Japanese Plows of Korean, Chinese and Mixed Origins

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I have conducted a comparative study of plows all over Japan since 1981. The research has shown that the shapes of plows used in the 20th century can help elucidate how Koreans settled in various parts of Japan in the 6th and 7th centuries. In this paper, I discuss how to acquire historical information from folk tools, which form a category of nonwritten cultural materials.

1. Uniqueness of plow agriculture in Japan among East Asian countries

Plow agriculture in Japan is marked by features not found in any other part of East Asia. While the advent of plowing in China and Korea dates back at least two millennia, it was in the 6th century or later when Japan imported the plowing technique that had been fully developed in these countries. In early China and Korea, plows were drawn by two draft animals; later, a type that could be pulled by one draft animal was invented. The plow introduced into Japan was the one-draft-animal type; plows drawn by two draft animals do not exist in the country. The lack of two-animal plows, a rarity in East Asia, has much to do with two geographical factors. First, Japan is an island country isolated from the continent. Second, Japan is far from northern East Asia, where two-animal plows are dominant, and adjacent to southern East Asia, where plows with one draft animal prevail.

The Japanese people had practiced hoe agriculture since rice farming began in the country a millennium before the introduction of plows. Unlike in China and Korea, where the use of iron spread at an early stage of history, in Japan iron was a rare and expensive import. Plowing was an expensive, sophisticated technology for the Japanese and was first embraced by people of power in regions around the nation.

2. Unchangeability of farm tools: a common phenomenon in the pre-modern society

Conventionally, it has been believed that farm tools have evolved into the various forms we know today, through adaptation to regional topography and soil characteristics. Although this theory may hold true for hoes and other implements, there are countless farm tools whose shape has not changed for more than a millennium.

For example, the ancient form of the character "耒" ("spade") inscribed on bronze ware from China's Zhou Dynasty has the same shape as the farm tool *ttabi*, which was used in Korea's Cheju Island in the 20th century, except that the *ttabi* has an iron blade attached. This suggests that the tool's shape has not changed for 3,000 years.

Meanwhile, a V-shaped yoke for a draft animal, in which a drawing rope is fixed along the outer edge of the yoke, is found in Yamaguchi Prefecture, southwestern Japan, and its shape is identical to a yoke for a draft animal in China. Although 1,300 years have passed since the yoke was brought to the region in the 7th century, its shape remains unchanged.

A closer look clarifies the principles determining the changeability of farm tools:

- Tools for producing products are less changeable than those used in daily life.
- Among rice-farming tools, cultivation tools are less changeable than tools for threshing or

processing harvested rice.

- Among cultivation tools, plows or harrows drawn by cattle are less changeable than hoes and spades manipulated by people.

Accordingly, plows are among the most unchangeable tools, and a comparison of the shapes of plows used in the 20th century helps elucidate the history of ancient Japan and, moreover, the migration history of East Asian peoples.

3. Revision of the shape-based classification

a. The purpose of classification

Japanese plows are commonly classified as long-sole, short-sole or no-sole, and I think this classification method is useful for functional analysis. However, studies that aim to divide plows into smaller groups have yet to succeed. The more detailed the classification, the more complicated whole picture becomes. Classification is nothing more than an analysis method, so we must have a crystal clear perception of why we classify and what information we want to obtain by doing so.

As a researcher of ancient history, my goal is to understand when and from where plows were brought to Japan. To this end, I have sought a classification method that can help determine plow origin based on shape.

b. Were no-sole and long-sole plows adapted to regional climates?

