

## Mini Review

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# Transport Policy and Cultural Borrowings: Japanese Examples

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## Abstract

It is argued that institutions and organizations embrace customs, cultures, and ethics. Culture may undergo transitions in response to changes in the environment, internal dynamics or through interactions with other cultures. Cultural borrowings have formed an important component of transport policy formulation in most societies. This concept is illustrated with government institutions that are responsible for transport infrastructure and services. Examples of ports and shipping, canals, railways and roads) from archaic times to the present in Japan are used to illustrate cultural borrowings, noting, of course, the existence of numerous home-grown policy interventions. Cultural borrowing can be reversed with the example of hydrogen-fuel cell technology as a key industrial export.

**Keywords:** Transport policy; Cultural borrowings: history; Canals; Ports; Railways; Roads; Hydrogen economy

## Introduction

Any governmental transport study would start with an “institutional analysis” of statutory and regulatory frameworks, and the key organizations that might be impacted by the project. Institutions and organizations, [1] embrace customs, cultures and ethics, and the culture may “undergo transitions in response to changes in the environment, internal dynamics or through interactions with other cultures” [2]. It is the people in these institutions and organizations who rely on the circulation of ideas on technologies, policies, services and finance to inform their “worldview”, and, who, ultimately, make recommendations on what projects are needed to achieve more economic, social and environmental sustainable development.

The concept explored in this article is that of “cultural borrowings” [3,4] and the formulation of government transportation policies at any historical period and at any defined territorial scale. “Cultural borrowing” means how creative ideas are driven forward by key people to transform society. Drawing on the case of Japan from ancient times to the present [5], selected examples of cultural borrowing in transportation policy formulation are outlined. Japan

is an interesting example because since the 1970s the country has been an exporter of consultancy services and technologies, especially to the Asian region [6]. Based on the above, the question is to what extent is contemporary policy-making a function of cultural borrowings, or of indigenous evidence-based research and development?

## Discussion

### Ports and Shipping

In Japan, in ancient times, powerful clans ruling as an institution would have controlled maritime ports. The first written evidence of a Japanese envoy visiting China [7] is recorded in the Hou Hanshu (57 AD). The T'ang government (China) set up Shi Bo Si (市舶) – its Oceangoing and Marketing Department - in many coastal ports for the administration of foreign economy-related affairs by sea including the export of silk products to Japan. Equivalent port-related functions were duplicated in Japan, where an institution of port administration had evolved - directed by nobles in the Emperor's Court.

## Railways

The initial phase of railway building in Japan in the late 19<sup>th</sup> Century is best interpreted as: the import of foreign technology by persuasion from foreign governments; and continental Europe's general experience of the role of railways in nation building. On 7 December 1869, The British Minister to Japan, Harry Parkes, met with heads of the Japanese Government to promote the construction of railways in Japan [8], where he was lobbying on behalf of British private-sector companies to win the lucrative business of rail technology exports.

The Meiji government's decision to adopt a narrow gauge (1,067 millimeters) is unclear but it was influenced by British engineers whose recommendation of narrow gauge was based on Japan's economic situation corresponding more to the economies of British overseas territories where projected passenger and freight traffic volumes were low. The Japanese Government raised £1 million (about £110 million sterling in current prices) in London by issuing bonds through the Yokohama Branch of the Oriental Bank (a British bank) for its first railway project – a 29 km line linking Shimbashi, west of central Tokyo, with Noge Kaigan, Yokohama, the main port near Tokyo at the time. The national government approved of an extensive network of state-owned railways where about 300 foreigners (mainly British nationals) were employed in railway design, construction and management. In 1905, the length of the national railway system reached 2,414 km.

## Canals

Japan's topography has negated the need for freight transportation canals but their evidence of a canal built for ships going back to the construction (uncertain date) of the Horie Canal. Clearly, it was important by the 6<sup>th</sup> and 7<sup>th</sup> Centuries AD. The total length of the channel is 3km - cut through three parallel sand bars, each separated by narrow lagoons, immediately to the north of the Uemachi Terrace, in the modern-day region of Osaka. The technology of canal construction was imported from mainland China and was used extensively in building moat around castles during the medieval period.

The Meiji Era (1868-1912) is characterized by Japan adopting western institutions and technologies, such as the Home Ministry (Naimushō), established in November 1873 (abolished in December 1947 by the Allied Occupational Forces) with public works being included within its administration. With the transfer of the national capital of Japan from Kyoto to Tokyo in 1868, the Prefectural Mayor, Kitagaki Kunimichi, hoped to inject new economic life back into the city by commissioning the construction of Lake Biwa Canal from Otsu to Kyoto. Minami Ichirobe, who had been the chief engineer working with the Dutch advisor van Doorn on the construction of the Asaka canal in Fukushima Prefecture, undertook preparatory work for the canal. The volume of rock estimated in the tunneling through the mountain at Mount Nagana had been previously

calculated in a thesis at Imperial College London – illustrating the influence of foreign technology in the early Meiji period. Permission to begin construction was sought from the national government in May 1884 who gave its authorization in January 1885.

