in smaller spherical capsules. The project for an "Agricultural City" was based on urban model centered on the importance of high density of the buildings, a character typical of the big cities, and the need for the multiplicity and rapidity of the communications and as tentative to promote a new scheme of town which could overcome the opposition between city and farm villages. This project appears to be more or less directly influenced by the idea of open and flexible space already promoted by Peter and Alison Smithson in their projects for "Golden Lane" residential block in UK (1957) and for "Haupstadt Neighborhood" designed for the center of Berlin in 1958.[cccxxiv] Indeed all these projects share the same concepts of separation of movements on different planes by means of suspended (above the ground) "pedestrian-streets nets", which link different urban spaces for different functions, and generate an urban image based on a composition of clusters aimed to define a system of places conceived according to the idea of a contious growth process in the time. Kurokawa's emphasis on the importance of the communication networks and the necessity to promote the interrelation between the individual and the community were the conceptual bases for this project: "The structure of a city must be a multi-planar transport system centered on activities of daily life".[cccxxv] In fact the geometrical grid which shaped the entire plan of this prototype of agricultural city (to being built in Nagoya), showed the streets network as the main infrastructure and the primary frame of the entire city, while the residences and the public urban facilities were substantially its sub-structure. In the project the living space for the residents was arose from the ground by means of pilotis and built on an artificial land,[cccxxvi] leaving all the natural

floor for the cultivation and agricultural activity, and the houses took the shape of giant mushrooms, whose singular form, according to Kurokawa, could act as an effective visual shelter for the people "to protect the individual privacy", and as formal opposition to the regular grid of the city. This project and the "Marine City" by Kikutake, where selected as representative of contemporary Japanese examples of the researchers in urban planning and architectural design at the MoMA's Exhibition in 1961.

If Kikutake stressed in his project the importance of the urban regeneration, and he referred to the concept of the cycles of urban replacement as a fundamental condition for the life in the contemporary environment, Kurokawa's proposal promoted the theme of the communications as a fundamental priority in the life of the modern city and the streets as main architectural infrastructure of the modern urban settlements. The idea of the key role of the communication network in the modern planning was probably a suggestion Kurokawa derived from the theories which Tange were developing during the preparation of his project for "Tokyo Plan 1960", where the urban structure is conceived as a complex and giant transportation system which supported the development of the metropolis. Like Tange, in the early 60s Kurokawa strived to find a different approach to the urban planning methods, and he also rejected the model of radial city in favor of the model of linear city, which could assure faster communications, more controlled growth and less urban sprawls. Anyway, differently by Tange, who gave much importance to the public places as the squares, unknown in the Japanese traditional culture, Kurokawa referred to the streets as the traditional public spaces in Japan where every aspect of the daily life of the people was run. The importance of the streets in the social life of the Japanese city led him to design trough the plan of agricultural city a modern version of the ancient grid of Kyoto (Heiankyo), as proof of growing awareness of the sense of national identity that was reappearing in the Japanese culture, and the willingness to rediscovery the roots and the essence of the "being Japanese" as necessary step toward the creation and the definition of a new aesthetic language suitable for expressing the modernity of the post-war Japanese architecture.

In the July 1960 the architectural magazine "Kenchiku Bunka" published the project for "Toyama Heights Housing" which Kurokawa presented at 12th Triennial Exhibition in Milan.[cccxxvii] The theme of the exhibition was "the home and the school", and Kurokawa presented a project which refined some concepts previously shown in his "Wall City" (the unity between residence and work place) and that in this case emphasized the relationship between the home and the school. The structure of the complex, which denoted some influence of Le Corbusier in the treatment of the façade and the plastic expression of the huge ramps for the cars, appeared as a further stage in the development of his planning theories which clearly gave paramount importance to the communication network as fundamental element to integrate the public spaces (the facilities of the city) and the private spaces (the individual residence). The street became the most eminent "urban connector", which Kurokawa defined as "…the base of the living units [which] is indispensable as a connector of urban structure on an engineering scale and living units on a human scale".[cccxxviii] The importance of the streets in the ancient Japanese cities assumed a particular value to the eyes of Kurokawa, who tried to transfer this peculiarity of the Japanese urban tradition into the project he

produced since then on, which were further enriched by his research on an spatial feature he defined as typical Japanese that is the concept of "intermediate" space, or "en" space. As he said: "In the early 1960s, when Metabolist movement had just been launched, I was completely absorbed in the study of road spaces as a characteristic aspect of the Oriental space-sense side… In the Nishijin Labor Center project, the Central Lodge in National Children's Land, the Hans Christian Andersen Memorial Museum in National Children's Land, the Yoshimatsu Residence and elsewhere, I tried to create new qualities of "intermediate spaces", half private, half public, characteristically historical Japanese spaces in cities, by guiding roads which are exterior spaces into the interior of structures. My obsession with street spaces persisted for some more time, and in meanwhile my space-sense was undergoing sublimation into a concept of media space, "en" space and intermediary space. The result of this phase of my obsession with road spaces was the Head Office of the Fukuoka Bank, the Head Office of the Japan Red Cross Society, Ishikawa Cultural Center, and the National Ethnology museum. The reason of my obsession with the media space as intermediary or undefined area was because it pointed to a problem that was alien to the dualistic world of western culture, or to the world of functionalism and rationalism which had been established on firm ground by the CIAM movement. The harder one tries to disintegrate space into functionally divided parts and recompose them, the more definitely one will be engaged in canceling the ambiguity and antinomy which intrinsically inhere the space. Space is essentially dense and filled with internal contradictions".[cccxxix]

In 1961 Kurokawa revealed two basic projects, "Helix City" and "Floating City", which became authentically some of the most famous icons of the whole Metabolism movement, and also reveal the basic influence of Louis Kahn shown in the monumental scale and the symbolic value of the structural emphasis of the mega trusses of the buildings, which appear to be somewhat inspired by the project of the massive body of Philadelphia's "City Tower" (the high-rise tower for Philadelphia city hall) and the sketches for the redevelopment of Philadelphia downtown (1956-1958), which by 1960 have been widely published and known. They were developed as a study projects prepared for publication of the second Metabolism manifesto planned to be published in 1961 but which was cancelled. In the project for "Helix city", Kurokawa envisioned a model of city capable of three-dimensional development like the spiral structure of the chromosomes (DNA), showing his intention to overcome the limits of the bi-dimensional urban planning approach of Functionalism. The main frame of the Helix structure supported the housing units and it was intended as "space frame for data transmission that generates architectural spaces".[cccxxx] Similar to this project was the "Floating City", which was prepared as a housing project to be realized on the surface of a lake in Kasumigaura, near the International airport of Narita, Tokyo. In this project the plan of the whole city is proposed as a complex transportation system which functioned as communication network and as structural frame. The lower level of the huge structural frame of the city was anchored at the bottom of the lake with a direct contact with the water. From this level an escalator system connected vertically the individual apartments with the traffic of pedestrians and vehicles on the roof of the urban structure. Here again Kurokawa gave much importance in the transportation system as "urban connector"

of the various structures of the city as well as the possibility of potential three-dimensional growth of the city (thanks to the standard dimensions of each urban block as floating helix cluster of capsule units), stressing as "…the structure of a city must be a multi-planar transport system centered on the activities of the daily life".[cccxxxi] In 1965 Kurokawa presented the project for Linear City "Metamorphosis" (which was prepared for the third publication of Metabolism group),[cccxxxii] where he further developed the concept of an urban model capable of progressive growth, without a city centre (which was seen as a major couse of the city problems as the center was always under stress for the congestion of fuctions), and composed by clusters of enclosed residential spaces surrounded by a belt of service facilities and communication channels (which in the traditional city are basically set only in the downtown), which could expand in whatever direction necessary. This project was proposed as alternative to the concentric expansion of the city (which cause several problems with the flow of communication and information between places and people) and as prototype of an urban settlement without a city centre. The main references for this proposal were taken both from the European models of linear city (especially the projects by the Spaniard Soria y Mata, Le Corbusier, and the Russian Miliutin) and the project by Tange for the Plan for Tokyo, although undoubtedly Kurokawa presented the same urban model with a refreshed interpretation, by rejecting in his design any geometrical forms and any patterns of regular expansion of the city, such as the use of the method of Master Plan, and promoting his idea of spontaneous development of the city. In particular this concept was first applied by Kurokawa into the masterplan of 2 new towns, Hishino New Town (1966) and Fujisawa New Town (1967), conceived, designed and built as settlements developed around the road system, composed by groups of mixed residential and service areas and without an urban centre, with a formal organic pattern of growth which recalled in part (but without the use of megastructures) his earlier proposals for a model of metabolist city, and then further adopted by Japanese Government in the "Comprehensive National Development Planning" in 1970 for the creation of a system of "Network-city", a new concept derived by Tange's vision of "Tokaido Megalopolis" and based on the idea that the new towns shouldn't be self-sufficient, but regarded as urban parts of the main city.[cccxxxiii]

In the project for a floating factory "Metabonate 1969", another projects which recalls the issue of reclaimed lands as solution to the shortage of space in mainland Tokyo (and already source of fruitful considerations by Metabolists at the end of 1950s), Kurokawa intended to combine the concept of floating cities and floating factories (such as marine factories or those for the petrochemicals and shipbuilding activities) in a unique super-structure floating on the sea. This new urban model was a specific answer to the need of coastal cities and countries like Japan, which rely on the sea for their productive and commercial activities. According to Kurokawa this kind of high technological urban prototype had the main advantage to safeguard the environment of the natural coasts (because they don't need the works for their installation on the ground of the banks) and in the same time to be easily removed and changed: "Because it is anticipated that there will be expansion, growth and replacement of factories, as well as extensive recycling of resources, the Metabonate, or unit composition, will be a highly effective means of answering the needs of the metabolic cycle".[cccxxxiv]

Thus the basic idea in the town planning approach used by Kurokawa was the creation of a kind of "patchwork-like" city, with a spatial order whose individual parts, in opposition to the strictly hierarchical order proposed by European Rationalism by means of a master plan and the zoning, were capable to build the city without any infrastructures (such as motorways, streets) or substructures but, on the contrary, by means of accumulation of urban units which related themselves to each other without a planned order, adding a touch of variety and diversity to the urban environment, which also followed the basic suggestions of some writers such as Jane Jacobs, who in his famed work "The Death and the Life of Great American Cities"published in 1961 criticized strongly the waste and the dull image of the contemporary city, preaching for a total urban renewval. This became a fundamental device in Kurkawa's urban design methodology, as the city grow through a repetition of modular components (the city block) which aimed at a method of expansion by adding further modular componets (produced according to industrial processes), just like for any other item created by indurtial design. In this way, according Kurokawa, the random accumulation of different buildings created blocks, and the random accumulation of different (self-contained) blocks, connected to each other by a system of networks for transport and communications, created eventually the image, full of variety, diversity and complextity, of the whole city, in the same way by which some verses are linked randomly to another in the ancient Japanese game of "Renga" to form a ever changing story.[cccxxxv]

Likewise most of the architects which at the end of the 1950s questioned the validity of the previous architectural tradition, Kurokawa rejected the pure forms of the projects of the masters of the Modern Movement, Le Corbusier and Mies, as well as the excessive geometrical approach of the urban planning methods based on the zoning, because their approaches were too distant from both the Japanese spirit and were impracticable in the case of a city like Tokyo, a fact that has already been proved by the examples of Nara and Kyoto, which were isolated cases in the history of Japan of "planned city" with a regular grid of streets. In the specific case of Tokyo he argued as this metropolis was characterized by a good transportation system by railways, relatively few cars (but also few parking lots), and narrow streets, which naturally promoted the development of the concept of semi-public spaces he tried to introduce in the modern city by his idea of intermediate space, or "en" media space, half private and half public, a concept taken from the urban experience of the ancient Japanese city, which he proposed for the first time, together with his original concept of "Architecture of the Streets" (1963), in the project for the redevelopment of "Nishijin District" in Kyoto in 1962.[cccxxxvi] The key concepts of the intermediate zone, media space, ambiguity, spatial interpenetration introduced by Kurokawa during this time, eventually gave birth to the more comprehensive concept of "Metamorphosis", a philosophical principle related to the concept of ambiguity, intermediate zone, interpenetration, ambivalence, and intended as intermediate stage between the idea of "Metabolism" and that of "Symbiosis".[cccxxxvii] It is very interesting to point out that the same themes introduced by this concept were under discussion in Europe by the Team X, from who Kurokawa was invited in 1962 in occasion of their meeting in Royaumont, introducing his project for "Nishijin".[cccxxxviii] Although the comment s of the members of Team X on Kurokawa project wasn't so

favorable, indeed it appeared clear that both their research was pointing in the same direction especially in relation with the use of capsule as architectural prototype, the idea of impermanence and the creation of "…a new sort of environment with different cycles of change for different function",[cccxxxix] as well as the use of a similar terminology and spatial concepts, such as Van Eyck's "in-between spaces", "edge" and "thresholds", by which private and public space, individual and communal areas are connected.[cccxl]

Kurokawa theories in urban planning and architectural design proceeded on parallel with the development of his exclusive philosophy influenced by Buddhist teaching and the myth of the technology, which led his thinking to refuse both the functional distinction in the field of architecture as well as the cultural barriers among the worldwide civilizations trough his philosophy of Symbiosis, promoting some aspects of the Japanese culture as a valid alternative to the Western models, as done also by Kikutake.[cccxli]

5-2-1. Kurokawa's Architectural and Urban Philosophy:"Capsules and Patchwork City"

Kurokawa started his research in town planning and architecture when the CIAM and functionalist influence in architecture and town planning were inexorably declining. A sort of "cultural renaissance" in the postwar Japan, stimulated by the economic recovery and the transformation of the contemporary society after the collapse of the ancient feudal system, combined with a deep crisis in the Western world, both cultural and political (it was the age of the end of European colonialism in the world and the beginning of the independence of many ex-colonies worldwide) were some of the key factors which had a strong influence on the young Kurokawa, who early showed a bold, inflexible and combative attitude in the promotion of his own theories, in Japan as well as abroad. As "philosopher-architect", his thought involved several different cultural fields such as art, technology, sociology, history, and his efforts led him in the development of his philosophy of "Symbiosis" (which he considered as a further stage of Metabolism's concepts evolution), which also underwent to several changes through the time, enriching of new meanings, and was both an attempt to combine "in symbiosis" many aspects of Western and Eastern cultural value systems, and a way to define better some specific characters of Japanese culture and society put in a worldwide context.

Kurokawa studied in Kyoto where he started his formation as architect, studying the ancient wooden architecture, and previously he had learned the basics of the Buddhist philosophy in a religious school when he was a young student. Since then he started the development of his concept of Symbiosis.[cccxlii]

The years of the university were characterized by his interest in the European masters of Rationalism (Le Corbusier and Mies) and the avant-garde movements of Italian Futurists and Russian Constructivists.

According to Kurokawa, it was the news of the dissolution of the CIAM and the collapse of the theories of the Modern Movement in 1958, together with the growing influence of the ideas of Team X, which prompted him and other colleagues of his generation to reflect deeper about the meaning of the modern architecture in Japan. In 1958 he wrote a short essay entitled "From the age of Machine to the age

of Life" where he announced many concepts of his philosophy, and in the same time he joined the Metabolism group, which presented its manifesto 2 years later.[cccxliii]

In Kurokawa's opinion, Metabolism was a reaction to the image of the society as a static entity, as envisioned by Le Corbusier, Mies and all the other members of Rationalism, although doubtless it retained from their lesson the confidence in possibilities given by industry and technology, and the idea of architecture as mass product by means of prefabrication and standardization processes. More over, according to him, Metabolism tried to reject the vision of architecture as fixed object, and on the contrary proponed architectures and cities which were metaphorically linked to the idea of growth, development, and recycle, promoting above all the idea of architectural cycles as the most important in its theory (as well as Kikutake did), in a sort of direct preference and sponsor for the building techniques and the sense of space which have been developed in the traditional Japanese architecture. Kurokawa alleged that: "The philosophy of Symbiosis was, in a world, an attempt to imbue architectural and urban space with the qualities of diachronicity and synchronicity".[cccxliv] The first law of Metabolism, the diachronicity "…dictated that as all temporal distances were relative and hence of equal value, symbols and signifiers from any age or tradition might be freely incorporated in architectural works. (…) Thus, Metabolist architecture and urban planning meant changing, growing and accreting buildings and cities in which people could participate toward transforming their future. In other words, the First Law of Metabolism, spatial diachronicity, amounted to a symbiosis of past and future".[cccxlv] The second law of Metabolism was defined as "spatial synchronicity", and was a reaction against the evaluation of the culture and architecture of the world seen from an only Western perspective. "With the International style as its weapon, Modernist architecture sought to force Western values on the whole world. This glaring, inherent error was brought under fire when Levy-Strauss questioned the supposed supremacy of Western culture. (...) All must be recognized on the same level: this is what the Second Law of Metabolism is all about. The Exaltation of the west, which reigned unchecked in the Modernist architecture is dead. We are now able to easily move across diverse cultural contexts, and combine elements of different background in the creation of a synchronic architecture".[cccxlvi] The architectural theory of Kurokawa led toward the complete symbiosis of different culture and the rejection of the Western cultural trends from the very beginning. Metabolism became a way to challenge the modernist theories and to claim a new cultural and architectural order in the modern times. Kurokawa called the Metabolism as a method to control the technology and was expression of the "Age of life" of the coming XXI century, an idea based on the concept of symbiosis of local cultures, in opposition with the "Age of Machine", which denoted the culture of the early XX century and the architecture of Modern Movement as expression of the whole Western system of values based on the concepts of rationalism, technology, universality and science.[cccxlvii] In other words the aim of Kurokawa's theories and philosophy (but also those of Kikutake) was basically to propose the system of values of Japanese culture as an effective alternative to that of the West, and as a model for the other cultures which had been subordinated to the Western world in the previous century. In fact, according to Kurokawa, "…In contrast with the age of machine principle, the age of life principle moves from dualism

to the philosophy of symbiosis. Symbiosis is essentially different from harmony, compromise amalgamation or eclecticism, and is made possible by recognizing a sacred zone and by showing respect for dualistic elements, such as different components, cultures or opposing factors. (…) Indeed, tolerance, the lack of clear boundaries, and the interpenetration of the interior and the exterior are all special features of Japanese art, culture and architecture. (…) In the coming age, the machine ideal of universality will be exchanged for a symbiosis of different cultures".[cccxlviii]

A great support toward this target came from the awareness and the success of the postwar recovery of Japan, which gained praise and admiration from every where in the world. But the economic recovery was just the most macroscopic element of a process of deep reshaping of the whole Japanese society, which witnessed during the early sixties a period of unprecedented transformation. Kurokawa described in his book "Metabolism in architecture" the five main characteristics of the modern Japanese society of the time. He pointed out as Japan was a country with and impressive growth of the population oriented toward and mass society and more and more attracted by an urban style of life, where the mobility became an essential aspect of the life of the people in the country where the urban fabrics was enlarging the boundaries of the metropolises, the importance of technology and industrial was a key factor in the development of the national industrial system, and for that reason kept in high regard by the government. And last, but not least, Japan was a country where was still strong the influence of Buddhist philosophy, with a deep sense of the mutability of the season and the awareness of the impermanence of the material word, and where the architecture and the building activities were dominated by the wooden, as basic building material easily replaceable and resistant to the earthquakes, following a long tradition of carpentry which dated back several centuries. The combination of modern (imported) and traditional (native) cultural elements which suddenly after the war invested Japan were deeply changing the Japanese people and the society. Kurokawa realized the necessity to create an architecture which could be expression of the new urban and social community of the modern times, so influenced by consumerism and new technologies, and above all to balance the relation between the sense of community of the society and the need for the privacy of the individual. This fundamental task was at the base of his theory of the capsules, which Kurokawa described in an article published on SD in the second half of the sixties under the name of "Capsule Declaration".[cccxlix] Kurokawa introduced the capsules as expression of the modern society in Japan and the world, where the old model of traditional family was drastically changing, and as proof of the efficiency of the industrialized prefabrication methods in the production of modern houses. The capsule was intended to be as a shelter, whose interior space was comfortable and rational, which could be easily moved and replaced, and for this reason was the ideal house for the modern society, which was composed by nomad people. The capsule was the "modern house" of the people of a society of migrants always in movement, so that it was conceived as an instrument suit to promote this movement. Furthermore the capsule, according to Kurokawa, could preserve and protect the privacy (a new concept in the Japanese culture imported in the early XX century[cccl]) of the individual from a society which tended towards homologation and standardization; furthermore it also rapresented a fundamental piece of his

broader architectural vision which connected directly with his urban design design principles. The capsule was for the independent building what the block was for the whole city: exactly like the capsule in the architectural system was a basic unit (which could be easily replaced and upgraded) which connected (literally could be plugged in) to a central body of services and movements channels, the blocks could gather together into several clusters, as many sets of independent cells, connected through them by transportation and movement channels to form a more complext organism like the city (such as in the projects for "Helix City" and "Kasumigaura Plan", 1961).

The capsule declaration was an attempt to interpret the recent revolution of the Japanese society, introducing an architectural prototype which was suitable for the new standard Japanese family, which was now changing from the traditional patriarchal model to a new nuclear model. Moreover the rapid growth of the city and the shortage of housing together with the phenomena of migration from the countries and the daily commuting led to the soar of price of the land and the accommodations in the central areas of the cities, and fostered the design of cheap and easy-to-built houses. The most famous application of Kurokawa's capsule theory was in the project of "Nakagin Capsule Building" (1972), which was well suited to express many features of Metabolism aesthetics, based on the systems of carrying (vertical shaft for services) and carried elements (the box-like units), elevations easily changeable according to the different position of the units, the massive use of modern industrial technologies and the proposal for a new architectural model of housing conceived as direct response to the need of the contemporary mass-oriented society. This project represented the summa of all the theories of Metabolism (since the early sketches of Tower shape community by Kikutake, to the project by Tange for Yamanashi Building), so that it became its first universally recognized icon. The capsule architecture drew the attention of both the government and large trusts, and Kurokawa, as well other architects specialized in this kind of architecture, among them Kikutake, were hired as technical consultants for many construction and manufacturing companies.[ccli] Apart from this direct design activity, Kurokawa revealed himself to be an exceptional prolific writer, and it was especially his merit that Metabolism theories spread so largely and arose so profound and sincere interest especially abroad, even though his writings appeared to be somewhat overemphasizing the role of Japanese architectural and cultural traditions behind the originality of Metabolist projects. Indeed together with the praise for his indefatigable work, he received also much criticism. German historian Walter Hanno Kruft presented Kurokawa as the most outstanding member of Metabolism movement, which he defined as "the most important contribution by Japan to contemporary architectural theory", and compared his large-scale structures to those of "Mesa City" by the Italian-American architect Paolo Soleri.[cclii] Robin Boyd, on the other hand, although he also admitted a certain talent in Kurokawa as designer and as theorist, pointed out that: "If the metaphysics behind Metabolism sometimes seems inscrutable and rather overblown in relation of the concrete examples to be seen so far, this is mainly due to Noriaki Kurokawa, one of the originators of the group and its most impatient member. He has become its most verbose spokesman, prolific, often brilliant, and frequently un-intelligible".[ccliii] The same opinion was shered by scholars William Coaldrake and James Steele. The

former focused on the general trend which hit the latest generation of Japanese architects, among the Kurokawa and Arata Isozaki, who, in their exaltation of new experimental architecture, "speak in a language heavily larded with western metaphor and allusion, impenetrable to reasoned historical analysis because it subsumes traditional Japanese architecture in a western matrix of spatial analysis devised only this century".[cccliv] The latter, instead, questioned Kurokawa's urban approach and methodologies, who, as well as expressed by Yoshinobu Ashihara's theories, insisted that behind the chaos and disorder of a city like Tokyo exist a system of method and a certain "hidden order".[cccv]

Eventually, it looked like that two key factors appeared to be decisive in the success of Kurokawa's urban design, as well as in the development of his architectural philosophy (but also for many other Japanese architects of his generation or younger), as the scholar Alex Kerr wisely put in evidence. These two factors which gave grate resonance to his research activity were the appreciation of his works by the international design community, especially thanks to his writings, and above all the great opportunities for public works and other private commissions in Japan, sponsored especially by Japanese government during the years of economic development.[cccvi]

5-3. Masato Otaka and Fumihiko Maki

Among the architects of Metabolism, Otaka and Maki appeared to be the more realistic and their contribte had a somewhat exclusive character and a special influence on the whole Metabolist theories as both the architects appeared to be, from the very beginning, less convinced than their colleagues of the paramount importance of technologies and their application to the design process to pilot the evolution of modern architecture and urban planning. This approach was evident in their research activity which were conducted independently from the "main stream" present in the Metabolist Group and represented by the works of Kikutake and Kurokawa, as proof of the basically different cultural background of Otaka and Maki, which became evident in the article they published as their contribute to Metabolist Manifesto and titled "Towards a Group Form". This essay presented their joint project for the redevelopment of West Shinjuku district in Tokyo ("Sinjuku Redevelopment Project", 1960), which illustrated the theme of an urban growth and redevelopment by means of urban platforms intended as "man made land" and as container of buildings (architectures) and infrastructures (service spaces). This project also contained the principle of a new urban design approach developed together even though it was mainly based on the independent studies and researches conducted by Fumihiko Maki in the United States, researches which involved the issues and the topic of the "Group Form" and "Collective Forms" as expression of a process of urban growth based (concerning the visual and aesthetic issue more than the functional one) on the mutual relation and ties created between the single independent buildings and their surroundings spaces or urban context, as parts and whole, which Maki himself had started to investigate in the surveys of vernacular architectures of many villages he visited around the world some years earlier.[cccvii] Indeed the

contents and the principles of the urban design methodology proposed in this project revealed as Otaka and Maki were both "a-typical" in the context of the Metabolism, for some specific reasons.

In 1960, when the Metabolist Manifesto was published, Masato Otaka was the oldest member of the group and an active member and important partner of Kunio Maekawa's studio, after completing the post graduate program at Tokyo University under the supervision of Tange Kenzo.[ccclviii] His studies were rather influenced by an evident rationalist approach as noted by Michael Ross, who observed that: "[he] had become a disciple of, and a strong believer in, the principles of Kunio Maekawa, who had worked for Le Corbusier and who had been Tange's employer and mentor at one time".[ccclix] In 1957 he worked to the design of "Harumi Apartments", an innovative mass housing block inspired to Le Corbusier's "Unite" to be built in a reclaimed area of Minato yard in Tokyo. Otaka interest in the search for new urban principles and methodologies started since 1958, when, in reaction with the proposal by Kuro Kano for infilling part of the Tokyo Bay as solution to find new land for the expanding city, he proposed a bold project for the development of Tokyo on the sea by using huge posts on the bottom of the sea and building on their top slabs of reinforced concrete on which create new spaces for the residential and productive activities of Tokyo.[cccLx] This was the first project of its kind to conceive the development of a system of expressways and ring-roads in the water of the bay as the backbone of the urban growth of the new settlement, anticipating a principle also present in plan for Tokyo designed by Kenzo Tange 2 years later. The plan focused on the development of a residential area of archipelago-like man made land as connective nodes for floating residential desk 100 meters long, as clusters of blocks based on the model of the residential apartments designed for Harumi reclamation. Following a strict zoning principle which recalled somewhat the modernist urban design approach, the new city was made of a series of artificial platforms (as man-made land) divided into parallel interconnected areas, and the stress of the plan was put on the matrix of local service areas of the dwelling complexes and the main transportation networks of ring roads, which run into the bay creating a horse-shaped layout. Differently from similar bold projects proposed by Japanese planners, the main focus of the projects was to maximize the living quality of the residential area (also as main element of the urban skyline), which in this proposal could benefit from the amenities of the natural environment of the sea and the rational and well planned net of nodes for different urban services and varied activities.

The theme of artificial land into the sea was further refined by Otaka as artificial land on the ground in the following years. In 1963 Otaka was involved in the development of the plan for "Ohtemachi City" the downtown center of Marunochi, creating a system of apartments built on an urban "podium" 12 meter high above the street level, and then for the development of "Sekaide Urban Platform" (another expression of the theme of urban artificial land already introduced with his plan for a population of 3 million people to be developed into Tokyo Bay) using "…[the] air rights over transportation corridors for urban housing",[cccLxi] and then in 1968 he was commissioned to prepare the urban renewal plan for two slums areas in Hiroshima. Although his activity in the fields of urban planning research and design reached high levels of quality and effectiveness, as seen in the plan for remodeling of the midtown area of Sekaide City

(Kagawa Prefecture), which Kawazoe quoted as being the first city plan made by a Japanese architect and as a model for the development of future cities in Japan,[cccLxii] Otaka's main results in the following years were not in the filed of urban design but in the field of architectural design instead. Worth of mention is that most of his projects by this time often showed exterior forms that recalled the interlocking-wooden construction techniques of the traditional Japanese architecture based on the post-beam principle (according to a current of general renewed interest in traditional architecture which peaked in the middle of 1960s), as seen in the project of "Tochigi Prefectural Council Building" started in 1967. Eventually his research for mand made land echoed Le Corbusier's concept of roof garden in his project for "Hiroshima Housing" (1973), which featured a system of hanging gardens and a roof promenade over the buildings.

Fumihiko Maki joined the Metabolist group when he was "…32 years old, but far more traveled and sophisticated than any other member of the group. After graduating from Tange's studio at Tokyo University in 1952, Maki left Japan for America where he received a Master of Architecture from Cranbrook Academy in 1953 and a Master in Architecture from the Graduate School of Design at Harward in 1954. Subsequently he worked for Skidmore, Owings and Merrill in New York, and for Sert, Jackson Associates in Cambridge. From 1956-1958 he was an assistant professor at Washington University's School of Architecture, and from 1958-1960 he traveled the Middle East, Europe and Asia on a grant from the Graham Foundation. He returned Japan in 1960, where he served for short time in Tange's office before opening his own consulting firm."[cccLxiii] The outstanding and eclectic activity of Maki as researcher and associate professor in the American universities lasted until 1965, and during those years he taught and refined his urban theories which were approached in a more traditional way, and were influenced by a strong awareness of the importance of urban planning principles over the architectural aesthetics in the design process. His staying outside Japan for many years had long-lasting consequences on his personal design philosophy and principles.

As noted by Botond Bognar: "Although Maki's interest in new modes of urban design were closely associated with those of the Metabolists, he never shared their technological preoccupation with mechanical changeability as the basis for the future city. He was a reluctant warrior in the army of Metabolists, and so his practice at that time could be considered as closer to the margin of Metabolism than its center. He and Otaka were the moderates in the group; their proposal for the redevelopment of Shinjuku (1960)…, while clearly critical departure from the master-planning practices of the modern movement, simultaneously distanced [itself] from the rigid (mega)structuralist interpretation of the new city. (…) Moreover, even in his early "Metabolist" architecture, Maki was more inclined to approach the issue of urban flexibility from… the reality of existing urban conditions, rather than from idealistic heights of utopia."[cccLxiv] This basic opinion expressed by Bognar on the role of Maki in context of Metabolist Group is similar to that of Ross, according to whom: "Although he is one of the original Metabolist Group, Maki perceives the group to have been more of a collection of contemporaries than a cohesive movement, and, by his own admission, stands outside the philosophy that has to be associates with Metabolists."[cccLxv] As matter of the fact, it seems that Maki in some way considered Metabolism as expression of the general

atmosphere of renewal present in Japan, both in the society and in any field of the culture, rather than a coherent and united architectural theory and movement with a clear and definite design method, and in doing so he split his design philosophy, mainly based on the architecture seen as space, which recalled the methodology proposed during the 50s by the Italian critic Bruno Zevi, and linkage of places, from the design approaches of the other main metabolists architects, namely Kikutake and Kurokawa, who conceived their architecture basicly as massive plastic objects whose visual effects aimed at the expression and the interpretation of the possibilities offered by the industrial technology.

5-3-1. Maki's Collective Forms and Linkage Theory

In the article coauthored with Otaka and published for Metabolist Manifesto on the project for the redevelopment of Shibnjuku Distict in Tokyo, Maki emphasized the role of the architect-planner, or urban designer, and his key role as controller of the process of transformation of the urban environment and give order to the chaotic modern city. He stressed in this article the importance of a new methodology in the field of town planning and the creation of new urban spaces based on the knowledge of factors such as the history, the ecology and human activities of the surroundings. He conducted surveys on vernacular architectures in Europe and Asia, in search of the design principles of the spatial organizations of the "collective forms", which, according to him, were more in conformity with the need for urban integration necessary to the modern urban settlements.

This research led to the publication of his essay "Investigations in Collective Forms" in 1964. In this paper Maki presented the results of his analysis of the relations between the parts of a city and the whole urban form, an approach also present into the studies of some other European contextualists (Van Eyck, Hertzberger). According to the study he defined 3 basic frameworks of aggregation (spatial linkages) that always exist among the buildings in the space: "Megaform", "Compositional Form" and "Collective Form", following to the connective nature of their spaces.[ccclxvi] The analysis on these 3 urban paradigms was conducted considering both the links between the spaces and the human activities which generated those spaces, and in the same time were shaped by the same urban spaces. The main interest of Maki was directed towards the nature and metamorphosis of the (public) urban spaces which, as exterior spaces, generated interior spaces and then became interior spaces themselves.[ccclxvii] Indeed in this short essay Maki named for the first time the concept of "Megastructure" as a new urban model for the challenges of the contemporary city, but as said before he never truly relied on the technology as concrete and definitive solution to the problems derived by the chaotic extension of metropolitan areas.[ccclxviii]

In 1960 Maki attended the 1960 Team X meeting near Avignon, France where he was attracted by the studies on the origin of urban formand in the architecture of traditional settlements (vernacular and "primitive" architecture) illustrated by Van Eyck.[ccclxix] Since then he was engaged in studies on formal and spatial rganization of various settlements, focusing on collective forms as antitode to the process of disintegration of the modern city, and refined his theories mostly under the influence of American

approach of investigation. The research about the nature the urban elements and how these are linked in the space and time to create a comprehensible and human evocative urban environment led Maki to conceive the city basically as a system of collective forms linked trough communication networks. During his study in Boston (the same city which at the time also had a great influence on the theories proposed by Tange) from 1962 till 1965 he conducted estensive surveys on the traffic movements of the city and the results were published in US in 1965 in the pamphlet titled "Moviment Systems in the City" which was the summary of his theory of linkage and was intended to define an alternative idea of the modern city (based on the concept of group form) instead of that proposed by the megastructural trend (based on the idea of megaform) which gained so much popularity in the arly 1960s. Maki's linkage theory aims to discover and define an architectural form suited for the massive flow of movement due to the recent improvement in the urban transportation of the modern city, and to create an architecture capable to integrate highways, mass transportation facilites, subways, garages and so on in the living fabric of the city. The theory is based on the identification of strategic transportation points in the modern city (similar to the "nodes" proposed in 1961 by Kevin Lynch in his method of evaluation of the image of the city) aimed to the creation of an efficient and integrated system of different scales of movement channels and interchange points (linkages) as the basic layout of the city plan. Maki conceived for the city the development of an integrated network of strategic transportation points of movements exchanges (stations, bus stops, etc.), and the development of totally new urban facilites in the places frequented by pedestrian for moving purposes, which Maki calls "City Rooms" and "City Corridors", and design and represent as new fundamental architectural icons of modern city with a powerful visual impact.[cccLXX] As matter of the fact linkages appear to be as architectural elements/ urban places which act as mediators (or movement stops) for the transition and the passage from (or to) diverse movements areas. They are effective "links"between 2 different domains seen as places or activites, and mold the whole city as an effective interlocking system of movement corridors and structural armatures, capable to grow and change, supporting housing function and other uses, and surrounding the main preexistent urban fabric.

As a matter of the fact Maki envisages a city organized as an open-ended system through a network of strategic transportation points and the movement of pedestrian generated by those points. In other words Maki considered as the modern city image was generated by a system of communicastion channels as pattern of movements which unify the whole city and can suggest its further expansion. According to Maki: "[link is]…the activity…of making a comprehensible and human evocative urban environment. It is one of the primary theses of my study that once a link is established for any reason, it takes on a complicated secondary sytem of meaning and uses".[cccLXXI] Indeed the general meaning of the linkage is extended not only as physical presence, but also as time concept, intended as relationship created among elements of different ages following the natural cycles of life and dacay, which Maki sees as proof of the morphological change shown in the diverse character of the city in the time.

It appear evident as both the analysis on the importance of the transportation as central element of the modern city and the deep reflection of the issue of the time as key concept (the concept of cylces) in his

urban theory proved to share (at least in part) a common ground with some of the contemporary Metabolist theories and with most of Tange's structuralist approach.

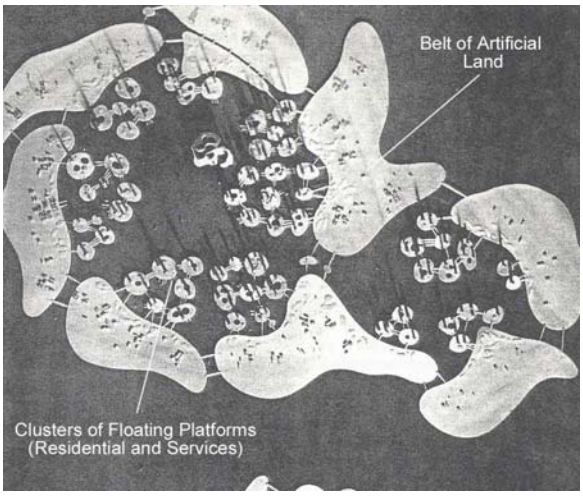
In 1965 he refined his previous urban and architectural approach and proposed another urban prototype named "Golgi Structure" developed from those same concepts. That structure was conceived and further developed on the principle that the urban elements of a city are perceived by the people fundamentally as mass of solids (buildings) and empty areas (streets), and the process of construction of the city, the final urban form and its evolution in the time usually is created and conducted by "adding" mass of solids in empty areas. On the contrary, "Maki began instead by designing a hierarchy of urban spaces. This preconceived exterior took the form of cylinders and cones in his highly abstract models. As the built environment developed, the solids began to fill in the areas around these voids, so that the exterior spaces evolved into large urban rooms with the qualities of interior public spaces".[cccLxxii]

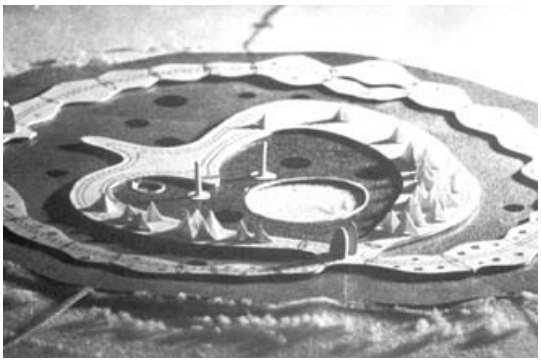
Maki's main interest in urban planning became the research on the relation between the single elements and the final form of the whole, and his design approach and methodology were indeed influenced by this subject, so that his started to create his project by focusing in the functional spaces which defined the units and from these he conceived the whole, as the sum of the urban blocks define the whole city.[ccclxxiii] This personal methodology led his architectures to be seen as complex and refined elements which must be interpreted with the eye of urban designer, as they can be fully understood only if they are inserted in the broader context of their surroundings.

The Albertian and Palladian concept which compares the buildings as "a city into the city" (and the the concept of the city as a small house, and the house as small city) was derived also from the reflection about the works of Aldo Van Eyck, member of Team X, and stressed the importance of the urban studies in the architectural philosophy of Maki which led towards the image of the city as ordered (but not necessarily with geometric patterns or schemes) group form. The process of intellectualization of his urban and architectural methodology went further by reconsidering the value of ancient Japanese tradition in town planning and architecture. Comparing the sense of Japanese space with the Western urban principles, more and more in the following years, after his return back to Japan in 1965 he discovered the precious concept belonged to the tradition of ancient Japanese city, and analyzed as the modern Japanese city presented a heterogeneous environment which was directly influenced by a different sense of the planning.

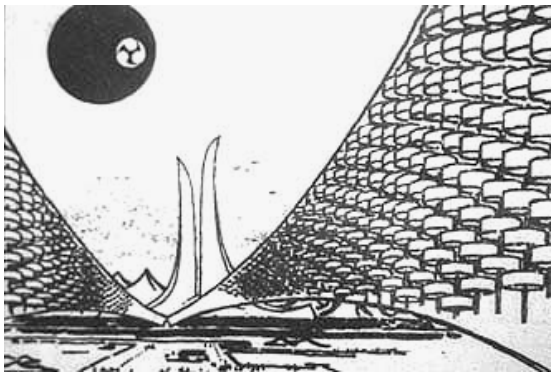
Maki noted as in Japan the city presents layers of fragmentary and collagelike quality of the urban fabric, which rejects the concepts of mathematical order and where it is absent the notion of clear visual urban core and general easily perceptible order, so tipical of Western cities as directly linked to the perspective laws. On the contrary, he rediscovered the value of the spatial "depth", or the illusion of secret spaces, in the concept of "oku", which he regarded as one of the most distinctive character of Japanese traditional city. The importance gave to the traditional native culture, as well as the departure from schemes and theories which originated in the context of western culture, became, for Maki as well as the other members of original Metabolist Group, although in different ways, the last step which denoted a progressive evolution and clarification of architectural principles which were born from the seeds of

Metabolism.

