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## Information Society on Track: Communication, Crime, and the Bullet Train

*Abstract:* This article considers Japan's first bullet train line, completed in 1964, within the context of an emerging "information society." Developed for the industrial economy, the line was reinterpreted by urban planners and fiction writers as both a central infrastructure of the postindustrial society and a symbol of its promise and dangers. Infrastructure became a tool for grappling with fundamental socioeconomic changes. This essay is an intellectual and cultural history of two intersecting tracks, explaining how information became a lens through which infrastructure was read and how the bullet train became a key for understanding social change.

In 1966, anthropologist Umesao Tadao made a surprising claim about the new high-speed rail line between Tokyo and Osaka: "The Shinkansen, essentially a system for handling information, is clearly beginning to show the transformation of the railway itself from a freight-transport system to an information-transport system."<sup>1</sup> Since the introduction of railways in the late nineteenth century, beginning along the old Tōkaidō road connecting Tokyo and Kyoto, trains had become a primary means of transportation in Japan. Opening on October 1, 1964, on the eve of the Tokyo Olympics, the Tōkaidō Shinkansen (literally, the New Tōkaidō Trunk Line, but usually referred to in English by the more exciting nickname of "bullet train") improved upon earlier rail systems by most traditional measures of trans-

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1. Umesao Tadao, "Jōhō sangyō ron saisetsu," in Umesao Tadao, *Jōhō no bunmeigaku* (Tokyo: Chūō Kōronsha, 1988), pp. 119–20.

portation infrastructure, offering greater speed, safety, and comfort. In that sense, it was one more step, if a rather large one, in a long history of incremental improvement. This article seeks to understand the dynamics behind Umesao's contention that the bullet train had changed the fundamental function of trains by tracing the intertwined historical discourses on the emerging information society and on infrastructural development in 1960s Japan. Two disparate genres—urban development plans and detective fiction—overlapped in their consideration of the new high-speed rail system as a central infrastructure of an emerging information society. That convergence shows how socioeconomic changes of the time shaped the way that people understood the new railway line and how this major infrastructural project prompted new visions of Japan's future.

During the 1960s, the idea was taking hold that Japan was in the midst of a second industrial revolution. The emerging socioeconomic structure, referred to as an “information society” (*jōhō shakai*), centered around the growing prominence of information industries and communications technologies within Japan's society and fast-growing economy.<sup>2</sup> The bullet train, a massive high-speed transportation infrastructure, both marked and embodied this turning point, participating in the conceptualization of Japan as an information society. At the time the world's fastest regularly scheduled train, the new line drew global attention and became a source of national pride. Because of that prominence, it was drawn into evolving visions of Japan's future.<sup>3</sup> Originally conceived as the solution to problems of the industrial economy, it was soon reinterpreted as an essential element of postindustrial Japan. By examining the ways in which four prominent individuals—a renowned architect (Tange Kenzō), a powerful politician (Tanaka Kakuei), a pioneering sociologist (Isomura Eiichi), and a best-selling fiction writer (Kajiyama Toshiyuki)—imagined the bullet train within the context of such socioeconomic transformations, this article explains how information came to be a lens through which infrastructure was read and how the bullet train became a key for understanding social change.

Thirty years ago, historian Tessa Morris-Suzuki wrote a groundbreaking book about the development of Japan's information society. Focused on government and scholarly plans for economic development based on the expansion of computer use, her story begins with the rise of this trend in 1969, a focal point of scholarly attention to the topic.<sup>4</sup> This article examines the prehistory of the computerized information society, consider-

2. Other frequently used labels included “information industry society” (*jōhō sangyō shakai*) and “informationized society” (*jōhōka shakai*).

3. Fujii Satoshi, *Shinkansen to nashonarizumu* (Tokyo: Asahi Shinbun Shuppan, 2013), pp. 110–32.

4. Tessa Morris-Suzuki, *Beyond Computopia: Information, Automation, and Democracy in Japan* (New York: Kegan Paul International, 1988). Also see, for example, Yoneji

ing the “old” industrial-age technology of the railway in terms of the “new” socioeconomic trends of the 1960s and early 1970s, in order to show how people grappled with the changes going on around them in that moment of transition to a postindustrial society. It joins a nascent body of scholarship that seeks to interpret the intangible realm of information in terms of the physical infrastructures that support it.<sup>5</sup>

This article also contributes to the growing field of infrastructure studies. Following on work primarily in anthropology, historians and other humanists have begun to examine the significance of transportation infrastructure beyond technological progress or human mobility.<sup>6</sup> Anthropologist Brian Larkin explains that, in addition to their technical function of transportation, infrastructures such as railways also perform aesthetic functions.<sup>7</sup> The bullet train was built for high-speed intercity transportation, but it also conveyed meanings and elicited emotional responses, making it a powerful rhetorical tool available to both planners and their critics. The conceptualization of the bullet train in terms of information was deployed in efforts to resolve some of the major challenges facing Japanese society in the 1960s, including the economic dislocation accompanying high-speed growth and the transition from an industrial to an information society, as well as the twin problems of urban overpopulation and rural depopulation. In this context, planners used high-speed rail as a tool in efforts to solve these problems, but they disagreed about how the tool worked. And popular fiction about the train provided a counternarrative to rosy views of fast-flowing information undergirding a more equal society, thus contributing to national debates and casting doubt on the claims made by conservative leaders in a voice that reached a mainstream audience.

It may seem strange to talk about a train in terms of communication in the mid-twentieth century, a time when electronic telecommunications technologies had already revolutionized long-distance communication. But

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Masuda, *The Information Society: As Post-Industrial Society* (Tokyo: Institute for the Information Society, 1980).

5. For instance, Yuriko Furuhashi, “Architecture as Atmospheric Media: Tange Lab and Cybernetics,” in Marc Steinberg and Alexander Zahlten, eds., *Media Theory in Japan* (Durham NC: Duke University Press, 2017), pp. 52–79; Thomas Lamarre, *The Anime Ecology: A Genealogy of Television, Animation, and Game Media* (Minneapolis: University of Minnesota Press, 2018).

6. For examples related to the bullet train and other railways in Japan, see Alisa Freedman, *Tokyo in Transit: Japanese Culture on the Rails and Road* (Stanford: Stanford University Press, 2011); Fujii, *Shinkansen to nashonarizumu*; Christopher P. Hood, *Shinkansen: From Bullet Train to Symbol of Modern Japan* (New York: Routledge, 2006); Kondō Masataka, *Shinkansen to Nihon no hanseiki: ichi-okunin no Shinkansen—bunka no shiten kara sono rekishi o yomu* (Tokyo: Kōtsū Shinbunsha, 2010).

7. Brian Larkin, “The Politics and Poetics of Infrastructure,” *Annual Review of Anthropology*, Vol. 42 (2013), pp. 327–43.

within the early discourse of the information society, the bullet train—as a new, high-speed connection between distant places—was drawn into efforts to shape Japan’s future by restructuring and expanding existing systems for the creation and dissemination of information. The bullet train was a “vanguard of the information society” for its role in speeding up the transmission of information and for its use of computerized systems for traffic control and seat reservations.<sup>8</sup> Examining the historical meanings attached to the new line in that context shows how urban planners and other intellectuals grappled with the momentous changes taking place around them and articulated competing visions for Japan’s future. The intellectual discourse that placed the bullet train at the center of Japan’s information society reveals a fundamental conflict over what that future should look like and how to get there, as development planners within and outside the government sought to use the communications potential of high-speed rail to promote their policy goals and producers of popular culture presented alternative views. A challenge to official visions can be seen, for instance, in popular culture materials focused on the bullet train. Stories about corruption and exploitation in the planning and construction of the line presented a social critique to a popular audience, drawing attention to the negative social effects of informationization.

This article examines the writings of three major figures in urban planning and one exemplary fictional representation of the bullet train to show how conflicting understandings of the role of high-speed rail in an information society were used in arguments for political, social, and economic change, transforming the ways that people thought of both railways and information. Tange Kenzō, one of the most prominent Japanese architects of the time, extended his attention beyond buildings themselves to consider how buildings connected to infrastructures and fit into larger urban and regional spaces. He led the so-called Tange Lab at the University of Tokyo and maintained close personal and institutional ties to upper-level bureaucrats and government agencies. Tanaka Kakuei, a leader of the conservative ruling party, had served as minister of posts and telecommunications, then as minister of finance during construction of the New Tōkaidō Line, and as minister of international trade and industry before becoming prime minister in 1972. Isomura Eiichi helped establish the field of urban sociology in Japan in the early postwar period. After 25 years of working for the municipal government of Tokyo, he embarked on a second career in academia in

8. Kondō, *Shinkansen to Nihon no hanseiki*, pp. 105–18. Few histories of the bullet train touch on the information society context of the new line’s opening. Suda Hiroshi briefly explains how it became “the transport appropriate for businessmen of the information age,” but that is in reference to increasing access to information in stations and train cars in the 1980s: Suda Hiroshi, *Tōkaidō Shinkansen sanjū-nen* (Tokyo: Taishō Shuppan, 1994), p. 201.

1953. Kajiyama Toshiyuki was a popular author of detective fiction, whose story of corruption in land acquisition for the “dream super-express” was part of a boom in novels and films exposing the dark side of the high-speed growth era.

