

An examination of Kenzō Tange's Plan for Tokyo, 1960, as a technocratic project for urban mobility set against the backdrop of Japan's rapid motorisation and informatisation.

Kenzō Tange's *A Plan for Tokyo, 1960*: a plan for urban mobility

Hyunjung Cho

This article examines Kenzō Tange's unrealised urban scheme, *A Plan for Tokyo, 1960: Toward a Structural Reorganization* (1961), in terms of its mobility rather than its much-discussed monumentality [1].¹ Tange's plan to build a colossal floating city over Tokyo Bay quickly impressed both Japanese and Western audiences with its sheer scale

and graphic quality. The global fame of this project was largely indebted to Reyner Banham's influential book entitled *Megastructure: Urban Futures of the Recent Past* (1976). In this book, Banham singled out *A Plan for Tokyo, 1960* as a representative example of megastructure design along with the British Archigram and the French Spatial City, claiming that



1 Kenzō Tange, *A Plan for Tokyo, 1960* (1961).

it raised the scale of megastructure to 'a level of monumental vastness'.²

While Banham described Tange's design as an Asian branch of the international megastructure movement, recent scholarship has tended to contextualise Tange's megastructure within Japan's specific urban and historical context.³ Along with the Metabolists' visionary urban schemes, Tange's ambitious plan has been widely discussed as an exploration of new territories in order to overcome Japan's urban congestion. Historically, the effort to expand Japan's living sphere harkened back to the colonial period. Architectural historian Hajime Yatsuka has pointed out that the urban projects conducted in Manchuria in which Tange himself had been involved during the war served as a model for Tange's postwar Tokyo Bay project.⁴ In the postwar context, Tange's plan has often been situated within the reclamation boom of the bay area and its 'planning frenzy' as seen in Tarō Okamoto's *Ikojima* (1957), Masato Ōtaka and Keiichi Okumura's *Tokyo Bay Plan* (1959), and Hisaakira Kano's *Neo Tokyo Plan* (1958–9).⁵ In the same vein, it was conceived as a precursor to the later-realised mega-constructions undertaken in the bay area, such as the Yokohama Minato Mirai project initiated in the 1980s.⁶

Whether the focus was given to its global or domestic context, the existing studies of Tange's plan were too immersed in its unprecedented megalomaniac scale to pay sufficient attention to the fact that it was a complex design for mobility.⁷ While the issues of scale and speed might seem to be separate, in fact they are inextricably interconnected. This article will re-examine Tange's plan for Tokyo Bay as a highly nuanced plan for urban mobility. First, it defines *A Plan for Tokyo, 1960* as a model city for an automobile society against the backdrop of Japan's rapid motorisation.⁸ Despite an unprecedented increase in the number of automobiles in the 1950s, however, Japanese cities lacked a proper urban infrastructure for efficient traffic circulation, which caused severe traffic congestion and eventually harmed the country's economic productivity. *A Plan for Tokyo, 1960* was driven by the architect's strong interest in urban infrastructure and his belief in mobility as a fundamental factor influencing the development of postwar Japanese society. The article then traces how Tange's interest in the visible network of transportation evolved into the invisible networks of information flow. Although his plan had little impact on the actual development of Tokyo, its historical implications can be discussed in terms of its configuration of a new concept of architecture and city in preparation for the nascent information society.

A Plan for Tokyo, 1960: a plan for mobility

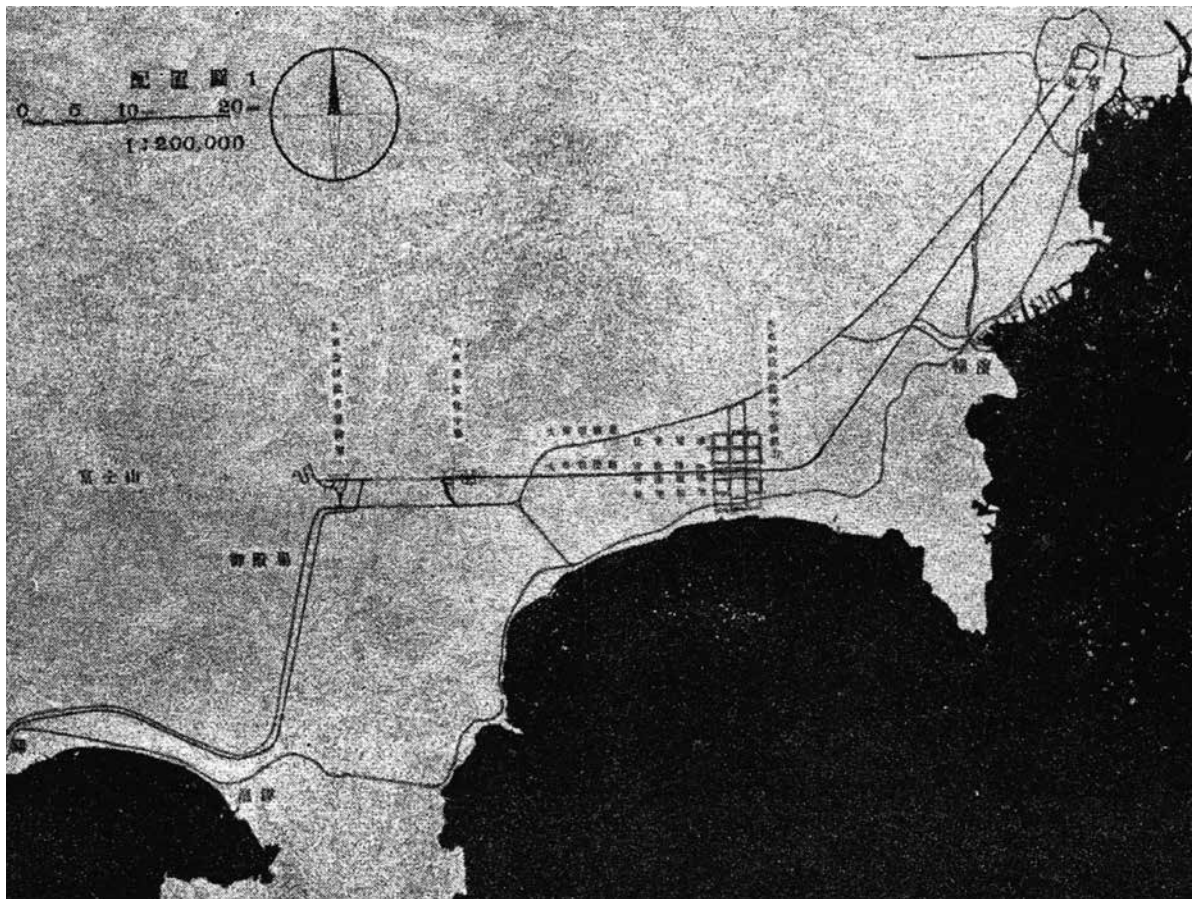
A Plan for Tokyo, 1960, published in the March 1961 issue of *Shinkenchiku* and then translated into English via several venues, is a forty-one-page illustrated essay filled with numerous statistics, graphs, and maps.⁹ It consists of two parts: an analysis of Tokyo's current urban problems and a

master plan to solve these problems. Tange diagnoses Tokyo as having fallen into a 'state of confusion and paralysis' because its outmoded urban infrastructure had failed to accommodate the ever-increasing population and its movement.¹⁰ The proposed solution is to build an artificial land mass floating over Tokyo Bay where five million residents of Tokyo could be relocated. However, the essence of *A Plan for Tokyo, 1960* does not merely lie in its proposal for a vast new habitat. The issue at stake was not to disperse urban functions to new towns or suburbia but to reorganise the urban structure from within so that it could adapt to its unprecedented expansion and increasing mobility.