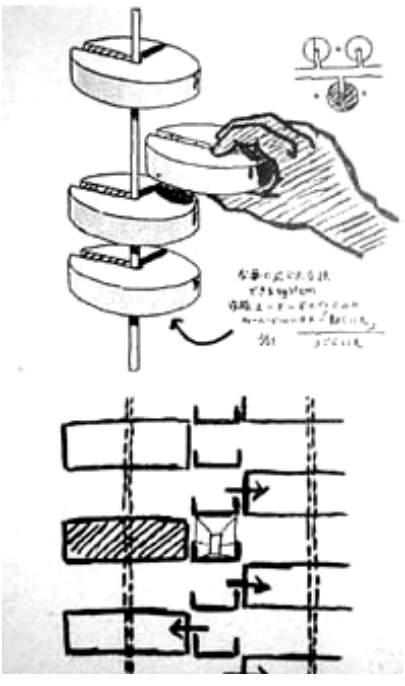


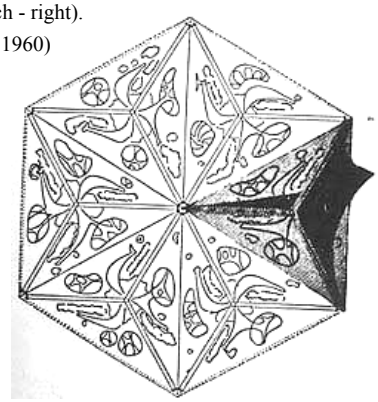


Marine City Unabara, which had several versions between 1960 (right) and 1963 (left), was an industrial floating city designed outside Tokyo Bay. Conceived as an archipelago of islands, , it was a modern, technologically advanced and exotic version of a self contained city based on the model of Howard's "Garden City" and made by clusters of platforms hosting multifunctional residential and service blocks. The size and the population were limited, and a further growth of the city, according to Kikutake, meant the "split" of the city herself, just like the cellular process of duplication. (photos from Kikutake, 1960)



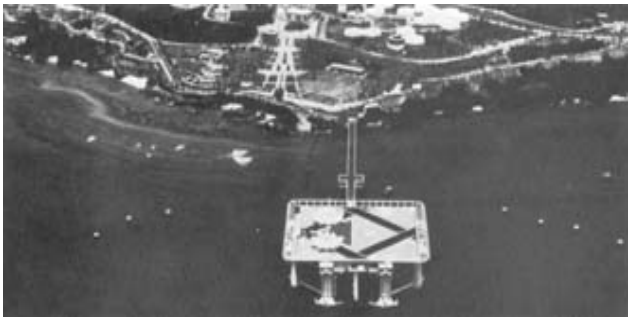
The project for marine city "Unabara" (1958-60) was one of the most famous proposals by Kikutake published in the Metabolist Manifesto, and combined the main themes of artificial land, marine cities and new building technologies. The residential units were a further version of Le Corbusier's concept of "bottle-shelf", and they were plugged in (piled) on the main frame to form three-dimensional blocks like huge sails. The services of the city were set on the ground floor, and the residential area was devised as a system of suspended capsules which recall Fuller's Dymaxion House (sketch - right).
(photos form Kikutake, 1960)

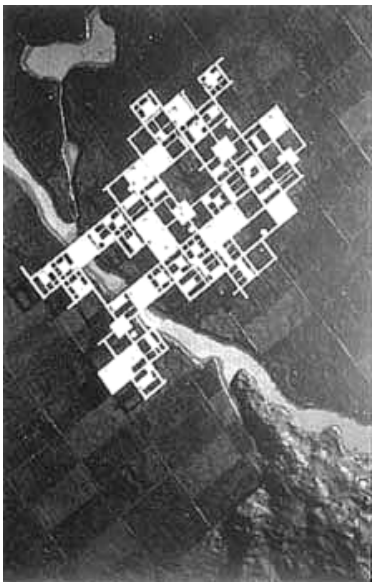


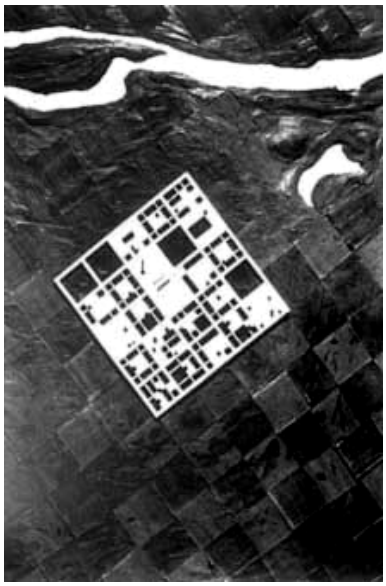


The capsule-apartment designed by Kikutake was inspired by the concept of “Movenette” (a special set of electric appliances/fittings and equipment units), and the cyclical change of all its internal and exterior elements, proposed in the project for Marine city “Unabara” - 1960. The capsule was made of modern and light materials (aluminum and plastic, the same used for the building of ship containers), ideal for a fast industrial production and construction, and was supposed to live for 25 years. The central void of the capsule, according to Kikutake, was meant to house a special mechanism which could rotate the apartment on its own axis. (photo from Kikutake, 1960)

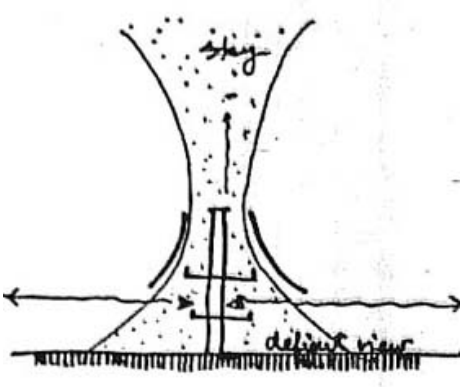
The activity conducted by Kikutake was mainly inspired by the new building techniques from civil and coastal engineering. The plastic beauty of the tall towers which arise from a platform, together with the interest in marine structures as floating artificial land, were basically his favorite themes in search of new models of mass housing structures, as can be seen in the project for “Tower City” (1963-above), or the “Osaka Expo Tower” 1970 (left) and the marine structure for “Aquapolis”, Expo 1975 in Okinawa (below), inspired directly by the schemes of offshore drill platforms. (photos from Ross, 1976)

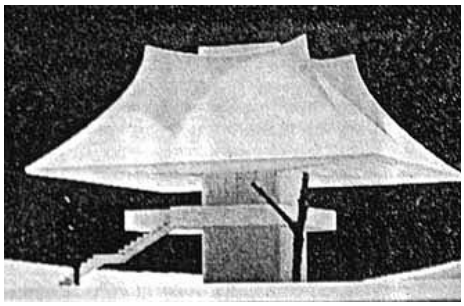




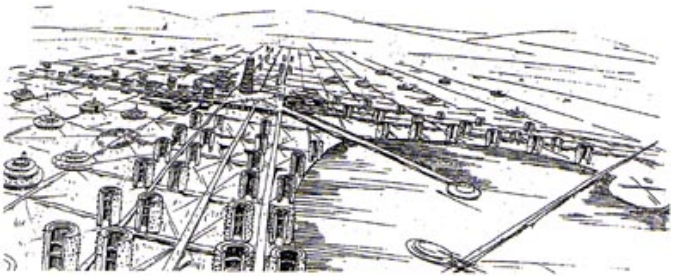


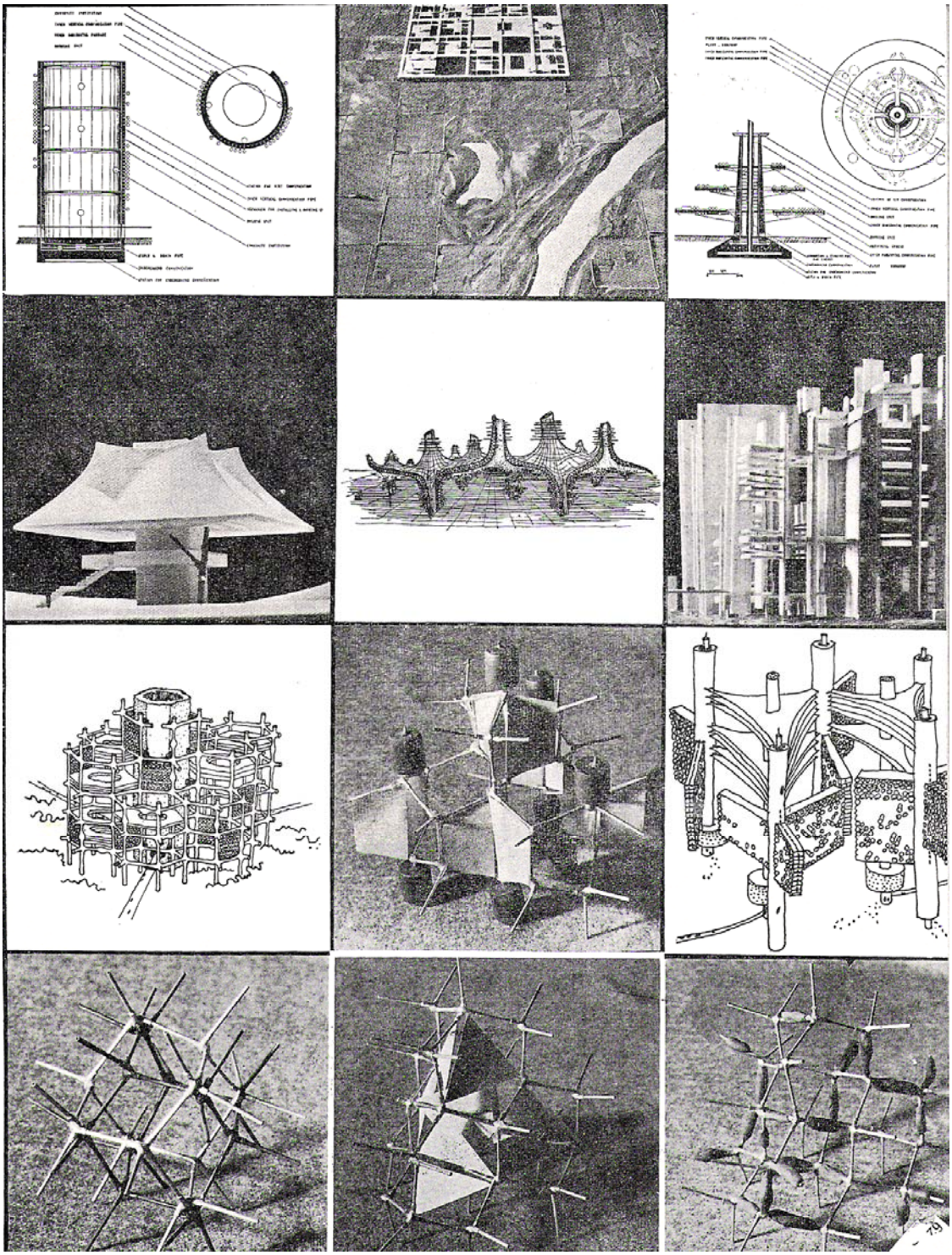
Two versions of “Agricultural City” and a conceptual draft for a new prototype of housing, designed by Kurokawa as an urban model which would combine together countryside and city in 1960. It was presented at the exhibition of MoMA in 1961, and became one of the distinctive projects of Metabolism. In spite of the order of the grid and the modern image of the urban layout, the fundamental idea of the pedestrian streets arose in the sky and the development in the urban design strategy of special areas of meeting was inspired mainly from Peter and Alison Smithson’s model of “Haupstadt Plan” for the centre of Berlin designed about 2 year earlier.
(photos from Kurokawa, 1977)



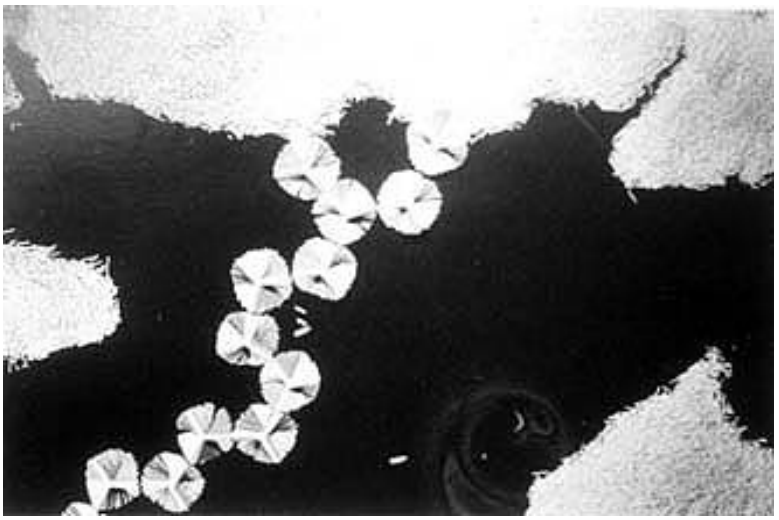


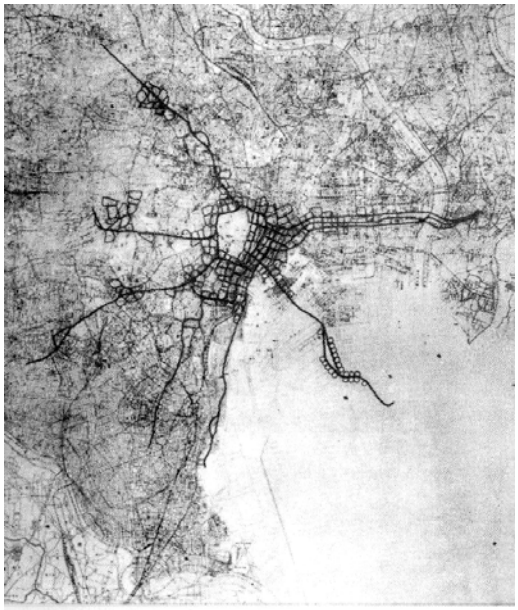
“Neo Tokyo Plan”, proposed by Kisho Kurokawa in 1960 and published as his contribution to the Metabolist Manifesto for the development of a new urbanism in occasion of World Design Conference in Tokyo in 1960. An earlier example of Kurokawa inclination for mega project still conceived in the spirit of rationalist “tabula rasa”.
(photos from Yatsuka Hajime and Yoshimatsu Hideki, 1997)

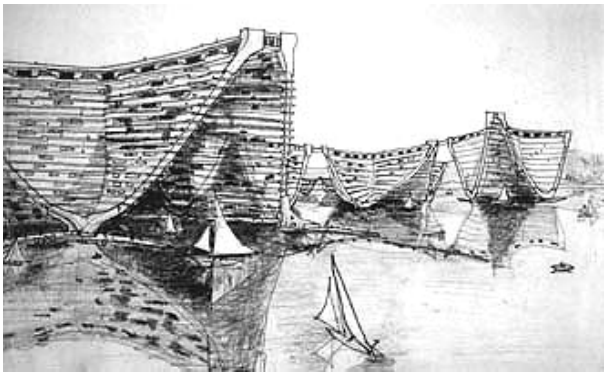


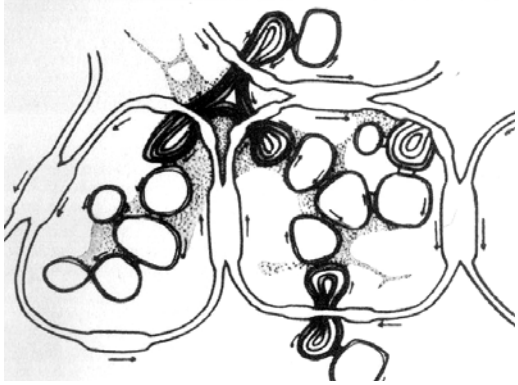


Kurokawa was among the main supporters of industrialized architecture, and his researches on ship-containers for the development of some modern architectural prototypes were implemented especially for the design of capsules and other housing prefabrications systems. His projects of early 60s reflect basically the idea of urban architecture for mass housing as a complex system of main structural frames and movable and light plug-in boxes able to spread in the space around and form clusters of buildings. This conceptual model of architecture eventually became the well-known fundamental icon of other Metabolist architectural and urban projects. (Photos from Kindai Kenchiku, November 1960)



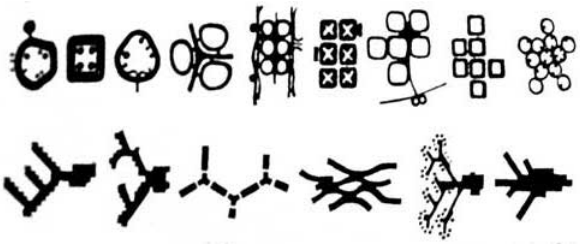


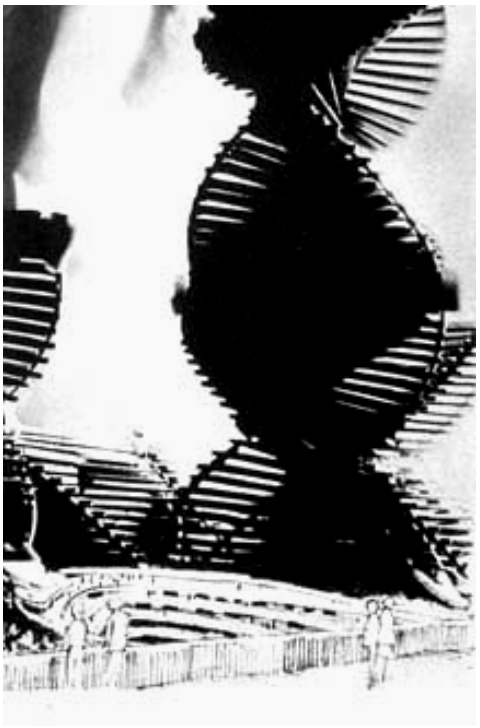




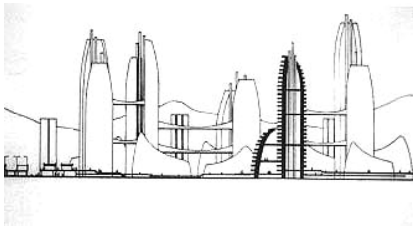
The theme of a “Floating City” as artificial land was the key theme for the Metabolists. This project for a city to be built on the water of lake of “Kasumigaura” (above and below), near Narita Airport, was developed by Kurokawa simultaneously with the project for a “Helix City” in 1961 (left).

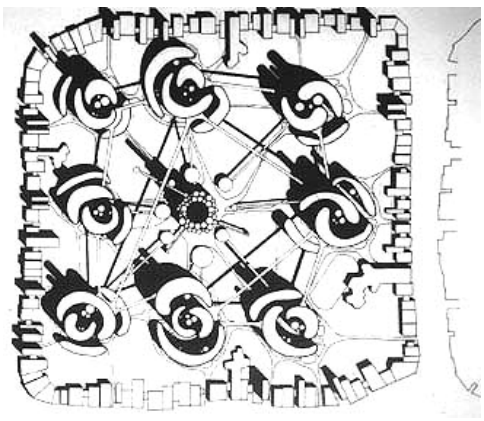
Kurokawa considered the city as a complex and organic transportation system which functioned as communication network whose streets also worked as the main structural frame of the urban settlements, which were conceived as modular blocks capable to develop and spread in any direction, with no concern for the preexistent urban and natural environment. His studies on the interconnection and the clustering of the urban blocks in the city follows the same principles he adopted for the architectural compositions of buildings by means of modular capsules (below). (photos from Kurokawa, 1977, Dahinden, 1972)

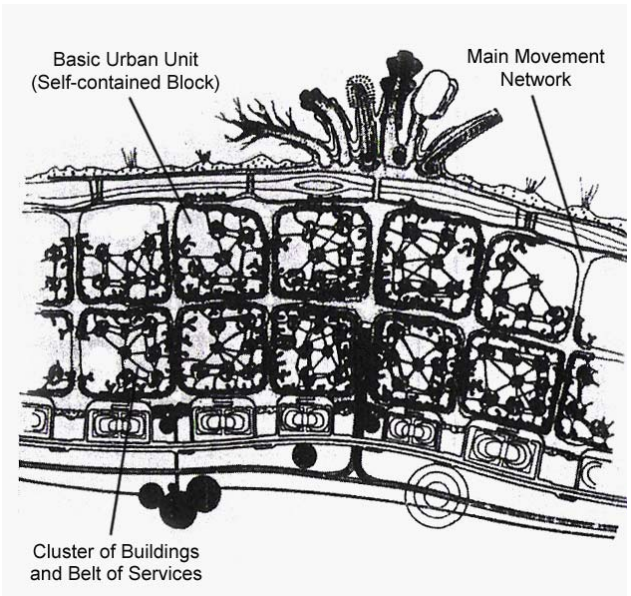


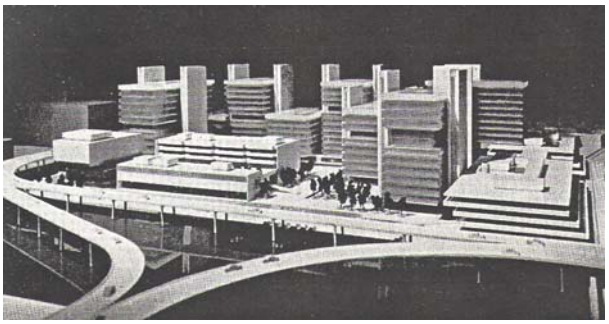


The urban project of “Helix City” (above), which reveals the influence of Kahn’s project for Philadelphia city hall (1956), was intended originally as proposal for the redevelopment of Shinjuku and Ghinza district in Tokyo (1961). However it evolved further as an urban model which presented several versions, such as “Methamorposhis City” in 1965 (below), a city composed of self-contained neighborhood units (filled in the center with services and housing residences) linked to each other by a web of streets and communications channels, whose image recalls multi-cellular organism according to Metabolist favored metaphor for the city. The new image of the urban form, baroque and irregular, clearly departed from the rationalist city. (photos from Banham, 1976; Kurokawa , 1977)

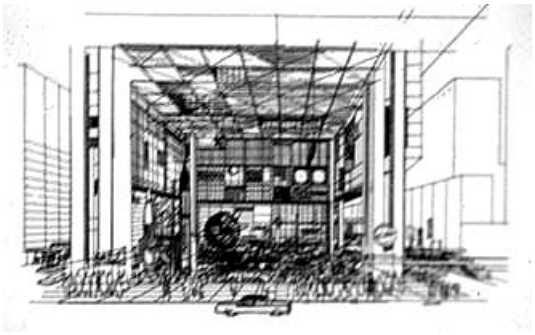


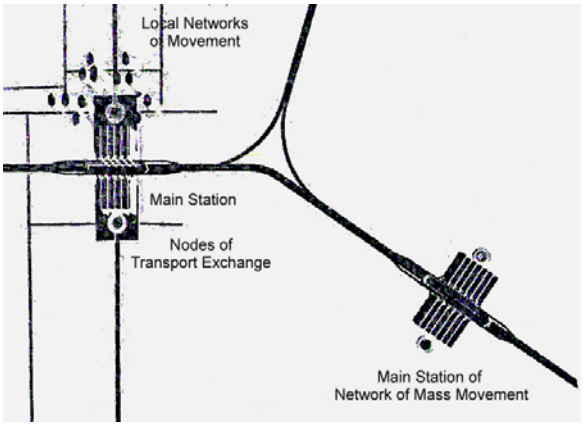




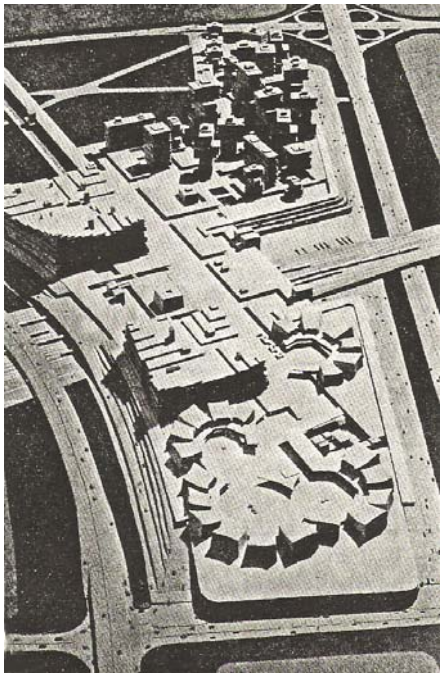


Otaka's Sakaide Plan (1963-left) and Maki's Dojima Redevelopment Plan (1963) show the concept of "man made land" as artificial land, already used for proposal of urban development of Tokyo into the sea (1958), set in the middle of the city. This concept defines an urban environment suitable to create additional building space, but also identify a somewhat alien and "different" urban space around the existent context which doesn't integrate at all. (photos from Boyd, 1968; *JA*, June 1966)

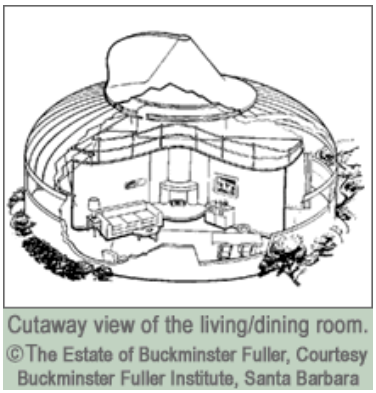




In his essay published in 1965, Maki conceived the city as an integrated system of buildings and communication networks. He devised what he called a set of city rooms (as interchange place) named "Atrium" as key interchange zone and as urban plaza, which were fundamental to his linkage theory aimed to connect the urban places by means of a web of strategic transportation points. (photos from Riani, 1968, *JA* June 1966)

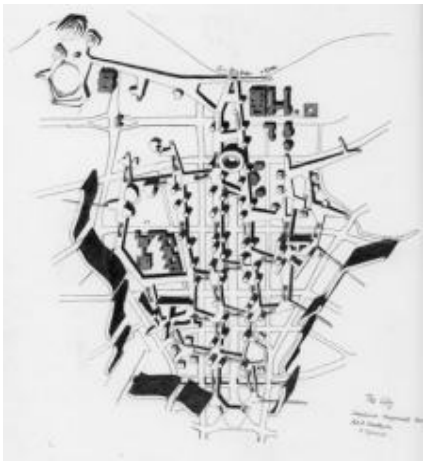


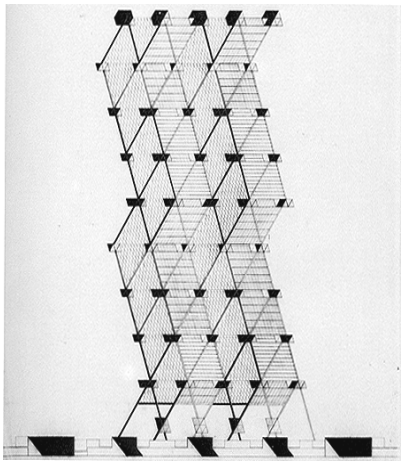
Otaka and Maki's Shinjuku Redevelopment Project (1960-right) configured the new district in Tokyo as a collection of buildings and facilities (above a series of theatres) as "group form" objects on a kind of urban "podium" which stands as artificial land above the ground of the prexisting city. (photo from Riani, 1968)



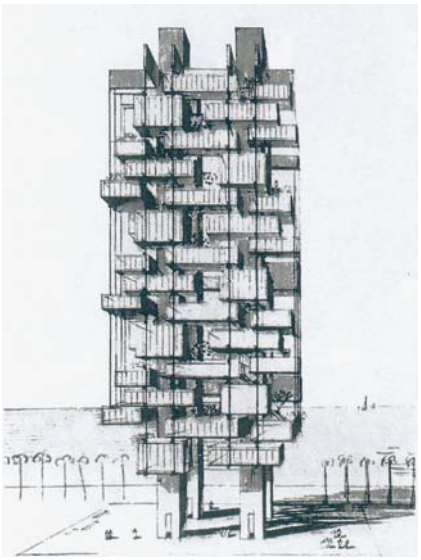
Cutaway view of the living/dining room.
©The Estate of Buckminster Fuller, Courtesy Buckminster Fuller Institute, Santa Barbara

The project for "Dymaxion House" was developed by Buckminster Fuller in 1927. Intended to be a prototype for serial production, this house was made of a structure of metal and plastic and suspended at a central mast. (Source: Fuller official website)

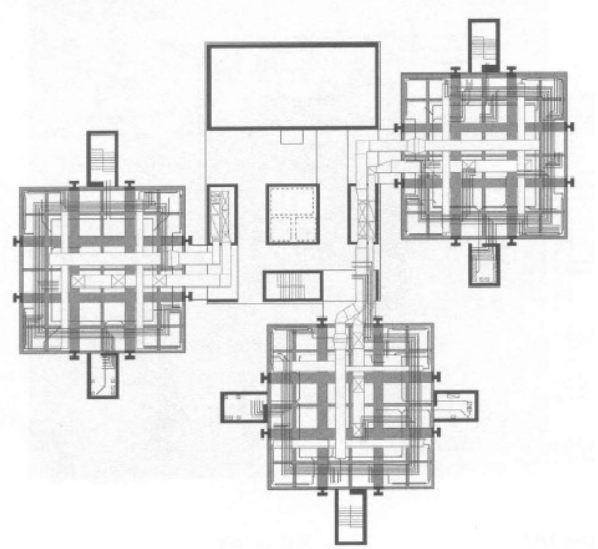




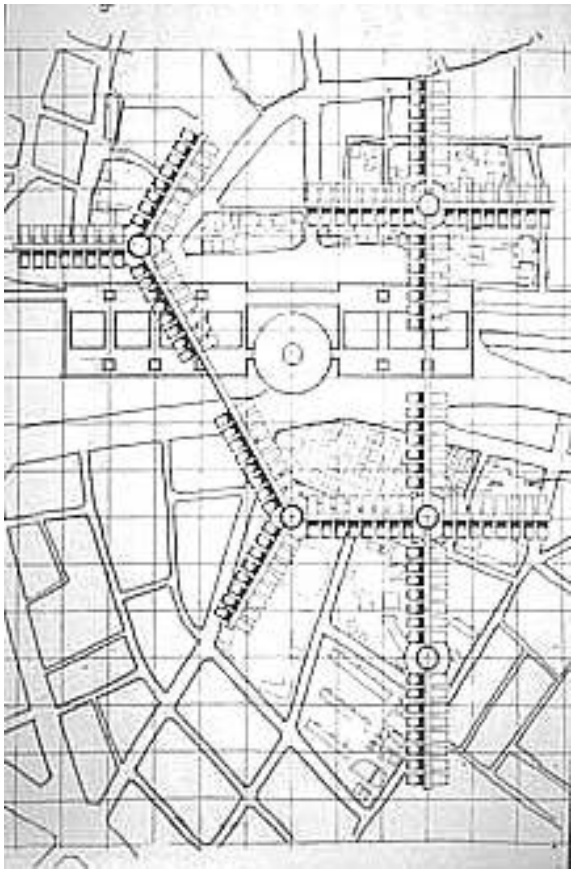
Among the main references which can be found in some projects by Kurokawa developed in the 1960 there are Alison and Peter Smithson's "Haupstadt District" for the center of Berlin (1958-above right), and Kahn's "Philadelphia City hall" (1956-58, left). Smithsons's project was influential in the development of "Agricultural city" (1960), as both share the same basic concepts such as the use of a web of pedestrian platforms arose above the soil, a layout extremely flexible and open, the idea of clusters of buildings as terminals of movements. Kahn's project for a city hall in Philadelphia downtown, which Banham consider among the most influential model of megastructures, proposed a monumental and symbolic architectural image which Kurokawa also implemented in his "Helix City" plan (1961). (photos from Christian Norberg Schulze, 1976)

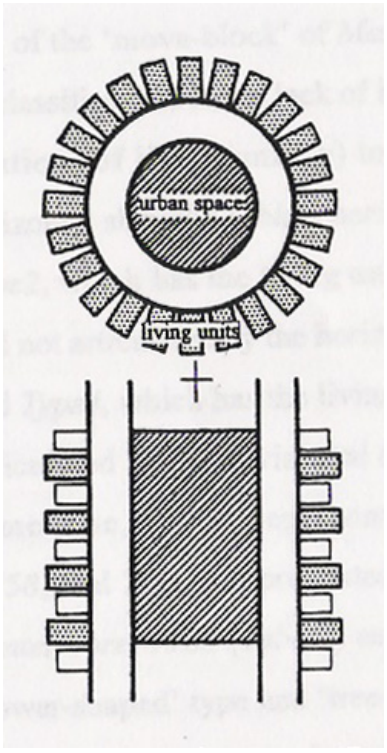


This project by Bertant Goldberg was named "Marine Towers" and built in Chicago from 1959 to 1964. These 2 multi functional residential towers housed apartments, parking lots, office spaces and other public facilities. On the contrary, the tower designed by Paul Rudolph (1954-side) was intended as residential high rise building with apartments as boxes branching out from the central cores, a solution whose visual effect anticipated Kurokawa's Nagakin Tower and other Archigram projects. (Paul Rudolph, 1970)



Since the late 1950s the search for essential forms and combinations, as well as the adaptability to changing needs, led to express the flexibility of the contemporary architecture directly through simple forms with high evocative technological structures and easily perceptible compositional hierarchies and space organization Above some examples such as Kahn's "Richards medical Research Building (l1957-1964, left) and Aldo Van Eyck "Amsterdam Orphanage" (1958-1960). Buildings were subdivided into networks of modules and elemental components according to the concept of "short term-long term" cycles of use, concepts also present in the background of Buddhist philosophy。
(Below, Arata Isozaki7s "City in the Sky – II, 1962, and Kikuatke's scheme of "Towers Shape City", 1958).





Chapter 6

Megastructures during the 1960s

Chapter 6 - Megastructures during the 1960s

The years between 1950s and 1960s saw the ongoing process of reconstruction after the World War II fulfilled, experienced a period of hope, anxiety, chaos driven by economic prosperity. The dawn of the Era of Space Exploration, the development of new sources of energy and the spread of new technologies as consequences of scientific research, created a growing contrast between younger and older generations and promoted new radical changes. Also the architecture was influenced by the atmosphere of those turbulent and optimistic years, and one of the main issues which caught the attention of the architects became the "urban crisis" of the contemporary city, and the search of alternative urban forms.

The weakness of the design principles and urban methodology developed by Modern Movement during the 20s and the 30s and worldwide accepted since the and of WW II, whose failure in the projects of postwar urban renewals appeared clear during the 1950s both in European and American cities as witnessed by many publications of the time such as 1961's Jane Jacobs essay, stimulated the research and the experimentation of new architectural models able to represent the higher grade of complexity of contemporary metropolis and the bigger scale of the urban phenomena, defined by some scholar as the debate over "the poetic of the new dimension",[cccLxxiv] which principally expressed concern about to the "issue of great numbers" and the consequent necessity of reconsidering the means of planning. Most of the urban designers and architects detected two main ways to overcome the urban crisis of the time: some tried to regenerate the historical city and emphasized the human scale of familiar neighborhoods districts; others pointed towards the development of a comprehensive urban image and form, according to the concept of mega-scale and self-contained urban settlement which had its model in the megastructures.

In the 1960s the megastructures were studied as potential alternative to old urban and architectural patterns in Japan as well as in all the developed country, aimed to overcome the fundamental problem of lack of legibility of the post-war industrial city and to create an innovative urban landscape more responsive to the needs of a modern society and to the natural environment, integrating the single building and the whole city both functionally and visually by means of more complex and varied interrelations.

6-1. Overview of the Postwar Urban Design Theories and City Models in the Western World

Since the beginning of postwar years and during the peak of the process of reconstruction, while it was still strong the willingness of continuing in the path set by Modernist tradition both in architecture and city planning approach, it could be seen the growth of a new generation of architects and planners, and the progressive development of a phase of critical revision of the Functionalist principles and methods.

The Functionalist city, which was conceived and expressed as a mechanical form of interrelated but independent and well ordered parts with specific functions and separations, became the universally accepted model implemented in the planning of new large urban settlements and small neighborhoods, from America to Europe and other developing countries.[cccLxxv] The predominant idea of economic

regeneration through urban development which dominated the economic boom of 1950s and 1960s, fostered the construction of huge and extensive systems of infrastructures in the cities as urban and interurban networks of movement, communication and energy supply integrated with public spaces, industrial and residential zones, to support the fast urban growth and create a solid basis for, as it was truly hoped at the time, an overall social order and harmony.[cccLxxvi] Basic planning concepts derived from pre-war urban theories and sources, such as the concept of decentralization and the importance of an efficient transportation development aimed to control the urban congestion, assure a good functionality of the industrial systems of production and foster an ordered dispersal of activities and people on a regional scale, were assumed as key elements in the design of new housing complexes and in the proposition of the "new towns" and "satellite towns" policies proposed for a great number of new rational cities by many governments in US and North Europe.

However the implementation of these same rationalist principles in most of the carefully planned projects of "slum clearance" and "urban renewal", as named in America and Europe the construction of extensive, geometric modern and healthier housing settlements and neighborhoods based on abstract schemes, which were intended as tentative to improve the living conditions of low-income people and give them higher standard dwellings, resulted into an epochal failure both for the poor quality of the housing complexes and for the drastic alteration of preexistent urban environment.[cccLxxvii] The main consequence of the dread effects of large scale redevelopments and in general of the irreversible urban growth was the loss of the familiar community-based neighborhood and of the traditional image of the city as something coherent and comprehensive, so that the city appeared to be more complex and chaotic than ever. The dissatisfaction with and the criticism of the traditional tools of urban planning and design, and the awareness of their evident failure in controlling the growth of extensive suburbs of what was seen as an "exploding metropolis",[cccLxxviii] became functional for the complete collapse of Modern Movement theories, and gave way to new researches, methods and strategies to shape the modern city. In particular 3 issues were felt as the priorities of the time and became catalysts of fundamental investigations: the issue related to what has been called the debate over the "Poetic of the New Dimension", the problem of how to regain the comprehensibility of the modern city as total visual image shared by all the citizens, and the search for an effective relationship between the singles urban elements and whole urban system in the industrial metropolis (namely how to create a link between individual buildings and the entire city).[cccLxxix]

New fundamental publications appeared in the early 1960s and marked a turning point in architectural and urban design for the following decades (Kevin Lynch, 1960, Gordon Cullen, 1961, Jean Gottmann, 1961, Christian Norberg-Shulz, 1963, Christopher Alexander, 1964). More and more influential on the theories and the schemes of designers and planners became the new social sciences, and particular relevance was assumed by the Structuralist thinking, which originated by studies conducted in the field of Linguistics. New movements in architecture, which called themselves as "Neo-" or "–ism", multiplied and spread with vigor, each of them proposing urban projects which stressed their common vision of the contemporary planning of the modern city as a scientific process aimed to forecast and anticipate the

conditions of a likely future. Whereas some proposals emphasized the new scale of interventions for a city that became a megalopolis, and consequently proposed bold visions of utopian technological urban environment made of transient structures, rejecting the forms of the existing city as extreme expression of the influence of industrialization and standardized mass production over the human habitat, many other more realistic and effective projects and movements derived from the rediscovery of urban quality of old patterns of living in the city of the past, and in the attempt to restore the nostalgic image of the traditional architecture.[ccclxxx] Especially this last attitude, supported by the shame of the destruction of many ancient urban fabrics occurred in the cities during the last decade, promoted and spread a renewed general interest for history, which resulted into a deeper interest in particular for the vernacular architecture and pre-modern urbanism, in search for the basic elements of urban image and forms and new principles of compositions.

In general in Western countries in this period it possible to detect, apart from the still persisting modernist lesson, many different stances or approaches in the methods adopted as a new fundamental theoretical basis for innovative urban design and city planning schemes, which however gave shape to 2 main basic philosophies and urban models. On one hand, according to the Humanist and Regionalist Approach, some architects and planners, such as some of the members of Team X and of the Dutch School, trying to regenerate the historical city and the human scale of familiar neighborhoods with their complex and close social structures, opted for a decisive shift to a smaller scale of design, and conceived the city as a collection of mixed used enclaves as parts of a system of interrelated urban (village like) clusters composed by simple geometries. On the other hand, other architects were influenced especially by Structuralist thinking and by the Systemic Approach, and, rejecting in part the validity of lessons of the preexistent urban fabrics, relied heavily on technology and transplanted the idea of industrialized system of production into the construction of human settlements, opting for large scale projects. They envisioned the city as an polycentric and efficient system of ordered and interrelated webs of functional connections of places and movement corridors for vehicular transportation, which supports other urban elements (housing, services, public spaces) as integrated appendixes, and creates an extremely flexible, dynamic and changeable overall structure able to define a comprehensive urban form and image, as it is the structure of movement that become the unit of order of the buildings of the city.[cccIxxxi]

6-2. Origins of Megastructural Trend and Crisis of Functionalist Urban Theories

Many critics have observed as all around the world the 1960s experienced a period of hope, anxiety, and chaos. In spite of the world was basking under economic prosperity, the existing order of society and value system were threatened. Amid the impeding threat of nuclear war between Capitalist world and Communist world, the assassinations of Martin Luther King and John Kennedy, the landing on the Moon, the Vietnam War and Student' Movement originated in France and spread with its explosive force to many other countries, the contemporary society and the traditional ideas witnessed a bitter contrast between

younger and older generations. Also architecture was influenced by the atmosphere of those turbulent years, and one of the main issues which interested architects and urban planners became the "urban crisis".

Disputes arose against the excessive rigidity and immobility of Functionalist theories, which prevented the development of new artistic languages in the field of design. The fast transformation of the people toward a mass consumer society more and more demanding was driven by the presence of many new cultural factors such as the study on new production techniques and materials (plastic, rubber, etc), a sense of general optimism following the end of the war, a good economic situation which boosted the consumptions, an aptitude of consumer goods to change easily, and those factors became instrumental in the searching for a new design methodology and its further development.

As already noticed, by the late 1950s the failure of the design methodology developed by the masters of Modern Movement during the 1930s led towards the experimentation with new architectural theories (such as the "Structuralism", "Regionalism" and "Theories of Systems") and prototypes, which rejected the rationalist approach and the main prescriptions of the International Style.[ccclxxxii]

The reasons which led towards the criticism of the theories promoted by the masters of the International Style before the Second World War was clearly summarized by the architectural historian Spiro Kostof: "The validity of those untested international [modernist] solutions for the basic issue of living in cities looked questionable, both to the profession and those outside. Fresh observation by social planners, especially in the realm of public housing, showed conclusively (…) that users were unhappy with what the architects had deemed exemplary and imposed from above. Internally, the younger followers of the modernist line pushed for reforms. They challenged the universalist posture of the masters, their pretense of omniscience. (…) Total design had proved unpalatable. The call now was for variety, flexibility, the semblance at least of spontaneity".[ccclxxxiii]

Whereas the Modern Movement identified the ideal city with the functional city, and argued that a good urban planning could have generated a good architecture by means of the instrument of the zoning, the crisis of this theoretical approach in the postwar years urged the architects to withdraw from rationalist design methodology and to pursue the resolution of this impasse in search for formal invention of their works, promoting, as pointed out by Italian critic Giulio Carlo Argan "the technological boom of contemporary architecture"; this situation drove towards architectural proposals whose nature was in opposition to the Rationalist program of dissolving the architecture into the urban planning, and, in opposition to this point of view, promoted the design of huge structures of big size and with a complex internal organization like that of a small city.[ccclxxxiv]

As consequence, among the most radical and popular architectural trend during the early 60s was the development of the so-called "mega-structures", as a kind of architectural prototypes based essentially on the power of modern technology (as the massive structures to build them required massive engineering as well) and seen as an innovative urban model which connected and integrated, concerning the creative process for its design and development, both architectural and urban design considerations, so that they were regarded during all the decade as a kind of "panacea" to the evil of the chaotic city growth.

In his "Urban Structures for the Future", a book published in 1970 as anthology amied to collect many examples and models of the megastructural projects developed during the previous decade, the Swiss architect Justus Dahinden described the "urban crisis" of the '60s as the consequence of many factors basically related to the lack of flexibility of urban schemes of the contemporary cities which failed to cope with the dynamic society of the period composed by a population of "urban nomads". According to Dahinden the problem caused by the concentration of population into the big metropolitan cities was the consequence of the urban sprawls promoted by the dynamics of change in the modern society and economy, and he pointed out that it could have been possible to control this tendency by means of the use of "megastructures" and creating a compact, "dense" city which could gather into an organic frame the different social groups and activities, integrating together the urban structure and public and private activities of society. According to him: "Faced with an urban society that has grown insecure due to the present inadequacy of urban design, the town planner must try to provide a range of 'possibilities' designed to cater for every conceivable kind of activity but without imposing a preconceived and authoritarian schema by creating actual 'objects'. The mobile urban forms which have already begun to appear on a modest scale would surely seem to indicate that the traditional town, which reflects conventional bourgeois attitudes and caters for the needs of a static society, is no longer desirable. (…) What is now needed is a new development which will reintegrate our social and urban structure and reunite the different social groups and activities. Consequently, future town planning must be synthetic; it must establish a new unity between architecture, economics, communications and social contact. For this reason contemporary planners are recommending that megastructures of enormous compactness should be built: instead of being spread out over a wide area of the different social sphere will be 'packed' one on the top of other".[cccLxxxv]

As also noted by other scholars, Dahinden stressed the importance of the social and technological revolution occurred in those years which promoted futuristic proposals in architecture and emphasized the role of the mass transportation and the need for innovative urban structures such as the megastructures, which furthermore represented a solution suitable to overcome the limits in the city planning due to the excessive fragmentation of urban land, and capable of controlling the growth of the city and respond to its future needs thanks to their expansibility and changeability.[cccLxxxvi]

Although the projects spread all over the world showed a somewhat evident utopian character in the exasperation of the of the futuristic forms, indeed they were sensitive to the nature of the deep changes occurred into the realms of society, economy and cultural values of the time, as well in the diffusion of new theories and researches into new scientific disciplines. Especially the town planning reached a further level of complexity as new disciplines such as sociology, geography, economics influenced directly or indirectly its methodology of research requiring new competences and survey instruments.

In 1930 the geographer Walter Christaller published his theory of "Central Localization" which introduced the concept that the city should be analyzed in relation with her surrounding territory. In his theory Christaller defined the city as the centre of a system of services and activities which spread an

influence range on the territory whose area depends on the importance of service offered to the people. As noted by the Italian scholar Emilio Battisti: "The importance of this theory lay in the recognition of the city as a structure connected with her neighboring territory: since then there is no meaning in researching only about the urban settlements to face the problems on a territorial scale. By studying the basic relationships which connect the city to her territory (…) (then) develop the research on the role of influence of the city towards other urban centers, the research on metropolitan areas, on city-territories and on the phenomena of conurbation".[cccLxxxvii]

Subsequently Jean Gottmann published in 1961 his famous "Megalopolis", which introduced a new model of urban development on a macro-regional level and furthermore confirmed the process of deep transformation of the traditional concept of city in the post-war years as well as the development of new of urban phenomena; these urban phenomena which occurred in the middle of the XX century indeed promoted new model of town planning which encouraged the architects to propose radical urban solution as expression of the criticism to the limits and the problems caused by the anachronism of the contemporary (tertiary) metropolises.

