Developments in the Pottery Culture of Gaya

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Introduction

Gaya (42–562) was a polity centered in the southeastern region of the Korean Peninsula. Historical records indicate that it was established after the year 42 CE and survived for 520 years. It coalesced and developed during the Three Kingdoms period of Korean history, a period when the three ancient states of Silla (57 BCE–935 CE), Baekje (18 BCE–660 CE), and Goguryeo (37 BCE–668 CE) engaged in a continuous struggle to dominate the region. Gaya and Silla were located in the southeast and separated by the Nakdonggang River, the largest river in the southern reaches of the Korean Peninsula. Baekje was situated in the southwestern part of the peninsula. Although it is inclusively referred to as Gaya today, it was actually separated into several political entities that maintained unique respective cultures. The major centers of Gaya were Gimhae (Geumgwan Gaya), located around the Nakdonggang River estuary; Haman (Ara Gaya), located near the Namgang River, a western tributary of the Nakdonggang River; Goryeong (Dae Gaya), in the middle basin of the Nakdonggang River; and Goseong (So Gaya), abutting the southern coast.

Historical records on Gaya are highly fragmentary, and the understanding of the history and culture of Gaya thus relies heavily on clues provided by archaeological research. The most representative archaeological data would be the abundant pottery excavated from the Gaya region.

The aim of this article is to briefly introduce the pottery of Gaya. Although a more detailed summary of the accumulated results of research on Gaya pottery is needed, length constraints mean the article will simply highlight some of the major developments in Gaya pottery. To this end, the following text primarily examines the following: the significance of grayish-blue stoneware, which appears for the first time in the fourth century CE; the unique pottery production methods of Gaya; the mass production and distribution of jars; the wide diversity its kind; the appearance of stoneware in Japan; and influences on Gaya's ceramics technology.

The Appearance of Grayish-blue Stoneware and the Emergence of Gaya Pottery

Gaya pottery can be divided between reddish-brown earthenware and grayish-blue stoneware. The reddish-brown earthenware vessels used in daily life gain a reddish color from

being fired in open kilns. Their walls are relatively soft and easily absorb water. In contrast, grayish-blue stoneware vessels were mostly used as burial goods and storage vessels, and they took the form of dishes, pedestaled vessels, cups, and large jars. They were reduction fired at high temperatures in closed kilns to achieve vitrification and were tinged with gray or black. This grayish-blue stoneware began to be produced around the fourth century CE in the Gimhae area, the center of Gaya at the time. This is generally accepted as the genesis of Gaya pottery. Clearly, people in the Gaya region had made and used various forms of pottery prior to the appearance of grayish-blue stoneware, but these cannot be called distinctively Gaya pottery in terms of form or production techniques. Grayish-blue stoneware, however, was first produced in the Gaya region and was maintained long enough to become a distinguishing feature of the culture. This type of pottery developed in the Gaya region became widely distributed throughout the Korean Peninsula and parts of the Japanese Archipelago. This distribution vividly demonstrates the vigorous interactions between Gaya and its surrounding polities. Gaya pottery production techniques spread beyond their birthplace and had a major impact on the appearance and development of stoneware in Japan.

Was the grayish-blue stoneware that marks the beginning of Gaya pottery an original invention of Gaya? Rapidly spinning potters' wheels were used to shape grayish-blue stoneware, enabling mass production and the standardization of forms. Grayish-blue stoneware is characterized by its dense structure, solidity, and impermeability. The silica in the clay vitrified, as the pottery was fired in step kilns, reaching temperatures over 1200℃. Entirely new forms that had never been seen in previous wares suddenly appeared, such as jars with two lugs. Explanations of the origins of this new grayish-blue stoneware are largely divided into two hypotheses based on either adoption or independent innovation. Researchers who advocate the former focus on the similarities between two-lugged jars, one of the earliest examples of grayish-blue stoneware, and a type of Chinese porcelain. Much of the evidence pointing to Gaya's active involvement in long-distance exchanges can be used to support the hypothesis of the adoption of pottery techniques from China. On the other hand, researchers have pointed out that the earliest grayish-blue stoneware from Gaya was not fired to vitrification (Fig. 1), and the development of this type of stoneware would have been

