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A PLAN FOR TOKYO, 1960

Kenzo Tange Team

1. Last month **EKISTICS** presented portions of Kenzo Tange's notions of future city form as evidenced in the Kurashiki City Hall and a project under his tuition at MIT. This is a further development along the same lines and a much grander scale which he undertook to develop with Sadao Watanabe, Koji Kamiya, Moriaki Kurokawa, Arata Isozaki, and Heiki Koh.

2. In drawing up a plan for Tokyo, our first task was to determine just what the functions of great cities are today, and how they differ from the past. Our studies lead us to the conclusion that the city of 10,000,000 is of fundamentally different character from a city of 100,000 or 1,000,000 and that its needs cannot be met by the same means that have been employed in the past. In the latter half of the twentieth century it will become increasingly necessary for society to face up to the difficulties confronting the mammoth cities, to overcome the inconsistencies, and to give expression to the true nature of such cities. The responsibility for creating new urban systems that will satisfy human hopes is ours.

3. We have drawn up a plan which will, we believe, change the old Tokyo in such a way as to make it capable of containing the new mobility and activity of the times. The plan calls both for the gradual reconstruction of the existing city and for expansion into Tokyo Bay -- two movements which, in our opinion, will aid each other along.

4. THE NATURE OF A CITY OF 10,000,000. 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 functions.

5. The cities of 10,000,000 have appeared in the course of the movement of population into teriary industries. In the last century the people engaged in secondary industries have continued to make up about 48% of the English population, but those engaged in primary industries have decreased from 22% to 5% of the total population, and those engaged in tertiary industries have increased from 30% to 46% of the total population. During this time the population of London has grown from 3,000,000 to 8,700,000. In the postwar period the English, adopting the tradition of the garden cities, have built eight satellite cities around London, creating residences for 130,000 people and working places for 60,000, but these satellites have not prevented London from growing to its present size.

6. In Japan the portions of the population engaged in primary, secondary and tertiary industries at the beginning of the twentieth century were 72%, 13% and 15% respectively. At that time the population of Tokyo was 1,400,000. In the ensuing period, during which the shift to secondary and tertiary industries has proceeded simultaneously, the population of the city has grown to a 1960 level of 9,670,000.

7. The city of 10,000,000 is essentially an organization which supports the activities of tertiary industries. About 58% of the people in Tokyo are engaged in tertiary industries, as compared with 62% in London and 67% in New York. Economic expansion is causing an increase in the relative importance of circulation rather than actual production, and the pivotal functions involved in the process of circulation are centered in the cities of 10,000,000. Accordingly, government, economy, the control of production and consumption, and cultural activity have come for the most part to be centered in these cities, forming complexes which control the fates of whole nations. The so-called second industrial revolution which is going on today will doubtless strengthen this trend.

8. A PLAN FOR TOKYO, 1960 -- A PROPOSAL FOR A CHANGE IN STRUCTURE. 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 determing 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:

a. To shift from a radial centripetal system to a system of linear development.

b. To find a means of bringing the city structure, the transportation system, and urban architecture into organic unity.

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

9. The redistribution of factories throughout the country is doubtless a necessary measure, but even if all the factories were moved to the southern tip of Kyushu the tertiary industrial population which controls economic circulation would still be concentrated in Tokyo. Plans to move factories are not without significance, but they will not solve Tokyo's problems.

10. The transfer of industrial facilities to satellite cities is subject to a similar criticism. It would be fine to create satellites in which a certain proportion of the population would be able to live in green surroundings, but the satellites would not solve the basic problems. Even if they flourished, as long as they remained satellites they would merely add to the burden of the urban nucleus. Furthermore, the experience of London with satellite cities indicated that when young people raised in the satellites come of age, they tend to crowd back to the central area.

11. The dispersion of functions is another possible measure. Doubtless it would be an improvement to remove unnecessary functions from the city. A movement of this sort has been going on in America, where various types of installations have been moved from the centers of cities to areas along the high-speed highways that radiate from the central area. Such is the case with shopping and amusement centers, which naturally gravitate toward residential areas. Even in Tokyo there is a tendency for the Shinjuku sub-center to become the nucleus of economic consumption.