The conventional theory goes that no-sole plows, which are small and convenient, were developed for use in fields, while long-sole plows, which are firmly built, were for rice paddies. However, no-sole plows have been used in both fields and rice paddies in Fukuoka Prefecture, while long-sole plows have served both purposes in Ōsaka Prefecture. Actually, no-sole plows have their roots in Korea, while long-sole plows are from China. For historical reasons, Korean plows came into use in Fukuoka, while Chinese plows spread in Ōsaka. In this way, a comparison of the shapes of plows in Japan may help unravel the ancient history of each region.

c. New classification: Plows of Korean, Chinese and mixed origin

As described above, Japan accepted the plowing technique perfected by the Chinese and Koreans. A quadrangular-frame long-sole plow with a curved beam was introduced from China, while a triangular-frame no-sole plow was brought from Korea. The shape of a Japanese plow reflects its origin, either Chinese or Korean. In my research, I have discovered plows featuring both Chinese and Korean elements. These plows of mixed origin boost the diversity of plows in Japan.

The new classification scheme that divides plows into those of Korean, Chinese and mixed origin may help determine when and from where plows were brought to Japan.

4. Horses and harrows first, oxen and plows later

In Japan, harrows, which are used to puddle and smooth soil before transplanting rice seedlings, are widely called *maguwa* ("horse hoes") or something similar. This name suggests that harrows were drawn by horses when the tools first came into use. Originating in Asia, harrows are pulled by oxen or water buffaloes in China and by oxen on the Korean Peninsula. Horse-driven harrows are found only in Japan, presumably because when harrows

were first introduced, horses were the only large domesticated animals available in Japan (oxen had yet to be domesticated). Archaeological remains from the 5th century include horse harnesses, but not ox bones. Accordingly, harrows probably arrived in Japan in the 5th century. The Japanese people had horses and harrows first, and oxen and plows were introduced later.

5. The first plows in Japan: No-sole plows brought by Korean immigrants in the 6th century

A type of yoke used in the Kii Peninsula, southern part of Honshu, is equipped with bars to hold the neck of the ox from both sides. This type of yoke, which is not found anywhere else in Japan, also exists on the Korean Peninsula, where it has the same shape, and uses the same rope-tying method. Thus, the yoke found in Kii probably came from Korea. If so, Korean no-sole plows should have been brought to the area too. This assumption is supported by the fact that plows in Kii have both Chinese and Korean features. So when did plows arrive in the region?

The yoke in Kii is called a *unagura*, which literally means "saddle" (*kura*) placed on "the nape of the neck" (*una*). This name suggests that an *unagura* was regarded as unusual as it was placed on the nape of the neck instead of the back.

It is estimated that harrows for puddling rice fields were brought to Japan in the 5th century from China's Jiangnan area, which is south of the lower reaches of the Yangtze River. This harrow was drawn by putting a saddle on the back of a horse. The name *unagura* seems to be based on a fixed concept that a farm tool should be pulled by putting a saddle on the back of an animal. Thus, oxen, *unagura*s and no-sole plows probably arrived in Japan after harrows did—that is, in the 6th century or later.

Meanwhile, as the yoke is called an *unagura*, not an *unajigura*, it was presumably introduced into Japan at the time when the nape of the neck was called *una* instead of *unaji,* as it is called today. *Nihon Shoki* (*Chronicle of Japan*), which was compiled under the editorial supervision of Prince Toneri and completed in 720, uses the word *unaji*. Since history books published by the government are written in formal language containing obsolete words, it is estimated that the word *unaji* was already being used in the 7th century. Thus, the word *una* may have been commonly used in the 6th century or earlier.

In short, the introduction of the *unagura* occurred either in the 6th century or later or in the 6th century or earlier. Accordingly, it was probably in the 6th century when Korean immigrants brought oxen, *unagura*s and no-sole plows, and this marked the first introduction of plow agriculture into Japan.

6. Why can Chinese long-sole plows be found from Kyūshū to Kantō?

According to historical records and archaeological studies, Japan experienced waves of immigration from Korea from time to time. On the other hand, there is no record of mass immigration from China. So why are long-sole plows of Chinese and mixed origin found in areas ranging from Kyūshū, in southwestern Japan, to Kantō, in central eastern Japan?

a. Chinese long-sole plows arrived in Japan in the 7th century

In its chapter about plows, *Wamyō Ruijushō* (compiled between 931 and 938) makes reference to the dictionary *Yōshi Kangoshō* (compiled between 717 and 724). *Yōshi Kangoshō* describes a plow sole called a *yisari*,

suggesting that long-sole plows were used in the capital and its surroundings. Since long-sole plows were common enough to appear in an early 8th-century dictionary, they were probably delivered to Japan in the 7th century or earlier.