The premise of this plan was that mobility determines the fundamental structure of the city. Tange stated that Tokyo was the organisational fulcrum of Japanese society and its organic life was dependent upon the flowing movement of people and information.¹¹ Relying on a biological metaphor, Tange compared transportation networks with 'the arterial system which preserved the life and human drive of the city, the nervous system which moves its brain'.¹² Particular emphasis was given to the rapid growth in the number of automobiles, which could enhance more fluid and individually motivated movement. For Tange, the increasing speed and mobility brought by automobiles would radically change our perception of the built environment. When traffic moved at 100 km per hour or more, he explained, the vastness of the new structure ceased to be vast.¹³ Believing that a new sense of mobility introduced by automobiles would destroy the existing spatial order of the city, Tange attempted to redesign Tokyo so that it could best respond to the increasing speed and scale of the motor age.

Tange's interest in urban mobility, however, was not new, but rather can be traced back to wartime Japan, when he was involved in a colonial urban project in Datong (1938) at the request of Eika Takayama, Tange's advisor and senior colleague.¹⁴ Throughout this project, Takayama proposed three key concepts of urban planning, 'density', 'land use', and 'movement', and assigned Tange to delve into the issue of movement, focusing on population movement and urban dynamicity. The Greater East Asia Co-Prosperity Sphere Monument (1942), which won young Tange, then a graduate student, first prize in a national architectural competition, showed Tange's fascination with movement and speed [2]. This wartime design features a high-speed expressway called the 'Greater East Asia Road', which made it possible to commute from Tokyo to the commemorative zone located at the foot of Mount Fuji within an hour at 70 km per hour.

In 1946, immediately after the war, Tange was appointed as an assistant professor at Tokyo University and embarked on a series of collective research projects regarding Tokyo's commuting patterns.¹⁵ If the Tange lab investigated the movement of trams and railways in the late 1940s and early 1950s, the emphasis had shifted to automobile traffic beginning in the late 1950s, when the society witnessed rapid motorisation.¹⁶ The lab's



2

accumulated research on urban mobility, particularly automobility, culminated in Tange's belated doctoral dissertation submitted in 1959.¹⁷ In his dissertation, Tange makes it clear that 'the increase of automobile traffic requires an innovation of architectural form and a new urban imagery that is distinguished from the past.'¹⁸ Based on an analysis of building density, traffic volume, and parking capacity, Tange suggested the reorganisation of an urban centre into superblocks that would house sufficient parking space underground, public spaces at ground level, and office units stacked upward. The dissertation served as the theoretical underpinning of the visionary plan for Tokyo Bay.

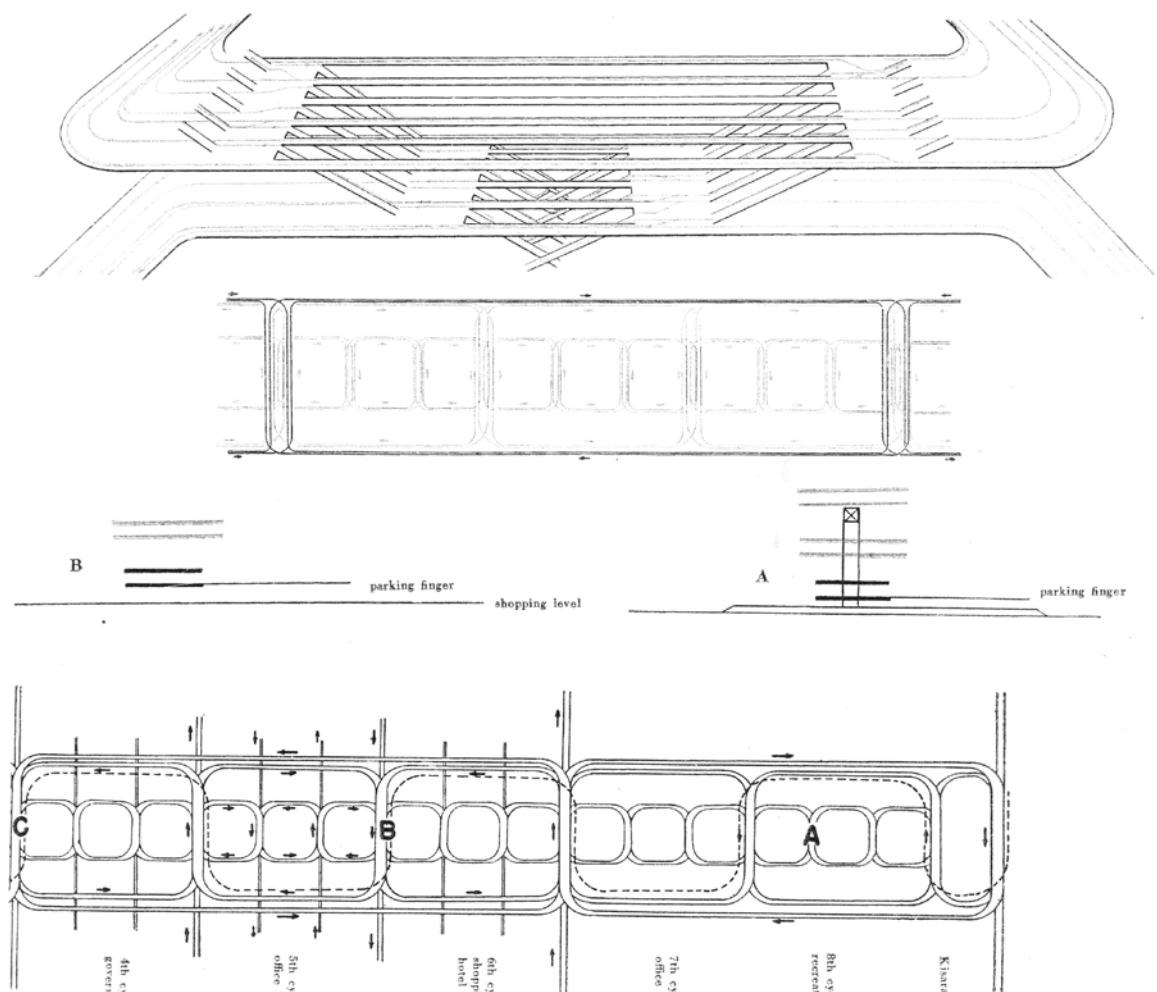
It is worth noting that the publication of *A Plan for Tokyo*, 1960 coincided with the government campaign for Japan's national highway construction. Believing that highway construction needed the work of architects as well as traffic engineers, Tange became involved in the construction project of the Meishin Expressway, Japan's first highway network connecting Nagoya and Kobe. He joined the Architectural Committee of Toll Roads for the Meishin Expressway, an advisory group that supervised the various designs for highway facilities, although he soon withdrew from this position to undertake the actual design of the rest area in Shiga prefecture.¹⁹ His 1960 essay entitled 'For the New Urbanity' in which the architect extolled highway systems as a 'grand achievement of human civilisation' demonstrated Tange's affirmative reaction to the national highway construction.²⁰

However, the response to motorisation among

2 Kenzō Tange, competition scheme for the Monument to the Greater East Asia Co-prosperity Sphere (1942).

Japanese architects was not univocal. Uzō Nishiyama, a left-leaning architect and urban planner who taught at Kyoto University, denounced motorisation as 'a highly inefficient and unequal tendency that only served the capitalist economic system', claiming that rapid motorisation would eventually be harmful to healthy civic life.²¹ There might have been a rivalry between Tange from Tokyo, the state architect who designed monumental national symbols such as the Hiroshima Peace Memorial Park and Yoyogi Olympic Stadium, and Nishiyama from Kyoto, the critical reformer who opposed car-centred government policies in favour of the living conditions of common people.²² Considering Japan's highly mountainous geography, Nishiyama was sceptical of adapting American urban expansion based upon the motorcar and underscored the need for a collective transportation system and pedestrian movement in place of wasting energy for the convenience of cars. As a protest against the concept of an intercity highway system, he proposed the idea of a carless city called 'Home City' (1960), in which people parked their cars outside the city, just as Japanese were supposed to take off their shoes before entering a house.²³

