



Aspects of Labour Intensive Economy around Bicycles in Modern India with Special Focus on the Import from Japan

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Takashi Oishi ⁺

Introduction

The bicycle market in British India continued to be dominated by British products which major companies like Hercules, Raleigh and B.S.A. brought in to set up exclusive distribution channels by appointing their own agents and thereby building their brand values. For some period from the late-1920s to the late-1930s, however, Japanese products succeeded in carving out a substantial share in the market. Though the success turned out to be short and decent due to imposition of preferential duties for British goods in mid-1930s and breakout of the WW II, the Japanese products surely worked to broaden a scope of bicycle from an item of elite/middle class to a tool of daily use. Growing popularity of Japanese bicycles/parts was not limited to British India. In fact, it was also experienced in many of East, South and Southeast Asian regions in the 1920s and 1930s.

Conventional description attributed this interlude of Japanese products just to their cheapness which could be realized by the abundant cheap labour for manufacturing. Moreover, at the same time, a strong voice at that time among Japanese bicycle industry which mainly echoed a handful of large manufacturers equipped with integrated plants was raised to apprehend, and even alert to, the danger of export increase by alleging it as *soseiranzo*(overproduction of inferior goods) on the part of dispersed small manufacturers, and some considered it as a structural defect that Japanese bicycle industry as a whole suffered from. Such voice thus appealed for more rigid control over qualities of export products especially coming from those small players under the arrangements of wholesalers and exporters.

The first part of this paper tries to re-examine as well as re-interpret phenomena of export increase and reasons behind. It found the major advantage of Japanese bicycle industry in supplying various types and qualities of bicycle parts which could be assembled by

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importers/customers' choice into complete bicycles as then called *kumiawase/kumitate kanseisha*, or be thrown into market for repair/replacement. The advantage was not only the variety but also the decent quality which could be inferior to the branded complete bicycles from Europe, but was surely tolerable considering the definite cheapness. Moreover, assembly of Japanese bicycles or repair/maintenance using the Japanese parts was made available in many smaller shops/stands closer to the ordinary life. Looking at the supply side, Japan had nourished clusters of small cottage-like manufacturing units for bicycles in a few localities. Although dispersed and unorganized by themselves, they could manufacture various parts which were then arranged for export by hands of wholesalers and exporters. What is more, these exporters including Indian/Chinese merchants who stayed in Kobe and Osaka did not make up exclusive agency systems over to India and other Asian regions, but instead, extended their networks opened to every possible retailer, persons in repair business, direct customers, etc.

The latter part of this paper focuses on the context of bicycle¹ use in India as an essential mode of transportation in relation with its peculiar function of what I term “repetition of small quantity/short distance mobility”. Environmental as well as socio-economic conditions in India necessitates as well as advantages daily practical use of bicycles in repetition of such mobility. The overall examination in the paper should be an opportunity to assess a current argument that, as Kaoru Sugihara, among others, has been building up, labour intensive/industrious mode of economy has been exerting a comparative advantage in certain industries as well as in certain contexts of everyday life in Asia and some other tropical regions².

1. Labour Intensive Industrialization of Bicycle in Japan

1.1. Start as repairing business and subsequent evolution as regional cluster(s)

Japanese bicycle industry started as repairing business for imported products. From the 1870s to the 1880s when enterprising importers were importing small quantities of bicycles for foreigners staying in Japan and for the Japanese affluent at that time, they also began to provide repairing services such as replacement of worn-out parts and broken accessories into new ones. They managed to channel these repairing tasks down to traditional blacksmiths in urban Japan, and in this very process, the importers and the

¹ Especially in the latter half of this paper, the focus is not limited to bicycle, but applied to tricycles and other various non-motorized cycle carts. Also, the first half of paper does not mean to exclude those carts though it does not specifically mention them.

² Kaoru Sugihara, The Second Noel Butlin Lecture: Labour-Intensive Industrialisation in Global History, *Australian Economic History Review*, Vol.47, No.2, 2007, pp.121-54.

blacksmiths gradually learned a structure of bicycle itself and bicycle business as well³.

Thereafter, the bicycle industry began to search for import substitution through two routes. One path was pursued by establishing large-scale integrated plants which enabled them to manufacture a wide range of parts and accessories by themselves. This capital intensive endeavor was initiated by a handful of newly joined entrepreneurs in Tokyo and Nagoya, and even smaller numbers of entrepreneurs survived by reinforcing customer's trust through their brand names. Examples of these successful cases are Miyata in Tokyo, and Okamoto in Nagoya⁴. Another path was hewed through collaboration of manufacturing wholesalers and herds of cottage-like workshops. By the 1900s, some Japanese importers grew into a kind of manufacturing wholesalers, who outsourced actual manufacturing activities to those small scale workshops and assembled them for sale. This latter labour intensive pattern was heavily observed in Osaka and its suburban regions⁵.

The former type of capital intensive enterprises had an advantage over quality control and brand development since they actually managed production and marketing under their own control. On the other, the latter system with extended outsourcing activities through a large number of dispersed workshops unavoidably faced challenges in control of product qualities. The latter, however, had a good reason to compete with some of former successfully in Japan. A bicycle is composed of roughly 30 main parts and 300 minor parts and accessories, and these materials vary from metal to rubber and to leather. Also among the metal parts, there were different kinds of processing. Therefore, it required a large capital to set up an integrated plant, and even to run it continuously. On the other hand, small units specialized in different parts, when effectively linked to one another, could overcome the variance of quality and specification of parts, and function competitively as a whole.

Osaka and its adjacent regions including Sakai and Kobe saw herds of such small units mentioned above. The Sakai region, in the south of Osaka, was foremost important in the sense that it had historically developed the skills of metal processing in relation to sword and pistol manufacturing from Sengoku and Edo period. The technology and skill once lost the core market along with the coming of Meiji Restoration, but after not a long

³ Atsuhiko Takeuchi, *Nihon-ni Okeru Jitensha-kogyo no Hatten* (in Japanese: The Development of Bicycle Industry in Japan) in *Gakugei-Chiri*, No.11, 1958. Jitensha-Sangyo Sinko Kyokai, *Jitensha no Isseiki: Nihon Jitensha Sangyo-shi* (in Japanese: A Century of Bicycle: History of Japan's Bicycle Industry), 1973, chap.1-3. Jozen Takeuchi, *Keiseiki-no Wagakuni Jitensha Sangyo: Wagakuni Kikai-kinzoku Sangyo no Teihen Kozo Bunseki no Ichi-Shiron* (in Japanese: Our Bicycle Industry in the Historical Formative Process: An Enquiry into the Basic Machinery Industry), United Nations University, 1980.

⁴ Takeuchi, J., *op.cit.*, esp.pp.45-51.