Meanwhile, in Hikari City and Hirao Town, which are in the coastal plains of Suō Province, eastern Yamaguchi Prefecture, southern part of Honshu, there exist Korean-type yokes with projections, as well as plows of mixed origin and Chinese long-sole plows. In Miwa Town and Hongō Village, which are in mountainous areas of Suō, V-shaped yokes for draft animals, in which a drawing rope is fixed along the outer edge of the yoke, and long-sole plows can be found, and both of them originated in China. As in the Kii Peninsula, yokes are called *unagura* in Suō, and this name suggests that yokes entered this region in the 6th century. Based on the same reasons as those mentioned in Section 4, Korean yokes and plows may have been brought to Suō Province in the 6th century. If so, this province received Chinese long-sole plows after the immigration of Koreans in the 6th century. Thus, Chinese long-sole plows are roughly estimated to have been introduced in the 7th century or later.

In short, Chinese long-sole plows entered Japan either in the 7th century or earlier, as indicated by the description in the dictionary, or in the 7th century or later, as indicated by the plows in Suō Province. Accordingly, Chinese-type long-sole plows presumably arrived in Japan in the 7th century.

b. The Japanese government may have introduced Chinese plows as part of the Taika Reforms

In the 7th century, when Chinese long-sole plows are estimated to have arrived in Japan, Japanese civilians did not have any contact with the Chinese people. Actually, imperial envoys to China's Sui Dynasty and the following Tang Dynasty were the only ones who could communicate with the Chinese. Thus, it is probably the government that introduced Chinese plows and disseminated them throughout the nation. So, the question arises: Which 7th-century government is responsible for the spread of Chinese long-sole plows?

Four governments existed in the 7th century: 1) the government of Prince Shōtoku and Soga no Umako in the early 7th century; 2) the government of Soga no Emishi and Soga no Iruka in the second quarter of the century; 3) the government established by Crown Prince Naka no Ōe and Nakatomi no Kamatari after the Taika coup of 645; and 4) the government of Emperor Tenmu and Empress Jitō in the fourth quarter of the century.

A framework to govern the entire territory of the nation was instrumental in disseminating long-sole plows. Such a system had yet to be completed in Periods 1 and 2. The first local governing system in Japan was established by the Taika Reforms.

Meanwhile, Chinese long-sole plows could be brought to Japan only by envoys to China. Yet in Period 4, none were sent to the Tang Dynasty, as the relationship between the two countries had cooled. Accordingly, it is assumed that the government set up after the Taika coup introduced Chinese long-sole plows.

The Taika government promoted the establishment of the Ritsuryo System, emulating the ruling system of the Tang Dynasty. The fact that the government endeavored to spread long-sole plows imported from the Tang Dynasty means that it pursued a technological innovation policy tantamount to the industrial revolution in the Meiji Period (1868-1912), which the government spearheaded by embracing the Western system of machine-based production. Indeed, folk implements have preserved the record of a massive government project that is not even written about in the 8th-century history book *Nihon Shoki*, demonstrating the invaluable role played by nonwritten cultural materials.