It was the crisis of the traditional model of city as it appeared and developed from the dawn of industrial revolution the main factor which prompted in Europe the spread of new ideas and theories in the field of urban planning ever since the end of XIX century. The change of architecture aesthetics during that period, which saw with the diffusion of the world fairs like the World Expos all over the world the spread of a new vision of the city as a mechanical world by means of the newest inventions and huge buildings built with new material and technologies (such as Joseph Paxton's "Crystal Palace" in London in 1853 and "Galleries de Machines" in Paris in 1889), introduced new reflections on the theme of the city of the future.

According to the architectural historian Benetto Gravagnuolo, who described the development of town planning theories in Europe between the XVIII and XX centuries, after the first blow of urban reform promoted by "Utopians" such as Etienne Louis Boulle, Claude Nicolas Ledoux and others British social reformers, there were 3 main tendencies which influenced the urban schemes of European cities at the beginning of the last century: the "Garden City Movement", which was influenced by Ebnezer Howard's theories of urban decentralization of the existing cities and referred to the Picturesque aesthetics; the tendency which proposed the continuity with the traditional way of (European) urban growth based without denying the value of the urban preexistence (such as in the projects of Hendrik Petrus Berlage in Amsterdam and Otto Wagner in Wien); and at last the theories of the "Modern Movement" during the 20s-30s, which proposed the urban reformation of the cities by means of the policy of "tabula rasa" by rejecting completely the their historical tradition and exalting the aesthetics of machine's world and the technological revolution, as stated in the early theories of Eugene Heinard, Tony Garnier and the Italian Futurists and carried out by Le Corbusier, Walter Gropius and other Rationalists.[cccLxxxviii]

From this point of view it appears clear, in spite of the inevitable differences due to the different cultural and contextual background, the deep connection that tied the theories of the masters of Modern

Movement, the radical spirit of reform behind their ideas and the strong impact of their revolutionary projects on the solution to the problems of the traditional city and her relation with the modern age of "machine and technology", to the fundamental goals of the megastructural movement and its vision of a new form of urbanism proposed from the early years of 1950s until the end of the following decade.

Indeed many aspects behind the logic which supported the megastructures as dominant architectural trend and design during the 60s in pursuing a real solution to the problem of modern city, as well as a way for the architects to overcome the "impasse" of the Rationalist ideology in the 50s, can be better understood if related to the cultural matrix of that design tendency, starting with the origin of CIAM theories and their crisis.

It was in occasion of CIAM meetings in 1929 and 1930 (the second and the third CIAM meetings ever) that some crucial aspects of modern architectural theories were discussed. In 1929, the CIAM meeting was held in Frankfurt and the theme of the discussions was the "existenz-minimum" and the economical housing, with many architects and designers who presented the outcomes of their independent research. The main concern on the economical housing and the small houses ("existenz-minimum") were an attempt of the masters of Modern Movement to response to the capital problem of the shortage of houses for the lower class in the pre-war Europe during those years. The necessities to give a house to every common laborer promoted an intensive phase of research and study to determinate the characters of the best house possible for the lower class in terms of quantity, quality and, above all, cost. The main result of that meeting was the awareness to develop architectural typologies which presented optimal "minimum" living standards (for the dimensions of the furniture, the rooms and the house), with rational form and built with modern material by means of prefabrication and other industrial processes to reduce the costs of production. The minimum level of the houses was intended to balance both the demands of the costs and the "biological" needs of the people. Among the projects presented at the meeting there were those of Alexander Klein, who presented his research on the dimensional standards for the houses, and Walter Gropius, who introduced his presentation on the "sociological premise of small apartment", which described the general features of the modern lodgings and their relation with the preexistent surroundings. The theme of the next CIAM meeting in Bruxelles in 1930 was "the rationalist block", and the projects were intended as urban models for low income people. Many projects, especially those presented by German architects, were conceived as high buildings composed by small apartments integrated with collective facilities. The blocks were supposed to be organized keeping a distance that could let air, light and direct sun pass by the buildings, which were surrounded by large green areas, all conditions absent in the lodgings of the European working class in the XIX century.[cccLXXXIX] Gropius presented a scheme illustrating the urban prototype for the modern building block which eventually became an effective model recognized as expression of modern functionalist architecture for the next decades. The model proposed was a dense and tall multi-family building divided up into a number of apartments which were designed according to the standards of the "existenz-minimum". There was no prescription regarding the limits of the height of the buildings, and the ratio height/distance between the buildings was related to the lighting

conditions of the lower floors of each building (it was prescribed that every apartment must receive an amount of direct light also in the winter season). Furthermore the general lay out of the buildings, which were integrated with collective facilities (schools, markets, playgrounds), showed as most favorable shape an organization into linear blocks parallel to each other and surrounded by the streets (that were hierarchically organized) and gardens, the latter being necessary to assure the people of the maximum quantity of green, air and sunlight for their dwellings units.[cccxc]

Similarly to Gropius, in the same years also Le Corbusier proposed architectural prototypes which moved from the ideology of creating a better social order and a new urban environment for the working class by means of the fusion of new technologies, industrial production and a "scientific" design approach. The outcome of his researches and studies on the collective houses developed in the history of European architecture and on the new typologies suitable for modern housing was the project for the "Unite' d'Habitation", a building for 1600 people which housed 400 apartments, a hotel and many other collective services, built in Marseille in 1951.[cccxci] The inspirations for this project, as he stated in his "Towards a modern Architecture", were the airplanes, the steamers and all the other standardized containers, whose elements were industrial products, designed for a large amount of users, and filled with many collectives facilities so that the entire building was self-sufficient and independent from the outside.[cccxcii]

The same structure of the Unite' revealed the mechanical character of the building, which was separated into the main frame made of reinforced concrete, and the box of the apartments, made of steel, which could be easily inserted (and removed) into the main frame, denoting the great potentiality laying into the new building technologies with regard to solution (in terms of flexibility and cost of production) to the problem of the housing for low income people. According to his new "5 points" of the modern architecture, Le Corbusier laid on the last floors of the building several services for the people and designed a roof-garden complete with other collective facilities for sport activities (a gym, a pool, a cycle lane), creating another important architectural prototype for collective residence, which was intended as fundamental element in the construction of the modern city based on the slogan "house=machine for living", whose scheme eventually became the main reference for the architectural experimentations undertaken by the architects of megastructures in the following years.[cccxciii]

In his work "Megastructures: Urban Future of the Recent Past", Reyner Banham indicated Le Corbusier as the initiator of the megastructure trend in architecture. The project which set up this new tendency was the famous "Plan Obus for Algeri", which Le Corbusier designed in 1931, and it was the source from which sprung many other designs for complex urban projects in the following years, reaching the acme during the '60s. In the project for Algeri, Banham introduced as early general definition of the megastructure that of being a big structure composed by a huge primary frame containing many secondary interchangeable elements.[cccxciv]

The interesting point was that the drawing for the Plan Obus denoted a total indifference for the architectural style of the objects inserted inside the frame of the primary structure (the dwellings), so that this project described clearly the essence of the megastructure as a dimensionally relevant "bookcase"

containing an infinite quantity of secondary elements whose importance and relevance was insignificant compared to the main frame. The "macroform" of the main frame grew to spread over the territory of the city as far as the limit of her urban area and further, covering entire regions.

Although Le Corbusier was the first architect who influenced the development of the megastructures, the Japanese architect Fumihiko Maki, at that time member of the Japanese architectural movement "Metabolism", had the merit to formulate the first "official" definition for the word "megastructure". In his essay "Notes on Collective Forms" written in 1964, Maki alleged that: "…The megastructure is a large frame in which all the function of a city or a part of the city are housed. It has been made possible by present-day technology. In a sense, it is a human-made feature of the landscape. It is like the great hill on which Italian towns were built. Inherent in the megastructure concept, along with a certain static nature, is the suggestion that many and diverse function may be beneficially concentrated in one place. A large frame implies some utility in combination and concentration of functions".[cccxcv]

Other scholars and architects tried to detect the characteristics of the megastructures, such as Ralph Wilcoxon, who specified in 1968 that this typology was dimensionally a big and large building, built by assembling modular units, had infinitive possibilities of growth, and was a long-lasting structural frame which could allocate minor elements (such as houses, small buildings and so on) which lasted less than the main frame and could be plugged in after being prefabricated elsewhere.[cccxcvi]

Apart from the images of utopian schemes that proliferated in many projects, filled with imagines and forms often taken from the world of the fiction, it is possible to detect 3 simple solutions which became the main typological references for the designers and planners: the "tower-building", which can reach an unlimited height, the scheme of "artificial land" with a frame arisen form the ground by means of huge pillars which often contains the services, and the model of "linear city" as promoted by Le Corbusier for Algeri Plan and the "Unite'", both capable of infinitive extension along their centre of gravity axis.

Among those solutions, the former had a long tradition linked to the suggestions of American skyscrapers (which had as forerunners Luis Sullivan and the Chicago School in US, and Mies in Europe) and influenced many contemporary works such as those of Archigram and Metabolists groups; the second solution was presented in some proposals of Jona Friedman and the Japanese architects Arata Isozaki, both creating blocks of urban fabrics literally floating on the natural ground occupied by the preexistent city; the latter was the one which presented more similarity to the prototype developed by Le Corbusier (and may be more chances to be put into reality) and had to exert a profound influence on other architects, as showed in the case of the projects of the Paul Rudolph for the Lower Manhattan's Highway (1970). In this project, Rudolph drew a structure with a section shaped like an "A", dilating the space of the "street-corridors" of the Le original Le Corbusier project and transforming the inner corridors into a large communal central area, which was also reminiscent of previous famous projects such as Gropius's "Terrassenhauser-Project Wonhberg" (1928) and Tange's project for a residence settlement in the Boston bay (1959).

6-3. Main Typologies of Megastructures and their Failure as Urban Prototypes

However it was Justus Dahinden who attempted a more detailed classification of the various architectonic features and concepts used for the development of the megastructures. In his study he detected at least 7 structures which followed different design and spatial principles. The classification of his "urban structures for the future" listed the: Cellular Agglomerates, Clip-on/ Plug-in structures, Bridge Structures, Containers, Marine Structures, Diagonal in the Space Structures and Biostructures.[cccxcvii]

The "Cellular Agglomerates" were composite structures consisting of integrated modular units which accepted additional units creating a macro-structures or spatial structure, whose final form depended on the position of the cells added. An example of this kind of megastructures was Moshe Safdie's "Habitat",[cccxcviii] a project for residential units built in occasion of Expo 1967 in Montreal, and Alfred Neumann and Zvi Hecker's Apartments block in Ramat Gad, Israel (1960). "Plug-in Structures" was by far the most popular typology of megastructures during the '60s, which divided the structure of the building in a primary system and a secondary system, allowing easily changes and regeneration of the structural elements, and was promoted the "philosophy" of capsules which, according to general opinion of designers, were the ideal device to allow the maximum of individuality and privacy in a alienating society based on mass consumption. Typical examples of those structures were Archigram's "Plug-in City" (1964), Isozaki's Clusters in the Air (1961), Wolfgang Doring's "Stapelhaus" (1964), and the famous "Nagakin Tower" designed by Kisho Kurokawa (1972). The "Bridge Structures", built on vertical shafts which supported the entire spatial frame, derived form some modernist prototypes such as the Le Corbusier's "Unite' d'Habitation" and El Lissitzky's "Wolkenbugel". The modern versions of these early models were for example Isozaki's "City in the Air" (1960) and Jona Friedman's "Spatial city" (1960), who based his research on his "General Theory of Mobility". In the last one the main frame of the building presented a structural spatial grid suspended on huge pillars above the preexisting city. Inside this spatial grid the secondary elements were easily in filled and moved like boxes. As examples of the typology of "Containers", which were an architectural structures capable of expand and contract, and create and control an internal microclimate, were Archigram's "Walking City" (1964) and Buckminster Fuller's geodesic domes , such as that for the American Pavilion at Montreal's Expo in 1967, and Frei Otto's light weight structures.[cccxcix]

"Marine Structures" were seen as an efficient and interesting solution to overcome the problems of soaring land prices and embodied the aspiration for a free and dynamic environment created on floating cities. Most of the projects of the time were conceived as prefabricated neighborhood modules made of steel and concrete (constructed in shipyards and towed to their destinations), which combined together created a growing system of interlocked structures which became eventually a larger city. Among the project which shared this principles were the projects developed by Kiyonori Kikutake for "Marine City" (1960), the projects developed by Tange Kenzo ("Plan for Tokyo", 1960) and a the system of "Earthquakes Resistant Floating Towns", composed by hanging structures suspended on tall bridges

designed by French architect Paul Maymont (1960), both planned for Tokyo bay, Shoji Sadao and Buckminster Fuller's "Triton City" (originally developed as model of a floating city for Tokyo Bay between the years 1963-66) and Hal Moggridge, John Martin and Ken Anthony's "Sea City" (1968) were well representative of the bold possibilities of this kind of urban structure designed to face natural forces such as earthquakes, strong tidal waves and typhoons.

The "Diagonal in the Space"'s concept consisted in an urban schemes based on diagonal structural frames which supported terraced houses, which basically formed residential hills, such as in the project design by Cesare Pelli and A. Lumsden for he "High Density Terraced Town" in Sunset Mountain Park (1965), Walter Jonas's "Intrapolis" (1960), or Y. Akui, T. Nozawa and T. Akaiwa's "Neo-Mastaba", a project for renewal of Tokyo developed in 1961.

The last urban structure which Dahinden detected as a basic reference in the typology of megastructures was the "Biostructures", which, by combining the science of living matter (biology) with the science of architectonics (structures), referred to an ideal organic architecture directed "…towards a deeper appreciation of the structural and functional correlation between nature and architecture" and "…[trying] to use our knowledge of the biological processes of origination, growth, cyclical change, decline and death in order to free architecture from its static role".[cd] One of the most famous architect who best represented this architectural trend is the Italian born architect Paolo Soleri, who developed his design theory based on the philosophical concept of "Archology", a neologism which blended together the words "architecture" and "ecology", and intended to develop a kind of architecture which aimed to save the natural resources and start a new stage in the evolution of human society, creating a different kind of urban environment by means of a process of miniaturization and compactness of the modern cities, as showed in his projects of "Hexaedron City" and "Babelnoah" (1964).

According to Banham the megastructural trend in architecture reached its peak in 1964 and had a further exploit in occasion of Montreal Expo in 1967.[cdi] After those dates it began a period of progressive crisis for the whole ideology of this architectural trend, especially for its blind faith into the power of technology and supremacy of industry. The progressive decadence of megastructures was due to several external factors, such as the economic crisis which suddenly hit the Capitalistic world at the beginning of the 70s (and promoted by events like the Oil Shock in 1973, the consequent slow down of the World Economy, the surge of many cases of mortal diseases caused by industrial pollution and the uncontrolled exploitation of the natural environment, which threatened the myth of the "fair" technology and industry) and internal factors linked to the failure of urban and social vision behind the design approach on which the megastructures relied. The main problems which caused the megastructures to fail as effective architectural solution for the modern city were directly connected with the sociological failure of the design approach, and in same ways they repeated the same mistake did by the architect of International Style during the 20s and the 30s.

The megastructures were architectures too huge, complex to use, and caused great difficulty in the phase of management due to the high costs of maintenance. As noted by Kostof: "Not only they were such

project beyond the means of the world economy, they were also in the end , for all their picturesqueness and seeming aformality, as oppressively programmed, as coercive, as the functionalist city they were determined to improve".[cdii] In particular a big failure was the idea to substitute the traditional structure of the neighborhood, typical of the old city, by means of the concentration of large amount of people and integrated services in big complexes of tall and compact buildings connected with each other and with the working places by means of motorways, which promoted the separation of the various functions of the city into specific areas, creating a big problem for the general mobility of the city, with crowded places and traffic congestion in some part of the city during the rush hours and total desert in residential areas during working hours. This urban approach linked directly towards the (inhuman) Functionalistic vision of the city, which was simply seen as a container of separated functions which gathered the same activities in the same place and connected each area with mass and high-speed transportation networks.

This mistake became more and more evident during the 60s, and the interest in the old historical city and the integration of functions and the smart organization of the different social activities present inside her boundaries caught the attention of the more sensitive architects.[cdiii] The process of reform and rejection of the Rationalist approach as well as the Megastructural trend was reflected in the success and the influence of three important writings, an essay issued in 1965 and two books published in 1966: Alexander Cristhoper's "A City is not a Tree" (1965), Robert Venturi's "Complexity and Contradiction in Architecture", and, more important for the urban studies, Aldo Rossi's "L'architettura della citta'" (The Architecture of the City).

In his work, Alexander argued that the main urban pattern distinctive of the modernist urban plans was a "Tree", a structure which had a trunk, branches and leaves, capable of linear development and completely planned in its entirety by a single designer (such in the case of the plans by Le Corbusier and Tange). Such a structure lacks of flexibility, complexity and composite structure which can only be accomplished by a design process which involves other and diverse elements of design, which can generate a "semi-lattice" structure. Alexander defines the historical cities as "natural" cities, and he compare their structure to the "semi-lattice", which had been developed trough the years by means of multiple social, economic and historical factors, and gave them their complexity and identity as urban settlements.[cdiv]

In his essay, Rossi praised the importance of the historical urban settlements and monuments as fundamental elements of the collective memories of the people, and led a further attack against the simplistic urban and architectural theories of International Style, as intended by the new generation of architects and witnessed by the mediocre realizations during the postwar reconstruction, pointing out as the form of the city wasn't a direct consequence of the urban functions of its urban elements, but on the contrary its form was strongly connected with the shape of the urban elements present inside its territory; the form of some urban elements was more important of functions which took place inside those forms, and among the urban elements which survived throughout the history of the city, the most important of all, those which are able to shape the city and its further development, were indeed the monuments.[cdv]

Apart the consideration about the reevaluation of the heritage of the historical city, however the failure of the "dinosaurs of the Modern Movement", as Banham labeled the megastructures, laid indeed on several other cultural factors at the base of their concept which weren't taken, at least at the beginning, in serious consideration, and in particular in the inhuman scale of their buildings and structures, in the poor, superficial, and often unrealistic design theories based on a simplistic analysis of the contemporary mass-consumption society, in the unacceptable condition of mono-cultural environment created by the megastructure as a city or a part of city designed by one architect only, and last but not least, in the excessive confidence in the technological devises as infallible "deus ex machina" able to give the perfect solution to the chaos of the modern city and its visual disorder.[cdvi] From this point of view, it was perfectly understandable the comment given by Ludovico Quaroni about the general meaning of the whole movement and its failure, when he alleged that: "The need for new criteria for formal organization, new [architectural] languages, new possibilities for using the city has pushed many designers to overcome the limits of a false "continuity". From here [began] a production without precedent of adventurous projects, all of them full of indications, but in which it is difficult to distinguish what is acceptable from what is not, the true conceptual and intellectual breakthrough from the superficiality of a nonsense without value. In opposition to the superficiality of Maymont, Friedman, Jonas, Jellicoe there is the intent of criticism declared in the works of Archigram and other similar groups, which however must be understood for its true meaning, within its limits of valuable "divertissement", as indication of a "compositional method" which is valid and possible beyond the static reduction to the elementary forms presents in the design approach of the last fifty years".[cdvii]

6-4. Megastructures in Japan

The special linkage between Japan and the megastructures has been well put in evidence by Reynard Banham, who pointed out the first official definition of this kind of architecture was suggested by Japanese architect Fumihiko Maki, at that time member of the Metabolist Group, as well as the fact, as he noted, that the same World Design Conference held in Tokyo in 1960 was a deliberate attempt to present the megastructure as a specific Japanese contribution to the modern architecture theories thanks to the projects presented by Metabolists and Tange.[cdviii]

Also Robin Boyd has stressed the particular predilection of Japanese architects for the megastructures as urban structures suitable for the needs of Japanese society of the time, an interest for a new kind of buildings conceived as fusion of architecture and urban environment that the many architects in Japan, especially the members of Metabolism, shared with the British group Archigram.[cdix]

It can't be denied however that many social, economic and cultural factors promoted the spread of megastructural ideas all around Japan during the 50s and the 60s. The new political and cultural direction embraced by Japan after the war was fundamental for the Japanese architectural context. Botond Bognar

noted that: "After an age of expressive and sculptural formalism, designers in general became increasingly preoccupied with the elaboration of systematic design methodology and often futuristic industrial construction. Large-scale, utopian urban schemes became models for an architecture that was regarded as a testing ground for the latest technologies. Megastructures, interchangeability, and capsule architectures went from mere catchwords, to built realities, proving again that in Japan, more than elsewhere, new ideas are experimented with and developed on the construction site rather than on the pages of magazines and books or in school of architecture".[cdx]

The processes of postwar reconstruction and economic growth gave a strong stimulus for the development of large construction companies, which found many occasions for their further expansion thanks to the phenomenon of urbanism which enlarged the suburbs of all the main Japanese metropolises and created extended and dense urban fabrics. The need for new urban facilities and services promoted public competitions sponsored by the government which gave several chances for the diffusion of design concepts developed both by the researches of construction companies and by private professionals, fostering the growth of a more competitive housing and construction industry.

Although Tange and Metabolist and some early Isozaki's projects were the forerunners of the Megastructural approach in Japan, there were many other imitators who followed the same path during all the 60s, and many of them were truly visionary and unrealistic architecture, such as the "Neo-Mastaba" project, which proposed in 1961 the reconstruction of the core of Tokyo transforming the city by means of immense pyramid-like structures connected by a complex system of suspended motorways, or Akira Shibuya's project for an Urban Megastructure, built by assembling tall vertical frames joined together by means of horizontal bridge-beams from which prefabricated capsule-apartments branched out, and winner of a residential design competition sponsored by the magazine "Shinkenchiku" (The Japan Architect) in 1966. Both those projects were well representative of the idea of megastructure as intended generally in the middle 60s, which had its first realization in Japan with Tange's "Yamanashi Communication Center", built in 1966 in Kofu, Yamanashi Prefecture. This concrete structure was a summa of many current megastructural ideas that conceived the building as a complex system composed by a set of interlocking shafts, bridges, box-like communication spaces. Michael Ross stressed as in this project "…Tange created a three-dimensional network composed of 16 concrete shafts with prefabricated "teeth" to receive the bridges linking the towers together. The shafts serve the bridged spaces by housing elevators, ducts, stairs, and toilets. The voids left between the shafts imply the potential for future growth and flexibility."[cdxi]

The high land prices in the big metropolis and the housing shortage were effective factors that fostered architects and urban planners to embrace the megastructural principles because it allowed concentrating a high amount of people into fairly small areas. The advancement into construction technology and building engineering used by the big construction companies, as well as the change in the urban legislation which changed the height limit for the buildings, prompted a large scale activity of urban redevelopment for many cities and the start of new public works sponsored both by private sector and central government.

In 1968 Masato Otaka was author of the urban renewal of Motomachi and Chojuen, two slums areas

in Hiroshima. In his project for the multi-storey blocks used as main skeleton a frame made of steel which created a vertical grid containing prefabricated units of double-apartment made of ferroconcrete. Service towers on both sides of the main frame hosted stairs and elevators. The plan of the project, whit its system of stepped blocks which "are suggestive of the form of a folding screen"[cdxii], were somewhat reminiscent of many basic urban and architectural ideas from Le Corbusier's "Ville Radiuse"and Unite'd'Habitation, such as the urban lay out of the plan which stretched along the Ota river like a modern version of the "redant" pattern, the clear separation between residential spaces and the green public areas around the blocks, and the roof-garden on the top of the buildings[cdxiii].

The "A" shape section proposed by Tange in the drawings for Boston Bay and Tokyo Plan was successfully put into reality ten years later by Sachio Otani in his project for housing blocks for a new high density community planned in Kawaramachi (Kawasaki). This low-income housing project required high density and low budget, so that Otaka created an urban environment compact and concentrate, gathering all the main residential and social function in a close area and freeing the space outdoor for other functions. The huge communal space under the roof of the 15-story structure had direct light form above, and each apartment had a total of 3 hours of direct sunlight thanks to the orientation north-south of axis of the block.[cdxiv]

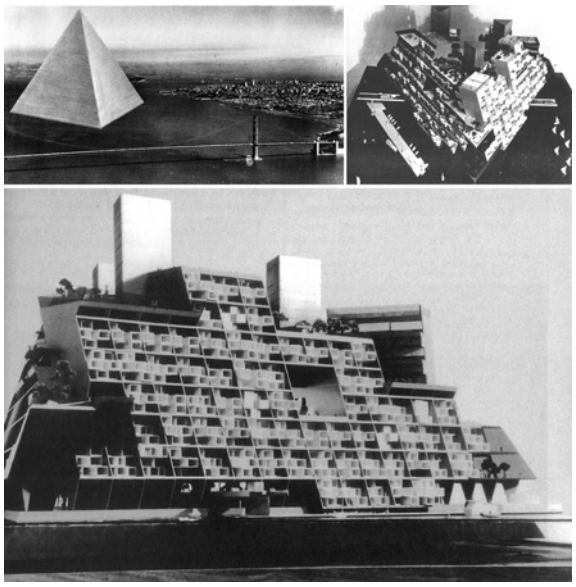
As it could be easily argued, the construction costs and the need for high density housing were issues of fundamental importance for Japanese government. The urban growth and the boom of the economy were the main concerns of the time, and this fostered a great interest in the housing problems. Many competitions were promoted by private and public sectors to stimulate researches and improvement in the field of construction by means of industrialized components, especially for the development of economical solution to the housing shortage. Megastructures principles promoted by Metabolists caught the attention of Japanese government as they appeared to be as one of the most convenient solution to the housing problems.[cdxv] Especially at the end of 60s, during the phase of preparation for Osaka's Expo 1970, the theme of innovative technologies for housing construction drew the attention of designers and architects, eager to develop new building techniques and to test new technologies in the field architecture. For example, in 1970 it was undertaken the "Pilot House Project" for the design of single-family and multi-dwelling systems, and 1973 there was the "Ashiyama High-Rinse Housing Competition", which called for low-cost dwelling units in reclaimed land near Osaka, and was sponsored by Japan Housing Corporation.

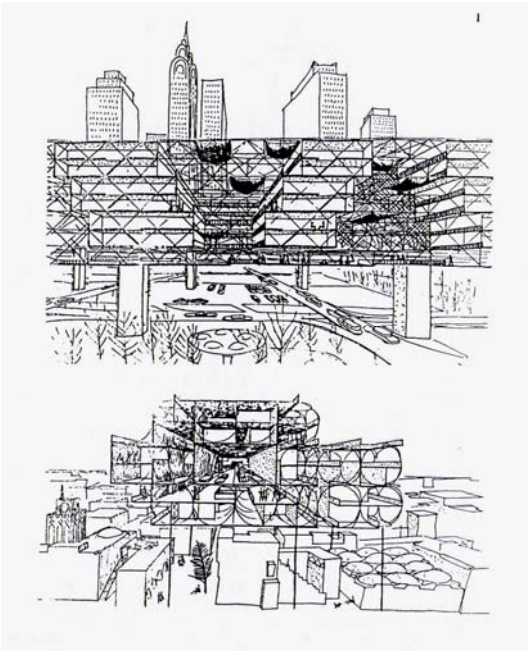
Most of these competitions saw as winners the projects presented by the big construction companies such as Takenaka, Shimizu, Nikken Sekkei, thanks to the outstanding capabilities of their research laboratories and industrial technologies. Although many completed projects were lacking in much of the "futuristic" appeal of the project proposed by Metabolists and Tange's megastructures, however they fostered the improvement of building techniques, the research on new materials and new housing design

The decadence of the Megastructural trend in Japan followed the same path like in Europe and US, but it was less traumatic than elsewhere because Japanese urban environment gave more possibilities for

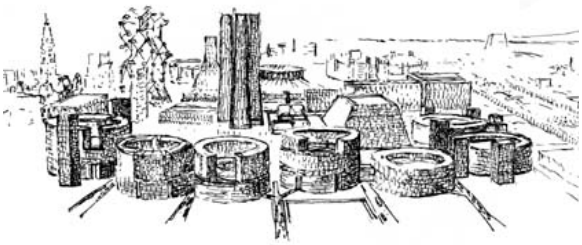
radical changes than it was possible for example in European towns, due to the different social and historical background.

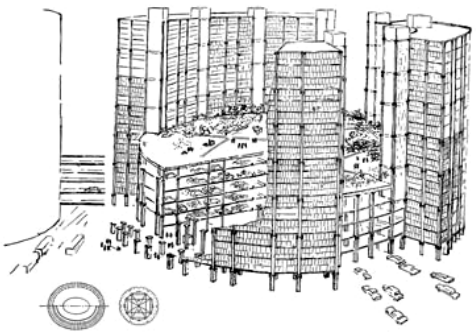
After Expo 70, which gave the last chance to Japanese architects to promote their megastructures, this architectural idea lost its original power of charming the people and also the architects began a process of revision and criticism, due to the surge of reconsideration of the collective history, the urban heritage and the traditional architecture still present in the old cities. This new general feeling surely contributed in the decay of the radical approach in urban planning proposed by architectural trend of megastructures.

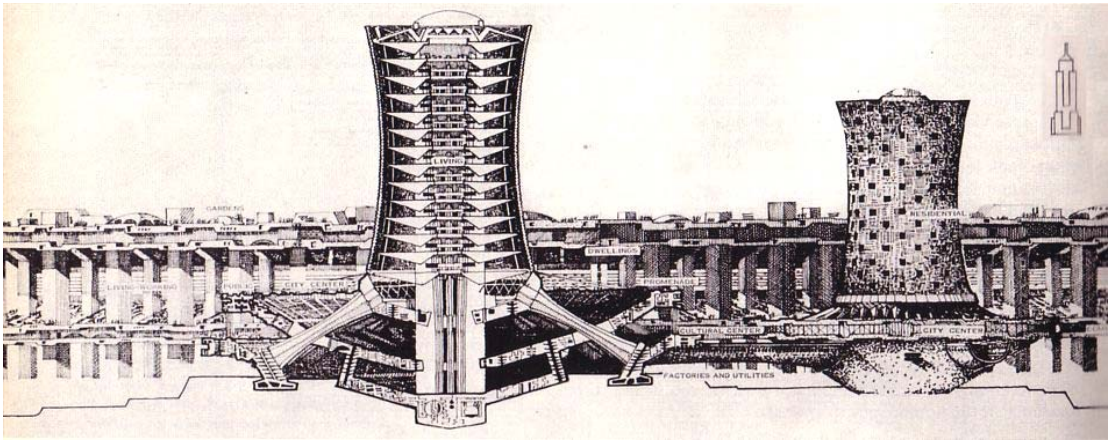




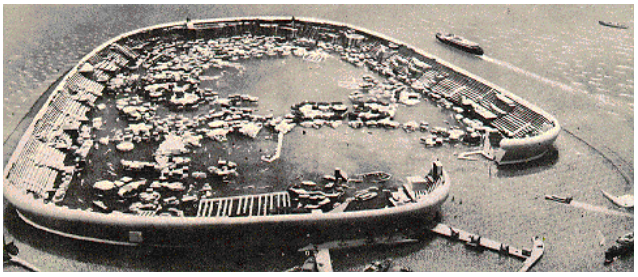
French architect Jona Friedman proposed as urban methodology his “urbanisme spatial”, which he intended as three-dimensional frames which covered the urban fabric of old cities such as Paris and new York (1959-right). Buckmister Fuller designed many kinds of floating cities, such as the projects for a marine city for New York (Tetrahedral City) and a model (Triton City, 1963-66) offshore Tokyo as a system of prefabricated blocks.(above-left). Louis Khan designed in 1956-58 a proposal for the civic center of Philadelphia with several monumental super-structures which contained services spaces and parking lots (below-right), residential blocks and other public facilities, (1959); also the Italian-born architect Paolo Soleri with his project “Babelnhoa”, a study for a compact and ecological city issued in 1959, became a well-known pioneer of the new megastructural trend (bottom).
(photos from Banham, 1976, Dahinden, 1972)

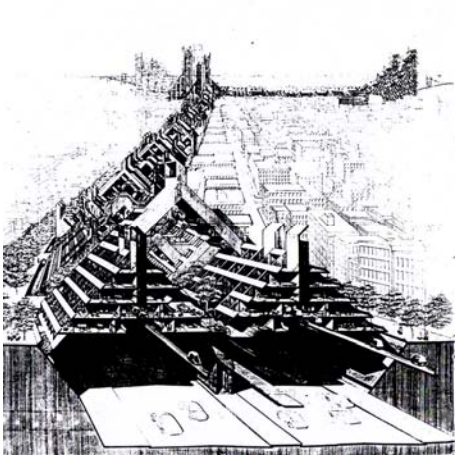




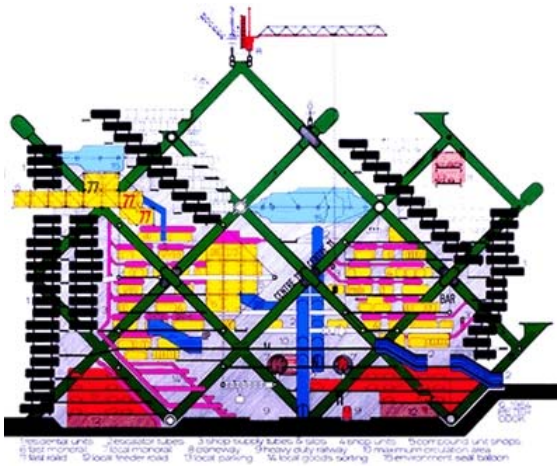


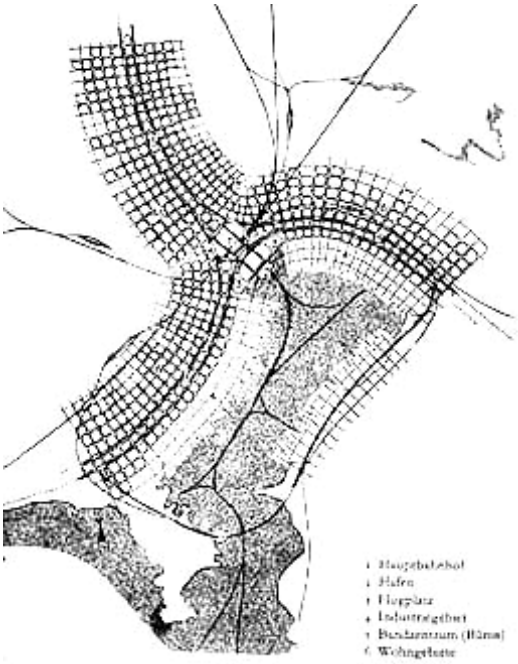
Megastructures fully developed in Europe and US in the late 1960s also as extreme tendency to programme any aspect of the future urban growth. The project for a "Sea City" in UK (1968-right), the project for the "Lower Manhattan development" in New York by Paul Rudolph (1970-below) and an early model of Geodesic Dome (1962-below) proposed for New York by Buckminster Fuller (right-below).
(photos from Dahinden, 1970)

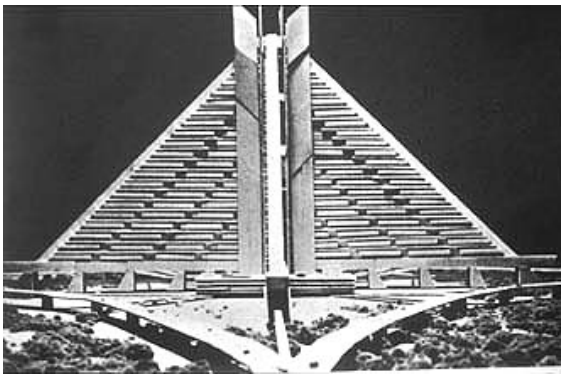


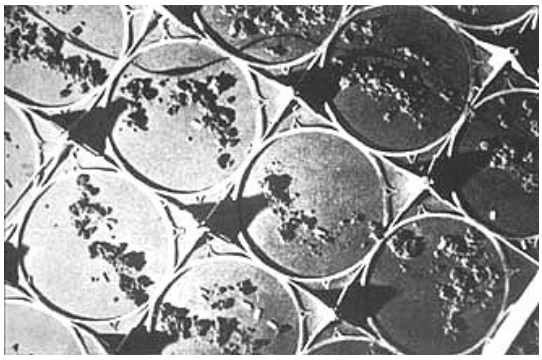


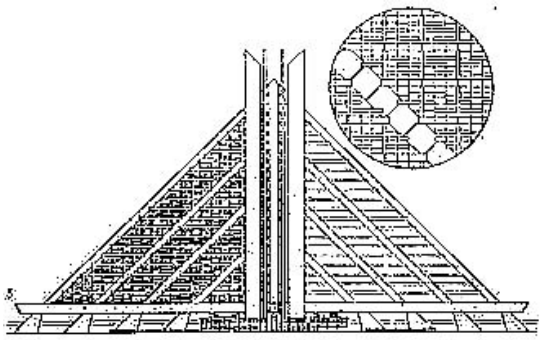
The projects proposed by British group Archigram during the 1960s were well known and closely recalled many themes already developed by Metabolists a few years earlier. Among the most popular projects, the Plug-in tower, Plug-in City and the Walking City (1964). The latter (below) was a moving urban machine which could be intended as metaphor of the modern city which hosts lots of "urban nomads". (photos from Archigram official website)





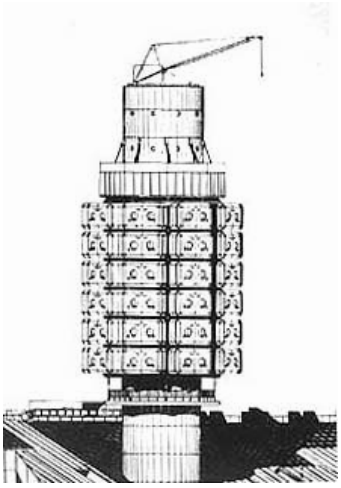


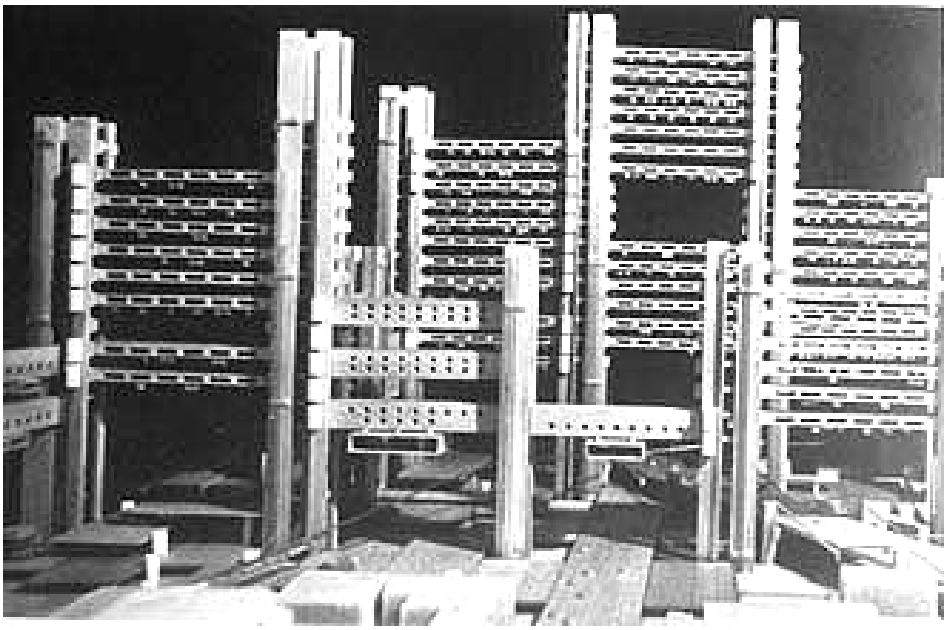


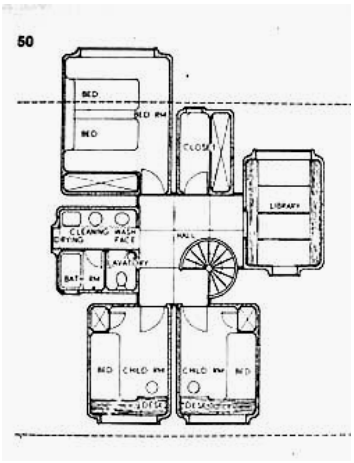


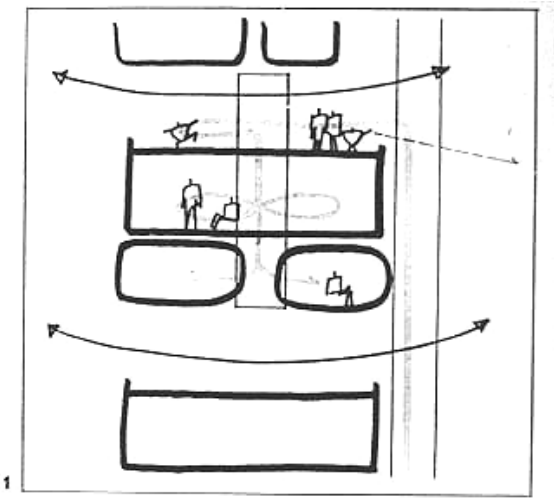
Megastructures developed in Japan during the 1960s: Neo-Mastaba project (1961-above), a futuristic and utopic plan to transform Tokyo metropolis by means of huge and tall pyramids-like towers which covered all the site of the real city with structures made of prefabricated industrial components which created impotents mega-dwellings connected by means of suspended freeways. (photos from Dahinden)

The fundamental theme of the plug-in tower so popular in early 1960s, with elements made of prefabricated plastic/steel capsules clustered around a concrete core shaft were built in early 70s, though in smaller dimension, as seen in the project for Kibogaoka Youth Castle, designed by Tatsuhiro Nakajima in 1972. (photo from Ross, 1976)



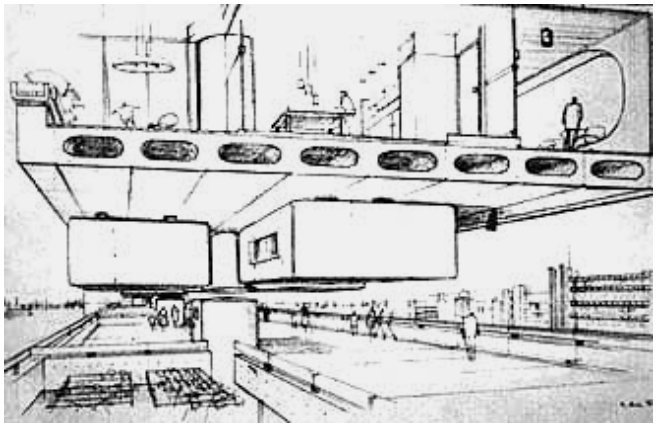




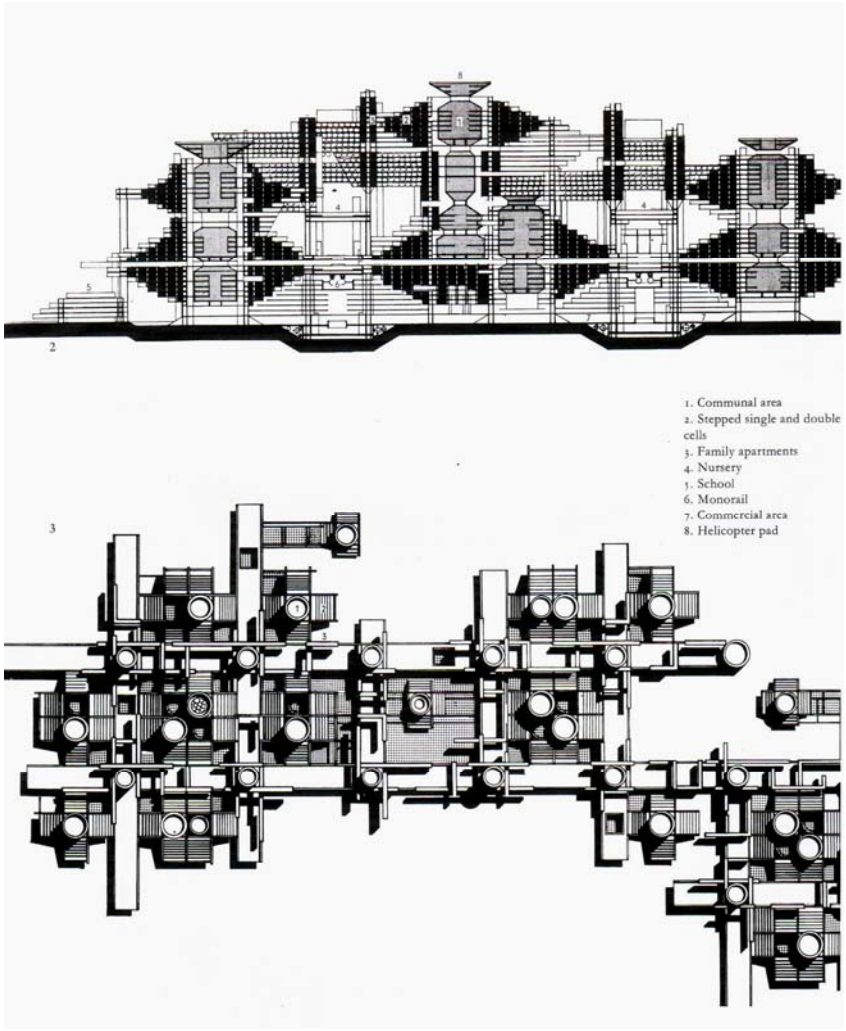


The mega-structure developed by Akira Shubuya in 1966 was conceived as system of shafts , bridges and capsules, which create a new urban environment with avenues and plazas arose from the natural ground, where lays the old city.