Though differing in both approach and conclusions, the four individuals examined here all used the prominent, popular, and familiar image of the bullet train to take their case for Japan’s future development to the public. Using the well-known and concrete technology of the railway to explain the relatively intangible concept of an information society, they contributed to an expansive view of information transmission that colored the further development of Japanese communications infrastructure and also redefined the meaning of the railway to accord with a changing society. After introducing the emergence of the information society concept in Japan, this article examines these four different views of the ways the informational turn would change Japanese society, each using the powerful imagery of the bullet train to help chart an unknown future.

### *The Idea of an Information Society*

Umesao Tadao, one of the developers of the concept of information society, foresaw a fundamental transformation of Japanese society and economy and identified the operation of the bullet train as one of many factors driving these changes. Umesao coined the phrase “information industry” (*jōhō sangyō*) in 1961, then elaborated on the concept in a 1963 article predicting the rise of the information industry, defined to include any enterprise dealing with information as a commodity, including its creation, storage, sale, and dissemination.<sup>9</sup> His definition of this new industrial category encompassed the mass media and publishing industries, as well as the construction and operation of communications infrastructures, and things like detective agencies and tourism, which he interpreted as the commodification of “experiential information.” As a means of speeding up the transmission of information carried by people, whether physically recorded or stored only in their minds, the bullet train helped promote information industries and could itself be situated within that category. Originally published in a broadcasting industry journal, Umesao’s ideas reached a broader audience when this article was reprinted just a few months later in the popular journal of opinion *Chūō kōron*.<sup>10</sup> Although the specifics of his argument, which mapped the development of information society along the path of evolution

9. Umesao describes his development of and publication about the concept in Umesao Tadao, *Jōhō no bunmeigaku* (Tokyo: Chūō Kōronsha, 1988), pp. 7, 28.

10. The original publication was in the January 1963 issue of *Hōsō asahi*. A lightly revised version was published in *Chūō kōron* in March 1963. That version of the article, “Jōhō sangyō ron,” is reprinted in Umesao, *Jōhō no bunmeigaku*, pp. 27–52.

in the animal kingdom, have been criticized as an explanation of social change, nevertheless, the article is important to this history, as it helped start the information society boom in Japan, a flood of books and articles that, by bringing the idea to the forefront of many disciplines, promoted the actual “informationization” of Japanese society.<sup>11</sup>

An extension of the idea of information industry, information society—or sometimes “informationized society” (*jōhōka shakai*)—is a concept that gained traction in intellectual and policy planning circles in Japan by the late 1960s. Hayashi Yūjirō, a professor at the Tokyo Institute of Technology and advisor to the government’s Economic Planning Agency, began to use the concept in 1967 and published a book on the topic in 1969. In the same year, study groups attached to the Economic Planning Agency and the Industrial Structure Council (a think tank operating under the aegis of the Ministry of International Trade and Industry) produced official reports and plans grappling with this phenomenon.<sup>12</sup> Hayashi explained informationization as a process of social and economic change, analogous to nineteenth-century industrialization, by which value comes to be produced increasingly by intangible information, more than tangible material goods.<sup>13</sup> Part of that process was a trend toward viewing Japan’s economy, industrial structure, and society as a whole in terms of information.

The bullet train provides an example of this change in the ways that scholars and policymakers viewed the economy. Though the new line had originally been conceived and planned as the solution to a problem impeding further industrial development—a transportation bottleneck along the country’s most dense industrial corridor—Umesao placed it firmly within the category of information industry. The bullet train differed from earlier railroad systems, he explained, in that it carried no freight, but only passengers. In Umesao’s view, this meant that “it carries information, or it carries people who are stuffed full of information. . . . Those who have meetings in Tokyo or Osaka or the like, it carries that kind of people.”<sup>14</sup> Though he refers specifically here to business travelers using the bullet train to get to meetings, his earlier explanation that anyone bringing their travel experiences home with them should be seen as an information carrier meant that both business and leisure passengers were traveling for the purpose of

11. Itō Yōichi, “Jōhō shakai gainen no keifu to jōhōka ga shūkyō ni oyobosu eikyō,” *Tōyō gakujuutsu kenkyū tsūshin*, Vol. 28, No. 3 (1989), pp. 35–36.

12. Hayashi Yūjirō, “Jōhō shakai to atarashii kachi taikei,” *Chochiku jihō*, No. 74 (1967), pp. 20–25; and Hayashi Yūjirō, *Jōhōka shakai: hādona shakai kara sofutona shakai e* (Tokyo: Kōdansha, 1969). These works are usually taken to mark the height of the information society boom. On these and similar texts, see Itō, “Jōhō shakai gainen,” pp. 33–42; and Morris-Suzuki, *Beyond Computopia*.

13. Quoted in Itō, “Jōhō shakai gainen,” pp. 38–39.

14. Umesao, “Jōhō sangyō ron saietsu,” pp. 119–20.

transmitting information. In fact, planners at Japanese National Railways (JNR) had initially intended to run super-express freight trains on the new line at night, when passenger trains were not running, but that plan was scrapped due to considerations of cost and track maintenance.<sup>15</sup> Though these practical reasons were behind the decision not to use the new line for freight, from Umesao's point of view, limiting the line to passenger traffic had a profound impact on its essential character. A transportation system conceived as the solution to an industrial problem became an infrastructure of the information society.

Later, in retrospective views of the bullet train's impact, Umesao used a neural metaphor to emphasize its historical significance. As "a kind of information transmission system," he argued, the bullet train could be compared "not to the vascular system carrying nutrition through the entire body, but rather to the central nervous system that controls and coordinates all of its functions."<sup>16</sup> In the late nineteenth century, the nation-building potential of railways was often represented through images of "iron rails as the bones and sinews of the nation."<sup>17</sup> In addition, the sense that railroads carried the nourishment of urban production to all parts of the country produced a vascular imagery and, eventually, the labeling of trunk lines as "arteries."<sup>18</sup> The shift from arterial to neural metaphors that marked discussions of the bullet train reflects a new conception of rail transportation, from the classic industrial model to an information society understanding, in which trains exercised a "neural" control function. This change is clearly connected to the influence of cybernetics, a concept developed by American information studies innovator Norbert Wiener during the 1940s and 1950s and soon popularized in Japan.<sup>19</sup>

15. "Kamotsu densha mo hashiraseru: Shin Tōkaidōsen, shin'ya o riyō," *Asahi shinbun*, July 7, 1960, morning edition, p. 11; Sekine Shoichi, "Traffic Handling System," *Japanese Railway Engineering*, Vol. 5, No. 4 (1964), p. 37; "Tōkaidō Shinkansen no kamotsu ressha wa dannen? Kokutetsu," *Asahi shinbun*, January 29, 1965, morning edition, p. 2.

16. Umesao Tadao, "Bunmei kaeru chūsū shinkei: Shinkansen no 10-nen," in *Umesao Tadao chosakushū: Nihon kenkyū* (Tokyo: Chūō Kōronsha, 1990), p. 403. Originally published in *Asahi shinbun*, September 20, 1974.

17. Bruce A. Elleman, Elisabeth Köll, and Y. Tak Matsusaka, "Introduction," in Bruce A. Elleman and Stephen Kotkin, eds., *Manchurian Railways and the Opening of China: An International History* (Armonk NY: M. E. Sharpe, 2010), p. 7.

18. Itō, "Jōhō shakai gainen," p. 34.

19. A Japanese translation of Wiener's *Human Use of Human Beings: Cybernetics and Society* (New York: Houghton Mifflin, 1954) was published as *Ningen kikairon: saibanetik-kusu to shakai*, trans. Ikehara Shikao (Tokyo: Misuzu Shobō, 1954). Translations of two other books by Wiener (including his autobiography) came out in 1956, and his seminal *Cybernetics; or, Control and Communication in the Animal and the Machine* (New York: J. Wiley, 1948), which first introduced the concept of cybernetics to the English-reading public, was published in Japan as *Saibanetik-kusu: dōbutsu to kikai ni okeru seigyō to tsūshin*, trans. Ikehara Shikao, Iyanaga Shōkichi, and Muroga Saburō (Tokyo: Iwanami Shoten, 1957).

Cybernetics, the study of the relationship between communication and control, proposed a basic analogy between machines and animals in their use of information-feedback paths for self-control: in both cases, the command center (brain) sends a command via the nervous system, information returns by the same path, and the brain responds by adjusting and sending a new command for action, in a constantly repeating pattern. Wiener argued that the feedback mechanisms that control the functions of machines were analogous not only to living organisms but also to society as a whole.<sup>20</sup> This certainly implied centralized control. In *The Human Use of Human Beings: Cybernetics and Society*, he wrote, “where a man’s word goes, and where his power of perception goes, to that point his control and in a sense his physical existence is extended. To see and to give commands to the whole world is almost the same as being everywhere.”<sup>21</sup> But for Wiener, this did not imply despotism. Rather, he viewed control of the means of communication as the glue that holds together any organism—including human society.<sup>22</sup>

In the United States, cybernetics and information theory gained broad use in explanations of human behavior across many fields (such as management, psychology, sociology, political science, and anthropology) and cybernetics systems modeling was prevalent in urban planning by the early 1960s.<sup>23</sup> Several of Wiener’s writings on cybernetics were translated into Japanese in the 1950s, and the major daily *Yomiuri shinbun* deemed the earliest of these a “must-read.”<sup>24</sup> Japanese scholars in many disciplines joined the international cybernetics boom. Urban planning, which was a relatively new discipline in Japan, was a fertile field for the burgeoning fascination with the function and implications of information flows and feedback loops, especially in the area of communications and transportation infrastructure. From the cybernetic perspective, because the railroad had increasingly lost its freight transport function in favor of its communicative function,

20. Norbert Wiener, *Cybernetics; or, Control and Communication in the Animal and the Machine*, second ed. (Cambridge MA: MIT Press, 1961).

