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“Industrious Revolution” Revisited: A Variety of Diligence Derived from a Long-Term Local History of Kuta in Kyô-Otagi, a Former County in Japan

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Abstract: Jan de Vries revised Akira Hayami’s original theory of the “Industrious Revolution” to make the idea more applicable to early modern commercialization in Europe, showcasing the development of the rural proletariat and especially the consumer revolution and women’s emancipation on the way toward an “Industrial Revolution.” However, Japanese villages followed a different path from the Western trajectory of the “Industrious Revolution,” which is recognized as the first step to industrialization. This article will explore how a different form of “industriousness” developed in Japan, covering medieval, early modern, and modern times. It will first describe why the communal village system was established in Japan and how this unique institution, the self-reliance system of a village, affected commercialization and industrialization and was sustained until modern times. Then, the local history of Kuta Village in Kyô-Otagi, a former county located close to Kyoto, is considered over the long term, from medieval through modern times. Kuta was not directly affected by the siting of new industrial production bases and the changes brought to villages located nearer to Kyoto. A variety of diligent interactions with living spaces is introduced to demonstrate that the industriousness of local women was characterized by conscience-driven perseverance.

Keywords: industrious revolution; diligence; religion and family; communal village system; fiscal state



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1. Introduction: The Formation of a Territorial Fiscal State and a Rural Village in Japan

Agriculture, fishery, and forestry constituted the backbone of the subsistence economy and community life of most villages in Japan before and during early modern times. Some villages were more focused on rice, crops, and other agricultural production for local non-marketed consumption, though rice would sometimes be sold in the regional or nationwide market, while other villages, such as those close to fresh- or saltwater, specialized in fisheries, and mountain villages perhaps specialized in supplying timber and charcoal in addition to agricultural production. A complex economy comprising a varied mixture of the three components of agriculture, fishery, and forestry appears to have been a common feature of many traditional Japanese villages.

A communal village system was introduced at a time of harvest failures and a food price crisis around 1640 because Japanese agriculture was strongly affected by natural disasters caused by Asian monsoons. Such administrative decisions, which were taken in the context of relief measures and regulations, “delineated the essential characteristics of the village system they wished to perpetuate” [1] (p. 112). Conrad Totman summarized the concept of a communal village:

Each village was to constitute a self-sustaining collectivity of smallholders clearly separated from merchants. They were to eschew luxuries and work diligently to produce

essential goods on their own lands, while collectively paying taxes and caring for their village. They were to be responsible for one another's good behavior, an obligation exercised through gonin-gumi, or "five household units," neighborhood groups modeled on classical Chinese precedents. Overseeing these collectivities was the hierarchy of village officials, intendants, and daimyo¹ or Edo officials, all attentive to their duties, dedicated to preserving the productivity vitality and well-being of the villagers, and effectively controlled by regulations that derived ultimately from Edo.

Hence, a communal village system is one where it is the responsibility, and in turn the rights, of the individual farmer or village to take care of their inherited property and pass it on to the next generation through diligent and conscientious behavior. In this sense, villagers had autonomy over their land.

The leaders of the Tokugawa shogunate (the shogun²–daimyo ruling system, 1603–1868) established and idealized the communal village system. The peasant family farm and the expansion of new arable lands increased the productivity of rice from the sixteenth to the seventeenth century, especially in the first phase of Early Modern Tokugawa Japan. By the Genroku³ period (1688–1704) [1] (pp. 184–222), in the early years of the Tokugawa shogunate, most of Japan was naturally or artificially reclaimed and cultivated to grow various types of rice, crops, and other agricultural products to sustain the population. According to an estimate, "paddy acreage increased by more than 70% between 1450 and 1600, and by another 140% by 1720." [2]⁴

Under the Tokugawa shogunate, every piece of taxable land was assessed in terms of its productive capacity and was measured in *kokudaka* (amount of *koku*: putative rice yield). The *kokudaka* system is "a system unique to the Tokugawa era that converted the value of fixed assets, based on which taxes would be determined, into rice yield given in *koku*" [3] (p. 187). Fixed assets would substantially mean "paddy and crop fields"; and therefore, crop yield was also numerically converted to rice yield. Moreover, in mountainous villages and fishery villages, valuations of iron, soils, and fishing grounds were also included. In this context, *muradaka*⁵ means the total *kokudaka* of a village. It was initiated to determine payable taxes for all agricultural yields in 1598. It was widely known that one *koku* was enough yield to feed one person for one year in the Tokugawa period. According to calculations by Satoru Nakamura [4] (pp. 168–174), the agricultural output in the benchmark year of 1700 was 169 kg, exceeding the criteria of 150 kg (or one *koku*) per person, and this increased over time to reach 201 kg in 1872.

Japan as a macro-region is often understood to have been freed from the constraints of a subsistence rice economy by around 1700. However, the ratio of paddy rice fields to upland crop fields varied from region to region, depending on ecological and geomorphological conditions; thus, agricultural output values ranged from 0.59 to 3.71, as a result of the great ecological diversity observed in early modern Japanese villages.⁶ In addition, many exchanges of agricultural, fishery, and forestry techniques and knowledge took place and were recorded in over 700 farm manuals from the second half of the seventeenth century to the latter half of the nineteenth century [5] (pp. 246–264). For example, the *Nôgyô Zensho* (Encyclopedia of Agriculture, presumed to be published in 1697 and regarded as the culmination of traditional agricultural manuals in Japan) was followed by many publications that introduced regional agricultural experiences [6] (pp. 194–222).