12. Still, if the tertiary productive facilities were dispersed, they would still be faced with the necessity of remaining in constant touch with the center of the city, and as a result the variable flow of traffic between the outlying regions and the center would only become larger. Again, it would be perfectly all right, as had been suggested, to move the government to the foot of Mt. Fuji, which, given a high-speed highway, would be separated from the city by only an hour's drive. On the other hand, if it remained necessary to spend two or three hours to come from the city limits to the center of town, it is doubtful that proper communication could be maintained. Here again it is clear that the problem is Tokyo itself. In any event, the removal of the government would not necessarily curb the development of the city itself. Certainly the fact that the American government is in Washington has not prevented an explosive expansion in New York.

13. We are not opposed to the measures mentioned above, but we are opposed to any argument which holds that they are sufficient solutions to Tokyo's problems. Several desirable changes are:

a. The construction of metropolitan subcenters.

b. A conversion to high-rise buildings near the central district and a corresponding shortening of commuter lines.

c. The construction of high-speed thoroughfares and the expansion of the subway system.

14. FROM A RADIAL STRUCTURE TO A LINEAR STRUCTURE 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.

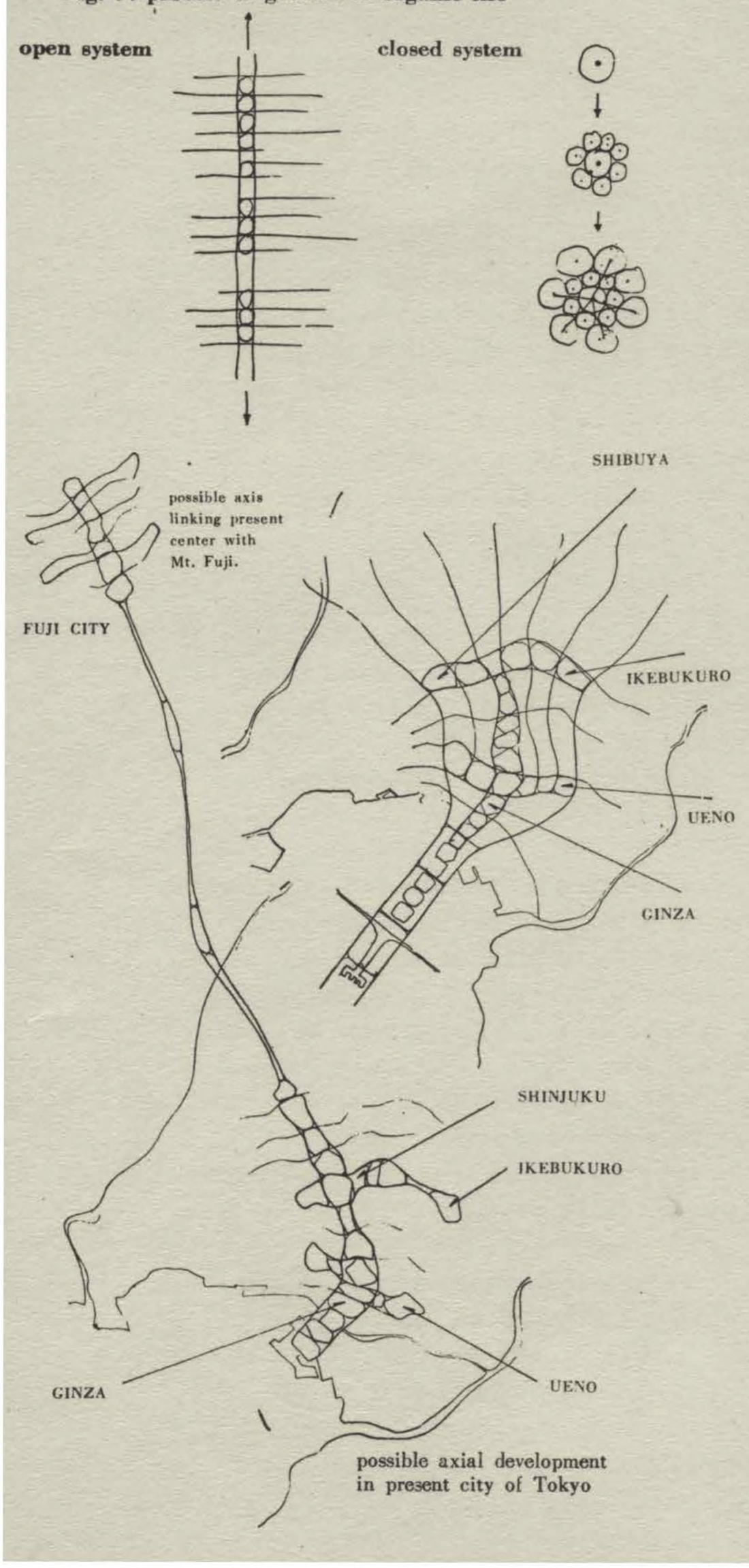
15. We reject the concept of the metropolitan civic center in favor of a new concept which we call the civic axis. This is tantamount to rejecting the closed organization of the centripetal pattern in favor of an open organization which makes possible a development along a linear pattern. In effect,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

