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URBAN STRUCTURE FOR THE EXPANDING METROPOLIS: KENZO TANGE'S 1960 PLAN FOR TOKYO

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Kenzo Tange's 1960 plan for Tokyo was proposed at a time when many cities in the industrial world were experiencing the height of urban sprawl. With a unique insight into the emerging characteristics of the contemporary city and an optimistic faith in the power of design, Tange attempted to impose a new physical order on Tokyo, which would accommodate the city's continued expansion and internal regeneration. The scheme, featuring a linear series of interlocking loops expanding Tokyo across the bay, has often been regarded as initiating the decade-long megastructural movement. Its theoretical contribution to contemporary urbanism, however, remains understudied. Through an in-depth analysis on the Tokyo plan, this essay studies Tange's city design theories in terms of both their domestic context and international influence. A series of conceptions that found their strongest expression in this plan, such as mobility, urban structure, linear civic axis, and city as process, will be re-examined. Tange incorporated these urban concepts into a powerful architectural language and tried to elevate them to a new notion of the relationship between the whole and the part, and between the permanent and the transient. An investigation of the subsequent debates surrounding this plan, however, demonstrates that the way Tange approached these concepts was symbolic rather than practical, an orientation also manifest in his later works. His vision for establishing a new spatial order for the continuously expanding and transforming metropolis was ultimately a utopian ideal.

INTRODUCTION

The World Design Congress held at Tokyo in 1960 was destined to have a major impact on the history of Japanese modern architecture.[1] Two important events, one in the conference and the other following but inseparable from the former, contributed to the country's emergence in the world's frontier of architecture and urbanism. On one hand, a group of young men, who called themselves "Metabolists," presented a pamphlet with their avant-garde city design manifestos and futuristic plans entitled *Metabolism 1960 — the Proposals for New Urbanism*. Among the group were architects Kiyonori Kikutake (b. 1928), Masato Otaka (b. 1923), Fumihiko Maki (b. 1928), Noriaki Kurokawa (b. 1934), and the architectural critic Noboru Kawazoe (b. 1926). On the other hand, Kenzo Tange (1913-2005), often recognized as mentor of these Metabolists, published a radical scheme known as *A Plan for Tokyo, 1960 — Toward a Structural Reorganization*, involving Metabolist members in the design team. This visionary plan, featuring a linear series of interlocking loops expanding Tokyo across the bay, was later regarded as initiating the decade-long megastructure movement (Figure 1). The cumulative energies of creativity in Japan after the end of the war were crystallized into these two distinct, but not unrelated, urban design statements.[2]

The common concern of both attempts was how to cope with the rapid growth and unpredictable changes of contemporary cities. In the introductory statement of *Metabolism*, the authors wrote, "We regard human society as a vital process — a continuous development from atom to nebula. The reason why we use such a biological word, the metabolism, is that we believe design and technology should be a denotation of human vitality."[3] The Metabolists rejected the modernist notion of city as a mechanical object and viewed it, instead, as an organic process. In contrast to the traditional "master plan" concept that dealt with cities in terms of a final, stable state, they called for an attitude envisioning no physical destination, but rather embodied a sense of the city as a dynamic process of ceaseless transformation. Their schemes, such as Kurokawa's "Helix City" and Kikutake's "Ocean City," were intended as the patterns "which can be followed consistently from present into the distant future."[4] However, the fantastic character inherent in these speculations also tended to obscure the real possibilities of an acceptance and display of the process of urban transformation.

Compared to the younger Metabolists, Tange's proposal appeared to be more sophisticated and demonstrated that the idea of "city as process" could be carried through into a powerful architectural language. A student of Kunio Maekawa, who had in turn been trained by Le Corbusier and Antonin Raymond, Tange was strongly affected by European modernism.[5] He had attended the CIAM meetings since 1951 and was closely connected with Louis Kahn and Team X members. The 1960 plan for Tokyo showed his deep awareness, like the Metabolists, of city as process, but he added to this idea the concepts of mobility and urban structuring, for which he was inspired mainly by the western contemporaries. As Tange claimed, the Tokyo plan marked a turning point in the evolution of his thought as he moved away from functionalism in urban planning and toward a structural methodology.[6] It is also obvious, however, that this evolution was accompanied by his approach towards the symbolism in design.

The plan for Tokyo was not only a cooperative attempt of Tange and the Metabolists, but also a concentrated expression of Tange's ideal on city planning. As Udo Kultermann noted, since this plan gathered up and focused everything Tange was interested in doing, it heralded practically all of his later projects.[7] Through an in-depth analysis of the Tokyo plan, this paper will study Tange's city design theories in terms of both their domestic context and international influence. A series of urban concepts that found their strongest expression in this plan, such as mobility, urban structure, linear civic axis, and city as process, will be re-examined. Tange incorporated these conceptions into a powerful architectural language and tried to elevate them to a new notion of the relationship between the whole and the part, and between the permanent and the transient. An investigation of the subsequent debates surrounding this plan, however, demonstrates that the way Tange approached these concepts was symbolic rather than practical, an orientation also manifest in his later works. His vision for establishing a new spatial order for the continuously expanding and transforming metropolis was ultimately a utopian ideal.

FIGURE 1. Kenzo Tange, Plan for Tokyo, 1960. Photography of the model.
Source: Kawasumi Architectural Photograph Office, Tokyo.