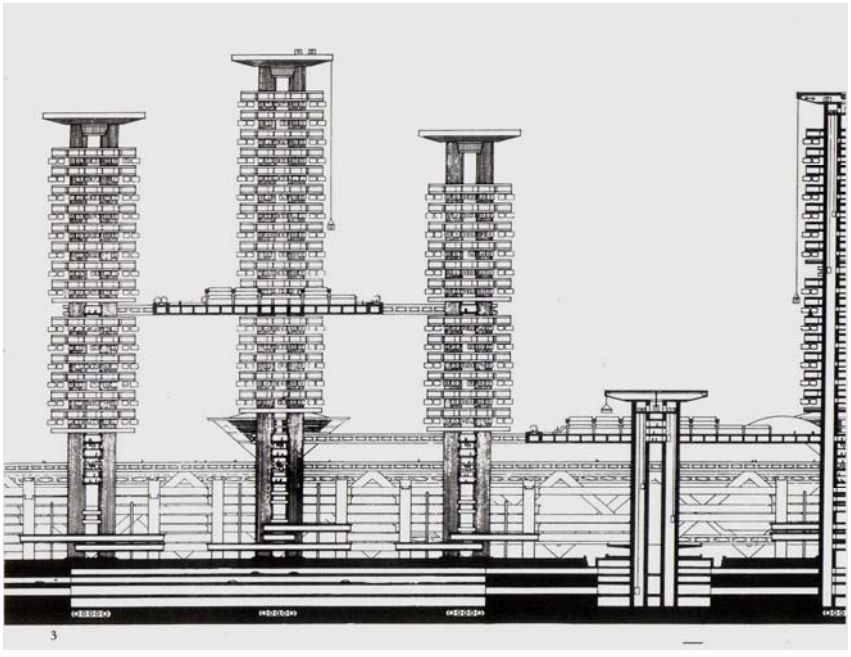
The housing unit is composed of prefabricated elements which offers several different possibilities of combination (photos form Ross, 1976)



This project proposed by Hakayama, Takaki, Rimura and Akimitsu in 1967, there is the intention to determine the urban form of the city, and the social structure of the community as well.
(photos from Dahinden, 1970)



The structure of this project, also a entry for the competition held in 1967, was the creation of tall towers which container commercial facilities and residential units.
(photos from Dahinden, 1970)



Conclusions

Conclusions

One of the main themes behind the proposal of a new urbanism, as stated in the Metabolist manifesto published in 1960, was the creation of a totally artificial environment as distinctive feature of the modern epoch, and give meaning to it. The artificial environment which eventually would substitute the traditional city and its historical memories was seen as the consequence of the contemporary process of social and technological transformation led by the economic growth and the cultural changes occurred after the last war. Especially in the case of Japan, the traumatic changes and the effect of national shock after the defeat had as main consequence a period of deep collective rejection of the memory of the recent past and history, which lasted several years. In a phase of general cultural uncertainty and physical prostration Japan was subject, as some researchers alleged, to kind of collective nihilism and passive acceptance of the fate which hit the culture and the values of the entire nation. But this condition didn't last for long and with the recovery of economy a new optimism and enthusiasm sprang from every level of the Japanese society.

The growing importance of industrial sector and technological innovation, and the diligent, responsible but often inflexible policy of Japanese government, were the key factors which set the foundations for the reconstruction of the country. From the very beginning the rebirth of postwar Japan was closely linked with the economic strategy which promoted the enforcement of the industry for importation of rough materials and exportation of finished products and the promotion of public works in the cities as engine of the economic growth. Functional to this policy were the projects for many public works for reshaping the natural barriers and limits which formed the Japanese archipelago, changing its prewar urban environments and natural landscapes, such as the construction of artificial harbors, docks and other huge facilities necessary to support the system of factories and industrial plants which more and more spread in the urban fabric of the cities. The studies and the researches conducted on the modular coordination and industrial prefabrication of housing during the 1950s were symptomatic of the frenetic rush toward the resolution of the problem of shortage of shelters for the people and the achievement of a faster process of reconstruction of the ruined cities, as centers of the economic production, as well. The consequent condition of urban sprawls which engulfed all the main Japanese cities in this crucial phase of economic growth was further exacerbated by the heritage of an excessive fragmented urban landscape and the lacks of effective sets of urban legislation, with consequent frequent episodes of land speculation, as well as by the absence of professionals urban designers trained in this specific field due to the fact that the first department of town planning in a Japanese university was officially set up only in 1962.

In this context the theories proposed my Metabolism were a collection of creative, polemical and ambiguous articles on the new direction that architecture and urban planning should undertake in those years of profound and exceptional transformation for Japan and Japanese society. The exaltation of the new artificial urban environment present in their early projects, which linked to the issue of "reclaimed lands" and other gigantic engineering works as the new frontier for the coming radical transformation of the culture and the society, had a power of suggestion similar to that represented by the myth of the "Ideal

City" during the Renaissance, when the forms of the new city was intended as expression and metaphor of a new and happier society which rejected the past (Middle Age) as symbol of an dark and barbarian epoch.

Metabolism was composed by a group of young and talented architects, most of them with international experience abroad, and was an effective example of the ferment of the new generation of professionals growing up in Japan at that time. Among the five architects the youngest was Kurokawa, and he was the most prolific writer of Metabolist Group, whose writings, articles and books, were published especially abroad during the 1970s, when the movement was already faded. One of the most interesting aspects of Metabolism was its attention towards the international recognition of their theories, and the relation it tied with other similar movements in Europe and America. This pretension towards an international "appeal" can be traced since the time when the name of the movement was chosen, so that the member of the group agreed to choose a word ending in "ism" as direct recall to more famous avant-garde movements such as Functionalism, Futurism, and Expressionism.

The unexpected and unprecedented success which the group gathered in occasion of the World Design Conference in 1960 was a surprise for all the members, some of them were invited to exhibit at MOMA of New York the next years, so that all this notoriety suddenly moved the interest of the international audience on the modern Japanese architecture and design, as many other scholars had correctly noticed.

Apart from the real value of the proposals presented in occasion of the Conference, whose main formal and functional elements derived from precedents in Western architectural and urban design concepts, without doubts the projects of Metabolist Movement were above all symptomatic of the atmosphere of radical polemic presents also in Japan against the rigid and dated planning schemes of orthodox systems of Rationalist design, as well as the nostalgic revivals of the traditional forms of the ancient native architecture. The source of inspiration of Metabolism was found, as happened before to Futurism, Constructivism and Bauhaus, in the world of advanced technology and the structural engineering which were transforming so extensively the features of the Japanese cites and natural landscape, since, as noted in 1960 by critic Philip Johnsons after the definitve collapse of CIAM, "…There is only one absolute today and that is change. There are no rules, surely no certainties in any of the arts. There is only a feeling of wonderful freedom, of endless possibilities to investigate, of endless past years of historically great building to enjoy".[cdxvi]

In particular a special relation links the members of Metabolism with the project carried on in Tokyo Bay in the late 1950s. During those years the idea for the urban reorganization of Tokyo by reclaiming the land of the bay was a source of many fruitful reflections in Japan and further developments in the field of urban planning and architecture to control the urban sprawls of the modern cities as consequence of the fast growth of the economy which led to the spread of what many critics called the "urban utopias". The urban utopias as developed in Japan assumed a different meaning from those conceived in the Western world: the latter, following a tradition started with the industrial revolution, were intended as ideal schemes which fused urban form and social order towards a comprehensive reform, but in the Japanese case no tentative of global social or economic revolution is proffered, and they are intended as real

mechanical structures following the logic of capitalist order of the Japanese society of the time. However those urban schemes, whose architectures were technically feasible, became certainly utopian when they presumed to extend their design principle from the architectural scale to the urban scale with little or none analysis and concern for the social, cultural and economic consequences. The famous proposals by Tange and Metabolists, which gained the praise of most of international observes, summarized and expanded precedent concepts, experiences and analyses promoted in the previous years by Japanese and foreign bureaucrats, planners, engineers and architects. Many local factors, especially the great pace of urbanization which hit the main urban centers following the surge of Japan as industrial power, and the specific progress of building and coastal engineering and industrial techniques, fostered and influenced directly the projects of many Japanese architects of the time, who envisioned for Tokyo innovative ever-expanding urban prototypes. Those projects come as reaction to lack of effective urban planning measures promoted by government, and as alternative to the current practice to gain more land by filling the offshore of the coasts as preferred sites for the development of industrial areas as key factor of the economic growth. The space obtained was intended as room to allocate, often randomly and according to the formula of a plain zoning, new housing blocks and factories as bottles and glasses on a tray. The Kombinato complexes built on the reclaimed lands caused the abrupt destruction of the natural environment and furthermore didn't resolve any of the structural problems of concentration, circulation and unbalanced urban growth which threatened the quality of life of the Japanese citizen. Basically Kano's proposal of 1958 (and later other plans like "Tokyo Channel Plan" and "Neo-Tokyo Plan") aimed mainly to maximize the use of new artificial lands for new productive and transportation facilities, and in this sense was completely conceived according to the governmental expectations of assuring the "vital" space for industry; indeed it also had the merit to establish the terms of comparison with a series of new proposals that assumed a different approach to gain the same artificial land and promoted a new methodology of urban planning to resolve most of the problems of modern city. Metabolist group and other Japanese architects, accepting the economic model of development of the time but searching for an alternative to the simple but radical (and useless) practice of reclamation, went a step beyond. From a deep analysis of their historical and economic context, and paying attention to the aspiration of the society, they proposed the development of new urban models, such as the marine cites, and searched for new theories and strategies in the field of urban planning, relating themselves to experiences and researches of foreign countries, and implementing new technologies more responsive to the needs of the bigger scale of city's growth. None of those Metabolists and Tange's urban project was carried out due to their inflexible urban scheme based on a single and rigid idea, which deprived the city of the of variety and diversity which just by the early 1960s came to be regarded as the fundamental quality of a good city, and achievable only through the participation of multiple co-authors in the design process; on the other hand those same projects and the megastructures proposed for Tokyo suggested the important issue on how structuring and which urban form must be given to the contemporary millionaire cities, searching for an architectural language suitable to express the new dimension of urban phenomena of the time. Shifting from the fixed

models proposed by CIAM to an "open city planning", flexible and changeable, these architects anticipated that urban designers should move in their projects from the concept of "metropolis" to that of "megacity", as consequence of the deep transformation of urban environment and society due to the evident new big scale of social, economical and cultural changes occurred in the contemporary world. Many of the projects showed a critical attitude towards the limits of the utilitarian urban planning's approach of the time, considered as the main reason of the urban chaos and poor quality of life present in all the Japanese cities and especially evident in case of Tokyo, and their criticism became functional for promoting the importance of the role of urban designer into the Japanese architectural context, stimulating a further attempt to renew the urban form and the architectural language of Japan led by their willingness to proceed over the foreign experiences and to develop an original and independent urban planning methodology based on new building technology and beyond the pure economic concerns.

Many scholars (especially Westerns) have generally described the deep impact metabolists projects had on the Western architects and architecture, but the reason of this sudden success relied more on the fascinating aesthetics of their architectural forms than on the theoretical background of the proposals, most of them inspired by a more orthodox anti-modernist design approach, which was the common basis for many others architectural movements of the time. However Metabolism had the unquestionable merit to show in the most impressive forms the same ideals of shift from the previous design traditions which animated the research of many architectural groups all around the world, and especially in Europe.

Their research combined in an effective and brilliant way the suggestions derived from the cultural heritage of their native tradition with many insights studied and developed in the architectural theories from abroad, such as the concepts of cycles, permanence, clusters, servant spaces and served spaces. The discussions held in occasion of the last CIAM in Otterloo organized by European group Team X, and the theories promoted by Americans Louis Khan, the German-born Konrad Wachsmann and others drew the attention of the Japanese architects who strove to search for a linkage between those modern international themes and some concepts derived from national traditional architecture, re-processing them and developing a architectural theory which could fit with Japanese culture and promote outside the new side of contemporary Japan. From this point of view, many fundamental features of theories elaborated by Metabolist Group were a clever synthesis of foreign and native suggestions, combined and melted together in the design principles of their independent projects.

Many themes and concepts behind their theories, such as the renewal of the society, the cycles of changes, permanence and transformation, which in European architectural context derived by from studies in new sciences like the Linguistics, was extended and connected by Metabolists with the techniques of native wooden traditional architecture, because, as they realized, the building techniques of traditional Japanese architecture showed extraordinary similarity with the same concepts of transformation (as "metabolic changes") and the separation of architectural structure in "fixed or permanent" and "transient" elements. Furthermore, the optimism which pushed the reconstruction of the cities after the war (in Japan and everywhere), and the phase of economic development which became the engine of the growing

prosperity of the nation, asked for the enforcement of the productive plants and industrial factories which required radical works for reshaping the natural coasts and territories by means of reclaiming lands, and indirectly promoting the importance of technology, engineering and industry also as aesthetic reference for a new architectural language. Technology became the main instrument to overcome the limits imposed by the speculation, the lack of regulations, the shortage of space and the chaos of the old and overcrowded cities, by which the architect tried to expand the human environment on artificial land and explore new unknown territories such as the sea and the sky. This myth of industry and technology linked the Metabolism with the trend of Megastructures, which appeared to many as a "panacea" to all the urban problems of the modern city. In particular it has been noted the special close linkage between the Megastructures and the Metabolist group, so that according to some scholars, such as Banham, the Japanese attempted to present the Megastructures as a specific Japanese contribution into the context of the contemporary architectural debate, which from many points of view could be regarded as true.

In fact Metabolists found their main inspiration not from some architectural theory but from the direct vision of the huge construction sites and impressive shipyards which arose everywhere in Japan during those years, as well as the fast advancement in industrial techniques and technological innovation. As noted before, the search for futuristic imagines and the exaltation of the technological solution in the projects was mainly encouraged also by the lack of set of regulations about the rules which discipline the architectural aesthetics in the town planning, which found Japan less advanced in comparison with other European countries and even United States. Metabolists Group had more freedom of expression in architecture also because Japan lacked of a system of cities with an urban fabric dense of historical stratification and monuments which prevented and limited the spread of radical and excessive innovative architectures. This situation was especially evident in Europe, so that many cities, such as Warsaw, Munich and Frankfurt, destroyed during the war, were rebuilt in their ancient historical shapes in full respect of the architectural tradition. But in the case of Japan, technical and cultural reasons reshaped completely the cities (with few exceptions such as Kyoto), in spite of many of them kept the lay out of the old urban fabric and the atmosphere of some ancient districts. During the 1950s the debate about the value and the importance of the tradition and theme of the modernization of the Japanese society reached its peak, and was further accompanied by episodes of social revolts as in occasion of the renewal of the alliance treaty (ANPO) between Japan and US. In this context the theories of Metabolism appeared to be directed towards a form of rejection of the memory of the recent past, which were related to the defeat, and rather they aimed to transform the negative power of technology, represented by the atomic blasts occurred in Japan during the last war, into a positive chance to change the future of the new generations.

However the importance of the rediscovery of the past and efforts to save the heritage of the historical tradition began in Japan since the middle of 1950s and promoted surveys and analysis of the ancient architectural and urban traditions, especially during the 1960s, as symbols of the new awareness of Japanese people for their history and collective memories of their native culture. Modern researches on the lay out of the ancient villages and the structures of old buildings led towards a scientific approach in the

analysis of the aesthetics and cultural roots of the native architecture and the definition of specific concepts such as MA, OKU and EN. Metabolists themselves tried to recreate the deep significance of the national tradition as methodology instead of forms to celebrate the successes of modern Japan.

The end of the 1960s conducted to what can be seen as an almost a complete negative balance of the Metabolism theories. This failure had several reasons, which had been investigated by some critics (such as Tafuri Manfredo, who labeled Metabolist projects as expression of ingenuous social utopia, and Reynard Banham, who stressed the lack of consistency of their design approach), who linked it to the advent of Post-modernism and the decadence of Megastructural trend, as a consequence of a general renewed interest into the value of the history of the local communities and in an urbanism which was less rigid and more based on a more human-scale, as also promoted in many other influential essays published since 1961 by members of Team X, Kevin Lynch, Jane Jacobs, Aldo Rossi and Alexander Christopher among the others.

Indeed appears evident that on the long run one of the most (if not the most) important achivement of Metabolist group wasn't the effectivenes and the originality of its architectural and urban theories, which in part colluted with the consumerism spirit of Japanese society of the time and which were directly influenced by similar urban theories imported from abroad, but fundamentally was their success in the disclosure to the international world of the reality of post-war Japan, thanks to many publications and writings spread (in the following years) by authors like Kurokawa and Kawazoe, the most prolific and effective "supporters" of the group.

The progressive fade of the earlier metabolist architectural and urban theories was further generated by the progressive transformation of the culture of the time and the society. The wealth and evident welfare which spread in Japan and elsewhere in the world thank to the economic growth, which stopped the rush towards a radical modernization, led indeed towards a more conservative culture which rejected the futuristic and revolutionary aesthetics of the early projects. So that it can be argued that a wealthy society prefers a conservative style, and it appeared clear at the end of 1960s that the cultural and social atmosphere to create and propose hyper-technological buildings and artificial environment, which emerged during the phase of revolutionary social ferments a decade earlier, was passed away for ever.

Research Activity

Research Activity

Main part of the present research has been inevitably draw from specialist works of others although other parts can be considered as results of the independent study of the author, who as been investigating on the activities of the Metabolist Group and the urban transformation of Modern Japan since his graduation at IUAV, Institute of Architecture of Venice, Italy, where the research has begun under the supervision of Professor Giulio Ernesti, Head of the Faculty of Town Planning at IUAV.

The contents of the present work spread from the analysis of long list of book and magazine, found in the university library of Waseda University, Tokyo University, Sophia University, Keio University, Tama Art University, The Japan Foundation Library in Tokyo, etc., the direct interviews held in the priod 2003-2004 with some of the original members of Metabolism, such as architect Kiyonori Kikutake, industrial designer Ekuan Kenji and with critic Noboru Kawazoe as well as the occasions of debate I had during seminars and presentations of my research (at the time as work in progress) in Professor Nakagawa Laboratory and Professor Nishimoto Laboratory in Waseda University, at the Department of Urban Planning in Tama Art University, and at Italian Institute of Culture in Tokyo (presentations held on November 21, 2003, and July 24, 2004) during the period 2001-2004, that is the period of my stay in Japan as Monbusho Scholarship Student.

The several occasions I had to exchange opinions and talk with academicians, colleagues, or just interested people, have been of the greatest value for me to enhance my knowledge on many issues related to my field of research and widen my points of views.

Further occasion to deepen my considerations on the subject of my research has come by means of the productions of some essays/papers I wrote in the previous months, as complementary activity for the preparation of my doctoral dissertation: two of them have been accepted and published in the academic journal *JAABE* (*Journal of Asian Architecture and Building Environment*), edited (among the others) by the Architectural Institute of Japan, and titled “Metabolism Reconsidered. Its role in the Architectural Context of the World” (Vol. 3, N.2, November 2004 issue) and “The Transformation of Tokyo during the 1950s and 1960s. Projects between City Planning and Urban Utopia” (Vol.5, N.2, November 2006 issue); another paper prepared for the ARIG, Associazione Ricercatori Italiani in Giappone (Association of Italian Researchers in Japan), and titled “Metabolism 1960. Utopie urbane nel Giappone post-guerra” (Metabolism 1960: Urban Utopias in post-war Japan), which has been published in “Bollettino ARIG 2004”, edited by Italian Institute of East Asian Studies in Kyoto, and published in June 2005; and an article titled “The Issue of Tokyo Bay’s Reclaimed Lands as the Origin of Urban Utopias in Modern Japanese Architecture”, accepted for publication in the *Journal of Architecture and Planning* (Transactions of AIJ-Architectural Institute of Japan; N.613, March 2007 issue).

研　究　業　績

種 類 別	題名、　発表・発行掲載誌名、　発表・発行年月、　連名者（申請者含む）
○論文	**"The Issue of Tokyo Bay's Reclaimed Lands as the Origin of Urban Utopias in Modern Japanese Architecture"** Paper accepted for publication in the ***Journal of Architecture and Planning (Transactions of AIJ - Architectural Institute of Japan, Tokyo)***, No. 613, March 2007, pp. 259-266, Pernice Raffaele. 東京湾の開発をめぐる戦後の計画と現代日本建築における都市メガプロジェクトの起源 - 日本建築学会計画系論文集　第 613 号　2007 年 3 月– pp. 259–266.
論文	**"The Transformation of Tokyo During the 1950s and the Early 1960s. Projects Between City Planning and Urban Utopia"**, published in: ***JAABE - Journal of Asian Architecture and Building Engineering (英文論文集 - Architectural Institute of Japan)***, Vol. 5, No. 2, November 2006, pp. 253-260, Pernice Raffaele
論文	**"Metabolism Reconsidered. Its Role in the Architectural Context of the World"** published in: ***JAABE - Journal of Asian Architecture and Building Engineering (英文論文集 - Architectural Institute of Japan)***, Vol. 3, No.2 November 2004, pp.357-363, Pernice Raffaele.
論文	**"Metabolism 1960: Utopie Urbane nel Giappone del Dopoguerra" (Metabolism 1960: Urban Utopias in Postwar Japan),** published in: ***Bollettino 2004 ARIG - Associazione Ricercatori Italiani in Giappone (Association of Italian Researchers in Japan)***, sponsored and edited by: ISEAS, Italian School of East Asia Studies, and Italian Institute of Culture in Kyoto, Japan; publication issued in June 2005, Pernice Raffaele.
学術講演	**"Le Megastrutture nel contesto architettonico giapponese degli anni '60. Analogie e differenze con le contemporanee tendenze occidentali"(Megastructures in the Japanese Architectural Context during the 60s. Analogies and Differences with Contemporary Western Trends);** Summary of Research presented at meeting of ARIG (Association of Italian Researchers in Japan), Italian Institute of Culture in Tokyo, Japan, 24 July, 2004.
学術講演	**"Megastrutture e Sviluppo Urbano nel Giappone Moderno: Metabolismo 1960" (Megastructures and Urban Development in Modern Japan: Metabolism 1960);** Summary of Research presented at meeting of ARIG (Association of Italian Researchers in Japan), Italian Institute of Culture in Tokyo, Japan, 21 November, 2003.

Questionnaire on the Metabolist Movement -「メタボリズム」に関するインタビュー

1) Japan lost the war in 1945. In the 1955 Japan continued an economic and industrial development which had already started in Meiji Epoch at the beginning of the XX century. In that period you were really young. What memories do you have about the cultural and social environment of that period? What kind of specific interests or which sort of readings characterized your formation as a professional in your field?
1）1945 年に日本は敗戦しました。1955 年には、日本では２０世紀初頭の明治維新とともに始まった経済的・産業的な発展が続いていました。もちろん当時、あなたはとても若かったですね。その時の文化的・社会的な背景に関してはどの様な思い出をもっていますか。また、当時、具体的にどういった興味をもっていたのですか。また、どの様なものを読んでこの分野の一専門家として活躍できるようなったのですか。

2) Is there any author or particular concept you were influenced by during the years of the Rapid Economic Growth of Japan? Which kind of education did you receive?
2）日本の高度成長期の間、誰か影響を受けた作家、あるいは概念などはありましたか。また、学問的にいうと、どの様な教育課程を経てきましたか。

3) You were member of the avant-garde movement known as "Metabolism", considered by many critics as the first autonomous movement of architecture and design developed in Japan. Who were the other members of the group? And in your opinion, what was the impact this movement had on the whole Japanese modern architectural environment?
3）メタボリズムは多数の評論家によって、建築・デザイン分野での日本初の自立した前衛的なムーブメントとして指摘されたのですが、あなたはそのムーブメントの 1 人としてご活躍なさったのですね。このグループには他に誰がいましたか。そして、あなたの見解では、このムーブメントは日本の現代建築の分野にどの様な影響を及ぼしたのでしょうか。

4) Do you remember which were the subjects about what you were used to discuss with the other members and what kind of atmosphere animated those meetings at the end of the '50s?
4）他のメンバーたちと集まっていた時に、どういった問題が語られていたのか、覚えていますか。また、50 年代後半の、その集まりではどの様な雰囲気が漂っていたのでしょうか。

5) Architecture, design, town planning: all themes that the Metabolist movement tried to change to fit to the new atmosphere in order to create a new style of aesthetic language suited for the Japanese society in a time in impetuous change. How did the members of the avant-garde group consider this phase of fast economic development and inexorable social transformations?
5）建築、デザイン、都市計画――これらはすべて、メタボリズムが猛烈な変化の時代の最中、当時の日本社会に即した新しい審美的なランゲージを成立させるべく、見直そうとした様々なテーマです。前衛的な動きであるメタボリズムのメンバーたちは、この高度経済成長および激しい社会変化の時代についてどの様な見方をしていたのでしょうか。

6) According to some critics the Metabolism wan't an architectural theory but rather a critical analysis of the Japanese society of that time seen by a point of view of architecture. What is your opinion about that?
6）何人かの批評家によれば、メタボリズムは建築上の理論ではなく、むしろ建築の視点から見た当時の日本社会の批評的な分析だったといわれています。これに関してはどう思われますか。

7) The Metabolist ideas are often connected with the Japanese artistic and architectural tradition. For example, the architect Kurokawa and the critic Kawazoe asserted that the Japanese traditional techniques and construction system are more effective compared to the western ones, more suited for the modern age, and also that the Japanese city appears to be more flexible and better organized compared to other western models. What does this claim for “cultural independence” exactly mean?
7）メタボリズムのアイディアは、日本の芸術・建築の伝統との関わりが強いとよく言われています。例えば、建築家の黒川さんや、批評家の川添さんは、日本の伝統的な技術や建築の建て方などが西洋に比べてもっと効果的であり、現代社会にとても適していると指摘し、また、日本の都市は西洋のモデルに比べてより柔軟なところを見せ、組織的にも、もっとしっかりしていると主張しました。この「文化的独立」という主張は具体的にどの様な意味を持っているのでしょうか。

8) Metabolist projects were well known all over the world: floating cities as "Marine city" or vertical cities such as "Tower community shape" (both projects developed in 1958-59), the plan for the renewal of Tokyo in 1960 by Tange Kenzo, or "Helix city" (1961) by Kurokawa Kisho, as well as the "City in the Sky" (1962) by Isozaki Arata. Fantastic design accompanied by a heavy use of industrial components and modern technologies, all factors that gave these projects an irresistible appeal in the Western world. Which is the reason why Japanese architects and designers conceived and elaborated such ambitious urban ideas, so exciting for their aesthetic innovation, very original as well, but pretty far from a possible realization?
8）"Marine city"のような海に浮かぶ都市あるいは"Tower community shape"のような垂直型の都市（両方のプロジェクトは 1958～59 年に計画されました)、丹下健三による 1960 年の東京一新計画、黒川紀章による“Helix city ”（1961 年)、磯崎新による“City in the Sky”（1962 年）――メタボリズムのプロジェクトは世界中で有名でした。空想的な設計に産業部品や先端技術の多用、これらが西洋の世界を魅惑した主な要因です。なぜ日本人の建築家やデザイナーたちが、審美的に非常に魅力的でオリジナルであるといっても実際には実現不可能であるこの様な意欲的な都市計画の構想に至ったのでしょうか。

9) A European critic has defined the Metabolist group as an "academy of the Utopia". Forty years later, do you agree with this opinion?
9）ヨーロッパのある批評家はメタボリズムのグループのことを「ユートピアのアカデミー」と指摘しました。40 年が経った今、この様な見解に同意しますか。

10) The megastructures during the ‘60s were just a style or a true necessity in the architectural design?
10）60 年代の巨大な高層マンモスビルは、建築設計の単なる様式でしたか。それともある種の具体的な必然性だったといっても良いでしょうか。

11) Is there any connection between the proposals of the new urbanism promoted by Metabolism and the urban model of the ancient Japanese cities?
11）メタボリズムによって提案された新しい都市計画と古代日本の都市モデルの間に幾つかの共通点があると思いますか。

12) What do you think was acceptable in the Metabolist ideas, and which one among their principles could still be useful in our contemporary society?
12）メタボリズムのアイデアの中で、何が受け入れ易かったと思いますか。また、様々な概念のうち、どれがまだ我々の現代社会において取り入れられると思いますか。

Interview with Ekuan Kenji

The interview was held in Ekuan Studio in Meijiro, Tokyo, on November 7, 2003; time 3:00pm.

Interview with Kenji Ekuan

栄久庵憲司さんに聞く

(Interviewer→ **I**　　Ekuan → **E**)

E：　全部やっているのが川添さん、…　まず質問をいただいたんですけどね。
若かった。でも若くても、僕はね、ネーバル・アカデミーに行ったんです。それが 17 歳だったから。英学校…それで、私そのとき一番大事なものと思ったのは、やっぱり日本の「武士」の美学ね、武士道の美学というのは、自分の一番トップのためには死んでもいいというのが武士の美学。だから、それはいろいろといわれるんだけど、他より早くてきれいに死ねるというか、ちょうど桜が咲いてパッと散ったときのきれいの散り様、それがそのときを支えてますね。若い僕らじゃなくて、おそらく大勢の日本の人たちがそうだったと思う。とても強い。それで、だから、トップが負けたといったら全部が負けたということになる、そういう大差違うぜ、イラクとは。イラクというと汚く見えるね。
その次は、興味？やっぱり戦争に勝つことだね。それ以外は何もなかったから。何もない、ただ戦争！だから、死ぬときでも勝つことを信じて死んでいくわけよね。

I:　　**それで、そういう背景の中でどうしてこういう…**

E:　　あ、それは別の話。全然別の話で 1945 年に負けたということはリクリアされたので、だからその…これは難しいんだけど、負けたことはリクリアされて…それであの一種の体が溶けたような…体がアンチェンされたような…だから、誰もが生きねばならないと思ったのね。生きねばならないというのは、美学ではなくて動物みたいな感じ…戦争に負ける前までは美学だったけど、負けたら美学じゃなくなった。サバイバル！でも、やっぱし僕はもうきれいにサバイバルしたからね。それで、だからあの…それから GI を持てることに夢中であるとか、それがとてもすばらしく見えて、うまくできているなと思った。それでだから、モノにも武士にも欠乏したから、武士を取り戻さなければと思いましたね。だから私は、文明で武士を取り戻すということに職名があるということは、これが民族のためだと思いました。民族全部なくなったから、爆弾でやられたから。僕は広島で原爆にあったから。もう本当何もなくなった。そういう中で、シンボリックに非常に刺激を与えたのが、気合を持ってさ「ラッキーストライキ」のパッケージね。とてもきれいだね。日本の男の人にすすめてチップ配達、それがとてもシーンがね。もらうほうは悲しいよね。でも、あげる方はきれいに見えるよね。コミュニケーションをするために。それ以上にパッケージのデザインがとても明るくてね、同じ白いのに丸だけど、日本の日の丸はローストワーだけど、片っ方のラッキーストライクは、ウィンドワーまったく同じ柄で…そういうもんで…これはアメリカのデザインだけど、何か日本の未来があるんじ

ゃないだろうかと思いましてね、夢とか希望とかね。焼け野原、何もないところでポンと出てくるわけだからね。ラッキーストライクという意味もなかなか明るくてね、昔からアメリカだなと思うんでしょうけど、非常に明るいので、そういう精神的なメッセージが元気付けてくれたことは事実だし、それで、読んだ本は、戦争が終わって 5 年目、1950 年くらいに広島のアメリカ文化図書館、アメリカ図書館で読んだ本は、「Never Live Well Enough Alone」というレモンド・ロイが書いたもので、レモンド・ロイというデザイナーが…その人の本を一生懸命読んで、それがあの…アメリカの文化は、モノの世界をデモクライズし、美しさの理由というところがデモクライズしていく。インドストリアルデザインをたくさん作るから物の世界でもデモクライズする、デザインが美しいから誰でもきれいなものを持っているという。そこが僕を一番刺激したもの。

I：　これは日本人がデモクライズされたものに触れることになったのは、その後ですよね。

E：　だから、ラッキーストライクか、それをきっかけで後は…それで、日本は戦争中もマスプロダクションになったからね。だから、飛行機を作ったり。でも、特別な文体であるとか、美しさ、美しい美術はいっぱい欲しくなったからね。

I：　戦争中は戦争のために絞られて、その後は人々のために…

E：　それで、ラッキーストライク何か、僕なんかが一番最初。ラッキーストライクをもって学校でこれだけの Materiality、日本語でいうと「モノの民主化」、英語で言えば Democratizing、それで学校で Movement になったね。それが、先生に怒られたね。なぜ怒られたかというと、学校のいいところが駄目だといったから。伝統だとかね歴史を否定したからね。でも、後で先生方は評価してくれました。

I：　黒川さんは負けることは勝つことだと言っていまして、結局は負けたのは逆に勝利になっちゃったのね。

E：　それは、勝利したから、経済的に勝利したから、そういっているのであって、マジで聞いたらだめ。黒川さんと私は苦しくなかったんじゃなくて、いい所に住んでいた。まだ田舎で食料があったりね。だから、他の人は食料がない家がない。だから、それがもう負けることが勝つことだということはよく言われるんですよ。それは、武士道でね。例えば、バット切るでしょう。そうしたとき、ここを皮だけ切ったときに勝ったと思っちゃうわけね。ところが、皮だけで後はパンで。そういうことでよく負けることは勝つことという。というが、今度の戦争が負けたことは本当はジャスト負け。二度と負けたくないね。戦争が終わって経済成長したら、もう負けた状態にはしたくないという。だから、仮に戦争があっても絶対に負けないということはある。初めから負けるたこと考えて戦争するよね。負けることを注意して。戦争中は負けることは考えなかったから。これは余計な話だけど、戦闘機、軽い、アメリカの飛行機と比べたらものすごく軽いの。だから、もうスピードも速いし、回転も

速いしね。すぐ追っかけてパパパッとやって必ず勝つんだけど、向こう側が気がついて撃たれることを気にして、鋼板（を厚くしてね、あたってもはいらないようにしたわけ。エンジンの馬力を 3 倍くらいにしちゃってね。

I：　　ゼロセンは 42 年までは一番いいやつだったけど、後は企業的な問題があって、日本はそういったモデルしかなくなっちゃったね。

E：　そうそう。早くて、薄くて、軽くて、（R：Japan was very proud that Zero-sen was better than…）ところが、アメリカのグラマンというのはね、エンジンが大きくて、昆虫でいうとアブというの、大きいな虫がピョンとうなる。

I：　　面白いのは、日本は最初からいつでも技術というところにすごく興味を持っていたのね。だから、戦闘機も軍艦とかね、それを作ることがきっかけになって後から技術の発達のあれになったですよね。日本の戦後の発達というのは、戦争中いろいろ作った経験に基づいて、発展してきたというのも言えるんですね。だから、戦前にあったいろいろな研究を戦争中に生かして、後からもまた生かされたのね。だから、身についた技術というのは…

E：　”Thin, lighter, stronger and powerful”。これが絶対日本のプロダクトになっちゃったのね。

I：　　三菱の飛行機のエンジンも、たとえば最初のモーターパイプを作るために同じ技術が施されているのね。それもやっぱり勉強になったというか…

E：　いろいろと反省もあってね。そういう話、あなた好きだね。

I：　　モデリングやってるから。「大和」とか「武蔵」とか作ったのね。それが趣味だから。だから、すごく脱線しちゃうんですね。

E：　そしたら、この順番でやりますか。この方が早いね。

I：　　お願いします。

E：　結構質問いっぱいあるから…。じゃ、日本語でちょっとさっと。

I:　　日本の高度成長の間、誰かに影響を受けた作家あるいはそのコンセプトはありましたか。学問的にどのような教育課程を経ていらっしゃいましたか。

E:　「吉田松蔭」「山口健二」、日本は明治のときに国が閉ざされたのを開けて、アメリカと付

き合ったわけね。そのときは、幕府を禁止してたんですね。それを破って、祈ろうとした結果は嫌いでしたね。その人の考えのひとつの小さなアカデミーを作ろうとしたんですね。それで、その、吉田の「松下村塾」という学校、それに影響されましたね。「吉田松蔭」の「松下村塾」、そこの卒業生が明治維新を全部作ったわけですね。影響は、その国を新しく作るというところに刺激を受けたわけです。だから、戦争で負けて、新しい日本を作る…、しかも、プライドと美学を失わないでね。それから、先生といったら、「吉田松蔭」。

I :　　たとえば、社会を変えようというアイデアというか、概念というのは、メタボリムズのどの計画にも入っているという…

E :　　そうそう。メタボリムズは、それにフィットするんですね。

I :　　今、何を模範にして社会を変えようとするのか、…

E :　　何を」じゃなくて、世の中の変化に対して一番フィットした知恵が必要ならば変えて行く。

I :　　アメリカとかを真似するというわけじゃなくて、時代が変化したという、それに合わせて変えるという…？

E :　　そうそう。それで、「負けることは勝つことだ」といったけど、ダメ。同じようなことで、ある時代が止まることは新しい時代を期待すること。これも自然に期待されちゃうよね。誰もが期待しているわけ。そして一番近いのは、明治維新のときの人たちが一番近くにいたわけね。

I :　　そのときの時代の変化に合わせて変えようという概念があって、でもその前の伝統というのは、どういうふうに思われるんですか？それも視野に入れて、変えようということ？

E :　　だから、プライドであるとか、美学とか、それらを中に入れてね、それから、倫理観を入れて、その倫理観はおそらく 2000 年続いている孔子とかね、孟子とか中国から 2000 年前に来た、それが日本化されたものですね。例えば、年寄りは尊敬すべきであるだとか、年上はちゃんと扱わなければいけないとか、弱いものをいじめてはいけないとか、そういう倫理観ですね。簡単な話だけど、美しいものを守ろうということ。お腹が空いても人のものを盗らないとかね。単純なことだけど難しいことですね。

I :　　すごく自己管理が必要ですよね。

E :　　それをもって改革を進めたわけです。改革の一番大きいのが国を開けるということですね。開けた結果、たくさん人出ました。アメリカとかね…憲法だとか、軍隊の仕組みだとか、そういうの

がどんどん日本に入ってきた。そして、アメリカからは資本主義の形態ね。だから、開けることだよ。

I：　それは、向こうに行くというのは、自分からみんなが行ったのか、それともその政府とか上から？

E：　いや、自分から行くお金がないから、政府しか行けないね。だけど、向こうから持ってきたものは、お金のない人は一生懸命それを勉強してましたね。これはしょうがない話で、お金がないから行けなかった。行きたくても行けなかった。

I:　だから、向こうに行った人はいろいろな知識とかを身につけて日本に戻って伝えるという？

E：　そうそう。それはとても優秀だったらしいね。ドイツ語を日本語に訳すとか…、それはね、こんなに違うのにね、よくぞ。ま、この人みたいに、そういうもんだね。じゃ、３番目ですね。順序よく行きましょう。全部やってからじゃなきゃ…。

I：　じゃ、３番目の質問で行きます。メタボリズムは多数の評論家によって、建築・デザイン分野での日本初の自立した前衛的なムーブメントとして指摘されたのですが、あなたはそのムーブメントの１人としてご活躍なさったのですね。このグループには他に誰がいましたか。そして、あなたの見解では、このムーブメントは日本の現代建築の分野にどの様な影響を及ぼしたでしょうか。

E：　これはもちろん最初はそうだったし、私はその一人です。仲間は、先言ったように、菊竹さん、黒川さん、マキさん、オオタカさん、川添さん、粟津さん。そのオリジナルが浅田タカシ、一番年上で。それで、日本のムーブメントとしては、同じですね。先言った明治のときの国を開けたと同じように、経済成長を国の政策として主張していたということは、労働力を必要とする、だから人口が増える、そういう新しい状況、すべてのモノの動きが変わってくるはずだ、ということじゃないですか。だから、そのような状況は、初めてですよ。そのような状況を建築界で使うのは初めてでした。それまでは、建築家というのは、政府が作れ、お金持ちが作れ、というそれだけでしたね。メタボリズムになって初めて、社会の大きな動きを見て。

I：　じゃ、ついでに、４番の質問ですけど、他のメンバーたちと集まったときにどういう問題がディスカッションされたのでしょうか。覚えていらっしゃいますか。その 50 年代後半、その集まりはどのような雰囲気だったのか。メタボリズムのメンバーが集まったときの問題だとか…

E：　一番記憶にあるのは、サワダタカシという人が、この人亡くなりましたけどね。その人は、人間の体に血が流れていると。だから、circulate していくとですね。だから、同じように国も人間の血が circulate していると。そのエネルギーが自分の circulate しないと健康な体にならない。だから、メタボリズムの原点は、生き物の体の circulation ですね。それで、アサダさんという人は、建築家で

戦争中は空港を作った人なんですよ。アメリカがバーンバーンと爆撃するでしょう。でも、すぐに翌日まできれいに空港作っちゃった。そういう技術仕官、海外のね。もう一つは、お医者のせがれだった。だから、手術したとき血がパッと出てくるのを知っているわけ。それで、僕らは血が知らないわけね。ちょっとガット血が出るだけでね。それで、メタボリックというのは、生物用語ですよね。

I：　　菊竹もお医者さんだったでしょう？

E：　菊竹はお金持ちのせがれ。九州の大金持ち。ブリジストンの創始者。

I：　　資料と違うのね。実際は…。資料に書いてあるものは100%信じちゃだめだね。

E：　だから、あんまり貧乏と考えられないでしょうね。僕はそう思うから。ま、そういうことですよね。

I：　　次、建築、デザイン、都市計画――これらはすべて、メタボリズムが猛烈な変化の時代の最中、当時の日本社会に即した新しい審美的なランゲージを成立させるべく、見直そうとした様々なテーマです。前衛的な動きであるメタボリズムのメンバーたちは、この高度経済成長および激しい社会変化の時代についてどの様な見方をしていたのでしょうか。
…ま、先と一緒ですよね。次の質問に入ります。
何人かの評論家によれば、メタボリズムは建築上の理論ではなく、むしろ建築の視点から見た当時の日本社会の批判的な分析だと…？

E：　それは、確かに言えますね。経済成長が進むこと、それは客観的な状態であって、メタボリズムは方法が出るように刺激したんですね。どのようにしたら、社会の状況にフィットし、かつそれが進化していくための方法の発見、ここがやっぱり面白いですね。

I：　　これは日本の人たちに対するメッセージというか、どのように社会の状況を把握して進化できるのか、というヒントを与えたのが日本の当時の人たちだったんですね。別に外国ではなくて…

E：　そうです。日本の中だけで、しかも行政だとか企業とかを中心に。それと、ある程度地域社会の人に対する意見。

I：　　これもちょっと次の質問と関係があると思うんですけど、メタボリズムのアイデアは、日本の芸術・建築の伝統との関わりが強いとよく言われています。例えば、建築家の黒川さんや、批評家の川添さんは、日本の伝統的な技術や建築の建て方などが西洋に比べてもっとも効果的であり、現代社会にとても適していると指摘し、また、日本の都市は西洋のモデルに比べてより柔軟なところを見せ、組織的にも、もっとしっかりしていると主張しました。この「文化的独立」という主張は具体