16. A Proposal for 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 streets and ordinary highways could never withstand the strain of such a volume.

17. 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 lines, 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-day 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 a unit of a man-made "ground" which would contain several levels of parking space.

18. The cyclical transportation system supports linear development, and the fact that it is composed of distinct units makes gradual development possible. This system is composed of unit cycles somewhat like the vertebrae in the spine. At each stage of development the system is complete, but it is always possible to add another unit. Cycle transportation is therefore suited to the mobility of an open organization, whereas the centripetal pattern is not.

Fig. 9. process of growth of organic life



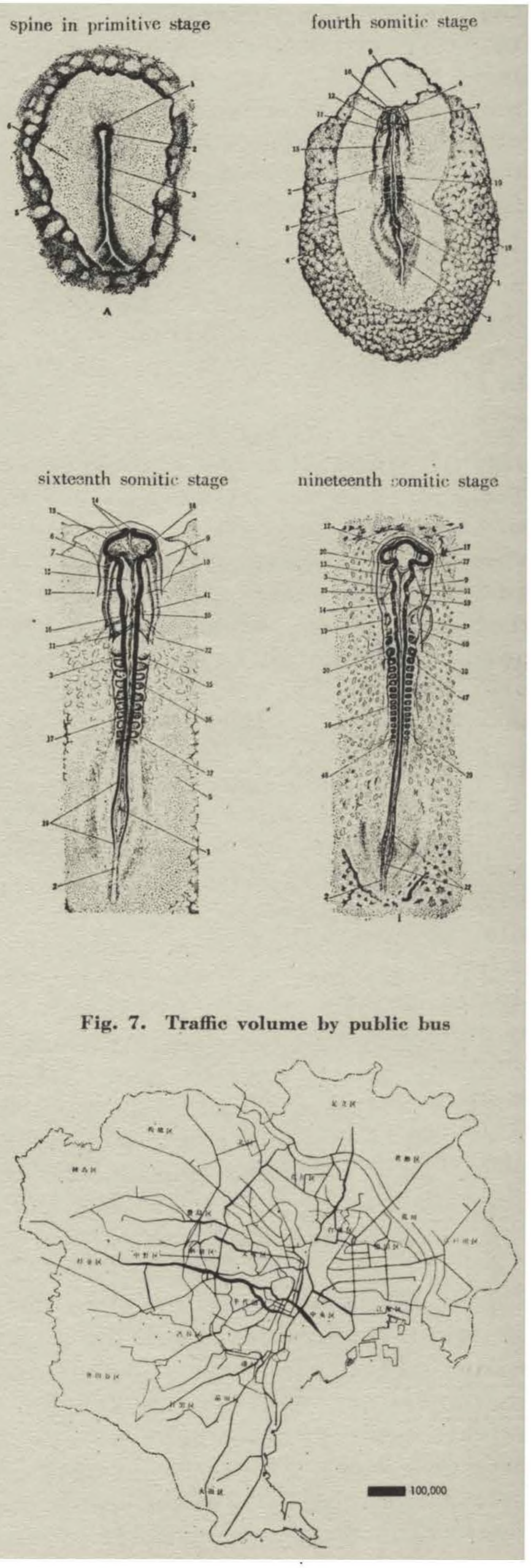