Fig. 1. Grayish-blue Stoneware Pottery. Excavated from Yangdong-ri Tomb No. 235 in Gimhae. Gaya, late 3rd–early 4th century. H. 32.0 cm. National Museum of Korea
This is the earliest known example of grayish-blue stoneware pottery yielded by a tomb in Gimhae, which is located along the Nakdonggang River estuary. This lidded jar has an uneven surface resulting from sudden exposure to high temperatures. This appears to be the result of poor temperature control during firing.

Fig. 2. Reddish-brown Earthenware. Excavated from Buwon-dong site in Gimhae. Gaya, 3rd–4th century. H. 15.0 cm (left). Gimhae National Museum

impossible without local innovations and gradual improvements in firing technology. Thus, these views regard grayish-blue stoneware as an independent local technology.

When discussing Gaya pottery, it is grayish-blue stoneware that first comes to mind. However, reddish-brown earthenware is also critical to understanding the pottery culture of Gaya (Fig. 2). Earthenware vessels were fired at relatively lower temperatures (less than 800℃) in an unsealed kiln, resulting in a reddish-brown shade, walls that are softer than stoneware, and high permeability. These wares consisted of pots, steamers, and bowls, and were used to boil water and other liquids, steam food, and as containers for foods. Grayish-blue stoneware has mainly been discovered in the context of burials, whereas reddish-brown earthenware has mostly been uncovered from dwellings rather than tombs. Although reddish-brown earthenware is thought to have been a remnant of pottery developed during the Bronze Age, the research conducted on this earthenware is scant compared to that on grayish-blue stoneware. There are a few reasons for this: A relatively smaller number of reddish-brown earthenware vessels has been excavated, and the evolution of the shape and the production techniques applied to these vessels over time remains unclear. Furthermore, no characteristics of this earthenware distinct to specific regions within Gaya have been identified.

On the other hand, grayish-blue stoneware shows obvious changes in the production techniques involved and can be considered a discrete innovation in pottery technology. Its forms are also unique compared to those found in other regions within Gaya and other countries of the time, and chronological changes in form and style are relatively clear. Gaya archeological sites have yielded a wide variety of artifacts, such as iron goods, pottery, and necklaces and earrings, illuminating the rich material culture of Gaya. The findings of goods that were imported from China and Japan reflect Gaya's active involvement in international exchanges. Among the uncovered artifacts, grayish-blue stoneware is the most geographically widespread within Gaya and makes up the overwhelming majority. As a result, research has largely focused on grayish-blue stoneware despite the importance of reddish-brown earthenware as items of everyday use. This earthenware pottery is critical to forming a more holistic understanding of Gaya pottery.

Unique Techniques for the Mass Production of Jars

Gaya pottery is generally divided into an early and a late phase. The early phase refers to the first hundred years following the appearance of grayish-blue stoneware in the Nakdonggang River basin, up to about 400 CE. However, this new technology was not widely applied throughout the region at the time, and high-quality wares were only produced in certain areas.

The two main production areas of pottery were Gimhae and Haman. Located at the mouth of the Nakdonggang River, Gimhae was the center of Gaya at the time. Haman is situated along the Namgang River, a tributary of the Nakdonggang River. Jars with mat-impressed patterns produced in Haman were also distributed over a large area spanning from the southern Korean Peninsula to the western Japanese Archipelago (Fig. 3). Various pottery forms such as mounted dishes, vessel stands, and cups were produced, but jars around 30 centimeters in height made up the majority. What were the reasons for the intensive production of this type of jar and its long-distance distribution beyond the Gaya territory? This question can be answered by understanding the character of this grayish-blue stoneware.