Unlike Nishiyama and his followers, however, Tange considered motorisation as an inevitable



3

3 Kenzō Tange, *A Plan for Tokyo*, Diagram of transportation infrastructure (1961).

process and tried to implement a new transportation infrastructure to accommodate it. It was likely that Tange's rather celebratory attitude to the emerging car culture was largely shaped by his half-year sojourn in the United States in 1959 when he taught at MIT as a visiting professor. The experience of staying in Boston served as a turning point of his career, a point at which he started to venture into superhuman-scale urban projects in earnest. Tange had a chance to observe American automobile culture and was deeply impressed by a futuristic urban look characterised by elegant arcs of elevated expressways and their multilevel intersections. At the same time, he was exposed to the holistic approach to the built environment that emerged in the US as a reaction to modernist thinking, particularly its estrangement of architecture from urban context.²⁴ In 1960, Harvard University initiated a one-year urban design study in an effort to fill the gap between architecture and planning, and in the same year University of California Berkeley launched the College of Environmental Design under which architecture, landscape design, and urban planning were integrated. Although Tange had already crossed the boundary between architecture and urban planning and undertaken a series of urban projects such as Hiroshima's and Wakkanai's postwar reconstruction, the new tendency in academia in the US might have reaffirmed Tange's integrated approach to building, infrastructure, and the city.

At MIT, Tange led a seminar on the topic of 'New Community on the Sea: 25,000 Habitants on the Boston Bay'. Together with his studio students, Tange proposed an urban scheme entitled the 'Boston Harbor Project' (1959), an artificial landmass floating on Boston Bay in which individual buildings, transportation networks, and urban facilities were all combined. The Boston Harbor Project consists of two opposing A-framed towers that stretch out along a highway and monorail lanes. This project can be read as a preliminary study for the Tokyo Bay plan, not only because it presented the idea of a floating megastructure, but also, as architectural historian Seng Kuan has pointed out, it demonstrated the 'infrastructural character and the idea of linkage'.²⁵ According to Tange's recollection, he had already conceived the Tokyo Bay project during his days in Boston and ordered his staff at Tokyo University to collect statistical data for Tokyo including demography and traffic in preparation for his plan for Tokyo Bay.²⁶

A Plan for Tokyo, 1960 is characterised by the radical reconsideration of both urban structure and architectural form for the emerging automobile society. On an urban level, it proposes the transformation of a conventional radial city to a

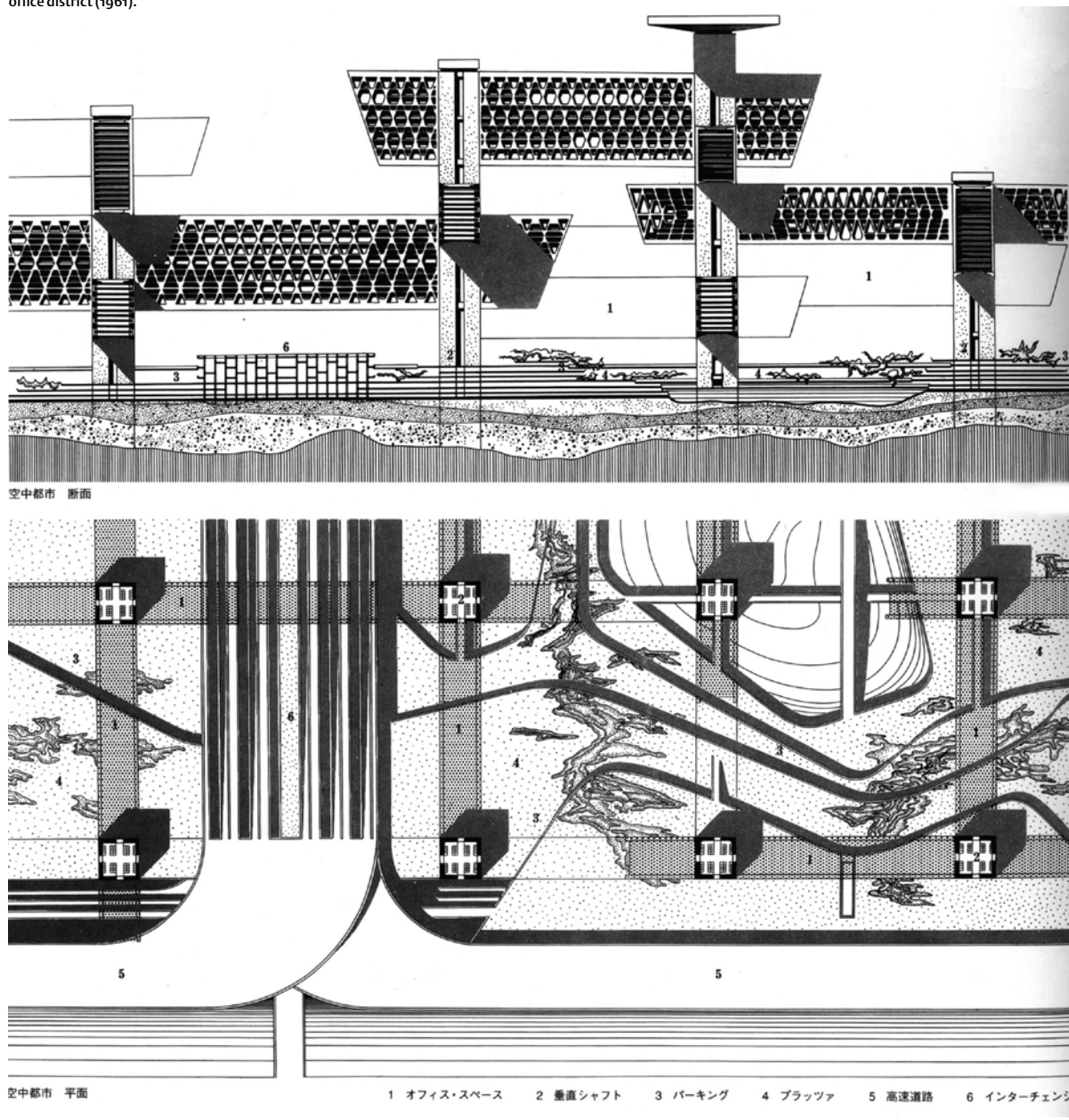
linear one by implementing a linear transportation axis. Tange believed that a conventional radial model could no longer withstand the increasing population and movement because it only increased the pressure on the centre and aggravated the commute from the centre to the suburbs. Utilising a biological metaphor, he claimed that a city should evolve from a closed, amoeba-like, radial structure to an open, vertebrate-like, linear structure.²⁷ For Tange, the concept of a linear city could alleviate chaotic urban expansion with self-regulating urban development by controlling the growth pattern of an ever-growing city in line with the transit system.