⁵ Tateuchi, A., *op.cit.* esp.37-39. *Osaka-shiyakusho Sangyo Chosha-ka, Osaka no Jitensha Kogyo*(in Japanese: Bicycle Industry in Osaka), 1933, chap.3-chap.8.

interval, it captured a chance to tap the need of bicycle parts. Besides Sakai, Osaka and Kobe also accommodated some important units of rubber and leather processing. These units in Sakai, Osaka and Kobe usually functioned with 20 or even less number of employees, some being “micro units with just two or three employees or just family members,” and they also accompanied casual/informal workers at home.⁶

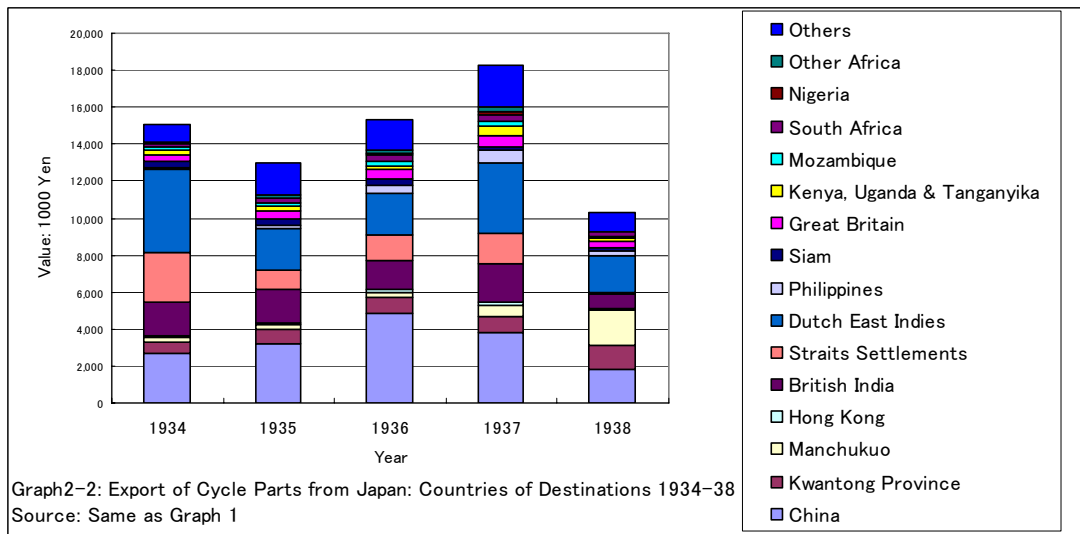
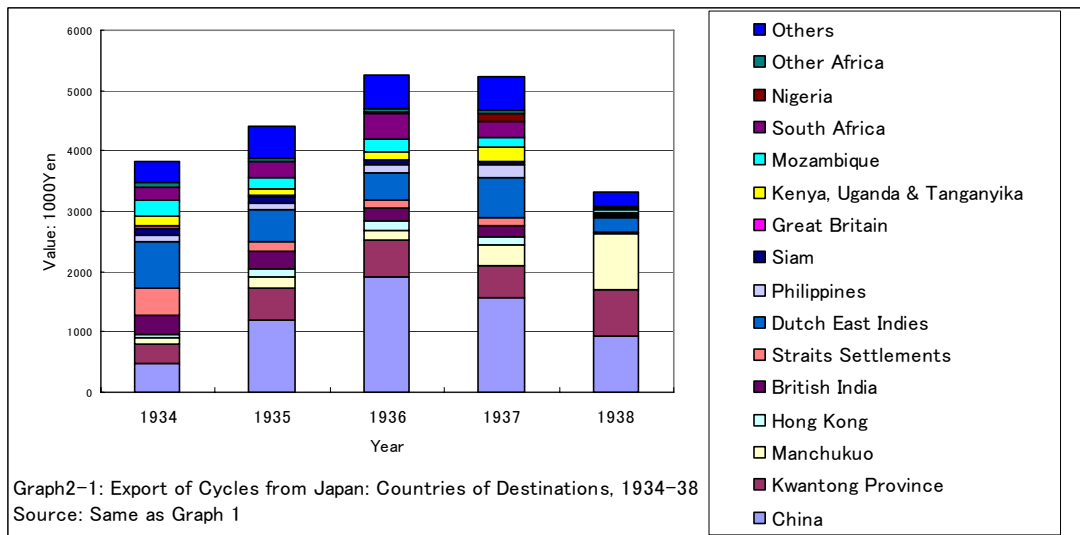
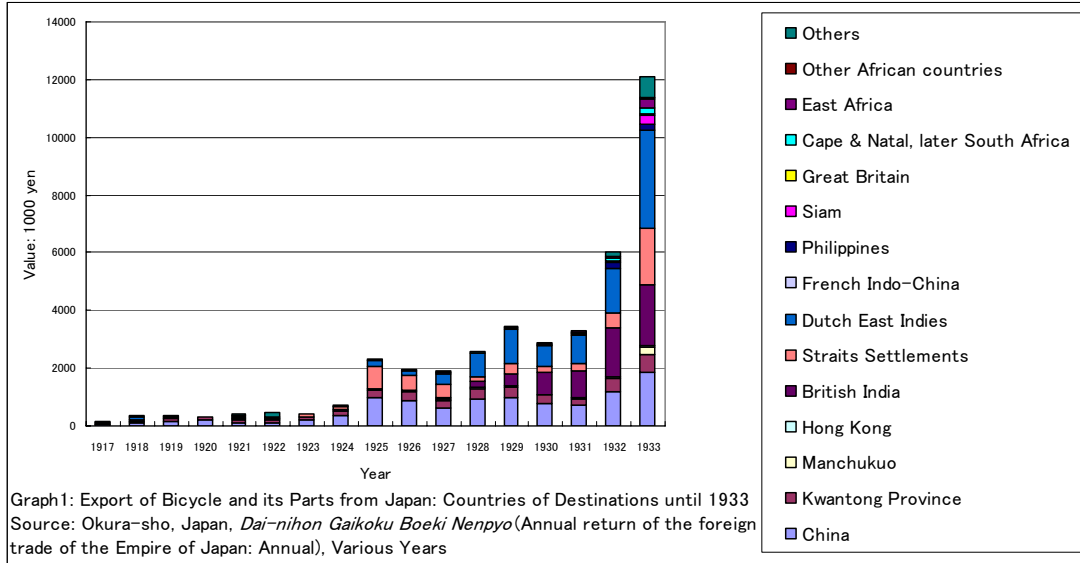
As we see below, it was this type of dispersed small workshops/factories under the effective control of manufacturing wholesalers, not the larger manufacturers with integrated lines, who eventually dominated the export scene from the mid-1920s. Urban regions of modern Japan succeeded in creating some kinds of labour intensive industries by making use of the abundant cheap labour as well as the dispersed character of production. Moreover, many of these industries also succeeded in exporting their products to foreign countries. Such examples can be seen in the industries of match, cotton product(hosiery), glassware, celluloid ware etc.⁷ Bicycle industry is one of them.

1.2. Wholesale to export: Parts trade through the open networks

As we can observe in Graph1, Graph2-1, and Graph2-2, the export of bicycle from Japan was meager until the early 1910s, but it grasped the chance to increase during the WW I when the export from Europe stopped. Then, it saw a major leap from the mid-1920s. From the 1920s to the 1930s, the Japanese bicycles and parts found their market mainly in Asian regions. Among the regions, China continued to be a major destination of these products by absorbing 20–40 % of the total export throughout the period. Export to Straits Settlements, Dutch East Indies, and lately British India expanded gradually in the late 1920s and in the early 1930s its share reached 20-30 % each.