URBAN STRUCTURING: SYMBOL OF MOBILITY

Tange initiated the plan from his interpretation of the characteristics of what he termed the world's "pivotal cities," that is, those with populations of ten million or more. From his point of view, such cities, including Tokyo, were in a state of confusion and paralysis because the physical structures of the cities had "grown too old to cope with the current rate of expansion," and the only way to save the

cities was a radical transformation of their fundamental structures.[8] The vitality of a city in the post-industrial age was no longer based on the primary or secondary economic activities, but on its tertiary sector. As a result, the city should be treated not as a composition of separate functional zones, as the orthodox modernists had suggested, but as an open complex linked together by a communication network. Tange argued that the organic life of Tokyo lay exactly in the flowing movement of its ten million people, who engaged in the communication of various functions and created the total function. Mobility was the factor that gave life to the city's organization, and the transportation system was the physical foundation of the city's operation. The importance of the communication system within the city was articulated by Tange with a metaphor: "It is the arterial system which preserves the life and human drive of the city, the nervous system which moves its brain. Mobility determines the structure of the city."[9]

The urgency of re-establishing the current physical structure of the city was brought about, first of all, by the rapid proliferation of individual automobiles. The automobile had changed the relationship between architecture and street, and the new relationship demanded a completely new system of transportation:

> *In the past, people walked along streets until they came to their destination and then simply disappeared into the door ... . With automobiles on the street, however, everything is different. In the first place, it is necessary to divide pedestrians from vehicles, to create highways and streets that are for the exclusive use of vehicles. Thanks to the coming of the automobile, there is need for a new order in which a vehicle can move from a fast highway to a slower one and then come to a stop at the destination.*[10]

Tange also contended that the speed and scale that automobiles had introduced into urban life were changing people's conception of space. This new sense of space, in turn, required a new spatial order in the city. Since the old transportation system could no longer meet the demands of contemporary society, Tange called for replacing it with a new hierarchical system serving the automobiles. This consciousness of the demand for greater mobility, in the sense of more intense communication within contemporary cities, underlies all parts of his plan for Tokyo.

The concern for mobility in city planning also derived from the European modernists. Le Corbusier's *Ville Radieuse* was a profoundly important step in introducing a new awareness of mobility into architecture and the city. He not only recognized that the automobile would be fundamental to the infrastructure of contemporary society, but also implied that it was certain to transcend its role as a mere means of transportation and become a communication symbol, unifying the open society as a new kind of organic unit. Later, he applied his *pilotis* in city projects for the purpose of separating the pedestrian from the automobile, and made it a basic structuring element in urban design. Le Corbusier's theories had significant impact on Tange. The latter introduced this *pilotis* system into the Tokyo plan and integrated it with the so-called "core system" of his own invention. He explained:

> Pilotis *areas constitute spatial links between private and public areas. They are areas in which the flow of traffic meets with stable architectural space. Core systems, on the other hand, link urban arteries with the buildings. In this plan we propose to unify the core and the* pilotis *into a single system.*[11]

Tange contended that the "*pilotis* and core" system could be used not only in the expansion of new city areas but also in redeveloping the existing urban areas, so he made his mega-structures start right from Tokyo's city center and extend outwards. The ultimate goal was to substitute the traditional two-dimensional zonal method of planning with this three-dimensional generative system, through which the interaction peculiar to modern society could develop freely. He argued, "In this system, it would be possible, while taking into account the spaces that form the surroundings, to form well-planned continuous urban spaces that were not closed in nature. In effect, zonal planning methods used in urban planning to date would be replaced by organized spatial planning."[12]

Tange's anti-zoning position and emphasis on urban communication systems were shared by his contemporaries, prominently Louis Kahn and Peter and Alison Smithson. In his plans for Philadel-

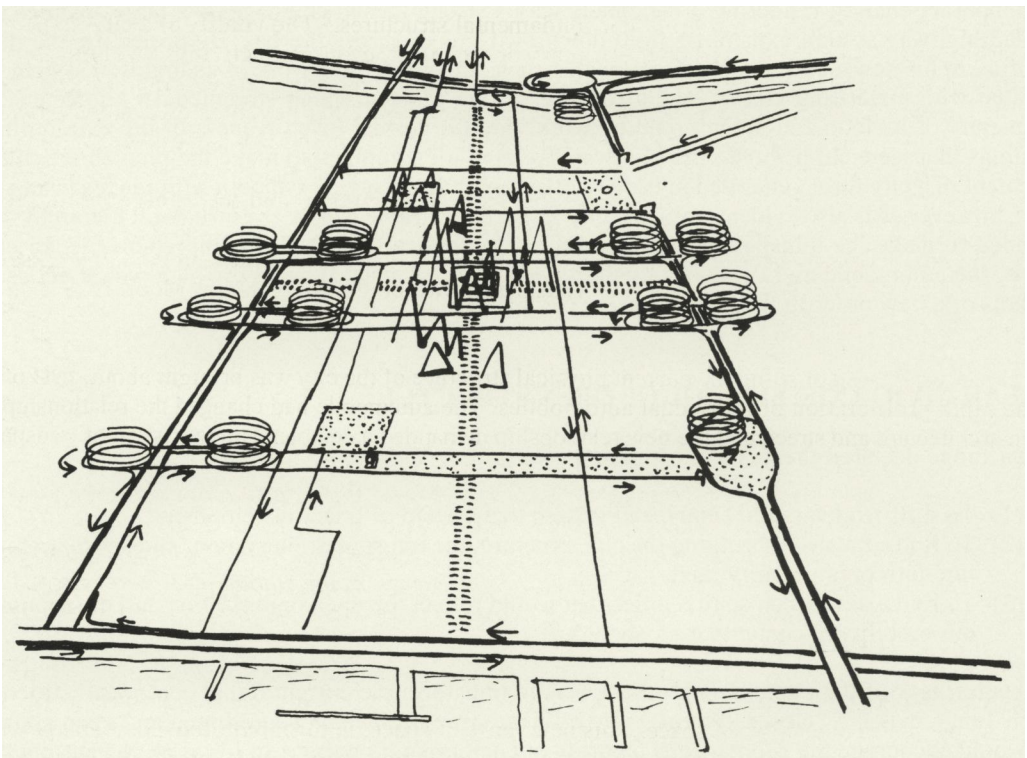

FIGURE 2. Louis I. Kahn, Plan for Philadelphia, 1951-1953. Sketch for traffic studies.
Source: Louis I. Kahn Archives at the University of Pennsylvania.