Vessels for storing various liquids like water, alcohol, and other beverages were in demand at the time, but earthenware and wooden vessels were highly permeable. Although there were metal and lacquered vessels available at the time that could meet these functional requirements, they were rare, and their production would have been relatively difficult. In contrast, grayish-blue stoneware jars were impermeable and easier to manufacture in large quantities. This might be the reason why jar-shaped vessels were the dominant form of grayish-blue stoneware for the 100 years following their appearance.

Kilns for producing early-phase Gaya pottery were most densely distributed in Haman area, and potters there employed unique methods for the mass production of jars. When vessels were fired, they were often nested and then stacked in the kiln to increase production capacity. Mostly, small, identical pieces

Fig. 3. Jar with Mat-impressed Patterns. Excavated from Hwangsa-ri Tomb No. 44 in Haman. Gaya, 4th century. H. 28.3 cm. Gimhae National Museum

like dishes or lids were so stacked, and this method was more generally applied in the latter phase of Gaya pottery production. Cases of placing one or two small vessels into a larger vessel have been found occasionally from the early phase, but the stacking method had not been fully developed. The reasons why they did not stack more pieces of pottery at that point in time can be considered in terms of the technology available and the experience of the potters, as well as supply and demand. If vessels were stacked up in many layers, heat circulation would have been disrupted by the mass of pottery within the kiln. To minimize the rate of failure and improve production under these conditions, experience with controlling the fire is critical. Perhaps the rationale for not stacking pottery at that time was simply the result of inexperience among the potters and the techniques available, given that it was still the very early stages of the development of grayish-blue stoneware. People were also less likely to apply the stacking method because the existing pottery supply was sufficient to meet the demand of the time. At the mouth of the Nakdonggang River, where the Gaya pottery was first produced, production and distribution both occurred within a narrow 25-kilometer radius. There are only a few rare exceptions in which this early form of grayish-blue stoneware has been discovered beyond that range. If demand was moderate and the pottery was only being distributed and used within a specific narrow area, there would be little need for the adoption of a new method.

However, in Haman, where grayish-blue stoneware was being produced around the same time, jars were nested on their sides in the kiln and stacked up in two or three layers. This stacking technique was unique to Haman at the time. Stacking vessels like this enabled up to three times as many jars to be placed in the kiln, but it risked ruining the aesthetics of the pottery and increasing damage and the defect rate. Nonetheless, the potters of Haman employed this process of mass production by stacking and firing jars for up to 75 years. It was an assertive choice by the potters to invest more in production than in protecting the aesthetics of the pieces, which could be explained by the soaring demand for these highly useful type of vessel that could contain and store liquids. These mass-produced jars have been found in all of the regions associated with Gaya, in neighboring Silla and Baekje, and various parts of the Japanese Archipelago across Korea Strait.

The Diversity of Gaya Pottery

Gaya pottery underwent a remarkable transformation in terms of form and production technology around 400 CE. Before then, high-quality grayish-blue stoneware was produced only in select regions within the Gaya Confederacy, particularly near the mouth of the Nakdonggang River and in Haman. However, around the year 400, this technology spread not only across all the areas associated with Gaya, but to other polities as

Fig. 4. Geumgwan Gaya Pottery from Gimhae Region. Gaya. H. 25.0 cm (upper right). National Museum of Korea

Fig. 5. Dae Gaya Pottery from Goryeong Region. Gaya. H. 39.0 cm (upper left). National Museum of Korea

Fig. 6. So Gaya Pottery from Goseong Region. Gaya. H. 48.1 cm (right). National Museum of Korea

Fig. 7. Ara Gaya Pottery from Haman Region. Gaya. H. 49.5 cm (upper right). National Museum of Korea

well, and various communities began to produce grayish-blue pottery. Based on the distribution of kilns at this time, both the technology and the potters involved appear to have moved in routes along the Nakdonggang River and southern coast, both of which were major transportation corridors. It is well known that Gaya was a confederation of several small and large polities, unlike the nearby kingdoms of Silla and Baekje. In each area associated with the Gaya Confederacy, ceramics began to be produced using these newly acquired techniques. However, each polity did not produce works of the same quality.