⁶ Osaka-shiyakusho Sangyo Chosha-ka, *op.cit.*, esp. pp.19-20, chap.7-8. ; Osaka-huritsu Shoko-keizai Kenkyusho, *Osaka ni okeru Jitensha-sangyo no Jittai: Seisan-hen*(in Japanese: Investigations into the Bicycle Industry in Osaka: Production Part) , 1954, pp.16, 27-28. Sakai Ringyo Kyokai, *Sakai no Jitensha* (in Japanese: Bicycle in Sakai), 1939.

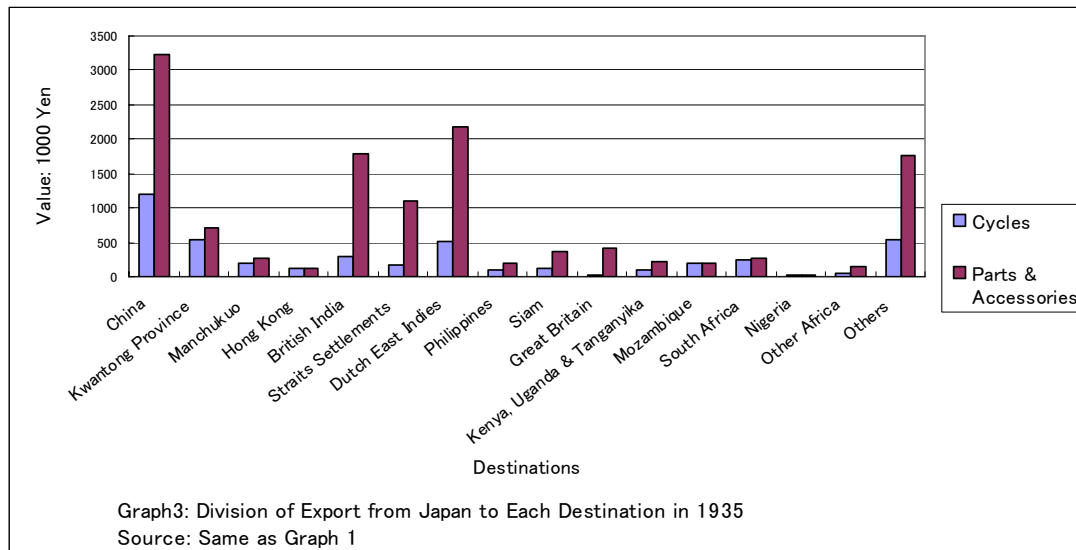
⁷ One of my researches puts focus on matches exported from Japan to various Asian regions including Japan. See, Takashi Oishi, Indo-Japan Cooperative Ventures in Match Manufacturing in India: Muslim Merchant Networks in and beyond the Bengal Bay Region 1900-1930. in *International Journal of Asian Studies*, Vol.1, No.1, 2004. Cambridge University Press.



As for the players, routes and shapes of export, there are roughly three patterns. One was the export of complete bicycles produced by a handful of major manufacturers equipped with integrated production plants mentioned above. This chose an ambitious path of export which directly connected to their agents or the importers in the foreign markets without intermediaries. This pattern, however, was hardly dominant with negligible success. The second type of export was routed through manufacturing wholesalers who handled both the wide range of bicycle parts produced by manufacturing units in Osaka, Sakai and Kobe and sets of parts which were to be assembled into complete bicycles after reaching destination countries. This complete bicycle assembled in destination countries was called *kumiawase kanseisha* or *kumitate kanseisha*. They usually exported these parts and sets of parts to foreign, and a few overseas Japanese, importers based in major port cities in destination countries. The third type of export also dealt with *kumiawase kanseisha* and parts, but was mainly geared by foreign merchant networks connecting between Japan and respective countries. In concrete, Chinese and Indian exporters in Kobe/Osaka took the initiative utilizing their intra-regional connections with overseas market. For example, Curmally Jan Mohamed, an Indian Muslim merchant, had offices in Bombay, in Calcutta as well as in Osaka, and targeted the Japanese bicycles as its main business. Such merchants sourced mainly bicycle parts from manufacturing wholesaler.⁸