的にどの様な意味を持っているのでしょうか。

E：　それはとてもいい質問で、質問のほうが立派だと思うんですね。やっぱり、日本では自然観察が非常によかったんでしょうね。だから、木は植えたら伸びるとかね。たくさん増えすぎるといけないから、時々切って片付けなきゃいけない、間伐というんだけどね。池の魚が多すぎると少し外すとかね。お寺の池がね、お寺の池は鯉でいっぱいになっちゃうんだけど、それをなぜかちょうどいつもいるんだよね。そういう自然の成立というものに対して昔から自然尊敬の気持ちがあって、一生懸命見ていたんですね。その結果、日本の建築は増えると決められた寸法の材木が少しずつ増えていくわけ。すなわち、畳が増えていくように。だから、人（家族）が増えれば畳が増えていく。家族が減ると畳が消えていく。これが、よその国にない非常にうまいアイデア、しかもモーデラ工事とかがしっかりできている。３尺６尺とかがね。もう一つは、技術的には、それをつなげる歩道をどう作るかという大工の技術だとか、それから、あまり深く土の中に木を入れなくて、石の上に乗せておくくらいの軽い状態だとか、カチガチ硬くしないで、振ったらぐらぐらするくらいの柔らかくする。たとえば地震がきてもぐらぐらできるような。そういうようなものは、自然観察と自然の成長に似た形態で人間を見ていたわけね。人間も成長する、それに対して建物も成長していくというふうな、これはやっぱり先ほどの血が circulate してエネルギーを送るということと同じような考え方で、建物も、子供が増えれば増えるというのは、血がつながっていくという。

I：　″Marine City″のような海に浮かぶ都市あるいは″Tower Community Shape″のような垂直型の都市（両方のプロジェクトは 1958～59 年に計画されました）、丹下健三による 1960 年の東京一新計画、黒川紀章による“Helix City”（1961 年）、磯崎新による“City in the Sky”（1962 年）―― メタボリズムのプロジェクトは世界中で有名でした。
空想的な設計に産業部品や先端技術の多用、これらが西洋の世界を魅惑した主な要因です。なぜ日本人の建築家やデザイナーたちが、審美的に非常に魅力的でオリジナルであるといっても実際には実現不可能であるこの様な意欲的な都市計画の構想に至ったのでしょうか。

E：　これは非常に興味ある質問ですけど、日本人独特のユートピア論があったんですね。ユートピア論というのは、どちらかというと、仏教思想の中で極楽思想だとか、西の向こうにはユートピアがあるんだと、極楽というのは空に浮いていたり飛んでいたり、そういうようなことで、空間を全部使った 4･5 dimension のことが描かれていたので、誰もがユートピアを基本的に持っているんですね。だから、おかしいと言わないわけ。ところが、ユートピアを誰もが描けるとは限らないわけ。やっぱり優秀な人じゃなきゃ、それは形にならないんですね。だから、高層ビルにしても、磯崎新のような頭がでかくて下が細いとかね。黒川紀昭のはこんなになってね、DNA みたいな感じで作るとかね。それぞれ形があるわけね。…これは実験。僕がね。

I：　それなりにユートピアですね。

E：　ということで、ユートピア論があることと、もう一つは、それでどうしても多少現実等を考えなければいけないのが建築家の悲しさというかね。土地が高いとか、土地が少ないとか、人口が多いとか、そういうのはやっぱり高いほうがいいだろうというような現実性もあるわけね。

I：　**空間があまりないから、一つの立派なものを作ってもっと空間を利用する？**

E：　そちらが主じゃないですね。やっぱりユートピア像をどう作るかということが主ですね。

I：　**今の答えだとたぶん 9 番、10 番の答えになっていると思うんですね。9 番、ヨーロッパのある批評家はメタボリズムのグループのことを「ユートピアのアカデミー」と指摘しました。40 年が経った今、この様な見解に同意しますか。ここでユートピア論が出てますね。それと 10 番、60 年代の巨大な高層マンモスビルは、建築設計の単なる様式でしたか。それともある種の具体的な必然性だったのでしょうか。それがたぶん先の答え。**

E：　そうですね。ユートピアの必然性はもちろんありますね。

I：　**戦争に負けちゃって、当時の日本人の意識に刺激を与えるためのユートピアだったのか、それともそれに加えて、先ほどおっしゃったように具体的な空間の考えとか、そのような…。**

E：　戦争に負けたというのは、政治的な意味でね。政治的な意味で負けたのであって、実際にはね、政治的な失敗で負けたけど、ユートピア論はやっぱり昔からありましたね。それはこれと離れますけど、日本ではアニミズム、物に心があるような、そういうようなことで物の世界を見ていましたから。だから、物の世界自身がいろんなお芝居ができると思っていたんですね。たとえば、これは平安時代ですけど、夜中にお寺の道具がみんな踊りだすとかね、お坊さんと交じりながらね。だけど、全部時間が止まってお寺の道具が踊るというそういう幻想を非常に楽しんでいましたね。

I：　**アニメにもいっぱいありますね。**

E：　ええ、いっぱいあります。そういうのが好きなんですね。だから、物をカチッと固めるだけでなく、よく遊ばせるというかね。だから、空中都市なんて本当は磯崎君は、浮かしたいんだろうね。だけど、しょうがないから支えてるというような。

I：　**だから、新しい技術を駆使して空想的な世界を建築の中に取り入れる…。**

E：　そうそう、技術に方向を与えたんですね。

I：　**今の現代の日本の技術と。外の人が日本のものを見て、それが日本の世界の中でどういう位**

置を占めているのかって、自分に問いかけたとき、日本人はそういうものを作って発信したみたいな捉え方をしているそうですけれども、そんなに外国を意識して作ったわけではないですよね。それは、指摘されるだけだから。

E： あのね。目標があるでしょう。目標に技術を捜していくと考えるのが、気持ちが安心するんですよ。人間というのは、安心して何かを考えるというのが大事なんですね。だから、外国を意識しちゃうと気持ちがこんなに（小さく）なって、安心しませんね。まっすぐ見て浮いた都市が作りたいと思うと、それだけのために一生懸命技術を発見していくわけね。そうすると、気持ちが整理されて…。

I： **ですから、私たちのユートピアを作るという意図ですね。もし技術が足りない場合は、ちょっと外を見て何か使えそうなものを取り入れるという…。**

E： それは、刺激を受けるためね。基本的で純粋な技術者の美学というのが要るんですね。

I： **「技術のための技術」みたいな、「アートのためのアート」みたいな…。**

E： そうそう。それは、もっとダイナミックに話せば、刀をこう、日本刀を作るでしょう。あのときたたくじゃない。あのときは全部集中してね。そしたら、出来上がったときはものすごく綺麗な…。

I： **武士道にも関係あります？**

E： 関係ありますね。

I： **だから、伝統からの影響というかね。形というよりも美学ということですよね。**

E： そうです。

I： **ですから、その人たちは、普通今の日本で作った物を見て伝統の影響があるなと思うけれど、見た目だけの判断で中には精神的にどうなっているのかが分からないわけね。だから、ものを書いたりいろいろ指摘するけれど、実際は分からないんですよね。**

E： だから、その一つの例としては、組織論的にたくさんの人が一つに集中できたんですね。そこは、組織想像力、組織的に想像力を生かしていくというんですかね。

I： **11 番、これらのメタボリズムによって提案された新しい都市は古代日本の都市モデルの間に**

幾つかの共通点があると思いますか。

E： それはありますね。大体今まで述べたように進展する日本住宅であるとか、そういうようなもの、取り替える、伊勢神宮みたいに 20 年に 1 篇やめて新しく…。あれがメタボリズムですね。だから、そういう面ではずいぶん繋がっていますよね。菊竹さんなんかを言いますと、世界で住宅のコンペする場合には、日本の住宅のスタイル、規則みたいな、それを基本にするといいと言うくらい。菊竹さんは、非常に世界的だと言っているんですね。つまり、メタボリズムが世界的という前に、長い伝統の伸び縮みするようなそういう建物は後進国開発にせよ何にせよ、非常に有効だと言っているんですね。

I： **一方は、伊勢が定期的に作り直されるというのがあって、桂離宮は、時間を置いてだんだん発展していくみたいな…。**

E： いたんだけど、今は国法で止めてますよ。形自体を切っちゃって。この間見てきたんですよ。綺麗ですね。見た？申し込んだら、絶対見られるから。1 時間目玉を閉じる時間も惜しいくらい。それほど美しくてね。メタボリズムは美しいということの代表的なもの。

I： **たぶんそれが 12 番の答えだと思います。私がとても興味を持っているのは、エクアンさんはデザイナーであると同時に、建築家でもあるということですね。たとえば、自分が読んできた資料の中で、メンバーたちの名前を挙げるときに、デザイナーよりは建築家のほうに焦点を当てて挙げられるから。どうして、そういうメンバーたちのその、本当のメンバーたちは誰だったのかということについて、一般の資料の中でゴチャゴチャになっているんですか。たとえば、丹下さんはメタボリズムのアイデア自体、丹下さんのアイデアだよ、という資料があるし、焦点を別に人に当てるという資料もあるから、読んでいるとすごくゴチャゴチャになってきて、実際はどうなったのかって。**

E： 僕なんかは、メタボリズムにすぐ乗ったのは、生産というパーツを作っているわけですよ。それは、人が増えたら生産も増えなきゃならないでしょ。もう一つは、インダドストリアルデザイン、僕は道具と言っているけども、道具というのは移動が聞くんですね。どこか行けというと、動かなきゃいけない。そういう性質を持っている。建築家はあっち行けと言っても動かないわけ。そういう意味で、道具は状況の変化に対して適応しやすい。しかも、こういうものも動かせるけど、住宅みたいな小さいもの、空間を道具化できる。たとえば、便所というカプセルを作るとか、台所というカプセルを作るとか、そういう技術があるわけですよ。それは、たとえば、アメリカでよく発達したトレーラハウスみたいに。そうすると、トレーラハウスみたいなものを作って移動するだけの、たとえば災害があるときに、そういうものを運んでおいただけで、十分百万人都市を作ることができるわけですね。よそで作って持っていけばいいんだから。だから、もっともメタボリックで表現として使われているのは、モンゴルのテントみたいなもの。ああいうのがインダストリアルデザインが一番できやすい。そこに 100 万人の refusee が出たら、100 万人用のテントをそこへ世界の協力をもってあらゆると

ころへ瞬間に作ることができるわけですよ。つまり、建築家の設計方法じゃない設計方法で都市や住宅を考えることができる。

I：　デザインの技法を駆使して都市計画を作るということ？

E：　ええ、そうですね。しかも、今の話は非常に臨時的かも知れないけど、増えたり少なくなったり、それは非常に合わせやすいということですね。

I：　すごく社会に対して商業的な…見方としては商品としての…。

E：　見方は商品だけど、商品じゃないわけですね。しかも、メタボリズムで一番大事なのはパーツ、コネクター、そういうのが用意できるわけですよ。

I：　メタボリズムというグループに対する丹下健三の影響というのは、何かありましたか？

E：　丹下健三の影響は、一つあった。反対しなかったということですね。彼が反対したらね、大変。

I：　黒川さん、菊竹さん、磯崎さんは丹下健三の事務室で働いていたんですね。

E：　弟子だったからね。

I：　60 年にデザイン会議があったときに、丹下健三がいろいろな概念図のようなものを作ったときに、メタボリズムのアイデアそのものを使っちゃって。

E：　それはその後ですからね。60 年の後。東京都市計画のね。メタボリズムの後。

I：　メタボリズムが世界的に非常に注目を浴びるようになったのは、60 年の後ですよね。

E：そうそう。60 年に最初にアピールしたんですよ。それで具体的に丹下さんが東京湾計画賛成の後で、そのときに黒川がメンバーだったんですね。

I：　黒川がメタボリズムと丹下の架け橋みたいな存在だったんでね。

E：　ちょうど中間にいた。そのとき、黒川はヘリクサとか cycle transportation システムとかそういうものをメンバーとして。

I：　　だから、逆に丹下さんが影響を与えたのではなくて受けたということですよね。

E：　そうそう。丹下さんはグレートプロデューサー。大事なことですね。

I：　　だから、向こうでは丹下さんのほうが人気があってね、メリットは全部丹下さんのほうに行っちゃうのね。そんなことないのに…。

E：　見えないですね。昔のお話だけどね、中国で三蔵法師というお坊さんがいてね。インドにお経に行ったんですね。そのとき、3 人の化け物がいたんですね。お弟子がね。それが、猿の化け物、ものすごく走るのが速いのね。それと、豚の化け物で食べ物を集めるのが上手なものとね。それから、河童の化け物で人を騙すのが上手なものね。その 3 人の弟子を連れてインドに行って、成功してインドのお経を長安の都に持って帰ったんですね。これは仏教史での最大の需要。三蔵法師もグレートだけど、面白い話は足の早いお猿と、食料を集める豚と、人を騙すことの上手な河童の化けが有名であること。もしかしたら、磯崎がお猿のようで、黒川が食料を集めることが上手な人かも知れないしね。そういうふうに見られるわけね。

I：　　三蔵法師は丹下？

E：　丹下健三は日本の建築の近代化をグッと前へ進めた人だね。

I：　　先駆者みたいな？

E：　そうそう。グッと前に進めた人。だから、タンゲの後をポスト・モダニズムというの。だから、日本では丹下が死ぬとモダンが終わるわけ。

I：　　最後の質問なんですけれども、メタボリズムは誕生してから間もなく消えちゃったというか、いろいろに分かれてみんなそれぞれの方向に走ったんですけれども、メタボリズムとしての具体的な考えを続けた人というのはいなかったんですね。それはどうして流れ星みたいに、すぐ消えちゃったのでしょうか。具体的な理由は？

E：　それは、それぞれのクライアントがあったから、ビジネスが。だけど、気持ちがつながっているから、これは大きいですね。だから、気持ちがつながっているから消えたようだけど、本当は続いていてそれがパッと明るくなるとかね。気持ちが大事なことでね、メタボリストがお互いに評価し合うというか、ほめ合うというのが大事ですね。

I：　　そういうのが続いたけど、まとまった感じとしてはなかったというか、だんだん消えて行ったんですね。例えば、60 年頃にメタボリズムのマニフェストを作ったでしょう？それがあって、62

年にはまた新しいものを発表する予定だったけど、それがなくなっちゃったんですね。どうして？それは惜しかったですね。

E： それは、考えが進むからね。一応まとめの川添さんが苦労して大変だと言ってね、つなげて行くのがね。今始めたんですよ。それぞれみんな宿題が出ていてね、みんな原稿 100 枚とかそういうの。確か来週パブリションに会うんだけどね、面白くなりそう。

I： **何を書くんですか。**

E： わからない。これから…。

I： **でも、メタボリズムについて？**

E： そうそう。メタボリズムが名前だもの。今度は本格的な本だから。

I： **いつ発行されますか。**

E： 今年いっぱいに原稿が集まるから。まだわからないけど、来年の夏までは…。

I： **彼は早稲田大学でメタボリズムについて博士論文を書いているので、もしよかったらコピーさせていただけますか。視点が違って結構面白いかも知れないから。**

E： 日本の場合、メタボリズムにつながっているのはあまりないのね。その強いグループが。それは、まず西洋の近代化の影響のほうが強くて。だから、新しい考え方をもって作るのはなかったかな。それから、二つ目は 60 年から今までだと 40 年くらい経って、みんな仕事をしっかりやっているわけね。だから、そういうしっかりやっているチームはやっぱり集まっても誇り高く集まるよね。俺はちゃんとやっているんだと。それでね、僕の想像だけど、おそらく次のセンチュリーはみんないなくなるけど、21 世紀の始まりにメタボリストの人がいたなということがわかればいいという感じ。

I： **今の西洋の世界ではメタボリズムの概念というのは、一番その日本からのヒントが大事にされているからね。でも、まだ混乱しているから、向こうの人は期待しているらしいのね。**

E： 混乱はだいぶ整理されると思いますよ。しかも、例えば菊竹さんはいろんな実験もしているし、どっちかというと天才的な人でね。いろんな技術も持っているし。だから、その人にお会いできればとてもいいと思うよ。考えがわかりやすくて。だから、ぜひ会うといいですよ。

I： **そうですね。**

E：　とても親しい関係なの。僕の考えとよく似ていてね。僕はデザイナーだけど、彼もどっちかというとデザインをしている。デザイン・オリエンテッド・アーキテクト。

I：　**西洋では、メタボリズムというと黒川さんの名前が最初に挙げられるのですが…**

E：　そうだね。よく本書いているしね。

I：　**情報というのは本を通して伝わるから。だから、どっちかと言うと誰が一番、そんなにやらなくてもいいんだけど、いろいろ紹介の仕方で誤解をね…**

E：　ノーベルプライザーね。僕らよく言うんですよ。日本で大江健三郎ノーベル賞取ったけど、あんなのどこがいいのかと思うんだけど、フランス人訳したのかな、それでずいぶんね。

I：　**紹介の仕方ですよ。僕が思ったのは、この間ベネチアの映画祭があって、北野たけしが受賞してすごく人気があったけど、日本の夜の番組とかを見ると全然違う北野たけしの側面が登場するのね。向こうの人たちは北野たけし彼がそういう夜の番組に出るのは思いがけない、知らないから。その人、ウチとソトの両面持っているんですね。**

E：　僕はね、北野たけしの前の勝新太郎のほうがはるかに面白い。勝新太郎が「座頭市」のオリジナル。全然違う。だから、審査員がもし勝新太郎のを見ていたらあげなかったと思うよ。

I：　**僕たちは侍が登場するだけで興奮しちゃうから、あげちゃうのね。まだ相互理解というのはそういう段階だから。**

E：　強いしね、ジェントルマンで、日本語で言ったらスケベだしね。面白いわけ。そのくせ、弱いものを助ける。全然違う。あんなの、ビートたけしやるのってけしからん。あんなの見たくもないとテレビで言っているぜ。

I：　**どうしてもオリジナルの再生だから。**

E：　勝新太郎の「座頭市」は絶対見るべきよ。あれは面白い。ビートたけしは顔つきがよくない。

Ｉ：　**難しいね。紹介の仕方で。**

E：　黒川もよく頑張ってますよ。一生懸命書くということはね、自分を出すことだから、黒川氏もビジネスマンとしては立派ね。なかなかできないよ。菊竹さんも材料はいっぱいあるけど、本作ら

ないもの、あまり。…丹下さんはすごい。丹下さんの本だけで、本屋やっている。すごいよ。

Ｉ：　一人の建築家がどうやってすばらしい作品を作って本も書けるという、そこまでの能力というはどこで…。

E：　それはね、日本の中で、戦争で負けたでしょう。黒澤明が出るとみんなそれに集中するわけね。それから、何でも黒澤ムービーになっちゃうわけ。丹下というのは一人出てくると、全部何でも丹下になっちゃう、本屋がつくっちゃうの。それと同じ。

Ｉ：　他の資料で自分についての資料を集めて書くわけね。

E：　そうそう。他人だけど、後は見てもらって「ああ、いいんじゃない？」とサインして。それでね、他の人が書いたのは上手く書く場合があるからね。建築家の文章って大体がよくわからないから。日本でも建築家の文章というのはもう全然。磯崎君の文章は読んでも、何でこんな難しいことをいうんだろうと。解りにくいのが建築家の文章ですね。

Ｉ：　イタリアもそうです。

E：　丹下さんの文書はわかりやすいよ。黒川紀昭の文章は上手よ。非常にポピュラで。

Ｉ：　メタボリズムについては、その当時書かれたものじゃなくて、もっと 10 年後とか 20 年後に書かれたのね。すごく離れたのね。 例えば、黒川さんの「Metabolism in Architecture」も 70 年代ね、20 年後。どうしてそんなに離れているんだろうと思うんですけど。

E：　水が山から染みてひょっと出てきて、またゾーッと染みて出てくるでしょう。その間にきれいになっていくんじゃない？そういう感じがしないでもないね。だから、だんだんよくなっていく。原理原則に帰るのね。一番最初に言った生物の変化だとか、そういう自然の変化という原則に帰っていくわけ。

Ｉ：　メタボリズムのサイクルみたいな…。

E：　あの最初のころはね、自然の中の蛇でも蝶々でもね、お魚でもたくさん生存して上手に暮らしているわけね。みんなメタボリスト。非常にトータルでね。やっぱりすごいと思うわね。だから今、我々はやっとそういうものだということが 60 年代からわかったのね。戦争が終わってから、十何年経ってね。戦争が終わった頃にはわからなかったけど、やっと生き物の姿が見えてきたのね。これは、とても大事な「自然観察」。

Ｉ：　高度成長が終わって、環境時代になって初めてもう一回メタボリズムが生かされる。その時代に来ているという…。こういうふうになるんですよね。

E：　そうそう。今まだ生産が多すぎて環境を壊していったのがまたこう繰り返される。

Ｉ：　**だから、また発展していくんですね。また戻っちゃうんですね。**

E：　そうそう。よくなる。

Ｉ：　**“beautify”ということにもう一回また。**

E：　だから、うまく行けば建築原論になるかも知れないね。

Ｉ：　**だから、日本で初めて発信する建築の理論というかフィロソフィーがメタボリズムだというふうな言葉と…。あれもみんな入れてね、桂も伊勢も…。日本の建築のストラクチャーも、それから新しく再生して戻るという…。**

E：　桂とかいってもわからないからね。向こうの人は。だから、メタボリズムにまとめていくとわかる。

Ｉ：　**これは､黒川さんの希望でもあるし､機械の時代から生活する人生の共生の時代に､symbiosisというものへ。**

E：　黒川紀昭は、メタボリズムの後に symbiosis することを with symbiosis という。Symbiosis は最初から入ってる。

Ｉ：　**この共生というのは、メタボリズムの一部であるかそれとも全部をさしているのか。**

E：　それは一部とは言えないけど、一緒というか、もう中に含まれている。要するに日本のベースみたいな、共生というのは、ともに生きるという…。

Ｉ：　**だから、日本の文化というのはいろんな世界の文化が融合されたような、和洋折衷というか、いろんなものが重なってきて、共存するというか、共生することですね。みんなで生きていこうという民族ですからね。西洋と違うところは、西洋は自立して自分は自分で…。**

E：　ええ、そうですね。

Ｉ：　**解りました。では、今日は会えてとてもよかったと思います。本当に勉強になりました。お時間を割いていただいてどうもありがとうございました。**

This email was sent by designer Ekuan Kenji to Raffaele Pernice on 2nd March 2005 in response to a previous message which asked for his comment on the article published by the author on the magazine "JAABE" in November 2004.

Wed, 02 Mar 2005 17:45:55 +0900

Subject: Metabolism

Dear Raffaele:

Thank you for your writing of Metabolism Reconsidered.

It is well written, and through the reading I felt as a member of the Metabolism that it conveys line by line your intensive study on the Subject. Let me have a liberty to send you a word for your further research.

When leaves turn in red and fall in autumn is a symbolic phenomenon of metabolism. Nature inherits such a system that leaves have fate to be turned in red and to be fallen. This is a technology that nature has. Metabolism is a large supportive concept, and I believe that we need a sturdy technology to create a real existence. Although the technology in 60s was incomplete, highly advanced technology may be able to support the idea of Metabolism these days.

Thus, the terminology Metabolism derived from biology now can create a real enough entity. However, humans have to use highly wise judgment for the solution on real things to avoid a regrettable result whereas nature's metabolic judgment is done infinitely and it bears a real thing as an infinite result. And that is an approach of the Metabolism.

The Metabolism may become an important criterion of human behavior, nearly religious, beyond mere biological terminology as representing the most distinctive thoughts of human growth and evolution in the twenty first century.

I am able to see this situation well because I am an industrial designer. I will be more than happy if above thoughts will make a reference for Your research to come.

Yours sincerely,

Kenji Ekuan.

Interview with Noboru Kawazoe

The interview was held in Kawazoe Studio in Tokyo, on June, 4, 2004; time 3:30pm.

Interview with Noboru Kawazoe

川添登さんに聞く

(Interviewer→ **I**　Kawazoe → **K**)

1)　*Japan lost the war in 1945. In the 1955 Japan continued an economic and industrial development which had already started with the Meiji Restoration at the beginning of the XX century. In that period you were really young. What memories do you have about the cultural and social environment of that period? What kind of specific interests or which sort of readings characterized your formation as a professional in your field?*

1945 年に日本は敗戦しました。1955 年には、日本では 20 世紀初頭の明治維新とともに始まった経済的・産業的な発展が続いていました。もちろん当時、あなたはとてもお若かったですね。その時の文化的・社会的な背景に関してはどのような思い出をお持ちですか。また、当時、具体的にはどういった興味をお持ちでしたか。その他、この分野の専門家の一人として活躍できるようになるために、どのようなものをお読みになりましたか。

K :　終戦のときに私は南九州にいました。私はそのとき専門早稲田の専門工科に入学していました。その入学試験を受けて、その年に合格通知が来ましたが、そのとき僕は徴兵検査のために宮崎にいたのです。両親が宮崎出身ですから。3 月 10 日の大空襲がありまして…、ここの辺りは 4 月 13 日でしたね。下町は全部焼かれてしまい、東京は最も焼き尽くされていました。それで強制疎開から帰ってきたとき、つまり軍隊から東京に帰って来てみると、私が子供の頃住んでいた地域だけがぽっかり焼け残っていました。子供の頃は西巣鴨に住んでいました。家の者は皆宇都宮の郊外に疎開していました。そのころ、私の弟は東京美術学校、現在の芸大ですね、そこの建築学科に入っていました。彼は 3 年からそこに通っていました。

戦時中に青年団と女子青年団ができていました。彼らはその地域の消火活動などを、お母さんや女中さんたちと一緒にやっていました。そのため、そういった地域はやはり処理がよかったです。空襲のあった時期は、皆バケツなどを持って消火にあたりました。私の住んでいた辺りは、大きな通りに囲まれて、お寺も多く、緑が多かったものだから、延焼を免れたのですね。焼け残ったところは皆そうですが、戦時中の青年会、地域の分科会など…。

I :　**そのとき、おいくつでしたか。**

K :　45 年でしたからちょうど 20 歳ですよ。そのころ、青年分科会や子ども会などができていま

した。戦前の東京では関東大震災の当時、小学校を各地に建てたのと同時に児童公園を各地に作ったのですよ。それで、子供たちを遊ばせるために、若い女性が中心で活動していました。約 30 名ほどで、その本部は日比谷公園にあり、各地を回って、公園に来る子供たちを遊ばせていました。その他に、キリスト教の日曜学校や仏教子ども会、それから YWCA などもありました。さらに戦時中の愛国少年団というのがありましたが、その実態はボーイスカウトでした。その地域でまず青年会に入って、人形劇サークルがあったのですが、その人形劇サークルを独立して、子供会を作りました。幼稚園や保育所、その他児童福祉施設を専門にしようとしたのです。そのときは民主化運動が盛んで、皆「民衆のための民衆の手による民衆の建築」という時代でした。それで「民衆に学べ」というのですよ。けれども、本当に民衆ができる、民衆が学ぶことができることをその人たちは知っている、そして民衆というのは、保育所しかないのではないかと思ったのですね。そして、今はなくなりましたが、当時芝公園で旅館をやっていた女将さんがいたのですが、その人が亡くなったときに、その当時にあった古い建物を東京都に寄付したのです。子供のために何か施設を造ってくれと言って、遺産を東京都に寄付したのですよ。それで造られたのが、芝児童館、ホールですね。それが「新建築」に載りまして、その計画案が出ました。その設計者の名前に、児童福祉施設研究所「河野道祐」とありましてね。それは東京都の社会教育課が管理していましたから、（子供会をやっていたものですからそこの課長さんと親しかったのです）そこに行って、「河野道祐という人を知らないか」と聞いたのです。すると、「たぶん今来ますよ」と言ったので、待っていたら来たのです。そこで、河野道祐さんと話をしました。ところが、児童施設だけでは食べられなかったのですね。それで、昼間はどこか建築事務所に勤めて、夜厚生省などに行っていたのですよ。そんな状況で、特にスタッフも誰もいなかったものですから、「仲間にしてくれ」とお願いしました。

I：　大学では、建築学科と文学科に籍をおいていらしたのですか？

K：　だから、そのために児童心理学をやる必要があったのです。それで、当時戸川行男という有名な先生がいらしてね。あの山下清がいたのは八幡学園（知的障害児のための施設）ですが、戦時中戸川先生は焼けたものだからそこにいたのですよ。山下清を世間に紹介したのは美術出版社の雑誌「みづゑ」でした。特集の計画があったときに、山下清をやらせたのが戸川先生でした。その出版社の前の社長と懇意だったのですね。それで、戸川さんの教えを受けるために専門工科の建築を出てから、文学部の心理学科に入ったのです。そこを出て、当時は編入できるのは第二（夜間）しかありませんでしたから、第二理工学部の建築科にまた入りなおしたのです。結局、建築と建築の間に児童心理学を挟んで勉強しました。

I：　“Japan Architect（ジャパンアーキテクト）”という雑誌に川添さんが書かれた“メタボリズム 2”という記事の中に、桂離宮とルイス・カーンの Richard Medical School とアンズリー（Ansley, イギリス）の児童学校（Infant School）との比較があります。児童施設に対するご興味は最初からお持ちだったのですね。

K :　それで、卒業論文を児童施設について書きました。…（図面を見せながら）戦時中のイタリアのオリヴェッティの作った保育所とか…。

I :　**それからルイス・カーンのプロジェクトですね。**

K :　要するにルイス・カーンというのは、ご存知でしょうが、マスター・スペースとサーバント・スペースが基本となります。桂離宮というのは、まず小書院、中書院、それから楽器の間、新御殿というように次々と建てています。（図面で説明しながら）混乱していないのは、「台所」つまりサーバントスペースが皆接してくっついているのです。ですから、マスター・スペースをどんどん足してもサーバント・スペースが真ん中にあるので、どこでもまっすぐ行くことができます。それから、いろんなところに池や、お茶屋などががあります。そうすると、この横に、名前は忘れましたが、「○○楼」という高い建物があって、ここに水路がずっとあるのですよ。ここの上は、垣を作ってトンネルになっています。お客さんたちが散歩するところがこうあります。食事などは全部この水路を使っています。もちろんお客さんたちも、楽しみながらここを歩くことができます。ですから、ルイス・カーンがマスター・スペースを次々と付け足してゆくということをしましたね…。

I :　**これと同じ考えは、桂離宮にも見られますね。メタボリズムの原点というか重要な特徴である、“次から次へと付け足す”というような…。**

K :　ですから、単位空間にして、それをつぎたしてゆこうという考え方ですね。

I :　**イギリスの児童学校も同じような考え方ですね。メタボリズムと同じように、単位空間を付け足してゆく、というような考え方が原点にありますね。**

K :　要するに、畳や建具があるでしょう。戦前まで、京都や伊勢、東京もそうですけど、引越しの時には畳や建具を全部外して持って来たものです。そして、次の家に行っても、どの部屋にも畳や建具を全部合っているので使えるのですよ。畳の上のたんすもぴったり合うのですよ。たんすも普通は 2 段か 3 段に分けて、そこに棒を通して担いで持って来たのですね。上と下を繋げるちょっとした金具がありますから。

I :　**これもコンパクトに運べる、カプセルのアイディアですね。**

K :　それが、形式が決まっていて、全部茶碗などを積み重ねることができるのです。すべて、重ねたり、畳んだり、巻いたりして、コンパクトにまとめて収納できるのですね。だから、移動収納を前提として作られている。そういうことができるのは、畳間といって…、柱と柱の…、（図面を描いて説明しながら）要するに畳がこうあって…ここからここまでを「ウチノリ」と言います…、柱の芯から芯までは「シンシン」といって、中心から中心線を採用して完成したのが書院造りです。ところ

が、これですと、ここにこう来ますから部屋によって畳の大きさが変わってしまいます。それが、「ウチノリ」制にした場合には変わらないのですよ。「ウチノリ」制にしたものの最初が桂離宮なのです。ということは、京都の町屋の様式を取り入れたのですね。武士や寺院などのお金持ちは、サイズを誂えて敷けばよいのですが、大衆は大量生産された畳を使い、建具を使っていました。

I :　　そのために、同じサイズでどこにでも合わせられるようなものを造るという考え方が定着したのですね。

K :　　そうですよ。近世の初めにそういう動きがあったということですね。「シンシン」制はもっと前、中世の様式です。

I :　　メタボリズムのコンセプトが伝統的に日本にあったにも拘らず、60 年代になって初めて注目されたのはどうしてでしょうか。

K :　　それはやっぱり高度成長、都市革命が起こるという予感ですよ。

2)　　*Is there any author or particular concept you were influenced by during the years of the Rapid Economic Growth of Japan? Which kind of education did you receive?*
日本の高度成長期の間に、影響を受けた作家、または概念などはありましたか。また、どのような教育を受けてきましたか。

K :　　高度成長の前に、伝統論争というのをやっていました。そのころ、桂離宮などの様式のことは皆ある程度分かっていたのですね。そのときの中心的な作家は丹下健三ですね。丹下健三が出てくるまで、コルビュジエをきちんと理解していなかったというか、皆コルビュジエを機能主義者だと思っていたのですよ。ところが、コルビュジエが言っているのはプラトン、ギリシャの幾何学精神なのです。皆誤解していたわけです。コルビュジエが「建築は機械だ」といったことだけが有名になっていたのですよ。必要を満たすことがいいとかね、それから構造がそのままになってはいけないとか…。これは「違うのだ」とコルビュジエは言っていたのに、皆それを知らないで、必要が満たされているからいいとか、構造の流れがいいなどと語り合っていました。

I :　　誤解があったのは、丹下健三の前の話ですね。

K :　　そうですね。丹下健三が現れて、「美しいものが機能的だ」と言ったのです。

I :　　丹下健三の前に、コルビュジエなどについての情報は何を通じて入ってきたのですか。例えば、本などですか。

K :　大体、本などですね。向こうにいた前川國男とか坂倉準三とか、そういうコルビュジエのところで学んだ人たちですね。それと、グロピウスのバウハウス…。未だに日本の建築家たちで間違っている人もいますよ。

I :　**この人たちが、日本に戻ってきて持ち込んだ情報が誤解されたのですね。**

K :　そうですよ。ところが、機能主義の美学というのをカッシーラーという哲学者が、昔は例えばフロギストンとか、実体で科学をやっていたけれどもそれは間違いで、機能関係でもって物質を見るという、それが新しい現代科学だということをカッシーラーが言ったわけですね。それは、ナチスなどの象徴に対する反対でもあります。けれど、それを間違いだと言ったのがノーベル賞を受賞した湯川秀樹の中間子論理です。終戦後の日本がまだ貧しいときでしたね、湯川秀樹がノーベル賞を受賞したのです。中間子というのはひとつの実体で、機能ではないのです。

I :　**中間子って何ですか。**

K :　要するに、電子核でいろいろやってもまだ足りないものがあって、合わないのです。その中に中間子という概念を入れることによって解けたのですね。

I :　**湯川秀樹って、物理学でノーベル賞をとった人ですね。**

K :　そうです。その理論の羅針盤になったと言われているのが、一緒に中間子論をやった助手の武谷三男という人でしたね。それで、それが機能じゃなくて、実体だと言ったのね。そう、三段階理論ですね。

I :　**菊竹さんの理論は、武谷三男に影響されたのでしょうか。それともカーンに影響を受けたのでしょうか。**

K :　まずカーンに影響されたのですよ。カーンが菊竹さんの家でやったでしょう。菊竹さんにはよくわからない点があったのを、カーンがすぐわかったのですよ。それで、カーンが菊竹さんに、「それはそういうことだよ」と言って、そのときに「日本にも似た理論があるよ」と言って武谷三男さんの「弁証論の諸問題」という本を貸してあげたのです。それで、菊竹さんは熱心ですから、すぐにその本を読んで武谷さんに会いに行って、それでいろいろまた学んだのですよ。

3)　You were member of the avant-garde movement known as "Metabolism", considered by many critics as the first autonomous movement of architecture and design developed in Japan. Who were the other members

of the group? And in your opinion, what was the impact this movement had on the whole Japanese modern architectural environment?
メタボリズムは、多くの評論家によって、建築・デザイン分野での、日本における最初の独立した前衛的ムーブメントとして捉えられており、あなたはそのムーブメントの主要メンバーの1人としてご活躍なさいましたね。このグループには他にどんな方がいましたか。そして、このムーブメントが日本の現代建築の分野にどのような影響を及ぼしたとお考えですか。

K： 後はご存知だと思いますが、大高正人、槇文彦、菊竹清訓、黒川紀章、インダストリアルデザイナーの栄久庵憲司、それとグラフィックデザイナーの粟津潔さん…。

I： **磯崎さんと丹下さんは関係していなかったのですか。**

K： 磯崎さんは関係ないね。丹下健三もないですね。丹下さんには面倒を見てもらいましたが…。丹下さんが経済企画庁の長官と親しかったので、企画庁の若手の行政官とメタボリズムのグループと研究開発をした、そういうことはありましたね。
菊竹くんの事務所からは錚々たる連中が出ていますね。名のある建築家だけで30人くらいはいますよ。亡くなりましたが、内井昭蔵とか仙田満とか…。丹下健三さんのところからは大崎幸男、上谷浩二とか黒川紀章などが出ていますが、菊竹門下がもっとも多いです。60年代は「か・かた・かたち」といって「かた」と「かたち」というふたつに分かれましたが、これは欧米では不思議ではないのですよ。それは、「かた」をやるのはデザイナー、「かたち」をやるのはドラフトマンということです。日本ではそういう分け方はあまりしません。

I： **それは菊竹さんが向こうから持ってきたものですか。**

K： 向こうから…というよりも、むしろ自然にそうなってしまったのですよ。

4) *Do you remember what were the subjects you were used to discuss with the other members and what kind of atmosphere animated those meetings at the end of the '50s?*
そのころ、他のメンバーたちと集まって、どのような事柄について語り合っていたか覚えていらっしゃいますか。また、50年代後期のそのころの集まりには、どのような雰囲気がありましたか。

K： 先ほど話に出た「伝統論争」などをしたのも50年代ですね。
それから、東京湾の埋め立て計画が始まったのもそうですね。それで、大高さんが前川物件として晴海高層アパートを造ったのです。高度成長に入るまでは、岩盤までの柱が30メートルを超すと経済的に成り立たなくなるのです。ですから、戦前は下町ではほとんど平べったい家だったのです。その場合、杭を打つ場合に、一本ずつ打つよりは、太い柱を造って下までボーンと置いたほうが経済的で

すよ。そうしたら、埋め立る必要はなくなるのです。海の上にいきなり建てて、せいぜいその下のところに公園などを造ればいいことなのですから。全部埋め立てる必要は無いのです。

I：　1959 年に東京湾の埋め立て計画が立てられましたね。加納久朗さんが埋め立てしようという提案をしました。菊竹さんや黒川紀章さんなども支持していましたね。

K：　丹下さんもそうでしたね。菊竹さんは浮かせてしまったでしょう。

I：　メタボリズムのメガストラクチャのアイディアのきっかけになったのは、こういった計画でしたよね。

K：　そうですね。それともうひとつは、日本では土木と建築ははっきりと分かれているのですよ。土木はほとんどお役所がやります。都市計画というのも、ただ土木だけだったのですよ。

I：　建築と土木が分かれているというのは日本の特徴でしょうか。

K：　もともとは、例えばいきなり巨大古墳から日本の文明は始まるでしょう。田んぼを造っていくのは土木なのですよ。だから、古代の豪族とか武士というのは、単に武力の指導者というだけであって、治水などは地方政…。要するに、日本の土木―農業土木という概念はヨーロッパにありませんよね。

K：　…それで、大高さんが福島教育会館というのを造りました。福島県の小学校の先生たちが自分たちでお金を出して教育会館を造ったのです。大高さんは福島の出身ですから。それで大高さんとはそこで会ったのですね。前川國男と、その構造をやっていた横山建築構造設計事務所のチームが、「このコストだと鉄骨トラスでしかできない」と。例えば日本だと小中学校の講堂兼体育館、ああいうものしかできないと。しかし、コンクリートを使って、そのコンクリート打ちを、農閑期― お米は 100 日かけて作りますがそれ以外の期間には、特に東北では男共が皆都市に出稼ぎに行くのですが―、に農民のおばさんたちに集まってやってもらう。それを使ってやればできるってね。屋根の曲線は当時まだ真空管を使ったコンピューターを使っていましたね。壁は塗り壁にしてね。そうすると、構造的にも割合持つわけですよ。コンクリート打ちをやって、それで、低コストを克服したのですよ。それで、丹下さんがその当時、昔の東京都庁舎は有楽町にあったのですが、外から見ると、ミース・ファン・デル・ローエのような、庇と廊下と各階に廻してね、そして日本的な雰囲気で…。しかし、見た目はそうなのですが、ミースがアメリカで作っているような緊張感はないのですよ。ミースがドイツで造ったのは大したことないのですよ。アメリカに行って初めて評価された。それで、丹下さんの鉄骨は全部曲げものですよ。抜けものじゃない。だから、見た目にはミース風だけれども、ミースの持っているような緊張感は無いのです。それでもミースの建物に比べれば、当時、面積当たりのコストは 10 分の 1 ですよ。それで、今ではコンクリートは全然ダメになってしまいましたが、当時僕

らは「コンクリートは半永久的な材料だ」と教わっていましたし、事実日本のコンクリートの質は良かったですよ。材料もまだ十分にありましたしね。それで、今度は香川県庁をコンクリート打ちで造ることになったのですが、仮枠を造るのは、当時は大工ですよ。今はダメですが、当時の日本の大工は、腕は世界で1番ぐらいだったのですね。それで、東京都庁舎の4分の1のコストですよ。それを担当したのが神谷浩二ですが、その人が2、3年前にフランスに行ってマルセイユのアパートを見たのですよ。そうしたら、昔と変わらないようにきちんと作ってあった。それで、気になって、心配になって、日本に帰ったらすぐに香川県庁舎に見に行った。そうしたら、これも大丈夫だった。それで、神谷が言うのはフランスだと丸いものの中にコンクリートを詰めるでしょう。それで、それをポッと上げるとそのままピシッと残っているのですよ。今は、日本のコンクリートはポッと上げるとペチャっとなるのですね。だから、香川県庁舎のは、ローテク・ハイクラスという感じだったですよ。

5) *Architecture, design, town planning: all themes that the Metabolist movement tried to change to fit to the new atmosphere in order to create a new style of aesthetic language suited for the Japanese society in a time in impetuous change. How did the members of the avant-garde group consider this phase of fast economic development and inexorable social transformations?*
建築、デザイン、都市計画―これらはすべて、メタボリズムが猛烈な変化の時代の最中、当時の日本社会に即した新しい審美的なランゲージを成立させるべく、見直そうとしたさまざまなテーマです。前衛的な動きであるメタボリズムのメンバーたちは、この高度経済成長および激しい社会変化の時代についてどのような見方をしていたのでしょうか。

K : これはさまざまだな。本当に、それぞれですよ。

6) *According to some critics the Metabolism was not an architectural theory but rather a critical analysis of the Japanese society of that time seen by a point of view of architecture. What is your opinion about that?*
何人かの批評家によれば、メタボリズムは建築上の理論ではなく、むしろ建築の視点から見た当時の日本社会の批評的な分析だったと言われています。これに関してはどう思われますか。

K : 要するに、メタボリズムというのは人間というか、生命の根本的な存在様式ですよ。これは、エンゲルスが自然弁証法の中で言っているのですね。「生命の存在様式はメタボリズム。」けれども、エンゲルスの規定はあまり正しくないのですよ。それは、もうひとつとして、「増殖」があるのです。メタボリズムというのは、成長して変化して行きながらも、自分自身の体をそのまま維持して行くということでしょう。絶えず変化しながらも。日本の建築もそれぞれ変わりながらも、ちゃんと維持して行くということですよ。ところが、日本の「新陳代謝」という言葉の中には、世代交代という意味を含んでいるのです。

I :　　この概念にメタボリズムという言葉をつけたのは誰ですか。

K :　　黒川君と僕と菊竹君と 3 人で、ヨーロッパと違う、東洋的な、日本的な概念で国際的に、欧米にも通用する言葉がないかということを議論していたのですよ。そのときに、「『新陳代謝』があるのだけどもな」と言っていたのですよ。そうしたら、菊竹さんが家に帰って和英辞典を引いて、「『メタボリズム』がある。」と。いかにも主張らしくもあるからこれにしようという風になったのですね。