At first, artisans produced pieces that were similar in form as they applied the adopted technology. However, it seems that many attempts at imitating this stoneware were unsuccessful: some examples have thick walls or failed during firing. Subsequently, individuals improved their skills gradually through trial and error and by inventing their own techniques. These production techniques were passed on to many regions in the southern Korean Peninsula, and the pottery culture of Gaya marked a novel transition as each Gaya polity came to possess highly-developed techniques. The appearance eventually shifted from more-or-less similar forms to assorted types reflecting the unique preferences of each Gaya polity (Figs. 4–7). The most popular form at the time, a mounted dish or vessel stand, vividly demonstrates variations in local preferences.

These kinds of pottery were also common in Silla, but Gaya pottery can be distinguished by soft curves in the overall form and the unique design and decoration motifs. Under close examination, regional characteristics make it even possible to distinguish the Gaya polity that produced the wares.

The diversity seen in these characteristics is a notable feature of Gaya pottery, although we generally refer to all of this pottery by the generic term "Gaya pottery" despite the variation.

In the latter stage of Gaya pottery, when diversity increased, mounted dishes, lids, and vessel stands were produced in large quantities, and jars lost their predominance. These items were not made for daily life but for use as ritual goods. Some of the pottery itself would be interred, but a considerable amount was simply used to hold offerings at burial rituals. There are several examples in which fish bones, conch shells, and chicken bones have been found in wares inside Gaya tombs. The use of diverse pottery forms by different polities for their burial rituals and the mass production of pottery in each area hold special implication. Burial rituals might be a simple behavior for mourning the dead, but standardized rituals in particular communities can have multiple and complex meanings related to the cohesion of the community, the display of wealth or social and political status, and the legitimation of the succession of power. The eventual use of similar forms of pottery for burial rituals across all of Gaya's polities can be interpreted as strengthening the political and social relations among them.

By this time, the size of tombs had gradually expanded within the Gaya territories, and increasingly larger amounts of pottery were being buried. This change in customs crucially affected the demand for burial pottery, such as mounted dishes, and increased demand for burial pottery resulted in the development of new tools and techniques. To produce more wares in shorter periods of time and within space constraints, potters transitioned towards stacking pottery layer by layer in the kiln. This technique eventually became common throughout Gaya. In other words, the techniques to produce pottery more efficiently were developed further, and this information was shared across communities.

Novel forms appeared in Gaya around the start of the later stage of its pottery, roughly the year 400. Among these

Fig. 8. Horn Cup in the Shape of a Warrior on Horseback. Excavated presumably from Deoksan-ri in Gimhae. Gaya, 5th century. H. 23.2 cm. Gyeongju National Museum. National Treasure No. 275

Fig. 9. Early *Sue* Ware. Excavated from Obadera site in Suemura Kiln site. Kofun Period. H. 5.0–32.0 cm, D. 10.0–42.0 cm. Osaka Center For Cultural Heritage

are vessels with atypical shapes and others that were modeled after the forms of assorted objects. This figurative work was diverse, including vessels that mimicked animals such as birds, horses, and deer; objects in the form of houses, boats, shoes, and wagons; and warriors on horseback (Fig. 8). Special meanings seem to have been ascribed to various objects from the surrounding environment, such as horses, which were a valuable resource in warfare. Boats were used for maritime trade and along rivers. Shoes and wagons were used for mobility and transportation. Pottery also took on the shapes of structures important for an agrarian society, such as granaries. Object-shaped pottery was imbued with various meanings in Gaya, allowing us to infer that various kinds of rituals that took place. Moreover, this pottery also provides a snapshot of the houses, boats, wagons, shoes, and warriors of Gaya that cannot be reconstructed through artifacts or historical records.