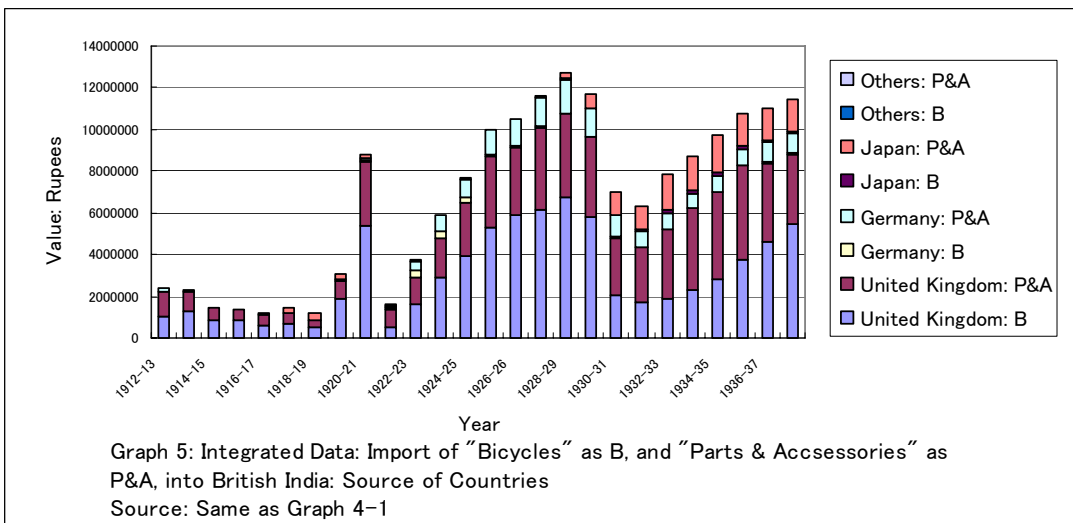
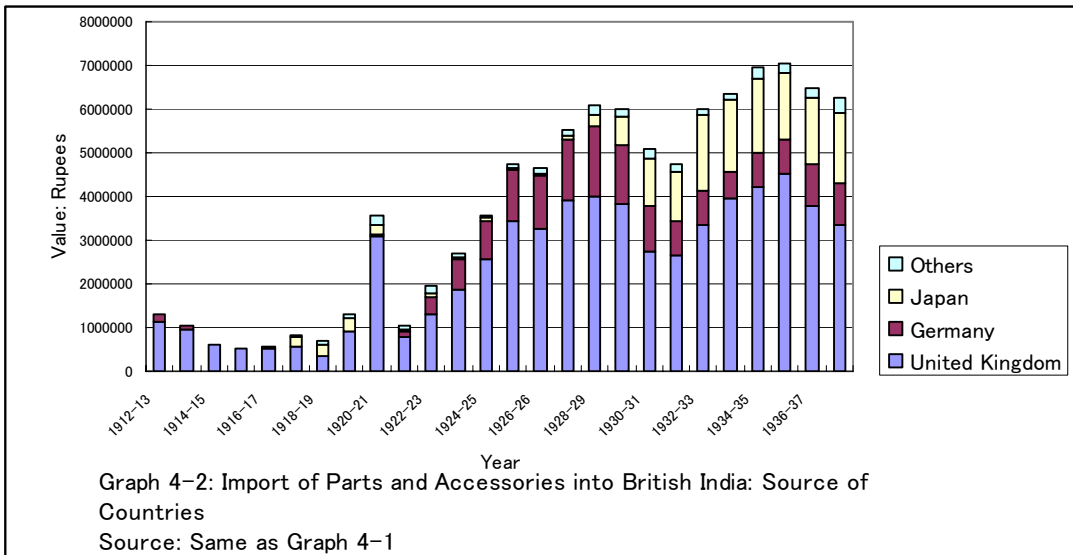
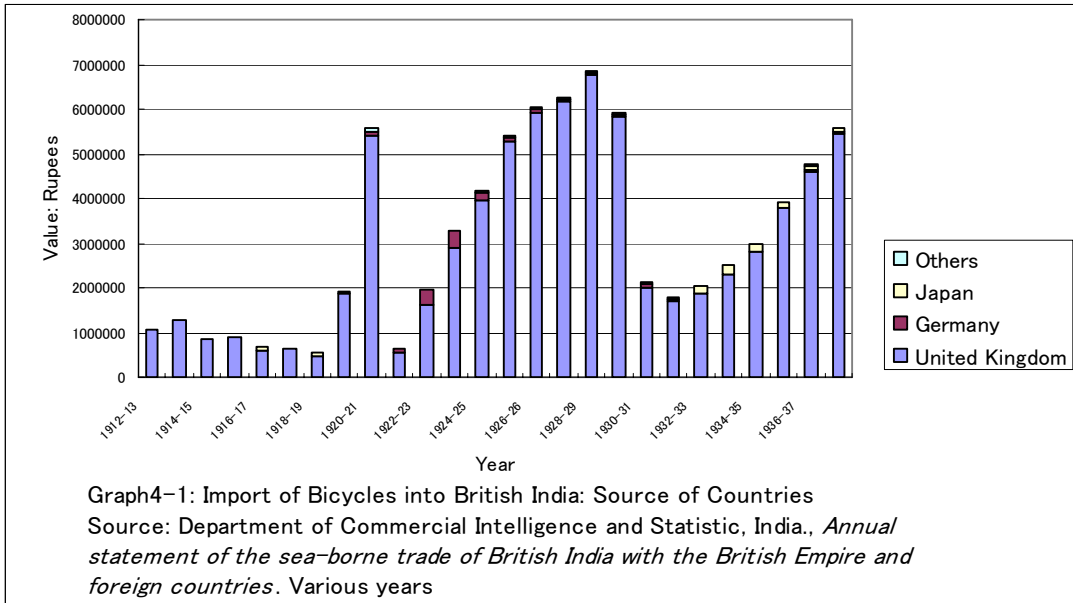
Here, in order to examine the advantage of *kumiawase/kumitate kansensha* supplied by the manufacturing wholesalers as well as the dominance of foreign merchants in the trade, we see some details of export/import trends. The Graph 3 below shows the composition of export from Japan to each destination in 1935, each of which is divided into “cycles” as complete bicycles on the one hand, and “parts & accessories” including the amount of *kumiawase kanseisha* on the other. Larger amounts of the latter in most of the destination countries confirms the dominance of *kumiawase kanseisha* and cycle parts, though in some African countries, namely South Africa, Mozambique, Nigeria, the complete cycles amounted to almost equal or surpassed the parts.

⁸ Osaka-shiyakusho Sangyo Chosha-ka, *op.cit.* pp.84-88.; Nihon Jitensha Yushutsu-kumiai, *Naigai-shijo ni okeru Honpo Yushutsu-jitensha oyobi Do-bubunhin no Torihiki-jokyo*(in Japanese: Trade Conditions of Export Bicycles and Parts in Domestic and Foreign Markets), 1932, Chap.4, esp.pp.41-42, 55, and Chap5.



As for the Indian import, statistical data is divided into “cycles” and “parts & accessories” nearly all the time through the 1910s to 1930s. The first two graphs below, namely Graph 4-1 and Graph 4-2, we observe the changing share of source countries in complete cycles, and parts & accessories respectively. The third one, namely Graph 5, integrates the amounts of two and compares the scale of them. It can be safely said that Japanese complete cycles hardly found a market in British India. Parts and accessories, however, succeeded in filling the vacuum of Indian market caused by the temporary retreat of British cycles during World War First, and after stagnation for a decade, namely, they began to secure substantial share from the beginning of 1930s. To be more concrete, the share of Japan approached one fourth of the entire market in its peak years in the early to mid-1930s, and when looked only in terms of “parts and accessories,” the same share was almost near to one third. Though political factor was supposed to have exerted an effect on this trend in the form of boycott of British especially around the year 1931 in connection with Gandhi’s Civil Disobedience Movement, Japanese parts and *kumiawase kanseisha* assembled from them obtained market’s stable support⁹.

⁹ Besides statistical data shown in the tables in this paper, see some contemporary survey reports. Kalukkata Nihon Shohin-kan, “Kalukatta wo chushin to seru Eiryō-indo ni okeru Honpo Jitensha oyobi do-bubunhin torihiki jokyo” (Survey on the trading of our cycles and their parts in British India, especially in Calcutta), Id, “Bombei wo chushin to seru Eiryō-indo ni okeru Honpo Jitensha oyobi do-bubunhin torihiki jokyo” (Survey on the trading of our cycles and their parts in British India, especially in Bombay), “Eiryō-Indo” (British India), all three compiled in Nihon Jitensha Yushutsu-kumiai, *op.cit.*.



Overall export from Japan was all the time dominated by parts and not by complete bicycles, and this tendency was also confirmed by the country-wise statistics for British India above. In fact, in the peak years of import from Japan to British India in the early to mid 1930s, the parts outnumbered the complete bicycles by 10 times or even more. What was the advantage of Japanese bicycles, especially of parts, in India and other Asian markets? Most of contemporary descriptions tend to find it in the cheapness, and this answer should be quite right. The strong foothold created by Japanese products in British India can be shown in the price lists compiled in a contemporary market survey, which illustrated a comparison and highlighted definite price competitiveness in various Japanese parts in Bombay (see Table 1).

The cheapness, however, was not the only reason. As some evaluation at that time also confirm, Japanese cycle parts attained moderate quality¹⁰, and it is only thanks to such attainment that they could overcome the stagnation for a decade after gaining the short touch with Indian market during World War First. In this connection, we should also reconsider the apprehension of *soseiranzo* (overproduction of inferior goods), *jisatsuteki kyoso* (suicidal inner-competition), and *han-mono* (Osaka stuff), which an influential voice inside Japanese bicycle business alerted to¹¹. It is pertinent to acknowledge that this apprehension or alert was thickly related with contemporary movements which tried to control national economy through setting up export union and industry/manufacturers union since the mid-1920s. In these movements heavily patronized by official institutionalization of Japan Government, a handful of large manufacturers and an element of exporters tended to raise the voice against smaller manufacturing wholesalers and foreign merchants in Osaka and Kobe, who were alleged to just sell off cheap bad stuff with feeble business prospect. Thus, in reality, the apprehension or alert reflected the increasing ascendancy of those manufacturing wholesalers and foreign merchants in Osaka and adjacent regions in the export business.

