The Formation of the Japanese Railway Network in the 1890s: The Case of the Kōbu-Line

by

Masahiro Satō
Institute of Economic Research, Hitotsubashi University

The Suntory Centre
Suntory and Toyota International Centres
for Economics and Related Disciplines
London School of Economics and Political Science
Houghton Street
London WC2A 2AE
Tel.: 020-7955 6698

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Preface

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1. Introduction

About a hundred and fifty years ago, Japan was divided into several hundred territories called *han*, each of which was owned by a landlord known as a *daimyō*. Although all the *han* came under the jurisdiction of the Tokugawa tycoon, they nevertheless enjoyed full autonomy with each *han* having not only its own customs, legal system and dialect, which were quite different from those of the other *han*, but even its own marketing and economic policies, as well as its own banknotes.[1] The independence of each *han* or area continued well into the last quarter of the nineteenth century, and was only gradually undermined by the various reforms introduced by the Meiji Government.

One of the main reasons for the independence of the *han* was a purely practical one: the severe limitations of the type of transportation that existed in Japan at that time. To begin with, land transport was curiously primitive: there were no macadamised roads and practically no bridges over rivers. Wheeled vehicles were out of the question because they usually churned up the muddy roads. The main means of transport, apart from the ox and coolie, was the horse; but even the horse had to carry much less weight in Japan than it did, say, in the West simply because, instead of wearing iron horse-shoes, which came into use in Japan only in the late nineteenth century, they wore straw-braided shoes, which did not last more than a short distance. Inland navigation, though more effective than land transport, was in many ways just as primitive, for it was impossible to use anything other than small, flat-bottomed barges because the currents of the rivers were usually too rapid for large boats to be navigated along them safely.

And despite the existence of a few canals here and there, it was impossible to develop any canal network for long-distance transport because of the mountainous landscapes. Coastal shipping was best suited for transporting bulky commodities such as rice and salt; but even that had its hazards inasmuch as Japanese vessels were often too frail to cope with the headwind and the heavy side waves during the winter, especially in the Japan Sea, which until the end of the nineteenth century was the most important trunk route for the transportation of freight. All this explains why every *han* not only enjoyed a peculiar independence, but was obliged to be self-sufficient if it was to survive.

The introduction of both railways and steamships brought about a revolutionary change in Japanese economic and social life. Indeed, it is sometimes said that the establishment of a railway network in Japan not only turned various local markets into national ones, but also helped to unify the Japanese population into one nation. The emergence of these sophisticated means of transport promoted inter-regional trade and brought about changes in relations between regional economic systems. During the Tokugawa period, for example, Osaka was the most important trading-centre, and cities that were commercially prosperous tended to be situated along the Japan Sea coast. Oddly enough, these regions are nowadays regarded as constituting a less developed part of the country than those on the Pacific coast, where Tokyo, Nagoya, Osaka and other major economic centres of Japan are to be found.

It may be useful at this juncture to help you picture things more clearly if I give you some statistics. Let us take an index of the total amount of so-called paid-in capital,[2] i.e. the sum of money which is actually paid to companies by shareholders, and divide it between each prefecture according to where the headquarters of each company are situated, and then separate the prefectures into three groups. Sixteen prefectures, which possessed a relatively large amount of paid-in capital, are included in the top group. In Diagram 1, these 16 prefectures are divided into two sub-groups: black for the upper half, grid for the lower half. Thus, if we

compare 1890 with 1920, we discover some interesting facts. For example, we note that the first five prefectures, Hokkaido, Tokyo, Osaka and Fukuoka, belong to the black group in both years. You may already know that these prefectures make up the hub of Japanese industry in the twentieth century. Secondly, you will also see that Yamanashi, Ishikawa and Mie, now no longer in the black group in 1920, are replaced by Kanagawa, Aichi and Kyoto. Thirdly, you will observe that various prefectures have been replaced in the grid group too. In other words, a reversal in the economic importance of the Japan Sea side of Japan, especially the northern part of it, and the Pacific side of Japan occurred during those thirty years.

The establishment of the railway network was probably one of the most important factors in the transformation of the Japanese economy in the period I have just referred to. At the time the Railway Nationalization Act was passed, namely 1906, the railway network had been virtually completed on the Pacific side of Japan, whereas there was no railway network at all on the Japan Sea side. As you will see in Diagram 2, Tokyo is at the centre of the network. This state of affairs may prompt two questions: first, why and how was the network laid out in this particular way; secondly, how are we to measure its actual effects on both the local Japanese economy and the Japanese economy as a whole? My paper will be concerned with the first question.

1. Three kinds of decision-taking as to railway routing

It is said that there are three basic methods of railway networking: British, French and Belgian. As you will all know, in Britain, especially before the 1840s, the routing of each railway line was planned and executed by entrepreneurs, without any interference from the Government. Accordingly, railway lines were laid without heed to any overall design in structure. In Belgium, on the other hand, all railway lines were, and always have been, built by the State according to a national network plan. In France, however, the procedure for establishing a railway line has always been much more complex than in England and Belgium. There, private

and state companies have been allowed to construct railway lines as long as these have not undermined the overall design of the national network as laid down by the Government. The way in which the Japanese railway system was established was closest to that of France, though no official network plan was made, apart from a few tentative ones, until 1906.

In this connection, let me tell you how pre-war Japanese railway companies set about getting a licence to construct a line. First of all, a number of local investors would often plan a line for the transportation of passengers and goods from their particular region, and would then try to persuade the bigger investors of, say, Tokyo or Osaka, to sink their money into the plan. After that the investors would apply to the local government for a licence by presenting their plan with detailed documentation. If the local government were satisfied with the credentials of the investors as well as the plan itself, they would recommend it to the Railway Bureau. If the Bureau agreed to the plan,[3] the company was granted a provisional licence, whereby it was obliged to complete the construction of the line within a specific period - usually a year. Once the line had been completed within the specified period, the company was awarded a full licence to run it.[4]

Anyone who wishes to understand the process of decision-taking as to the routing of railways has to bear in mind that four groups are involved in the process: local entrepreneurs,[5] large city investors,[6] local governments and the Central Government, with each group having its own particular reason for constructing the line as well as its own ideas as to the most economical way of routing the line. For example, local entrepreneurs were concerned with the economies of transporting certain commodities between their regions and the main cities for the benefit of the local farmers and merchants, whereas big investors, say, in Tokyo or Osaka, being profit maximizers, did not mind what the railway carried as long as the line was carrying a large number of passengers and goods and bringing in the most money. Then local governments seem to have wanted every railway line to link the main cities of their prefecture with the one where they themselves were based,

so that both passengers and goods would always have to pass through the prefectural capital.