phia dated 1952, Kahn not only accepted traffic as the generator of the design but also suggested this might be more than a mechanical necessity. His diagram of circulation, which defined different types of movement, gave visual form to the traffic and became the departure point of the plan (Figure 2). His analogy between the flow of traffic and the flow of rivers provided a novel analysis of the movement patterns of a large metropolitan area:

> *Expressways are like RIVERS. These RIVERS frame the area to be served. RIVERS have HARBORS. HARBORS are the municipal parking towers; from the HARBORS branch a system of CANALS that serve the interior; the CANALS are the go streets; from the CANALS branch cul-de-sac DOCKS; the DOCKS serve as entrance halls to the building.*[13]

The poetic analogy, offering a new and symbolic meaning to the banal structures serving traffic, was subsequently developed by Kahn in his design for the structuring elements in design. This was evident in his later plan for Philadelphia called "Viaduct Architecture"(1953).

Alison and Peter Smithson's 1958 competition entry for *Hauptstadt Berlin* was also based on a study of movement, both physically and in its social ramifications. Although it represented a less symbolic and more pragmatic perspective, the plan went somewhat further than Kahn's, and envisaged a more drastic re-ordering of the city. There were separate systems for cars and pedestrians, each adopting quite different geometries and operating independently. Regarding mobility as the characteristic of "our period," the Smithsons called for an "aesthetics of change" to replace the traditional Cartesian aesthetics in design.[14]

Tange had attended CIAM meetings since 1951 and was familiar with the urban theories and projects of Kahn and the Smithsons. In the Tokyo plan, he further developed mobility as a characteristic of the

contemporary society, rendering it concretely with a strong formal language — a large-spanned suspended highway system expanding from downtown Tokyo across the bay. By projecting the infrastructure of his new city directly onto the water, the controlling framework of its highway system was revealed with a startling clarity. The great size of this project, which stretched 18 kilometers; the perspicuity of its loop and branch road network; and the formal inventiveness of the extraordinary buildings that were clipped onto the highway skeleton all combined to make the plan an articulated statement of a city form generated in the age of automobiles. Tange's symbolic attitude regarding this issue, however, was also evident in such a city form: the extreme clarity and structural hierarchy were intended to make the transportation system not only applicable, but also comprehensible. In other words, the automobile and the carefully-designed traffic infrastructure in the plan would act as the symbols of a new order in the contemporary city.

LINEAR CIVIC AXIS: SYMBOL OF OPEN STRUCTURE

Kenzo Tange declared the goals of his plan of Tokyo redevelopment:

(1) To shift from a radial centripetal system to a system of linear development;
(2) To find a means of bringing the city structure, the transportation system, and urban architecture into organic unity; and
(3) To find a new urban spatial order that would reflect the open organization and the spontaneous mobility of contemporary society.[15]

The central task of the plan, among others, was to transform the current radial centripetal structure, which Tange called a "closed system," into a linear structure, which represented an "open system" and would encourage the spontaneous mobility of contemporary society. In his view, the current spatial organization of Tokyo was a typical centripetal system with a civic center as its core. Tange defined it as the structure of the medieval city that was obsolete and dysfunctional for a city of current magnitude. He said,

> *In the age when cities developed around central squares or plazas and when people lived within limits prescribed by regional societies, the central square was the nucleus of communication, and the cathedral, the castle, and the city hall were the spiritual supports, as well as the symbols, of city life. Horses and carriages moving along radial streets past rows of buildings must have formed a very harmonious ensemble. Now, however, mass communication has released the city from the bonds of a closed organization and is changing the structure of society itself. In the society with an open organization and in the pivotal city of this organization the mobility involved in free, individual communication is assuming a larger and larger scale. This movement, added to the fixed movement of regular commuters, has led to extreme confusion in the larger cities.*[16]

Therefore, Tange rejected the concept of metropolitan civic center in favor of a linear form that he called the "civic axis." This civic axis, along with the arterial movement that sustained urban life, would act as the symbol of an open organization in the contemporary pivotal city, just as the cathedral sitting at the center of the closed organization was the symbol of the medieval city. In Tange's proposal, the future axis of Tokyo would take as its point of departure the present city center and gradually extend out over the Tokyo Bay (Figure 3).

Although Kenzo Tange claimed that the civic axis was a new concept, the linear city was hardly his creation. As early as 1882, Soria y Mata had proposed the first published linear plan, *Ciudad Lineal*. Since then, the linear city idea had been developed into many versions by town planners in Europe and America. Among the most well-known examples were the *Cite Industrielle* by Tony Garnier in 1904, Edgar Chambless's 1910 plan called "Roadtown," as well as Le Corbusier's 1931 scheme for Algiers. After the end of the Second World War, the linear city aroused widespread interest once again, for it seemed to be a feasible model with the potential to control urban sprawl and direct the decentralization of the city in an orderly way.[17] Another powerful idea of town planning for organized urban decentralization was the Garden City. It was also highly influential in that period and widely