¹⁰ Nihon Jitensha Yushutsu-kumiai, *op.cit.*, p.423. for the situation in Calcutta market.

¹¹ For example, "Honpo yushutsu sinko-ni kansuru sanko jiko" (Affairs relating to the promotion of export), Nihon Jitensha Yushutsu-kumiai, *op.cit.* esp. pp.373-380. Osaka-shiyakusho Sangyo-chosaka, *op.cit.* 1933, p.15.

Table1: Wholesale Prices of Bicycle and Parts in Bombay in October 1930Source: Nihon Jitensha Yushutsu-kumiai, *Naigai-shijo ni okeru Honpo**Yushutsu-jitensha oyobi Do-bubunhin no Torihiki-jokyo*, 1932, pp.412-15.**A. Complete and Set Product****1. Bycle, Complete**

Origin	Brand, if specified	Price
Japan		23Rs.
Britain	Hercules Popular	42Rs.
	Barton on Humber	60Rs.
	Barton on Phoewing	45Rs.
	Hercules Brindia	48Rs.
	Eminent	48Rs.
	Low-price British product	30Rs.

2. A Set of Frame, Fork, Mudgard, Gear, Crank, Seat

Japan		7-12Rs.
Britain	Hercules Brindia	17Rs.
	Phillips Philco	17Rs.
	Phillips Credix	17Rs.
German		13Rs.
France		9-11Rs.

B. Parts

Parts	Origin	Remarks	Unit	Price
1 Handle	Japan		-	1Rs.14An.6 P
	Britain		-	4Rs.4An.
2 Front Fork	Japan		-	13An.
	Germany		-	1Rs.5An.
3 Handle grip	Britain		-	1Rs.8An.
	Japan	Rubber	Gross	10-14Rs.
4 Brake rubber	Britain	Celluloid	Gross	18-20Rs.
	Japan	Almost monopolized by Japanese products	Gross	1Rs.8An.
5 Coaster pin	Japan	Almost monopolized by Japanese products	Gross	1Rs.8An.- 1Rs.13An.
6 Accelerator bottom blanket	Japan	Almost monopolized by Japanese products	Dozen	1Rs.8An.
7 Accelerator hub	Japan	Almost monopolized by Japanese products	Dozen	1Rs.8An.- 1Rs.11An.6 P
	Germany		Dozen	1Rs.13An.
8 Pedal accelerator	Japan	Almost monopolized by Japanese products	Gross	24Rs.
	Japan	Almost monopolized by Japanese products	Dozen	1Rs.
10 Rim	Japan		-	2Rs.1An.
	Germany		-	2Rs.2An.- 2Rs.12An.
	Britain		-	3Rs.6An.
11 Hub	Japan		Pair	1Rs - 1Rs.6An.
	Germany		Pair	1Rs.4An.- 1Rs.10An.
	Britain		Pair	1Rs.12An.
	France		Pair	1Rs.12An.
12 Hub cup	Japan		Dozen	1Rs.
	Germany		Dozen	1Rs.4An.
	Britain		Dozen	1Rs.8An.
13 Chain wheel	Japan		-	13An.- 1Rs.2An.
	Germany		-	1Rs.8An.
	Britain		-	Minimal amounts
14 Chain	Germany	Almost monopolized by German products	-	About 7Rs.
15 Mudgard bolt nut	Japan	Almost monopolized by Japanese products	Gross	Rs.16

Another important reason why Japanese cycle products successfully gained footholds in various Asian regions lied in the strategy of marketing, to be more specific, in the concentration into *kumiawase kanseisha* and parts. And this strategy also closely reflected the growth of those manufacturing wholesalers as well as the intra-regional networks of foreign merchants based in India, which are mentioned above. The Japanese bicycle industry had nourished the dispersed yet clustered state of parts industry especially in and around Osaka. As the arrangers of these various products for export, some of the manufacturing wholesalers as well as Chinese/Indian merchants staying in Osaka and Kobe engaged in export in two advantageous ways. One was to export parts themselves for the repair market which cater for replacement for either European or Japanese bicycles. Another was, as briefly stated in the previous section in connection with statistics, to export bicycles not as a pre-assembled complete body or complete set of body under one specific authentic brand, but as a set of parts under various brands which should be assembled into a complete bicycle after reaching destination countries or as a partial set of body which should be amalgamated with parts from U.K. and other European to make a complete cycle. In the statistics shown above, these two types of parts are combinedly recorded as exported parts. Various advantages existed in connection with this strategy targeting parts and *kumiawase kanseishas*. For example, in the latter case, transportation cost was substantially reduced compared with complete or half-complete bodies. More importantly, the Japanese bicycle industry could supply a bewildering variety of parts and *kumitate kanseishas* at various price ranges. In fact, kinds and qualities of Japanese products outnumbered those of the European and American bicycle industries. This matter was also related with marketing and retailing. Major European and American companies set line-ups of a few authentic models under their own brand names, and neatly regulated the distribution channels exclusively through the designated agents in major port cities. Japanese bicycles and parts were not sold through such tightly controlled distribution channels. By contrast, they were brought into foreign markets either through networks of Indian/Chinese merchants or through the sales by Japanese manufacturing wholesalers via importers in foreign countries, and then routed through any local wholesalers and retailers. This non-exclusive open business method relying on the local business networks had larger potential to penetrate into local markets in rural areas. A further point close to this was that durability of each bicycle parts differed greatly in those days, and availability of each spare parts in their localities has a great advantages in the on-spot and timely repair. In addition, *kumiawase kanseisha* when amalgamated with European and American parts could avoid the negative prejudices possibly connected with Japanese products. Last but not least, compared with complete bicycles, parts could enjoy lower levels of import tariff in some periods in some destination countries. In fact, these various advantageous points were acknowledged and

strategically pursued by the Japanese concerned parties as the “parts prioritized principle” (*bubunhin daiichi-shugi*), as compared with “complete-cycle prioritized principle” (*kanseisha daiichi-shugi*)¹².

2. Bicycles in Modern India

2.1. Indigenous context of repair/replacement

Remarkable penetration of repair/replacement parts and *kumiawase/kumitate kanseisha* thrown into Asian regions from Japan assumed an important condition. That was the existence of local technology which managed to assemble and replace parts on the spot in even localities in urban zones and at small towns in rural areas. In connection with this, local context of retailing/repair should be clarified. A survey on bicycles in Indian market conducted by local Japanese consulate in the 1930s reported that though retailers were generally in small scale thus not always reliable, they combined the repair as subsidiary business with the retailing, and that those in rural area combined even machine tools and fuel/burner retailing business.¹³ Thus, it would not be too far to assume that some of local blacksmiths traditionally connected with their caste servitude of iron tool supply captured the bicycle retail business along with its repair service. A report in the 1940s also recorded that after deprived of supplying newly hammered iron tools connected with agriculture due to the influx of factory made ones, blacksmith castes either remained in rural area for catering repair works and for providing new iron items in daily use, or moved into urban society for the maintenance as well as manufacturing of new machine tools occasionally as employed wage workers.¹⁴ Here, we can remind ourselves that repair of traditional carts called *ekka*, *tanga* etc, especially of those wheel parts which contained iron nails, was also traditionally reserved for blacksmiths. Thus, it can be said that India took advantage of indigenous context of repair works for the maintenance and even introduction of bicycles for the daily use in local society.