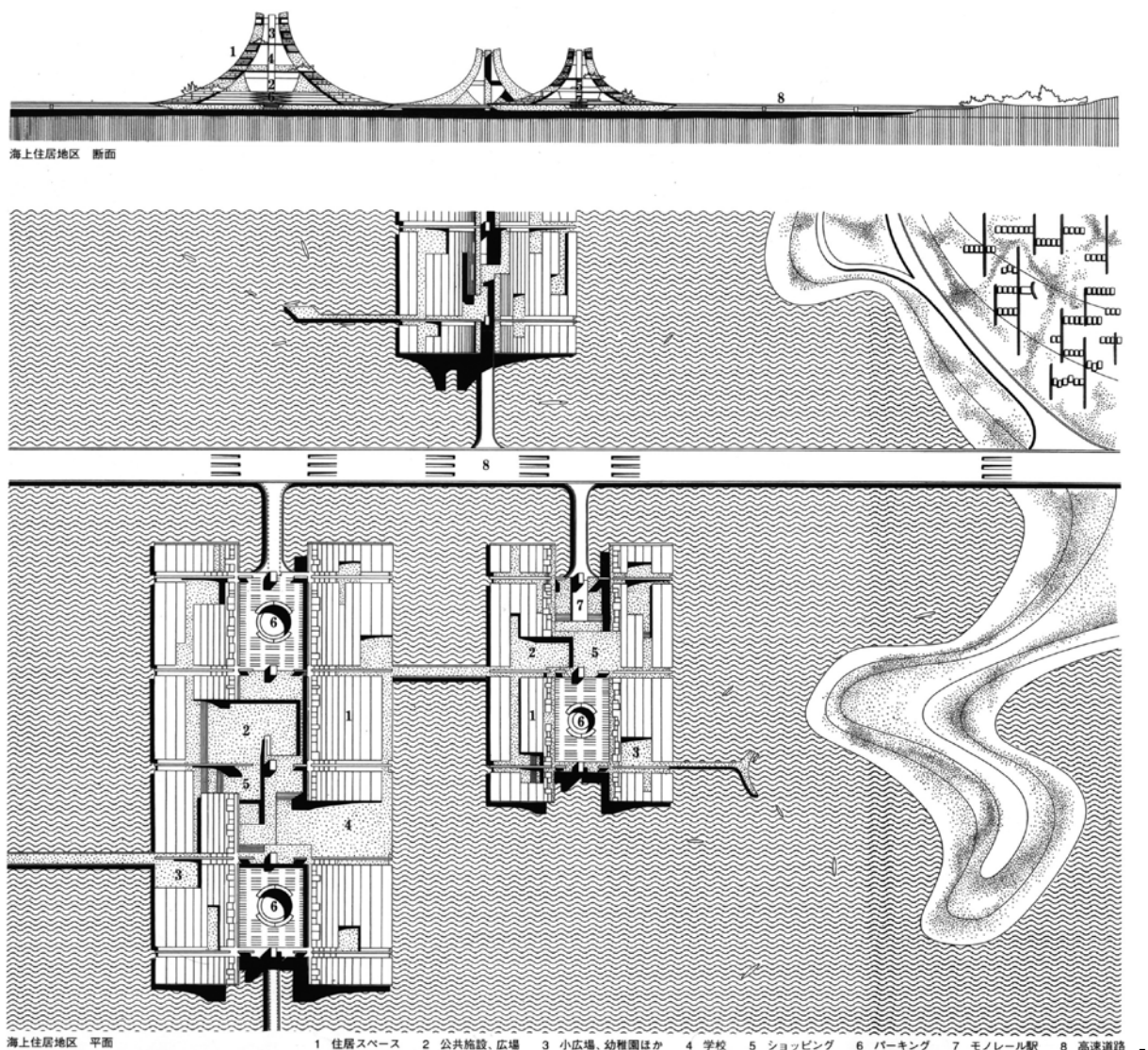
The linear axis that straddles the nearly 80 km all the way across Tokyo Bay serves as the backbone of a vast redevelopment of the metropolitan region. Along it, various facilities including a transportation hub, an administrative zone, and an office area are located in order, and a series of residential sub-spines

stretch from the axis at a right angle. This axis is conflated with an innovative highway network along with monorail and subway lanes that are lifted 50 m above the water [3]. The highway network is based on a 'cycle transportation system', a series of looping decks with vertical separation based on a speed hierarchy (high speed/low speed/human speed/immobility; the upper levels were to be used for high-speed movement and the lower levels for slower movement or stationary needs, such as parking spaces and buildings). The effect of this hierarchal traffic system is threefold: (1) to accommodate ten to thirty times as much traffic volume as the existing road system; (2) to facilitate the uninterrupted flow and smooth transit of vehicles without intersections; and (3) to improve the efficiency of door-to-door travel by cars.

Of course, the concept of a linear city was not original to Tange. As early as 1882, Spanish planner Soria y Mata first proposed the idea of a linear city called Ciudad Lineal.²⁸ Since then, the linear city idea

4 Kenzō Tange, *A Plan for Tokyo*, Pilotis and core structure in the office district (1961).





5 Kenzō Tange, *A Plan for Tokyo*, A-shaped towers in the residential district (1961).

was persistently revisited by various architects and urban planners throughout the twentieth century. The most recent and direct precedent of Tange's linear city can be found in Dynapolis, the city with parabolic unidirectional growth proposed by Greek planner and architect Constantinos A. Doxiadis.²⁹ Beginning in the early 1950s, Doxiadis proposed a new urban frame to cope with the unprecedented expansion of population and automobile movement of contemporary cities. His idea was to abandon the conventional urban model as a static and self-confined object in favour of an ever-growing, flexible, and dynamic organisational structure. Tange remained in close touch with Doxiadis and his multidisciplinary consulting firm Ekistics, and an English summary of *A Plan of Tokyo*, 1960 was published in Ekistics' monthly journal in July 1961.³⁰ Given their shared interest in expanding and mobile cities, it was very likely that Tange's linear model was inspired by intellectual dialogue with Doxiadis and his circle.

Tange's interest, however, was not restricted to reconfiguring the urban structure from a radial to a linear one on a macro level but included designing a new form of individual buildings on a micro level. Consider the office district and the residential zone

proposed by Arata Isozaki and Koji Kamiya from the Tange lab, respectively. The office district features a series of bridge structures hung between gigantic shafts called a 'pilotis-and-core system', an enlarged version of Le Corbusier's pilotis structure [4]. The 'pilotis-and-core system' functions not only as supports for a building but also as the container of elevators, ducts, and other functional elements. It is worth mentioning that Le Corbusier's pilotis structure, an upright column on which a building is erected from the ground up, was conceived as a device for creating a new interface between buildings and cars in the early twentieth century. In his *Villa Savoye* (1929), for example, the pilotis structure is intended not only to separate pedestrians from automobiles, but also to provide a space for a driveway and parking under the building, which enables the seamless and uninterrupted entry and exit of cars. Likewise, in Tange's plan, the pilotis-and-core structure enabled the smooth flow of drivers from the highway network to the parking area under

the pilotis and to each residential unit via elevators.

Similarly, the residential district consists of a series of pyramidal megastructures connected to an auxiliary motorway that branches off from the main highway axis. This A-frame residential structure, which came from the Boston Bay Project (1959), features a core zone below a pitched roof where a monorail station, parking lots, and other public facilities are brought together [5]. Residents can make an easy transit from their cars or public transport to the communal space of the residential towers and then move to the individual living units.

The integration of the architecture and the traffic infrastructure shown in both the office and residential districts echoes what British town planner and traffic engineer Colin Buchanan termed 'traffic architecture' in his 1963 report, *Traffic in Towns*.³¹ Buchanan's influential publication aims at the radical and comprehensive urban reconstruction in preparation for the motor age. Criticising the conventional design approach as being based on the strict separation between architecture and transport, Buchanan advocated a more holistic understanding of these two realms and proposed a new concept of traffic architecture in which buildings and access ways (traffic network) were designed together.³² By doing so, he intended not only to maximise efficient handling of automobile traffic, but also to secure an 'environmental area' where pedestrians could move safely and comfortably. Traffic architecture took the form of a multilevel megastructure where pedestrian decks hovered over a motorway at ground level. In this regard, the 1960s megastructure movement, a widespread emergence of multipurpose large structures that included various urban infrastructures, can be read as an effort to restructure the urban landscape in accordance with the postwar motorisation and its new mobility.