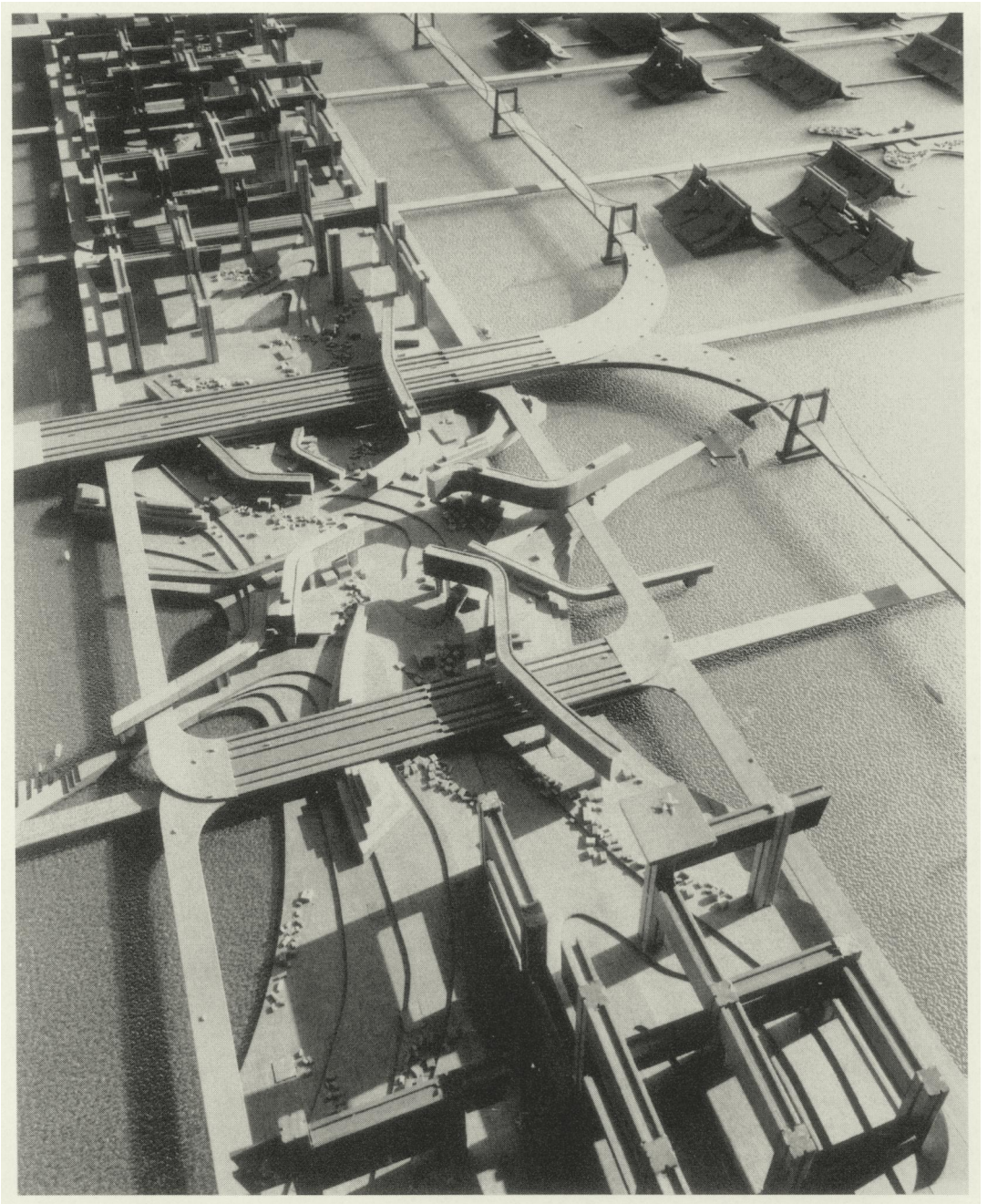

FIGURE 3. Kenzo Tange, Plan for Tange, 1960. The model showing the "civic axis" and the "core and *pilotis*" system. Source: Kawasumi Architectural Photograph Office, Tokyo.

experimented with on both sides of the Atlantic, prominently in the British New Town Movement and the Regional Planning Association of America. There were debates about these two models, for people were usually in favor of one theory over the other. In 1944, Patrick Abercrombie prepared a master plan for greater London that envisioned a series of new towns on London's outer rings to accommodate the expansion of the central city. Four years before Tange's attempt, a comprehensive plan was also proposed for Tokyo after Abercrombie's model. However, in Tange's view, the idea of creating

satellite cities or sub-centers to disperse population and city functions from the city center would not solve the fundamental problem of Tokyo. The reason was simple: even if the satellite cities and sub-center actually matured, the dispersion of population and functions would create a need for even more movement between the center and sub-centers and between the sub-centers. In the long run, this variable flow of traffic would add to the burden of the metropolitan center.[18] Conversely, as he argued, the civic axis would allow the spontaneous mobility characteristic of the contemporary age on one hand, and maintain the proper relationship between different sections and functions of the city on the other. Thus, it was the ideal model. Tange contended that the linear city embodied the very essence of progress. Its significance transcended mere questions of transportation as its form-giving feature, the central spine, and became the symbol of the post-industrial city.

Tange's team went on to design a cyclical transportation system for this civic axis, which consisted of several loops of highway extending from the city center of Tokyo across the bay and arriving at the prefecture of Chiba. It was claimed that this feature would make the gradual expansion of the civic axis possible, because at each stage of development the system was complete, while it was continually possible to add another unit. The highway was so designed that there was no limit to the number of lanes at the points of interchange. Tange boasted that this system would be capable of handling from ten to thirty times as much traffic as the high-speed highway system then in existence. However, in an essay written in 1964, Peter Smithson threw doubts on the feasibility of such a linear transportation system, although he admitted the ingenuity of the design:

> *The classic disadvantage of the linear town is that it concentrates all movement along the central spine — all movement must proceed via that spine even when it has no business there. In a linear road system this leads to a terrific number of lanes being necessary, each filled to capacity, with a probable redundancy of lane capacity in the feeders. As far as I can see, no reduction of the number of lanes is produced by the cyclical system, except in so far as one might get better usage of the lane capacity because the longer and shorter journeys need not use the same links in the system. But this separation would be possible to arrange in a more orthodox system ... .*[19]

This argument disputed Tange's claim. In Smithson's view, this plan was more like a symbolic gesture of tackling the transportation problems than a practical proposal.