¹² Nihon Jitensha Yushutsu-kumiai, *op.cit.* passim, but esp. pp.41-42, 386-87 etc. The author has been putting focus on the intra-regional networks of Indian merchants who were engaged in the trade of miscellaneous consumer goods including food stuffs and manufactured goods. See, Oishi, *op.cit.* 2004. Takashi Oishi, Indian Muslim Merchants in Mozambique and South Africa: Intra-regional Networks In Strategic Association with State Institutions, 1870s-1930s, in *Journal of the Economic and Social History of the Orient*, Leiden, Brill, Vol.50, No.2-3, 2007. Oishi Takashi, Indo-jin Shonin no Nettowaak: Koiki-chitsujo to Zakka-Shokuryohin Bijinesu (in Japanese: Networks of Indian Merchants: Intra-regional Order and Trade in Foodstuffs and Miscellaneous Consumer Goods) in Endo Itsuki ed. *Gulobalu Gavanansu no Saizensen: Genzai to Kako no Aida*. Yushindo: Tokyo, 2008.

¹³ “Bonbei wo cyushin-to seru Eiryo-Indo ni okeru Honpo Jitensha oyobi Do-jitensha Bubunhin Torihiki-jokyo”(Circumstances of bicycle and bicycle parts marketing in British India with special focus on Bombay region), compiled in Nihon Jitensha Yushutsu-kumiai, *op.cit.*, p.403.

¹⁴ Presidency of Bombay. General Department, *Report of the Bombay Economic and Industrial Survey Committee*. Bombay : Printed by Government Central Press, 1940, pp.72-73.

How a bicycle in India had become a common transportation tool by the mid-1930s and maintenance and even secondhand bicycle after maintenance had become a common business practice can also be observed from a following description regarding to egg distribution.

The cycles usually belonging to the distributors are of the conventional type without any special attachments, nor are they used exclusively for the distribution or transport of eggs. The cost of a good second-hand cycle is Rs 20 to Rs 25 and its maintenance may cost less than Rs.1 per month. A man usually delivers in retail 3 to 5 dozen eggs per hour, according to the distance to be covered.¹⁵

A new interpretation of modern Indian history pays keen interest on the survival of artisan-based economy as well as service sector in colonial India, and puts focus on them in connection with its hypothesis about labour intensive mode of economic development¹⁶. The expansion of Japanese *kumiawase/kumitate kanseishas* and bicycle parts should be related with this focus, namely it assumed the elaborate assembling and recurrent repair/replacement of parts, and thus should be concurrent with the rise of labour intensive mode of service sector. In this connection, it may be suggestive to note that some African areas, namely South Africa and Mozambique, did not receive many Japanese parts even in the heyday of its foreign export, namely, in the 1920s and 1930s, and rather prefer complete bicycles(see Graph 3). Though much further elaboration is needed, this could be explained by the paucity of indigenous technological as well as social base which could support the labour intensive services of repair and assembling.

2.2. “Repetition of small quantity/short distance mobility”

Partly with the influx of cheaper Japanese products on open distribution channels/networks, use of bicycles in India began to be associated with daily practical use from the early 1930s. Thereafter, Indian local production was given birth in the 1940s to respond to the stop of import, and after the independence in 1947 it expanded its production enjoying the high rate protective tariffs imposed in connection with import substitution policy¹⁷. During this process, bicycles in India further expanded the range of

¹⁵ Government of India, *Report of the Marketing of Eggs in India and Burma*. 1938, p.148

¹⁶ Besides Kaoru Suhihara, Tirthankar Roy produces works which represent this new academic scholarship. See his *Traditional Industry in the Economy of Colonial India*, Cambridge University Press, 1999.

¹⁷ Government of India, Tariff Commission, *Reports on the Continuance of Protection to the Bicycle Industry*, 1954 & 1957. Delhi : Manager of Publications. Anjali Kumar ed. *India's Manufactured Exports, 1957-1980*. Delhi: Oxford, 1988, Chap.3. Singh, Sukhpal, Bicycle Industry Since Independence: Growth, Structure and Demand, in *Economic and Political Weekly*, 25(34) 1990. Paul A. Kattuman, The Role of History in the Transition to an industrial District: The Case of the Indian Bicycle Industry, Meenu Tewari, The State and Shaping of the Conditions of Accumulation in Ludhiana's Industrial Regime: A Historical Interpretation, both compiled in Philippe Cadene and Mark Holmstrom ed. *Decentralized Production in India: Industrial Districts, Flexible Specialization, and Employment*. New Delhi, 1998.

users and emphasized its context of daily practical use. This nature of daily use has not basically changed until now, letting bicycles stand “primarily as a rugged transport vehicle on the rough village and town roads as well as for carrying heavy loads.” Seen in terms of the types of bicycle, “conventional standard roadster model” has been overwhelming the market, hampering the expansion of light weight sport type.¹⁸

The daily practical use vested in bicycles in Indian historical context should be elaborated. No substantial study, however, has been done on such particular aspect. A few studies on the bicycle industry in the post-independence India have already highlighted the emergence of Indian national production and its transformation into export industry into surrounding Asian and African countries. Regional cluster(s) of small scale units in Punjab for manufacturing bicycle parts has also invited academic attention in relation with the comparative analysis on the socio-economic modes of production¹⁹. For the analysis on the context of daily practical use in modern India, however, I concentrate on consumption side, not production side, in the following part of this paper.

I tentatively term the Indian context of daily practical use vested in bicycles as “repetition of small quantity/short distance mobility.” In the given environmental condition under tropical zone, there should be an absolute necessity as well as comparative advantage to put foremost priority in coping with the hotness and humidity, which exhaust human energy and damage the physical organs. In the historical experiences, human society in tropical areas should have developed various measures to cope with this given conditions, but what I here vest “repetition of small quantity/short distance mobility” with cycles has been one of the significant strategic modes of human activity in its relation, at least in South Asia. Transportation as well as mobility of various loads including humans themselves, not in long distance or with large quantity, but by short distance and of small quantity, has been intensively repeated in everyday life, and in so doing it effectively avoided the consumption of extra energy and possible proliferation of bacteria. I argue that bicycles and a few other non-motorized human power mobility tools with wheels, like cycle-led carts, cycle rickshaw, *jinrikisha*, have been effectively tapping such need and strategy of mobility. These low cost petty mobility/transportation tools were generally modern invention based on the new technology originating in Europe, but after brought into India and other Asian regions, the innovations of forms and usages were made on them to conform to peculiar tropical circumstances and the needs/strategies derived.

¹⁸ India Directorate General of Technical Development, *Indian Bicycle Industry: Prospects & Perspectives*, July 1987. 1988.

¹⁹ See, references in footnote 17.

