1961

Kenzo Tange rose to preeminence in Japan in 1949 when he won first prize in a competition to design the Hiroshima Peace Center on the site where the first atomic bomb had fallen four years earlier. A student of Kunio Maekawa, who had in turn been trained by Le Corbusier and Antonin Raymond, Tange was strongly affected by European modernism. He presented his Hiroshima project at CIAM's eighth congress in Hoddesdon in 1951, and in 1959 traveled to Otterlo to attend CIAM's final gathering. There he was among the few to express regret about CIAM's disintegration at a moment when he felt it more useful "to lay emphasis on the links that unite us all." At the same time he was strongly receptive to the new ideas on mobility being advanced by the Smithsons and Team 10. Taking exception to Ernesto Rogers's attempt to identify his work with a return to Japanese tradition, he stated that he did not wish to be so conservative as "Rogers himself in the case of the Torre Velasca," adding that "Creative work is expressed in our times in a union of technology and humanity. . . .Tradition can, to be sure, participate in a piece of creation, but it can no longer be creative itself." Two projects done at this time—for a terraced residential complex standing on an island in Boston's Back Bay (1959) and, above all, a plan for restructuring Tokyo (1960)—clearly marked a departure from the more object-oriented monumentality of Hiroshima (completed in 1956) and the *béton brut* expressionism of his Kurashiki Town Hall (1958–60).

181–83, 240–41

300–7

Tange's plan for Tokyo, designed in collaboration with Sadao Watanabe, Koji Kamiya, Noriaki Kurokawa, Arata Isozaki, and Heiki Koh, was first presented at the World Design Conference held in Tokyo in 1960. Comparable in visionary scope to Le Corbusier's 1922 Ville Contemporaine for Paris, a city for three million inhabitants, Tange's plan provided for ten million, a density on which Tokyo's population was verging at this date. The scheme was predicated on mass movement, speed, and automated communication. Rejecting the traditional fixed master plan, Tange approached the city as a living organism subject to a continuous cycle of growth and change—an idea derived from Team 10 and being developed at this time by the Metabolist group (among them Kurokawa)—seeking a form of organization responsive to dynamic patterns of urban flow and changing function. Believing that "the only way to save Tokyo is to change its basic structure," he rejected the model of the centripetal core expanding according to a radial-concentric pattern with outlying satellites, a schema he considered obsolete and dysfunctional for a city of this magnitude (and which had been proposed for Tokyo in 1956 on the model of Abercrombie and Forshaw's plan for Greater London), taking his cue instead from the linear city proposals that had been developed by various architects since the beginning of the century. To solve the problem of the city's exhaustion of buildable surface area, he boldly located a new civic axis running from the modern business center of Tokyo into the middle of Tokyo Bay, where a chain of megastructural space frames interlinked a cyclical system of superhighways and mass transit flanked by floating residential development.

319–24

The audacious proposal was worked out and even defended by Tange in pragmatic terms. Yet it entailed nothing less than a total redefinition of the city itself. The late-twentieth-century city was, in his view, "not merely a collection of people and functions," but "an open complex linked together by a communication network." Its function was no longer "to produce objects," but to "act as a brain center performing countless invisible tasks." If the period from 1920 to 1960 had been one of functionalism, Tange noted in a subsequent writing, the new period would be one of "structurism": "the process of formalizing the communicational activities and flows within spaces."

Despite Tange's emphasis on his scheme's flexibility and openness,

though, it was widely criticized for both its technological determinism and axial monumentality. Fumihiko Maki, a member of the Metabolist group, suggested that even though the megastructure allowed for changeable infill, it could itself become obsolete and thus prove "a great weight about the neck of urban society." Maki proposed instead "the system that permits the greatest efficiency and flexibility with the smallest organizational structure." The critique of "major structures" versus "minor objects" and the "overestimation of technology and productive progress for their own sake" was echoed by Aldo van Eyck, among others, while another Team 10 representative, Peter Smithson, objecting to the regimentation and overscaling of the components, raised the specter of Big Brother, charging that the vision of a megalopolis the majority of whose population was engaged in "tertiary" activities—communications—was not only unrealistic economically but failed to reckon with the political consequences of such a "centralized nation-city."