Fig. 7. Traffic volume by public bus

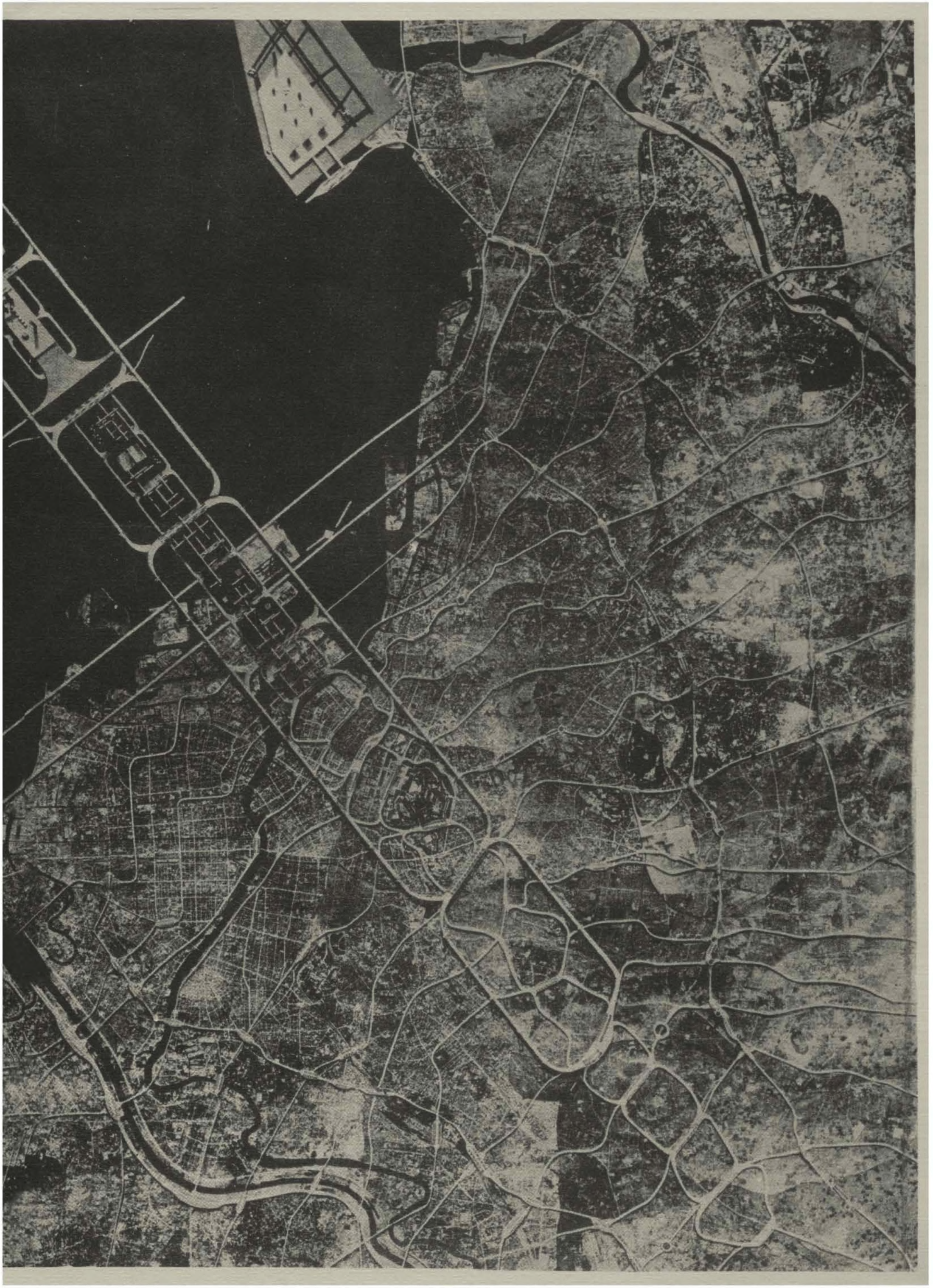
19. Residential Areas. The cyclical transportation system will lead to the development of parallel streets branching out perpendicularly from the axis. These will extend into residential areas. Traffic along the streets branching out for the axis will also be one-way, outgoing vehicles proceeding along one street and incoming vehicles along the next. Each pair of streets will thus form a loop similar in some respects to the links of the central axis. These loops will bring subcenters such as Shinjuku, Shibuya, and Ueno into the system. We consider these subcenters as regional centers of comsumption -- the loci of the tertiary consumption functions. The tertiary production functions will be located along the axis, but the consumption and production functions will be closely linked to them by the axis itself and by the loops extending from it.

