



**A SHORT HISTORY OF
TRANSPORT IN JAPAN
FROM ANCIENT TIMES TO THE
PRESENT**

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1. Introduction

The cover to this book alludes to technological change in transport where a magnetic levitation rail car is seen projecting from the firebox of a mid-19th century British railway steam engine. The stories behind these inventions, and numerous others, that have progressed all forms of transport over land, sea and air, are the *people* in the institutions and organisations whose policies, rules and regulations have brought ideas to fruition. Here, 'institution' means the mechanisms of governance of a geographical territory. A distinguishing feature of a primitive society is "social organisation" (Nash, 1967: 5) but this evolves with different historical epochs each having distinctive and complex institutions.

The term 'institution' for a nation extends from its constitution to other governing organisations that have a less secure constitutional basis, such as provincial and local government, the bureaucracy, political parties, trade unions and lobby groups. As Hague and Harrop remark "As we move away from the heartland of constitutionally mandated structures, the term 'organisation' tends to supplant the word 'institution'" (2001: 63).¹

Throughout history, it is largely the power sanctioned by central governing institutions that progress personal mobility and the ability to move goods. This book is a short history embracing all modes of transport in Japan. The themes identify the governing authorities of institutions and describe what factors have influenced their major transformations over time, and demonstrate, at the same time, how transport has evolved. When interpreting the history of transport, one way to understand the distinction between the institutions and

1 For an extensive exposition of these, sometimes subtle, distinctions, the reader is referred to Duina (2011), who provides a detailed introductory discussion of the characteristics of institutions and organisations, or to Alston (*et al.*, 2018).

organisations of the economy—respectively, the public (government) and the private sectors, or the civic and civil sectors²—is to think of the political institutions of government extending back over time and to consider their long-term evolutions, in which are embedded much shorter-term changes in transport innovation and administration.

In the descriptive narrative and interpretations of institutions and organisations covered in subsequent chapters, the following transport-related questions are posed.

1. Throughout the history of transport innovations and policies that relate to the movement of people and freight—from archaic times to the present—both civic and civil society have been intimately entwined in one way or another to deliver progress, change and technological and managerial innovation. Who were the relevant institutions and organisations in society? What were their respective roles in relation to the movement of traffic on all transport modes, especially issues of authority and power relations?
2. By placing people at the centre of this enquiry, an obvious parallel question would be: who were the key players behind the changes in these institutions and organisations and what tangible things did they achieve in the transport sector?
3. The transfer of knowledge and its adoption that, in turn, influences change is facilitated by the technology of transport and communications available at any point in history (Grayling, 2016), so to what extent is any country influenced by overseas ideas in the transformation of its institutions, organisations and transport?
4. What might the future look like in terms of institutions, society and transport?

Such questions are answered in this book with a case study of transport in Japan from archaic times to the present. This book represents a vastly

2 For a more concrete, micro example of such interactions involving civic and civil society see a case study of urban transport policy in Sydney, Australia (Black *et al.*, 1982).

more ambitious extension of the author's description of institutional changes and the changes in the provision of transport infrastructure services in Australia 'bookended' between the 1956 Melbourne Summer Olympic Games and the 2000 Sydney Summer Olympic and Paralympic Games (Black, 1999). These questions can be addressed more readily in relation to contemporary societies where data are freely available. Every advanced economy, including that of Japan, would have detailed descriptions, accessible in the public domain, on its institutional and organisational arrangements for transport, including its regulatory framework: who plans, approves, funds and finances, builds and maintains transport infrastructure. However, to reveal the past entails interpreting material from a wide range of sources.

To tease out the evolution of institutions, organisations and transport requires a broad search of historical accounts written both in English and in Japanese. Published in English, there is scholarship rich in details of ancient and modern aspects of Japan, its politics and economy. Computer search engines and the website Academia allow access to data bases that contain relevant articles. Extensive use of Google translator was made to convert text in kanji and katakana into English. As with some historical writings, there are variants in dates in the original source material, so I have resolved these differences by resort to *Japan: An Illustrated Encyclopedia* (Kodansha, 1993), written by leading Japanologists. Material extracted from published secondary sources has been carefully checked from this encyclopedia.

The methodology on which the manuscript is based also includes: extensive site inspections of all form of transport infrastructure; visits to museums and art galleries—especially the woodblock prints of Hiroshige and Hokusai that depict famous scenes on medieval roads; publications and reports in English and in Japanese; reference to old maps and artworks; and historical novels, such as *The Tale of the Heike*³ Interpretations of data collected have been aided by my numerous Japanese academic colleagues, and by the engineering members of the Not for Profit Organisation (NPO), Strategic Life-cycle Infrastructure Management (SLIM), Tōkyō, whose members arranged fieldwork

3 Heike means the "House of Taira"—where "Taira" was the original *uji* (or clan) name of the house.

excursions for me to the many transport projects that they helped build, or they studied when they were students in the 1950s and 1960s.