The *kokudaka* system is understood to have constituted the basis of land ownership in early modern Japan.

Where a *gun* (county)-level compilation of village-specific surveys is available, the *kokudaka* of each village can be calculated quite easily. For example, *kokudaka* data for the 231 villages in the Kofu plateau and surrounding areas can be accessed, using the *Kai-Koku-Shi* (the topography of Kai Country) in Bunka 11 (1814). In many villages, land tax and other taxes were static or even slightly reduced, although the productivity of land was generally on the rise; thus, an increasing amount of surpluses was a general phenomenon. The widely held notion that the land tax imposition during the Tokugawa period was cruelly oppressive proves untrue [7] (p. 69). While *kokudaka* did not reflect the

actual productivity of a village, it served as a criterion that was commonly used within a region and thus allows us to compare regional levels of land productivity, or capability of “rice” production. According to *kokudaka* comparisons in the Kofu basin in central Japan, flood-prone areas proved to have been more productive than mountainous areas, with the *kokudaka* of the former being as high as 3.13 *koku* per capita in contrast to 0.65 *koku* per capita in the latter [8] (p. 36).⁷

Kyôto (then called “Kyô”) was the metropolitan center of Japan from the Heian period (794–1185) until the Meiji restoration. Kuta is located in Otagi County, Yamashiro Country, about 40 km north of the Imperial Palace, which was the residence of the Emperor in Kyô. Kuta first appeared in historical documents in Kôhei 7 (1064), when it was described as a temple territory of the Hôjô-Ji Temple in Kyôto.⁸ Furthermore, in Heiji 1 (1159), Kuta had 15 *chô*⁹ of paddy fields, which were under the jurisdiction of the temple, whereas the development of other fields was free. There was also a “*soma*” mountain, which was positioned as a *soma* site for the repair of Byôdô-In Temple and Hôjô-Ji Temple. The word *soma* means timber forest. Although Kuta was a public territory bearing tax obligations and duties as a supplier of timber, the village inhabitants were also granted exclusive rights to freely develop their agricultural fields. This can be considered the starting point of village autonomy, or a communal village system.

A land survey ledger, *Kenchichô*, was compiled in Keichô 7 (1602), the year before the start of the Edo period (1603). At this time, Kuta was made up of five villages: Nakazaichi, Kami, Kawai, Shimo, and Miyanotani. The total tax amount for these five villages was calculated to be 389.65 *koku*. The *muradaka* was almost unchanged at the end of the Tokugawa period, more than 260 years later, amounting to 391.21 *koku*.¹⁰ The actual agricultural productivity is unknown. It is possible that the amount subject to taxation remained unchanged for a long time. In 1880, 480 residents of 80 households lived in the five villages. The *muradaka* per capita was 0.815 *koku*.

The land survey of 1602 provides a clue to the birth of the territorial fiscal state, which determined all of the village boundaries in Japan. It was a turning point from the patchwork rule of the scattered manor to a single nationwide territorial rule. The land survey was carried out by the Kutsuki clan, one of the rulers of the neighboring Ômi province, known as Gô-Shû. They were not lords of Yamashiro Province to which Kuta belonged. As already mentioned, Kuta originally belonged to the domain of Hôjô-Ji Temple, but after the Muromachi Shogunate, in Eiwa 5 (1379), it became a part of the domain of Sanbô-In¹¹ of Daigo-Ji, a temple in Kyôto [9] (p. 573, No. 14) [10] (p. 21, Okada House Archive, No. 38).

In Tenshō 7 (1579), Oda Nobunaga gave the Kutsuki clan the position of the representative of Kuta-no-Shô [9] (pp. 579–580, No. 38/39).¹² Although the villagers resisted Kutsuki’s rule and attempted to flee, they were eventually brought completely under the control of the Kutsuki clan. Before Kutsuki control, the villagers had been free to cultivate their land as they wished, with the exception of a limited tax burden, but the land survey conducted by the Kutsuki clan fixed the tax burden to the total production of the village, including the yield from rice paddies, field crops, forestry, and other operations. This was a completely different form of territorial control than the tax burden imposed on the Hôjô-Ji domain. Sanbô-In of Daigo-Ji learned for the first time that the tax amount of Kuta-no-Shô¹³ was 539 *koku*. The taxes paid to Sanbô-In amounted to 55 *koku*, which was only 10% of the total, while the Kutsuki clan received a tax revenue of 470 *koku* (87%).¹⁴ Sanbô-In tried to regain control of the territory, but the tax amounts remained unchanged until the end of the Edo period [9] (pp. 580–581, No. 41).

Did this mark the end of an era of free will and diligence in developing arable and mountainous lands? If the annual tribute received by Sanbô-In had not changed for 450 years, it is possible that the five villages in Kuta-no-Shô saw a tenfold increase in production during that period. Although this is a rough estimation, it seems to be clear that the village underwent a far greater change than previous estimates suggest.¹⁵ It could be said that increased production was a result of voluntary diligence because the village

territory, as a manor of Sanbô-In, was at the disposal of local farmers in return for their annual tribute payments.