21. Norbert Wiener, *The Human Use of Human Beings: Cybernetics and Society* (Garden City NY: Doubleday, 1954), p. 97.

22. Wiener, *Cybernetics*, 2nd ed., pp. 160–61.

23. Ronald R. Kline, *The Cybernetics Moment: Or Why We Call Our Age the Information Age* (Baltimore MD: Johns Hopkins University Press, 2015), pp. 134–37, 192.

24. “Jihyōteki shohyō: saibanetchikkusu,” *Yomiuri shinbun*, March 28, 1954, morning edition, p. 8. Also see, among others, “Saibanetikkusu o megutte (1): ‘jōhō’ o ryō de hakaru ‘ōtomēshon’ no genri: ōyō sūgakusha,” *Asahi shinbun*, March 20, 1956, morning edition, p. 5; “Saibanetikkusu o megutte (2): dainō no shinpi o toku: seirigakusha,” *Asahi shinbun*, March 21, 1956, morning edition, p. 5; “Saibanetikkusu o megutte (3): kotoba o katahashi kara ‘ryōka’: gengo gakusha,” *Asahi shinbun*, March 23, 1956, morning edition, p. 5; “Saibanetikkusu o megutte (4): kikai to no heiwa kyōzon: bungei hyōronka,” *Asahi shinbun*, March 23, 1956, morning edition, p. 5; and Yokoyama Sensaku, “Saibanetikkusu to tetsudō,” *Un’yu to keizai*, Vol. 24, No. 4 (1964), pp. 48–51.

Umesao insisted, it had become “a major information facility of modern society.”<sup>25</sup> In 1950, the railway carried 52 per cent of all freight and 92 per cent of passenger transport; a decade later, those percentages had fallen to 39 and 76 per cent, respectively; by 1970, the numbers were down to 18 and 49 per cent, while automobiles carried 39 per cent of freight and just under half of all passengers.<sup>26</sup> Both passengers and goods were rapidly moving off the rails to other forms of transportation (primarily automobiles), but the railway’s share of freight transportation was extremely low, even as trains maintained a sizable hold on passenger traffic. In this context, Umesao called for the railroad industry to adapt to overwhelming economic trends by purposefully embracing its role as an information carrier, thus promoting the functional integration of the entire country. And the bullet train, in his view, was leading the way.

The neural metaphor that Umesao used had become ubiquitous with the putative dawn of the information age, as pundits and planners assigned the functions of brain, spinal cord, and nerves to various aspects of the nation’s infrastructure, reflecting the role of transportation and communications technologies in social control. The bullet train was imagined as facilitating central control by delivering both command and feedback between the “brain” in Tokyo and the rest of the national body of Japan. In addition to the growing sway of cybernetics, this image is also related to specific aspects of the functioning of the bullet train system, especially the electronic Centralized Traffic Control system, which integrated the monitoring, management, and guidance of bullet trains on the line through operation display panels at the headquarters in Tokyo Station and communication with drivers and crews on the trains. With increasing traffic, this system was upgraded to the computer-assisted COMTRAC (Computer-Aided Traffic Control) system in 1972.<sup>27</sup> Advances in the use of electronic communication and automated controls led Sogō Shinji, in a speech delivered in May 1964 after his resignation as JNR president, to claim that the bullet train indicated the direction for success in the information age for railways all around the world.<sup>28</sup>

The intimate connection between communication and control made the bullet train particularly interesting to planners looking for ways to solve Japan’s problems in the context of informationization. Japanese planners

25. Umesao Tadao, “Jōhō no kōgengaku,” in Umesao, *Jōhō no bunmeigaku*, pp. 233–35.

26. Mitsuhide Imashiro, “Changes in Japan’s Transport Market and JNR Privatization,” *Japan Railway and Transport Review*, September 1997, p. 50.

27. Katsuji Akita and Yutaka Hasegawa, “History of COMTRAC: Development of the Innovative Traffic-Control System for Shinkansen,” *IEEE Annals of the History of Computing*, Vol. 38, No. 2 (2016), pp. 11–21.

28. Sogō Shinji, “Gijutsu kakumei to Shinkansen,” in Yamazaki Akira, ed., *Kōki shinkansen kōenshū: sono kansei katei hōkoku* (Tokyo: Nihon Kōtsū Kyōkai, 1964), pp. 5–9.

were not the first or last to think of transportation and communications infrastructures in terms of control. From the roads of the Roman Empire to Internet protocols in our contemporary world, institutions and individuals have mobilized new information technologies to expand or bolster their control over land and populations.<sup>29</sup> The general path of Japan's first bullet train, a line connecting the nation's five largest cities, had been used in such ways since at least the seventeenth century, when horsemen barreled down the Tōkaidō road, conveying the intelligence and commands that facilitated shogunal governance. Well before the introduction of railroad technology to Japan, the Tōkaidō was the most important of the five main roads developed and maintained, but also closely monitored and regulated, by the Tokugawa shogunate as a means to establish and solidify its control.<sup>30</sup> This channel was thus initially developed as part of a state effort to facilitate and control mobility and communication in order to maintain its power and extend its range of governance.

That method of solidifying and exerting power continued under the new regime that took over in 1868 with the Meiji emperor as its titular head. As part of a wide-ranging program of modernization along Western lines, the Meiji government built the infrastructure for an industrialized capitalist economy in Japan, including railroads, and the priority was the Tōkaidō route. Japan's first railroad ran from Shinagawa in Tokyo to Yokohama, comprising what would eventually become the easternmost end of the original Tōkaidō Trunk Line. A section at the western end was completed by 1877. While private companies built lines in other parts of Japan, the national rail agency focused on the Tōkaidō, completing the route in 1889.<sup>31</sup> During World War II, a planned but never built high-speed railway between Tokyo and Shimonoseki (in many ways a precursor to the bullet train) was envisioned as a tool for solidifying the Japanese empire and called "the great artery of Asian development."<sup>32</sup> By the late 1950s, the Tōkaidō region had become heavily industrialized and even more densely

29. James R. Beniger, *The Control Revolution: Technological and Economic Origins of the Information Society* (Cambridge MA: Harvard University Press, 1986), p. 21. On protocols and control, see Alexander R. Galloway, *Protocol: How Control Exists after Decentralization* (Cambridge MA: MIT Press, 2004).

30. Constantine Nomikos Vaporis, *Breaking Barriers: Travel and the State in Early Modern Japan* (Cambridge MA: Harvard University Press, 1995), pp. 17–55.

31. On early railroad development in Japan, see Steven J. Ericson, *The Sound of the Whistle: Railroads and the State in Meiji Japan* (Cambridge MA: Harvard University Asia Center, 1996).

32. Quotation is from Tetsudōshō Kansen Chōsaka, "Tōkyō-Shimonoseki Shinkansen no zōsetsu," *Shūhō*, No. 192 (June 19, 1940), pp. 35–39. Also see "Tōkyō/Shimonoseki no kansen ni kōa no dangan ressha," *Asahi shinbun*, October 28, 1939, morning edition, p. 11; "Senro no haba ga hiroku naru: 'dangan ressha' no subarashii keikaku," *Asahi shinbun*, November 12, 1939, morning edition, p. 6; and "Shin Tanna suidō jichinsai," *Yomiuri shinbun*, September 20, 1941, morning edition, p. 3.

populated. As Japan headed into a period of high-speed economic growth, demand was beginning to outstrip capacity on the Tōkaidō Trunk Line. This trend prompted a decision to build the new standard-gauge, high-speed line alongside the existing trunk line, cutting the running time between Tokyo and Osaka by more than half.

What was new in the 1960s, compared to these earlier examples of transportation development as a means of control, was the growing dominance of information in Japan's society and national economy. While the wartime line, for instance, was intended to increase the state's military control by facilitating movement of troops and war materiel, the bullet train increased cybernetic control. And what differentiates it from our present day of instantaneous digital communication is the nascent state of the telecommunications industry at the time. At the turning point from industrial to information society, the tools of industry were reimagined to function in the world of information and used to further expand that world. In the burgeoning information society of 1960s Japan, the patterns of mobility created by the bullet train inspired new ideas about the potential for flows of information to reorganize the national space of Japan, in terms of population, industry, and economic activity. Urban planners linked the communication functions of the bullet train to central issues of regional and national development and, in doing so, helped promote the information society and transform perceptions of railways.

### *Tange's Cybernetic Megalopolis*

The bullet train ran straight down the center of Tange Kenzō's vision of Japan's future. Because the new line would significantly expand the region's communications infrastructure, he saw it as an important factor making the Tōkaidō belt into the "spinal cord" of the emerging information society.<sup>33</sup> Tange was among the first to interpret the bullet train in terms of cybernetics. That concept was fundamental to his early 1960s urban planning for Tokyo and the Tōkaidō area and more broadly to the architectural movement known as Metabolism, of which he was a central figure as the mentor of its founding members. The foundational principle of this movement, which was prominent in 1960s Japan, was to design buildings and cities with an organic adaptability to change; its proponents insisted that cities must be

33. Tange Kenzō, "Nihon rettō no shōraizō: Tōkaidō Megaroporisu no keisei," *Chiiki kaihatsu*, No. 2 (1964), p. 8. A heavily revised version of this article was published several years later in English (as well as German and French) as Kenzo Tange, "Tokaido-Megalopolis: The Japanese Archipelago in the Future," in Udo Kultermann, ed., *Kenzo Tange, 1946–1969: Architecture and Urban Design* (New York: Praeger, 1970), pp. 150–67. Media scholar Yuriko Furuhashi examines the impact of the "information society" concept on architectural criticism in the 1960s through the works of Tange and other Metabolists in Furuhashi, "Architecture as Atmospheric Media."

seen not as a set of fixed buildings and infrastructures, but rather in terms of a constant process of renewal. The idea of urban space as living and growing was central for Tange, who held that effective spatial planning required consideration of Tokyo, the Tōkaidō region, and the entire Japanese archipelago as a single organic structure.