In surveying the contemporary transport scene, when attempting to answer some of the questions posed earlier, government officials and consultants have been interviewed. Today, in Japan, there are three tiers of government—national, prefectural (and city) and local. The civic sector comprises an elected Parliament, government bureaucracies of which the Ministry of Land, Infrastructure, Transport and Tourism is the most relevant to the transport sector. The sector is a mixed one, with government-owned ports, canals and airports, prefectural highway departments, private railway companies, public and private bus services, private-sector logistics companies, and, of course, a population wedded to personal mobility with motor cars and bicycles. Examples of such fieldwork and interviews by the author include published studies on railways and transit-oriented development (Black *et al.*, 2016), Ōsaka seaports and canals (Black, 2021) and emissions from the Hanshin Ports (Styhre *et al.*, 2017), and unpublished investigations into roads and airports.

Study Area and Time Periods

For convenience of exposition, and for its historical association with the formation of the early Japanese state (Kawanabe *et al.*, 2012), most of the selected case study area comprises of the Kantō region in central Honshū (containing the prefectures of Tōkyō, Chiba, Saitama, Kanagawa, Gumma, Ibaraki and Tōchigi) and of the Kansai region (a historical and cultural term loosely applied to Ōsaka, Kyōto and Kōbe). Today, Kansai (https://en.wikipedia.org/wiki/Kansai_region#/media/File:Kinki-en.png) and Kantō are distinct regions in the minds of Japanese people. Used in documents some time before the 10th century, Kansai (“west of the barrier”) is in contradistinction to Kantō (“east of the barrier”). Added to this study area is the Hokuriku region to the north of the Japanese Alps because of its historical trade links with the core study area between Ōsaka and Tōkyō. The study area includes a well-defined geographical region on Honshū Island that the Japanese refer to as the *Tōkaidō Megaroporisu* or the “Super Mega Region” (<https://transportgeography.org/contents/applications/transportation-mega-urban-region/tokyo-osaka-corridor-tokaido/>).

The *Tōkaidō Megaroporisu* is a general term for the approximately 500 km stretch of land that accounts for only 17 per cent of the nation's area along the Pacific coast of the island of Honshū extending westwards from Tōkyō to Ōsaka and Kōbe. This region is the political, cultural and economic heartland of Japan. As of January 2020, its population was 66.48 million (just over half of the national population) and its annual GDP (in 2016) was 311 trillion yen—very similar to the GDP of the United Kingdom (Central Japan Railway Company, 2020: 22).

Nevertheless, certain transport developments require discussion that extend beyond this land-based study area—air travel and ocean and coastal shipping being obvious cases in point. Historical sea routes of Japan connecting China, Korea and other Southeast Asian countries via the Setō Inland Sea are considered as an integral part of the core study area. Another example is the early fortified trading seaport of Dazaifu on the Sea of Japan (near present day Hakata). Similarly, when discussing developments in aviation in the first half of the 20th century, it should be noted that Japan had overseas territories in China, Taiwan and Korea.

The time frame starts with the “dawn of civilisation” in Japan (Deal, 2005: 12) and ends up today, with speculations on possible reforms to the Japanese transport sector in 2022 and beyond. A periodisation scheme is adopted that divides the continuous flow of social events and institutions into a number of discrete time periods. As such, any classification scheme is a historical concept devised by historians. An obvious starting point for a non-historian is to consult *The Cambridge History of Japan* (Hall *et al.*, 1990, 1993, 1999) where the defined periods are labelled: ancient; Heian; early medieval; Edō; and modern, or to look at the chronology in Wikipedia (2021).

However, I have preferred to use a classification from a Japanese scholar partly because his classification of time periods has been devised in the context of legal history whereby “...law is that which regulates social activities and organizations...” (Ishii, 1980: ix). Table 1 shows these convenient time periods used for later analysis of social institutions with the addition of an amended contemporary period to bring events up to date. Ishii's detailed chronological table (Ishii, 1980: 133–153), that ends in 1951, uses both the Western calendar year and the Japanese year based on the reign of each Emperor (from 562 A.D.) so these approximate dates have been added to Table 1 to make the classification easier for non-Japanese readers to understand.

Table 1. Time Periods—Analysis of Institutions and Organisations.
Source: based on Ishii, 1980: viii.