2. Original Ideas of the “Industrious Revolution”

Akira Hayami contrasted the labor-intensive technologies of Tokugawa Japan with the capital-intensive technologies of Britain during the Industrial Revolution [11]. According to Osamu Saito [12] (pp. 152–153), Hayami’s “industrious” revolution theory originally had four parts:

1. There was a transition in Japan from a command economy to a market economy between the sixteenth and seventeenth centuries.
2. This “commercialization” prompted an increase in population and a concomitant decrease in the land population rate.
3. The decrease in available land changed household formations to smaller units. This process was understood to have prompted the development of a “peasant” economy in which complex kinship family farms with subordinate laborers were changed to simple family farms, where the labor force was limited to members of the immediate family.
4. In the process, according to de Vries’ interpretation [13] (p. 72), Hayami used the term Industrious Revolution to account for the growth in agricultural output in the final decades of the Tokugawa era that was achieved as peasants adapted their farming methods to substitute increased human exertion for the tractive power of livestock. “There must have been a conversion from ‘horsepower’ to ‘manpower’ in rural Japan” [14] (p. 6). The term Industrious Revolution can be applied to this change.

De Vries revised the fourth concept to make the argument more suitable to early modern commercialization in Europe [15]. He contended that a fundamental change occurred in the household economy, thus increasing the labor supply for the market. The European redefinition of the Industrious Revolution has proponents, who provide empirical evidence of the revolution. Households increased their labor market participation in order to buy new consumer goods with the money earned from their labor [16] (p. 14). In this European pattern of the “Industrious Revolution,” the expansion of work hours was correlated with the expansion of an economy of consumption.

De Vries demonstrated “that historical consumption has been a dynamic phenomenon, charting a far from linear process of change” [17] (p. 273). Most studies of modern economic growth are founded on a supply-side mechanism. Arguments about the Industrious Revolution explore a new dimension that is useful for historically comparative studies, placing the Industrial Revolution in a broader historical setting. The Industrious Revolution was a household-level change with important demand-side features that “preceded and prepared the way for the Industrial Revolution, which was driven primarily by technology and changes in organization” [13] (p. 79); therefore, it was a supply-driven phenomenon. De Vries’ revision allows room for a new dimensional argument concerning economic development from pre-modern to modern times. Kaoru Sugihara, Osamu Saito, and other scholars have expanded his argument. The term Industrious Revolution came to mean the general process of labor-intensive industrialization, which contributed to the achievement of modern economic growth by non-Western countries.¹⁶

Hayami’s views were reduced to a simple path toward industrialization that was, however, intentionally complicated by individuals. The Industrious Revolution came to be regarded as “a process of household-based resource reallocations that increased both the supply of marketed commodities and labor and the demand for market-supplied goods” [15] (p. 249).¹⁷ Again, we must remember that Hayami never discussed the transition from the Industrious to the Industrial Revolution, nor did he focus on the immense labor supply related to the increase in productivity because Japanese “ecological conditions” were more suitable for small family farming, which was more efficient than a big farm using paid labor [18] (pp. 312–313).

Hayami’s idea was a unique demonstration of the existence of another dimension for traditional stage theory debates on the transition from a feudal to a market economy. The

first demographic expansion occurred in seventeenth-century Japan. Hayami estimated the population of Japan at the beginning of the seventeenth century to be between 9.8 and 12.0 million. That number then jumped more than 2.3 times to about 26.0 million, according to calculations based on the first national population survey, which took place in 1720. The estimate for the population at the end of the sixteenth century was recently revised by Osamu Saito to 17.0 million [19]. This indicates that Japan's population had increased much more during medieval times than previously estimated.

It is not certain whether this population increase before the sixteenth and seventeenth centuries was drastic or gradual. The beginning of the survey of arable lands that investigated the whole of Japan sprang from a political initiative of Toyotomi Hideyoshi in 1582. The mid-1950s saw a historical debate rise among scholars in Japan regarding the land survey conducted from 1582 to 1598. Some scholars claimed that the transition from a slave-oriented economy to a feudal economy occurred then because the land survey brought about an institutional revolution in Japan, thus establishing an autonomous peasant society. This argument remains controversial, as historical documentation for Japan's Warring State period is insufficient.

When did the drastic change in agricultural land and life actually occur? This question is related to the first part of Hayami's theory on the Industrious Revolution regarding Japan's transition from a command economy to a market economy. He characterized the historical change not as a social revolution based on an institutional transition, but as a demographic transition caused by the changing processes of household and family labor management. The household unit changed from "family," comprising not only kinships but also laborers and servants, to "family" consisting only of intimate kinship relations in the modern sense. The timing and duration of this demographic transition were diversified; however, whether dramatically or gradually, the increase in population in the seventeenth century is best explained in the context of the increase in peasant family farming [20] (pp. 42–46, esp. 42).

Twelfth-century sources on the taxes shouldered by the inhabitants of Kuta show us, however, a completely different story; they were entrusted with the preservation of majestic temples, such as Byôdô-In and Hôjô-Ji, and at the same time, were given the freedom to develop the land. In other words, they were guaranteed, in exchange for their contribution in maintaining cultural buildings, the economic freedom to survive. This is an aspect that is largely absent from de Vries' and Hayami's theories of the Industrious Revolution.