Now, another question emerges: How was the technology transferred from the central government to regions throughout the nation?

c. *Tameshi* models distributed throughout the nation

In ancient times, it was impossible to transfer technology with engineering drawings as we do today. Instead, people in both China and Japan created models to spread technology, and such models were called *tameshi* in Japanese. In order to systematically rule the nation's entire territory, the Taika government divided it into *kuni* provinces, which consisted of smaller *kōri* districts. There were about 500 *kōri*s in Japan, and each one had a governor called a *kōri-no-kami*, who was appointed by the central government. Thus, it is estimated that the Taika government made about 500 models based on plows imported from the Tang Dynasty, and distributed them to *kōri-no-kami*s around the country to popularize the use of long-sole plows.

d. Archaeological support: Long-sole plows with soles and moldboards made integrally were unearthed

Recently, long-sole plows whose wooden soles and moldboards are formed integrally were discovered in strata from the 7th century at the archaeological sites of Shimokawazu in Kagawa Prefecture and Kajiwara in Hyōgo Prefecture, both in southwestern Japan. Also, a small model of a plow for ritual use was unearthed at the archaeological site of Yashiro in Nagano Prefecture, central Japan. In China and Korea, moldboards, which turn over soil, are made of cast iron, and a wooden moldboard made integrally with a sole is unique to Japan. Although wooden implements can be unearthed only when certain conditions are met, the distribution of plows with integrally formed soles and moldboards encompasses a wide range of areas including Kagawa, Hyōgo and Nagano prefectures, suggesting that this type of plow may have been used all over the nation. Since these plows have not only the same shape but also the same sole length (around 72 centimeters), there must have been a government standard defining the size and shape of plows. Plows with integrally made soles and moldboards were probably produced following the models supplied by the Taika government.

The distribution of folk implements, as well as the political and diplomatic situation in the 7th century, implies that the Taika government introduced long-sole plows, and this hypothesis is confirmed by the existence of long-sole plows with integrally formed wooden soles and moldboards, which were likely produced according to a standard.

7. Original and mixed types of Korean no-sole plows

a. Birth of plows of mixed origins

As mentioned above, Japanese plows are grouped into those of Chinese, Korean and mixed origins, and Chinese plows were actually disseminated by the government. So how did plows of mixed origin emerge?

When the government distributed model plows in the 7th century in a bid to promote the use of long-sole plows, Korean and Chinese characteristics were blended to create a new type of plow in regions that had already received Korean no-sole plows in the 6th century. On the other hand, in regions where Koreans did not settle in the 6th century, people accepted the government's model plows as they were, without making any changes.

b. Original-type Korean plows may have arrived in Japan after the end of the government project

I sometimes come across original-type Korean no-sole plows that do not show the influence of the government's model. Under what conditions do these original-type Korean plows exist?

Plows brought by Korean immigrants after the end of the government's long-sole-plow promotion project retained their original form without absorbing the influence of the policy. These Koreans were among the last groups to migrate to Japan and were probably refugees from Baekje, which collapsed between 660 and 663, and Goguryeo, which was vanquished in 668.

Based on the discussion above, I devised the following "formula," which relates the shape of a plow to a region's history in the 6th and 7th centuries.

- A region where the government's model plows remain in their original form
  → Korean immigrants did not enter there.
- A region where plows of mixed origin exist
  → Korean immigrants moved there or to a neighboring region in the 6th century.
- A region where original-type Korean no-sole plows exist
  → Refugees from Baekje or Goguryeo migrated there.

c. Pinning down the exact time when the long-sole-plow promotion policy was instigated

According to the history book *Nihon Shoki*, more than 400 people from Baekje settled in Kanzaki County, Ōmi Province (present-day Shiga Prefecture) in February of the fourth year of the reign of Emperor Tenji (665). The book also says that more than 700 people from Baekje were moved to Ōmi's Gamō County in the eighth year of the reign of Emperor Tenji (669). In Kanzaki and Gamō counties, in the eastern part of Shiga Prefecture, farmers use original type of Korean no-sole plows, a fact which supports the assumption that the existence of original-type Korean plows in a region means that refugees from Baekje or Goguryeo settled there. Moreover, the description in *Nihon Shoki* serves as a clue for pinpointing the time when the Taika government launched the policy of disseminating the use of long-sole plows.