Gaya Pottery and the Appearance of a New Pottery Culture in Japan

In some parts of the Japanese Archipelago, a new type of pottery known as *sue* ware (須惠器, Jp. *sueki*) appeared about the time of the beginning of the latter phase of Gaya pottery (Fig. 9). *Sue* ware was characterized by highly distinct forms and techniques relative to earlier types of Japanese pottery, so it is considered an innovation in both the ceramic and cultural history of Japan. The appearance of *sue* ware closely parallels the timing of the emergence of grayish-blue pottery in Korea. It was produced using techniques new to the Japanese Archipelago that resulted in hard, dense walls with good water retention due to firing at high temperatures. It must have been a dramatic improvement to be able to contain and store fluids (alcohol, water, etc.), which had been impossible with previous wares, and so most *sue* ware forms were designed for containing liquids. This transition can be seen in the earliest known *sue* ware kilns, which mostly produced enormous wares with a capacity of over 300 liters of liquid. Functional divisions emerged according to the different characteristics of types of pottery. For example, *sue* ware was used primarily for holding liquids, whereas reddish-brown earthenware, called *haji* ware (土師器, Jp. *hajiki*) in Japan, was mainly reserved for cooking.

It is widely accepted that pottery technology from the Korean Peninsula influenced the epochal appearance of *sue* ware. Surveys have uncovered early *sue* ware kilns in Osaka and Nara close to the center of royal authority in western Japan. Suemura in Osaka is considered a type site for *sue* ware kilns. With about 1,000 kilns, it is the largest pottery-producing site discovered in Japan and was in operation for 500 years starting in the fifth century CE. Due to the large volumes that have been excavated, Japanese *sue* ware has been well chronicled since 1950s. In particular, pottery produced in the earliest known kiln at the site caught the attention of researchers because it clearly shows the influences of Gaya pottery in terms of form, decorative designs, and shaping techniques. *Sue* ware, resembling Gaya pottery, began to be turned out using potters' wheels and high-temperature firing in a climbing kiln. Of course, not every product was simply a reproduction of Gaya pottery, and pottery forms and crafting techniques that had previously existed in Japan are also observed in *sue* ware along with forms from other regions on the Korean Peninsula. Thus, this site may demonstrate a circumstance in which a group of people who crafted pottery crossed over to the Japanese Archipelago around 400 CE and produced wares using this site as a center. As mentioned earlier, the pottery-production technology of Gaya played a definitive role in the appearance of stoneware in Japan. Although opinions differ regarding the motivations for related artisans to have traveled to Japan, one thing is certain: there were clearly continuous and close exchanges between Gaya and Japan.

Epilogue

The characteristic features of Gaya pottery become increasingly notable with the arrival of grayish-blue stoneware, which was first crafted around the Nakdonggang River estuary starting in the late third to the early fourth century. The first such stoneware was made up of jars suitable for containing and storing liquids. People in Haman applied a unique technique that allowed for the mass production of jars, and Gaya pottery was distributed over a wide area beyond the Gaya sphere. Subsequently, stoneware production technology was transferred and applied to diverse areas, and a wider variety of forms emerged that clearly reflected the identity of the Gaya polity in which they were produced. Moreover, rather than being applied to everyday use, grayish-blue stoneware was intensively produced as burial goods for tombs, which were growing increasingly larger in size. At the same time, the ceramic production technology of Gaya had a major influence on the

appearance of a new pottery culture in Japan.

Archaeologists rely on ceramics more than any other type of artifacts to draw inferences about the passage of time and aspects of regional change. Thus, studying pottery is one of the most popular areas within archaeological research. Scholars of Gaya have achieved great progress, and the results of their work have been accumulated to build specific chronologies that can be utilized as critical data for studies of other subjects. Even so, it is true that data from pottery is insufficient to achieve the true purpose of archaeology: reconstructing the cultures of the past. This essay introduces Gaya pottery based on archaeological data, although it is undeniably insufficient to provide a full understanding of the culture.

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