The Central Government seem to have cherished the idea that every railway line should begin in Tokyo, though it was evidently much more concerned later with the efficient transportation of troops and munitions.[7] In this connection, it is noteworthy that the military authorities had published their own plan for a railway network as early as 1883, whereby every main trunk route should be as far inland as possible to avoid bombardment from enemy warships, and to strengthen links between Tokyo and those cities where army divisions were based.

The question, then, is: what was the process that led to the establishment of the national railway network in 1906? Before answering the question, let us now consider the case of the Kōbu line and a number of plans preceding its final establishment, in respect of the four groups referred to just now.

3. A brief history of the Kōbu line

The Kōbu line came into operation in 1889 between Shinjuku and Hachiōji (see Diagram 3) and was extended to the centre of Tokyo in 1895. It was nationalized in 1906. Some of you in the audience may have travelled on this line, since it is now a part of the Chūō line, which is one of the most important railway lines in Japan.[8] As it would take me too long to tell you the history of the planning and construction of that line, let me refer you instead to Table 1 in order to give you a general idea about it and draw your attention to three things that happened in the process of licensing that line.

First of all, the Kōbu line was originally planned by a number of Tokyo investors represented by Sakubei Iwata. The local investors, led by Hanjūrō Tamura, the largest land-owner in the San-Tama region, had not formed the company at that stage, although they were consulted by Iwata about the plan and helped in the decision about the routing of the line. Also, it was on the advice of the local representatives that, instead of linking Tokyo

with Hamura or Ōme, the Kōbu line now linked Tokyo with Hachiōji,[9] which in those days was the centre of the local economy (see Diagram 3). It must also be borne in mind that every provisional route of the Kōbu line as planned before 1885 was intended to go through the villages of those local representatives.

Secondly, I should point out that the route plan of the Kobu line was changed in May 1885, with the result that it would no longer pass through the area represented by Tamura and others.[10] Accordingly, the local representatives, having suddenly changed their minds about the Kōbu line, decided in December 1886 to apply to the Prefectural Office for a licence to lay a railway line designated as the Bukō line - a designation that may be a little confusing to some of you[11] - which covered practically the same route as the original plan of the Kōbu line. However, by dint of governmental intervention in January 1887 the two groups were amalgamated. I shall discuss this later in more detail.

Thirdly, in December 1886 a number of raw silk merchants in Yokohama and Hachiōji, represented by Zenzaburō Hara, also applied to the Prefectural Office for a licence to establish the Musashi line, which was to link Hachiōji with Yokohama via Kawasaki. Although the Governor of Kanagawa Prefecture approved the plan, preferring it to the Kōbu line which would go to Tokyo without passing through Kanagawa, the Home Secretary Aritomo Yamagata was against it, while supporting the Kobu line. The Musashi-line plan was finally turned down by the Central Government in July 1887.

It would be appropriate at this point to consider the main ideas behind these different railway plans of the groups referred to above, namely Iwata and the other Tokyo investors, the local investors of the Tamura and Hara groups, the Prefectural Office of Kanagawa and the Central Authorities represented by Yamagata.

4. The Kōbu and Bukō lines

Before examining the aims of the Tokyo investors, it would be

useful to consider the size of, and the routes for, the land goods transport to and from the San-Tama region just before the introduction of a railway into the area (see Diagram 4 and Table 2). It is evident that of the three regions Kita-Tama played the most important part in the transportation of goods. Some 400,000 *da* (approx. 50,000 tons) of mostly cheap goods in bulk such as firewood, sweet potatoes, rice, fertilizer and so on, were carried between Tokyo and Kita-Tama. Between Tokyo and Nishi-Tama, whose political and economic centre was Ōme, about half that quantity was carried, that is, about 200,000 *da* per annum, while between Tokyo and Minami-Tama, only about 70,000 *da* per annum was carried. However, it should be remembered that, although the quantity was low, many of the goods transported between Minami-Tama and Tokyo or Yokohama were expensive, light-weight goods such as raw silk and silk cloth, and that a larger amount of freight was transported from Minami-Tama to Yokohama than to Tokyo, presumably for export.[12]

It is likely that Iwata and the Tokyo investors were not well aware of all this. But they knew that between 1870-72 many barges were used to carry goods and passengers on the Tamagawa-jōsui canal which, running through Kita-Tama, linked Shinjuku with Hamura. Although a good deal of merchandise could have been transported along the canal, such transportation was officially forbidden in 1872, mainly because horses and barge passengers were polluting the water needed to supply the city of Tokyo. That is probably one reason why the Tokyo investors had first planned to use the embankment of the canal in 1884 to link Hamura with Shinjuku by rail. In the same year Iwata and his group visited the San-Tama region in order to ask the local representatives to back their plan; and it was while they were visiting the region that they came to know of the existence of limestone near Ōme. According to Iwata's memoirs, the moment they knew about the limestone, they decided to change their railway plan by extending the route to Ōme.

What was the significance of limestone for Iwata and others? Until the Meiji era, the city of Tokyo was actually built of wood and

paper; the majority of houses had wooden structures with roofs of shingle or even resin-coated paper, which made them a fire hazard. However, the Home Secretary and a number of senior ministers decided to rebuild the capital, making it not only as splendid a city a Napoleon III's Paris and Bismarck's Berlin, but also as fireproof as possible. This project, which entailed the reconstruction of roads, buildings, harbours and so on, was announced in the newspapers as early as 1882 with a view to eliciting popular opinion. No doubt, Iwata and the Tokyo investors realised that sooner or later there would be a huge demand for both limestone and gravel. That was probably the main reason why they changed their plan regarding the lay-out of the railway. In fact, in 1889 just after the Kōbu line had come into operation, Iwata and some investors set up a company to transport gravel, but not limestone, on the Kōbu line from the San-Tama region to Tokyo.

The aims of the local representatives, however, were rather more complicated than those of the Tokyo investors. It is probable that they were well aware of the potential of the Hachiōji market as a trading-centre. You will already have seen from Table 3 that the trading figures of Minami-Tama were small, mainly because, as I said earlier, land transportation was incredibly primitive in those days. Indeed, coolies had to be used for the transportation of, say, eleven tons of commodities from Hachiōji to Shinjuku, a distance of some 23 miles; moreover, the coolies were also compelled to build the bridges and repair the roads and embankments along their way. According to a manuscript of 1885, it would take about 40 days, and cost about 1,500 yen (the equivalent of about £255 in those days) to undertake a journey as senseless as this one. In spite of these difficulties, however, the representatives of the San-Tama region were already looking forward to a time when Hachiōji would be the trading centre not only of the San-Tama region, but also fo the Saitama, Yamanashi and Nagano prefectures, where a good deal of raw silk was produced for export. Another thing was that, while navigation on the Tamagawa-jōsui canal was still allowed, almost all the local investors mentioned above had been owners of barges and had

been making money from the transportation of goods between the San-Tama region and Tokyo. Certainly, the investors expected good economic benefits for their area, including a reduction in the price of locally produced goods carried to Tokyo as well as of products such as fertilizers carried from Tokyo, the creation of new jobs, and so on. Also, having had to give up their water-transport business, the local investors wanted to commence their businesses as transport agencies. Thus it was that Tamura and the other local representatives managed to persuade the Tokyo investors to change the terminus of their railway from Ōme to Hachiōji.