Even before the label “information society” was popularized in Japan, Tange had begun to rethink urban planning in terms of information flows. Cybernetics had captured his imagination in the late 1950s and soon became the basis of his radical reconceptualization of nationwide urban development, based on the argument that, as an organic structure, society requires strong and capacious information connections to facilitate its self-control. It was during his 1959 stint as a visiting professor at the Massachusetts Institute of Technology (MIT) that he began to think about space in terms of information, communication, and cybernetics. MIT was a dynamic center of information studies at the time, boasting among its faculty several prominent figures in the development of information theory, including Wiener, the originator of cybernetics; Claude Shannon, often called the “father of the information age”; cybernetician Warren McCulloch; and logician Walter Pitts, among others. Tange later pinpointed his stay at MIT as the beginning of his interest in information.<sup>34</sup>

Tange began applying the concepts of cybernetics to urban and regional planning with the ambitious “1960 Plan for Tokyo,” prepared in cooperation with his research group and drawing on work he did at MIT. In this design, introduced to the Japanese public through a televised New Year’s Day presentation, Tange used Tokyo’s population milestone of ten million people as a prompt to tackle the specific problems created by urban overpopulation.<sup>35</sup> Concerned primarily with facilitating mobility between and through cities that were becoming more crowded and sprawling every year, he focused on designing efficient communications and transportation infrastructures. Though the plan did not use the word “information,” it emphasized the central role of communication in the modern mega-city and contemporary society as a whole.<sup>36</sup> As Rem Koolhaas and his coauthors explain in their extensive exploration of Tange and the Metabolists: “What Tange’s team does not mention is industry: their city is postindustrial, designed for the tertiary sector, a city composed by its flows of communication, information, and road traffic.”<sup>37</sup> No one had yet called Japan an information so-

34. Kenzo Tange, “Recollections: Architect Kenzo Tange (5),” *Japan Architect*, Vol. 60, No. 8 (1985), p. 7.

35. Rem Koolhaas et al., *Project Japan: Metabolism Talks* (Köln: Taschen GmbH, 2011), pp. 442–43.

36. Kenzo Tange et al., “A Plan for Tokyo, 1960: Toward a Structural Reorganization,” *Japan Architect*, Vol. 60, No. 4 (1961), pp. 8–34.

37. Koolhaas et al., *Project Japan*, p. 284.

ciety, but Tange's plans were based on the developments implied by that label. Tange had already proposed methods to ease population pressure on Tokyo through communications infrastructure during World War II in his prize-winning but never realized proposal for a Greater East Asia memorial, which envisioned an urbanized axis linking Tokyo to the foot of Mount Fuji.<sup>38</sup> Perhaps a glimmer of the future information society was already visible two decades earlier.

Not only Tokyo, but the entire country was struggling with demographic change as populations shifted from rural to urban areas, especially the cities of the Tōkaidō region. Between 1950 and 1960, the national population increased by about ten million people, but urban areas increased by roughly 28 million, while rural areas fell by 18 million.<sup>39</sup> Responding to this broad demographic challenge, Tange further developed the concepts laid out in the 1960 Plan a few years later, expanding the scope from metropolis to archipelago with a proposal for a "national axis" made up of communications and transportation infrastructures, a new spinal cord for a restructured national body. In this conceptualization of a "Tōkaidō Megalopolis," Tange made his focus on information explicit.<sup>40</sup> He saw the ongoing "information revolution" identified by Umesao as the fundamental change shaping Japan's future:

If the first industrial revolution was a revolution connected to the production of goods, one can say that the second industrial revolution is a revolution in handling information. As opposed to a revolution of the body, one can say it is a revolution of the nerves and brain. By reinforcing the nervous system in this way, contemporary society is developing its organic structure.<sup>41</sup>

Just weeks before the opening of the New Tōkaidō Line, in August 1964, Tange incorporated this new infrastructure into a plan for the future organization of the nation as a continuous urban space connecting first Tokyo and Osaka, then eventually extending from one end of Japan to the other.<sup>42</sup>

38. Tange Kenzō, "Dai TōA kensetsu kinen eizō keikaku: Kyōgi sekkei tōsen zuan," *Kenchiku zasshi*, Vol. 56, No. 693 (1942), pp. 963–65.

39. Statistics Bureau of Japan, "Historical Statistics of Japan: Population and Households," <http://www.stat.go.jp/english/data/chouki/index.html> (accessed December 1, 2019).

40. Railway historian Harada Katsumasa identified the creation of the Tōkaidō Megalopolis as the "epochal significance" of the bullet train, though he did not explain it in terms of information. Harada Katsumasa, *Tetsudō no kataru Nihon no kindai* (Tokyo: Soshiete, 1983), pp. 247–52. For a broader treatment of the concept of the megalopolis in Japan, see Jeffrey E. Hanes, "From Megalopolis to Megaroporisu," *Journal of Urban History*, Vol. 19, No. 2 (1993), pp. 56–94.

41. Tange, "Nihon rettō no shōraizō," pp. 6–7.

42. Tange presented this to the Japan Center for Area Development Research, a group he had recently cofounded as a structure for cooperation on urban and regional planning among academia, industry, and government (Koolhaas et al., *Project Japan*, p. 678).

In this plan, Tange applied Wiener's cybernetic theory to emerging concepts of Japan as an information society by pairing dynamic economic and demographic changes with what he saw as a deepening of Japanese society's organic structure and linking both to the flow of information.<sup>43</sup> His premise was that spatial structures must be able to grow and change, that they must be divided by function, and that these functions must be coordinated and aggregated to support the life of the organic structure (i.e., society). Based on the cybernetic analogy that machines, living beings, and society as a whole all relied on feedback mechanisms for self-control, he emphasized the importance of "informational couplings" that allowed for two-way communication: command and feedback. He concluded that the development of communications technologies was effectively deepening the organic structure of society, such that it could automatically control its own actions and adapt to changing circumstances better than in the older industrial society.<sup>44</sup>

In spite of the development of telecommunications technologies, Tange emphasized high-speed rail and roads. The instruments of electronic mass communication, such as radio and television, contributed to the flow of information, but they lacked the essential element of feedback. Although the telephone allowed two-way communication over long distances, Tange dismissed such "indirect communication" as insufficiently developed to replace face-to-face exchanges among many people. He argued, therefore, that transportation was becoming increasingly important as a means of information connection.<sup>45</sup> Thus, for Tange, the two mutually reinforcing processes characterizing contemporary Japan (and the capitalist world as a whole)—the intensification of economic and population growth and the deepening of the organic structure of society—both relied on increasingly fast and efficient flows of information embodied primarily in human transportation. Comparing urban areas to artificial intelligence devices, he stated, "Just as every electron in an electronic brain takes up and moves information, so information processing takes place through human transportation, as every individual person moves around like an electron."<sup>46</sup> In the anthropomorphized metabolic structure of the Japanese national body, Tange positioned people as electrons, whirling around in the brain (Tokyo) and moving along lines of the network to other parts of the organism with messages from the brain.<sup>47</sup> This analogy led him to conclude that the future

43. Tange, "Nihon rettō no shōraizō," p. 2.

44. *Ibid.*, p. 6.

45. The premise that the importance of face-to-face communication increased the need for high-speed transportation became the basis a few years later for an argument for construction of an even faster bullet train on the Tōkaidō route: Oku Takeshi, Kyōtani Yoshihiro, and Sanuki Toshio, *Chōkōsoku Shinkansen: Tōkyō-Ōsaka ichijikan* (Tokyo: Chūō Kōronsha, 1971), pp. 25–29.

46. Tange, "Nihon rettō no shōraizō," p. 6.

47. Tange, "Tokaido-Megalopolis," p. 154.

organic society needed a new physical structure: a single megalopolis that would ultimately extend over the entire archipelago, with peripheral cities connected all along the length of the central “spinal column.” Tange’s was fundamentally a centralizing plan. By positing one city as the brain of an organically structured society, he envisioned information flows as enhancing central control of the nation as a whole.