20. The streets radiating from the axis will provide communication between residential areas and the central area. This connection is particularly clear in the districts built over the bay. The branch streets on the bay will also be provided with mass transportation which links with the mass transportation on the axis. Within twenty years some 5,000,000 people will probably live on the bay. Some of the residential districts will stand on reclaimed land, and others on platforms supported by piers sunk directly to the ocean bottom.

21. ORGANIC UNIFICATION OF THE CITY, THE TRANSPORTATION SYSTEM, AND ARCHITECTURE. 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.

22. The appearance of the automobile has led to the division of vehicles and pedestrians, with the result that the relationship between streets 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.

23. 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 automo-



mobiles would move about on the ground without disturbing life within the private space above.

24. 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 we propose. Each link of the transportation system contains a unit of area with multi-level 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.

25. The cores would contain elevators, ducts, and the other installations needed to provide for the movement of men and energy. At the same time they would serve as columns. Between these, buildings with seismic walls would be suspended as needed. The walls as a whole form trusses, and office buildings or hotels would rest on horizontal slabs supported by trusses on both sides. The height of the cores would be from 150 meters to 250 meters, the height of the open space under the buildings about 40 meters, and the length of the span about 200 meters. The structures would therefore have a scale and a spatial arrangement which would be compatible with the variable flow of automobiles on the ground. The cores would serve not only as supports for the buildings, but as the arteries of traffic. The type of architecture may be thought of as a development to urban scale of the pilotis and core arrangements that our team has experimented with in the past.

26. THE RESTORATION OF SPATIAL ORDER IN THE CITY. It is necessary, while organizing the city in such a way as to give order to the various levels of urban space -- from private to public -- to arrange these spaces in a clear pattern within the urban structure. When it comes to the question of residential areas, there is a need to construct a comprehensive dynamic whole in which there is an order of progression from the house to the playground for children to the space of quiet gatherings to large open spaces to large-scale recreation and sport centers; from the kindergarten to the primary school to the middle school to other educational and social installations; and from parking to transportation plazas to highways. The measurements of these various elements must be arranged into an organic whole which meshes well with private houses and which provides for low, for continuity, for expansion, and for contraction. In our plan, the residential areas that stand on man-made platforms in the bay are characterized by a vertical distribution of these