Unfortunately for the local representatives, the route of the Kōbu line was changed yet again in May 1885, with the result that the line no longer passed through the villages. This meant that the line ceased not only to be of benefit to the area they represented, but also to serve their private interests. Moreover, when the change was made, the Tokyo investors completely ignored Tamura and his group because they were not shareholders of the company; and though Tamura and the local representatives wanted to join the company, Iwata and the other Tokyo investors would not allow them to do so. Consequently, the local representatives applied for a licence to lay a highly competitive railway line as one way of being allowed to join the company, knowing that the Government was bound to intervene on their behalf. Their efforts paid off, for the Kōbu and Bukō Railway Companies were amalgamated in January 1887. The proportion of the shares held by the local investors amounted to 16% of the entire capital. Although the financial power of the local representatives was far smaller than that of the Tokyo investors,[13] they had the information about the local economy which the Tokyo investors needed insofar as they wished to maximize the profits. Accordingly, they were able to persuade the Tokyo investors to put their money in the line which would be beneficial to the area they represented.

5. The Kōbu and Musashi Lines

On 28 December 1886, two months after the Kōbu Horse-Tramway Company had obtained their licence, Zenzaburō Hara and various entrepreneurs in Yokohama and Hachiōji applied to the Kanagawa Prefectural Office for approval of their plan for the Musashi Railway Company. The reason for establishing the Musashi line was much more explicit than it was in respect of the Kōbu and Bukō lines inasmuch as the applicants, who were mainly raw-silk exporters, were especially concerned to keep the cost of transporting their goods down to a minimum. At any rate, this is how they justified their application for the line:

> Any observer of the economic scene in Hachiōji cannot help but notice a steady growth in the production of raw silk and silk cloth year by year, as well as an increase in the number of goods such as kerosene, pig iron, rice and so on transported from other regions, and hence conclude from this that trade between Yokohama and Hachiōji is thriving. But a thriving trade of this kind can be guaranteed only if there is a railway line to link these two cities, that is, by ensuring the speedy conveyance of those goods between Hachiōji and Tokyo or Yokohama which are required to fulfil the needs of supply and demand...[14]

Notwithstanding this proposal, the route that was eventually decided on was laid not between Hachiōji and Yokohama but between Hachiōji and Kawasaki, the latter city being a stop on the Tōkaidō line linking Tokyo with Yokohama. Hara and his fellow applicants gave two topographical reasons for choosing the route: first, it was more convenient than the Hachiōji-Yokohama line for carrying passengers and goods to both Yokohama and Tokyo; secondly, in so far as the route went through flat terrain and crossed no rivers, the company was spared the exorbitant expense of cutting tunnels and building bridges.[15] According to the document containing the application for the laying of the Kōbu line, the cost of iron bridges was 17% of the estimated initial capital

costs of the total construction, whereas the cost of steam locomotives was 10%, and the cost of land a mere 5%. Hara's plan was, then, very practical, at least in so far as it favoured the raw-silk industry, thereby benefiting not only Hara and his fellow applicants but also the Central Government; after all, the exportation of silk was a major source of income for the Japanese economy, and hence a means by which Japan could import the machinery needed for her heavy industries.

At this point, it may be interesting to compare the Kanagawa prefecture authorities with the Central Government in their respective attitudes to the proposed railway line. The Governor of Kanagawa prefecture strongly supported the idea of the Musashi line. Thus, in his letter to the Central Government he emphasised the following two arguments, with particular reference to the Kōbu line. First, he shared Hara's view that the Musashi line would be economically advantageous for the exportation of raw silk products; secondly, he pointed out the usefulness of the line for his duties as Governor of Kanagawa prefecture, especially since his jurisdiction included the San-Tama region (until 1893).

The Governor also maintained that, if the Musashi line were rejected in favour of the Kōbu line, people living in the San-Tama area would be unable to travel by train to Yokohama, the headquarters of Kanagawa prefecture, without having to go via Tokyo prefecture. As the Governor said, 'it is much easier for me to govern my prefecture if those who come under my jurisdiction can travel directly to my office, instead of making a roundabout journey.' These words make it plain that the Governor had essentially political reasons for supporting the line, especially in view of the uneasy relationship that existed at that time between himself and the representatives of Yokohama. Indeed, by recommending the railway, the Governor hoped to win those representatives over to his side and thus help to settle their differences.

The Central Government, however, did not see things in quite the same way. In fact, the Home Secretary Aritomo Yamagata wrote

a paper entitled 'On the Construction of Steam Railways', in which he fiercely opposed the plan for the Musashi line. Yamagata's paper had three essential arguments. First, there was the claim that Tokyo, being the capital of Japan, should have priority over all other parts of Japan in respect of economic benefits; secondly, that the amount of freight carried between Hachiōji and Yokohama was actually smaller than that carried between Hachiōji and Tokyo; thirdly, that the Musashi line would be strongly competitive with the recently licensed Kōbu line and therefore in danger of undermining its economic viability.

Yamagata's second argument seems somewhat curious, for one wonders how he could have worked out which line carried the larger amount of freight. In any case, it is obvious that from the viewpoint of raw silk exporters the Musashi line was more useful than the Kōbu line. The mind boggles at Yamagata's apparent unawareness of the importance of raw-silk exports for the Japanese economy as a whole. There may have been two reasons for this seeming hostility to the Musashi line. First, Yamagata had, as Army Chief of Staff, already published the railway network plan in 1883 for military purposes. The fact that in this plan Tokyo was to be linked with every city in which an army division was garrisoned made it inevitable that the Chūō line, which linked Tokyo with Nagoya, should become one of the most important lines; and since the Kōbu line formed a significant part of the Chūō line, it had to be protected from the threat of competition from other lines. Again, in the very year the plan for the Musashi line was submitted (1886), Yamagata was busy devoting his energies as Home Secretary to the overall re-planning of Tokyo, whereby roads and railways would radiate from Tokyo City in much the same way as they did from Paris. Hence the absurdity of licensing any railway line such as the Musashi line which by-passed Tokyo. Yamagata's repudiation of the Musashi line was, moreover, backed a week later by the Director of Railways Masaru Inoue, with the result that the plan for the Musashi line, as well as the Kanagawa prefecture Governor's recommendation, was turned down.