## Roads

The ancient Japanese highway system was a direct copy of the highway system established during the Chou dynasty (1122-1222 BC), and subsequently improved in the Chin dynasty (222-207 BC) of China. Road infrastructure (and, by implication, some embryonic road administration) was established in the Kofun Period. From at least the 5<sup>th</sup> Century AD roads linked settlements, palaces, tombs, craft production areas and ports [9]. The Taiho reforms (702 AD) introduced national administration - the "Ritsuryo system", another cultural borrowing from China – and this formed the basis of an institution responsible for a national highway network, including the planting of trees by the side of the road. Of course, the history of highway administration does not always reflect cultural borrowings because during the isolationist, Edo era (1600-1867) there is a long record of locally-derived policies, such as road maintenance, barriers (sekisho), post stations, controlling pilgrimages, and travel permits and passports [10].

As for the contemporary Japanese highways, the greatest cultural borrowing was the political influence of the United States from 1945 onwards. As part of Japan's post-Pacific War reconstruction, a memorandum from the Supreme Commander for the Allied Powers (SCAP) in 1948 introduced a five-year highway plan to replace the German autobahn-style highway planning in vogue during the early 1940s. As noted by Black & Rimmer [11], the first five-year plan had a strong American influence due to the involvement of specialists led by Dr Ralph Watkins who had been invited by the Japanese government to consider the economic feasibility of an expressway linking Nagoya with Kobe. The Watkins' Report (1956) stressed the importance of highways as social overhead capital and their crucial role in promoting economic growth.

It also introduced the concept of highway traffic demand analysis and methods of estimating traffic diversion from existing roads to new roads. The Nihon Doro Kodan (Japan Highway Public Corporation) established by law in April 1956, reviewed the Watkins Report and published its own report [12]. The revised Special Measures for Highway Construction Law was repealed with the Japan Highway Public Corporation taking over responsibility from the Ministry of Construction to construct a national toll highway network and to collect road user tolls. This led to the creation of a Japanese version of the Highway Capacity Manual [13] that was used to standardize expressway design. The extent of American influence on Japanese road policies can be seen from the fact that Watkins Report also triggered a flurry of additional highway legislation providing for national expressways, national toll roads, revised funding arrangements (government bonds,

grants to prefectures) and metropolitan expressways. Legislation includes: The National Expressway Law enacted 1957; the Metropolitan Expressway Public Corporation Law (1957); and the Hanshin Expressway Public Corporation Law (1959).

### Reversing the Cultural Trend

As the Games of the XXXII<sup>th</sup> to be held in Japan commencing in July 2020, vexing global issues include climate change, energy policy, and making cities and transportation systems more sustainable. One technology that can address all issues is hydrogen-fuel cells. Japan has the world's largest number of patent applications in the "fuel cell" field. On 26 December 2017, a "hydrogen basic strategy" was launched as a national strategy by the Japanese government. Promoting the realisation of a hydrogen society can also help to strengthen Japan's industrial competitiveness and provide a concrete example of "cultural exports". Some of these early initiatives for hydrogen-fuelled vehicles are as follows. In May 2019, the Toyota Motor Corporation announced the construction of new buildings to produce fuel-cell stacks and the addition of lines to produce high-pressure hydrogen tanks in anticipation of global sales of 30,000 vehicles/year from 2020 onwards. Honda Motor Co., Ltd. has also established a joint venture plant with General Motors and announced that it will produce next-generation fuel cells from 2020 onwards. Future opportunities for hydrogen include the powering of passenger and freight railways and container shipping.

### Conclusion

Whether government transportation policy making is a function of cultural borrowings, or of indigenous evidence-based research and development has been explored in this article using Japan from archaic times to the present as a case study. Cultural borrowings have formed an important component of transport policy formulation in most societies [11]. Roads provides the most probable answer in that the early history points to willingly copying from China and the post-Pacific War to being dominated by American models of highway administration and design yet during the pax Tokugawa (1600-1867) the national government (bakufu) issued its own policies and edicts. The know-how to build canals was evident from ancient times but never exploited for transportation of goods (except within the cities of Edo and Osaka) because of topography and the relatively short and fast flowing rivers. In the late 19<sup>th</sup> Century, elements of Western technology were used on

the construction of the Lake Biwa canal. The British introduced all aspects of railway technology to Japan during the Meiji era. Despite this, the Japanese government through research and development, inaugurated the world's first high-speed commercial passenger service [14]. A global hydrogen society could also help to strengthen Japan's industrial competitiveness – fuel cells being a concrete example of "cultural exports".

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