The megalopolis concept reveals a contradiction inherent in Tange’s work, and in the Metabolist movement more generally, between the element of control implied in centrally planned designs and the aim of designing for greater freedom and equality in the aftermath of the political crisis surrounding the 1960 Japan-U.S. Security Treaty revision. While the emphasis on creating more efficient flows of information accommodated democratizing principles, scholars have identified autocratic elements in Tange’s work. For instance, architecture critic Hajime Yatsuka and media scholar Yuriko Furuhashi both draw a connection between Tange’s plans for regional development and the biopolitical spatial imagination behind colonial planning for Manchuria in the 1930s and early 1940s.<sup>48</sup> Architectural historian Zhongjie Lin notes a tension not only among the Metabolists but in modernity itself between the competing ideologies of rationalism and libertarianism, producing conflicting ideals of society as either highly regulated and centralized or decentralized and locally organized. He sees in Tange’s approach to regional planning the architect’s “technocratic ambition, that is, to control the development of the whole nation by means of modern technology, management, and planning.”<sup>49</sup> But he argues that this approach—the Metabolists’ desire for a master planner—contradicted their fundamental goal of designing urban spaces that would cultivate democratic societies. Furuhashi shows that Japanese scholars of communication studies were very much aware of the tension between the “emancipatory potential of communication” and the possibility that it might become, as liberal intellectual Tsurumi Shunsuke put it, “a technique that benefits the oppressor.”<sup>50</sup>

That contradiction is visible in Tange’s plan, aimed at increasing the quantity, speed, and efficiency of the information transfer that is central to both a vibrant economy and a healthy democracy, but through highly centralized planning. Tange himself claimed to be designing for “an atmosphere of freedom and constant choice” through the development of information connections.<sup>51</sup> But, in accordance with the cybernetic analogy, he proposed a structure of completely centralized control by a brain center in Tokyo,

48. Hajime Yatsuka, “The 1960 Tokyo Bay Project of Kenzo Tange,” in Arie Graafland, ed., *Cities in Transition* (Rotterdam: 010 Publishers, 2001), pp. 178–91; and Furuhashi, “Architecture as Atmospheric Media,” pp. 58–59.

49. Zhongjie Lin, *Kenzo Tange and the Metabolist Movement: Urban Utopias of Modern Japan* (New York: Routledge, 2010), pp. 90, 95.

50. Quoted in Furuhashi, “Architecture as Atmospheric Media,” p. 68.

51. Tange, “Tokaido-Megalopolis,” p. 157.

which sent out commands and received feedback from all parts of the nation through a system of high-speed trains and expressways. The cybernetic approach to urban planning helped smooth this contradiction between control and design for greater freedom by placing autonomous individuals within a centrally planned information feedback loop. The biological analogy helped naturalize central control by likening it to the essential function of the brain controlling the body.<sup>52</sup>

*Expanding the System: Tanaka versus Isomura*

The tension between freedom and control was central to the clash between two main views of the functions of the bullet train in an information society that emerged nearly a decade later. In 1972, the construction of a national network of high-speed rail and other infrastructures of transportation and communications was at the center of a plan for rebuilding the Japanese archipelago in the context of informationization. The much-discussed book *Nihon rettō kaizō ron* (translated into English as *Building a New Japan: A Plan for Remodeling the Japanese Archipelago*), was published under Tanaka Kakuei's name on the eve of his election as prime minister, eight years after the Tōkaidō Shinkansen opened and Tange presented his megalopolitan vision.<sup>53</sup> Urban sociologist Isomura Eiichi critiqued the Tanaka plan by attacking its basic assumptions about the impact of the bullet train as a carrier of information on population distribution, urban development, and the decentralization of power.

By this time, the idea of Japan as an information society had made its way into governing circles and attained the status of official policy, standing at the center of a number of government plans and reports devoted to the topic.<sup>54</sup> For example, the Economic Planning Agency's 1969 New Comprehensive National Development Plan took as its basic premise that Japan was becoming an information society as the result of "rapid progress in the so-called 'Second Industrial Revolution' based on the information revolution, internationalization, and technological innovation."<sup>55</sup> Policies for land

52. Ravi Ahuja notes that "organicist conceptualisations of social phenomena have the effect of legitimating contradictory social phenomena by naturalising them." Ravi Ahuja, *Pathways of Empire: Circulation, "Public Works" and Social Space in Colonial Orissa c. 1780–1914* (New Delhi: Orient Black Swan, 2009), p. 69.

53. Tanaka Kakuei, *Nihon rettō kaizō ron* (Tokyo: Nikkan Kōgyō Shinbunsha, 1972); Kakuei Tanaka, *Building a New Japan: A Plan for Remodeling the Japanese Archipelago* (Tokyo: Simul Press, 1973). Though the extent of Tanaka's actual involvement in the plan's creation or his commitment to its ideas is in doubt (see Koolhaas et al., *Project Japan*, p. 649), because it was attributed to and claimed by him, it is discussed here as his plan.

54. Morris-Suzuki, *Beyond Computopia*, pp. 8–10.

55. Economic Planning Agency, Government of Japan, *New Comprehensive National Development Plan*, 1969, p. 3.

utilization, regional development, and infrastructural expansion, including construction of new high-speed railways and other transportation and communications networks, were all built around the interconnected goals of furthering and adapting to this new reality. Elements of this blueprint for development are reminiscent of Tange's proposals, especially its understanding of the integrating functions of these expanding networks, which it envisions as "the main axis of Japan" facilitating "the central management function of Tokyo."<sup>56</sup> Echoes of Tange's ideas are perhaps not surprising, given that two graduates of Tange Lab, Shimokōbe Atsushi and Obayashi Jun'ichirō, helped shape the government's development plans throughout the 1960s as officials in the Economic Planning Agency. Shimokōbe was an especially significant figure in the upper levels of the government bureaucracy and from that position played the role of "puppet master" for the Metabolist group, implementing its vision from behind the scenes.<sup>57</sup>

Though he later denied any direct involvement, Shimokōbe is said also to have exerted a strong influence on *Nihon rettō kaizō ron*.<sup>58</sup> The book was not revolutionary in its main ideas; in its scope and details, it bore a heavy similarity to the Economic Planning Agency's 1969 development plan. The promotion of a nationwide system of high-speed rail, in particular, garnered official support in the 1970 Nationwide Shinkansen Railway Development Act (Zenkoku Shinkansen Tetsudō Seibi Hō), and construction of a line extending west from Osaka to Hakata had already begun. But the book's putative authorship by a powerful and charismatic politician stimulated popular interest, making it into a bestseller.<sup>59</sup> In a 2005 interview, Shimokōbe cast doubt onto Tanaka's own commitment to the ideas it contained.<sup>60</sup> But the question of whether Tanaka truly supported the plan as a whole or had a significant role in its creation is beside the point. The energetic response to the book—both positive and negative—among scholars and in the media, along with its purported authorship by the nation's top political figure, show the importance of the ideas it contained.

Tanaka's plan shared the same goal as Tange's—ameliorating the congestion and other problems caused by excessive concentration of population and industry in the Tokyo-Nagoya-Osaka belt—and started from the same premise that improving flows of information would contribute to public welfare. This grand proposal for massive infrastructural development across the nation included the expansion of information connections as part of

56. Ibid., p. 26.

57. Furuhashi, "Architecture as Atmospheric Media," p. 62; Koolhaas et al., *Project Japan*, pp. 13–14, 678.

58. Koolhaas et al., *Project Japan*, p. 678.

59. Komuta Tetsuhiko, *Tetsudō to kokka: "Gaden'intetsu" no kingendaishi* (Tokyo: Kōdansha, 2012), pp. 99–101.

60. Koolhaas et al., *Project Japan*, p. 649.

central government efforts to shape space and mobility, arguing that the construction of new bullet train lines and other information infrastructures could be used to redistribute population and industry more evenly across the nation. Writing at a moment when the communications potential of computers was beginning to come into focus for policymakers, Tanaka placed more emphasis than Tange had on telecommunications and computing networks as the infrastructures of the information society, but the nationwide expansion of the bullet train system was a major component of his plan to develop information industries, redistribute population, and decentralize power by making information more easily, quickly, and abundantly available in peripheral cities. Like Tange, Tanaka argued that the problems of uneven population distribution, as well as related regional economic disparities, could be eliminated through infrastructural planning.

In spite of the basic similarities between them, Tanaka's conception of the space to be created by newly built infrastructure differs drastically from Tange's, due to the specific historical contexts of their creation as well as different understandings of the impact of information flows on population mobility. Tange sought to speed up and expand connections along the Tōkaidō; in contrast, Tanaka aimed to redirect those flows outward in order to redistribute both population and industry. Blaming "psychological distance and the information gap" for preventing the regional dispersion of industrial production and population, Tanaka concluded that the construction of bullet train lines, expressways, and other networks would solve the population problem, because giving people in regional cities equal access to information would weaken the incentives for them to leave. Ultimately, the "focal cities" created by thousands of miles of super-express railroads crisscrossing the country would be within a few hours of each other, effectively unifying the urban centers and making them all as accessible as suburbs of Tokyo.<sup>61</sup> The bullet train alone would not effect these changes, but it was one of the primary components of Tanaka's plan.

While Tange envisioned the natural growth of a self-regulating organic body, shaped by information feedback, Tanaka's plan had more of a Dr. Frankenstein approach: information flowing along newly created paths would act as an electric charge intended to reanimate declining areas on the periphery. This difference emerged from their particular attitudes and goals. Tange took as his starting point the understanding that people wanted to live in Tokyo (and other Tōkaidō cities), and he aimed to develop systems and structures to facilitate mobility and communication within, between, and beyond these heavily populated cities. Tanaka, on the other hand, as the political representative of one of the peripheral areas in question, had strong professional and personal incentives to promote a model

61. Tanaka, *Building a New Japan*, pp. 114–22, 166.

that would pull people and industry out from the center.<sup>62</sup> It is perhaps no coincidence, then, that his plan aimed to direct information flows outward so that new information industries would develop in rural areas and regional cities and people would, therefore, want to stay there. While Tange took collective personal preferences as a starting point, Tanaka hoped to use the power of information flows to change those preferences.