2.3 Loads on bicycles and cycle carts: Meat, fish, vegetables

“Repetition of small quantity/short distance mobility” could be observed in various phases of economic activities in modern and contemporary India, but some particular loads should be highlighted in connection with their larger risk of damage and decay, and with the ways bicycles and cycle-led carts challenge such risks.

Meat: scattered channels in urban economy²⁰

Evidences in the 1950s reveal that local butchers in urban areas effectively utilized *tongas*, *thelas* or *ekkas*, and cycle carts for bringing animal bodies from the slaughter house in the outskirts of city to his retail shop inside the town. Origin of the issue surely lied in the high cost of ice box and no arrangement of cold storages. The use of petty non-motorized vehicles, however, should not be related to just the restraint of infrastructure for preservation, but also to the broader context of market localization as well as the scattered state of meat production in urban India.

Business of meat production has been localized within specific urban zone with scant connection with outer region due to the lack of distant marketing, which was not commercially practical due to the shortage of refrigerating infrastructure and facility. Thus, production at the same time consumption was to be largely confined to each urban zone. Moreover, meat production/distribution within such geographical limit still tended to be largely dispersed with small scale and individual producers scattered over. Per capita consumption of meat still remained at low level due to the small purchasing power, and it was also unrealistic to hold meat more than half a day at the butcher shop. Reflecting this marketing conditions, large scale enterprise found it sever to enter the scene to handle it in bulk, and instead individual butchers scattered in small quarters inside the city undertook small business, usually handling just one cattle and a few heads of sheep or goats per day.

Transportation of animal bodies out of the slaughter house traced two different routes. One was directed to the meat stall set up in registered principal markets usually under the control of municipality. Another was to individual retail shops owned by butchers. Among these two, the latter tended to market more. It seems that, in urban India, the principal market in the center of city did not play dominant function especially in connection with fresh foods including meat, fish, leaf vegetables, because intervention of such market would eventually incur unnecessary detour before reaching customers. Taking the route leading to individual butcher shops could function in fit with the strategy

²⁰ I read through a survey monograph on meat industry done by a government department. My argument here is based on this research. See, Directorate of Marketing and Inspection, Ministry of Food and Agriculture, Government of India, *Report on the Marketing of Meat in India*, 1955

to avoid the degradation of products. Though transportation means for the first route was usually so-called meat vans, either bullock or motor driven, but those for the latter route had the choices of either horse *tonga*, *ekka*, cycle vehicle. The advantage of these non-motorized petty vehicles was not just the high mobility in its general sense, but also a concrete function to proceed into narrow lanes so that butcher took in bodies to his shop with minimum heed of people. Urban India had to expect such subtle management to avoid misapprehension which could be caused by the co-habitation of people having different religious/cultural backgrounds. Another important advantage was that the beds of those non-motorized carts could be washed away with water after its every day use, though those of motorized one could not have been.

Fish: uncertainty of catch and corresponding diversity of vehicles²¹

There is a large degree of similarity between meat and fish in connection with the necessity as well as advantage of non-motorized petty transportation means including bicycle and cycle carts. Both goods are highly damageable with hotness. Moreover, in India, the organized form of fishing company or co-operative fishery was less common, and fishing with individual or family at its base was more popular. Thus the marketing of fish tends to mold small scale distribution. The marketing of fish, however, was to contain other elements different from that of meat. Firstly, catch of fish was remarkably unstable with the inevitable effect by natural condition, facing scarcity at times but casually rejoicing with bumper. Secondly, fish economy was not localized either within urban area or within sea-shore area, but was assumed to connect sea side and some interior lands. Thirdly, indigenous knowledge of preservation like drying or curing had supplied fishermen as well as intermediating merchants a certain degree of choices over the selection of transportation methods.

Reflecting these differences with meat economy, fish economy was to reserve wider range of transportation modes from peddling to cycle carts, railway, etc, to reflect the multiple choices of targeted markets. This situation can be effectively summarized like below:²²

The chief forms are head loads, *bahangis*(shoulder slings), bicycles, pack animals, pony carts, motor vehicles, railways, boats, steamers as well as bullock carts. The use of a particular mean of transport depends upon the distance to be traveled, the quantity of fish, facilities available for quick and safe dispatch and the expenses that

²¹ This part is mainly based on various descriptions in a government report. See, Government of India, Agricultural Marketing in India : *Report on the Marketing of Fish in India*. -Delhi : Manager of Publications, 1946

²² *Ibid*, 66-67

have to be incurred. In view of scattered production of fish the extent to which each mode of transport is utilized varies according to local conditions and may change from day to day. This and the uncertainty regarding the total catch that may be landed make the problem of transport all the more difficult for the agencies concerned in the assembling and dispatch of supplies.

Direct marketing of vegetables/fruits in town²³

Transportation of vegetables and some fruits into regional towns and some major cities in India was another context where bicycles and some other non-motorized vehicles played the major roles.

This should be first contextualized in broader framework about Indian agricultural society. Accumulation of scholarship has revealed that Indian rural society saw a major increase of small independent peasants from early-modern time, and it took on a character of small peasant society. It should be important, however, to remind ourselves that major crops, namely rice, wheat and some other cereals, were, and still have been, assembled and brokered by the commission merchants and other various agencies. Small peasants had few chances to independently sell off those crops directly to the wholesale market, much less to retail sector or end-consumers.²⁴ Compared with this, small peasants in the suburbs of regional towns and major cities channeled their products directly to markets and even consumers by themselves or casually through itinerant buyers.

The gap between these two situations can be attributed to some natural as well as socio-economic factors surrounding vegetable/fruit marketing which connected towns and their suburbs. Firstly, the distance between production site and retail market was not long, and it could be covered by small cost and energy with specific transportation via non-motorized vehicles. Second, compared with grains and cereals, vegetables, especially leaf ones, as well as fruits are generally more easily damageable, and require smooth and short time transportation to the end-consumers with minimum strands on the way. Third, kinds of vegetables and fruits are numerous with various crop seasons, and they suit not to channeling in bulk, but to repetition of small quantity loads in specific seasons. For these factors, it was not merchants who undertake bigger enterprise but small peasants in the suburbs themselves who found the advantage in channeling out their own vegetables and fruits directly to urban areas. A survey on the assembly of vegetables and fruits into major cities in India in the 1960s found growers of vegetables themselves often the

²³ This section depends on a government report. Directorate of Marketing and Inspection, Ministry of Food and Agriculture, Government of India, *Marketing of Fruits and Vegetables in the Cities of Calcutta, Delhi, Madras, Ahmedabad, Poona and Nagpur*. Delhi : Manager of Publications, 1965.

²⁴ In fact, there were various movements to activate co-operatives. Further research should re-examine the movements in connection with transportation.

strongest player among the different agencies of transport, and they largely depended on non-motorized cycle carts²⁵.