347–60
181–83

The debate opened by Tange's project had important repercussions on related tendencies around the world. The issue was approached in France as a debate over the "spatial city," while in Italy it was reframed in terms of the "new urban dimension" and the question of "total form." The critic Manfredo Tafuri, in an early essay entitled "The New Urban Dimension and the Function of Utopia" (*Architettura, cronache e storia,* February 1966), cautioned against "concepts of a global and all-resolving urban form, alternative in the sense of dissolving existing structures; of the identification of a utopia of scale with a social utopia .; of the cathartic value attributed to technological prophecy; of the reintegration of city and nature; and finally, of formal exaggeration introduced as an urban value in itself."

273–75
399–401
449–55

Published in Japanese in Shinkenchiku, *March 1961. In English in* Japan Architect, *April 1961, pp. 10, 12, 16, 18, 28, 32. Republished in slightly revised form in Udo Kultermann, ed.,* Kenzo Tange: Architecture and Urban Design *(Zurich: Verlag für Architektur Artemis, 1970), pp. 114 ff. Courtesy of the author.*

A Plan for Tokyo, 1960: Toward a Structural Reorganization

Kenzo Tange

1. The nature of a city of 10,000,000: the importance of its existence and the necessity of its growth

Tokyo, New York, London, Paris, Moscow—all masses of population that have passed or will soon pass the 10,000,000 mark. People call them "overgrown cities," but before deciding whether they are really overgrown or not, we must first consider the conditions that necessitate their development, the importance of their existence, and the true nature of their functions.

The technological revolution of the twentieth century, and particularly of its latter half, is causing drastic changes in economic structure, in social system, and in 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 its 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.

Furthermore, it is now impossible to plan an industrial undertaking without reference to technological research or to the prospects for demand. The stimulation of demand, which we refer to in Japanese as the "revolution in consumption," has become an unavoidable part of economic circulation; without the mass communication that produces this stimulation there can be no mass production. This phase of the economy is beginning to control people's modes of living and their concept of life.

The process of economic circulation within a given country is determined by a complicated system of relationships in which government, politics, finance, control of production and consumption, technology, and communications are all intimately and mutually linked. The portion of the population which has charge of this system—we might call this the tertiary industrial population—has been greatly increased during the second industrial revolution. The growth in this sector of the population, the increase in its productivity, and the rise in its income are indices of economic expansion.

The functions that are gathering together in cities of the ten-million 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 their high 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 coastal areas 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 functions.

What I speak of as organization is not a single enterprise. It is neither fixed nor closed. It is a type of organization that results from the invisible network of communication produced by the technological revolution, an open organization in which any combination of function and function, of function and man, of man and man is possible. By virtue of

this organization, the individual functions go together to form the comprehensive function of a city of 10,000,000.

At any class level and in any field, organizations—they might be called conferences—are formed and dissolved. This organizational activity, while entailing many expenses, decides everything, creating wisdom, producing values, and connecting them with the world. Tokyo, a city of 10,000,000, is the organization of the pivotal functions of Japan, and as such it is so important that it controls the fate of the entire country. At the same time, world conditions are reflected in this organization with gradually increasing sensitivity.

People say that the organization man is alone, but even more alone is the man who is separated from this network. It is in order to connect themselves with this network that people gather in the cities. The telephone, the radio, television, the portable telephone, the video-telephone—all these indirect means of communication give rise to a greater demand and need for direct communication. When men carry messages, when they attempt to preserve the links between the various functions, there is a flow of movement, and it is this movement that makes the urban organization an organization. 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 functions 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 functions.

2. The physical structure of Tokyo: limitations and inconsistencies of the centripetal radial structure

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 for communication improve, men instinctively feel the need for 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.

The functions which are gathered in Tokyo seek closer mutual communication, and as a result they are drawn toward the center of the city. This civic center, once formed, grows larger and larger. At the same time, the people who perform the functions spread out into the suburbs in an effort to find cheap land. The city therefore assumes a form that is centripetal and radial. This has been the typical urban pattern since the Middle Ages, and the natural pattern that a city will follow if left to grow freely.