6. Conclusion

It is now time to draw some conclusions from our findings. While the Tokyo investors enjoyed greater financial power than did local investors, it seems that they were unable to lay any railway line without consulting the local investors, if only because the latter knew more about local economic conditions and were in a good position as wealthy speculators and village officers to persuade the people living in the region to approve the plan. On the other hand, the local representatives lacked the funds to build a railway line independently, even though they were acutely conscious of the material advantages of a railway both for the region as a whole and for their own private interests. And it was with this in mind that they did their best to persuade the Tokyo investors to put their money in the plan. Although the local representatives managed to have the Kōbu line approved, many other similar plans failed to arouse the interest of the Tokyo investors.[16] The trouble was that there was an irremediable conflict of interests. Thus, whereas local governments were all for railway lines that ran to and from their prefectural cities and were therefore hellbent on getting local representatives under their jurisdiction to support them in their railway plans, the Central Government was concerned in its railway projects to give priority to Tokyo over all other parts of Japan for both economic and military purposes. Nevertheless, since the Central Government evidently lacked the necessary funds to finance the railways single-handedly, it was compelled to rely heavily on private companies for such projects. Accordingly, only those plans submitted by private companies and endorsed by their local governments were accepted that were not at variance with the railway policies laid down by the Government for its own benefit. One such plan that was approved was the one submitted in 1887 by the Governors of Fukuoka, Kumamoto, Saga and Nagasaki for the Kyushu line. Evidently the Central Government had decided that the project as carried out by private companies would hasten the construction of a trunk route in the north of Kyushu Island.

Thus as a result of a conflation as well as a conflict of interests,

the Japanese railway network acquired the shape you can see in Diagram 2. It was a system that not only met political and military requirements but also benefited the business world of Tokyo. That does not, however, mean that the system was necessarily always beneficial to other areas and their local economies. Indeed, I am tempted here to recount an anecdote about one of the ways in which the railway network caused tension between Tokyo and the local areas. Sometime at the turn of the century there was an intense controversy over the nationalization of the main railway lines and over future plans of railway construction. We are told that a prominent railway executive in Osaka, called Kiyoshi Minami[17] (one of the earliest Ph.D.s in civil engineering), criticized the senior ministers of the Central Government in 1902 for their lack of vision as to a future Japanese railway network and for tolerating the existence of a network that was both sprawling and economically useless. Minami's criticism was answered a year later by an official in the Railway Bureau, called Mitsugu Sengoku, who asserted not only that the essential railway network was already near completion but also that it was economically viable. The reason for this disagreement between Sengoku and Minami was that they each had quite different aims for the railways in Japan. For Minami the most important aim was to build railways along the coasts of the Japan Sea and the Setonaikai (Inland) Sea, thereby linking Osaka with economically prosperous cities, and making it possible gradually to shift from sea transportation to railway transportation. Sengoku, on the other hand, was to all appearances first and foremost concerned with the ways in which the railway network would benefit the Tokyo market and the military objectives of the Central Government. From this viewpoint, the then existing railway network as a whole was satisfactory, even though there was still a good deal to be done to make it a truly efficient system. There must have been many similar disagreements (if not quite as open as that which existed between Minami and Sengoku) between the Central Government and the various prefectures. Indeed, there has traditonally been a conflict between the Central Government and local governments, simply because the interests of local governments are regarded by the Central Government as being at variance with national interests.

What now remains for me to do sometime in the future is to measure the economic effects of the railway system both on local Japanese economies and on the national economy as a whole, and to determine what the Japanese of those days concluded from those effects and how they then acted on their findings when they came to modify the railway system still further.

NOTES

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1. These banknotes were called *han-satsu*, which means 'paper money issued by the *han*'. Even in the Meiji era, some 150 regional banks (called 'national bank') were authorized, rather like the Bank of Scotland or the Royal Bank of Scotland today, to issue their own banknotes up to 1884, after which time the Bank of Japan was the only one empowered to issue banknotes. The transaction areas of the regional banks corresponded roughly to those areas formerly occupied by the *han*; which suggests that, despite the restrictions imposed by the Meiji Government, the local economies were still quite autonomous.

2. In pre-war Japan, 'nominal capital' (*kōsho-shihonkin)* and 'paid-in capital' (*haraikomizumi-shihonkin*) were legally distinguished from one another. When a company was established, it declared a certain amount of the nominal capital, and issued stock certificates with a value equal to that of the nominal capital. The company would then sell the certificate to its shareholders at a discount price, which in many cases was a quarter of the official price of each certificate. The shareholders were obliged to pay the company specific sums of money until the difference between the official price and the paid-in money disappeared. During the time the money was being paid in to the company, it was known as 'paid-in capital'. This system made it easy for companies to raise money needed to start businesses.

3. If the plan was rejected by the Bureau, or was strongly opposed by senior ministers, it was sent back to the relevant local government with instructions to report the decision to those who had drawn it up.

4. If the company was unable to complete the construction before the expiry date of the provisional licence, it had to be disbanded.

5. Most of these were local landowners who had originally been village officials under the Tokugawa regime and later became local prefectural M.P.s in the Meiji era. They were the wealthiest class in the region, though their properties were far less important for the Japanese economy than the properties of British landlords were for the British economy.

6. Many of these were either prosperous merchants who later became *zaibatsu* (financial cliques) or nobles who were former *daimyō*.

7. It should not be forgotten that in the early Meiji era, that is, before the Russo-Japanese War, there was much less imperialistic feeling in Japan than in later periods. The Army and Navy top brass were ever worried about Japan's being invaded by Western nations, and they had good reason for their anxiety. The Army was led mainly by generals from Chōshū-*han* (now Yamaguchi prefecture) who had had bitter experience of defeat in the battle of Shimonoseki in September 1864, in which they fought against the combined British, American, French and Dutch fleets led by the British vice-admiral A. Kuper, and the Chōshū fortress had been captured without difficulty. The Navy was led by admirals from Satsuma-*han* (now Kagoshima prefecture), whose capital, Kagoshima city, was once destroyed by bombardment from British warships in the so-called Anglo-Satsuma War of August 1863. Such experiences no doubt influenced the Army and Navy chiefs of staff in their attitudes to the railway system. Among other plans for a central

railway system submitted in the years preceding the Railway Nationalization Act of 1906 was one prepared in 1891 by the Director of Railways, Masaru Inoue, who, somewhat influenced by the plan drawn up by the Army headquarters, proposed the nationalization of the trunk routes. However, at that time the central authorities lacked the money to carry out his suggestion, being obliged in those days to rely on private entrepreneurs for their funds.