Actual routes and marketing spot in urban areas varied reflecting the variations of urban markets and competitive players. An important point was that main city market(s), usually controlled by municipality, did not become the site of this direct marketing of vegetables and fruits on the part of peasant growers. Those main markets mainly catered for bulk marketing of agricultural produce equipped with certain uniformity of quality and size, and were usually dominated by commission agents. Therefore, it was instead either smaller private markets or temporary stalls aside main markets that peasants could dispose what they brought. What is important here is that peasant growers somehow managed to secure formal rights and physical spaces to sell their products in urban zones. Though further research is required, India has historically nourished various measures of institutional guarantee for small independent peasants to sell their own products directly in retailing. The origin of this guarantee surely lies in rather conscious policy on the part of British Indian authorities to suppress intermediating merchants thereby diversify the marketing channels which otherwise tended to be monopolized by merchants. Some experimental actions were taken including the new legislations starting from Bombay Agricultural Produce Markets Act(1939). In connection with this paper, it is here foremost important to note that, besides suppressing intermediating merchants, the policy included somewhat differentiated tax on transportation tools. Here again, further research is definitely needed for municipality wise history of such policy. But, it is at least here suggestive to note that some major cities including Nagpur and Madras had by the 1960s introduced differentiated tax on different transportation tools incoming to their urban zone²⁶.

2.4. Human mobility and bicycles in modern India

Bicycle in contemporary India has been attracting growing attention as an eco-friendly human mobility tool which should somehow cooperate with sustainable development concept. This awareness is in correspondence with the further enlargement of major mega cities and the deterioration of ecological circumstances they face. But, it is extremely difficult to historically trace the real modulation of human mobility which bicycles and cycle carts shouldered in modern India.

In urban context, historical experience as well as contemporary situation suggests the advantage of short and speedy mobility which bicycle and other non-motorized vehicles like *jinrikisha* catered for. Such mobility simply lessened exposure to heat, which

²⁵ *Ibid*, p.7

²⁶ *Ibid*, p.79

otherwise should exhaust human energy.

In suburban and rural context, it should be more important to compare the advantage and disadvantage which bicycle and other principal mobility means made. One of the underlying transportation policies in British India was surely the promotion of railway and eventual suppression of other middle/long range transportation means as its reversal side. It was in a sense a necessity after, and as long as, it invested huge capital on it. After independence India gradually modified its transportation policy to favor other means including motor vehicles on roads. Nonetheless, India severely faced shortage of as well as mismanagement of public transportations on road. For example, public bus service still left vast interior areas uncovered, and its service connecting suburban and urban areas has been suffering from unreliability of time schedule and over-crowdedness.²⁷

Bicycle use in everyday commute purpose should be further contextualized in this kind of competitive relation with other means and with historical perspectives. For the temporary argument here, I could quote a data on the proportion of commuters on different mobility modes.

Table2: Modal Share in Delhi

Source: Geetam Tiwari, Encroachers or service providers?, *Seminar*, No.491, 2000, table1

<i>Mode</i>	<i>1957</i>	<i>1969</i>	<i>1981</i>	<i>1994</i>	<i>1994</i>	<i>1999</i>
Cycle	36	28.01	17	6.61	4.51	2.75
Bus	22.4	39.57	59.74	62	42	36.2
Car	10.1	15.54	5.53	6.94	4.74	28.35
SC/MC	1	8.42	11.07	17.59	12	29.29
Auto	7.8	3.88	0.77	2.8	1.91	1.74
Taxi	4.4	1.16	0.23	0.06		0.04
Rail	0.4	1.23	1.56	0.38	0.26	
Others	17.9	2.19	4.1	3.62		2.47
Walk					31.77	1.62
Total	100	100	100	100	100	100

An Epilogue: Japanese experiences

In this last part of paper, I quote examples of bicycle economy from the Japanese historical experiences, which have some common context of labour intensiveness.

It seems some sea-shore areas in modern Japan saw a rise of fish-selling hawking merchants on cycles for some time from the 1930s. The author comes across an

²⁷ S. K. Srivastava *Transport Development in India*, 2nd ed., fully rev. and enl. Ghaziabad, 1956. chap.9-13

interesting article on such business in Kujukuri-hama, a long beach area in Chiba prefecture. On the adjoining north side of beach lies a Chosi port, which prospered thanks to fishing in the middle range or in remote sea in the Pacific. On the other hand, small ports on the Kujukuri-hama were not equipped with either large fishing enterprise or large ports, but had small scale inshore fishing. Compared with fishes brought into the Chosi port, those landed at the latter were unmistakably much smaller in size and with less variety, in other words, monotonous. Moreover, the latter fishing was more liable to be affected by everyday climate, leading to the unevenness of everyday catch. In addition to these conditions of fishing itself, the sea-side area was more or less deserted in terms of modern transportation with railway set in the interior. In such given conditions, itinerant merchants amassed the remaining smaller fishes, and brought them into nearby interior regions, initially with *tenbin-bo* (stick with containers at both the ends) on the shoulder. This type of itinerant merchants began to use bicycles in around 1910, and their number saw remarkable increase in the mid-1930s possibly due to the relative fall of bicycle's price²⁸. Here in this context, we can observe that the economic risk unavoidably derived from the unstableness of catch from natural resources was lessened by creating smaller and swift marketing channels, and at the same time the peddler business tapped the everyday needs of protein in adjoining areas. Bicycles turned up as the ideal mobile tool to roam around the interior regions, and to minimize the damage on fish. In addition, merchant strategy was surely working in the choice of peddling business in that it could avoid the application of tax as well as sanitary inspection at that time.

Another aspect can be highlighted here in relation to non-motorized mobility tools in urban society in modern Japan. *Ko-unso*, literally meaning the small transportation, was a range of small scale transportation by small quantity and short distance which major cities in modern Japan like Osaka effectively utilized. This can be paralleled to what I described as "repetition of small quantity and short distance mobility" in India, which was shouldered by bicycles and other non-motorized vehicles. Though detailed kinds unknown, *ko-unso* used as its mobility tools horse-led carts, and it should include bicycle-led one. As for its concrete manifestation and related concentration, the case of Osaka in the 1910s can be quoted. One type of *ko-unso* was connecting smaller manufacturing workshops with wholesalers, and then with the node for remote transportations like train transportation. In this context, labour intensive production in dispersed small units as mentioned also in this paper induced the rise of this particular transportation sector. Another context was typically seen for the transportation of goods loaded off at train station. Osaka, having a large population by that time, contained an

²⁸ Shimizu Keihachiro, Kujukurihama Sengyo Jitensha Gyosho no Hassei to sono Hanbaiken(in Japanese: The Formation of Bicycle Hawkers of Fresh Fish along Kujukurihama and their Marketing Areas), *Jinbunchiri*, Vol.5.No.6. 1954.

acute need for such service. In this connection, we can also observe the effect of institutional management on the part of municipality like in India. Municipality imposed a ban on horse shed within its core region in the center. With the rise of cost and difficulty in keeping horse carts in the core region, share of other smaller carts increased.²⁹ Here, we can also confirm the growing link between modern grand transportation with minor, and often non-motorized, transportation tools. Coming-in of railway line to the core part of city did not always diminish the sphere of smaller mobility tools, but instead should have increased its needs to mold some collaborative relation.

²⁹ Kobe Tetsudo-kyoku, *Keihanshin-ni okeru Kamotsu Kounso no Gaikyo*(in Japanese: General Circumstances around Petty Transportations in Hanshin Region), 1925.

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