Moreover, there were also debates as to the plan's metaphorical meaning. In order to make it more convincing that linear development is an inevitable result as a city expands, Tange, like the Metabolists, invoked a biological analogy. He compared the transformation of the city structure from a radial form to a linear form with the evolution and growth of living organisms:

> *The amoeba and the asteroid have radial centripetal forms, but vertebrates have linear bone structures with parallel radiations. When the living functions of organisms differentiate and perform the composite function of life, the centripetal pattern evolves into a system of parallel lines grouped around an axis formed of a spine and arteries. The process whereby a vertebrate body hatches from an egg illustrates the possibility of gradual development on the part of a linear system.*[20]

Thus, while most simple organisms initially take a radial form, as they mature and are required to perform more complex functions, the radial pattern is no longer suitable and evolves into a linear one. What was true for organisms was also true for cities, Tange asserted. This belief was also held by the Metabolists, and not coincidentally. The architect team that formulated the plan under Tange's direction included Noriaki Kurokawa and Arata Isozaki. The former was one of the initial members of the Metabolism movement, and the latter joined the group a few years later and published such well-known schemes as the "Space City" and "City in the Air."

Interestingly, when Christopher Alexander (1965) commented on Tange's plan in his essay "City is not a Tree," he also introduced a biological analogy. He called city planning of such organization a "tree" and said that the Tokyo plan was a "beautiful example" of the tree-like structure. He harshly criticized the artificial cities created in the pattern of a tree for being monotonous, rigid, and having lost the necessary characteristics of human organization, so they were doomed to fail in reality. Instead of "tree," he called for another structure named "semi-lattice," originating from all natural

cities and providing complexity, variety, and real openness.[21] Thus, both Smithson's technical critique and Alexander's theoretical critique called into question the "openness" and "flexibility" that Tange repeatedly claimed for his linear plan. Nevertheless, this monumental structure remained a strong idea with symbolic representation of the transformation toward a new spatial system characteristic of movement and growth.

METABOLIC CYCLE: SYMBOL OF GROWTH AND REGENERATION

In contrast to the conventional master plans that sought a final, stable state, Tange envisioned that his plan for Tokyo would make the city adaptable to both the external growth and internal regeneration. External growth means that the organization of the city is conceived as a kind of man-made nature or as a system on the basis of which the spatial structure could develop freely. Internal regeneration means that the components of the system, that is, architecture, are flexible and can adapt to changes while the system as a whole maintains its quality. The key to establishing such a system is through differentiating objects whose cycle of change is slow from those objects in cycles of more rapid change and evolution. This attitude, introduced by Team X, sees the city as an organic process that is constantly flowing and changing, a process that can never arrive at an end or an ideal destination. Peter Smithson noted,

> *Just as our mental process needs fixed points (fixed in the sense that they are changing over a relatively long period) to enable it to classify and value transient information and thus remain clear and sane, so the city needs "fixes" — identifying points which have a long cycle of change by means of which things changing on a shorter cycle can be valued and identified. With a few fixed and clear things, the transient — housing, drug stores, advertising, sky signs, shops and at shortest cycle of all, of course, people and their extensions, clothes, cars and so on — are no longer a menace to sanity and sense of structure, but can uninhibitedly reflect short-term mood and need. If this distinction between the changing and the fixed were observed there would be less need for elaborate control over things for which no good case can be made for controlling, and legislative energy could be concentrated on the long-term structure.*[22]

Applied to the planning of a city, this means fixing only a sort of "infrastructure" along which development can take place and leaving the transient things to individual tastes. For instance, the transportation system should be intended to be more or less inviolable and protected as "fixed," while new development would be conceived as "transient." This distinction between "fixed" and "transient" elements should be traced back to Le Corbusier's involvement in city planning. His 1931 Plan of Algiers proposed a massive sub-structure as the "permanent" frame of the city, with an elevated super-highway enclosed inside, while inhabitants would be allowed to build their own two-story houses on this gigantic reinforced concrete shelf to suit their own needs. The theme relating different cycles of change was taken over by Team X, who developed it into a new discipline of architecture and planning and claimed this would generate, paradoxically, a sense of security, stability, and order. These qualities were further developed and transplanted by the Metabolists to Japan, where they were integrated with the Eastern natural philosophy that saw the eternal mutation of all things.[23] The Metabolists maintained that objects with different quality were in different "metabolic cycles": some are persistent while others are transient. To accommodate the accelerating flows of population, materials, and information in contemporary cities, they advanced a transformable technology based on prefabricated components and the replacement of obsolescent parts according to the metabolic cycles. However, this metabolic cycle should be understood less in scientific terms than as a metaphor or microcosm of the cycles found in nature at large.

Obviously, Tange was also deeply aware of the different metabolic cycles of various constructions. The longer life-spans of large-scale construction like infrastructures, compared with the life-span of the houses and articles of daily lives, were gradually growing shorter as a result of the enormous consumption of modern consumer goods. He observed,

> *Short-lived items are becoming more and more short-lived, and the cycle is shrinking at a corresponding rate. On the other hand, the accumulation of capital has made it possible to build*

in large-scale operations. Reformations of natural topography: dams, harbors, and highways are of a size and scope that involve long cycles of time, and these are the man-made works that tend to divide the overall system of the age. The two tendencies — toward shorter cycles and toward longer cycles — are both necessary to modern life and to humanity itself.[24]

In the plan for Tokyo, these extremes of durations in an urban cluster — the long-term, large-scale structures, which curtailed individual freedom more and more, and the short-term elements, which were an expression of freer individual choice and of contemporary susceptibility to novelty — were brought into harmony in the triangle-shaped dwelling structures.[25] The terraced concrete levels of these structures formed artificial grounds and floors provided by communal investment upon which individual investment would take place in the form of private constructions and consequently reflect rapid changes in taste (Figure 4). The basic theme, the coordination of interrelated and interdependent cycles of duration, called for constructive exchanges in space. In other words, the longer life cycles of infrastructures were organically connected with the shorter life cycles of the individual constructions, so that this spatial organization was living and moving itself.