Time Period	Western Calendar	Description of Period
Archaic	250 B.C.–603 A.D.	Tribal (Religious) State
Ancient	603–967	<i>Ritsuryō</i> State
Medieval	967–1467	Early Feudal
Early Modern	1467–1858	Centralised Feudal
Modern	1858–1945	Modern Monarchy
Contemporary	1945–2022	Modern Democratic

Significance

A multi-disciplinary, social science perspective is taken with the book being of interest to a variety of disciplines. They include historians, geographers, political scientists, sociologists and any students in Japanese courses dealing with technology and society. In addition to transport researchers and students, the book may also be of interest to the general reader. For researchers of the new institutional economics (Williamson, 2000), the case study approach will be of interest because North (1991: 97) mentions institutions as “humanly devised” twice in the first five lines of his article. Furthermore, Japanese transport researchers, who are less familiar with this line of inquiry, can take inspiration from the approach in formulating their own area-based, research case studies with the benefit of being able to access primary data sources in their own language.

This book aims to complement the understanding of institutional arrangements of the governance, planning and evaluation in the transport sector, and to the ways these activities interact to shape the spatial economy of any nation. An understanding of the political framework in any era is essential in understanding the context, how transport functioned at the time and the impacts transport had on society. Finer (1997: 1) notes that the history of politics involves understanding “the structures of government under which groups of men live, and its relationship towards them.”

Apart from the socio-technical transition literature (Geels, 2012), little has been written about institutional and organisational transformations when applied to transport. No Western scholar has attempted to interpret the long-term development of the Japanese transport sector by paying attention to all modes of transport within the context of political economy. The closest studies of this kind are the book *Rikisha to Rapid Transit: Urban Public Transport Systems and Policy in Southeast Asia* (Rimmer, 1986) and books by Hauser (1974), who studied the Tokugawa era and economic institutional change in the cotton industry, by Vaporis (1994) on Tokugawa road administration and by Traganou (2004) on barriers to travel in the Tokugawa period.

With a greater understanding of the historical factors underpinning the dynamics of (transport) institutional and organisational change in the past it is possible to look more critically at current institutional arrangements and to assess the reforms that might be needed such that transport services support society in a more economic, environmentally sustainable and equitable way. As noted by van Vliet (2002: 35), the widespread global application of newly emerging transport and communication technologies is reshaping the physical, economic fabric of cities: these require new institutional arrangements.

Understanding of the role of modern governments is essential when considering the financial aspect of infrastructure development. Various projections of infrastructure requirements in urban and rural areas of Japan, and the capacity of governments to fund infrastructure from traditional sources of revenue, such as income tax, show a shortfall such that private-sector finance will be needed to plug the gap. This situation has led in the 1990s to private finance initiatives (PFI) in the UK and in Japan, and public-private partnerships (PPP) in Australia, and in other Asia-Pacific countries (Economic Intelligence Unit, 2012).

Studying the contents of this book raises the contemporary question as to what is the appropriate role of governments in economic development policy? One view is that transport infrastructure and services are social overhead capital and therefore should be provided, and maintained, by the government as monopoly enterprises. Another view is that such markets should be contestable and that the role of government should be policy, regulation and strategic planning with outcomes being transport project development and the procurement

of construction, operation and maintenance services based on which party can offer the highest value for money to society. How this plays out in Japan in the future will be shaped partially by past and present experiences by people, their political motivations and the policies they introduced.

Organisation of the Chapters

The next chapter elaborates on the concept of institutions and provides the political context for the case study material on all modes of transport in Japan by outlining the important institutions and other organisations and how they have evolved and changed from archaic times to the modern period. These include: the hunter-gather society of the Jōmon, where there were clans but no institutions; the rise of clan chiefs and defined territories in the Yayoi period; the unification of parts of western Japan in the 2nd century and the institution of Emperor (Griffis, 1915); the over-reaching control of the Emperor's Court; the rise of the warlords and the imposition of three military governments until 1868; a rapid modernisation of the economy with the Meiji Restoration and westernised model of government in a monarchical democracy; and, finally, the current democratic form of government and its bureaucratic departments in Japan.

Apart from the obvious importance of walking to any society, the most appropriate transport mode to start with is water because sea transport provided the means for the early inhabitants of Japan to communicate with nearby states, especially on mainland China and Korea. Therefore, Chapter 3 analyses the organisation of ports and domestic and coastal shipping. This includes the ancient and medieval ports at the Eastern end of the Setō Inland Sea, such as Naniwa, Sakai, Ishiyama Honganji, Watanabe and Hyōgo. Coastal trade became an important feature of the Japanese economy from the early 17th century. As Western powers forced the opening of selected ports in the mid-19th century, and as the economy modernised in the 20th century, port improvements took place to accommodate international shipping. The post-Second World War economic boom of the 1960s onwards required further port expansion, and the introduction of container shipping in the late 1960s necessitated large facilities and extensive land reclamation. Increased global maritime

competition has forced government intervention into the way Japanese ports are owned and financed of which the Hanshin port of Kōbe and Ōsaka is a good example.