8. This line may become one of the most important (and most famous) lines in the world in the near future, because the Ministry of Transport is said to be planning the construction of the new Chūō line on which linear motor cars are expected to be able to run at a speed of more than 300 m.p.h..

9. In every railway plan Shinjuku was invariably the starting-point. Hachioji was a distribution centre for raw silk which was produced in Saitama, Yamanashi and Nagano prefectures as well as the San-Tama region, and then exported mainly to the USA via Yokohama.

10. The area represented by those people varied according to circumstances. Normally they together represented a gun, that is, an area about a third of the size of an English county such as Oxfordshire, and consisting of several villages. The representatives usually spoke for all the people in their region, at the same time as they each represented the people of their respective villages. Hence there were inevitable conflicts now and then between these representatives, especially when the interests of the villages were opposed to one another.

11. Kōbū and Bukō have exactly the same meaning. 'Kō' is the initial letter (*kanji*) of Kōshū, now Yamanashi prefecture, and 'bu' is the initial letter (*kanji*) of Bushū, now in this context, Tokyo. Thus the terms 'Kōbu line' and 'Bukō line' both mean 'the line which links Yamanashi with Tokyo'.

12. The figures concerning transportation between Tokyo and Minami-, Nishi- and Kita-Tama are for 1883, those concerning transportation between Yokohama and Minami-Tama are for 1885, those concerning transportation between Tokyo and Yamanashi are for 1879, and those concerning transportation between Yamanashi and Shizuoka are for 1884.

13. The estimated capital of the initial cost of building the Bukō Railway Company was 750,000 yen, whereas the assets of Tamura, who was the biggest landowner in the San-Tama region, with some 500 acres of arable land, was estimated at less than 35,000 yen at that time. On the other hand, Iwata, though a far less wealthy man, managed to borrow about 360,000 yen from an American company in Yokohama.

14. *Kobun-ruijū* (The Compiled National Record), the National Archives.

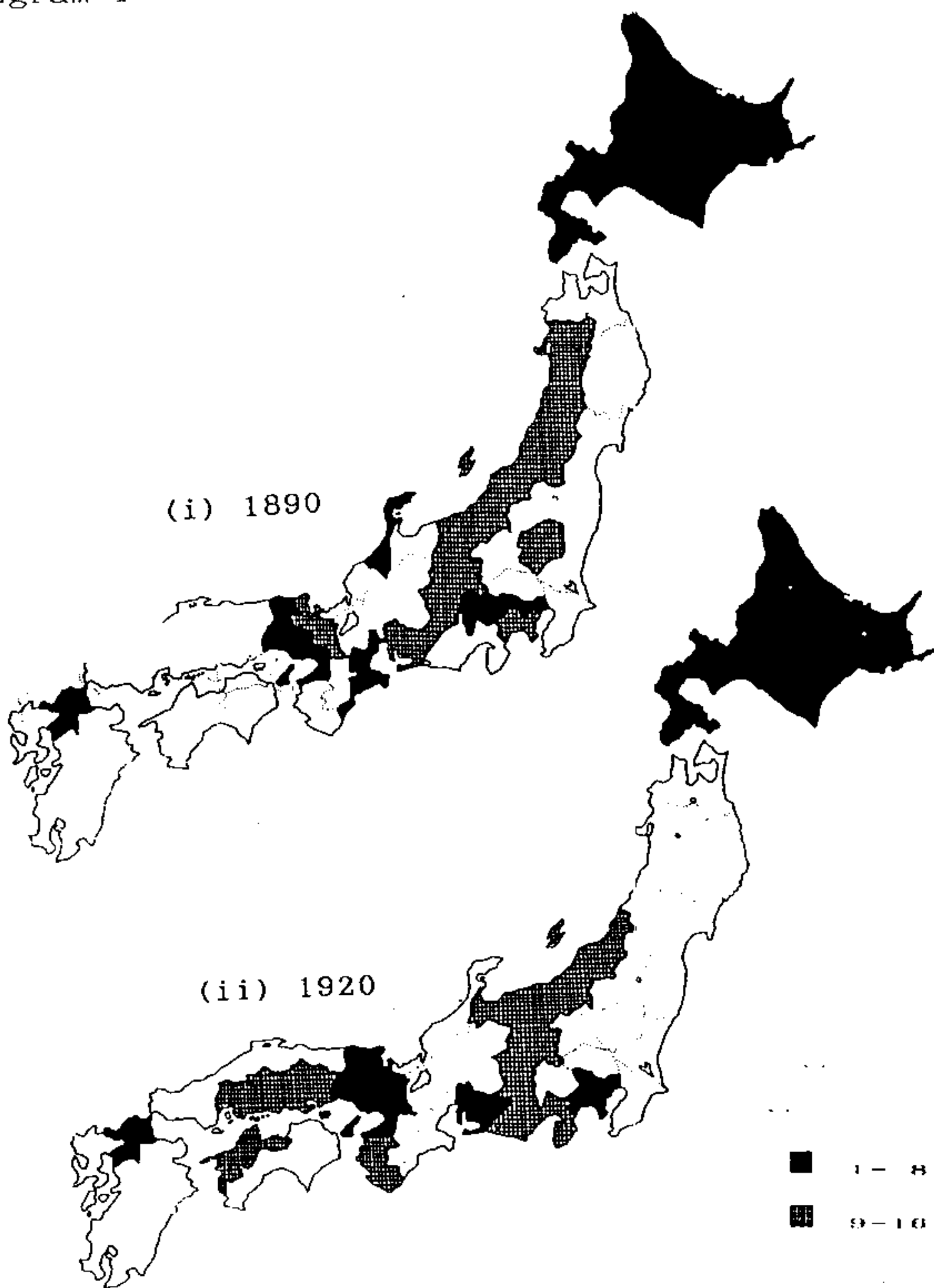
15. This is easier to understand when we compare the two sets of capital outlay for the Kōbu line. One concerns the application in 1886 for a horse-tram line which would not be laid across rivers; the other is an application in 1887 for a railway line to Hachiōji that would cross two large rivers, that is, the river Tama and the river Asa. Since there were no iron bridges required for the horse-tram line, the estimated cost of a number of wooden bridges was only 1% of the total capital outlay; in the case of the railway line, on the other hand, two iron bridges were required, amounting to 17% of the capital outlay; an expense which grew from 276,269 yen in 1886 to 600,000 yen in 1887.

16. Where it was impossible to finance a railway plan, some local investors settled for cheaper forms of transportation such as light railway or trams drawn by horses or even men.