Towards architectural mobility, from physical to electronic

Tange was not the only architect who brought up the issue of mobility. Already in the Athens Charter, a manifesto based on the 1933 CIAM meeting and published in 1943, modernist discourse had granted transportation (circulation) its own quadrant within the four programmes of functionalist urban planning: dwellings, work, leisure, and transportation. The fourth was intended to bring the other three into effective communication with one another. CIAM's emphasis on transportation was motivated by the growing sense of crisis over the fact that traditional urban infrastructure could no longer accommodate the needs of cars at the dawn of the automobile age. Faced by the new demands of high-speed motorised vehicles, Le Corbusier, the founding member and key figure of CIAM, attempted to eliminate the existing urban infrastructure and to replace it with space designed around cars. His visionary schemes, such as the *Ville Contemporaine* (1923) and the *Plan Voisin* (1925), are examples of car-oriented cities whose emphasis was given to the efficient flow of private vehicles.

In the 1950s, when the era of mass motorisation

began, the notion of mobility emerged once again as one of the most important agendas in architectural circles. However, the postwar discourse of mobility was largely fostered by the criticism of modern movement.³³ At the 1956 CIAM meeting held in Dubrovnik, Team 10 considered the city as a complex living organism and presented the concept of 'mobility', along with those of 'cluster', 'growth', and 'change', in order to challenge modernist doctrine, particularly its rigid functionalism and top-down approach. Unlike Le Corbusier, who was preoccupied with the efficient flow of car traffic, the Team 10 generation tried to resuscitate pedestrians as an important component of a city and to secure a public domain in urban space as a bulwark against the tyranny of cars.

The key figures in this movement were Alison and Peter Smithson and Louis Kahn.³⁴ The Smithsons singled out the concept of mobility as a 'characteristic element of the period' and continued as follows:³⁵

Social and physical mobility, that feeling of a certain sort of freedom, is one of the things that keeps our society together, and the symbol of this freedom is the individually owned motor car. Mobility is the key both socially and organisationally to town planning, for mobility is not only concerned with roads but with the whole concept of a mobile, fragmented community.

For the Smithsons, mobility was associated less with a non-human traffic system than with lively social interaction in a community. The Berlin Hauptstadt project (1957), an unrealised urban scheme of the Smithsons, features a pedestrian deck as a way of reconciling the hostile relationship between cars and pedestrians. Kahn also wanted to renew the existing urban order in accordance with the advent of mass car culture in America. In his traffic study for Philadelphia (1953), Kahn sought to untangle traffic congestion and mitigate the parking problems of postwar cities. However, Kahn's ambition went far beyond a Corbusier-like car utopia. His plan for the Philadelphia Civic Center (1956–7) is characterised by a multilevel spine that separated automobile traffic and pedestrian walkways and a ring-type parking dock that defended the civic centre against the privatising tendency of cars. Kahn's plan for an ideal civic centre was influenced by the humanitarian debate over the nature of the urban core that took place at the CIAM Hoddesdon conference of 1951, although he tried to modify CIAM's emphasis on the traditional piazza in accordance with the growing demands of automobile traffic.³⁶

Tange was largely influenced by the postwar discourse of mobility/automobility shared by his Western architect contemporaries. As a regular participant in the CIAM conferences, Tange was exposed to Team 10's biological model of city as an ever-growing living organism.³⁷ Moreover, Tange was one of the key hosts of the Tokyo World Design Conference of 1960, which some two hundred architects and designers, including the Smithsons and Kahn, attended. However, Tange's concept of mobility was different from the humanitarian



6

approach of his contemporaries in terms of their different attitude towards pedestrians.

In Tange's plan, the people are missing and human subjects and their movements are treated as nothing more or less than quantifiable data. When this plan was first presented, contemporary commentators criticised the lack of people in it. It was described as 'a city without people' and the architect was urged to consider the existence of people in his design.³⁸ Indeed, the priority of Tange's plan was less to accommodate the spontaneous movement and participation of individuals than to construct a control system that could regulate and manage urban circulation, a sort of control against which Team 10 might have struggled. In this light, Peter Smithson criticised Tange's plan as 'centralised, absolutist, and authoritarian', although he was mesmerised by the outstanding graphic quality of the Tokyo Bay scheme.³⁹ The lack of people in Tange's work was noticeable even comparing it with Buchanan's bureaucratic report, which for all of its emphasis on car traffic paid attention to safe and comfortable movement of people in the carless zone.

Unlike the Smithsons and Kahn, who examined the notion of everyday mobility on the street level, Tange approached urban mobility from the perspective of the national economy. For an architect who undertook the rebuilding of a devastated country in the wake of the Second World War, it was important to consider how to contribute to the national economy by means of architecture and urbanism. In his essay 'Several Issues Surrounding Construction' (1948), he wrote that 'the infrastructure of a city or a nation was a founding element of the productive forces'.⁴⁰ Emphasising the efficient flow of people, goods, and information as a crucial element of the economic productivity of a given piece of land, Tange went so far as to compare

6 Kenzō Tange,
Tokaido Megalopolis
(1964).

the linear axis stretching across the bay area with 'a giant conveyor belt carrying a flow of people'.⁴¹ This technocratic attitude mirrored Le Corbusier's call for efficient spatial management for better productivity, a concept that can be described as 'pacifist mobilisation' of the people, land, and various means of production.⁴²