Canal transport and lakes are forms of water transport (rivers have played a limited transport role in Japan because of the mountainous topography and fluvial infrastructure improvements have served to regulate surges in water flow and avoid excess flooding) that deserve a separate chapter (Chapter 4). The ancient period essentially set the pattern of canal and river management for millennia with landowners reliant on local knowledge for construction, operation and maintenance. In fact, the canals that were constructed in the commercial ports of Ōsaka and Edō from the 17th century were not financed by governments but were built entirely by the resources and capital of the merchant class. The ancient cultural and political locus of Japan was around Lake Biwa and Kyōto, so various ambitious plans were proposed by warlords that involved large-scale canals linking the Sea of Japan and the Pacific Ocean. All were aborted because of topography. It was not until the late 19th century that a canal was constructed between Lake Biwa and Kyōto for the purposes of moving freight, providing irrigation and generating electricity.

Ways of moving over the landscape on foot or by horse stretch back to when the Japanese archipelago was settled, but any sense of building and maintaining a network of roads dates from state formation in 6th century (Chapter 5). Later, in the medieval period, as the country descended into civil war, the *daimyō* (the great war lords owning large domains) used *corvée* labour for road building purposes. The third military government (Tokugawa) used roads and barriers⁴ to maintain tight security and control over the country that followed the barrier policies and post stations introduced by the Taira edicts in the 7th century. During the early modernisation of Japan, there was little road investment because railways were a construction priority. Highway and expressway construction is predominantly a post-Second World War phenomenon that went hand in hand with the Japanese Government's

4 In Japan, these "barrier stations" were small fortified structures on main roads. Used in the Middle Ages, the British word "turnpike" was a spiked barrier across a road for defence, especially against horsemen (Jackman, 1916: 218–227).

promotion of a domestic automobile industry and policies to raise the standard of living that included private car ownership.

As the feudal past in Japan was swept aside (partly through external pressures), railways (Chapter 6) were constructed at the beginning of the Meiji Restoration under the influence of overseas money and expertise. Competition to expand the network ensued between the government and private sectors, until, as in many countries, the government nationalised the railways. Post-Second World War Japanese railways is a story of the financial difficulties of government railways and the establishment of regional business enterprises. In addition, Chapter 6 is the story of the history of the successful bullet train (*Shinkansen*) that has captured international attention. The unique reasons behind its development and success are explored in this chapter, along with its technological advancement in the 500 km/hr maglev train that is under construction between Tōkyō and Nagoya.

Air passenger transport is an obvious competitor to high-speed rail in the long-distance passenger markets of Japan. Chapter 7 traces the history of Japanese aviation in the early part of the 20th century, initially limited to military aircraft, but soon expanding into domestic services. Both the national government and private enterprise were involved in offering air services until the government nationalised the airline companies. The main theme is the organisation of airports and civil aviation in the post-Second World War period, including the rise of domestic and international air carriers. From military aerodromes to the most modern of airports, such as Haneda and Narita in or near to Tōkyō, and Kansai and Kōbe serving the Ōsaka region, the national government has been the prime mover with policies, regulations and airport financing in the aviation sector.

Anyone who reads scholarly articles about transport would have heard of the plea to “integrate land use and transport”.⁵ How the Japanese have tackled this feature of urban development is described in Chapter 8 with a case study of the Tōkyō metropolis, where the land readjustment program, transit-oriented development and land-value capture feature prominently. Planning for integrated land-use and

5 This has been a reoccurring transport conference theme worldwide since the concept of “integration” was introduced in a report for the Ministry of Transport, British Government, by Baroness Sharp (1970).

transport in Tōkyō regional new towns is also described. Examples of transit-oriented development are drawn from railway stations where the author and colleagues conducted field studies and interviews. Globally, there is an ongoing ‘smart city’ movement and examples from the study area are described. Looking to the future, the Japanese Government is promoting Society 5.0 and the vision and components are outlined in this chapter. Chapters 2–8 each contain their concluding sections and are supported by separate lists of references.

In the Conclusions (Chapter 9) the early questions posed are re-packaged and answered when addressing transport institutions and organisations. What are the respective roles of civil and civic society in providing transport at specific points in history? What activities did they actually perform in their respective social institutions in delivering transport infrastructure and services? Who were the key players in these transport institutions and organisations and what tangible things did they achieve? Were the progression of evolutionary paths of institutions and organisations slow and conservative, or were the paths abruptly disrupted, and for what internal or external reasons? Who were the dominant players behind these changes? And the transfer of knowledge and its adoption in most societies influences transitions, so to what extent has Japan been dependent on overseas ideas in the transformation of its institutions and organisations? Finally, Chapter 9 also considers the future of key aspects of Japanese society and speculates on some of the institutional and organisational challenges that might be facing Japan into the middle of the 21st century.

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