17. Kiyoshi Minami took his doctorate in engineering at a

Scottish university in the early 1880s. Japanese railway technology is said to have been derived mainly from Scottish railway technology, and appropriately so, for Japanese engineers like Scottish engineers have to cope with a good deal of mountainous country and, hence, have had to be good at cutting tunnels and building bridges.

Diagram 1 Paid-in capital by prefecture



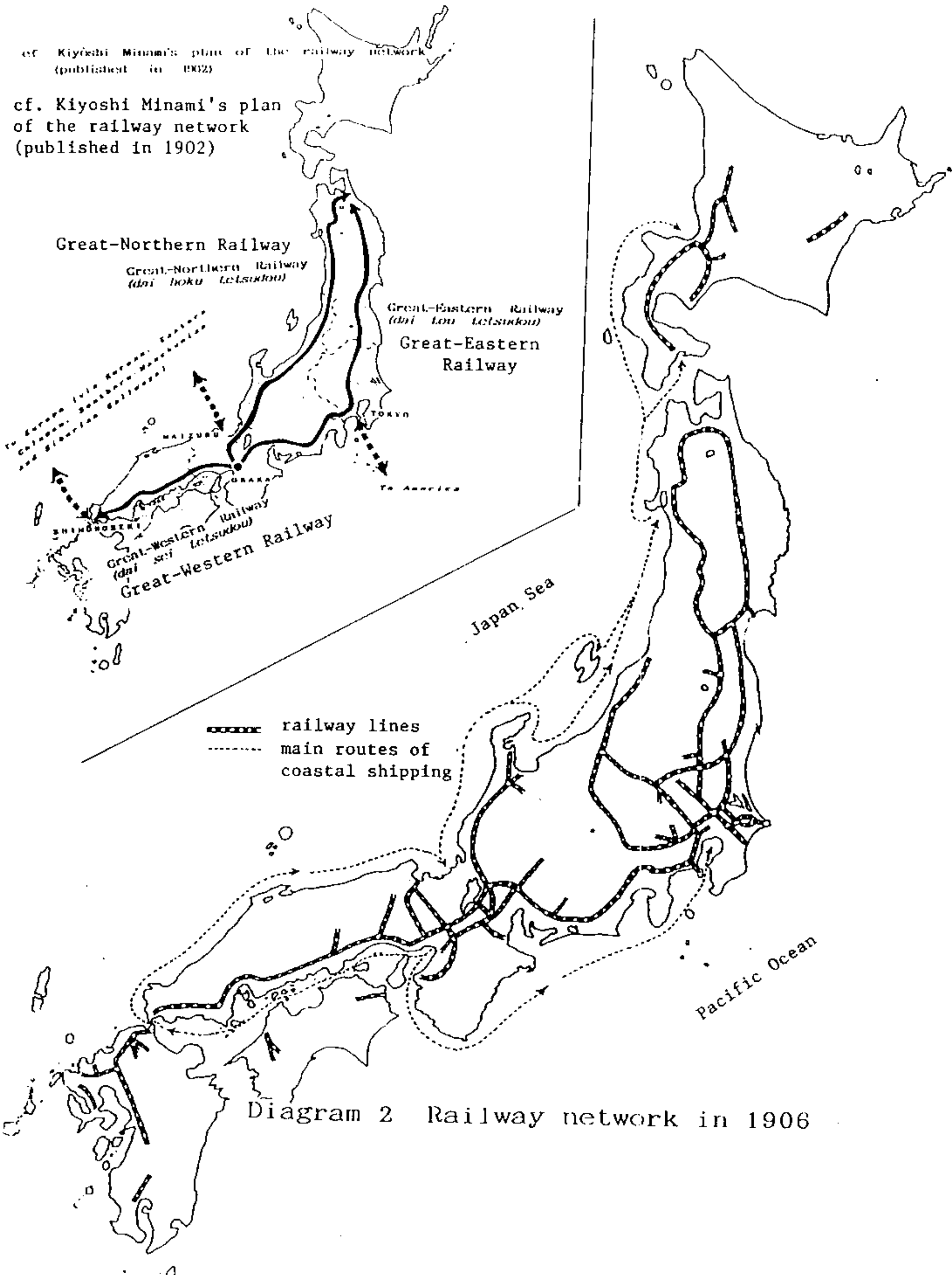


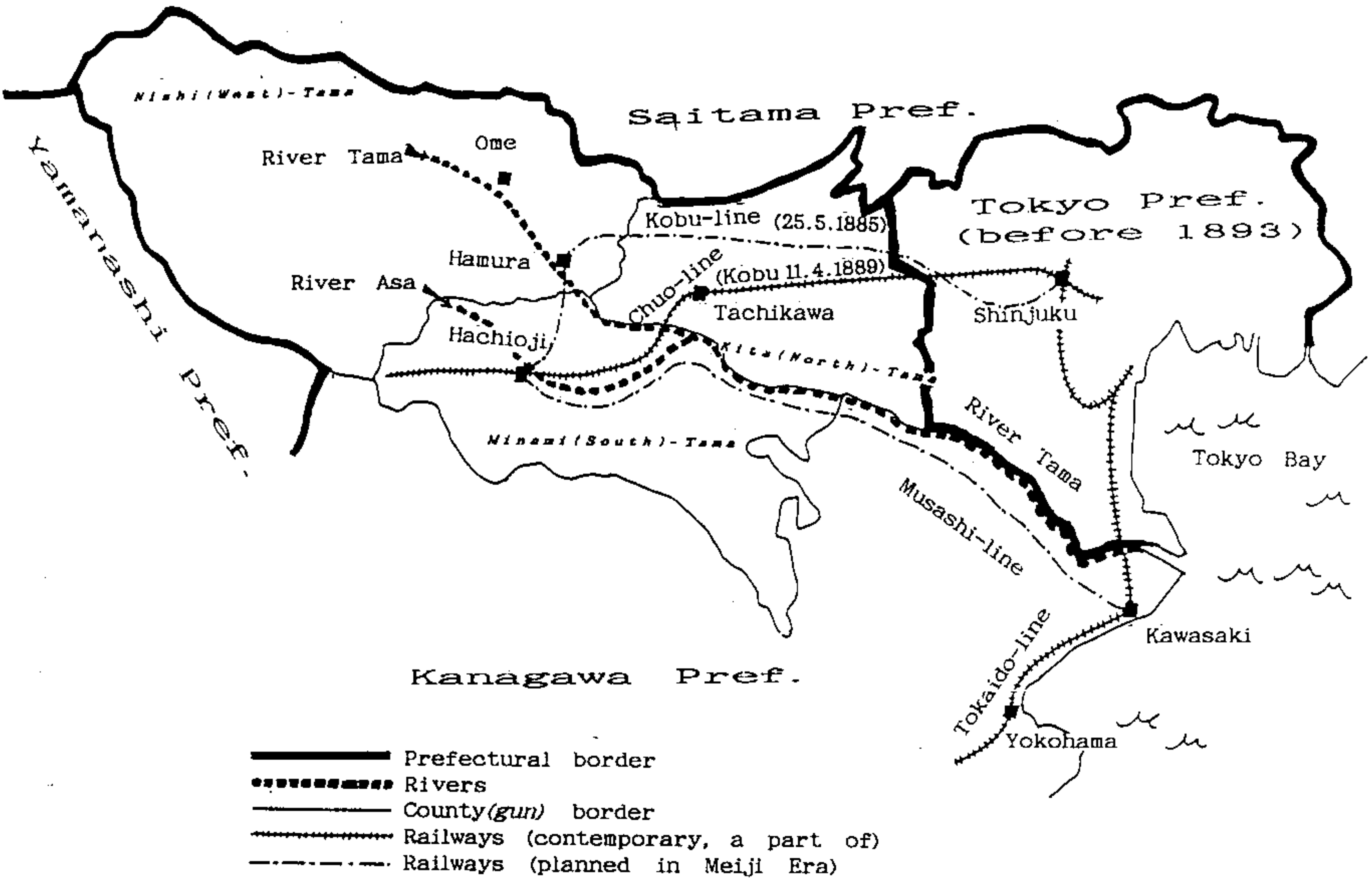
Diagram 2 Railway network in 1906

(part 2 of DIAGRAM 2)

cf.

The name of concerning prefectures

Hokkaido
Akita
Yamagata
Niigata
Tochigi
Ishikawa
Toyama
Nagano
Yamanashi
Tokyo
Kanagawa (Yokohama)
Shizuoka
Aichi (Nagoya)
Mie
Kyoto
Hyogo (Kobe)
Osaka
Wakayama
Okayama
Hiroshima
Setonaikai Sea
Ehime
Fukuoka



Nishi (West)-Tama
Saitama Pref.
Ome
River Tama
Tokyo Pref.
(before 1893)
Kobu-line (25.5.1885)
Hamura
River Asa
Chuo-line
(Kobu 11.4.1889)
Tachikawa
Shinjuku
Hachioji
Kita (North)-Tama
Yamanashi Pref.
Minami (South)-Tama
River Tama
Tokyo Bay
Musashi-line
Kawasaki
Tokaido-line
Yokohama
Kanagawa Pref.
Prefectural border
Rivers
County(gun) border
Railways (contemporary, a part of)
Railways (planned in Meiji Era)
0
10 MILES

Diagram 4 Goods transport around the San-Tama (1000da)