As the central urban district grows, there are more and more commuters, and as the suburbs grow, they travel farther. Hence the murderous confusion in the train stations of Tokyo today. The movement of the commuters is repeated daily at definite intervals. It constitutes a regular, permanent flow, which is sustained by the mass transportation organs. Though private railways and subways carry a certain percentage of the people, the main burden is shouldered by the national railway system.

With the growth of social organization and the division of functions, there is more and more free, individually motivated movement. In opposition to the steady flow of the commuters, this is a variable flow—one might say a flowing mobility. It is this mobility that gives the open organization of the city its organic life. And as leisure time increases, this flow grows larger, sustained largely by automobiles, which grow more and more numerous with the expansion of the economy.

Automobiles carry the flowing movement of traffic in the heart of the city and to a lesser degree in and between the urban subcenters. Though the number of automobiles per capita is less in Tokyo than in Western countries, it is growing fast, and with it the steady flow of commuters who drive their own cars is swelling.

In the center of the city, where the pivotal functions are concentrated, the variable flow is increasing at an accelerating rate. The result is that traffic in this area has almost reached a state of paralysis, but this does not alter the fact that the flow is both necessary and inevitable. Such mobility is needed to maintain the life of a city of 10,000,000. And it should be kept in mind that the increase in the flow is not what causes traffic confusion. Confusion results from the fact that the structure of the city cannot sustain the necessary mobility of the times. This is the failure of the radial city in which traffic moves toward the center.

The traditional radial plan can perhaps provide the mobility required by a city of 1,000,000, but that of 10,000,000 is beyond its limitations. In Tokyo, where movement is increasing by the day, it is urgent that a new system of transportation be constructed. And one which will bring city, buildings, and transportation into a single organic entity.

In addition, since the speed and scale of movement in the city is destroying the spatial order of the city, it is necessary to find a new order.

3. A plan for Tokyo, 1960: a proposal for a change in structure

As a reflection of Japan's economic expansion, Tokyo is developing and spreading at a rapid pace, and the flow of movement within the city is increasing in scale and speed. The human drive behind this growth is tremendous.

And yet this tremendous human drive is having the adverse effect of exposing Tokyo's incongruities, of throwing the city's functions into confusion, and of slowing down movement to the point of paralysis.

Many people consider that growth itself has produced confusion in the city, and that if growth is contained, the situation will improve. It is impossible, however, to curtail this growth, for that would be attempting to reverse a necessary historical trend.

We do not oppose such measures as the redistribution of factories throughout the country, the construction of satellite cities, or the removal of governmental and educational institutions to other locations. Such measures might in some respects be advantageous. In our opinion, however, the Tokyo that remained after these measures had been taken would still writhe in urban confusion. Furthermore, the causes that lead to the city's expansion would still remain in operation.

Tokyo will not be saved unless we keep our vision firmly fixed on Tokyo itself. Nothing is accomplished by escapism; there may be open spaces to which existing urban installations could be moved, but the problem of Tokyo's growth would continue.

People say that the city's expansion has been too rapid, but the real difficulty has been that our plans have been too small and our policies too old-fashioned. People are forever saying "we must be practical," but the type of "practicality" that has been exercised in Tokyo is impractical in the extreme. It is unrealistic and backward-looking.

We, for our part, recognize the necessity of Tokyo's growth, the importance of its existence, and the validity of the functions that it performs. Furthermore, we believe it possible to direct the human drive that has created the confusion of today into new channels, and for this reason we place forward a plan which we regard as both constructive and practical.

The city of 10,000,000 is an organism which has appeared only in the latter half

of the twentieth century. It is a historical novelty. In order to remain alive and to grow, it must have a structure befitting the twentieth century. Instead, however, the radial pattern of the Middle Ages, with its centripetal traffic system and its rows of buildings along the sides of streets, has been allowed to grow and grow without basic alteration.

The result is that the permanent structure of the modern metropolis is incompatible with the movement that is necessary to the life of the metropolis. The old body can no longer contain the new life. The radial pattern is incapable of the mobility that the city of 10,000,000 requires. Furthermore, the population of Tokyo twenty years from now will be about 15,000,000.

This is the inconsistency that lies at the root of Tokyo's confusion. There is only one way to save Tokyo, and that is to create a new urban structure which will make it possible for the city to perform its true basic functions.