3. Kyô-Otagi County in the First Phase of Industrialization in Japan, 1880–1908

The "Industrial" Revolution was a complex process of environmental and geographical changes in the relationship between humanity and nature. High levels of inequality were observed in England and India before the beginning of the "Industrial" Revolution, whereas low levels of inequality were seen in early modern Japan. Findings [21] suggest that even in egalitarian societies, we cannot ignore the existence of regional and local diversity amid economic inequality. Otagi, a county in Yamashiro Country, Kyô, Japan, to which Kuta belonged, had a relatively high level of economic inequality in around 1880. Using topography containing economic and social details dating back to 1908, toward the end of the first phase of Japan's industrialization under traditional understanding [10], a comparison of the two periods reveals changes and aspects that were unchanged in local histories, especially in local ecological and developmental characteristics. The process of the "Industrial" Revolution was a combination of segmented processes, observed particularly in changing local organic economies [22].

The villages around Kyôto are referred to in *Kôkoku Chishi* (*The Imperial Gazetteer: Topography of Imperial Kingdom*), which was compiled and submitted to the government by the Kyôto Prefecture and covered the eight counties of Yamashiro Country, an administrative unit of early modern Japan [23]. The precise date of its completion is unknown. In Meiji 5 (1872), the government launched a project to publish *Kôkoku Chishi*, a series of topographical records that would be compiled by prefecture. Each prefecture would conduct surveys and

studies to compile topographical records for each county and village, and then submit the manuscript to the government. However, after numerous delays from the original schedule in conducting surveys and writing text at the prefectural level, the Home Ministry's Bureau of Geography took over the task of collectively compiling local topography in Meiji 18 (1885), and the project was continued until it was finally suspended in Meiji 26 (1893). The manuscripts that had been completed and submitted to the government were later lost in the Great Kanto Earthquake, but some local governments had kept copies or manuscripts that they had yet to submit. The data for Otagi County are an example of such remaining manuscripts [24]. Unfortunately, the exact year cannot be traced for the data for Otagi County, and thus, the authors would like to guess that they are from the early Meiji period, around 1880. The present research used the data of 56 villages derived from the documents regarding the *Kyôto-Fu Chishi* (topography of Kyôto Prefecture) that are archived by the Kyôto Prefectural Library and Archives.

The 56 villages of Otagi County had a total population of 32,729, and the average *muradaka* per capita was 0.93 *koku*. The *kokudaka* data for each village were derived from the *Kyûdaka Kyûryô Torishirabechô* (survey of former *kokudaka* of former territories), an index compiled by the Meiji government of the names of all villages across Japan in the late Edo period.¹⁸ The *kokudaka* is provided for each village listed. The topography of 1880 does not mention each individual village *kokudaka* and, in terms of village products, only refers to the specialties or main products. For example, in the five villages of Kuta, charcoal is listed as the main product for Nakazaichi, charcoal and cedar wood for Kami and Shimo, charcoal and cypress/cedar wood for Miyanotani, and charcoal and cedar wood for Kawai. Charcoal was the main product of Kuta as the supplier for Kyôto city. As for the land, the area of taxed land and the rent tax are given, but there is no mention of the production volume or the production value. This is a big difference from the *Edo* period, when the level of *kokudaka* indicated the amount of production, or the amount of taxes for the village. In Japan, European-style statistics were rapidly introduced in the Meiji period (1868–1912), but the time of the first topography of 1880 belonged to a yet transitional period when the economic volume of each region was inadequately understood. Therefore, in this study, we used the *kokudaka* of the late *Edo* period as a proxy indicator.

Another topographic description of Otagi County was published in January, Meiji 44 (1911)¹⁹, and therefore, we can make economic and social comparisons of Otagi County in two different periods. The latter Meiji topography is called *Kyôto-Fu Otagi-Gun Son-Shi* (village record of Otagi county, Kyôto Prefecture) and was compiled by the Board of Education of Otagi County for the purpose of exalting patriotism in the county. The topography included modernized economic statistical data surveyed in 1908. These data were no longer calculated in *kokudaka* but in monetary terms.

There were 56 villages in around 1880, which were reorganized into 17 villages by 1908 in the series of municipal mergers implemented in the Meiji period known as the Great Meiji Consolidation. It should be noted that significant change can be observed in the village populations, but that the degree of population change largely varied in between the compared periods. Kuramaguchi was the only village with a population decrease. The population rate of increase from 1880 differed largely between the villages, ranging from 2.87 times to 0.85 times. The population increased slightly in the four villages of Kuta, Kurama, Shizu-Ichi-No, and Kumogahata by 1.09, 1.11, 1.31, and 1.09, respectively. The five villages were merged into one village, Kuta. Statistical data, especially statistical economic data, came to no longer be available for each of the five individual villages, but only for the village of Kuta as a whole.

Kuta was obviously an agricultural–forestry village. Shizu-Ichi-No, located closer to Kyôto City, was an agricultural village that grew *Kyô-yasai* (heirloom vegetables of Kyôto) to sell in Kyôto, while both Kurama and Kumogahata's forestry mainly supported the demand of Kyôto's inhabitants. Kurama was a hub for the firewood transported to Kyôto city, and Hanasé was the most significant wood supplier for Kyôto city.

Hanasé produced a larger amount of forestry products than Kurama did, amounting to JPY 57,061 in total production of which rice accounted for JPY 13,408. The difference, or JPY 43,653, represents the total forestry production. This amount was equivalent to 18.6% of the industrial production in Ōmiya. Forestry products from Hanasé were mostly rafted from Kita-Katsura River, an upper stream of Katsura River, which runs into Kyôto city. Products were rafted during the months of September through May, using traditional technologies.