First, the government could create model plows only after its envoys to the Tang Dynasty returned to Japan. Thus, the policy is estimated to have been installed in July 654 at the earliest, when the first envoys after the Taika coup came back to Japan. In the meantime, the project was presumably finished by February 665, when 400 people from Baekje immigrated into Kanzaki County, Ōmi Province. Therefore, the distribution of the government's model plows to *kōri-no-kami* local governors should have occurred during the ten-year-and-seven-month period from July 654 to February 665.

d. Tracing migration routes in the 6th to 7th centuries

While pursuing the comparative study of plows all over Japan, I have also been trying to examine whether the formula that relates plow shapes to 6th- and 7th-century history, and which was established based on the study of plows in the Kantō region, can be applied to other regions. According to studies of plow shapes conducted so far, the history of most regions can be explained by the formula.

Meanwhile, there exists an immense variety of Korean no-sole plows in Japan, which may mirror the variety of

places in Korea from which the immigrants came. Therefore, research on the shapes of plows all over Korea after a thorough study of Korean plows in Japan can help to specify the immigration routes in the 6th to 7th century. For example, the research findings may show that a group of Koreans from around City A in North Jeolla Province moved to around City B in Kanagawa Prefecture, or that, after the fall of Baekje, refugees from around City C in South Jeolla Province settled in County D in Yamanashi Prefecture.

8. Plows: Nonwritten cultural materials which unravel the migration history of East Asian peoples

a. Plows impart historical and folkloric information

In this paper, I have explored how regional history in the 6th to 7th century can be recounted based on the characteristics of plows. Besides being animal-drawn cultivation implements, plows serve as nonwritten cultural materials that can shed light on regional history. Plows are collected by museums around Japan, and each plow carries not only the information about its function as a cultivator but also the historical and folklore information about when, from where and how it was brought to a certain region. Thus, plows are invaluable nonwritten cultural materials for the study of human societies.

b. When viewed as nonwritten cultural materials, plows are not tools but folk implements

The COE program of Kanagawa University has given me opportunities to communicate with researchers in different fields. When I coordinated the session "The folk implements and the folk technique" at the international symposium last year, I was asked from time to time why I used the term "folk implements" instead of just calling them "implements."

In their book *Mingu Shūshū Chōsa Yōmoku* (1936), Keizō Shibusawa, the father of folk tool study in Japan, and his fellows defined the term "folk implements" as "familiar tools which were created with technical means by our fellow countrymen out of need in their daily lives." This definition was formulated 70 years ago by a coterie of Japanese researchers who aimed to study folk implements, and is therefore flawed as seen from today's academic viewpoint. For instance, the expression "our fellow countrymen" excludes non-Japanese. Moreover, with the phrase "created with technical means out of need in their daily lives," tools introduced from abroad such as plows are removed from the category of folk implements. This definition overlooks the reality that Japan is an East Asian country located on the edge of the Chinese cultural area, and in the case of farm tools, 70 to 80 percent have their roots in China or Korea. Having entered the 21st century, when international and interdisciplinary studies are burgeoning, we need to reconsider our view of folk tools.

As described above, a plow imparts not only information about its function but also historical and folkloric information ; when, from where and how it was delivered to a region. People regard a plow as a tool because they focus on its function. But I call it a folk implement because I attach weight to its historical and folkloric information, rather than its function as a cultivator. In conclusion, folk implements are tools providing not only functional information but also abundant historical and folkloric information, and a tool is called a folk implement when its aspect as a nonwritten cultural material is highlighted.

As described in the first section of this paper, Japan received plows and plowing techniques from China and Korea centuries after the advent of plowing in these countries. As they are among the most unchangeable farm tools, plows have retained their original shapes since they were brought to Japan in the 6th and 7th centuries.

Therefore, studies of Japanese plows will help elucidate the unknown history of 6th- and 7th-century China and Korea.

Folk implements in Japan are indispensable assets to all Asian people, and the onus is on the Japanese people to protect such artifacts.

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