I :　　「メタボリズム」の前には、違う呼び方をされていたのですよね。

K :　　いや、ありませんよ。ああ、「焼け跡グループ」みたいなね。僕らの世代には焼け跡のイメージが強いのですね。そこで、何か「戦後の開放感」とそれから「何でもできる」と言ったらおかしいけれども、無限の可能性を感じたということですね。それで、それを「ポテンシャルエナジー」としたわけですよ。でも、グループとしての他の名前はありませんよ。

7)　*The Metabolist ideas are often connected with the Japanese artistic and architectural tradition. For example, the architect Kurokawa and the critic Kawazoe asserted that the Japanese traditional techniques and construction system are more effective compared to the western ones, more suited for the modern age, and also that the Japanese city appears to be more flexible and better organized compared to other western models. What does this claim for "cultural independence" exactly mean?*
メタボリズムのアイディアは、日本の芸術・建築の伝統との関わりが深いとよく言われています。例えば、建築家の黒川さんや、批評家の川添さんは、日本の伝統的な技術や建築の建て方などが西洋に比べてより効果的であり、現代社会に大変適していると指摘し、また日本の都市は西洋のモデルに比べてより柔軟であり、組織的にもよりしっかりしていると主張しました。この「文化的独立」という主張は具体的にどのような意味を持っているのでしょうか。

K :　　僕らが見誤ったのは、日本のセメントなどがだめになるとは夢にも思っていなかったのですね。特に 80 年代、ポストモダンが流行して、理論が全部解体しました。80 年代に東京が世界金融経済の一拠点になったのですよ。それで、今後 20 世紀までにそれだけの数字の住居が必要だと言ったのですよ。それで、東京都が、正確な数字は忘れましたけれど、現有量の倍必要だと言ったのですよ。そうすると、新宿の三井ビルクラスの超高層ビルが 200 個ですよ。それで、建設省の担当が追い討ちをかけて 3 倍だと言ったのですよ。300 個だと。そういうことを土地政策なしで発表したらどういうことになるか、これは田中角栄の列島改造のとき分かっていましたよね。列島改造と言ったばかりに、土地がパッと上がったのですね。地価が上がって、銀行や企業の含み資産が自動的にバッと上がったのですよ。それで、円が高くなって、円が回ってバブルですよ。それで、土地が上がるから、官庁もお役人も建設会社も皆暴力団を雇って、ほっぺたを叩くようにして値上げしておいて買ったのですよ。だから、バブル崩壊は当たり前ですよ。そういう浮わついた中で出て来たのが、適応的な議論なので

すよ。だから、磯崎新がメタボリズムだとは思っていません。もともとはメタボリズムに近かったけれども。
何と言うか、うたかたの夢みたいなものですよ。それでもそのままを続けて行かなければならないような、変な日本の経済の状態でした。

8) *Metabolist projects were well known all over the world: floating cities as "Marine city" or vertical cities such as "Tower community shape" (both projects developed in 1958-59), the plan for the renewal of Tokyo in 1960 by Tange Kenzo, or "Helix city" (1961) by Kurokawa Kisho, as well as the "City in the Sky" (1962) by Isozaki Arata. Fantastic design accompanied by a heavy use of industrial components and modern technologies, all factors that gave these projects an irresistible appeal in the Western world. Which is the reason why Japanese architects and designers conceived and elaborated such ambitious urban ideas, so exciting for their aesthetic innovation, very original as well, but pretty far from a possible realization?*
"Marine city"のような海に浮かぶ都市あるいは"Tower community shape"のような垂直型の都市（いずれも1958～59年に計画されました)、丹下健三による1960年の東京一新計画、黒川紀章による“Helix city”（1961年)、磯崎新による“City in the Sky”（1962年）など―メタボリズムのプロジェクトは世界中で有名でした。
空想的な設計と、工業部品や先端技術の多用、これらが西洋の世界を魅惑した主な要因です。なぜ日本人の建築家やデザイナーたちは、このように美しく非常に魅力的でオリジナリティに富んだ、しかしながら実際には実現不可能である都市計画の構想に至ったのでしょうか。

K： 特に大高さんはリアリズムの極致ですね。

I： **これが「ユートピア的なアカデミー」と言われるのはヨーロッパでの受け取り方で、やはり「300メートルの柱に建つ町というものが実現可能なのか？」という意味で、「ユートピア的」、「現実的ではない」という風に受け取られてしまうのですね。**

K： ああ、大林（建設）で、東京都の場合、超高層ビルを建てるとき1000メートルを建てるのだと言っていますが、それではダメだと。フランク・ロイド・ライトのは”マイル・ハイ”で、つまり1600メートルですよね。

I： **菊竹さんの“Tower Community Shape”は、300メートルですよね。**

K： はい、300メートル。それは、大体大気の逆転層ですよ。ですから、300メートルのものは建てられるでしょう。大林では、2001年に2001メートルにしようと言っていたのですよ。欧米からの引き合いが一番多かったのがこれでしたね。

I : このような超高層ビルを建てようとする背景には何があるのでしょうか？

K :（雑誌を見せながら）これは大林でしょう。大林の技術というのは…。これは未来を主題にしたものと昔のものの復元と代わりばんこにやっているのですよ。

I :　　これは今の雑誌ですか。

K :　　これは、『アプローチ』といって、竹中が出したものですよ。それは、英語から入っているから…。火星などに都市を造る、ところが、火星の表面は分かっているのですよ。だから、できるのですよ。だから、予定がきちんと決まっていればできるのですよ。

I :　　どうして火星に建てるのですか。

K :　　それは、大林という建設会社の PR ですよ。我々はこれだけの技術を持っていますよ、という宣伝です。

I :　　60 年代のメタボリストがあのような都市計画を目指した理由は？

K :　　一番は土地ですよ。パブリックな土地がないのですよ。だから、人工土地を造って、都市を造ろうと。それが、僕らの一番大きな課題でしたね。今でもそうですが、土地問題が根本なのですよ。

I :　　日本は技術的に大変発達していたので、土地がなくても縦に建てることができると思っていたのでは？

K :　　建てられると思ったのですよ。少なくとも、あの当時のコンクリートでやればできると思っていたのですね。ですから、技術に対する過度の期待はありましたよね。それで、先程申し上げましたように、建築家が都市にアプローチしようとしたら、土木的なものは持ち込み得ないという、そういうスケールもあるでしょう。だから、土木が押さえている都市計画の中に建築が殴り込みをかけるのは、土木的なスケールでないとだめなのですよ。
日本の場合、シティ・プランニングみたいなものはアーバン・デザインでなければいけないと僕らは皆主張していたのですね。だから、要するに図面の上に道路を引くだけなのですよ。例えば、ここに湾があるとするでしょう。ここに道路を通そうとしますね。そうするとこれをこっちにもってくるかこっちにもってくるかで公安局と建設局で大いに喧嘩するのですよ。それで、その勢力の強さによってこっちに行ったりこっちに行ったりする。だから、ひとつの設計をするにもお役所が関係する全部の役人を呼んでそれで合わせなければいけないのですよ。それから、日本の埋め立ては全部直線にやってはいけないのですよ。それは、大きな船がどこにでも泊まれるようにするためです。

I：　　これは、黒川さんの 58 年の東京湾のプロジェクトと似ていますね。

K：　それは「親水性」と言って、そういうふうに法律で決められているのですよ。それで、大高さんはそれを横浜のみなとみらいで浸水曲線というものを初めて作ったのですよ。法律の場合は、一回前例ができれば後はいいのですよ。そういうものすごい苦労をしてそういう前例をいくつか作っていく、それがメタボリストたちの戦いなのですよ。それで、信念を持つためには生命の根本的存在ですよなどと言ってやらないとできないのですよ。信念を持たないと。それからね、日本というのは変な国でしょう。奈良、平城、東大寺のあのブロンズは世界最大のブロンズ像ですね。そのときにほぼ同時期に国府と国分寺と国分尼寺を全国に建てるのですよ。それから、軍のお役所を全部入れると、計画として 300 を一気に作ってしまう。100 年くらいかかったでしょうけれどね。それから、近世初頭、江戸城というのはまとまった城郭としては、世界最大の城郭ですよ。都市を囲ったというのはありますけれど、ひとつの城郭としては世界最大です。それを作ったときに全国 300 諸侯があって、それらの諸侯が町と城下町を造ったのです。それから長崎とか新潟とかね。

I：　　でも、お城だけがあって、町はなかったのですか？

K：　それだけで、一応町割りはしますよ。その周囲をお寺で囲むのです。そういうような計画都市を長崎とか新潟とか、倉敷などの港町を含めると 300 以上ですよ。計画都市を一挙に、300 の都市を作るというのを一度ならず二度までもやった。世界中どこにもないと思うのですよ。だから、変な国民なのですよ。やり出すと、バッとやってしまうののですよ。

I：　　ちょっと 6 番の質問に戻りたいのですが、何人かの批評家によれば、メタボリズムは建築上の理論ではなく、むしろ建築の視点から見た当時の日本社会の批評的な分析だったと言われています。これに関してはどう思われますか。

K：　当時の日本社会の批評的な分析というよりも、もうちょっと現実的ですよね。ですから、さっき言ったような建築史から理論の一番の原理論みたいなものですね。大阪に石毛直道の研究成果が国立民族学博物館にあるのですよ。この人は住居（住まい）の文化人類学に関するものを書いた人ですが、最初は未開民族の住居をやって、今は食べ物の専門家ですよ。それで、言っているのですけれど、今までの建築学者の研究では、住み方については五万とやっている。だけれども、住むことの意味を問うた者はいないのですよね。ただし、「今和次郎と吉阪隆正を除いて」と書いてあります。それで、大体日本は欧米に学んでいるのですよ。だから、欧米にも住むことの意味を問うた建築学者はいないと思うのですよ。それだけでなく、食べること、食事をすること、料理するということは…、料理の仕方は五万とありますよ。それから、食事の仕方やエチケットのようなものは五万とあるのですよ。だけれど、食事とは何か、調理することは何か、ということを問うたものはないのですよ。それで、例えばヨーロッパ人はこうやって食べるとか、日本人は茶碗と箸で食べるとか、食事の仕方そのものを研究して、それと料理とをくっつけて家庭内とか、それで石毛直道さんが食文化学を作った

のですよ。それで、「これは日本以外にない学問ではないですか」、と僕が聞いたら、「いや、最近は中国や韓国でやっている」と。要するに、日本から輸出されて行ったのですね。最近はヨーロッパまで行っていますよ。住居学も同じだと思うのですよ。これはなぜかというと、そういう主観を取り込んだもの、主体を取り込んだものは、ヨーロッパでは全部哲学になっていますよ。

I：　　日本は欧米で研究されたものを取り入れてきたのですね。

K：　今まではそうしてきたのです。でも、そういうのは欧米にはなかったのですよ。だから、日本の学問が今ヨーロッパまで行っているのですよ。中国、韓国から今はヨーロッパです。数年前にやっと数十人の会か何かがヨーロッパに行ったのですよ。だから、生活などという問題は資産減少との対峙から存在するようになった。だけどそうじゃなくて、それを実証的にやって行こう、生きるという意味を実践的にやって行こうというのがメタボリズムですよ。それの基礎学問としてあるが、生活学科ですよ。

I：　　7番の質問ですが…。

K：　日本人だから、日本の建築や芸術から考えていたから当然ですね。それだけど、やっぱり西洋には日本にはないものがありますよ。それが何かというと、日本に圧倒的に欠けているのは、「追い越す」ということですよ。欧米の場合、アリストテレス以来、要するに、ギリシャのアリストテレスのころですが、基本的に利息で儲けるのが一番いけないことだったのですよ。それで、ユダヤが作られたのですね。だから、フィレンツェのメディチ家から金融が始まるのですけれども、これはフィレンツェの市民に利息をつけてお金を貸したのではありません。それを預かって、それをヨーロッパ中の支店網を通して為替で儲ける、それから貿易で儲けてそれを市民に還元するのですね。それで、ルネサンスが起こったのですよね。それから、一番最初に市民社会を作ったのはオランダとイギリスでしょう。要するに、東インド会社、要するに株式会社ですよ。貿易、遠海貿易というのは儲けが大きいけれど、船が沈んでしまったら元も子もない。それで、皆で話し合ってあれにしましょうと言ってできたのが市民社会ですよ。日本の場合は、お米が実るでしょう、そうすると、「初穂」と言って、一番最初にできた稲の穂を神様に捧げるのですよ。それで、翌年神様からその種もみをもらって蒔くのですよね。初穂というのは、一番短い日照時間で成熟した種なのですよ。それを繰り返してやることによって、神様から見て一番生産性が高い。その代わり、これは税金になるのです。要するに、5割を付けて返すのです。年に10割の高利貸しです。それが神様に返るのですよ。結局神様と言うのは領主、結局は天皇、政府ですよ。だから、日本のもともとの政府というのは高利貸しなのですよ。だから、平安の貴族が京都で悠々としながらも出先機関に任せっぱなしだったのですよ。武士と同じなわけですよ。だから、日本の根本において、土地の上にいろいろな公共財産を据えてそれを上手に運用して豊かな生活を作ろうという発想があるわけですよ。高速道路を作ったときに、最初の約束は、通行料を払って、建設費が全部賄えたときにただになるようにすることだったのですよ。それは当然ですよね。ところが、実際には運賃を上げて、どんどん拡げていった。お役人が工事で儲けたりして。

だから、本当の根本的な民主主義はまだできていないのです。

K： 僕はね、正直言ってあんな空想的なものをやって受け入れられると思っていなかったですけれどね。とにかく、若いから、元気のいいものをバーンとやれというくらいな感じでね…。こんなこと若い時でないとできないから、やっておかなくては…。

I： **60 年代後半、大阪万博の後にメタボリズムのアイディアが忘れられていったのですね。**

K： それはそうでしょうね、一時期は。

I： **それには何か理由がありますか。**

K： 72 年当たりから国際的にいろいろ変わっていましたよね。未来学そのものがずいぶん変わりましたよね。成長の限界とか、そういうようなことがあって。だけど、その頃から日本はようやく現実的になってきましたね。自治体の基礎を作って行かなければいけないとか、それから、文化行政を築くことが、博物とか図書館などを作らなければいけないのだということがそのときから始まるのですよ。だから、例えば黒川さんにしても大高さんにしてもそのときから文化施設を通った。その頃に言っていたのは、文明と文化の代謝とかね。生活の外在化と内在化、建築と地域社会の関係をそういう形でやっていました。だから、むしろ実践的なところに入って建築とは関係なく、コミュニティ版を 40 件ぐらい作った。そのときは建築家と付き合っている暇がなかったね。つまり、メタボリズムは 60 年代に理論だけでやって、それから万博に乗り込んで、それで今度は自治体でやり出したのですよ。僕は 72 年に生活学会にいたのですけれどね。

I： **一番メタボリズムについて書いたのは、黒川さんですよね。**

K： 黒川君ですね。一番若かった。デザイン課業が忙しいときには、朝 4 時に起きて朝ご飯までの間仕事していた。だから、彼は努力家ですよ。そうやって本を出した。当時一番コンクリートで盛んだったのはソ連ですよ。コンクリートは凍ってしまったら駄目だから、その資料を手に入れて勉強していました。

I： **槇さんと大高さんはどちらかというと…？**

K： 槇さんと大高さんはかなり気が合うのですよね。東大の教授になると大概人柄の良い人は皆悪くなりますよ。牧さんは東大の教授になったわけだから、それはなぜかというと、明治維新のときに賊軍にまわった方なのですよ。要するに、民主主義の見方に反対したら、皆苦労したのですよ。大高さんも明治の自由民権運動、そこから出た人なのですよ。それから、菊竹さんは九州一の大地主ですよ。それが、戦後の土地解放で全部失くしたのですよ。だから、皆政府に対する抵抗があるのです

よ。僕の生まれも九州なのですが、やっぱり賊軍なのですよ。

I：　60 年代のマニフェストというのはメタボリズムの宣伝をやっていたのですね。61 年と 62 年に予定されていたけれども、結局は実現されなかった。それには何か理由があるのですか。

K：　メタボリズム方針というのは、田辺さんが言ったのですが、要するにメタボリズムはどんどん変化するけれども、変化するときにある局所が先に変化するというふうにと。ルイス・カーンの中世都市みたいなものを例に挙げたけれども、それが丹下さんの東京計画よりは、大高の新宿計画の方にはるかに合っているのですよ。だから、メタボリズム方針として、7 人の枠を広げて丹下さんや磯崎さんを全部入れてしまうのですよ。そうしたら、黒川たちが反対したのですね。気を取り戻して、もう一度メタボリズムというのをメタボリスト同士でやろうとした。そのときに大高さんは忙しかったから、二日間箱根で泊まり込みでやったのですが、前日はフリーディスカッションで、翌日は討議をしたのですね。大高さんが第一次だけとって、それを書いたのですよ。帰るときに、僕が作った提案を持って帰ったのですね。それを帰りの電車の中で読みあげて、「これは賛成です」「これは賛成です」と。70 年代と 80 年代になって、「今の建築家では駄目だ」と大高さんがあのメタボリズム方針でまた一回やろうと言ったのですよ。それで、大高さんと菊竹さんと丹下さんと僕で相談して、集まって食事しながらやったのですよね。皆信頼した関係でしたけど。それで、やろうと思っていたところに、下高原という元国土庁の次官で筑波万博の会場を担当していた人がいるのですよ。そこから、筑波万博の会場件が持ち上がった。「メタボリズムでやれ」と、それはそのときにやらなかったのですね。だけど、下高原さんのアイディアとしては、あの敷地は工場団地の地盤計画を兼ねているわけですよ。そうすると、今のアメリカ辺りの工場というのはほとんどが転宅ですね。だけど、薬にしても中の気温を調整しなくちゃいけないのでしょう。それで、気温などがきちんとと調整できて、どんな職種が入ってきても適応できるようなものは、こういうのがやれるのはメタボリズムしかないのですよ。それで、テーマ観は菊竹さんで、日本における技術は黒川さんに合わせるのを待っていたのですよ。ところが、建設省が反対して飛んじゃったのですよ。だけど、会場計画をいくつかのブロックに分けて、いろんなものが入ってくるでしょう。だけど、それぞれの地区によって色の調整とか、類型を埋めることとかは、大高、菊竹、槇、黒川が都市の基本的なものを作る実験をやったのですよ。

Interview with Kiyonori Kikutake

The interview was held in Architect Kikutake's Studio in Meijiro, Tokyo, on November 5, 2004; time 11:00am.

Interview with Kiyonori Kikutake

菊竹清訓さんに聞く

(Interviewer→ **I**　　Kikutake → **Ki**)

Ki :　　先に 15 分くらいメタボリズムの話をします。ということは、インタビューのクエスチョンをきちんとまとめて下さった、だからとてもいい質問を下さったのでそれに答えます。そして、それは日本語で話しますから、後でもし場合によったらそれをテープから聞いて翻訳をされてもいいと思いますし、どこに使って頂いても結構です。本当にいい質問ですから、先にお答えします。

1)　　Japan lost the war in 1945. In the 1955 Japan continued an economic and industrial development which had already started with the Meiji Restoration at the beginning of the XX century. In that period you were really young. What memories do you have about the cultural and social environment of that period? What kind of specific interests or which sort of readings characterized your formation as a professional in your field?

1945 年に日本は敗戦しました。1955 年には、日本では 20 世紀初頭の明治維新とともに始まった経済的・産業的な発展が続いていました。もちろん当時、あなたはとてもお若かったですね。その時の文化的・社会的な背景に関してはどのような思い出をお持ちですか。また、当時、具体的にはどういった興味をお持ちでしたか。その他、この分野の専門家の一人として活躍できるようになるために、どのようなものをお読みになりましたか。

Ki :　1 番目の質問で、「戦後に 1955 年頃にどのような形でどうして建築というものを志したのか」をお尋ねになっていますが、その背景はここに書かれているとおりで、戦争後はドイツも、日本も、イタリアも同じだと思いますけれども、激変した一般的なソーシャル・レボリューションが起こったというのはそのとおりなのですが、私にとっての激変をお話します。それは今まであまりお話ししていません…。

私のファミリーはランドオーナーなのですね。［(誰かを呼びながら) すみません、イタリアから出た本というのはあるのでしょう。お願いします。］イタリアの方だから、イタリア語で書かれている本は読めますからプレゼントします。あ、これ、英語でしたね…。(**I :** 英語でも大丈夫ですよ) ["Kiyonori Kikutake: from Tradition to Utopia". Preface by Kiyonori Kikutake, introduction by Maurizio Vitta, L'Arca Edizioni, Milano, 1997]

Ki :　　一番最初のところね…（地図を見せながら）…私の家は代々、この地域を治めていたのです

よ…とても美しく、豊穣な土地です。そこでは米を生産していました。日本で一番美味しい米です。本当に美しいところでした…。ところが、これをアメリカのマッカーサーはランドオーナーを全部廃止してしまったのです。どこでもやってない、アメリカも、自分の国でもランドオーナーの土地を取り上げるということはしていません。ヨーロッパでもそうです。フランスもドイツもイタリアも英国もランドオーナーというのは非常に重要な社会的なステイタスなのですよ。自分の国でもしていないことを日本にだけやったのですよ。それで、ランドオーナーというのはその地域の環境を守るという責任があるのですね。だから、学校を寄付したり、川の洪水などが起こらないように水門を作ったりとかそういうことも皆ランドオーナーの費用でやったのですよ。ところが、ランドオーナーの土地を全部取り上げられるとですね、どういうことが起こるかというと、収入が一銭もないのですよ。サラリーマンは毎月サラリーをもらうけれど、ランドオーナーは 1 年経ってお米ができないとお金にならないのです。だから、僕は「将来何になるか」なんていうことは全然考えたことなかったのですけども、しかしとにかく何とかして大学に行かなくてはいけないと、それで私の兄が早稲田にいましたから、兄が「たぶん建築をやったらいいのじゃないか？」と。早稲田の建築というのは日本一だったのですよ。だから、そういう社会的な激変がファミリーの上に及んだわけですよ。ファミリーだけではなくてファミリー全体が生活に困るし、うちで管理していた水天宮というのはうちのすぐそばにある神社なのですが、あの東京にある水天宮の本社なのですけれども、そこの総代をやっていたのですけれども、それももう全部やれないのです。それから、バイレンジといってお寺もありますけど、それも毎年何十俵というお米を出してそれを支えていたわけですね。それも全部だめになってしまった。だから、何とかして平和に建設をやるようなそういう仕事をやりたい、それが第一番目のクエスチョンへの答えです。だからね、怒りがあるのですよ、マッカーサーに対して、アメリカに対して。社会的な秩序を、オーダーを破壊するということがどういうことかということをね、それは神社も困る、お寺も困る、ファミリー全体、うちの番頭さんから一族全部が破滅になったのですよ。

2) Is there any author or particular concept you were influenced by during the years of the Rapid Economic Growth of Japan? Which kind of education did you receive?

日本の高度成長期の間に、影響を受けた作家、または概念などはありましたか。また、どのような教育を受けてきましたか。

Ki : 次の２番目のクエスチョンにいきますが、「メタボリズムのメンバーが何を話したか」ということはお分かりだと思いますけれども、「日本を復興できるかどうか」ということです。他の人は違いますよ、自分の好きなことをやったり勉強したりいろいろなことをお話したり。私の場合は、そういう社会的な秩序が、オーダーが、社会のオーガニゼーションがきちんと復興できるかどうかということが問題でした。これはものすごく大きな問題だったのですよ。

3) You were member of the avant-garde movement known as "Metabolism", considered by many critics as the first autonomous movement of architecture and design developed in Japan. Who were the other members of the

group? And in your opinion, what was the impact this movement had on the whole Japanese modern architectural environment?

メタボリズムは、多くの評論家によって、建築・デザイン分野での、日本における最初の独立した前衛的ムーブメントとして捉えられており、あなたはそのムーブメントの主要メンバーの1人としてご活躍なさいましたね。このグループには他にどんな方がいましたか。そして、このムーブメントが日本の現代建築の分野にどのような影響を及ぼしたとお考えですか。

Ki : 次の3番目にいきます。メタボリズムが、日本に対して何か審美的なランゲージを確立するとかいろいろなテーマをメタボリズムが話し合ったのではないかということですが、私は違うのです。それはね、うちのファミリーが、ランドオーナーとしてのファミリーが、650年間このエリアの地主だった立場から考えて、このエリアのためにどう考えたらいいのかということをすごく考えました。だから、ただ単なる美しい建築を作るとかではなくて、その地域のカルチャーとか社会的なひとつのオーガニゼーションだとか、それからそれをどういうふうに経済的に支えるか、ということをとにかく考えることだったのです。

4) Do you remember what were the subjects you were used to discuss with the other members and what kind of atmosphere animated those meetings at the end of the '50s?
そのころ、他のメンバーたちと集まって、どのような事柄について語り合っていたか覚えていらっしゃいますか。また、50年代後期のそのころの集まりには、どのような雰囲気がありましたか。

5) Architecture, design, town planning: all themes that the Metabolist movement tried to change to fit to the new atmosphere in order to create a new style of aesthetic language suited for the Japanese society in a time in impetuous change. How did the members of the avant-garde group consider this phase of fast economic development and inexorable social transformations?

建築、デザイン、都市計画―これらはすべて、メタボリズムが猛烈な変化の時代の最中、当時の日本社会に即した新しい審美的なランゲージを成立させるべく、見直そうとしたさまざまなテーマです。前衛的な動きであるメタボリズムのメンバーたちは、この高度経済成長および激しい社会変化の時代についてどのような見方をしていたのでしょうか。

Ki : 次の4番目、メタボリズムというのは建築の理論、セオリーだと考えている人が非常に多いのですけれども、セオリーではないのです。それよりも、日本の文化をきちんと作り変えたり伝えたりすることができるかどうか、この点がものすごく大きくヨーロッパの建築家たちと違う点なのです。それはどこが違うかと言いますとね、ヨーロッパの建築家には過去のスタイルとか、過去の歴史を否定しないと現代がないのです。ところが、日本の建築の考え方はこれまでに2000年続いた歴史をどういうふうにうまく伝えてつないで発展させていくかという考え方なのです。だからね、伝統についての考え方がやっぱり違うのですね。それで、そういうようなプロジェクトについて私は3つ作りま

した。あとでお見せしますけれども、１つは住宅です。住宅をどういうふうに新しく作るかということ。それから、２番目は塔状都市というハイライズの塔状の建築。３番目は海上都市という海の上のフローティングシティです。その３つのプロジェクトを提案したのです。それで、その住宅も塔状都市も海上都市もユートピアというふうに言うのですけれども、ユートピアではないのです。ここでもイタリアの方がユートピアと書いていますが、ユートピアではなくて、それを過去の伝統の先にあるものをただやっただけなのです。その３つはマッカーサーが私から奪い取ったものなのですよ。住宅も私が継ぐところがなくなってしまったのです。収入もなくなりましたから。それから、環境も土地を全部取り上げられてしまったわけですから、土地をどう作るか考えたのですよ。

I :　　失ったものに対する、というか、失わされたものに対する復讐のようなお気持ちがあったわけですね。

Ki :　そうです。復活です。それはね、普通の人が考える以上に強烈なのです。

I :　　このケースではアメリカですが、自分からものを奪い去って行ったアメリカに対しても「負けるものか」と自分の持っていたものを取り返すようなお気持ちでいらしたのですね？

Ki :　だから、インディアンみたいな気持ちですよ。それでね、塔状都市というのは土地を立体的に作るということなのですよ。それから、フローティングシティを海の上に今までないランドを新しく造るという。これはメタボリズムのオリジナルの本なのですけども、1960 年のものですが、（**I :** World Design Conference のときのものですね？ **Ki:** そうです。）これは私のところなのですけれども、タワーシティというのは、垂直の壁がランドなのです。普通今まであったのは水平のランドだけれども、そうではなくてこれは垂直の壁にこのように住宅を作ればいいのではないかというのが塔状都市の提案なのですよ。それから、フローティングの都市も同じように…。

I :　　ここの側面部分が似ていますが、これは何ですか？柱ですか？

Ki :　それは窓側が開いているだけです。住宅がこの大きさ。住宅も今まで作られた住宅の作り方ではなくて、人の住むところだけを作って、あとは台所とかバスとか子供部屋があります。

I :　　まず 1 つの大きな空間を作って、そこから必要なところを分けていったというような考え方ですか。

Ki :　日本の伝統の歴史の考え方は、そのための建築をずっと作ってきたのですよ。だから、日本の建築には壁がないのですよ。壁ではなくてね、建具があるのです。建具で仕切って、必要なときだけ部屋を作るのです。襖、障子、雨戸、ガラス…。ですから、一応 5 番目のクエスチョンはそういう

意味で、古い過去の歴史を現代にどんなふうに実現するかということを考えたということです、お分かりになりますね。

6) According to some critics the Metabolism was not an architectural theory but rather a critical analysis of the Japanese society of that time seen by a point of view of architecture. What is your opinion about that?

何人かの批評家によれば、メタボリズムは建築上の理論ではなく、むしろ建築の視点から見た当時の日本社会の批評的な分析だったと言われています。これに関してはどう思われますか。

Ki : あと 6 番目の質問に移りますけれども、日本の古い都市計画と、新しい都市計画との関係というのには共通点は今まだありません。これからやらなくてはいけないですね。それで、僕の海上都市も含めてこのときに提案した海上都市と住宅と塔状都市という僕のプロジェクトは全部 1958 年です。1958 年にこういうプロポーザルを、マガジンにしたのです。それで、この会議は 1960 年にあったのです。だからもうすでに雑誌に発表してあったこういうプロジェクトを、ただここに置いたのです。それで、他の方々は単なるプロポーザルを多少こういうふうにやっておられますけど、それはただ単なるイメージであった。けれども私の場合だけは実際にこのプロジェクトをやって、実際に作ろうということをやったわけなのです。

I : 確かにその本のほぼ半分くらいが先生のことで占められているということもありますし、他のメタボリズムの方にもインタビューをさせて頂いたのですが、皆さん口を揃えておっしゃるのが、菊竹先生がリーダーであったし、いつも誰よりも情熱を注いで歩んでいらしたということでした。60 年代にこのメタボリズムがすごく有名になりまして、ヨーロッパあたりでもかなり取り沙汰されていたのですが、その後に少し動きが見えなくなったというのはどういうことなのでしょうか。

Ki : 見えなくなったというのは、評論家の人たちが今のようなきちんとした取材をしなくて、自分たちで勝手にメタボリズムというのはこういうものじゃないかなと想像しただけですよ。

I : ひとつお伺いしたいのですけれども、ヨーロッパやアメリカなどではメタボリズムというのはひとつの流れとしてとても有名ですし、非常に注目されることも多いのですが、日本ではそれに比べてわりと下火といいますか、あまりご存知の方がいらっしゃらないこともありますよね。それはどういう訳だと思われますか。

Ki : そういうことは全然知りません、僕は。だけど、それは歴史が後でゆっくり証明すべきでしょう。あとふたつ質問が残っていますので、それをやってそれからあとは 10 分ぐらい質問にお答えします。
6 番目の質問は、メタボリズムで考えた新しい都市計画と古代の都市との間に共通点がありますか、ということですが、それはあるのです。それは、メイン・ストラクチャーとサブ・ストラクチャーと

いうそういう関係ですね。そういうものは非常に重要な関係です。それは、フィジカルなストラクチャーでもあり、それからまた例えば通信のネットワークのようなものでもあります。それからまたそういうものはどういうふうにこれから都市を作っていくかという時に非常に重要な概念なのですね。そのことについては、フィレンツェが招待をしてくれたので、その時に記念の講演をしました。

I：　それはいつですか。

Ki：　後で調べてみます。25 年前くらい前です。

I：　1968 年にフィレンツェのサンミケーレ教会で日本建築展覧会があったのですが、そのことでしょうか。

Ki：　毎年一人かあるいは二人かの建築家を招待して、展覧会をしたりスピーチをしたりします。それでね、今都市計画の話に関係あるのですけれども、フィレンツェは過去の歴史に観光としてそれによりかかっていて、新しい都市の力をまだ作り出していないと。それで、「どうしたらいいか」というので、どうしたらいいかということを話しました。それはね、まず通りの中の重要なところに広場があります。あの広場とこっちの方にいろいろ街区がありまして、道路に面した方は建物が建っているけども、真ん中にはコートヤードが空いているのですね。だから、そのコートヤードと町のロータリーになっているところを高層の建築にして、そこを空中で繋ぐという、そういうメタボリックな都市を作ったら、世界の興味が、新しい魅力が出てくるでしょうって言って、だけどもとても評判が悪かったのよ。

I：　建築家というのは、イタリアでは働きづらいというか、新しいものを作れる基盤ができていないので…。

Ki：　いや、できていますよ。たくさんのチャンスがありますよ。まだこれからです。

I：　ただ、法律などの規制が多いのですよ。フィレンツェでも新しい革新的なデザインのビルの建築など取り沙汰されたことがありましたが、結局保守的な動きに止められてしまったりしたことがありましたね。

Ki：　やはり抵抗があるのです。日本でも。フィレンツェは過去の素晴らしい建築がたくさんあるから、そういうものがあればあるほど抵抗が大きいのです。
ラストクエスチョン、何が受け入れやすくて、そしてそれが実際に取り入れられているかどうかについてなんですが、僕の場合には人工土地のコンセプトは塔状であれ、水平の長い帯状の建築であれ、いずれもとにかく提案してきたものは、その部分は採用されて、そして実現しています。それで、大

体 5 つくらい実例を申し上げますけれど、人工土地に対してはパサディナハイツというのがありますね、斜面になったものです。それから、第 2 の実現したものとしてはネットワークの問題があります。情報とか、道路とか、ショッピングのネットワークをどう作るかということをやって、それを実際に都市に当てはめて、そしてその都市ができつつあるのが、東急のペアシティ計画というのがあります。そういうものとか、だけど部分ですよ。全体の区画をなかなか実現できない。3 番目は、プロセスデザインです。一番最初のファーストステージ、セカンドステージ、サードステージというふうにプロセスデザインをして、それで作っていくというので。それから、ムーブネットというひとつのインダストリアルデザインでもあり、道具のデザインでもあります。それが 4 番目です。それから、5 番目が今、一所懸命やろうとしているのですが、造船と建築とのドッキングですね。それもまだ実現はしていませんけれども。

I :　　コルビュジエさんがなさったような船室のようなお部屋を家の中に作るとか、そういったことではなく、ですか。

Ki :　家全体を鉄板で造ってしまうという、ドックで造ってしまうという…。これが、あの人工土地の計画ですね。今こういう塔状の都市も同じように計画をしているところです。なかなかそう簡単には実現しない。それで、こういうプロセスで…。

I :　　これは現実に動いているプロジェクトですか？

Ki :　まだ…。来年モナコで海上のフローティングシティのシンポジウムをやりますけれども、その時にこう眼下のモナコのコンプレックスは…、これがそうです。

I :　　最後にひとつお伺いしたいのですが、50 年代とか 60 年代に菊竹先生または周りのメタボリストの方々に影響を与えたヨーロッパもしくは海外の建築の流れみたいなもの、建築でなくても何か流れというのはありましたでしょうか。

Ki :　それはね、Team X がありました。英国のスミソンさんがトップでね、Team X のメンバーです。

I :　　他にも、ルドヴィコ・クァローニやジャンカルロ・デカルロがいましたか？

Ki :　そうでしたね。

I :　　ルイス・カーンには興味がありましたか。

Ki : そうです。非常に影響がありました。特にルイス・カーンとはとても交流がありました。

I : **インタビューにご親切に応じて頂きまして、どうもありがとうございました。**

The author interviewing Kiyonori Kikutake in his studio in Meijiro (photo taken on November 2004)

Acknowledgements

Acknowledgements

The preparation of this research project could not have been possible without the assistance in many ways of numerous people in many countries. My sincere apologies, as well as my grateful thanks are due to those whose names are excluded from necessarily brief list which follows.

Above all -but they can but be nameless- from my lecturing activity at Waseda University and Tama Art University, and Italian Institute of Culture in Tokyo; Professors at the Department of Architecture in Waseda University to whom I owe particular debts include Professor Nishimoto Shinichi, who continuously supported me in my research as supervisor since I first applied for a Monbusho Scholarship after my graduation in Italy, and Professor Takeshi Nakagawa, who accepted me as doctoral student in his laboratory, whose needed criticism has been fruitful for the final transcription of the whole research;

Of numerous Japanese professors, my thanks are due to Professor Shigeru Sato and Osamu Ishiyama, Department of Architecture at Waseda University, and Professors Kazuji Watanabe and Sato Koichi, Tama Art University, for their advice and support and for consolidating my interests in the fascinating world of Japanese History, Art and Architecture.

Among the many friends and colleagues who have encouraged and assisted my work I would like to give a special mention of Koiwa Masaki and Okuda Koichiro, friends and collegues at doctoral course in Waseda University, and of Miss Jang Misuk, Master at Tokyo University of Foreign Languages, Toma Luca, Master at Tama Art University, Hironori Shimitsu, Master student at Tama Art University, and Miss Kobayashi Midori, for their fundamental support in the transcriptions of the interviews.

My sincere and deep gratitude goes to Mr Kiyonori Kikutake, Ekuan Kenji and Noboru Kawazoe, who kindly accepted to give me a chance for an interview and let me to collect information and gave me advice and insight so precious for the results of the whole research.

Last, but not least, I'd like to thank the Japanese Government and the Japanese Ministry of Education for supporting me during the whole stay in Japan thanks to the grant of a Scholarship, as well as all the staff of Waseda University and the students and the colleagues in Nishimoto and Nakagawa laboratories, whose cooperation, help, support, advice and friendship gave me one of the most exciting and memorable time of all my life.

Summary of the Dissertation in Japanese

Summary of the Dissertation in Japanese

高度経済成長期(1958 年～1964 年)における東京湾計画と都市ユートピアの間のメタボリストの動向

ラファエレ　ペルニチェ

メタボリズムはこれまでで最も進展を見せた代表的な潮流のひとつであり、そのプロジェクトが示した、かつて見たことのないような洗練された形の背後にある都市理論と建築言語の意義を明らかにし、より深く研究することが多く重ねられてきた。

世界中の多くの評論家や学者たちはメタボリズムの大胆な未来図に魅了されたり、あるいは感銘を受け、新しい近代の日本建築と再建された日本の精神の発現として、その革新的なデザインアプローチを賞賛したり、時には批判したりした。しかし、これまでメタボリズムについて行われてきた研究は、主に建築の理論と、形式的なイメージや建築のコンテンツの背後にある文化の違いの表現としての美学のスタイルに関わる問題のほうに焦点を合わせたため、都市理論とそのプロジェクトに直接影響を与えた特定の社会経済の背景と文化的なコンテクストにメタボリズムの建築家を結び付けた根本的な関係についてのより深い分析はしばしば軽視されてきた。そのため、本研究の調査は主に戦後の日本の都市システムの変化のプロセスの分析、及び外国の建築理論の影響と日本の都市計画の限界について強調するとともに、メタボリズムが影響を与えた社会文化的なコンテクストの調査の二つのアプローチによって行われている。

本稿は序論、6 章で構成される本論、結論と初期のメタボリストグループのメンバーである 3 名とのインタビューの記録で構成される。

序論では、 本研究の主題の説明と目的を述べ、さらに特に外国の学者によってなされた先行研究を要約して評価し、本研究の新しい要点を説明する。

第 1 章では、アバンギャルドな建築の進展としてのメタボリズムの起源について述べ、東京で開催された世界デザイン会議(the World Design Conference)の際のマニフェストの出版以来現れた建築言語と都市計画理論の解釈を示す。特に、インスピレーションの根源、及び多くの建築と都市計画と美学のコンセプトの転換の起点としての日本の文化的な背景の重要性を強調する。

第 2 章では、近代日本建築とアーバンデザインの起源についての簡明な歴史の調査を行い、日本の戦後の建築と都市計画活動に重点を当てる。特に、組み立て式の住宅のデザインと家の部品の工業生産の導入に関する研究に重点をおいて、1950 年代に建てられた最も代表的な建築の視点を述べる。さらに、メタボリストグループの理論的指導者としての丹下健三の業績と日本建築の未来像の建築原則の展開を記す。日本の都市のスプロール化の起源の分析とともにこの章を結ぶ。

第 3 章では、高度経済成長期の日本の都市計画活動と都市の発展を分析する。この時期に都市の発展は 1960 年代の初めにピークに達し、都市計画の分野で革新的な方法研究のための調査が行われた。19 世紀の初めの日本の都市計画の伝統とヨーロッパから日本に入ってきた方法論を検討することによって、この章では日本で起こった社会経済の変化と“Tokaido Megalopolis”と呼ばれる都市地域

の発展を考察する。

第 4 章では、日本のアーバンデザインにおいて最も革新的な時期の起源として、1950 年代後半の東京の都市変化のための「干拓地」とそのプロジェクトについて扱う。この章では、埋立て、東京湾の水面利用の提案と、沿岸構造物と海上都市のテーマの普及との関係について調査を行う。さらに、非能率的な政府の計画案に代わり、東京の再開発のためのデザイナーや設計家のみならず、メタボリストのグループによって提案されたプロジェクトの分析を行う。

第 5 章では、メタボリズムの建築家によって開発された都市理論と彼らの近代都市のビジョンを詳細に扱う。菊竹清訓の「海上都市」、槇文彦の“Linkage Theory”と“Collective Forms”、黒川紀章の「線状都市」のモデルのようなコンセプトについて述べる。彼らの都市理論と都市の概念がヨーロッパやアメリカからの都市と建築の主な流れとどのようにつながるのか、その関係と類似性、また近代主義の原則の危機の中での相補的な影響が分析されている。

第 6 章では、メタボリズムによって提案されたプロジェクトを含む 1960 年代の主な建築の傾向である“Megastructure”を取り扱う。すなわち、機能主義によって奨励された最初の都市モデルから都市問題を解決できる建築のプロトタイプとしての失敗までを追及する。この動きが及ぼした欧米諸国と日本での主な影響を精査することがこの章の目的である。

結論では、研究の結果を要約し、前章の分析から得られた考察を述べる。メタボリズムは独創的、かつ論争を巻き起こした多義的な建築の動きであり、特に海外で驚くべき成功を収めた。また、これは欧米の影響のみならず日本の地域の文化要素から生み出された潮流でもあった。メタボリストの急進的な都市計画は日本の都市計画における方法論の刷新の必要から生まれ、1960 年代の初めにメガストラクチャーの動向を広めた変形可能な工業技術の考えとつながる美学と建築の理論を促した。

1958 年から 1964 年まではメタボリストのグループにとって最も創造的な時期であり、その時期は日本の経済成長と干拓地、人工地盤、日本の新たな産業と沿岸工学技術の出現も重なった。都市の継続的な発展によって生じる多くの問題は伝統的な都市計画の方法論とアプローチでは統制が困難であるが、「海上都市」と“Megastructure”のアイディアはそれらを解決するために実用的で経済的な方法であることがわかり、このテーマは政府や建設産業に興味と信頼を抱かせた。メタボリストグループが成功を収めたもうひとつの要因は、その時の都市危機に応じた Mega-city の新たなモデルを作ることに貢献した点にある。彼らの都市のプロトタイプには、近代工学の空前の進歩によって導かれた産業社会のめまぐるしい変化によりよく対応できることが意図された。さらに、場所の美学と空間の質の重要性を強調したアーバンデザインの新しい学問分野のコンセプトと法則によると、メタボリストグループはインフラストラクチャーの供給と機能的な問題に焦点を当てた日本の通常の都市計画分野に対して、日本で初めて新たな広範囲のアプローチの必要性を明らかにした。結局のところ、メタボリズムの主なメリットは、建築と都市の理論（その時の日本社会の消費主義と海外からの他の建築と都市の理論が部分的に影響した）の有効性や独創性だけでなく、特に戦後の日本の現実を、メタボリストの多くの出版物によって国際世界に知らしめた点にある。

建築家の菊竹清訓、建築評論家の川添登、産業デザイナーの栄久庵憲司が筆者に許したインタビューの記録は、本稿の考察を立証し広げる役割を果たし、これらはオリジナルで未発表のものである。

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[i] In general many Japanese and foreign scholars refer the period of great economic growth during these years as of the "rapid economic growth" (高度経済成長期) or "high economic growth".
[ii] Banham Reynard, *Megastructures: Urban Future of the Recent Past,* Thames and Hudson Ltd, London 1976.
[iii] Quoted in: Carola Hein, Jeffry Diefendorf, Ishida Yorifusa, *Rebuilding Urban Japan after 1945*, Palgrave Macmillian Ltd, UK, 2003, p.200.
[iv] In spite certain benevolence on the Metabolists projects, especially concerning the urban image and the aesthetic of the urban forms, indeed many of the Western ctitics became more severe in judjing the functionality of their urban schemes. In this sense, as noted by Jenckes, the Metabolist city was mostly seen as a "..Formalization of frozen process and fixed schemes"; (Jencks, 1986; p. 356).