Though Tanaka did not share Tange's vision of an organic society, he used a similar neural metaphor, calling Tokyo and other major cities the "nerve centers" of political, economic, social, and cultural functions of Japanese life, a position that had been intensified in the information age. But, shifting to other anatomical metaphors to express breakdowns in the national body, he decried this structure as one that worked to subordinate and homogenize peripheral cities, while large cities suffered from "hypertrophy" and the "arteriosclerosis" of congested traffic, as well as "asthma" caused by the resulting pollution. Smaller regional cities, in contrast, relying on distant nerve centers with none of their own, are "like a human body without a brain."<sup>63</sup> His proposed remedy for these ills was to promote the development of knowledge-intensive industries in regional centers, so that people would be lured away from Tokyo and other large cities, along the extended national network of high-speed roads and rail.<sup>64</sup> In this respect, the plan relied on the assumption that speed and convenience of travel would encourage people to move out of Tokyo, rather than exacerbate ongoing urbanization.

Tanaka also differed from Tange on the notion of centralized control, arguing:

It is often erroneously asserted that the information society is necessarily a centralized society. On the contrary, it is precisely because of improved information systems that the regulatory powers of the national government can and should be more decentralized and local governments can and should be given an even freer hand in planning on the basis of as much information as is available to the national government.<sup>65</sup>

Tanaka sought to control population mobility by channeling information flows, but he claimed that this would ultimately decentralize control. These two disagreements between Tange and Tanaka highlight fundamental

62. Hanes, "From Megalopolis to Megaropolis," pp. 76–77. On Tanaka's background and history of bringing central government resources in the form of infrastructure construction projects to his Niigata district, see Chalmers Johnson, "Tanaka Kakuei, Structural Corruption, and the Advent of Machine Politics in Japan," *Journal of Japanese Studies*, Vol. 12, No. 1 (1986), pp. 3–11. On his role in bringing high-speed rail to Niigata, see Hood, *Shinkansen*, pp. 75–79.

63. Tanaka, *Building a New Japan*, pp. 161–64.

64. *Ibid.*, pp. 82–93.

65. *Ibid.*, p. 175.

questions for planners: can they control mobility by redirecting information flows, and what impact would that have on centralized control over society?

Such questions were addressed by one prominent critic of the plan, Isomura Eiichi, then a professor of urban sociology at Tōyō University. Isomura responded to Tanaka's plan by challenging its underlying assumptions about the relationships among information flows, mobility, and power and making a very different forecast of the impact that the expanding bullet train network would have on the human decisions that cumulatively shaped population distribution, economic activity, and local and national culture. He predicted that, contrary to official expectations, expansion of the bullet train system would worsen Japan's demographic problems and increase both the centralization of government administration and cultural homogenization. The Tanaka plan presumed that infrastructure building would reduce crowding in urban centers, but Isomura argued that, in fact, it would have the opposite effect, encouraging even greater concentration of both population and power in the Tōkaidō region, especially Tokyo.

Isomura was a visiting scholar at Harvard University in 1957, two years before Tange's stay at MIT, when these two universities together constituted a hotbed of information studies.<sup>66</sup> Isomura also brought ideas about information flows into his analysis of the impact of high-speed rail on Japanese society. In November 1972, just months after the publication of Tanaka's "remodeling" plan, he published an article identifying a different kind of spatial reorganization resulting from the debut of high-speed rail. Beginning with the fact that Tokyo, Osaka, and Nagoya had continued to outpace outlying regions in economic and population growth, he explained that in the Tōkaidō region, where information channels were highly developed, the bullet train affected people and economic activity because, in general, information stimulates the receiver to action, and the bullet train gave people greater opportunity to act by increasing mobility. However, he wrote, rather than easing pressure on the capital, the new line "quickened the flow of brain power and the collection of information in Tokyo at the expense of all cities in the megalopolis along [its] route, including Osaka."<sup>67</sup> By highlighting actual demographic trends, Isomura disputed the notion that policymakers could control space and mobility as they expected through creation of more and faster information connections.

66. In addition to the MIT faculty members listed earlier, Harvard faculty included, among others, Anthony G. Oettinger, a mathematician who founded Harvard's Program on Information Resources Policy in 1972. On Isomura's experience and later use of the ideas he encountered there, see Hanes, "From Megalopolis to Megaroporisu," pp. 56–58.

67. Isomura Eiichi, "A New Proposal for the Relocation of the Capital," trans. Fumiko Bielefeldt and Carl Bielefeldt, *Japan Interpreter*, Vol. 8, No. 3 (1973), p. 295; originally published as "Shin Tōkyō sentoron," *Gekkan ekonomisuto*, November 1972, pp. 48–55.

Isomura questioned Tanaka's reasoning that in an "informationized society" such as Japan's, "as long as the people have easy access to information, they will not feel the need to venture into the city and will be content to remain at home in the country," taking issue with its underlying assumptions about human nature and suggesting that people were more likely to have the opposite reaction.

The more developed a society's information system, the more people tend to gather at the source of information. In Japan, this source is composed of the Diet and the national government. Therefore, the question is not simply whether or not Tanaka's new cities can be built, but whether these cities can reduce the convergence of people on Tokyo as long as the government remains there.<sup>68</sup>

Isomura concluded that it was not sufficient to expand and accelerate the conduits of information in order to redistribute population, but rather that the source of information itself must be moved. Therefore, he proposed dispersing the structure of government administration—a primary source of information—by building a new government center a short distance away at the foot of Mount Fuji. His choice of location echoed Tange's wartime proposal for the Greater East Asia memorial but took it one step further by calling for not just a spiritual and cultural center, but even the functions of government to be located at this historically and culturally meaningful space.

Continuing his exploration of the bullet train's impact on space in a 1973 article on urban planning, Isomura acknowledged that, although policymakers could not easily redistribute population, the weight of both bullet trains and expressways in regional development and urban planning gave the government a great deal of power to shape national, regional, and local space.<sup>69</sup> He also viewed the relationship between information and control differently than either Tange or Tanaka. Examining the impact of bullet train construction on urban and regional development, as well as on the perceptions, expectations, and fears of people in smaller regional cities slated for future bullet train stations, Isomura echoed Tange and Tanaka in placing the bullet train at the center of the emerging information society. But more than a plan for the future, his conclusions were a warning of things to come. He found that the consciousness of the Japanese people was becoming homogenized by the informationization of society and that the bullet train bore significant responsibility for cultural, economic, political, and administrative centralization. Directly contradicting Tanaka's claims that high-speed rail would contribute to the decentralization of power, Isomura

68. Isomura, "A New Proposal," pp. 300–301.

69. Isomura Eiichi, "Shinkansen to tochi kaihatsu riron," *Chiikigaku kenkyū*, No. 3 (September 1973), p. 45.

argued that the structure of the emerging bullet train system made Tokyo like a main office of a geographically dispersed company, while regional cities were relegated to the position of branch offices or subsidiaries, communicating with the center via high-speed rail.<sup>70</sup>

The relationship between information and control was central to Isomura's understanding of the bullet train's impact on all aspects of social life. In his analysis, in an information society, the outward flow of information gave the providing city cultural, economic, and administrative influence over those receiving it, and high-speed rail was an important conduit for centrally produced and disseminated information. As the capital, Tokyo was the nucleus of Japan's information society, and Isomura noted that it therefore held the supreme position, one step higher than Osaka. By the same token, cities on the fastest "super-express" would place higher in the evolving urban hierarchy than those with stops on the slower "local" bullet trains that stopped at each station. By the time he wrote this 1973 article, the second bullet train was partially open on the San'yō Line, extending the high-speed rail system from Tokyo west to Okayama. Isomura saw that Osaka's place at the junction of the Tōkaidō and San'yō bullet train lines boosted its regional clout, since "being within reach of Tokyo as a day-trip further solidified its power base in relation to its periphery" in western Japan.<sup>71</sup> And to the extent that the Tōkaidō bullet train allowed Tokyo and Osaka to operate as a single urban sphere, it increased control over peripheral areas by the Tōkaidō megalopolis as a whole. He even suggested that, as the bullet train increased communication between Tokyo and Osaka, intermediate cities would need a "defense system" against terminal-city influence, in terms of both the potential obliteration of local lifestyles and local administrative autonomy with greater central control.<sup>72</sup> This work challenged optimistic predictions of the decentralizing effects of high-speed rail networks by considering how the flood of incoming information threatened to overwhelm local cultures and local governance. Isomura's work can be seen as an effort to salvage local autonomy and cultural diversity from the intensification of centralized control accompanying the expansion of communications networks.

Isomura's argument highlights a characteristic that Tange's and Tanaka's plans, as well as that of the Economic Planning Agency, have in common: they are all examples of what Morris-Suzuki disparaged as "a technocrats' Utopia, a public justification for the policies desired by economically power-

70. Ibid., p. 48.

71. Ibid., p. 49.

72. Isomura Eiichi, "Toshika no shinten to sono eikyō: Nishi Nihon kaihatsu no kadai," *Chiiki kaihatsu*, Vol. 7, No. 58 (July 1969), p. 33; Isomura, "Shinkansen to tochi kaihatsu riron," pp. 47–51.

ful groups.”<sup>73</sup> More recently, Yoshimi Shunya reinforced this point, asserting that “information society theory fails to give due attention to the potentially conservative effects of quantitative changes, simply reinforcing the existing social order.”<sup>74</sup> These plans assert that their goal is to improve the welfare of society as a whole by restructuring information flows, but they maintain the existing social hierarchies and structures. As is clear from the writings of advocates such as Tange and Tanaka, planners had high hopes about the informationization of Japan, based on optimistic assumptions that it would bring economic vitality, rational social organization, and other solutions to important problems confronting Japanese society. But those analyzing the social impact of the government’s plan for information-centric development warned that it might bring unintended negative effects, such as increasing centralization of both administrative and cultural functions and perpetuation of economic and social inequalities.