We are not trying to reject the Tokyo that exists and build an entirely new city. We wish instead to provide the city with a revised structure which will lead to its rejuvenation. We are talking not merely of "redevelopment," but of determining a direction along which redevelopment should proceed. Redevelopment that is not orientated in a definite direction cannot solve the problems that face Tokyo.

In our proposal, the basic aims of redevelopment should be as follows:

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;
3. To find a new urban spatial order which will reflect the open organization and the spontaneous mobility of contemporary society.

4. From a radial structure to a linear structure: a proposal for cycle transportation

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 urban life. Horses and carriages moving along radial streets past rows of buildings must have formed a very harmonious ensemble.

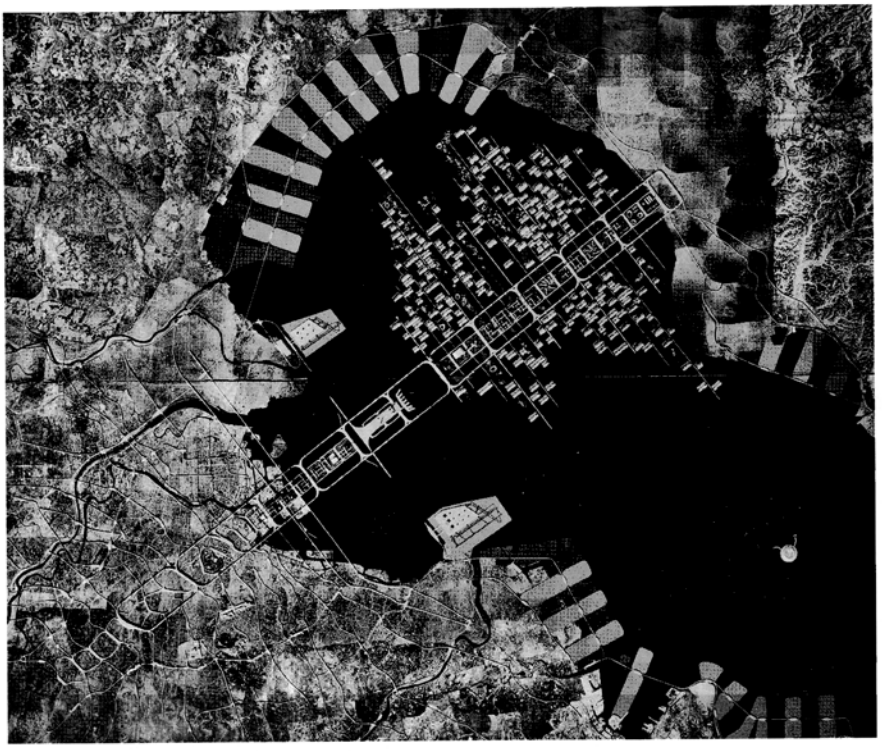
Now, however, mass communication has released the city from the bonds of a closed organization and is changing the structure of society itself. In the society with an open organization and in the pivotal city of this organization the mobility involved in free, individual communication is assuming a larger and larger scale. This movement, added to the fixed movement of regular commuters, has led to extreme confusion in the larger cities.

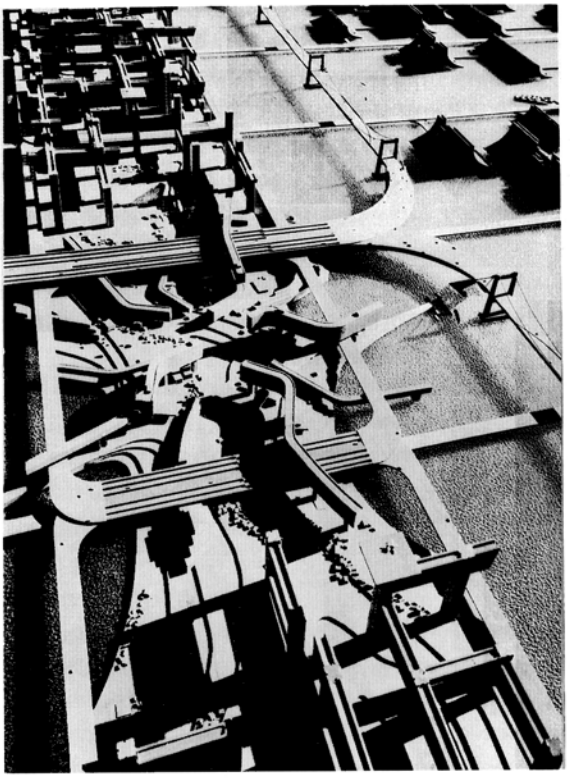
The urban system developed in the Middle Ages cannot withstand this movement, and the centripetal pattern is seeking to reform itself from within.