[v] Among the others, see: "The After Image of Erewhon: On mirage City-Another Utopia", interview with Arata Isozaki, in: Intercommunication, N.21 Summer 1997; "Tokyo Bay Plan" in: Reiser + Unemoto Studio, *Tokyo Bay Experiment,* Columbia University, Graduate School of Architecture, Planning and Preservation, New York, 1994.
[vi] Paolo Riani, *Kenzo Tange,* Sansoni Editore, Firenze, 1977, p.5.
[vii] In 1968 it was published a book entitled "Nihon no Toshi Kukan" (Japanese Urban Space) as result of many surveys of ancient Japanese villages. Among the authors: Ekuan Kenji, Arata Isozaki and Kenzo Tange.
[viii] Maurizio Vitta, *Kiyonori Kikutake. From tradition to Utopia,* L'Arca Edizioni, Milano, 1997,p.17.
[ix] Kurokawa Kisho, "Grave-Post of Contemporary Architecture", in SD n8601, January 1986, pp.3-4.
[x] Terada Toru, *Japanese Art in World Perspective,* Weatherhill/Heibonsha, N.Y., 1976, pp.77-81.
[xi] Zenkakuren as movement of far left ideology was responsible of many clashed with police and members of other parties since 1960, the date of the renewal of the Japanese-American treaty for the defense of the archipelago (ANPO), which tied stronger Japan and US. Their violent opposition to the government policy lasted during all the 60s; cfr. Sato Sadao, "Per una storia del movimento" (For a history of the movement) in: Marco Muller, Dario Tomasi, *Racconti crudeli di gioventu. Nuovo cinema giapponese degli anni 60.* EDT (Edizioni di Torino), Torino, 1990, p.22.
[xii] Terada Toru, op. cit., pp.86-87.
[xiii] Rem Kollhaas, quoted in Botond Bognar, *Tokyo, World Cities Series,* John Wiley and Sons, 1997, p.55.
[xiv] Noboru Kawazoe, "From Metabolism to Metapolis- Proposal for a city of the future", quoted in: Dahinden Justus, *Urban Structures of the Future,* Praeger Publishers, New York/Washington/London, 1972, p. 205.
[xv] Isozaki Arata, "Of city, Nation, and Style", in: Masao Miyoshi, Harootunian H.D., *Postmodernism and Japan,* Duke University Press, Durham and London, 1989, p.52; According to Isozaki, Metabolism wasn't an authentic avant-garde movement because its search for the development of a national architecture later gained the strong support of the Japanese government.
[xvi] As reported by Philipd Drew, who quoted an interview of James Stirling with Isozaki himself, the Japanese architect stressed that "…some of our tendencies are the same, but I always felt differently. I never became a member of Metabolist Group"; see: Philip Drew, *The Architecture of Arata Isozaki*, Harper and Row Publishers, New York, 1982, p. 10. Indeed it was Kikutake's schemes and and Tange's design approach which played an important role in shaping most of the projects by Isozaki in the early 1960s.
[xvii] Akira Asada interviewing Arata Isozaki, in: "The After-Image of Erewhon: On Mirage City - Another Utopia", in: *InterCommunication,* N. 21, Summer 1997 (See:www.ntticc.or.jp/pub/ic_mag/ic021/isozaki_e.pdf)., pp. 6-7.
[xviii] As noted by Weldeken, Isozaki was critic to the tendence of Kikutake to condemd the monuments (Weldeken, op. cit., p. 296); indeed the importance of Isozaki projects and criticism lays especially in the awareness of the merit and the importance of preserving the memory of the recent history (of Japan) and in the value of the symbol in architecture, and in his pragmatic and realistic approach in the design process. See also: Arata Isozaki, *Arata Isozaki. Works 30. Architectural Models, Prints, Drawings*, Rikuyo-sha Inc., Tokyo, 1992; reprinted and re-edited as: Arata Isozaki, *Arata Isozaki Unbuilt*, Tokyo, 2001.
[xix] Kathryn B. Heiesinger, Felice Fisher, *Japanese Design. A Survey since 1900,* Philadelphia Museum of Art, Harry Abrams Inc., New York, 1995, p.18.
[xx] Ross Michel F., *Beyond Metabolism. The New Japanese Architecture,* McGraw-Hill, New York, 1978, p.23.
[xxi] Stewart B.David, *The making of the Modern Japanese architecture, 1968 to Present*, Kodansha, New York, 1987, p.179.
[xxii] Wendelken Cherie, "Putting the Metabolism back in Place", p.282, in: Goldhagen Sarah W., Legault Rejean (edited by), *Anxious Modernist. Experimentation in Postwar Architectural Culture.* Canadian Centre for Architecture, Montreal, The MIT Press, Cambridge, Massachussetts, and London , England, 2000.
[xxiii] Ibid., p.284.
[xxiv] Since in the second half of 50s it was decided the next meeting of the World Design Conference to be held in Tokyo in May 1960. Noriaki Kuokawa, Kiyonori Kikutake, and Noboru Kawazoe started to meet informally to discuss general topics in architecture, design and urban planning. Kisho Kurokawa, *Metabolism in Architecture*, p.26
[xxv] Ranzo P., Di Maio S & D, *La Metropoli come Natura Artificiale. Architettura della Complessita` in Giappone,* Edizioni Scientifiche Italiane, Napoli, 1992, p.66.
[xxvi] Paolo Riani, *Kenzo Tange,* pp.26-30 .This metaphor of the human body was introduced in occasion of the WoDeCo 1960 by a speech by Kenzo Tange titled: "Technology and humanity". He introduced direct reference to the theory of the cycles in architecture and the concept of "Metabolism".
[xxvii] Noboru Kawazoe, quoted in Ranzo, di Maio, p.66.
[xxviii] Botond Bognar, *Contemporary Japanese Architecture.* p.123.

[xxix] Isozaki Arata, Doi Y., *Arata Isozaki: opere e progetti*, (preface by Dal Co Francesco), Electa, Milano, 1994, pp.7-8.
[xxx] Botond Bognar, *Contemporary Japanese Architecture*, p.104; Ross M. F., *Beyond Metabolism*, pp.23-25.
[xxxi] Kurokawa Kisho, *Metabolism in Architecture,* Westview Press, Boulder, Colorado, 1977, p.43.
[xxxii] ibid., p.45.
[xxxiii] Among the influential publications that criticized the urban methodology of Modern Movement was the book by Jane Jacobs, "Death and Life of American cities", published in 1961; in this book the author stressed the necessity for more diversity (both regarding the functions and activities) in the city, and rejected the excessive uniformity of the urban grid and architecture, so usual in the Functionalist design.
[xxxiv] Kurokawa Kisho, "Grave-Post of Contemporary Architecture", in SD n8601, ed. En/Jp, pp.3-4.
[xxxv] Steward B. David, *The making of a Modern Japanese Architecture. 1868 to Present,* Kodansha, NewYork, 1987, p.179.
[xxxvi] Frampton Kenneth, *Modern Architecture. A Critical History,* Thames and Hudson (World of Art), 3rd Edition 1992, p.271.
[xxxvii] Kurokawa Kisho, "Grave-Post of Contemporary Architecture", in SD, p.3.
[xxxviii] Kurokawa Kisho, "Metabolism, Symbiosis and Culture of Japanese cities", in: Gideion, Keisuke,Osamu, *Japanese Urban environment,* Elsevier Science Ltd., Oxford 1998, pp.5-6.
[xxxix] "(…) Tokonoma and Tsukeshoin were extrusion of the interior space…Architectural space….was like a bubble created by internal pressure from which expanded, in turn, smaller bubbles. (…) Various extrusions besides tokonoma, chigaidana, shoin and jojodan developed in residential architecture from medieval period through the feudal period, and they were important in the organization of the interior spaces"; Inoue Mitsuo, *Space in Japanese Architecture,* John Weatherhill Inc., N.Y. and Tokyo, 1985, p.122.
[xl] Kurokawa, "Metabolism, Symbiosis.", in: Gideion, Keisuke,Osamu, op. cit., p.7.
[xli] *"Kiwari"* literally means "timber splitting", and it was a system of proportion to determine the measurements and the intervals of the structural members of the buildings, such as columns and beams, devised by Japanese master carpenters since the late Middle Ages, and conceived on the thickness of the pillar, as well as the distance between the middle of one pillar and the next. Together with "tatami-wari", another system of standardized measures and based on the distance between the outside of one pillar and the next, it bacame the fundamental method of architectural costruction and set a path for the development of prefabrication methods in the modern Japanese construction industry during the XIX century; cfr.: Hirai Kiyoshi, *The Japanese house, then and now,* Ichigaya Publication, 1998, p.97; cfr.: Kawazoe Noboru, *Japanese Architecture,* Reference Series-7, International Society for Educational Information Inc., Shinjuku, Tokyo, pp.16-17; p. 21.
[xlii] Regarded the links between Buddism philosophy and Metabolism it is interesting the observation by Cherie Waldeken, who noted as it mainly originated by the essay written in occasion of Yokyo Olympics in 1964 by scholar Guenter Nitschke on the magazine *AD*. She reported as in that article Nitschke explained the sources of Metabolist projects in term of ancient "Oriental" philosophy and that: "…In retrospect, the *AD* issue captures an enduring series of disjunctures which seem almost paradigmatic of the critical discourse about postwar Japanese architecture, by foreign and Japanese critics. The first is the contrast between the meticulous, detailed description of the owerwheling problem facing postwar Tokyo and the futuristic Metabolist proposals that polemically reject and ignore the massive public efforts to analyze and improve the existing city. The second is the contrast between Nitschke's highly personal and somewhat mystical interpretation of Metabolism in the broad context of ancient East Asian philosophy and the writings of the Japanese contributors themselves, who stress their relationship to biological principles and engineering….*AD*'s presentation of the Metabolists, like much of postwar writing on Japanese architecture by both foreign and Japanese critics, naturalizes the work with the rhetoric of modern science and simultaneously nativizes it with the rhetoric of ancient philosophy. The work's ancient, native origins – and the supposed inevitability of its forms as derived from rational, scientific inquiry – sidestep any debt to foreign sources and evade dependence on any particular time or place in Japan". (Wendelken Cherie, op. cit., pp. 280-281).
[xliii] Cfr. Chapter 4, Paragraph 2-1.
[xliv] Kawazoe, Kikutake, Kurokawa, Maki, Otaka, *Metabolism 1960. Proposal for New Urbanism,* The Bijutu Syuppan Sha, 1960, p. 49.
[xlv] Heino Hengel, *Measure and construction of the Japanese house,* Tuttle Publishing, Tokyo, 2003 (1st edition 1985), p.13.
[xlvi] ibid., p.24.
[xlvii] Kikutake K., Maurizio Vitta, *Kiyonori Kikutake. From Tradition to Utopia,* L'Arca Edizioni, Milanoi, 1997, p.10.

[xlviii] Kawazoe Noboru, *Japanese Architecture,* Reference Series-7, op. cit., p.5; Kawazoe links the birth of the ancient Japanese architecture made of wood and characterized by rectilinear shapes with the activity of shipbuilders called "Inabe", who built a fleet of warships for the kings of Yamato dynasty during their attempts to control and unify the minor Japanese kingdoms (who were independent states separated from each other by steeps and wild forests, so that communications by sea and by rivers were the only possible) between the IV and VI century. According to him: "The Inabe eventually shifted to land-based construction. They built the palaces of Yamato kings and the cities during the formation of the ancient [Japanese] state in the VIII century, not forgetting the temple of Todaiji in Nara…If the culture is the structure, and the transport the means, by which the cities subdue and control the countryside, then the Inabe were the artisans which supported it. It could almost be said that Japanese architecture was shipbuilding on land", ibid. p.4. See also: Fosco Maraini, *Japan. Patterns of Continuity*, Kodansha International Ltd, Tokyo, 1971, pp.195-196.

[xlix] Noboru Kawazoe, "The Metabolism-I", in: *The Japan Architect*, Vol. 44, N. 1-159, December 1969, p.108.

[l] Kawazoe Noboru, "Metabolism-II", in: *The Japan Architect,* Vol. 45, N.1-160, January 1970, p.101; The British Architect C. H. Aslin, developed a system of prefabricated lightweight-structured schools, using the limited materials available under post-war austerity conditions. For further information see: http://students.bath.ac.uk/ab0heeg/project23.html

[li] Kurokawa, *Japanese Urban Environment,* p.7.

[lii] quoted in: Gyorgy Kepes, *Language of Vision,* Dover Publication Inc., NewYork, 1995 (1st Edition 1944), p.53.

[liii] Isozaki Arata, quoted in: Knabe Christopher, Noennig R. Joerg (edited by), *Shaking the Foundations. Japanese Architect in Dialogue,* Prestel Verlag, Munich-London-NewYork, 1999, p. 114.

[liv] Vance James E., *The Continuing City. Urban Morphology in Western Civilization,* John Hopkins University Press, Baltimore, Maryland, 1990, p.7.

[lv] Morris A.E.J., *History of Urban Form. Before the industrial Revolution,* Longman Edition,(3rd Ed.), 1996, p.6

[lvi] Fujinori Terunobu, "Urban Planning in Meiji Era", Shuji Takashina, "Tokyo:Creative Chaos", in: *Japan Echo,* Vol. 14, spec. issue, 1987 (See: http://www.indiana.edu/~ealce350/syllabus.htm); cfr.: Botond Bognar, *The New Japanese Architecture,* Rizzoli International Publications, NewYork, 1990, p.16.

[lvii] Kornhauser David, *Il fenomeno urbano nella storia del Giappone,* Franco Angeli Editore, Milano, 1978 (Italian Edition for: *Urban Japan: Its Foundation and Growth,* Longman Group, London, 1976), pp.66-72; pp.89-96.

[lviii] Quoted from: SanFilippo M., *Le citta`,* TCI, Milano 1978, in Giosi Amirante, *Material for the course of History of City and Territory,* University of Naples, A.A.1993-1994, p.71.

[lix] Gideon, Osamu, *Japanese Urban Environment*, p.41; It's interesting to note that Japan for over 2000 years didn't face any invasion from foreign countries (except for the failed invasion of Mongols in XIII century) , and probably this fact influenced the shapes of the cities as well as many cultural features of the Japanese people.

[lx] This issue of Japanese culture has been already clearly and widely described in many studies starting from Ruth Benedict's famous "The Chrisanthemum and the Sword", published in 1946.

[lxi] Heino Engels, *The Japanese House, A Tradition for Contemporary Architecture,* C.E. Tuttle Co., 1964, p.383.

[lxii] Karan P. P., Stepleton K., *The Japanese city,* The University Press of Kentucky, Lexington, 1997, pp.21-22.

[lxiii] Kornhauser David, *Il fenomeno urbano nella storia del Giappone,* op. cit., p.134.

[lxiv] Ockman Joan, *Architecture Culture 1943-1968. A Documentary Anthology.* Columbia Books of Architecture, Rizzoli, N.Y., 2000 (1st Edition 1993), p.319.

[lxv] William J. Curtis, *Modern Architecture since 1900,* p.510.

[lxvi] Kornhauser David, *Il fenomeno urbano in Giappone,* op. cit., p.23; pp.81-82.

[lxvii] Wendelken Cherie, "Putting the Metabolism back in Place", in: Goldhagen Sarah W., Legault Rejean (edited by), *Anxious Modernist. Experimentation in Postwar Architectural Culture*. op. cit., pp.280-281.

[lxviii] Robin Boyd, *New Direction in Japanese Architecture,* George Brazillier, New York,1968, p.24.

[lxix] ""Future" lies in the Contemporary World, Science Fiction and Architects", by Noboru Kawazoe, in *"Kokusai –Kentiku",* Vol. 27, N. 2, February 1960, pp.69-70.

[lxx] Tafuri Manfredo, *L'Architettura moderna in Giappone,* Cappelli, Bologna, 1964, p.126; p.156.

[lxxi] Sadler Simon, "Open Ends; the Social Vision of 1960s Non-planning. From Megastructures to Monad", in: Jonathan Hughes, Sadler Simon, *Non-Plan: Essays on Freedom, Participation and Change in Modern Architecture and Urbanism*, Architectural Press, UK, 2000, pp. 138-139.

[lxxii] ibid., p.139.

[lxxiii] Tafuri Manfredo, *L'Architettura moderna in Giappone,* op. cit., pp.155-156.

[lxxiv] Robin Boyd, *New Direction in Japanese Architecture,* op. cit., p.15.

[lxxv] For this topic see: Chapter 4.
[lxxvi] In particular this was first project of its kind to conceive the development of a system of expressways and ring-roads in the water of the bay as the backbone of the urban growth of the new settlement, anticipating a principle also present in plan for Tokyo designed by Kenzo Tange 2 years later.
[lxxvii] See: Chapter 4, p.88.
[lxxviii] Cfr.: "Citta', Utopia e Progettualita': Bilancio del XX secolo"; in: *Paesaggio Urbano,* Luglio/Ottobre 1997 (Maggiolini Editore).
[lxxix] Cfr. Leonardo Benevolo, *The History of Modern Architecture,* MIT Press, 1971; Chapter VI, Chapter XI (Vol.1)
[lxxx] Metabolism, at least at the beginning, related with the reformist spirit of Modern Movement against the tradition and the historical city, by paying attention to the sanitary and social issues related with the problem of shortage and poor quality of housing for the working class, as well as the awareness of searching a new architectural style which could express the modern industrial society; on the other hand, Metabolism also expressed less concern than Rationalism about the development of a methodological design approach based on rigid schemes and codes and fixed forms, both in architecture and urban planning.
[lxxxi] Aldo Van Eyck was the one of the most important member of Team X and a forerunner of Structuralist stance in the architecture of Netherlands since 1950s. Dutch Structuralism spanned from the 1960s on into the 1980s in large sectors of the architectural world in Holland, and especially referred to schemes and theories by Van Eyck ('dual phenomena', 'in between realm', 'threshold'), whose syncretic approach to design, bringing together the classical, modern, and vernacular traditions in architecture, (explained in his evocative mottos such as the shift from 'space and time' to 'place and occasion', 'vers une casbah organisée') strove to give a solution to the general wish for a return to essentials in architecture and urban design as reaction to mass consumption society of the time. Dutch Structuralism (and team X as well) was mostly influenced by Van Eyck's project of Amsterdam Orphanage (1958-1960), where he subdivided a larger group of orphans into smaller 'families' and the 'houses' they inhabit, the doctrine aimed to develop a more humanist architecture, and conceived that all the buildings of the larger institutions can and should be subdivided into smaller components - which re-establish the human scale - as if each institution, whatever its nature, will become more transparent, less bureaucratic, less alienating, more understandable, less rigid through the mere fact of subdivision. This school of Dutch architecture, Structuralism, was an approach which Herman Hertzberger applied more consistently over a long period than did van Eyck (who did not see himself as a Structuralist), and was expressed through projects whose schemes were basically shaped as network of independent and compact modules with elemental and horizontal hierarchy space organization.
[lxxxii] It is interesting to note that Yatsuka Hajime and Yoshimatsu Hideki, in their book (メタボリズム, INAX 出版, Tokyo, 1997), assume that the design approach by Aldo Van Eyck denotes some similarities with Kikuatke's design methodologies, and that both the architects were relevant members of the Structuralist stance of the 1960s.
[lxxxiii] Akira Asada adds that: "…The metabolists, then, conceive of architecture as essentially functionalist and yet more complex than what a conventional, modernist scheme might propose"; see: Akira Asada, "Beyond the Byomorphic" in: Reiser+Unamoto Studio, *Tokyo Bay Experiment,* Columbia University, Graduate School of Architecture, Planning and Preservation, New York, 1994, p.21.
[lxxxiv] See: Manfredo Tafuri (1964), Robin Boyd (1968).
[lxxxv] Tafuri Manfredo, op. cit., p. 25.
[lxxxvi] ibid., pp.26-27.
[lxxxvii] Bognar Botond, op. cit., p. 8.1.
[lxxxviii] Richards F. M., *An Architectural Journey in Japan,* The Architectural Press, London, 1963, p. 161; "Imagine my surprise on arriving in Japan -this was in 1920- to find here expressed in Japanese farms and Shinto shrines like Ise, all the features which we so ardently desired [to achieve in Europe]…", quoted by Antonin Raymond, ibid.
[lxxxix] Manfred Speidel, "Bruno Tout-My point of view on Japanese architecture", quoted in: *Casabella,* N.676, March 2000, p. 91.
[xc] Tafuri Manfredo, op. cit., p. 29.
[xci] Tempel Egon, Nishimura Norio, *Nuova Architettura Giapponese,* Edizioni di Comunità, 1969, p. 15.
[xcii] See Chapter 3, pp.46-48.
[xciii] Tempel Egon, Nishimura Norio, op. cit., p.15.
[xciv] Bognar Botond, op. cit., pp. 84-85.
[xcv] Tempel Egon, Nishimura Norio, *Nuova Architettura Giapponese,*op. cit., p.17
[xcvi] ibid.,
[xcvii] Tafuri Manfredo, op. cit., p. 62.
[xcviii] Bognar Botond, op. cit., pp. 5-8.

[xcix] Tempel Egon, Nishimura Norio, *Nuova Architettura Giapponese,*op. cit., p.19.
[c] See: Botond Bognar, Kenneth Frempton, Manfredo Tafuri, J.E.Stewards.
[ci] According to Tafuri, the history of evolution of modern Japanese architecture can be divided into 3 phases: the first one was characterized by the passive assimilation of imported knowledge and techniques from Western countries in Meiji epoch, the second between the 1953-1957 was a period of experimentation, research on the international models and production of a new architectural language which was not completely original, although it showed more awareness of the national cultural roots, and the last phase corresponding to the "new Japanese architecture" which started with Tange's project for Tokyo city hall and Togo Murano's Sogo Department Store, both in 1957. See: Manfredo Tafuri, *L'Architettura moderna in Giappone,* Cappelli, Bologna, 1964; p.53; p.63.
[cii] Tafuri Manfredo, op. cit., p. 56.
[ciii] ibid., p. 61.
[civ] ibid., p. 71.
[cv] Tempel Egon, Nishimura Norio, *Nuova Architettura Giapponese,*op. cit., p.23.
[cvi] Bognar Botond, p. 88.
[cvii] Tafuri Manfredo, *L'Architettura moderna in Giappone,* op. cit.; Robin Boyd, *New Direction in Japanese Architecture,* op. cit.,
[cviii] Tafuri Manfredo, op. cit., p.58.
[cix] Kenzo Tange, "My Experiences", *Space Design*, January 1980, p.185.
[cx] See: Chapter 4, pp. 84-92.
[cxi] Hein Carola, Ishida Yofusa, Diefendorf, Jeffrey, *Rebuilding Urban Japan after !945,* Palgrave Macmillan, London, 2003, p. 19.
[cxii] Bognar Botond, *Contemporary Japanese Architecture,* p.84.
[cxiii] Bognar Botond, ibid.*,* p. 85.
[cxiv] Hein Carola, Ishida Yofusa, Diefendorf, Jeffrey, *Rebuilding Urban Japan after 1945,* op. cit., pp.20-21.
[cxv] ibid., pp.23-24.
[cxvi] Kawaoze Noboru, *Contempory Japanese Architecture,* Kokusai Bunka Shinkokai (Japan Cultural society), Tokyo, 1968, p.37.
[cxvii] Hein Carola, Ishida Yofusa, Diefendorf, Jeffrey, *Rebuilding Urban Japan after 1945,* op. cit., p.25.
[cxviii] Ann Waswo, *Housing in Postwar Japan. A Social History,* Routledge Curzon, London, 2002, p.46.
[cxix] ibid., pp.51-52.
[cxx] ibid.
[cxxi] ibid., p.53.
[cxxii] Private railways had an important impact on the morphology of Japanese cities because its presence caused many cities to have two business districts. In fact the former was the old shopping area of the city, the latter was the business area developed around the railway station, usually distant from the core of the existing city. The new commercial area nearby the station drew the interest of many costumers and in few years it started to compete with the old commercial center; quoted in: Kornhauser D., *Il fenomeno urbano nella storia del Giappone*, Franco Angeli Editore, Milano, 1978, p.87.
[cxxiii] In 1955 Hatoyama cabinet proposed the "Economic Independent 5 Years Plan" (fulfilled in just 2 years), followed in 1957 by Kishi Cabinet 's "New Long Term Economic Plan" (fulfilled in few years), and in the years 1960-1962 by Ikeda Cabinet's "Double National Income Plan" and "First National Comprehensive Developed Plan", also aimed to foster and control the already impressive economic growth; see: Shogo Takegawa, "The Development of Regional Social Planning in Postwar Japan", paper submitted to ISA Research Committee Meeting in Copenhagen in 1997.
[cxxiv] Sorensen Andre, "Building world city Tokyo: Globalization and conflict over the Space", in: *The Annals of Regional Science*, Spring-Verlang 2003, p.523; Sorensen Andre, *The Making of Urban Japan. Cities and Planning from Edo to the Twenty-first Century*, Routledge Ed., London & New York, 2002. It is important to note that the 1st City Planning Law issued in 1919 prescribed the land use into just 4 distinct areas and conceived a system of mixed land use, which could allocate enough close in the same site both industrial and residential settlements. This planning system was a really weak tool in the planning process as it focused just on land use and public facilities provisions in already urbanized areas, whereas it prescribed no effective legal instruments on the power to take over private property for public use or for the subdivision control, neither requirement for basic infrastructures before the construction of new developments, nor any minimum housing standard. In 1950 the "Building Standard Law" was enacted, but it also revealed to be nothing more than a simply collection of restrictions (concerning matters such as the ratio of building coverage in the site, the floor area ratio, and so on), which were indeed substandard in comparison with similar Western models, and didn't automatically produced satisfactory living conditions in the new

constructions. The awareness of the growing problems caused by worsening of the urban environment led towards a new City Planning Law (which especially had the merit to broaden the zoning areas from 4 to 8) only in 1968.

[cxxv] Sorensen Andre, "Building World City Tokyo: Globalization and Conflict over the Space", in: *The Annals of Regional Science*, Spring-Verlang 2003, p. 523.

[cxxvi] This subject has been widely investigate in researches published both by Japanese and foreign scholars. Among the most recent illuminating works worth of mention, there are: Andre Sorensen (2002), Carola Hein (2003).

[cxxvii] Ann Waswo, *Housing in Postwar Japan. A Social History,*op. cit., p.57.

[cxxviii] ibid., pp.57-59.

[cxxix] Robin Boyd, *New Direction in Japanese Architecture,* op. cit., p.13.

[cxxx] Kawaoze Noboru, *Contempory Japanese Architecture,*op. cit., pp.39-46. Furthermore Kawazoe noted that: "It is an interesting fact that, in Japanese postwar houses, one can see repeated the historical development of Japanese architecture from Heian residential house to the tea house and tradesman's house of Tokugawa period." Ibid., p.49.

[cxxxi] Waswo noted that: "No comparable [to Europe] evolution had occurred in the early Japan. This is not to say that the lifestyles of the relatively well-to-do in cities, towns, and villages had remained static. Improvements to dwellings had indeed taken place during the peaceful and prosperous Tokugawa era (1603-1868), but these had been concentrated on construction techniques, which became more robust, and on the progressive refinement of what was, from a western perspective, an essentially 'medieval' way of life"; quoted in: Ann Waswo, *Housing in Postwar Japan. A Social History,* op. cit., p.68.

[cxxxii] Inabe Kazuya, Nakayama Shigenobu, *Japanese Homes and Lifestyles. An Illustrated Journey trough the History,* Kodansha International, Tokyo, 2000, p. 116.

[cxxxiii] Watanabe Hiroshi, *The Architecture of Tokyo,* Edition Axel Menges, Stuttgart/London, 2001, p.118.

[cxxxiv] Ann Waswo, *Housing in Postwar Japan. A Social History,* op. cit., pp.69-71. During the 70s the DK housing type developed in the more sophisticated LD+K type (living-dining plus kitchen space).

[cxxxv] Edwin Reischauver and Albert Craing; quoted in: Hiesinger Kathryn B., Fischer Felice, *Japanese Design. A Survey since 1950,* Philadelphia Museum of Art/Harry Abrams Inc., NewYork, 1994, p.18.

[cxxxvi] Tanabe Kazuto, "Study of Modular Co-ordination in Japan", in *Kokusai-Kentiku,* Vol. 25, N. 1 January 1958, p.11.

[cxxxvii] ibid.

[cxxxviii] Cherie Wendelken, "Japanese Architectural Culture in the 1950s", in: Hein Carola, Jeffry Diefendorf, Ishida Yorifusa, *Rebuilding Urban Japan after 1945*, Palgrave Macmillian Ltd, UK, 2003, p.201.

[cxxxix] It is interesting to note as the main interest of Japanese architects during this period was led towards the surveys of traditional architecture instead of the old cities. But the end of the 60s the interest moved from architecture to urban planning; in fact in 1968 it was published the first important essay on the old Japanese cities titled "Nihon no toshi kakuen" (The Japanese Urban Space), edited among the others by Arata Isozaki and Kenji Ekuan (cfr.: Cherie Wendelken, "Japanese Architectural Culture in the 1950s", in: Hein Carola, Jeffry Diefendorf, Ishida Yorifusa, op.cit., pp.209-211). Based on the surveys of old Japanese towns and villages, this book reflected the new general interest in the traditional aspects of the native culture and history, which was promoted in the second half of the 60s by books like Aldo Rossi's "L'architettura della citta'"(The Architecture of the City) and Robert Venturi's "Complexity and Contradiction in Architecture", both published in 1966.

[cxl] In ancient Japanese architecture the module used was "Kanejaku", whose scale was a bit larger than "Kujirajaku" This was a module system used until Edo Period to control the space of the house; quoted in: Kawazoe Noboru, *Contemporary Japanese Architecture,* Kokusai Bunka Shinkokai (Japanese Cultural Society), Tokyo, 1968, p. 47.

[cxli] Tafuri Manfredo, *L'Architettura moderna in Giappone,* op. cit., p.75.

[cxlii] Tempel Egon, Nishimura Norio, *Nuova Architettura Giapponese,*op. cit., p.23.

[cxliii] Hiesinger Kathryn B., Fischer Felice, *Japanese Design. A Survey since 1950,* Philadelphia Museum of Art/Harry Abrams Inc., NewYork, 1994, p.14.

[cxliv] quoted in: Mutsuo Fukushima, "Zero inspired today's innovations", *The JapanTimes,* 14th January 2004.

[cxlv] Woodall Brian, *Japan under Construction. Corruption, Politics and Public Works,* University of California Press, Berkley, 1996, pp. 34-35.

[cxlvi] ibid., p. 36.

[cxlvii] Coaldrake H. William, *Architecture and Authority in Japan,* The Nissan Institute/Routledge, London/N.Y., 1996, pp.252-253.

[cxlviii] "The Postwar Period and a Glimpse of the Future- Postwar Prosperity and the Construction Industry", in: *JA,* N. 139, March 1968, pp. 82-83.

[cxlix] Inabe Kazuya, Nakayama Shigenobu, *Japanese Homes and Lifestyles. An Illustrated Journey trough the History,*

op. cit., p.112.
[cl] ibid., p.115.
[cli] Ross Michael F., *Beyond Metabolism: the New Japanese Architecture*, McGraw-Hill, N.Y., 1978, pp.39-40.
[clii] ibid., pp. 60-63.
[cliii] Kornhauser David, *Il Fenomeno Urbano nella Storia del Giappon*e, Franco Angeli Editore, Milano, 1978, p.132 (Italian Edition for: *Urban Japan: Its Foundation and Growth,* Longman Group, London, 1976).
[cliv] Karan P. P., Stepleton K., *The Japanese city,* The University Press of Kentucky, Lexington, 1997, p.21.
[clv] Kenichi Miyamoto, "Japan's world cities: Osaka and Tokyo compared" quoted in: Fujita K., Hill R.S., *Japanese Cities in the World Economy,* Temple University Press, Philadelphia, 1993, p.56.
[clvi] Ibid., p. 58; see also Karan P. P., Stepleton K., *The Japanese city,* op. cit., p.22.
[clvii] See Chapter 2.
[clviii] Karan P. P., Stepleton K., *The Japanese city,* op. cit., p. 80.
[clix] Cori B., Pellegrini G.C., Dematteis G., Pierrotti P., *Geografia Urbana,* UTET Libreria, Torino, 1993, pp. 61-62.
[clx] Fujita K., Hill R. C., *Japanese Cities in the World Economy*, Temple University Press, Philadelphia, 1993, p. 26.
[clxi] Fujinori Terunobu, "Urban Planning in Meiji Era",op. cit., pp. 46-48.
[clxii] Fujita K., Hill R. C., ibid., p. 31.
[clxiii] Fujita K., Hill R. C., ibid., p. 33.
[clxiv] Kawazoe Noboru, *Contemporary Japanese Architecture,* Kokusai Bunka Shinkokai, (Japan Cultural Society), Tokyo, 1968, p.72.
[clxv] ibid., p. 73.
[clxvi] After Tanabe K., "Intra-regional structure of Japanese cities", 1970; quoted in: Scargill D.I., *The Form of Cities*, St. Martin's Press, New York, 1971, p.251.
[clxvii] Richards M. F., *An Architectural Journey in Japan,* The Architectural Press, London, 1963, p. 117.
[clxviii] ibid.
[clxix] The strong criticism of current planning methodologies in Japan was indeed one of the main reasons which fostered new radical approach and reforms in the field of urban design, as it became clear, in Japan as well as in other developed countries, that a key factor in the modern architecture was the development of plans which could link effectively (in functional and visual terms) the independent building and the whole city; for this issue see Chapter 4.
[clxx] Ward Stephen V., *Planning the Twentieth-Century City. The Capitalistic World,* John Wiley & Sons Ltd, 2002, p.39.
[clxxi] The first Japanese example of garden city was Tamagawadai, now "Den-en Chofu", developed in 1918 as garden suburb for commuters living around Tokyo. Cfr., Ward Stephen V., op. cit., p. 150-151.
[clxxii] ibid., pp.77-78.
[clxxiii] It is interesting to note that in modern Japan traditionally the word "toshikekaku" refers, according to the scholar Carola Hein, to the world of engineering as it concerns specifically with the field of city planning and the planning and supply of civil infrastructures. Whereas in the field of city planning is the engineer who assumes the task of the planning of the city, the word "machizukuri" (which in contemporary Japan can be translated as "urban design") refers to the world of urban spaces as designed by the architects, the urbanists or the urban designers, and it conceives the city as a work of art, aiming to improve both the functionality and the aesthetic quality of these places.
[clxxiv] Ward Stephen V., op. cit., p.79.
[clxxv] New taxes on the ownership of the land were issued in consequence of Russo-Japanese War (1905) and after the Great Kanto Earthquake in 1923.
[clxxvi] Cfr. "Research on the Urban Transition of Tokyo by the Analysis of the Property Ownership System", by Etsuko Nomura, Doctoral thesis, Waseda University, 2002
[clxxvii] Hein Carola, Diefendorf Jeffrey M., Yorifusa Ishida, *Rebuilding Urban Japan after 1945,* Palgrave Macmillian Ltd, 2003, pp. 6-7.
[clxxviii] Regarding the plan prepared for Datong, according to Ward "…much was very directly borrowed, particularly the standard neighbourhood plan which was virtually identical to one applied in Detroit in the early 1930s."; quoted in Ward Stephen V., op. cit., p. 154.
[clxxix] David Tucker, "Learning from Dairen, Learning from Shinkyo: Japanese Colonial City Planning and Postwar Reconstruction", in: Hein Carola, Diefendorf Jeffrey M., Yorifusa Ishida, *Rebuilding Urban Japan after 1945,* op. cit., p. 177.
[clxxx] ibid., p. 179.
[clxxxi] As pointed out by Carola Hein: "As I began to interview planning historians and urban planners in Japan about the existence of visionary plans in the 1940s [--long-term comprehensive ideas and goals that might serve as

guidelines for establishing future plans to rebuild the destroyed cites--], it quickly became obvious that such plans were extremely rare. Japanese architects and planners during World War II had concentrated on mapping the effects of the bombs on the cities; after 1945, discussions on urban planning doctrines, and visionary and aesthetic concepts, did not play a major role in the reconstruction of Japanese cities. Instead, pragmatic elements of Japanese urban planning, land readjustment (*kukaku seiri*) in particular, provided the main tools for the rebuilding. Having proven its value after the Great Kanto Earthquake of 1923, this method has continued to be a central instrument of Japanese urban planning. Even the Peace Center in Hiroshima, its exceptional character notwithstanding, became possible only through land readjustment (the only difference being that the land exchanged was provided elsewhere in the city rather than in the same area), and the rebuilding of Kobe after the Great Hanshin Earthquake of 1995 illustrates the continuing importance of this tool. Investigation into the specifics of Japanese planning practice made me realize that, while tools such as land readjustment are typical also in German planning practice, differences in the specific application outweigh their similarities. I thus came to understand that urban planning in Japan—even though it integrated some Western inspirations—has different roots than that of European and American countries where architectural and urban design issues with the aim of beautification are of central importance."; in an interview released by Carola Hein as post-doctoral researcher at Tokyo Metropolitan University, Kogakuin University (1995-1999), see : wwwsoc.nii.ac.jp/cpij/edit/1-2-1.pdf

[clxxxii] Land readjustment is implemented through "replotting": since landowners and leaseholders equitabily contribute a portion of their land in the LR project, a replot becomes smaller than the lot before, but with a higher value due to the enhancement of the site thanks to the presence of new public facilities (streets, parks, etc); source: Japan Land Readjustment Association, "Urban Development Project in Japan", 4th Edition, 2003.

[clxxxiii] Hein Carola, Diefendorf Jeffrey M., Yorifusa Ishida, *Rebuilding Urban Japan after 1945,* Palgrave Macmillian Ltd, 2003, pp. 238-242.

[clxxxiv] David Kornhauser, *Il fenomeno urbano nella storia del Giappone,* Franco Angeli Editore, Milano, 1978 (Italian Edition for: *Urban Japan: Its Foundation and Growth,* Longman Group, London, 1976), pp. 131-135.

[clxxxv] The term "megalopolis" refers to a new type of urban structure theorized during the 50s, and it derived by the title of a book published by the scholar Jean Gottmann in 1961. In his pioneering study on urban sprawl of the dense conurbations developed along the Washington-Boston corridor in the East Coast of United States, he claimed the creation in XX century of a super urban system as expression of "the new order of ages", characterized by high density, extension and concentration of function, activities and wealth. Cfr.: Jean Gottmann, Robert Harper, *Since Megalopolis; The Urban Writings of Jean Gottmann,* John Hopkins University Press, 1990.

[clxxxvi] Glickman Norman, *The Management of the Japanese Urban System: Regional Development and Regional Planning in Postwar Japan*, Academic Press, NewYork, 1979 p. 14.

[clxxxvii] Bureau of Statistics of Japan, Historic Statistics Section: www.stat.go.jp

[clxxxviii] Glickman Norman, ibid., p. 15.

[clxxxix] Glickman Norman, ibid., pp.17-22.

[cxc] Karan K.K., Stapleton P., *The Japanese City*, The University Press of Kentucky, Lexington , Kentucky, 1997, p. 81; see also: Fujita K., Hill R. C., op.cit.

[cxci] Steward B. David, *The Making of a Modern Japanese Architecture*. 1868 to Present, Kodansha, NewYork, 1987, p. 186.

[cxcii] Glickman Norman, op.cit., p. 247-248.

[cxciii] Glickman Norman, op.cit., p. 255.

[cxciv] Steward B. David, *The Making of a Modern Japanese Architecture*. *1868 to Present*, Kodansha, NY, 1987, p.178

[cxcv] Kenzo Tange, quoted in: Udo Kulterman, *Kenzo Tange. Architecture and Urban Planning 1946-1969*,Praeger, NewYork, 1970, p. 116.

[cxcvi] This concept was related to Tange's Structuralist theories in urban planning which he explained for the first time in his project for Tokyo Bay in 1960.

[cxcvii] Udo Kulterman, op. cit., p. 152.

[cxcviii] Udo Kulterman, op. cit, pp. 162-164.

[cxcix] Peter Smithson, "Writing s on Tokyo Bay Project", *AD*, September 1964, p. 479; quoted in: Sadler Simon, "Open Ends", in: Sadler Simon, Hughes Jonathan, *Non Plans: Essays on Freedom, Participation and Change in Modern Architecture and Urbanism,* Architectural Press, 2000, p. 140.

[cc] Frampton Kenneth, *Modern Architecture. A Critical History,* Thames and Hudson (World of Art), 3rd Edition 1992, pp. 276-277.

[cci] Yasuo Masai, "Metropolitization in Densely Populated Asia: The Case of Tokyo"; in: Dutt A., Costa F., Noble A., *The Asian City: Processes of Development, Characteristics, and Planning,* Kluwer Academic Publishers, Dordrecht/

Boston/ London, 1994, p. 121; p. 124.
[ccii] Guenter Nitschke, *Kyoto Journal 50*, "Transience- Perspective on Asia", June 2002; cfr.: http://www.east-asia-architecture.org/ieaau2/rockflower.html
[cciii] Sorensen Andre, *The Making of Urban Japan. Cities and Planning from Edo to the twenty-first century*. Routledge Edition, London & NewYork, 2002, p.188.
[cciv] Tafuri Manfredo, *op.cit.*, p.133.
[ccv] Tafuri Manfredo, ibid., pp.131-132.
[ccvi] Michael Hebbert, "Sen-biki admist Desakota: Urban Sprawl and Urban Planning in Japan", in: Shapira Philip, Masser Ian,Edgington David, *Planning for Cities and Regions in Japan*, Liverpool University Press, 1992, p.72.
[ccvii] "The specific cause of the failure of the Tokyo belt was the formation of a political league between sixteen municipalities and several hundred farmers to frustrate the plan. In Koganei city, farmers prematurely subdivided and sold plots to prevent designation. The small landowners had a powerful ally in the form of Japan Housing Corporation, owner and intending developer of large tracts of land in the heart of the proposed (green) belt". Quoted in: Michael Hebbert, "Sen-biki admist Desakota: Urban Sprawl and Urban Planning in Japan"; in: Shapira Philip, Masser Ian,Edgington David, *Planning for Cities and Regions in Japan*, Liverpool University Press, 1992, p.73.
[ccviii] Michael Hebbert, "Sen-biki admist Desakota: Urban Sprawl and Urban Planning in Japan", in: Shapira Philip, Masser Ian,Edgington David, *Planning for Cities and Regions in Japan*, Liverpool University Press, 1992, p.73.
[ccix] Cybrisky Roman, *Tokyo. The Changing Profile of an Urban Giant*, G.K. Hall & Co., Boston, 1991, p.200.
[ccx] Sorensen Andre, *The Making of Urban Japan. Cities and Planning from Edo to the twenty-first century*. Routledge Edition, London & NY, 2002, p.163.
[ccxi] ibid., p.188.
[ccxii] Cybrisky Roman, *Tokyo. The Changing Profile of an Urban Giant*, G.K. Hall & Co., Boston, 1991, p.201.
[ccxiii] Sorensen Andre, *The Making of Urban Japan. Cities and Planning from Edo to the twenty-first century*. Routledge Edition, London & NY, 2002, p.179.
[ccxiv] See: Miyamoto Kenichi, "Waterfront development and conservation in Japan", in: Bruttomesso Rinio (edited by), *Waterfronts. A New Frontier for Cities on Water,* Acts of the International Symposium in Venice (Italy), 1993, p.235.
[ccxv] Kawakatsu Heita, "Connecting Japan with the Outside World through the Sea", in: *Kansai a la carte*, Vol.12, 2002 (http://www.kippo.or.jp/culture_e/ibunka/interview/).
[ccxvi] Various Artists, *A Hundred Years of Tokyo City Planning*, edited by TMG, Tokyo Metropolitan Government, Municipial Library, N.28, 1997, pp. 6-7.
[ccxvii] Yutaka Hikosaka, "Tokyo 1940-2000. The Death of the City and the End of "Theories of Tokyo"", in: *JA-the Japan Architect*, "Tokyo", Summer 1991-3, p.8.
[ccxviii] "Kano Koso – Tokyo wan umetate no mochiifu" (Kano Plan – The motif of reclaiming Tokyo Bay), in: *The Kokusai-Kenchiku (The International Architecture)*, Vol. 25, N.12 December 1958, p.65.
[ccxix] Riani Paolo, *Kenzo Tange,* Sansoni Editore, Firenze, 1977, p. 24.
[ccxx] The investigations conducted in the field of coastal engineering especially in US and North Europe between the late 1940s and the 1950s, and early available in Japan due to the American occupation, promoted and spread much updated information through publications, symposiums and conferences since 1950, the year of the first international conference on ocean engineering held in Berkley, California. New and more advanced methods of construction for ports, breakwaters and other marine works, made of reinforced concrete and steel and based on new design principles, derived mainly from the studies and the improvement in military engineering (starting with those conducted by the Allies during the WW II on the artificial military harbors which led to the construction of famed "Mulberry Harbors" in 1944) and from the oceanic oil explorations; the outcomes of those researches on waves and tidal motion, long-term performance and resistance of materials, promoted further developments in the field of modern sea defence and offshore industry and technology, with improvement in the construction of piers, offshore platforms and other floating structures designed to work in deepwater and to resist extreme severe environments. See: Various Artists, *Offshore Pioneers: Brown and Ropt and the History of Offshore Oil and Gas,* Gulf Professional Publishing, Huston, 1997; D. Reeve, *Coastal Engineering,* Spon Press, 2004.
[ccxxi] Horikawa Kyoshi, "History of Coastal Engineering in Japan", in: *Advances in Coastal and Ocean Engineering*, Vol. 6, April 2000, edited by Philip L. Liu, Cornell University, New York, pp. 9-14; pp. 27-28. Since the middle of the 1950s in Japan universities and research institutes, such as the Port and Harbor Research Institute (linked with the Ministry of Transportation) conducted researches in this field. The first Japanese conference on coastal engineering was held in Kobe in 1954, and the new improvements in coastal engineering, supported by the government, were first implemented in the construction of the Kobe International Trade Port (1955-1959).