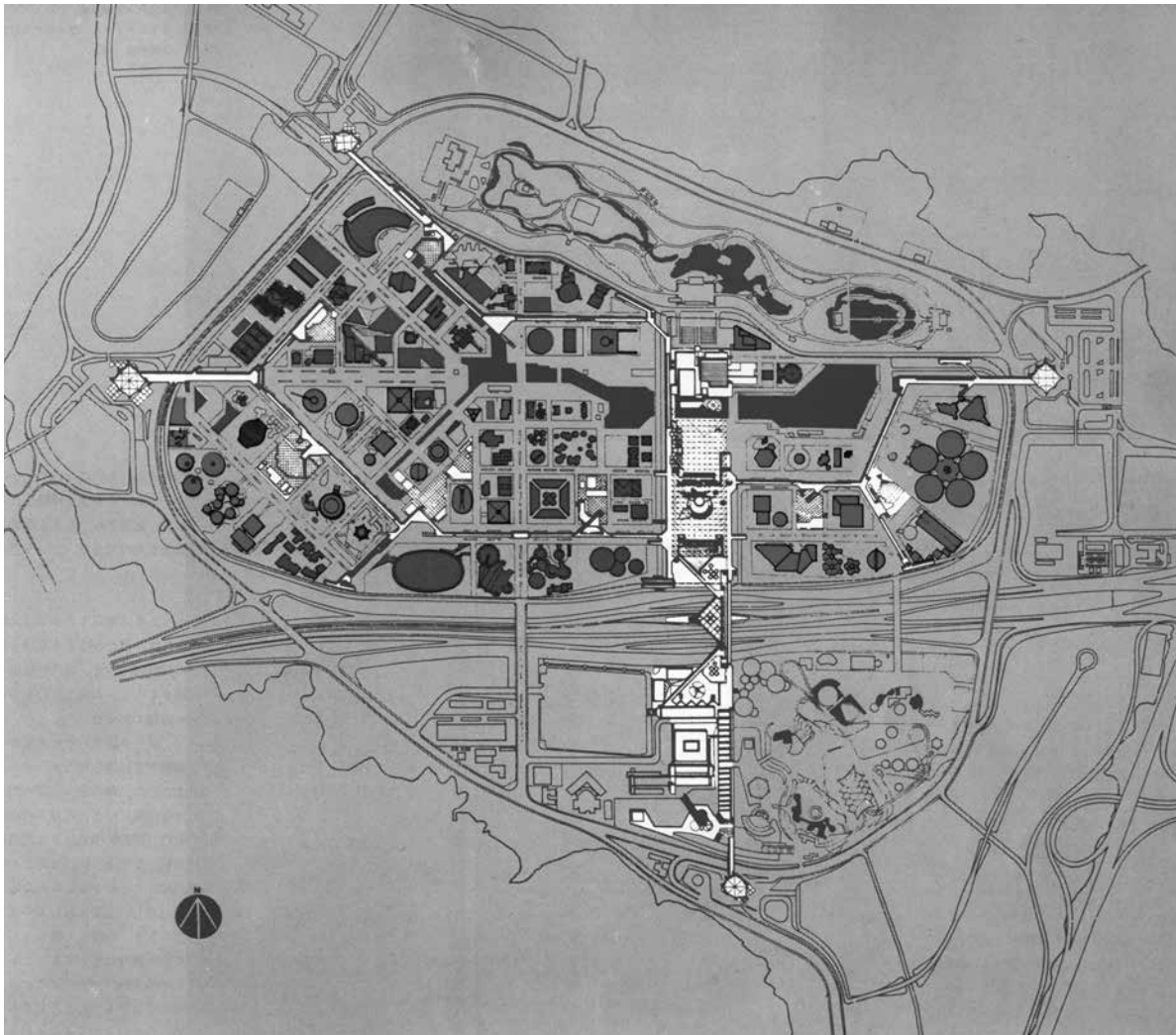
Understandably, Tange's plan was intended to have an effect on actual urban policies, although it was a voluntary research project. According to Zhongjie Lin, Tange's design served as a polemical counterthrust to the National Capital Development Plan of 1958, which proposed the dispersion of population and city functions from the city centre to satellite cities and subcentres.⁴³ More specifically, the idea of a linear traffic axis provided a clear antithesis to the official traffic plan of 1958 drafted by Masao Yamada and his team in the Bureau of Capital City Development. Produced amid a highway construction boom, Yamada's traffic plan featured intensive urban highway networks developing radially from Tokyo's urban centre to suburbia.⁴⁴ Immediately before and after its publication, Tange attempted to communicate his work to various government organisations including the Ministry of Construction, the National Capital Region Development Committee, and the Japan Housing Corporation.⁴⁵ In particular, the Minister of Transportation was encouraged to refer to Tange's work by a member of the Diet.⁴⁶ However, *A Plan for Tokyo, 1960* was left only on paper and had little impact on the actual development of Tokyo.

Nevertheless, I would like to claim that the significance of Tange's plan lies less in whether or not it was realised than in the fact that it anticipated a new concept of architecture and urbanism in the emerging society. Tange's plan proposed a new vision of architecture and city not merely as physical hardware, but also as software, 'an organisation tied together by the invisible network of communications'.⁴⁷ It was a study of circulation for people, goods, and information. Such a networked conception of a city can be understood within the international context of what Mark Wigley called 'network fever' prevalent in the architectural circles of the 1950s and 1960s.⁴⁸ Yet, at the same time, as media scholar Yuriko Furuhashi has correctly pointed out, the architect's emphasis on both physical and virtual networks was deeply rooted in Japan's specific domestic context of a time when the country was quickly and strategically entering a post-industrial, consumerist, and information society stage.⁴⁹ Tange's interest in the coordinated management of the flow of things and people can be understood within the context of the so-called 'logistic revolution' of postwar Japan. In his bestseller titled *The Logistics Revolution* (1962), economist Shūji Hayashi observed the radical innovation in logistics that was accompanied by the development of transportation, consumerism, and information technology.⁵⁰

Beginning in the mid-1960s, a number of government proposals and government-sponsored think tank reports outlined a technocratic vision of the 'informatisation' (jōhōka) of society. According to sociologist Tessa Morris-Suzuki, the arrival of an information society in Japan was not a natural outcome determined by a sort of inherent teleology of technology itself, but a planned technocratic attempt to restructure the country's industry to continue economic growth.⁵¹ Tange was keenly aware of this radical social transformation and tried to develop a new model of architecture and city that would be suitable for the flexible and fluid movement of both cars and information.

Throughout the 1960s, Tange tried to radicalise the logic of transportation and moved it in the direction of electronics, which included the invisible and immaterial flow of information. Take, for example, Tokaido Megalopolis (1964), a territorial-scale project that extended the linear traffic axis of *A Plan for Tokyo, 1960* along the Tokaido Pacific Belt [6].⁵² Borrowing the concept of Jean Gottmann's 'Megalopolis', Tange suggested a radical restructuring of the entire archipelago into a single colossal city that was

7 Kenzō Tange, *A Masterplan for Expo '70* (1970).



7

organically connected by the linkup of physical, social, and information networks.⁵³ Tokaido Megalopolis is a statistical and theoretical research project concerning not only 'hard' transportation networks but also 'soft' information pathways. This land planning idea was further articulated in his 1968 report 'Japan in the Twenty-first Century: The Future of National Land and of Citizens' Way of Life'.⁵⁴ Envisioning fifty years into the future of a Japan that would undergo rapid 'informatisation', the report remapped the entire archipelago according to the flow of energy, information, and free time by constructing an 'information kombinato', a huge industrial complex in which information, industry, and transportation networks congregated. Tange's idea of an electronic network derived from that of a physical traffic network since he believed that the free movement of people could carry information with it.⁵⁵ Unsurprisingly, Tange's study of the characteristics of a highway system, such as the unfettered flow of vehicles, limited access, and hierarchal distribution of roads, lent a similar network protocol to the flow of information.

Coda

Tange's career as the country's master planner culminated in the 1970 World Exposition in Osaka (referred to as Expo '70) in which he was involved as a chief producer of the Expo's overall facilities. In the expo special issue of *Shinkenchiku*, Tange claimed that Expo '70 should be a stage for a new architecture and city in the emerging information society.⁵⁶ A starting point to materialise his vision of information age design was the expo's traffic system. The architect put top priority of his expo design on an innovative traffic network that could accommodate the unprecedented volume of traffic generated by the expected 300,000 visitors and 50,000 vehicles per day. The expo site was thus designed as a gigantic machine for circulation. The central nervous system of this machine was the Symbol Zone, a vast strip

located along the central north-south axis of the site [7]. The Symbol Zone served not only as a nexus of various modes of multilevel transportation including monorails, ropeways, and moving walkways, but also as a conglomerate of electronic wires, gas pipes, the sewage system, and telephone lines. The futuristic look of Expo '70 as a ceaselessly mobile and seamlessly networked virtual city offered a palpable image of the coming information society. As soon as Expo '70 ended, however, Japanese society was significantly affected by multiple oil shocks and its postwar reconstruction boom and subsequent economic growth slowed down. The sort of national-scale urban projects that attracted Tange rapidly decreased in number, and the only options left for architects were to work for commercial enterprises or adapt their methods to small-scale design or private houses. The era of a heroic national architect had disappeared.

Undeniably, *A Plan for Tokyo, 1960* had little impact on Tokyo's actual urban policies and its transportation system in particular. As opposed to Tange's vision of a motorised linear city, Tokyo expanded radially outward along the web-like network of subways and trains. Nevertheless, his attempt to design urban infrastructure, particularly its systems for mobility, circulation, fluidity, and interconnectivity, guided the nation's strategic development of the Tokaido corridor, a chain of connected industrialised cities built along the linear transportation and information system. Moreover, Tange's reconceptualisation of urban space through both physical and electronic networks provides inspiration for today's scholars who are interested in the intelligent transportation system and wireless communications of cities. To a degree, Tange's plan for Tokyo Bay seems to find its legacy in the current 'smart city' discourse, a study for a new model of city in which architecture and infrastructure would become a part of communication and information networks.