Not only Kuta, but also Hanasé, Kurama, and Shizu-Ichi-No all demonstrate how an organic economy can be developed, using natural resources to meet the new demands of a city, in this case, Kyôto. Ōmiya saw a transition from agricultural lands to hosting factories amid new developments in the traditional textile industry. The economic development of the textile industry of Ōmiya clearly required capital power as shown by reports found in topographies on the construction of textile factories, especially in 1908. Ōmiya had originally been covered with agricultural land but being close to the center of Kyôto's *Nishijin-ori* (traditional textile produced in Nishijin), many silk textile factories were built. In 1908, silk textiles accounted for JPY 235,980 (68.3%) of the total agricultural, industrial, and commercial production, which amounted to JPY 345,347. Unrin Nenshi Company, which twined silk threads; Kyôto Orimono Co. Ltd. and Shibano Factory, which specialized in Shusu textiles; and Nishijin Orimono Mohan Kôjyô (the Nishijin textiles model factory, which was a national silk factory) were prominent local companies.

It should be noted, however, that in 1880, the village already had a different social structure from that of Kuta and other rural villages. Two villages, Nishi-Shichiku-Daimon and Nishi-Gamo, merged into Ōmiya, which was given a new name. In the case of Nishi-Gamo, 99 (66%) households of the total 149 households were still male farmer households, but in the remaining households, men were miscellaneous workers and most of the women were engaged in agriculture and firewood collection. This implies that while men followed a variety of occupations in search of new sources of income, almost all women were agricultural workers or traditional village workers. There was a rapid shift to dual occupations in Nishi-Shichiku-Daimon, where, of the 404 households (including temples and shrines) in the village, only 15 households had men engaged in agriculture, while 13 were engaged in lumbering, 172 pursued miscellaneous work, and 185 worked in shops. This can be understood as a step in the process of industrialization and specialization in the textile industry. It is also clear that women were mainly engaged in agriculture and forestry, even during this transitional process.²⁰

We can observe large changes in the occupational structure by looking at the ratio of the number of unemployed and “vocation unknown” households or people against the total number of households or people, as well as the share of people with vocations other than agriculture, forestry, fisheries, or commerce. A significant share of unemployed or vocation unknown people, who were usually few in number in the Edo period, were proletarians. While only 6.7% of the population of Kuta was unemployed or vocation unknown, in Shizu-Ichi-No, Kurama, and Kumogahata, the share was 40.9%, 23.4%, and 40.4%, respectively. The ratio of laborers in these villages did not vary much. However, we can find a concentration of laborers in villages such as Kuramaguchi, Tanaka, and Nishi-Shichiku-Daimon. In Kuramaguchi, over 40% of total households were those of laborers, representing 64% of the total population. In Shimo-Gamo, such households accounted for 29% of total households, and the ratio of laborers was also high in Kurama and Tanaka, with representations of 16% and 17%, respectively. For example, comparing the agricultural village of Kuta and the forestry-oriented village of Kumogahata, we can observe an obvious difference in the unemployed or vocation unknown population. The total population of the two villages was around 500 each, but the ratio of commercial workers in Kuta was 3.9%, compared to 17.6% in Kumogahata, thus allowing us to infer that significant changes took place in the forestry management in forestry-oriented villages close to the city. Kuta was still a traditional communal village in 1908.

Most mountainous roads were narrow trodden paths, and most roads in Kuta, located in the northeastern part of Otagi County, were not wide enough for vehicles, such

as two-wheeled carts, to pass through. Therefore, in most cases, mountains hindered the transportation of people and goods. For example, the mountains around Ogosé, located to the south of Kuta, impeded travel to Kyôto, and the mountain pass, which was used for charcoal transportation, was the only way over Kurama to Kyôto City [25] (pp. 13–16). Therefore, Kuta also had closer connections with Ômi Province in the present Shiga Prefecture on the Biwa Lake side, rather than directly with the market in Kyôto City. Topographic writings reveal that timber, firewood, and charcoal were delivered to Ômi, connecting with Kyôto through waterways on Biwa Lake.

Automobiles were first imported into Japan in around Meiji 31 (1898), but in Taishô 8 (1919), when the Road Act was enacted, there were only approximately 5,000 automobiles in Japan in total. This implies a great delay in road development in Japan [26]. The modernization of Japan was driven by railroad construction and the development of its network as a major means of transportation, but people continued to rely on walking as their daily means of transporting both humans and goods. Horse-drawn carriages never developed as a popular means of passenger transportation. Ox carts and horse- or human-powered carts were used mainly for transporting goods.