Although Peter Smithson admitted the closeness of theoretical positions between him and Tange in this issue, he doubted the feasibility of Tange's idea for the residential mega-structures. He wrote, "The pyramidal housing units over-the-water are formally the finest things in the scheme, but unhappily as in a thousand student projects (from the time of Le Corbusier's Algiers project onwards), the romance of the idea of 'each man building his own house' on man-made platforms, stands unsupported by a demonstration of how it is to be done."[26] Even inside the Metabolism group, there were also debates on the criteria for differentiating the long-cycled structures and short-cycled elements. Fumihiko Maki observed that Tange's megaform concept depended largely on the assumption that the designer would be able to ascertain which of the functions to be dealt with fell in the long cycle of change, and which in the shorter. He wondered,

Can the designer successfully base his concept on the idea that, to give an example, transportation methods will change less rapidly than the idea of a desirable residence or retail outlet? Sometimes, the impact and momentum of technology become so great that a change occurs in the basic skeleton of social and physical structure. It is difficult to predict to which part of a pond a stone will be thrown and which way the ripples will spread. If the megaform becomes rapidly obsolete, as well it might, especially in those schemes which do not allow for two kinds of change cycle, it will be a great weight about the neck of urban society.[27]

Here, Maki implied that even though the megastructure allowed for changeable infill, it could itself become obsolete. He proposed instead "the system that permits the greatest efficiency and flexibility with the smallest organizational structure," which he called the "group form."[28]

Thus, the debates surrounding the concept of "metabolic cycle" further demonstrate the utopian character of Tange's plan, as well as his symbolic approach to this issue. With a rigidly hierarchical system and monumental scale, Tange's mega-form was actually less a plausible proposal of realizing the idea of "city as process" than an expressive gesture that worked to visualize the dream of adaptability to growth and change.

CONCLUSION: CITY AS A SYMBOL

During the 1950s and 1960s, when Tange proposed this plan, the cities in the world were undergoing dramatic changes. Many large cities were experiencing the height of urban sprawl. City centers suffered severe land shortage and traffic congestion. Paradoxically, while the cities absorbed more and more population and resources, they were also facing the crisis of being dissolved. It seemed to many that a new sort of order was needed to accommodate and regulate the urban growth and transformation. The inefficiency, confusion, and inequity of the industrial metropolis made a ready case for bold, comprehensive approaches rather than piecemeal remedies cast within existing parameters. Tange's plan responded exactly to this situation. It represented an innovative undertaking, projecting a future

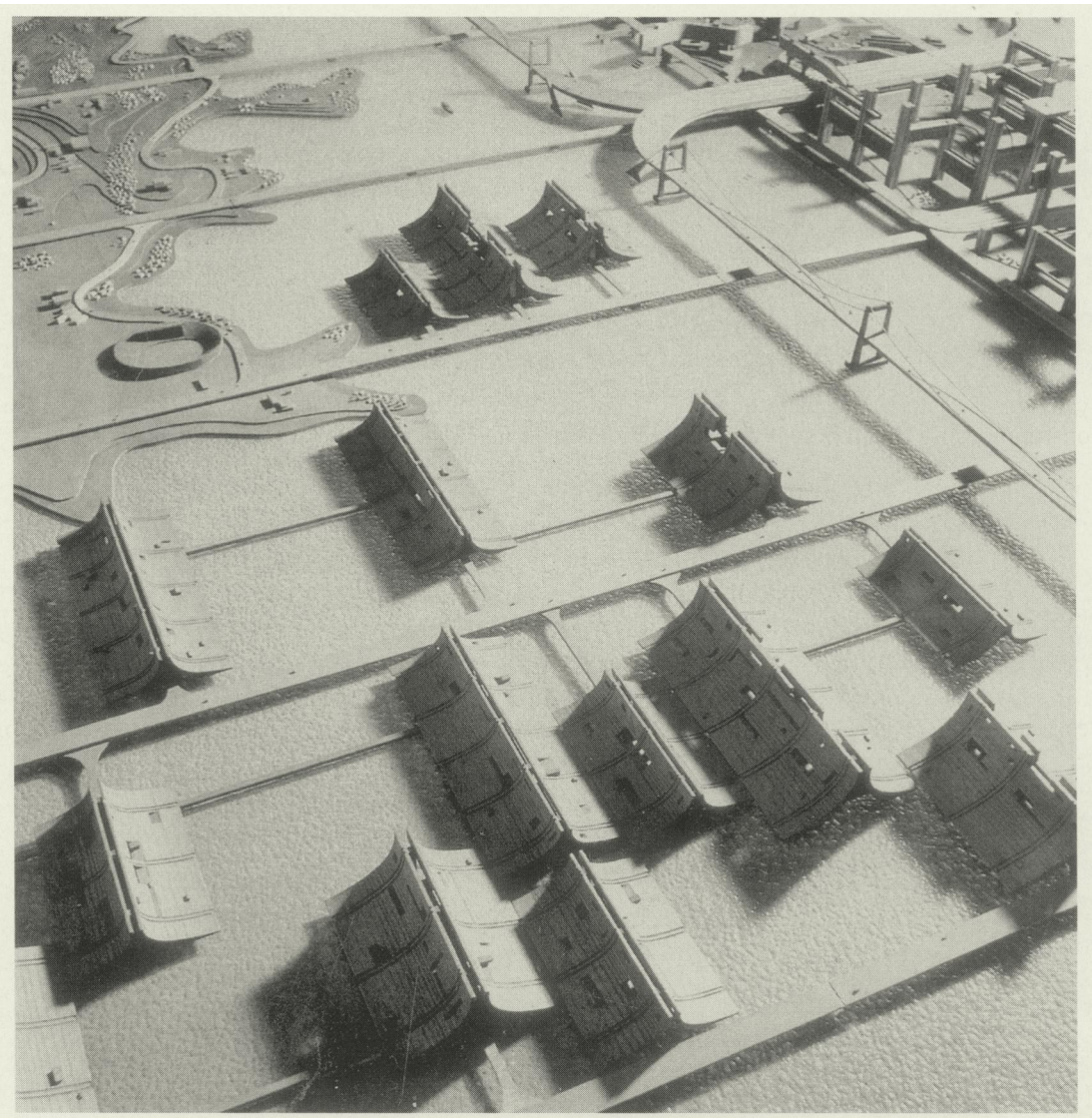

FIGURE 4. Kenzo Tange, Plan for Tokyo, 1960. The residential blocks with A-shaped structure.
Source: Studio Murai Co., Ltd., Tokyo.