Notes

1. The members of Tange's team who were responsible for *A Plan for Tokyo, 1960* included Arata Isozaki, Koji Kamiya, Sadao Watanabe, Noriaki Kurokawa (Kishō Kurokawa), and Byung-gi Kang (a Korean student whose name was written as Heiki Koh).
2. Reyner Banham, *Megastructure: Urban Futures of the Recent Past* (London: Thames and Hudson, 1976), p. 57.
3. Tange is one of the most studied Japanese architects. Major Tange scholarship includes Kenzō Tange and Terunobu Fujimori, *Kenzō Tange* (Tokyo: Shinkenchiku-sha, 2002); Zhongjie Lin, *Tange Kenzō and the Metabolism Movement* (London and New York: Routledge, 2010); Zhongjie Lin, 'Urban Structure for the Expanding Metropolis: Kenzo Tange's 1960 Plan for Tokyo', *Journal of Architectural and Planning Research*, 24:2 (summer 2007), 109–24; Seng Kuan and Yukio Lippit, eds, *Kenzō Tange: Architecture for the World* (Zurich: Lars Müller Publisher, 2012); Saigaku Toyokawa, *Gunzō toshite Tange genkyūshitsu [Tange Lab as a Group]* (Tokyo: Ohmsha, 2012); Saigaku Toyokawa, *Tange Kenzō to Kenzo Tange* (Tokyo: Ohmsha, 2013); Saigaku Toyokawa, *Tange Kenzō: Sengō nihon no gushōsha [Tange Kenzo: The Master Planner of Post-war Japan]* (Tokyo: Iwanami, 2016). My study is particularly indebted to a series of Japanese publications by Saigaku Toyokawa on the Tange lab's collective projects.
4. Hajime Yatsuka, *Shisō toshite no nihon kindai kenchiku [Japanese Modern Architecture as an Idea]* (Tokyo: Iwanami Shoten, 2005), pp. 444–5; Seng Kuan, 'Land as an Architectural Idea in Modern Japan', in *Architecturalized Asia: Mapping a Continent through History*, ed. by Vimalin Rujivacharakul and others (Honolulu: University of Hawaii Press, 2014), pp. 189–204.
5. The 'planning frenzy' of Tokyo Bay was discussed by Rem Koolhaas and Hans Ulrich Obrist in their book *Project Japan: Metabolism Talks* (Köln: Taschen, 2012), pp. 266–93.
6. Zhongjie Lin, 'From Megastructure to Megalopolis: Formation and Transformation of Mega-projects in Tokyo Bay', *Journal of Urban Design*, 12:1 (February 2007), 72–3.
7. A roundtable discussion on the topic of mass, velocity, and politics in contemporary cities among Hajime Yatsuka, Shūji Funo, and Eiji Hatō, published in a web

- version of *Kenchiku tōron*, is an exceptional case which calls our attention to the fact that mobility and commuting are the key themes of *A Plan for Tokyo, 1960*. <<https://www.ajp.or.jp/jpn/touron/5gou/tairon04.html>> [accessed 1 June 2017].
8. Postwar Japan witnessed the rapid process of motorisation; at the end of the Second World War, only 130,000 vehicles were registered but the number increased rapidly, reaching 500,000 vehicles by 1951, then doubling to one million in 1953, and doubling again to two million in 1957. See the homepage of the Ministry of Land, Infrastructure, Transport, and Tourism, <http://www.mlit.go.jp/road/road_e/q1_history_3.html> [accessed 1 June 2017]. Believing that the automobile industry would become a nexus of related industries such as machinery and steel manufacturing, the government provided various forms of assistance to the industry including low-interest loans, tax privileges, tariff exceptions for imported machinery, and import protection. The government campaign for the 'People's Car Plan' of 1955 played a significant role in promoting the purchase of inexpensive passenger cars such as the Mitsubishi 500 (1960) and the Toyota Publicar (1961) to a wider general public and enhancing the competitiveness of Japanese automobiles in the international market. For more on Japan's rapid motorisation in the postwar period, see Ryūichi Kitamura, ed., *Posto Motorization: 21 seki no tosh to kōtsū senraku* [Post-motorisation: Traffic Strategy of the 21st Century] (Tokyo: Gakuin Shuppan-sha, 2001), pp. 16–29; Yoshihiro Hotta, *Jidōsha to kenchiku: Mōtarizeshon jidai no kankyō desain* (kawade shobō, 2011).
 9. Its English translation was first published in the April 1961 issue of *Japan Architect*. The same year, an independent booklet with some additional data was published in English. In addition, *Ekistics* published a ten-page abstract of its English translation in July 1961. See Kenzō Tange, 'A Plan for Tokyo, 1960', *Ekistics*, 12 (July 1961), 9–19.
 10. Kenzō Tange Team, 'Tokyo keikaku-1960: sono kōzō kaikaku no teian [A Plan for Tokyo, 1960: Toward a Structural Reorganization]', p. 114.
 11. *Ibid.*, p. 88.
 12. *Ibid.*, p. 93.
 13. *Ibid.*, p. 114.
 14. See Toyokawa, *Gunzō toshite Tange genkyūshitsu*, pp. 77–104.
 15. Tange lab's research on urban mobility conducted in the immediate postwar years includes the following: Kenzō Tange, Sachio Ōtani, Tetsuo Ono, 'Tsukin genshō yori mitaru Daitosho no chiiki kōzō [Regional Structure of Metropolis from the Perspective of Commuting Phenomenon]', *Kenchiku zasshi*, 62 (734) (September 1947), 14–15; Kenzō Tange, 'Tsukin genshō ni kansuru kiso kenkyū [Basic Theory of Commuting Phenomenon]', *Kenchiku zasshi*, 62 (734) (September 1947), 14; Kenzō Tange, 'Jinkō idō no chiiki kōzō' [Population Movement and Regional Structure]', *Kenchiku zasshi*, 62 (728) (February 1947), 25.
 16. Kenzō Tange, 'Kensetsu o meguru shomondai tokushū [Several Issues Surround Construction]', *Kenchiku zasshi* (January 1948), 2–10.
 17. Kenzō Tange, 'Toshi no chiiki kōzō to kenchiku geitai [Regional Structure and Architectural Form of a Metropolis]' (D. Eng. dissertation, University of Tokyo, 1959).
 18. *Ibid.*, vol. 2, p. 120.
 19. For a detailed account of facility design for the Meishin highway, see Hotta, *Jidōsha to kenchiku: Mōtarizeshon jidai no kankyō desain*, pp. 30–3 and pp. 40–6. This committee consisted of the key figures in Japanese architectural circles including Tange, Hideto Kishida, Junzō Sakakura, and Togo Murano.
 20. Kenzō Tange, 'Atarashi toshi matomete [For the New Urbanity]', *Shūkan Asahi*, 5 April 1960.
 21. Uzō Nishiyama, 'Chiiki kikan ni okeru kenchiku deki sōzō no kadai [The Task of Architectural Creation for Regional Space]', *Shinkenichiku* (December 1965), 163. Nishiyama's scepticism toward the emerging car culture was shared by Toshikazu Yukawa in his criticism of the 'my car' syndrome. In his 1968 book *Mai ka-bōkoku ron* [My Car, A National Peril], Yukawa denounced car culture as 'a devil that would deceive people and eventually lead them to hell'. Toshikazu Yukawa, *Mai ka-bōkoku ron* [My Car, A National Peril] (Tokyo: Sanil Shobō, 1968).
 22. Andrea Yuri Flores Urushima, 'Genesis and Culmination of Uzō Nishiyama's Proposal of a "Model Core of a Future City" for the Expo 70 Site (1960–1973)', *Planning Perspective*, 22 (October 2007), 391–416.
 23. Uzō Nishiyama and others, 'Home City: Future Image of City', *Kindai kenchiku* (March 1961), 52–8.
 24. See Nan Ellin, *Postmodern Urbanism* (New York: Princeton Architectural Press, 1999), pp. 247–50.
 25. Seng Kuan, *Utopian Across Scales: Highlights from the Kenzō Tange Archive*, exhibition catalogue (Cambridge: Harvard University Graduate School of Design, 2009), unpaginated.
 26. Kenzō Tange, 'Recollections: Architect Kenzō Tange Part 5', *Japan Architect* (August 1985), 9.
 27. Kenzō Tange team, 'Tokyo Keikaku-1960: sono kōzō kaikaku no teian [A Plan for Tokyo, 1960: Toward a Structural Reorganization]', pp. 98–9.
 28. Arturo Soria y Mata, *La Cité Linéaire: Conception Nouvelle pour l'Aménagement des Villes* (Paris: École nationale supérieure des Beaux Arts, 1984), cited in Lin, *Kenzo Tange and the Metabolist Movement*, p. 154.
 29. Doxiadis refused to use the term 'linear city' when describing his concept of Dynapolis, but the idea of a dynamically growing city in a linear direction falls into the category of a linear city. As for the Dynapolis, see Constantinos A. Doxiadis, *Architecture in Transition* (London: Hutchinson & Co., 1963), pp. 99–106.
 30. For Tange's activities in *Ekistics*, see Mark Wigley, 'Network Fever', *Grey Room* (summer 2001), 82–122.
 31. Colin Buchanan, *Traffic in Towns: A Study of the Long-term Problems of Traffic in Urban Areas* (London: HMSO, 1963); Commemorating the fiftieth anniversary of its publication, the significance and legacy of the Buchanan report has been recently re-evaluated. See Simon Gunn, 'Buchanan Report: Environment and the Problem of Traffic in 1960s Britain', *Twentieth Century British History*, 22:4 (December 2011), 541. The term 'traffic architecture' became widely circulated in architecture and planning circles of the mid-1960s, when rapid motorisation required a radical change in urban and architectural design. Lawrence Halprin's influential book, *Freeways*, also employed this term in order to refer to the integration of highways, transit, and other urban programmes into megastructure. Lawrence Halprin, *Freeways* (New York: Reinhold Publishing Corporation, 1966), pp. 113–47.
 32. Colin Buchanan, *Traffic in Towns* (London: Routledge, 2015), p. 60.
 33. For the tremendous impact of the automobile on architecture and urban design, see Moshe Safdie, *The City after the Automobile: An Architect's Vision* (New York: Westview, 1988).
 34. Zhongjie Lin discusses the influence of Team 10, Louis Kahn, and the Smithsons on the Tokyo Bay project. However, he failed to demonstrate how Tange's idea of