#### *A Literary Critique of the Technocrats’ Utopia*

While Umesao Tadao is often credited with originating the idea that Japan was becoming an information industry society, the changes he identified were inescapable, and many people, beyond just politicians and planners, noticed and incorporated them into their thinking about Japan’s present and future. Producers of popular culture, for instance, mobilized the symbol of the bullet train as a mechanism for protest against the social ills they saw accompanying the informationization of Japan or to bring popular attention to sectors of the population for whom the promise of the information society seemed to be an empty one. Films and novels featuring the bullet train sought to promote a better future through critique of present social structures by depicting powerful figures abusing their exclusive access to important information regarding the planning and construction of the line in order to gain personal or political advantage. Such stories decried the uneven access to information that both resulted from and reinforced persistent economic and political inequalities in Japanese society.

As people began to discuss the rise of the information society, they foresaw problems that would likely accompany the changes they described and predicted. This included the likelihood that information society might be severely stratified, with a vast chasm between the “information elite” who create, control, and use a vast range of information, and the relatively

73. Morris-Suzuki, *Beyond Computopia*, p. 22. Zhongjie Lin makes a similar critique of Tange’s 1960 Plan for Tokyo, explaining that the plan failed in part because it implied a strictly hierarchical social structure that conflicted with the ideals of democracy and equality that he claimed for the plan: Lin, *Kenzo Tange and the Metabolist Movement*, p. 166.

74. Shunya Yoshimi, “Information,” trans. David Buist, *Theory, Culture & Society*, Vol. 23, No. 2–3 (2006), pp. 275–76.

powerless masses who consume only the information provided to them and are unable to obtain more exclusive or valuable information.<sup>75</sup> Fictional works centered on the bullet train addressed the issue of inequality, presenting a critique of the technocrats' utopia that the bullet train was helping to build and a very different perspective on the impact of high-speed rail on an information society. At the same time, these works delivered to a popular audience a sense of the growing importance of information in Japan's society and economy. Examples, most of which are based on true stories, include a novel about powerful government figures using their monopoly on information about bullet train plans to overpower local opposition; a television drama that fictionalized real-life challenges in construction of the line; an action movie about a bomb on a speeding bullet train; and a detective novel (quickly made into a film) that considered the economic consequences of uneven access to information.<sup>76</sup> The last of these, Kajiyama Toshiyuki's 1963 *Yume no chōtokkyū* (Dream super-express), whose action takes place when the new line is still in the planning stages (and, therefore, not yet performing a communicative role), depicts the train not primarily as a carrier of information but rather as a catalyst for the creation, acquisition, and use of information with both economic and political value. This representation highlights a key aspect of information society: the fact that information itself produces value.<sup>77</sup> In these stories, the bullet train creates information that is valuable because it can be sold, because it confers power on those who control it by helping them to achieve a particular goal, or because it significantly raises the price of land and other commodities.

Bullet train fiction dealt primarily with a different kind of information than did scholarly studies or official government plans. The information at their center is often illicit: inside information used to make illegal profits; misinformation deployed to cover unseemly truths; secret information selectively displayed for the purpose of pressure, blackmail, justice, and revenge. It is monopolized by powerful or connected individuals and carefully distributed to further their own interests. Or it is created and deployed by criminal elements for nefarious ends. This is a very different view of the information society than the celebratory one typical of the technocrats' utopia. Rather than increasing efficiency, productivity, and equality, the informationization of Japanese society is depicted as generating new op-

75. Morris-Suzuki, *Beyond Computopia*, pp. 16–17.

76. Nishiguchi Katsumi, *Shinkansen* (Tokyo: Kōbundō, 1966); Shimada Kazuo and Yokomitsu Akira, *Dangan ressha: NHK karā eiga*, dir. Kishida Toshihiko (NHK, 1964); Satō Junya, dir., *Shinkansen daibakuha* (Tōei, 1975); Kajiyama Toshiyuki, *Yume no chōtokkyū* (Tokyo: Kōbunsha, 1963); and Masumura Yasuzō, dir., *Kuro no chōtokkyū* (Daiei, 1964). Of these examples, the action movie is the only one not based on real-life incidents.

77. Hayashi, "Jōhō shakai to atarashii kachi taikai," pp. 20–25.

portunities for the powerful to oppress the weak, for the dishonest to cheat the naive, for the haves to get more at the expense of the have-nots. It was a minority perspective, but couched in blockbuster fiction with vast circulation, it reached a broad audience, giving it a power beyond its immediate scale. For instance, Kajiyama's story of corruption in land acquisition for the "dream super-express" highlights the commercial value of information and critiques the perpetuation of existing inequalities within the new socioeconomic structures by showing how exclusive access to information afforded economic gain and political power at the expense of those without access.

If information has value in itself and contributes value to other things, then it can be worth stealing and controlling through bribery, extortion, and perhaps even murder. Kajiyama wrote *Yume no chōtokkyū* as a police procedural in order to explore what he saw as a newly prominent type of crime centered on exchanges of information and the new methods adopted by the police to combat and uncover such crimes. He was fascinated with the methods of investigation particular to information crimes, in which, unlike crimes of violence, there are no bodies or weapons, and sometimes even the victim does not see that there has been a crime. How, he asked, does such an invisible crime come to the surface? Kajiyama called this kind of intellectual crime—in which information serves as either the mechanism or the payoff—a "modern weapon and a blind spot in today's world."<sup>78</sup> He wanted to use his novel about an information crime to illuminate this little-known world, not primarily to expose the crime, but rather to depict "the difficult investigations and the ingenious process" of the police agency's underappreciated "intellectual crimes division."<sup>79</sup> Several pages are devoted to an explanation of the structure, characteristics, goals, and methods of that division. Drawing a distinction between detectives in the violent crimes division, who look for material clues like a murder weapon or fingerprints, and those who investigate information crimes, the narrator explains that the latter must search for these "hidden crimes" by "getting hints from rumors, secret-telling letters, and such."<sup>80</sup> Investigators of information crimes must pay attention to all kinds of information—rumors, secrets, accusations—in order even to discover that a crime has been committed.

Of course, the idea of using information (or misinformation) for profit was not new. Since the development of capitalism, access to information about a potential investment could be the difference between riches and ruin. And since the establishment of a patent system, unscrupulous inventors

78. Kajiyama, *Yume no chōtokkyū*, p. 284.

79. Ibid.

80. Ibid., p. 67.

have tried to steal ideas. In the context of Japan's information society of the 1960s, intellectuals and policymakers were more acutely aware of information systems, and information moved faster, was vastly more abundant, and was beginning to dominate the entire national economy. And it continued to be largely monopolized and controlled by those in power. The bullet train was interpreted as part of the information society as much by critics of the emerging social structure as by its architects. Like planners who sought to use control of information flows as a tool to fix social problems, Kajiyama and other writers of bullet train fiction saw the power of information. In contrast to optimistic forecasts, however, they highlighted the ways in which that tool was used as a weapon. Fiction writers also sought to improve society but by critiquing the consequences of unequal access to information within an increasingly information-centered socioeconomic system.

Kajiyama tells a sordid story of blackmail, extortion, and murder in an illegal scheme to profit from JNR's acquisition of land for the bullet train, in which information is the coin of exchange. Inside information, misinformation, and secrets are used in various ways to gain profits and to force, cajole, or trick people into acting against their own interests or principles. The novel follows three separate but intertwined quests for information: the multistage crime at its center, a journalist's search for a story, and a police investigation. The crime begins with a complex plot by former JNR employee Nakae Yukichi to lure the married director of the public corporation in charge of planning the new line (called the Shinkansen Corporation) into an affair, then use evidence of the affair as blackmail in order to obtain advance information about the planned locations of new bullet train stations in Osaka and Yokohama. That initial stage of the crime takes place before the start of the novel, which begins *in media res* with the second stage, in which the villain deploys misinformation about inside information. Nakae approaches a struggling real estate broker in a quiet suburb of Yokohama about a suspicious deal to buy up a thin strip of land. He convinces the broker to go along with the deal by making the false claim that he used to work for the construction minister and knows through this connection that a factory will be built there. Through the broker's mediation, he is able to buy up most of the relatively worthless land around the planned new bullet train station for what sellers feel is a generous sum. But he soon sells the same land to the Shinkansen Corporation "for a price that would make your eyeballs pop out."<sup>81</sup> Though the novel begins with the land purchase, it focuses primarily on two separate but overlapping investigations: a freelance reporter pursues a story about a woman's mysterious disappearance, while detectives in the "intellectual crimes" division slowly unravel the massive corruption scheme connected to Nakae's land deals.