The region embraced changes that were attributable to the siting of new commercial production bases, such as in Ômiya and Tanaka. Textile factories that never existed in previous times were built, and the area developed into an industrial zone. Milk began to be produced for the first time in history, and pastures grazing cows exclusively for the Kyôto market appeared in Tanaka, a village close to Kyôto city, to accommodate the increasing demand. Given the higher demand for firewood, charcoal, and timber, forestry grew significantly by using river transportation. Furthermore, agricultural products grown in rural villages close to the city came to be consumed outside the villages, and therefore, agricultural production saw technological advancements, leading to the commercialization of agriculture. In some villages, the foundations of the local organic economy were enhanced with the commercialization of agriculture and forestry, while in other villages, urbanization and industrialization weakened their dependence on the organic economy, thus weakening the foundation itself. The following are concluded:

1. Otagi county underwent substantial administrative changes.
2. The population undoubtedly followed an upward trend. The population was substantially increasing in the city and surrounding areas, accelerating urbanization. Administrative units changed greatly from the *Edo* period, with small village units disappearing and municipal mergers creating larger units.
3. Standardization in the economy also changed with the abolishment of the measurement of *muradaka* and the shift to segmented monetary units. It was the end of a measurement system that was focused on recording how much a village could produce or its subsistence as a village.
4. Agriculture in industrialized districts, such as Ômiya, became largely female-oriented. However, some villages specialized in forestry and distribution and formed new supply areas of living resources. Kuta became one of the multiple suppliers of firewood and charcoal, without experiencing any decisive change; as a result, it appears to have maintained the rural landscape of the *Edo* period.

The first three points were the major changes observed. Unlike England, where the use of fossil fuels dramatically increased [22], the region did not experience energy conversion to fossil fuels, including coal or petroleum, and continued to rely on forest resources for heat and cooking. Despite the increase in vehicles, including two-wheeled carts, roads that were wide enough for them to pass through were very limited. Therefore, while transportation using wheeled vehicles drawn by man or livestock developed significantly, many products were still carried by traditional means, such as paniers and rafts. The authors would like to highlight the fourth point, where, despite the changes that occurred in surrounding communities in Otagi County, some villages, such as Kuta, maintained their traditional ways.

4. Diligence in the Memories of the Twentieth-Century Women in Kuta

In 1159, the taxable area of rice fields in Kuta was 15 *chô* (ca. 15 ha), and at the end of the *Edo* period, the total taxable area of rice and other crop/vegetable fields was 69.176 *chô*, with a total taxable area of rice fields of 49.556 *chô*. The area of mountain forests was not yet clearly calculated at that time, although a tax was imposed on their transaction. One would be considered to be a great peasant to have a 0.6, 0.8, or 1.0 ha rice field. It is said that in the days before the 1970s when there were no mechanical rice planters, it would take a week or ten days to plant rice [27] (p. 158).

Until the 1970s, almost every farmer in Kuta kept a cow, and the women's memories of Kuta, compiled in 1993, tell of the life in Kuta and their diligence—not of the “industrious” worker—but it is not clear how far back into the past we can go to learn more about the old Japanese family. Some narratives provide the age of marriage, which was 19 and 21. Five women were born in the 1920s, ten in the 1930s, nine in the 1940s, one in the 1950s, and three in the 1960s. Some households owned enough paddies and crop fields to feed their family, while others did not. Women were apparently taught family traditions and the way of life by their mother-in-law when they married into a family. As far as the records of 28 individual women published in 1993 [27] are concerned, a decisive change in women's labor seems to have occurred in the 1970s. It should be noted that these records describe the life stories and lifestyles of 28 women who lived and are currently living in Kuta. Mechanisms for sustaining life prevailed in a time when life was dependent on the ecosystem. Therefore, highly sustainable livelihoods tended to support the sustainability of family systems as well.²¹ The following are only two examples:

Ôe Tomiko [27] (pp. 145–146) (born in 1936) “A daughter-in-law in young ages”:

I married into a family in Kuta in Showa 30 (1955). Every day I would ask my mother-in-law, “What shall I do today, Mother”? My mother-in-law oversaw preparing meals, and since my job was to take care of our draft cattle [cows in most cases], I would go outside at dawn and get myself soaked in morning dew, cutting the grass for hay while it was still cool. During the day, I would cut the grass growing on the mountainside.

And in autumn, I would cut reed grass. I took the manure out of the barn [which was often a part of the main house] once every two weeks and piled it up on the ridges between rice fields by carrying some on my back and the remainder in a bicycle-drawn cart. My hands would be sore from the green grass and the odor of the warm manure, from which I could still feel the warmth of the house cattle, was offensive, but now they are all fond memories. Back then, the house cattle played an important role in farming, so they were well cared for and fed. People used to say that one looks at the cow and you could see what a hard worker the wife was.

Fumi Shimizu [27] (p. 150) (born in 1930s) “A mountain of memories”:

When the world awoke from its long winter sleep and the nightingale began to sing, everyone became busy in the rice fields, in the crop fields and in the mountains. I would go into the woods to collect tree branches from very early in the morning to help make charcoal and to prepare bundles of firewood. I would till the land, getting blisters on my hand until the end of April. They were very challenging days.

Now that I think of it, the one or two days a month that we got off were a long time coming for the young bride. When we had finally finished planting rice in the wind and rain, the next day would be another early morning starting with cutting grass for the cow. I would spend the afternoons cutting grass in the mountains. After a while, I would go into the barn to take the cow dung out. Day after day, the hot weather would continue. As the weather got a bit cooler, we would start reaping the rice. When it rained, I would gather chestnuts and horse chestnuts, so there was no time for me to rest my shoulders. On sunny days, I would spend the evening carrying the harvested rice under the stars.

There were many hardships, such as hanging the rice on wooden racks to dry and dealing with the elderly. I would stay up until very late each night threshing the rice. This

work would go on and on until the end of autumn, in November. Then, we would begin preparing for the winter, gathering firewood, and carrying charcoal in a bicycle-drawn cart to Ume-no-ki (in neighbouring Prefecture Shiga).