Tokyo based on linear city principles with a complex transport system and super-scaled structures, as well as a new relationship between urban space and architecture. In doing so, its authors were trying to channel urban growth and impose a new texture into the existing metropolis. Tange was deeply aware of the critical role that private automobiles played in the transformation of city life and the shaping of new city form. His observation of the new characteristics of post-industrial cities was undoubtedly acute. These characteristics became apparent in Japan after World War II as the country was undergoing the reconstruction of its cities and pursuing an economic modernization. But at the same time, various aspects of the proposed solution, as we can see now, were problematic. The system he envisioned was based on a segregation of pedestrian from automobile traffic on one hand, and a hierarchical organization of space according to different speeds on the other. The separation of pedestrians and automobiles would be attained only at the sacrifice of human scale in the city, as manifested in the following decades. The hierarchical transportation system, once built, could be highly efficient, but hardly flexible.

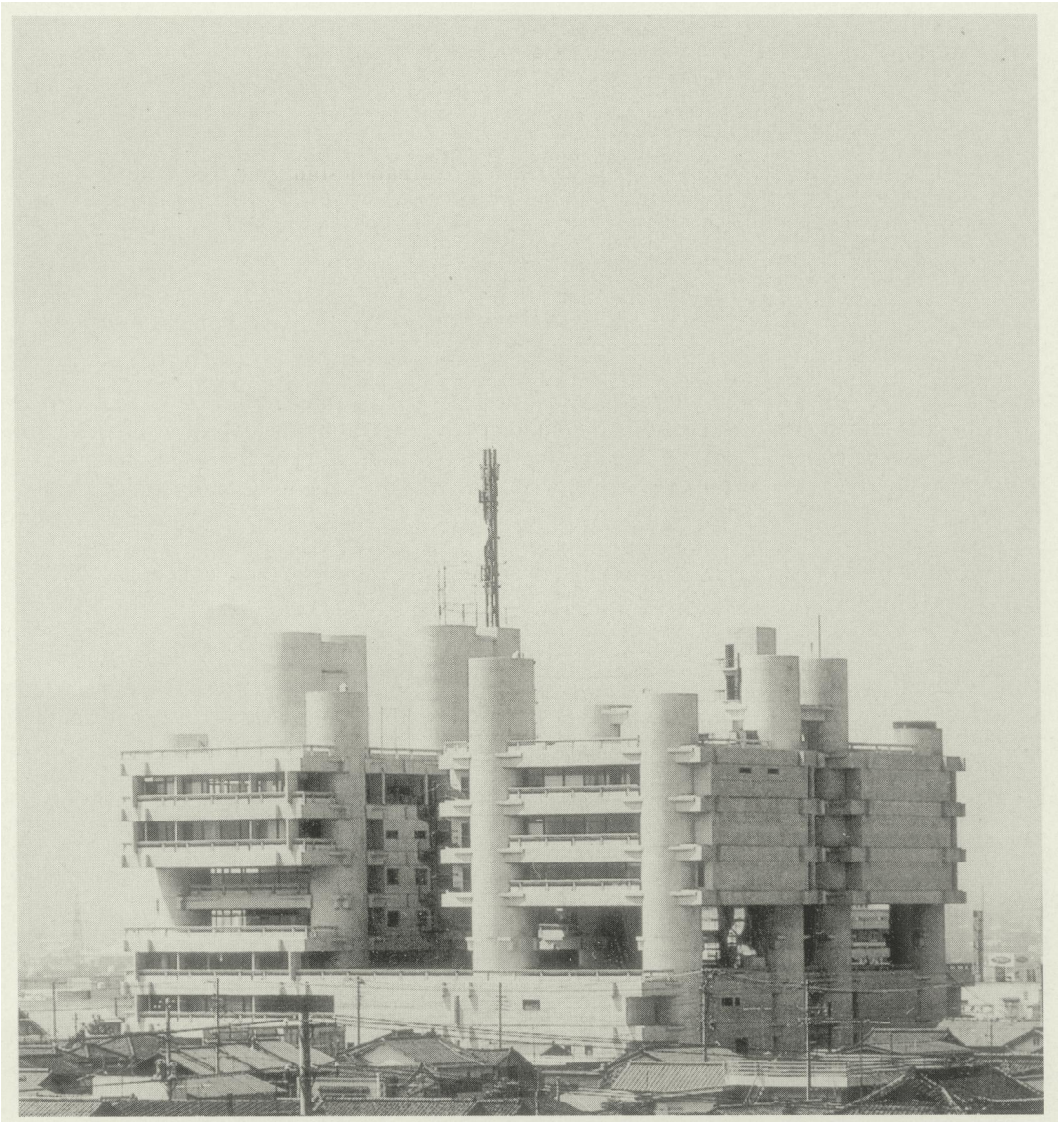

FIGURE 5. Kenzo Tange, Yamanishi Communication Center, Kofu, 1966. The cylindrical towers terminate at different heights, implying the possibility of extending vertically.
Source: Studio Murai Co., Ltd., Tokyo.