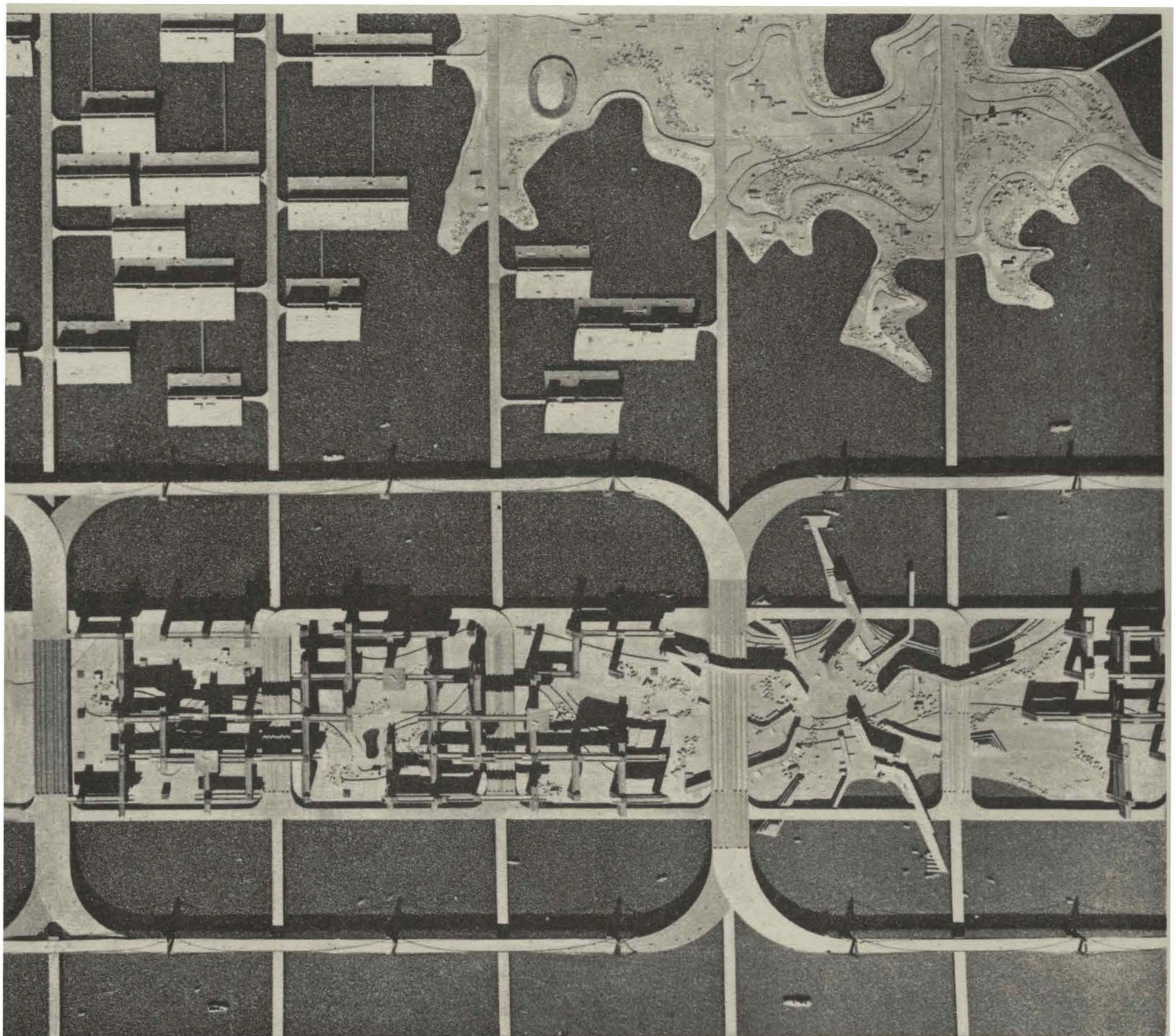
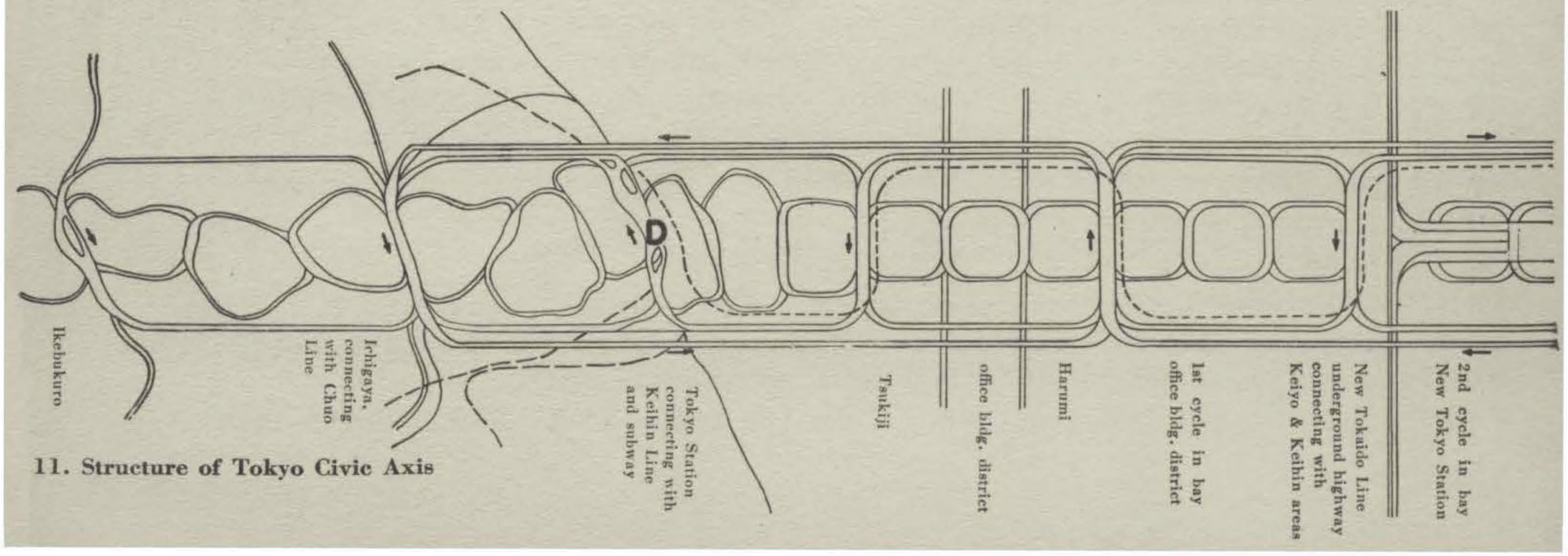