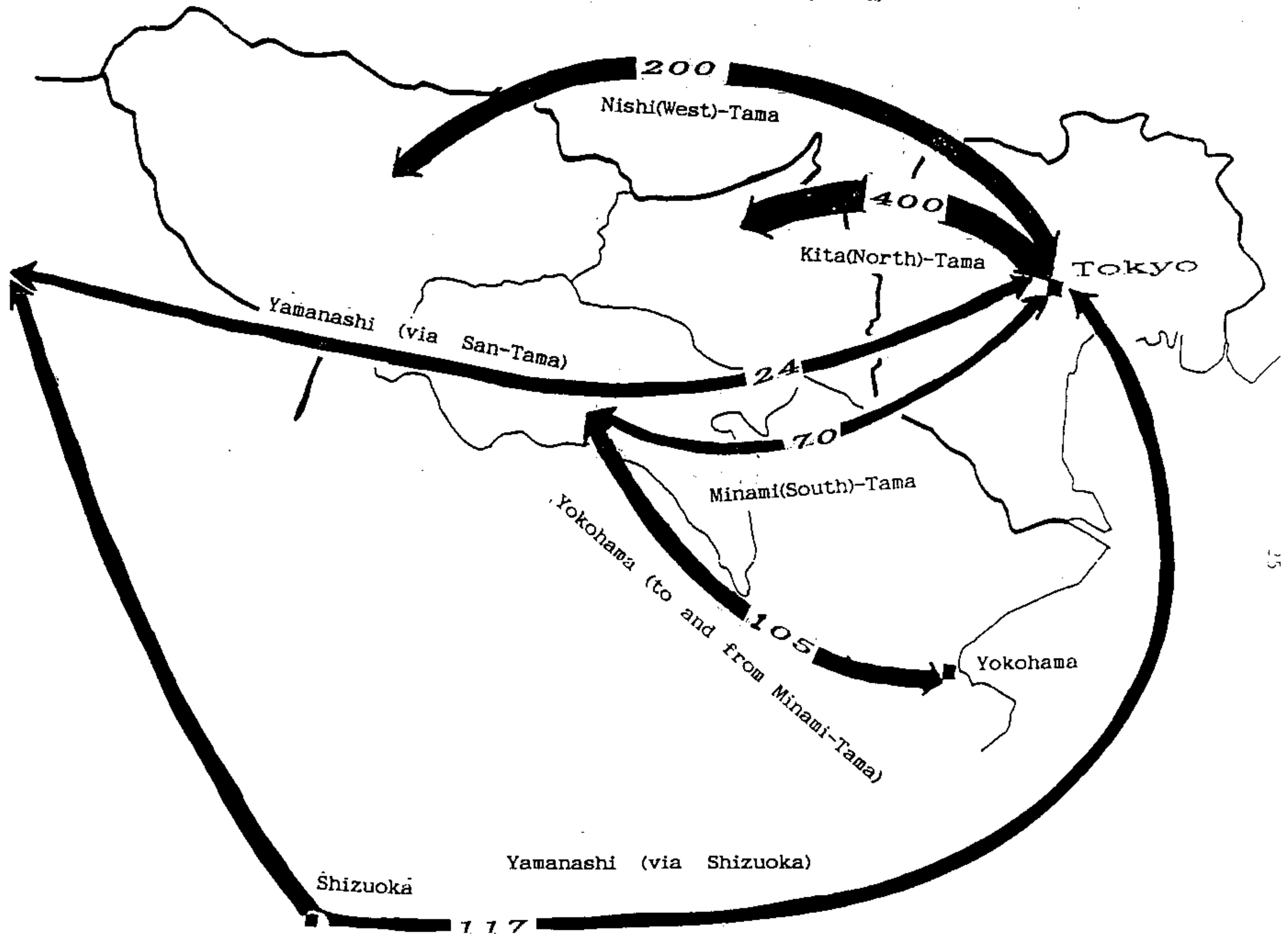


Table 1

Date	Event
1883	'Some persons in Tokyo' applied to the Tokyo Prefectural Office for their plan of a horse-tram between Shinjuku and Hamura using the embankment of Tamagawa-*jōsui* (creek for supplying water to the City of Tokyo). Refused.
84 22 Apr.	Iwata, Iseki, Hattori and other people submitted a plan for Kōbu Horse-Tramway between Shinjuku and Hamura, using the embankment of Tamagawa-*jōsui*. Although they had originally planned a line between Tokyo and Hamura, they changed their plan to extend its route to Ōme, because in the process of collecting information about the area, they discovered for the first time that limestone was produced here. They changed the terminus again to Hachiōji, according to the advice of Tamura and Sashida, and submitted their plan for the Kōbu Horse-Tramway between Shinjuku and Hachiōji to the Prefectural Office.
85 25 May	The Kōbu Horse-Tramway again changed its route. As a result, the route now did not go through the villages Tamura and the others represented.
86 10 Nov.	The Kōbu Horse-Tramway was licensed.
16 Dec.	Tamura, Sashida and other representatives of the San-Tama region submitted to the Prefectural Office of Tokyo their plan for the Bukō Railway, whose route was identical with the Kōbu line plan of 22 April 1884.
19 Dec.	The Kōbu Horse-Tramway group changed its plan and applied again with a plan for a steam railway.

(page 2 of Table 1)

28 Dec.	Hara and other merchants of Yokohama and Hachiōji submitted their plan for the Musashi line, whose route was between Hachiōji and Kawasaki. The Governor of Kanagawa Prefecture preferred this line to the Kōbu and Bukō lines and recommended it to the Central Government.
87 30 Jan.	The Kōbu and the Bukō lines were amalgamated through the mediation of the Central Government and Keijiro Amenomiya, who later came to be known as the 'Railway King' of Japan.
5 Mar.	The Home Secretary Aritomo Yamagata presented his views at a meeting with the Senior Ministers. He was opposed to the Musashi line because it would threaten the economies of the Kōbu line.
10 Mar.	The Director of the Railway Bureau Masaru Inoue supported Yamagata's recommendation.
21 May	The Governor of Kanagawa Prefecture submitted his recommendation for the Musashi line a second time to the Central Government.
6 June	The Kōbu Railway Company asked the Governor of Tokyo Prefecture whether the horse-tram licence for a steam railway under section 3 of the Imperial Ordinance on Private Railways, which had been promulgated in 1887.
1 July	The Governor of Tokyo Prefecture answered the Kōbu Railway Company question by saying that it should be a provisional licence.
4 July	The application for the Musashi Railway was refused by the Central Government.
88 21 Jan.	The Railway Bureau ordered the Kōbu Railway Company to leave the construction of the line to the Bureau, because the Kōbu line would be part of the trunk routes.

(page 3 of Table 1)

Date	Event
Feb.	The Kōbu Railway Company applied for a full licence to build and run the section between Shinjuku and Hachiōji.
31 Mar.	The Kōbu Railway Company was licensed.