We reject the concept of the metropolitan civic center in favor of a new concept which we call the civic axis. This is tantamount to rejecting the closed organization of the centripetal pattern in favor of an open organization which makes possible a development along a linear pattern. In effect, we are proposing that the radial structure of Tokyo be replaced by an axis which develops linearly.

The evolution of radial cellular bodies into vertebrates and the changing of eggs into bodies are instances of the sort of development we have in mind, and they illustrate its necessity.

The manufacturing processes in modern factories will gradually be divided, and





the all-purpose machines which make for centralization will be broken down into component parts. At the same time, however, the work performed by these smaller machines will be unified by the linear movement of a conveyor system.

If the various functions of a great city were distributed along a line, communication linking them could be carried out in a minimum of time by movement along that line. Nothing could be simpler or quicker. The entire movement of a city of 10,000,000 would be sustained by this communication.

The cathedral, which sat quietly at the center of the closed organization, was the symbol of the city of the Middle Ages. For the open organization of the contemporary city of 10,000,000 the civic axis, along which the arterial movement that sustains urban life takes place, is a fitting symbol.

We propose for this civic axis a system of cyclical transportation. It is estimated that the Tokyo of twenty years hence will have a population of 15,000,000. This will probably mean that 2,000,000 or 2,500,000 people will have to gather along the civic axis in order to perform necessary urban functions. In addition it may be expected that five or six million people will flow into the axis each day. While many of these people will rely on mass transportation, there will also be flowing mobility of individual traffic. The present system of street and ordinary highways could never withstand the strain of such a volume.

With the existing system of highways, at the points of interchange it is unfeasible to have more than three lanes in one direction. The three-level cyclical system that we propose, however, overcomes this limitation with a series of overlapping links. In each link all traffic is one-way, but in any two neighboring links the direction of circulation is opposite, so that at the points where the links overlap, movement in both links is in the same direction. The overlapping links serve as points of interchange, the connection between upper and lower links being accomplished by means of ramps. The number of ramps is equal to the number of lanes, and the ramps alternate with continuing lanes. This type of highway could be made to handle ten times, or even thirty times, as much traffic as the present freeways, and a civic axis with a system of cycles of this design could serve as a rapid and effective means of communication for a city of any size.

The three levels of traffic would be divided in accordance with the speed of vehicles moving along them, and the lowest level would be divided in accordance with the speed of vehicles moving along them, and the lowest level would be a unit of a man-made "ground" which would contain several levels of parking space.

The cyclical transportation system is composed of a series of unending links, each link of which serves as a steady cycle of flow. Any number of links could be employed, so that the civic axis could develop unit by unit. A system of this sort would make it possible for any number of people to move freely and quickly among the functions lined up along the axis.

5. Organic unification of the city, the transportation system, and architecture: a proposal for unifying the core system and the *pilotis*

Transportation today is changing the relationship that links the city structure with traffic and architecture. Indeed, the automobile is completely overturning this relationship. In the past, people walked along a street until they arrived at their destination and then walked directly into a door. This fact has since ancient times determined the system of traffic and architecture in cities. The appearance of the horse and carriage created no need for a new system, and even when railways and trolleys were invented, people

felt no serious doubts about the old one. The problems and these new modes of transportation created were solved by means of stations.

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.

The basic difference between the automobile and mass transportation facilities like the train and streetcar is that the automobile theoretically makes it possible for individuals to move freely from door to door. In other words, the automobile provides not mass, but individual transportation.

The appearance of the automobile has led to the division of vehicles and pedestrians, with the result that the relationship between street and buildings has come to resemble the relationship between railways and buildings. Even though buildings open on a street, it is usually impossible to park cars in front of them. There is need for a new sequence in which the automobile moves from high-speed highways to low-speed highways and then to parking spaces from which the passengers in the automobile can approach buildings. In other words, 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 for releasing ground space. Their idea was to create a public space on the ground where the movement necessary to modern society could take place and a quiet 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 automobiles would move about on the ground without disturbing life within the private space above.