Fig. 10. Section of interchange



11. Structure of Tokyo Civic Axis

various spaces, but the areas that stand on reclaimed land are for the most part characterized by a horizontal distribution.

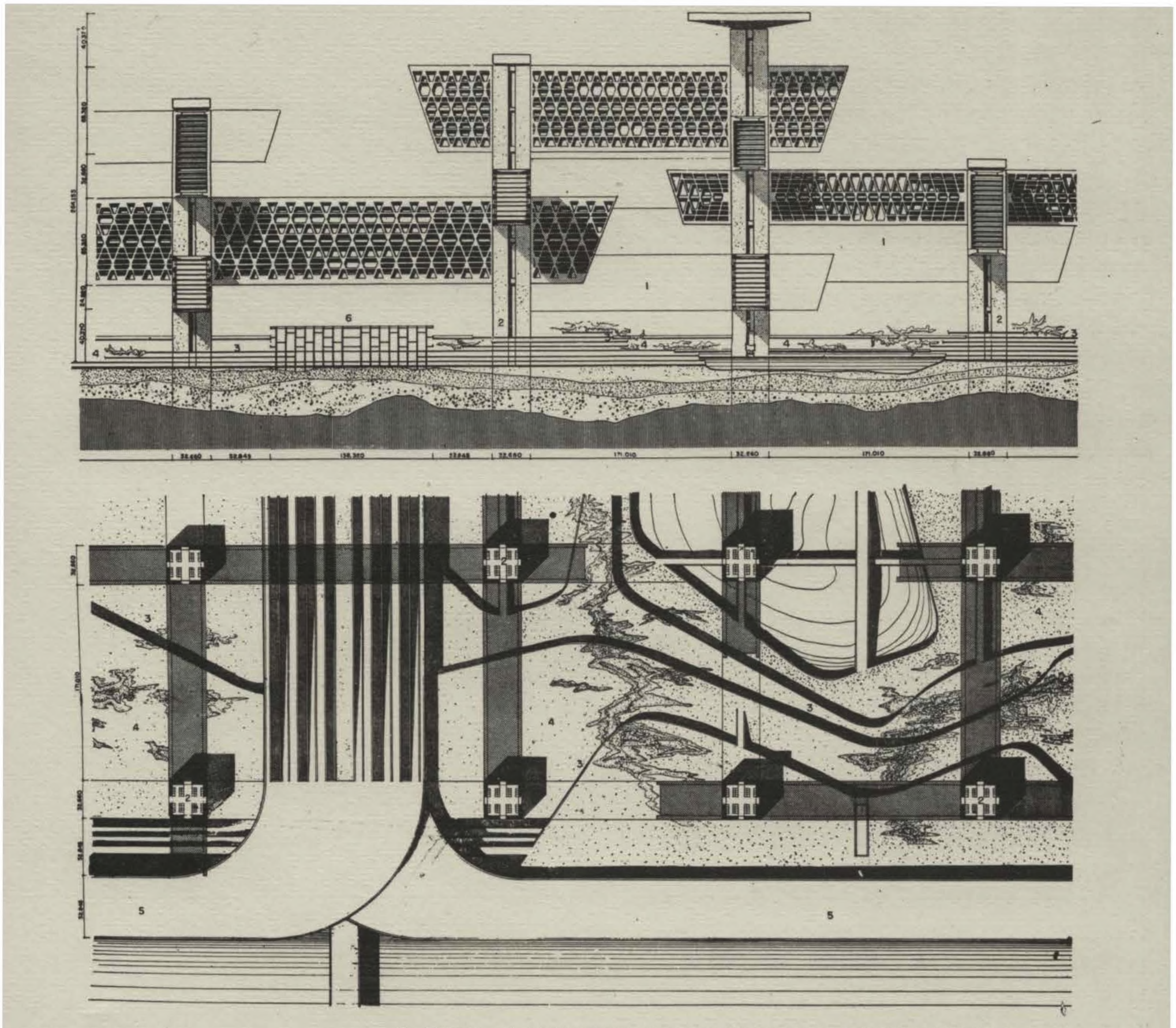
27. Sites for residential areas will be created by two methods: the creation of man-made platforms above the sea, and the reclamation of land. A part of the land for residential areas will be obtained by sand-pump reclamation of the sort now employed in most reclamation projects. At the same time in the places where the removal of sand has caused the sea bottom to become thinner, concrete foundations will be laid on the hard subterranean level, and large man-made platforms will be raised above these. If these two methods are used in conjunction with each other, there will be no need to transport large quantities of earth from other areas.