89 11 Apr.	The Kōbu Railway Company started its service between Shinjuku and Tachikawa (about 17 miles).
22 May	The Kōbu Railway Company applied to the Tokyo Prefectural Office for permission to extend the route into the city centre of Tokyo, i.e. between Shinjuku and Misakichō (Kanda).
13 July	A provisional licence was issued for the extension of the Kōbu line between Shinjuku and Misakichō.
11 Aug.	The Kōbu Railway Company started a service between Tachikawa and Hachiōji (about 6 miles).

Source:
Summary of Constructing the Kōbu Urban Line (*Kōbu tetsudō shigaisen kiyō*), Kōran Sugawara, 1897 Tokyo.

Establishment of the Kōbu Railway Company (*Kōbu tetsudō no sōritsu*), an interview in a magazine *Tetsudō Jihō*, Sakubai Iwata, 1906 Tokyo.

The History of Japanese Railways (*Nihon tetsudō shi*), The Department of Railways, 1921 Tokyo.

Compiled materials for the History of Tokyo City, vol.72 (*Tōkyō shishi-kō, shigai-hen dai 72*), The Office of Tokyo Metropolitan Prefecture, 1981 Tokyo.

Table 2 Size and route of goods transportation around the San-Tama region

routes		amount 1000da*2		major goods
from	to			
Minami-T*	Tokyo	18	70	raw-silk, textiles
Tokyo	Minami-T.	52		fertilizer
Minami-T.	Yokohama	60	105	raw-silk, textiles
Yokohama	Minami-T.	45		n. a.
Nishi-T.	Tokyo	110	200	limestone, charcoal
Tokyo	Nishi-T.	90		fertilizer, salt, rice
Kita-T.	Tokyo	204	400	firewood, sweet-potato, chloride of lime *(sarashiko)*
Tokyo	Kita-T.	196		fertilizer, salt
Yamanashi	Tokyo	8	24	n. a. (raw-silk?)
Tokyo	Yamanashi	16		n. a.
Yamanashi	Shizuoka	32	117	rice, cotton goods
Shizuoka	Yamanashi	85		salt, sugar, kerosene

Notes:

* 'T.' for 'Tama'.

(Notes relating to Table 2)

*2 The word *da* means the amount which a horse can normally carry, though Japanese people in those days did not have a clear concept about *da* as a measure for weight or volume. The source materials of this table are collected from various books and manuscripts; the measures used in those materials are, therefore, not standardized. In this table, the measures are converted into *da* as follows:

1 *da* = 8 *to* = about 0.5 bushel
1 *da* = 36 *kan* = about 300 pounds
1 *da* = 2 *ko* (The work *ko* literally means a piece or a package. In those days, a horse usually carried two packages on both sides of its back.)

Readers must be conscious that the accuracy of the figures in this table is probably very dubious.

<u>Sources:</u>

Estimation of the Profit of the Canal between Hamura and the Yotsuya-gate if Tokyo City (manuscript, *Tokyo Yotsuya-guchi unga rieki yosan shirabegaki*), Sashida archives, 1883 Hamura.

Application Form for the Kawasaki-Hachiōji Railway (manuscript, *Kawasaki Hachiōji kan tetsudo fusetsu negai*), in Compiled Public Records vol.37 (*kobun ruijū 37*), The National Archives, 1886 Tokyo.

The Statistics for Encouragement of Industries in Yamanashi No.1 (*Yamanashi-ken kangyō dai ikkai nenpō*), Prefectural Office of Yamanashi, publishing year unknown, Kōfu.

Statistics of Yamanashi Prefecture in the 20th year of Meiji (*Meiji 20 nen Yamanashi-ken tōkeisho*), Prefectural Office of Yamanshi, 1887, Kōfu.