Charcoal production continued until around the mid-1970s, when Japan's energy revolution led to a sharp decline in demand for charcoal, and charcoal-making ceased [27] (p. 145). At that time, a factory was set up in Kuta for the Nishijin weaving companies of Kyôto [27] (p. 184) and weaving at home on rented looms became more widespread. Nearly 30 women were weavers at one time, but by 1990, around when these narratives were recorded, there were only around eight women working as weavers [27] (pp. 186–187). Women's work shifted from helping with the burning and transporting of charcoal to weaving. At the same time, cultivators, tractors, and power threshers were introduced; therefore, the rice harvested by combine harvesters could be hulled and packed into bags on the spot. The month-long process of hanging rice on wooden racks to dry could now be done in a single night [27] (p. 193). Until the 1960s, the traditional role of rice, wood, and charcoal suppliers did not change so dramatically. Today, only leisure facilities, such as campsites, and the processing of wild vegetables continue to make use of the mountainous "living spaces".²²

According to "Japan's population censuses,"²³ the population of Kuta has been continuously declining since 1920, and in 2015, there were only 51 households and 72 inhabitants. Despite the rapid aging of the population, many family relatives live in Kyôto, and there is less abandoned land than in other areas of Japan. Kuta is, of course, not the only village in Japan to have supported many magnificent wooden structures, including the famous temples of Byôdô-In, Tôdai-Ji, and other shrines and temples outside their village. Sustaining the lives of the inhabitants in their own individual living spaces, the villagers had shared cultural goals that are unthinkable across geographically wide ranges today. This point is missing from Hayami's and de Vries' discussion of the "Industrious" Revolution and should be explored further before many mountainous and coastal Japanese villages simply disappear.

5. Concluding Remarks: Diligence in Living Spaces

The most significant change in Kuta occurred as a result of the exodus of young people, especially after the war in the 1960s, which is not discussed here. In their pursuit of higher education, more and more young people left the village for cities [28]. The village is no longer a place of prosperity for their descendants. This migration trend seems to have continued since the First World War, but it is only in the last decade or so that we have begun to clearly see its effects in the abandoned fields. People who were born in Kuta and have moved to the city are getting older; there are no more people in Kuta who were born in Kuta, and the fields are being abandoned.

The demise of old ways of living can cause anguish, and a deep sense of loss. It is a little like the extinction of older species of animals. This is an issue of some seriousness, but it is up to the society to determine what, if anything, it wants to do to reserve old forms of living, perhaps even at significant economic costs

[29] (p. 241)

In Kuta, it was mainly the women who maintained the above-mentioned traditional way of life. Why were the women of Kuta willing to perform submissive, subservient, or voluntary work for their mother-in-law? Apparently, there are aspects of their discourse with family relations that cannot be understood in terms of the Industrious Revolution toward industrialization or labor-intensive industrialization.

The industrial revolution is usually depicted as a success story. . . . , however, the industrial revolution may come to be regarded not as a beneficial event which liberated mankind from the shackles which limited growth possibilities in all organic economies but as the precursor of an overwhelming tragedy—assuming that there are still survivors to tell the tale

[22] (pp. 204–205)

The local history of Kuta over the long term followed a different path of development from the trajectory that led to the Industrial Revolution. It was also distinct from the pessimism about the future that Wrigley observed. Therefore, Kuta is one of the few local living spaces that were not directly affected by the so-called Industrial Revolution in Japan and kept their traditional ways until very recently. In their local living spaces, the women of Kuta engaged in agriculture and forestry, and also some women even in industrialized places of Kyô-Otagi, where vocational and everyday activities were particularly regulated by nature. Their circumstances required them to demonstrate an “industriousness,” which was rooted in a moral sense of duty.

This sense of “industriousness” should be distinguished from the “industriousness” that set the stage for the Industrial Revolution. While “industriousness” generally implies perseverance and determination, the industriousness of the women in Kuta was not characterized by determination. They did not work diligently to accomplish a certain goal, such as obtaining the freedom of choice, which would accompany the expansion of consumption. The diligence observed in Kuta was a conscience-driven dedication to daily work.

Kuta’s diligence seems to have had its origins in a certain religious faith. Although it has not been possible to fully develop the religious aspect of the discussion herein, there were numerous temple and shrine territories similar to Kuta before the Tokugawa period. Should we not consider the connection between the payment of annual tributes and certain religious sentiments? Here, too, the diligence with which the people engaged in agriculture and forestry seems not to be explainable by the industriousness that social and economic history has understood it to be.

The diversity of the early stages of the industrialization observed in Otagi County is based on the geographical proximity to the former capital city, Kyô, and the differences in the environmental conditions of the villages and their mutual transport systems. The authors would like to call these environmental conditions “living spaces” so as to cover the environment in its entirety, including all life forms. In Japan today, where villages such as Kuta are disappearing, the question that needs to be revisited is the relationship of diligent interaction between people and local living spaces. It would be possible to say that the productive forces in the living spaces of Kuta had reached a certain level of culmination before the start of the *Edo* period: food, charcoal, and timber production. If we dare to formulate it, we may say that the period before the seventeenth century in Kuta was a Boserupian growth²⁴ period, and the period after that was the de-Boserup market- and then state-capital-oriented period for Kuta. This is an issue for further study.