28. In building over under-sea foundations, it will be more logical to use structures of large span, in which the foundation supports are concentrated. Over these supports, a variety of man-made platforms could be considered. In our plan, the structures built here are more or less triangular in section. At every third level they have concrete platforms extending from side to side and housing gas, water, and electricity lines. On these platforms it would be possible for each individual to construct a house to his own taste from the available manufactured building materials. There would be one row of houses near the top of the structure, but two or three on the lower levels where the structure spreads out.

29. PROGRAM FOR CONSTRUCTION. In the first five-year plan, three cycles would be constructed. These would link Ichigaya and downtown Tokyo, downtown Tokyo and Tsukiji, and Tsukiji and Harumi. Interchanges would be constructed over the moat at Ichigaya and at the control area in Tokyo Station thus linking the cycle system with the present transportation system in the metropolitan center. Without this connection, the proposed civic axis would not develop. The cost of constructing a single unit link in the new system would be ¥ 300,000,000,000, so that the cost of tnree links would be ¥ 900,000,000,000 (approximately $2,500,000,000).

30. Since the new highways would in effect be suspension bridges running 40 meters above ground, construction would be possible if sufficient land were acquired for piers at intervals of one kilometer. In the Tsukiji-Harumi link, however, it would be best to begin with the idea of carrying out a complete redevelopment of the enclosed area, and for that reason, the entire area should be bought up. Allowing ¥ 600,000,000,000 for various purchases of land, the cost of the three links from Ichigaya to Harumi would be ¥ 1,500,000,000,000 ($4,016,000,000).

31. On the other hand, the construction would lead to the creation of three one-kilometer links in the Tsukiji-Harumi interval. These would contain an area of about 3,000,000 square meters, which if sold for ¥500,000 per square meter, would yield the required ¥1,500,000,000,000.



1. office space 2. vertical shaft core 3. parking floors 4. plaza 5. highway 6. interchange