[ccxxii] "The Forms of New Cities", by Masato Otaka, in *Kokusai-Kenchiku*, Vol. 26. N. 2, February 1959, pp.30-31; "City Planning scheme over Tokyo Bay", by Masato Otaka, in *Kenchiku-Bunka*, N. 148, February 1959, pp.39-41.
[ccxxiii] "Proposed Design of Marine city "Unabara"", by Kiyonori Kikutake, in *Kokusai-Kenchiku*, Vol. 25, N.12, December 1958, pp.60-65; "Proposed Tower-Shape Community", by Kiyonori Kikutake, in *Kokusai-Kenchiku*, Vol. 25, N.1, January 1959, pp.12-19; "Marines Cities", by Kiyonori Kikutake, in *Kokusai-Kenchiku*, Vol. 26, N.2, February 1959, pp. 36-39.
[ccxxiv] "Plan for New Tokyo" by Noriaki Kurokawa, in *Kenchiku Bunka,* Vol. 14, N. 155, September 1959, pp.27-32.
[ccxxv] "The Proposition of the Plan of the Tokyo Bay", by Soitsu Nonomura and Shuichi Tsubata, in *Kokusai-Kenchiku,* Vol. 26, N.4 , April 1959, pp.12-14.
[ccxxvi] Sorensen Andre, *The Making of Urban Japan. Cities and Planning from Edo to the twenty-first century*. Routledge Edition, London & NewYork, 2002, pp.189-190.
[ccxxvii] ibid., p. 191.
[ccxxviii] Cybrisky Roman, *Tokyo. The Changing Profile of an Urban Giant*, G.K. Hall & Co., Boston, 1991, p.90.
[ccxxix] ibid., p.201.
[ccxxx] Sorensen Andre, *The Making of Urban Japan. Cities and Planning from Edo to the Twenty-first century*, p.160.
[ccxxxi] Kenzo Tange, "My Experiences", *Space Design*, January 1980, p.185.
[ccxxxii] Ockman Joan, *Architecture Culture 1943-1968. A Documentary Anthology*, Columbia Books of Architecture, Rizzoli, N.Y., 2000 (1st Edition 1993), p.325.
[ccxxxiii] Kenzo Tange, "My Experiences", *Space Design*, January 1980, p.186. About the issue of the cycles of life of architectural elements see also chapter 1-3.
[ccxxxiv] quoted in: Riani Paolo, *Kenzo Tange,* Sansoni Editore, Firenze, 1977, pp. 21-22, from: "Architecture d'aujourd'hui", 1961, N.98, p.58.
[ccxxxv] Tafuri Manfredo, *L'Architettura moderna in Giappone,* Cappelli, Bologna, 1964, pp.140-141.
[ccxxxvi] Riani Paolo, op.cit., p.22.
[ccxxxvii] Tafuri Manfredo, *L'Architettura moderna in Giappone,* pp.141-142.
[ccxxxviii] Botond Bognar, *Contemporary Japanese Architecture*, Van Nostrand Reinhold Company, NewYork, p.109.
[ccxxxix] Botond Bognar, ibid., p.112.
[ccxl] Kenzo Tange, "My Experiences", *Space Design*, January 1980, pp.186-187.
[ccxli] Kenzo Tange, "A Plan for Tokyo, 1960: toward a Structural Reorganization", quoted in: Ockman Joan, *Architecture Culture 1943-1968. A Documentary Anthology.* Columbia Books of Architecture, Rizzoli, N.Y., 2000 (1st Edition 1993), pp. 327-328, published in *The Japan Architect*, October 1960, under the title "Technology and Humanity".
[ccxlii] Torenobu Fujimori, *Kenzo Tange,* Shinkentiku- Japan Architect, Tokyo, 2002, pp. 351-353.
[ccxliii] Cfr..: David B. Steward, *The Making of a Modern Japanese Archgitecture.1868 to Present.* Kodansha, New York, 1987, p.177.
[ccxliv] quoted in: *Idea. International Advertising Art*, N. 248, 1995, p.105.
[ccxlv] Further information on the project for "La Defense" district can be found at this web site: http://www3.sympatico.ca/david.macleod/LADEF.HTM
[ccxlvi] Kenzo Tange, "A Plan for Tokyo-1960", quoted in: Kultermann Udo, *Kenzo Tange 1946-1969: Architecture and Urban Design,* Praeger, N.Y., 1970, p.128.
[ccxlvii] quoted in: Kultermann Udo, *Kenzo Tange 1946-1969: Architecture and Urban Design,* p.129.
[ccxlviii] Banham Reyner, *Le Tentazioni dell'Architettura: Megastrutture,* Editori Laterza, Milano, 1980, p.54 (Italian edition for: *Megastructure. Urban Futures of the Recent Past*, Thames and Hudson, London, 1976).
[ccxlix] Steward B. David, *The making of a Modern Japanese Architecture. 1868 to Present,* Kodansha, NewYork, 1987, p.177; moreover Tange introduced Kiyonori Kikutake to CIAM in Otterloo in 1959, and Noriaki Kurokawa and Arata Isozaki were both his students at Tokyo University.
[ccl] Tafuri Manfredo, *L'Architettura moderna in Giappone,*op. cit., pp. 148-149.
[ccli] Ibid., p. 143.
[cclii] Botond Bognar, *Contemporary Japanese Architecture*, op. cit., p.113.
[ccliii] Kenneth Frampton, "The Rise and the Fall of Mega-Architecture: Arata Isozaki and the Crisis of Metabolism 1952-66", in: *GA-Architect-6, Arata Isozaki,* Vol.1, 1959-1978, ADA Edition, Tokyo, 1991; p.9.
[ccliv] "In order to demonstrate the possibility of a decisive change of direction, the architects Bakema and van de Broek in 1965 presented a scheme for enlarging Amsterdam towards east, on the stretch of water that still remained between the city and the reclaimed land in the Zuider Zee. This project involved building, on a series of artificial islands, a linear city of 350.000 inhabitants, with a branch of a metropolitan railway running through the middle.", in:

Benevolo Leonardo, *The History of the City,* Scholar Press, London, 1980, p.913.
[cclv] Banham Reyner, *Le Tentazioni dell'Architettura: Megastrutture*, pp.55-57.
[cclvi] Various Artists, *Japon des avant-gardes,1910-1970: exposition,* Editions du Centre Pompidou, Paris, 1986, p.415
[cclvii] See: Chapter 3, Paragraph 3-2
[cclviii] Steven Hunziker, Ikuro Kamimura, *Kakuei Tanaka: a Political Biography of Modern Japan*, Daruma International Ltd, 1996, Chapter 3, "Building a New Japan", see: http://www.rcrinc.com/tanaka/ch3-3.html ; Cfr. Mihael Ross, p. 120.
[cclix] "…Assuming an inveterate minimum GNP growth rate of 7.5 percent, Tanaka streamlined the Research Commission's bureaucratic-speak into a cosmic political platform, where no city in the nation would exceed 250,000 people. These core cities would be distributed evenly throughout the country and connected by justly arranged networks of national freeways and bullet trains making any area in Japan accessible to any other in a single day. Further, each core city would be transformed into a computerized telecommunications center with information access equal to any other core city."; quoted in: Steven Hunziker, Ikuro Kamimura, ibid.
[cclx] Botond Bognar, *Contemporary Japanese Architecture*, p.128.
[cclxi] Tafuri Manfredo, *L'Architettura moderna in Giappone,* p.115.
[cclxii] According to Hajime Yatsuka, during that period Kikutake's design approach recalled many of the features and the issues of Structuralist current, whose main members were Tange himself and Bakema and Van Eyck of Team X; (See: Yatsuka Hajime, Yoshimatsu Hideki, メタボリズム [*Metabolism*], INAX 出版,Tokyo, 1997).
[cclxiii] In that occasion Tange presented to the audience his projects for Tokyo City Hall and Kagawa Prefectural Office; See: Steward B. David, *The making of a Modern Japanese Architecture. 1868 to Present,* p.176-177
[cclxiv] See: "Architecture + City" by Kenzo Tange in: *Sekai-no Gendai Kentiku 1961* (彰国社、世界の現代建築、1961－10、都市と建築) p. 93; Banham Reyner, *Le Tentazioni dell'Architettura: Megastrutture*, op.cit., p.47.
[cclxv] Ross Michel F., *Beyond Metabolis. The New Japanese Architecture,* 1978, p.29; p.191.
[cclxvi] Kiyonori Kikutake, *Maritime City*. *Material List for Floating city Project 1970-1971 at Hawaii*, "Marine city-1958", p.1; p.13
[cclxvii] Kiyonori Kikutake, *Maritime City*. *Material List for Floating city Project 1970-1971 at Hawaii, (Marine city 1958),* pp. 3-4; Kiyonori Kikutake, *Metabolism 1960. Proposals for New Urbanism,*pp.22-23.
[cclxviii] ibid., pp.4-5.
[cclxix] published in: *Kokusai Kentiku*, Vol. 26, N.2, February 1959, pp.36-39.
[cclxx] "(…) Fixing the residential units within the circuit may be considered, and at such residential unit the people would have the blessing of the sun from one side and the nature and scenery of the sea from the other. The membranic open space which served construction in the construction stage may later play an important role as an open space for the new community living within. Fish tanks or sea plant cultivation tanks may be included within this community space, either in the same way or in a hemispheric form. ", Kikutake, *Maritime City,*.op.cit., p.9
[cclxxi] Kiyonori Kikutake, "Marine city 1958", *Space Design,* p.31.
[cclxxii] Kiyonori Kikutake, *Maritime City*. *Material List for Floating city Project 1970-1971 at Hawaii, (Tower Shape Community 1958),*op. cit., p.1.
[cclxxiii] Moholy-Nagy S., Rudolph Paul, Schwab Gerhard, *The Architecture of Paul Rudolph,* Praeger Publisher, NewYork-Washington, 1970, p.196; this sketch presented many similarities with later Kikutake's works and was probably more influential, both for the structural concept and for the final form of the building, in the preparation for the models of "Kata Housing System" in the 70s.
[cclxxiv] for details about Goldberg's "Marine City" towers in Chicago refer to:
http://www.greatbuildings.com/buildings/Marina_City.html
[cclxxv] Kiyonori Kikutake, ibid., p.3.
[cclxxvi] ibid., p.7.
[cclxxvii] The idea of a structure that carried independent housing units and which declared outside the difference between the main frame and the loaded parts had as best example the "Unite d'habitation" by Le Corbusier which could contain more than 1600 people.
[cclxxviii] Ross Michel F., *Beyond Metabolism. The New Japanese Architecture*, op. cit.,p.30.
[cclxxix] Kiyonori Kikutake, *Maritime City*. *Material List for Floating city Project 1970-1971 at Hawaii, (Tower Shape Community 1958),* p.13; Kiyonori Kikutake, *Metabolism 1960. Proposals for New Urbanism,* p.19.
[cclxxx] "Machi" means city or part of a city; in this last sense its Chinese character (kanji) can be written as "cho", which means administrative unit, and denotes both a physical area (basic urban unit) and a small social unit, as local community with its own sense of identity.

[cclxxxi] Among the most interesting proposal which adopted the concept of clusters suspended from a central core were the projects for "Ecopolis-Tree shaped housing" (1972), "Spiral housing", and the "Hotel Sofitel" in Tokyo (1992)

[cclxxxii] It is easy to recognize that the importance of the maritime commerce and the priority given to production, import and export of goods and rough material is directly linked with the reality of Japanese industrial cities of 50s developed and sponsored by Japanese government.

[cclxxxiii] Kiyonori Kikutake, *Maritime City*. *Material List for Floating city Project 1970-1971 at Hawaii, (Sea city of 1960 - A Model of Metabolic Space),* p.3 ;The concern about the limit for the population of a city has been always an important issue in the field of town planning. Among many plans which stressed the importance to control the population of a new founded city there was "Garden City" by Ebenezer Howard (1898), who fixed the population at 32.000. Also in ancient times this issue was very important as well. For example the ancient Greeks in the VIII and then IV centuries B.C. spread their colonies throughout the Mediterranean Sea, especially in South Italy and Middle East; In the V century B.C. a method of urban planning was developed by Ippodamus from Milos, who gave specific rules about the foundation and the town planning, stressing above all the importance of a limit to the amount of the population (10.000 people).

[cclxxxiv] Kikutake, ibid., p.5.

[cclxxxv] See: Le Corbusier, *The City of Tomorrow and its Planning*, Dover Publication, 1987, (original title: *Urbanisme*, 1st French Edition 1925), p.217; Le Corbusier, *Maniera di Pensare l'Urbanistica*, Edizioni Laterza, Bari, 1975, pp. 57-62, (original title: *Manier de penser l'Urbanisme*, 1st French Edition 1946).

[cclxxxvi] Differently from Le Corbusier, who always strove for a model of city with the potential of endless boundaries, Kikutake chose the Howardian formula of a marine-"garden city", with definite size and clear limit to its growth.

[cclxxxvii] The entire scheme was somewhat similar to those for "Garden City" by Ebenezer Howard.

[cclxxxviii] "The word Dymaxion was a neologism, signifying dynamism plus efficiency. This house was a prototype for serial production. Hexagonal in plan and sandwiched between the two decks, it was suspended and triangulated (on the wire wheel principle) from a central mast"; Frampton Kenneth, *Modern Architecture. A Critical History,* Thames and Hudson Ltd., London, third edition 1992, p.239.

[cclxxxix] "At the press of a button , this cylindrical dwelling unit, driven by a motor under the floor, moves around the pipe to whatever angle required for whatever time required.", Kikutake, ibid., p.7.

[ccxc] Gravagnuolo Benedetto, *La Progettazione Urbana in Europa,* Edizioni Laterza, 1991, p.370; illustr. from Le Corbusier, *Oeuvre Complete.*

[ccxci] Kiyonori Kikutake, *Maritime City*. *Material List for Floating city Project 1970-1971 at Hawaii, (Sea city of 1960 - A Model of Metabolic Space),* pp. 8-9.

[ccxcii] The Manifest of Futurism (Manifesto del Futurismo) was published by Filippo Tommasi Marinetti on 20 February 1909 in the French newspaper *Le Figaro.* In the May 1914, in occasion of a exhibition held in Milan by the Italian avant-garde group "Nuove Tendenze" (New trends), Antonio Sant'Elia exhibited some of his panels and drawings and a message entitled "La Citta` Nuova" (which was revised later and named "The Futurist Architecture") to introduce his vision of the megalopolis of the future and the architecture of the XX century, where, together with the apology of the machine age and new materials and technologies, he rejected the laws of history continuity and claimed that: "…the fundamental characters of futurist architecture are transitoriness and caducity. The houses will last less than we last. Every generation will build his own city…"; Gravagnuolo Benedetto, *La Progettazione Urbana in Europa. 1750-1960.* Editori Laterza, Roma-Bari, 1997, pp.281-282.

[ccxciii] Kiyonori Kikutake, *Maritime City*. *Material List for Floating city Project 1970-1971 at Hawaii, (Sea city of 1960 - A Model of Metabolic Space),* pp.10-11.

[ccxciv] Alison Smithson, *Team X Primer*, 1968; quoted in: Colquhoun Alan, *Modern Architecture,* Oxford University Press, 2002, pp.219-220.

[ccxcv] "Tokyo is the perfect example of the fluid, regenerating city (…) This is the result of a healthy (if somewhat hyper) metabolism, making the city the scene of constant renewal and change. The cores of Western cities, with their indestructible masonry structures, on the other hand, suffer from stagnation and rigidity. Tokyo, thus, is an "amoeba city" with is amorphous sprawl and constant change it undergoes, like the pulsing body of the organism. And, as with an amoeba, Tokyo demonstrates a physical integrity and the capacity for regeneration when damaged. Whether the amoeba city is good or bad, it does preserve."; quoted in: Ashihara Yoshinobu, *The Hidden Order. Tokyo through the twentieth Century,* Kodansha International, Tokyo and New York, 1989 (Japanese Edition 1986), p.58.

[ccxcvi] ibid., p.19.

[ccxcvii] Ross Michel F., *Beyond Metabolis. The New Japanese Architecture*, p.191.

[ccxcviii] Frampton Kenneth, *Modern Architecture. A Critical History,* Thames and Hudson Ltd., London, third edition 1992, p. 282.

[cxcix] Tafuri Manfredo, *L'Architetuura Moderna in Giappone",* pp.137-138.
[ccc] Banham Reyner, *Megastructure. Urban Futures of the Recent Past*, p.57; p.91; p.101.
[ccci] Wendelken Cherie, "Putting the Metabolism back in Place", p.290, in: Goldhagen Sarah W., Legault Rejean (edited by), *Anxious Modernist. Experimentation in Postwar Architectural Culture.* Canadian Centre for Architecture, Montreal, The MIT Press, Cambridge, Massachusetts, and London , England, 2000.
[cccii] Kiyonori Kikutake, "Age of Methodology", in *Space Design,* n8010, October 1980, p.35.
[ccciii] Watanabe Hiroshi, *The Architecture of Tokyo,* Edition Axel Menges, Stuttgart-London, 2001, p.123
[ccciv] For further information about the "Three stage theory" and Taketani Mitsuo see: http://www.bun.kyoto-u.ac.jp/~suchii/cntr-lec.html (article by Uchii Soshici, 2002) ; http://www.sciamdigital.com/ (article by Laurie Brown, Yoichiro Nanbu, "Physicist in Wartime Japan", 1998)
[cccv] Kiyonori Kikutake, "Age of Methodology", in *Space Design,,* n8010, October 1980, p.36.
[cccvi] ibid., p.36
[cccvii] See Botond Bognar, *Contemporary Japanese Architecture*, p.128.
[cccviii] Ross Michel F., *Beyond Metabolism. The New Japanese Architecture*, op. cit.,pp.49-50
[cccix] ibid., p.50; Kikutake proposed and built another scheme of Kata housing system in Japan in 1975 ("Tiered Kata Proposal -"Pasadena Heights"-)
[cccx] Cfr. Maurizio Vitta, *Kiyonori Kikutake. From Tradition to Utopia*, op. cit., p. 133.
[cccxi] Kikutake adopted in this manuscript the translation of kata as "system" and katachi as "form", which are derivative of Luis Khan' design approach. See Kiyonori Kikutake, *Maritime City*. *Material List for Floating city Project 1970-1971 at Hawaii, (Methodology of Urban Design- cityscape, city function, city space-, 1966),* p.1. ; Kiyonori Kikutake, "Age of Methodology", in *Space Design,* p.36.
[cccxii] ibid., p.6.
[cccxiii] ibid., p.8.
[cccxiv] Kikutake describes the channel as a system composed by key points (buildings, shops, factories, significant spaces, etc.) and a network (streets, railways, other communication ways), both as physical or functional entities; (Ibid., p. 11.) Furthermore in this definition it's probably that Kikutake was somewhat influenced by some modern theories of urban geography developed since the early sixties, as proved by his definition of "channel system" which resembled the concept of "urban field" by Jean Gottman and above all Brian Berry's definition of "urban territorial system" (which was defined as an open system of interdependent urban places), to describe the process of urban transformation; See Cori B., Pellegrini G.C., Dematteis G., Pierrotti P., *Geografia Urbana,* UTET Libreria, Torino, 1993, pp.146-147.
[cccxv] Ibid., p.9.
[cccxvi] ibid., p.11.
[cccxvii] "The channel method for urban development is a method by which the inhabitants freely select, participate in and independently change their environment. City planners supply conditions and techniques for it as a system"; ibid., p.24.
[cccxviii] Gravagnuolo Benedetto, *La Progettazione Urbana in Europa,*op.cit., p.139.
[cccxix] Maurizio Vitta, *Kiyonori Kikutake. From tradition to Utopia,*op. cit., p.133.
[cccxx] Ross Michel F., op. cit., p.37; p.71.
[cccxxi] His project for "Prefabricated Apartments" published in 1962 proposed the conceptual division of the architectural plan in "master" spaces and "servant" spaces according to a principle developed by Kahn's design methodology. See: Kurokawa Kisho, *Metabolism in Architecture,* Westview Press, Boulder, Colorado, 1977, p.92
[cccxxii] Kawazoe, Kikutake, Kurokawa, Maki, Otaka, *Metabolism 1960. Proposal for New Urbanism,* op. cit., (Plan for New Tokyo), p.80.
[cccxxiii] ibid.
[cccxxiv] Regarding Smithson's critic Tafuri pointed out that: "conceived as a criticism of zoning by sectors that had been proposed for the *Ville Radieuse* and championed in the Athen Chart, their projects put considerable emphasis on relational spaces such as streets within blocks, contact between dwelling and street, population density, and multipurpose buildings. The intensity of slums…were captured and sublimated by the Smithsons in typological proposals of urban scale. This was achieved by an overt return to the themes Le Corbusier had grappled with in the Obus Plan for Algiers. Suspended streets, continuity of the the network, density of services, and direct give-and-take between residences and services were taken as basic factors in architectural forms. […] The discourse opened up by their Golden Lane Housing project was carried further in their competition project of 1957-58 for Berlin Haupstadt done with Peter Sigmond. Their new urban fabric was to be suspended above the old one, connected to the ground with relational spaces and towered freely disposed within the elastic superstructure."; Tafuri, Dal Co, *Modern*

Architecture 2, Electa/Rizzoli, 1986, p.347.

[cccxxv] Kawazoe, Kikutake, Kurokawa, Maki, Otaka., op.cit, p.54. Furhtermore it can be noted that Kurokawa appears to share many of the key concepts of Alison and Peter Smithson proposed, and that then became fundamentals elements of Team X anti-modernist design approach. Among the most important there are the concepts of "urban fabric" as opposite to modernist concepts of masterplan and zoning; the concept of "edge" as intermediate space between private and public areas, and also the concept of "cluster", as system of different buildings which create complex and various relations among themselves. Even though Kurokawa was greatly influenced by these ideas, however in his early projects such as "Helix city" he appeared to be more in favor of drastic works of massive scale according of the Rationalist principle of "tabula rasa", whereas Team X always strove for softer and small scale of interventions in the the heart of the city.

[cccxxvi] The idea of buildings which arose in the air keeping free the space on the ground, occupied by pre-existences such as older buildings or, like this case, by the natural land which was the essential production source of agricultural city, was largely adopted in other authors' projects such as Yona Friedman's "Urbanisme Spatial" (1960-1962) and Arata Isozaki's "City in the Sky" (1961-62).

[cccxxvii] Kurokawa Noriaki, "Proposed Plan for the Toyama Heights Housing Project", in "*Kentiku Bunka"*, N. 165, July 1960, pp.54-57.

[cccxxviii] Kawazoe, Kikutake, Kurokawa, Maki, Otaka, *Metabolism 1960. Proposal for New Urbanism,* op. cit, p.80.

[cccxxix] Kurokawa Kisho, "Grave-Post of Contemporary Architecture", in SD n8601, January 1986, p.4.

[cccxxx] Kurokawa Kisho, *SD Monograph series,* n. 7804, April 1978, p.111.

[cccxxxi] Kurokawa Kisho, *Metabolism in Architecture,* op. cit., p.54.

[cccxxxii] ibid., p. 58.

[cccxxxiii] ibid., p.57; pp. 67-69.

[cccxxxiv] ibid., p. 96.

[cccxxxv] "…Masakazu Yamazaki:I feel tempted to propose an applied method derived from the concept of "renga" (a kind of "verse-linking") in build up a city. When you proceed to compose a renga collection, you have many people contribute their lines inspired by the tailend [talent] of their immediate predecessor but without the awareness of the whole or the framework. Thus, the lines are linked one after another to form the whole. In a city, when you build a building, you will take into account only its relationship to the immediate neighboring structures, and the accumulation of such houses is what makes up the whole as a city. Couldn't this way of thinking be practical?
Kisho Kurokawa: I'm all for it. Modern architectural movements in Europe have presupposed spatial hierarchy. Under this system, you have the infrastructure and the substructure, and the synthesis of these two makes up architecture, or city-planning. By contrast, the "renga" method you just mentioned established spatial order without the medium of infrastructure, and is precisely what we [metabolists] have been asserting". From the dialogue: "On the culture", between Masakazu Yamazaki, play writer, and Kisho Kurokawa, in: Kurokawa Kisho, "Grave-Post of Contemporary Architecture", p.5.

[cccxxxvi] The "Architecture of the Streets", as Kurokawa called the outcomes of his research on the comparative studies between Japanese city and Western city (1963), assumes that the street of the traditional Japanese city can be seeen as an extension of the private and personal space, as well as an extension of public space. Whereas Western city rely on squares and plazas as means of public relations, in the Japanese urban space the streets (or more specifically, the passageways under the eaves of adiajent and continous buildings) are integrated with architecture and have the same functions of the squares in Western cities. According to Kurokawa the streets in Japan are indeed and extension of architectural space, and relate the individual lives to communal life in the city. His vision of the street as a basic link with other functions and other spaces of the city, even though are connected with the philosophy of Buddhism and his principles of "Symbiosis" of cultures, seems recalling also similar considerations on the nature of the urban spaces developed by Tange and Maki in the same period. For further details on these topics, see: Kurokawa Kisho, *Metabolism in Architecture,* op. cit., p.143; Kurokawa Kisho, "Metabolism, Symbiosis, and Culture of Japanese Cities", in: Gideon S. Golany, Keisuike Hanaki, Osamu Koide, *Japanese Urban Environment,* Pergamon, Oxford/ New York/ Tokyo, 1998, p.11.

[cccxxxvii] "Metamorphosis 1962" was the title of another manifesto planned by Metabolists group, but which was never published. Kurokawa referred to the theory of metamorphosis, according to which metabolic processes (which are based on the metabolic cycles of life of architectural and urban elements) produced a transformation of the city and a sudden emergence into a qualitatively different urban structure, as the next step of the evolution from Metabolism to Symbiosis. Furthermore, according to Kurokawa, the concept of metamorphosis proved to be a key word for many members of Metabolits group, and developed some basic ideas such as his "architecture of the streets", Kikutake's

concept of "semi-public and Maki's "golgi's field"; quoted in Kurokawa Kisho, "The philosophy of Symbiosis: From Internationalism to Interculturalism", in *Process: Architecture,* N. 66,March 1986, p.54; See also: Kurokawa Kisho, *Metabolism in Architecture,* op. cit., p. 45, Kurokawa Kisho, *From Metabolism to Symbiosis,* John Wiley and Sons, 1992, p.14; p. 110.

[cccxxxviii] Wendelken Cherie, "Putting the Metabolism back in Place", in: Goldhagen Sarah W., Legault Rejean (edited by), *Anxious Modernist. Experimentation in Postwar Architectural Culture*. op. cit., p.294.

[cccxxxix] quoted in: Colquhoun Alan, *Modern Architecture,* op. cit., p. 220.

[cccxl] ibid.

[cccxli] See: "Kisho Kurokawa", in: Knabe Christopher, Noennig Jorge R., *Shaking the Foundations. Japanese Architects in Dialogue,* Prestel, Munich/London/NewYork, 1999, pp.20-27.

[cccxlii] quoted in: Betty J. Blum, "Interview with Kurokawa", compiled under the auspices of the Chicago Architect Oral History Project, The Art Institute of Chicago, Department of Architecture, 2002, (http://www.artic.edu/aic/collections/dept_architecture/kurokawa.pdf); pp.11-12.

[cccxliii] ibid., pp.24-25.

[cccxliv] Kurokawa Kisho, "The philosophy of Symbiosis: From Internationalism to Interculturalism", in *Process: Architecture,* N. 66,March 1986, p. 51.

[cccxlv] ibid., p.52.

[cccxlvi] ibid., p.53.

[cccxlvii] Knabe Christopher, Noennig Jorge R., op.cit., p.21.

[cccxlviii] Kurokawa Kisho, *Kisho Kurokawa,* Edition du Moniteur, 1995, p.11; p. 14.

[cccxlix] Kurokawa Kisho, *Metabolism in Architecture,* op. cit., p. 75.

[cccl] Waswo Ann, *Housing in Postwar Japan. A Social History.* RoutledgeCurzon, London, 2002, p. 68.

[cccli] Botond Bognar, *Contemporary Japanese Architecture*, op. cit., p.142.

[ccclii] Hanno-Walter Kruft, *A History of Architectural Theory. From Vitruvius to the Present,* Princeton Architectural Press, N.Y.,1994, pp.434-435.

[cccliii] Boyd Robin, *New Direction in Japanese Architecture,* George Braziller, N.Y., 1968, op. cit., p.46.

[cccliv] Coaldrake H. William, *Architecture and Authority in Japan,* The Nissan Institute/Routledge, London/NewYork, 1996, p.253.

[ccclv] Steele James, *Architecture Today,* Phaidon Press, London, 1997, p. 437.

[ccclvi] Kerr Alex, *Dogs and Demons. The Fall of Modern Japan,* Penguin Books, 2001, p.242.

[ccclvii] Their studies on group form aimed to define some formal schemes in urban design in order to see how the various parts of an urban fabric fit and relate together to make up the whole; regarding this issue it was Maki who proceeded further into the development of a more comprehensive theory and detailed schemes. Cfr. Fumihiko Maki, *Fumihiko Maki. Building and Projects,* Princeton Architectural Press, New York, 1997, p. 123.

[ccclviii] Michael F. Ross, *Beyond Metabolism. The New Japanese Architecture,* McGraw Hill Publication, New York, 1978, p. 25.

[ccclix] ibid., p. 42.

[ccclx] Cfr. Chapter 4, p. 70.

[ccclxi] Michael F. Ross, op. cit., p.42.

[ccclxii] Noburo Kawazoe, *Contemporary Japanese Architecture,* Kokusai Bunsa Shinkokai, Japan, 1968, p.73.

[ccclxiii] Michael F. Ross, op. cit., pp. 26-27.

[ccclxiv] Fumihiko Maki, op. cit., p. 123.

[ccclxv] Michael F. Ross, op. cit., p.113.

[ccclxvi] Cfr.: Fumihiko Maki, op. cit., pp. 206-213. The 3 paradigms of collective forms as the result of Maki's study on the relationship between the architecture of the city form a view of collection of buildings. In the "compositional form" the elements are conceivede as independent parts which are grouped together according to geometrical laws; "megaform" is a great urban structure which contains and concentrateand combines several functions and activities as a huge over- infrastructure useful for economic purposes (can foster productive activities in the surrounding areas); "group form" is an urban structure developed around "generative" spatial elements (such as street, plaza, etc.) which connect with the space around them and create system of mutual reference and influence, both functionalyl and visually. In particular the Group Form can be considered as a collection of single and independent buildings of different forms and various functions which define an overall and flexible system of elements able to change at any time without altering the main layout or the shape of the whole system, so that it can survive in the time. The first application of the Group Form's principle in a project by Maki could be seen in the general plan and the organization of the spaces in the "Rissho University", designed in 1965.

[cccclxvii] Cfr.: Botond Bognar, *Contemporary Japanese Architecture. Its Development and Challenge,* op. cit., p. 153; Ross, op. cit., pp. 31-32.
[cccclxviii] Cfr.: Chapter 6, p. 109; Ross, op. cit., p. 129.
[cccclxix] Gaetano Ginex, *Aldo van Eyck*, Testo e Immagine, Universale di Architettura, Marsilio, 2002.
[cccclxx] Fumihiko Maki, *Fumihiko Maki: Buildings and Projects,* Princeton Architectural Press, New York, 1997, p. 207; "The Theory of Group Form" by Fumihiko Maki in: *The Japan Architect,* Int.Edit. Vol.45, N.2-161, February 1970, pp. 39-43.
[cccclxxi] ibid., p. 215.
[cccclxxii] Ross, op. cit., p. 32.
[cccclxxiii] Cfr.: Botond Bognar, op. cit., p. 153.
[cccclxxiv] Cfr.: Sigfried Giedion, *Space, Time and Architecture. The Growth of a New Tradition*, Cambridge/Harvard University Press, 3rd Edition 1954 (1st Edition 1946); Manfredo Tafuri, Francesco Del Co, *Modern Architecture Vol. 2*, Electa Milano, 1986 (1st edition 1976).
[cccclxxv] Spiro Kostof, *The City Shaped*, *Urban Patterns and Meaning through the History,* Thames and Hudson, 1992.
[cccclxxvi] Stephen Graham, Simon Marvin, *Splintering Urbanism*, Routledge, 2001, p.64.
[cccclxxvii] The wave of criticism of the new housings complexes rebuilt during the 50s focused especially on the excessive segregation of functions and activities, the loss of identity and of human scale typical of the traditional communities, and the consequent evident sense of rootless which many dwellers experienced in their life into alienating environments composed by standardized anonymous urban blocks separated by traffic arteries in the suburbs of the growing industrial metropolis. These complaints and criticisms on the state of the contemporary neighborhoods and city became the main source of new studies and surveys in the field of social sciences and ecology (among the others stand out the contributions by: Jane Jacobs, 1961; William Whyte, 1961; John Simonds, 1961, and Oscar Newman, 1961), which stimulated further remarkable outcomes in architectural and planning strategies and new methodologies of analysis and understanding of complex environments (such as the development of Environmental-behavior studies, focusing on people using city spaces, and Space-morphology studies, focusing on public spaces and urban form), as largely witnessed by the amount of new publications, debates and researches dated since the early 1960s.
[cccclxxviii] "Exploding Metropolis" was the title of a book published in 1958 as collection of independent essays on the condition of the big conurbations in US, which special mention to the state of urban sprawl and transportation development. Among the authors: Jane Jacobs, William Whyte, Francis Bello.
[cccclxxix] See: Siegfried Gideon, *Space, Time and Architecture*, Harvard College, 1954; Manfredo Tafuri, Francesco Dal Co, *Modern Architecture* Vol. 2, Electa/Rizzoli, 1985 (1st Italian Edition 1976); Charles Jencks, *Modern Movements in Architecture*, Penguin Books, 1985; Spiro Kostof, *The City Shaped* (1991) and *The City Assembled*, Thames and Hudson, (1992); Nan Ellin, *Postmodern Urbanism*, Blackwell Publishers, 1996.
[cccclxxx] Inspired by the myth of the "exploding metropolis" and the surge of the new concept of "megalopolis", Megastructural movements were the main outcome of this utopian tendency during the 1960s and comprised a large set of specific groups and theories, such as the "anarchic" movement of "Situationists" by Constantin, the "Urbanism Spatial" by Friedman, Soleri's "Archology", etc., whose main interest was the development of human settlements on a massive scale, basically conceived as total (controllable) systems of movements and flow of their inhabitants and their architectures (See: Reyner Banham, 1976). Instead the Townscape Movement, Regionalism, Contextualism and New Urbanism moved their proposals on a smaller scale, and aimed to restore, both as visual image and as physical/functional/social entity, the tradition of the neighborhood (seen as a typical feature of the "lost" urban quality of Western pre-industrial settlements) as a fundamental basic urban unit of the modern city.
[cccclxxxi] Both these schemes contain some valid elements and some critical elements, but above all reveal the general crisis and contradictions of the time, with one stance emphasizing the importance of the past tradition and the value of history for a better quality of life, the other more concerned to follow the needs of technological society of the present, and to assure optimal conditions for movement functionality and higher economic production.
[cccclxxxii] Cfr.: Colquhoun Alan, *Modern Architecture,* op. cit., p.220; Frempton Kenneth, *Modern Architecture. A Critical History,* op. cit., p.271, Various Artists, *Architectural Culture. 1943-1968*, op. cit., p.8.
[cccclxxxiii] Spiro Kostof, *A History of Architecture. Settings and Rituals,* Oxford University Press, New York, 1985, p. 743
[cccclxxxiv] Giulio C. Argan, *L'Arte Moderna. 1770-1970*, Sansoni Editore, Firenze, 1981 (1st Edition 1970), pp. 609-612; Argan considered as forerunner of this kind of architecture Le Corbusier' s "Unite' d'Habitation", cfr. Banham Reynard.
[cccclxxxv] Dahinden Justus, *Urban Structures for the Future,* Praeger Publisher, London/ New York/ Washington, 1970, p.8; p.11.
[cccclxxxvi] ibid., p.16; furthermore, as alleged by Spiro Kostof: "…The attempt to resolve the conflict between design

and spontaneity, between the large container and the small human incident, led to the megastructure craze. A megastructure…was slated for whole cities or fragments of cities, but was also applicable for institutional communities like universities or corporate centers. There were two important aspects of the megastructures. The vast scale and complexity of the structural framework had to rely on advanced technology. (…) The other, related aspect had to do with casual organization, elastic stacking patterns, and irregular skyline. In terms of housing, the attraction resided in being able to recapture with modern industrial means some of the visual sparkle of Italian hill towns and Greek island communities- that Mediterranean vernacular admired by modern architects all through the century."; quoted in: Spiro Kostof, op. cit., p. 745.

[ccclxxxvii] Emilio Battisti, "Struttura urbana e trasformazioni territoriali", in: *L'Arte Moderna*, Vol. 11, Fratelli Fabbri editori, Milano, 1975, p. 217.

[ccclxxxviii] Benedetto Gravagnuolo, *La progettazione urbana in Europa 1750-1960,* Laterza, Bari, 1991, p. xiii.

[ccclxxxix] cfr: Rejana Lucci, *La costruzione dell'abitare,* CUEN, Napoli, 1991, pp. 172-175.

[cccxc] ibid.; however it is interesting to note that in occasion of the CIAM meeting in 1930 various models of dwelling blocks and settlements for the working class were proposed by different architects; for instance Dutch architects presented a modern versions of their traditional house (whose model originated in the Middle Age) which were arranged around a central court to form the urban block. And also architects like Adolf Loos and Richard Neutra polemically rejected the German approach and proposed model of urban development based on usage of single-family houses and cottages, advocating a kind of urbanization that was extensive instead of intensive.

[cccxci] During his travels throughout Europe in the 1920s, Le Corbusier studied the monasteries, convents and other kind of collective buildings whose uses required a conceptual separation between public or semi-public spaces for collective activities and private spaces (such as the monk's cells).

[cccxcii] Cfr.: Le Corbusier, *Verso una architettura,* Longanesi, Milano, 1984 (Italian edition of: *Towards a New Architecture*).

[cccxciii] The section of this project presented a solution based on the use of different typological schemes such as gallery house and terraced house combined with interior corridors named by Le Corbusier "interior streets". Every dwelling unit, which had a long and narrow plan and was inspired by a traditional European house called "Gothic house" developed during the Middle Age, had both its small sides on the two long fronts of the building, receiving air, direct sunlight and having a complete view of the surroundings.

[cccxciv] Reyner Banham, *Le Tentazioni dell'architettura. Megastrutture,* Edizioni Laterza, Bari, 1980 (Italian edition of: *Megastructure. Urban future of the Recent Past.* Thames and Hudson, 1976), p. 3.

[cccxcv] Fumihiko Maki, "Investigation in Collective Forms", St Louis, 1964, in: *Fumihiko Maki: Buildings and Projects,* Princeton Architectural Press, New York, 1997, p. 210; cfr.: Reyner Banham, op. cit., pp. 3-4.

[cccxcvi] Reyner Banham, op. cit., p. 4.

[cccxcvii] Dahinden Justus, op. cit., pp. 19-40.

[cccxcviii] The original model for this project was developed by Safdie in 1963, during his studies with Louis Khan in Philadelphia. The project developed in 1968 showed some influence of Khan's architectural ideas, as well as the suggestions for vernacular architecture conceived as effective models of standardized and "spontaneous" urban settlements, a kind of architecture which spread so much interest during the early '60s; cfr. Banham Reynard, op. cit., p. 5; p.118 .

[cccxcix] Dahinden Justus, op. cit., pp.30-31; p.120.

[cd] ibid., p. 38.

[cdi] Reyner Banham, op. cit, p.75.

[cdii] Spiro Kostof, op. cit., p.746.

[cdiii] "But what these urban substitutes reflected was the growing interest in the old city themselves. (…) [In the 60s] The mood changed. The mending and revitalization of already debilitated cores [of the cities] found persuasive advocates [such as Jane Jacobs and Luis Mumford]. (…) This turn of events cut to quick the last defense of the International Style- its rejection of the history."; ibid., p.747.

[cdiv] Isozaki links the problem of Metabolism to the debate over Alexander's "tree" and "semi-lattice" structures; cfr. Chapter 1-2, p.14.

[cdv] Aldo Rossi, *L'Architettura della Citta'*, Citta' Studi Edizione, Torino, 2004 (1st Italian Edition 1966), p. 60.

[cdvi] cfr.: Banham Reynard, op. cit., pp.239-240.

[cdvii] Ludovico Quaroni, *La torre di Babele,* Marsilio Editore, Padova, 1982, p.236.

[cdviii] ibid., p.44 (cfr. Wendelken Cherie, "Putting the Metabolism back in Place", in: Goldhagen Sarah W., Legault Rejean -edited by-, *Anxious Modernist. Experimentation in Postwar Architectural Culture.* Canadian Centre for Architecture, Montreal, The MIT Press, Cambridge, Massachusetts, and London , England, 2000, p. 281); furthermore, according to Banham the first "authentic" megastructure was Tange's Project for Boston Bay (1959); ibid., p.49.

[cdix] Boyd Robin, *New Direction in Japanese Architecture,* G. Braziller, New York, 1968, pp.14-15.
[cdx] Botond Bognar, *Nikken Sekkei: Building Future Japan, 1900-1990,* Rizzoli International, New York, 2000, p.50.
[cdxi] Michael F. Ross, *Beyond Metabolism. The New Japanese Architecture,* McGraw Hill Publication, New York, 1978, pp. 32-33.
[cdxii] ibid, p. 43.
[cdxiii] It must be noted that Otaka was disciple and fan of the architectural principle of Kunio Maekawa, who had studied in Europe with Le Corbusier before the Second World War. After the war, Maekawa designed the Japanese version of "Unite' d'Habitation" in 1958, the "Harumi Apartment".
[cdxiv] Michael F. Ross, op. cit., pp.47-48; cfr. Botond Bognar, *Contemporary Japanese Architecture. Its Development and Challenge*, Van Nostrand Reinhold Company, New York, 1985.
[cdxv] Michael F. Ross, op. cit., p.39.
[cdxvi] Philip Johnson, quoted in: Charles Jencks, Modern Movements in Architecture, op.cit, p.208.