81. Ibid., p. 119.

In this story, information is central to the crime, but it is also the key to justice. Just as the two investigations finally converge to trap Nakae, he slips through their grasp at the airport, leaving Japan on an international flight: in order to prevent Nakae from testifying against him, the construction minister (who would have been implicated in the scheme) has pressured the Foreign Ministry to facilitate his fleeing the country, so he can wait out the remaining year until the statute of limitations on bribery expires. The novel ends with the detectives at the airport, bitterly disappointed at having missed their chance to arrest Nakae, the only witness against corruption in the highest level of the government bureaucracy. Spotting the reporter, the primary investigator hurries over and beseeches him to write a thorough story about the woman's disappearance, a central element in this complex corruption case, promising to contribute materials he has collected through the investigation. When the reporter expresses surprise that the police are going to share materials, the detective declares that he is handing over the materials not as a representative of the police, but "as an individual. No, maybe as a citizen."<sup>82</sup> He sees it as his civic duty, when corruption evades the criminal justice system, to catalyze an alternative path to justice through the public dissemination of information. Ultimately, the only way to obtain justice for this information crime is through an information solution.

Though this can be seen, in some ways, as a happy ending afforded by sharing information, in portraying a dark dynamic of information surrounding the bullet train, the novel provides a stark contrast to planners' bright, confident portrayals of efficient paths of communication solving the pressing problems of Japan's high-growth economy. In that way, it explicitly rejects the standard celebrations of the new line and instead proffers a critique of a society focused on economic advantage at the expense of general social welfare. Rather than a harbinger of a more just and equitable future, the train becomes a marker of the persistence of the dark, venal social structures behind the facade of utopian rhetoric. This story is particularly powerful (and dark) because it is not entirely fictional. In an afterword, Kajiyama explains that he had been inspired by an actual case of corruption involving land acquisition for bullet train construction.<sup>83</sup>

Not only the basic outlines but also many of the details of the story hew closely to the facts of the case. Based on leaked information about the location of the new bullet train stations, a former JNR employee engaged a local real estate broker to assist him in buying a long, narrow strip of farmland outside Yokohama for slightly more than the market price, purportedly for an automobile factory. He did the same in the area of the new station in Osaka. Investigators believed that he was able to get hold of this insider

82. *Ibid.*, pp. 282–83.

83. *Ibid.*, p. 284.

information thanks to his ties to JNR. As one news report put it, “Information flows around the ‘JNR household.’”<sup>84</sup> A month later, he sold the land to JNR for what was, indeed, an eye-popping sum of over ¥231 million, about ten times what he had paid, raking in hundreds of millions of yen in profit. Even the dramatic conclusion, with the villain Nakae Yukichi of East Asia Development Corporation slipping out of investigators’ grasp by escaping Japan from Haneda Airport, echoes news reports that the case fell apart when it was discovered that the real-world perpetrator, Nakachi Shingō of Japan Development Corporation, had departed from Haneda on a U.S.-bound flight, then continued on to an unknown destination. The closing line of one of the last newspaper articles on the case, a quote from one of the detectives, is reminiscent of the novel’s conclusion: “This is certainly a problem for our investigation. But we will not let this incident be swept under the rug; we will pursue it to the end.”<sup>85</sup> Reading this, one cannot help but think of the fictional detective’s determination to seek justice by sharing everything he knew with a reporter, just as the investigator quoted above had clearly done. In fiction as in life, Kajiyama seems to suggest, publicizing information can bring an element of justice for information crimes. By writing this novel, he himself was helping to make sure that happened.

### Conclusion

Though the writers examined here were not directly involved with the planning or construction of the bullet train, they were arguably more important than JNR’s engineers or bureaucratic leadership in shaping perceptions of the line, since their ideas reached a broad national audience and captured popular imaginations. Writing in the early 1960s and inspired by Wiener’s pervasive cybernetics model, Tange saw new information flows as part of the feedback mechanism that would allow the entire Japanese archipelago to operate as a single self-regulating organic structure. He promoted an efficient, rational social structure using a metaphor of society as a living organism that relied on bullet trains and other information connections as feedback mechanisms needed to facilitate self-control. A decade later, the concept of information society was becoming widely accepted, in connection not only with the growing prominence of information industries in the national and global economies but also with the related development of

84. “Shinkansen Yokohama eki: Giwaku hirogaru, baishū yūshi ni kuromaku,” *Yomiuri shinbun*, October 10, 1962, morning edition, p. 11.

85. “Giwaku no Nakachi, Nihon Kaihatsu shachō ‘kokugai dassē’: Shinkansen yōchi baishū no sōsa ni itade,” *Yomiuri shinbun*, January 20, 1963, morning edition, p. 11. Also see “Yōchi baishū de oshoku ka: Tōkaidō Shinkansen, Nihon kaihatsu nado sōsaku,” *Yomiuri shinbun*, October 9, 1962, evening edition, p. 9; and “‘Shin Yokohama Eki’ de amai shiru: Futari o taiho, hitori sōken,” *Asahi shinbun*, November 21, 1962, evening edition, p. 7.

the technologies of instant telecommunication. At that point, Tanaka (or those who wrote plans in his name) sought to use the power of the national government to control space and mobility by expanding the bullet train system and other communications infrastructures, thus channeling the flow of information (and hence, he argued, people and industry) to points decided in Tokyo.

In a critique of Tanaka's ideas, Isomura presented an opposing view of the effect of creating information connections with new high-speed rail lines. His findings challenged the utopian, teleological narrative of information society, which presented increasing flows of information as inherently and universally beneficial, or as progress toward a higher plane of democracy, rationality, and efficiency. He argued to the contrary that strong information connections such as bullet trains tended to increase central power (i.e., an ability to exert control over surrounding spaces) in ways that were not always desired by people outside the center. Encoded in a work of fiction, Kajiyama's critiques were more oblique, but also more poignant, revealing the false promise of equality seen in the information society by its optimistic advocates.

The ambitious plans proposed by Tange and Tanaka and critiqued by Isomura and Kajiyama were not immediately realized. Tange's proposal for complex and elaborate systems of communications and transportation infrastructures that would fundamentally change the patterns of urban development in Japan were deemed excessively impractical, and Tanaka's plan to bring the entire nation within a single day's travel on high-speed rail was thwarted by the economic crisis of the 1970s. This goal has come close to fruition nearly a half-century later, and infrastructural development continues to draw the Tōkaidō region ever more tightly into a single megalopolis, but Tokyo, now the hub of the national high-speed rail system and still the center of Japan's national government and economy, continues to be overcrowded and culturally dominant. Attention to arguments about the future of the Japanese archipelago at the start of the information age reveals the efforts of urban planners to grapple with changing views of the role of communications infrastructure in social control developed in the field of information studies. Tying dominant concepts of information and society to the bullet train, these thinkers shaped new visions of Japan's cities, the Tōkaidō region, and the nation as a whole, while also changing popular views of the railway.

Trains were a key infrastructure of the industrial age, but with the development of both automobile and air transportation in the mid-twentieth century, many began to refer to railways as a sunset industry. The bullet train remade rail transportation from a relic of the past into a vibrant harbinger of the future. This transformation was related to the new train's sleek design, computerized controls, and smooth high-speed operation, but it also

stemmed, in part, from its connection to exciting new developments in the basic patterns of the Japanese economy and society, which scholars and policymakers were just beginning to notice, analyze, and promote. The bullet train both symbolized and contributed to technological, economic, and social transitions occurring in the 1960s. As a means of transportation, the train would move information (the knowledge held in travelers' minds, the materials in businessmen's briefcases, the exposed film in tourists' cameras) at speeds faster than the vehicles of the industrial era could do. And as a system developed in the age of the computer, the bullet train also relied on electronic communication and control, information moving almost at the speed of light. As a result, the new line became part of the "informationization" of Japan, as it was reinterpreted in terms of the emerging information society by intellectuals who saw it as helping to push the economy in new directions. Linked to the idea of the nascent information society, the bullet train transformed the railway into a technology of the future.

Looking back from the twenty-first century, it is easy to see information systems only in terms of computer networks and digital communication, supported by cloud-like infrastructures. But as we are increasingly reminded, those intangible information operations entail a physical presence and a real carbon footprint. It is important to remember that built infrastructure is part of this discussion. Information is not just ethereal; there is a material element to the virtual, hardware behind the software. In the transitional moment of the 1960s, when telecommunications technologies were rudimentary, but futurologists glimpsed the dawning of a new socioeconomic reality, the unprecedented speed of the bullet train brought the railway into that vision. As the information age began to emerge from the long shadow of the industrial age, trains, which had for so long been symbols of speed and connection, were open for appropriation by those who sought to articulate and imagine the new era. As familiar tools that could be repurposed for changing times, the language and rhetoric around industrialization was useful for envisioning what the new information society might look like.

The intellectuals who used the bullet train as a focal point for arguments about economic development and social change in Japan were taking advantage of popular excitement about the opening of the world's fastest train to draw attention to their ideas and explain them in terms that people could easily understand. By doing so, they were also transforming the bullet train itself, by imagining new possibilities and potentials for high-speed rail. This demonstrates the ways in which ideas and infrastructure can influence and change each other. As the discourse on information society began to attract widespread attention in the 1960s, national, regional, and urban spaces came to be viewed as networks of connection, a concept readily applicable to trains, which themselves form a physical network. Thinking

about the bullet train in terms of information helps explain why, in the “jet age” of the 1960s and beyond, the Japanese government focused plans for the future (and substantial resources) on what many dismissed as a technology of the past. Japan’s transformation into an information society made planners re-envision rail from a carrier of goods to a carrier of information. This updated conception placed high-speed rail alongside other communications technologies on the cutting edge.

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