We have been using *pilotis* arrangements since we drew up the plans for the Hiroshima Peace Memorial. In the Tokyo City Hall, the *pilotis* area was divided into two levels, a lower one for automobiles and an upper one for pedestrians, and in our plan for a comprehensive metropolitan center for Tokyo, we carried this system through another stage of development. In general, this sort of solution appears to be one of the most promising means of redeveloping urban areas.

We are also proposing to make use of the core system, in which the vertical traffic in buildings as well as the service arteries—water ducts and electric wiring—are gathered together in single shafts forming the nuclei of buildings. The cores of buildings would become 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 buildings take the place of columns, creating "columnless" *pilotis* areas under the buildings. This system is unified with the cyclical transportation system we propose.

Each link of the transportation system contains a unit of area with multilevel parking space. People would enter the parking space in their cars, get out of the vehicles, and then ride up into buildings in elevators situated in vertical cores. In this way the unit urban area and the highway system would intermesh, and there would be spatial order as well as a speed hierarchy linking, first, streets, interchanges, parking spaces, and buildings, and second, high speed, low speed, human speed, and immobility. Urban space would be restored to life.

6. The restoration of spatial order in the city: a new urban spatial order reflecting the open society and flowing organization of the city

In contemporary civilization and in the cities of 10,000,000 which form the nuclei of contemporary civilization, the speed and scale that have been made possible by modern technology are destroying spatial order.

The plazas, cathedrals, and city halls of the Middle Ages had a mass human scale which was united to the masses of people gathered in the urban centers, and which harmonized with the human scale of the roads radiating from them. Today, however, huge highways carrying high-speed traffic have intruded themselves into the old system. They represent a superhuman scale, which in no way harmonizes with the architecture of the late nineteenth century and the first half of the twentieth century.

The accumulation of capital in our time will doubtless work to increase the scale of construction still further, causing the order of urban space to be shaken to its very foundations. The new large-scale structures, which have long life cycles, will form the major framework of the cities, and they will be one of the decisive elements in the new urban spatial systems. When we consider that traffic can move at 100 kilometers per hour or more, however, the vastness of the new structures ceases to seem vast. The flow and speed of the present will doubtless lead to even larger-scale construction.

Nevertheless, man himself continues to walk in steps of a meter or so, and we are still surrounded by the unchanging human scale. Furthermore, whereas the life cycle of large-scale construction is growing longer, the life cycle of our houses and the articles we use in daily activities is gradually growing shorter. This fact results from our ever-increasing reliance upon manufactured goods and from our tendency to take up new things and discard them more and more rapidly.

Individuality, freedom, and spontaneity form an ever-strengthening antithesis to the control of technology. Man desires more and more to exercise his own individual choice in matters that concern houses, gardens, streets, and plazas.

There are, then, two conflicting extremes—the major structures which have long life cycles and which, while restricting individual choice, determine the system of the age, and the minor objects that we use in daily living, which have a short life cycle and which permit the expression of free individual choice. The gap between the two is gradually growing deeper.

The important task facing us is that of creating an organic link between these two extremes and, by doing so, to create a new spatial order in our cities. The centripetal hierarchy of the cities of the Middle Ages will no longer serve, for it represents an order determined by the fact that man walked on his own two feet. In the moving, flowing cities of our time, pedestrian traffic and automobile traffic intersect, and the direction of both is variable. Movement is not closed and centripetal, but open and fluctuating.

The spatial order in cities will doubtless become richer in content as time goes on. It will come to include not only spaces of an orderly nature, but free, nonordered spaces as well.

We have put forth several plans dealing with the spatial relation of the two extremes. In the Kurashiki City Hall, the M.I.T. plans, the W.H.O. plans, and in the present plan for Tokyo, we have tried to provide freedom within a more systematic spatial structure, and in the Kagawa Housing project as well as the plans for housing on the filled-in land in this project, we have tried to find order within free disorder in groups of buildings.

We must seek order in freedom and freedom in order. It is by relating these two extremes that we will create a new spatial organization for contemporary cities.