- mobility can be distinguished from those of his Western architect contemporaries. Lin, *Kenzō Tange and the Metabolist Movement*, pp. 133–71.
35. Alison Smithson, ed., *Team 10 Primer* (Boston: MIT Press, 1968), p. 51.
 36. For Louis Kahn's urban core projects, see Sarah Goldhagen, *Louis Kahn's Situated Modernism* (New Haven: Yale University Press, 2001), pp. 102–18.
 37. For Team 10's biological model of the city, see Sarah Deyong, 'Memories of Urban Future: The Rise and Fall of Megastructure', in *The Changing of Avant-garde: Visionary Architectural Drawing from the Howard Gilman Collection*, ed. by Paola Antonelli and Terence Riley (New York: Museum of Modern Art, 2002), pp. 23–36.
 38. Yuichiro Kojiro, 'Movement in the Principal Structure', *Japan Architect* (August 1961), 41.
 39. Peter Smithson, 'Reflections on Kenzō Tange's Tokyo Bay plan', *Architectural Design*, 34 (October 1964), 479.
 40. Kenzō Tange, 'Kensetsu o meguru shomondai tokushū [Several Issues Surround Construction]', *Kenchiku zasshi* (January 1948), 2–10.
 41. Ibid., 100.
 42. Kenneth Frampton, *Le Corbusier* (London and New York: Thames & Hudson, 2001), p. 120.
 43. Lin, *Kenzō Tange and the Metabolist Movement*, p. 155.
 44. See Akira Koshizawa, *Tokyo toshi keikaku monogatari [Stories of Urban Planning Projects in Tokyo]* (Tokyo: Nihon Keizai Hyōronsha, 1991).
 45. 'Editorial', *Shinkenchiku* (July 1961), 97.
 46. Tange and Fujimori, *Tange Kenzō*, p. 351.
 47. Tange, 'Tokyo keikaku-1960, sono kōzō kaikaku no teian', p. 82.
 48. Mark Wigley, 'Network Fever', *Grey Room* (summer 2001), 82–122.
 49. Yuriko Furuhashi, 'Architecture as Atmospheric Media: Tange Lab and Cybernetics', in *Media Theory in Japan*, ed. by Marc Steinberg (Durham: Duke University Press, 2017), pp. 59–65.
 50. Shūji Hayashi, *Ryūtsū kakumei: Seihin, keiro, oyobi shōhsha [The Logistics Revolution: Products, Pathways, and Consumers]* (Tokyo: Chūō Kōron Shinsho, 1962).
 51. Tessa Morris-Suzuki, *Beyond Computopia: Information, Automation, and Democracy in Japan* (London and New York: Kegan Paul International, 1988), pp. 6–24.
 52. Kenzō Tange, 'Nihon retto no shōraizō [The Future Vision of the Japan Archipelago]', *Chūō kōron* (January 1965).
 53. Jean Gottmann, *Megalopolis: The Urbanized Northwestern Seaboard of the United States* (New York: The Twentieth Century Fund, 1961).
 54. This report was entered in the government contest for the 'Design of Japan's National Land and of Citizens' Way of Life in the Twenty-First Century' in 1968 held in commemoration of the centenary of the Meiji Restoration of 1868. *21 seiki no nihon genkyūkai, 21 seiki no nihon: sono kokudo to kokumin seikatsu no miraizō [Japan in the 21st Century: The Future Vision of its Land and People's Life]* (Tōkyō: Shinkenchiku-sha, 1972).
 55. Tange, 'Tokyo keikaku-1960, sono kōzō kaikaku no teian', p. 93.
 56. Tange Kenzō and Kawazoe Noboru, 'Nihon bankokuhakurankai no motarasu mono [What Japan Expo Brought About]', *Shinkenchiku* (May 1970), 147. For an analysis of the expo's architecture as an information age design, see Hyunjung Cho, 'Expo' 70: The Model City of an Information Society', *Review of Japanese Culture and Society*, v. XXIII (December 2011), 57–71; Makoto Kikuchi, 'Jōhōka shakai no toshi no kikan kōzō [Urban Infrastructure of Information Society]', in *Metabolism: The City of the Future* (Tokyo: Mori Art Museum, 2011), p. 281.

Illustration credits

arq gratefully acknowledges:
Akio Kawasumi, 1
Tange Associates, 2–7

Acknowledgements

This work was supported by the faculty basic research fund of KAIST.

Author's biography

Hyunjung Cho is an assistant professor in the School of Humanities and Social Sciences at KAIST (Korean Advanced Institute of Science and Technology) in South Korea. Her research topics include architecture and urbanism in modern Japan and Korea.

Author's address

Hyunjung Cho
ustay76@gmail.com