Through the plan, Tange wanted to promote the essential characters of the contemporary city, namely mobility, openness, and adaptability to change and growth. The plan took as its mission the establishment of a new spatial order for human habitats. This would require a complete integration of city and architecture, as well as a new relationship between the part and the whole, and between the permanent elements and the transient ones. Tange tended to combine in his design these ideas and carry them into a powerful architectural language. However, the way he approached these issues was more symbolic than practical. His ideal city worked more like a symbol, which communicated with people and reflected the social ideals but nevertheless remained technically unachievable. Therefore, it is not difficult to detect the contradiction between the means and the aim in his plan. The paradox between the order and spontaneity, both critical to the contemporary city, was fully represented in the scheme but could hardly be reconciled. Here, the Metabolist idea of change and growth was mingled with a

strong architectural language of expressional monumentality that Tange had perfectly applied in his earlier works. The result was an ideal city form that would act as an exceptional vehicle for the transformation of a culture facing the need for new communal symbols.

Tange's symbolic approach was not only expressed in the urban design proposals but also theoretically formulated in an essay published in 1966 entitled "Function, Structure and Symbol," in which Tange argued for the necessity of applying symbolic approaches in design: "Going even further, we find cases in which spaces are communicational fields in a symbolic phase — where we give form to spaces as something symbolized .... I venture to say we need a symbolic approach to architecture and urban space in order to secure humanity, human meaning and human value in architecture and urban space."[29]

Though unexecuted, the plan for Tokyo heralded Tange's works in the following years. In 1964, he experimented with the concept of "city as process" in the design of Yamanashi Communication Center in Kofu. The idea, again, was based on the notion of differentiating the two types of space units, namely those of a permanent character and the flexible zones depending on future development. The permanent units comprise circulation systems, while the flexible zones are mainly designed for human occupation. The permanent units are combined with the structural elements which, in this case, consist of 16 cylindrical towers. The flexible zones are independent of the structure so that they permit a high degree of freedom in utilization and permutation and can be extended outwards. Ironically, although the usable accommodation (broadcasting studios, offices, etc.) appears to be housed in removable concrete boxes, the construction is in fact conventional, so its capacity of "growth and change" is, once again, symbolic. What differentiates the Yamanashi Center from the Tokyo plan is that its extensibility is by implication vertical, since the cylindrical towers terminate at different heights (Figure 5). As Reyner Banham observed, the result was "a monolithic statue commemorating an ideal of adaptability that was practically impossible to realize in built fact."[30]

Later, Tange's symbolic approach in city design was fully demonstrated in the redevelopment plan for the city of Skopje, in which the whole structure of the city was bound together with the symbolic concepts of "city gate" and "city wall."[31] Through the metaphor of a city with its traditional elements, Tange hoped to endow the city of misfortune with a new order, enable it to communicate with people, and help it regain its vitality and meaning. For him, giving symbolic significance to the operation of structuring is useful both in developing a design inward and in making the design more comprehensible.

NOTES

1. An outline of the conference is included in *The Making of a Modern Japanese Architecture: 1868 to the Present* by David B. Stewart (1987). Working papers of the conference were published in English and Japanese as *World Design Conference 1960 in Tokyo* by the World Design Conference Organization (1961).

2. For a detailed account of the Metabolist movement, see *Metaborizumu: 1960 nendai Nihon no kenchiku avangyarudo [Metabolism: Japanese Architectural Avant-Garde in the 1960s]* by Yatsuka and Hideki (1997). Kenzo Tange's complete works were recently published in *Kenzo Tange* by Kenzo Tange and Terunobu Fujimori (2002).

3. Kawazoe, *et al.,* 1960:1.

4. Kawazoe, 1961:99.

5. The personal backgrounds of Tange and Metabolist members are outlined in *Beyond Metabolism: The New Japanese Architecture* by Michael F. Ross (1977). Also see *New Frontiers in Architecture: CIAM '59 in Otterlo* by Oscar Newman (1961) for Tange's participation in the 1959 CIAM meeting.

6. Tange, 1976:11-14.

7. Kultermann, 1970:112.

8. Tange, *et al.,* 1961:6.

9. *Id.*, 7.

10. *Id.*, 9.

11. *Id.*, 24.

12. *Id.*, 24.

13. Kahn, 1953:28.

14. Smithson, 1968:57.

15. Tange, *et al.*, 1961:10.

16. *Id.*, 12.

17. Studies on the linear city can be found in *Architects' Year Books* of the 1950s and 1960s, such as "The Linear City" by George R. Collins (1965) in volume 11 and "On Linear Cities" by C.A. Doxiadis (1968) in volume 12.

18. Tange, *et al.*, 1961:11.

19. Smithson, 1964:479-480.

20. Tange, *et al.*, 1961:13.

21. Alexander, 1965:58-61.

22. Smithson, 1968:68.

23. Nitschke, 1964:512-524.

24. Tange, from *Japan Architect*, reprinted in Maki, 1964:11.

25. When Tange taught at MIT in 1959, he had already introduced this design concept in the students' project for a residential block in Boston Bay. The scheme showed some mega-structural qualities similar to Le Corbusier's Algiers Plan.

26. Smithson, 1964:479-480.

27. Maki, 1964:11.

28. Maki, 1964:12. For a general critique on the idea of megastructure, see *The Elusive City: Five Centuries of Design, Ambition, and Miscalculation* by Jonathan Barnett (1986).

29. Tange K, 1966, *Function, structure and symbol*, reprinted in Kultermann 1970:242-243.

30. Banham, 1976:55.

31. Skopje suffered from a disastrous earthquake in 1963, in which more than 60% of the city was destroyed. In 1965, the United Nations organized an international competition for the planning of reconstructing the city, and Tange's scheme was selected. See Kenzo Tange (1970) "Lineage of Urban Design" in *Japan Architect* 130 for a detailed description of this project.

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