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Notes

¹ Literally “great name”: regional baron.

² Hegemonial military leader: a hereditary head of the Tokugawa family.

- 3 A nengô (a period of years as designated in the Japanese calendric system) when original Japanese recreation and aesthetic productions and cultures flourished as ukiyo, the “floating world.”
- 4 Citation from K. Yamamura, “Returns on Unification: Economic Growth in Japan, 1550-1650” [2] (p. 334) [1] (p. 149). According to a new estimation of the population of 1600, as later mentioned, these figures should be revised.
- 5 “Mura” means village and “daka” is equivalent to “taka.”
- 6 A ratio of 1.00 means that the areas of paddy and upland fields were equal. Rice fields covered a larger area [4] (p. 211).
- 7 Floods were not always a calamity because flooded areas could be used to produce surplus rice for village inhabitants in normal years and could also be altered to detention basins for flood control. Floods would bring new fertile soil, which was especially effective for mono-crop practices, such as the commercialized production of indigo along the Yoshino River (Kitahara 2006, p. 192).
- 8 This official letter is a notification from the former Grand Minister’s office.
- 9 One *cho* is approximately one hectare in area.
- 10 *Gôshû Kutagô Kenchichô/Gôshû Takashimagun Kutagô Kenchichô*, The University Library of the Tsukuba University: https://www.tulips.tsukuba.ac.jp/limedio/dlam/B10/B1042089/1/normal/10076713422/10076713422_0001.html (accessed on 20 February 2021). For Kuta’s localities in detail, see [30] (pp. 51–52).
- 11 Sanbô-In was built in 1115 by Shôkaku, the 14th archbishop of Daigo-Ji. It is the main house where the “feudal archbishop,” most often a distinguished member of the Emperor’s family, stays among all houses in Daigo-Ji. See the site of Daigo-ji: https://www.daigoji.or.jp/garan/sanboin_detail_e.html (accessed on 25 March 2021).
- 12 Since Tenpuku 1 (1233), a group of ten families, including vassals and servants, was recognized to have been responsible for the tax burden (see [9] (pp. 566–567, No. 4) and [10] (p. 21, Okada House Archive, No. 38)), from which five families can trace their lineage back to the present day in Kuta (see [30] (p. 58)).
- 13 Kuta-no-Shô (manor) included Kuta’s five villages, Ohmi, and Momoi. The latter two villages were situated to the south of Kuta, closer to Kyôto and following the mountain passes. The *kokudaka* was more than Kuta’s one.
- 14 The 3% remainder was used to pay taxes for Kurama Temple and a hermitage.
- 15 Economic growth in the early modern period was noted, but as we shall see, the population of Japan around 1600 was revised upward, and estimates of economic growth were also revised considerably upward for the Middle Ages. See [31].
- 16 See [32–35] for labor-intensive industrialization, and in relation to the land scarcity, see also [36].
- 17 See also [17].
- 18 National Museum of Japanese History, Kyûdaka Kyûryô Torishirabechô (Survey of former *kokudaka* of former territories), www.rekihaku.ac.jp/up/cgi/login.pl?p=param/kyud/db_param (accessed on 20 February 2021).
- 19 Digital collections of National Diet library (Japan), “Kyôtofu Otagigun Sonshi” (Village record of Otagi County, Kyôto Prefecture), <http://dl.ndl.go.jp/info:ndljp/pid/765593> (accessed on 20 February 2021).
- 20 In Japan, and Asia in general, the boundary between urban and rural areas is blurred, and farmland and wasteland can easily be converted into housing lots, shops, and factories. There is not enough space here to discuss Japanese cities in comparison with those in Europe. Rather, we would like to emphasize that the longevity of a river landscape surrounded by mountains, such as Kuta, is due to the greater importance placed on its local organic economy.
- 21 See [37] for understanding “temporality.” Before industrialization, it should be considered that the basic lifestyle had long been narrated and passed on through the family.
- 22 “Living spaces” is a term devised by the authors to represent a holistic spatial concept that includes all life forms living in a certain environment. It embraces the spatial relationship and organic interactions between humans and nature. See Section 5, “Concluding remarks: Diligence in Living Spaces” for further details.
- 23 The population census in Japan is available from 1920, every five years. See the following site: <https://www.e-stat.go.jp/stat-search/files?page=1&layout=datalist&toukei=00200521&tstat=000001036875&cycle=0&tclass1=000001036876> (accessed on 18 February 2021).
- 24 Osamu Saito, drawing on Joel Moccia’s summary of economic growth, suggests that growth, particularly in relation to population size, might be better termed Boserupian growth. Other than that, Moccia himself named “capital” as Thoreauian, “markets” as Adam Smithian, and “technological progress and innovation” as Schumpeterian [38] (p. 51). See [39] to understand an academic way of thinking, especially for women’s work, by Boserup, who sometimes refers to Japan as well. This is based on the most limited available literary sources, and, as is generally understood, the emphasis is on women as factory workers during the Industrial Revolution [40] (pp.166-8, esp. 167). However, if we follow her own approach, the role of women as agricultural workers in the early stages of industrialization, as we find in this article, will be portrayed in a different way. Once again, we believe that Boserup’s argument needs to be reconsidered based on original historical evidence. It could be said that this article was a partial attempt to do just that.

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