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Reviewed Article:

Bottle Gourd as an Implement for the Poor in Roman Italy

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Bottle gourds, which are thought to have originated in Africa, have been collected and cultivated in Italy since antiquity for the making of vessels and utensils, as well as food, musical instruments, and fishing buoys (Janick, Paris and Parish, 2007, p.1441). Columella and Pliny the Elder both write extensively about the uses of bottle gourds, yet the importance of this vegetable in antiquity is notably absent from modern scholarship. The thick skin of the bottle gourd, which may be a trait of domestication, is the reason why the fruit makes such an excellent container (Schlumbaum and Vandorpe 2012, p.500). In order for a household to maintain economic independence, and survive under conditions of crop failure, hardship, and

seasonal changes, a well-made storage vessel would have been essential. The functionality and performance of the storage vessel would have determined the longevity of the products inside, and thus directly contributed to the well-being of the user (Villing and Spataro 2015, p.9). Ceramics, the most noted type of vessel used in antiquity, required skill, time, and special equipment to make, and therefore would not have been practical for all poor people to produce or buy. If a poor family grew a crop of bottle gourds, however, not only would they get food from it, but a few gourds left on the vine to harden could easily be transformed into storage vessels, bowls, portable water containers, or utensils. This project is intended to explore the underrepresented aspects of poor culture, using both textual and archaeological information.

> “When I realised that making these implements was so effortless, and so cost effective, I felt like I had accomplished the goal of my project. I knew that these could be made by the poorest people. To hold them in your hands is like holding history. This is not like a piece of pottery, as they are rarer to come upon, and underrepresented in ancient and modern scholarship.

Cucurbita: What is it?

To accurately understand the history and development of food plants, we need to critically evaluate evidence from many different disciplines, including botany, horticulture, archaeology, iconography, and literature (Janick, Paris and Parish, 2007, p.1452). Our understanding depends on the accuracy, detail, and accurate translations of the sources (Janick, Paris and Parish, 2007, p.1452). Columella mentions *Cucurbita,* which is a genus of herbaceous vines including several varieties of squash, and gourds (Nee, 1990, p.57), several times in his work *De re rustica*. It is most often translated as gourd, though some books, such as the translation of the recipes attributed to Apicius by Vehling, incorrectly translate *Cucurbita* as pumpkin. We can immediately rule out any type of squash, including pumpkin, as the type of plant Columella is writing about, as no archaeological remains of any type of *Cucurbita* have been found outside of the Americas before 1492 (Lust and Paris 2016, p.55). It is accepted around the world that the genus *Cucurbita* was, without a doubt, completely unknown to the Romans or the Greeks (Janick, Paris and Parish, 2007, p.1453). Columella (*Rust*. 10.385–388, 11.3.49-50) mentions a couple of types of *Cucurbita:* one has long fruit for eating, and another is used to make vessels, pails, wine flasks, and instruments. Pliny (*NH*. 19.24.69-70) similarly describes the *Cucurbita* as being a vine which creeps either upwards or along the ground, and is edible early in the year, but changes form later in the season to be suitable for the making of jugs and casks. A species of gourd in the genus *Lagenaria* called *Lagenaria siceraria* (bottle gourd), has been grown on the Italian peninsula since at least the time of the Romans (Lust and Paris, 2016, p.55), and fits these descriptions perfectly. Several of these large fruited species were mistakenly included in the genus *Cucurbita* by early botanists, but

have since been removed and placed in their own genera (Nee, 1990, p.57). It is assumed, then, that we have to distinguish between the ancient word *Cucurbita,* which, undoubtedly meant gourd, and the modern word *Cucurbita*, which describes a genus comprised of squashes, not found in Italy during Roman times. Thus, it seems the early writers were describing a species belonging to the genus *Lagenaria* instead of the genus *Cucurbita.*

Archaeological and Iconographic Evidence of Bottle Gourd in Roman Italy

Archaeological remains of bottle gourd are limited in both their quantity, and state of preservation (Lust and Paris 2016, p.55). The problem with determining how frequently bottle gourd was used as a container, or which demographic used it most frequently, is that the taphonomic conditions in the Mediterranean were often not appropriate for the preservation of these perishable vessels (Christakis, 2010, p.6). Accordingly, there are very few remains of bottle gourd in the archeological record, as they are primarily preserved only by mineralisation or waterlogging (Schlumbaum and Vandorpe 2012, p.500). A research project in the Santa Giusta lagoon in Sardinia which began in 2005, sought to examine waterlogged transport amphorae and Punic coarse ware in order to determine the economic importance of the contents (Sabato et. al., 2019, p.9). A single seed of *Lagenaria siceraria* was found in a deposition layer dated from the third to second century BCE, suggesting that it may have been exported for the purpose of being grown and used for water containers, a practice common in the Roman Empire, and still common to this day in Sardinia and Africa (Sabato et. al., 2019, *p.13*). Without definitive material evidence of intact bottle gourd containers, iconography becomes an important additional piece of evidence. A first century bronze, cupping vessel was found in Pompeii's House of the Surgeon, and its shape resembles that of bottle gourd (Janick, Paris and Parish, 2007, p.1451). Seven mosaics and one statue from elsewhere in the Mediterranean depict the young bottle gourd, possibly selected for its phallic nature (Janick, Paris and Parish, 2007, p.1451). Though there are few examples, bottle gourd iconography proves that it was indeed known to more people than just Pliny and Columella, and helps makes up for the lack of archaeobotanical data.

How Roman Italians used Bottle Gourd

Pliny the Elder wrote quite extensively about the bottle gourd. Much of his commentary was extremely helpful in my pursuit of growing bottle gourds for another project where I recreated some simple Roman meals. I planted the seeds between the vernal equinox (March) and summer solstice (June), as he suggested (*NH* 19.24.69), as well as starting some seeds indoors in the late winter, in case of a very cold spring. Pliny (*NH* 19.24.71) notes that the gourd is used as food when young, but changes its nature later in the season. Harvest it early in the year and it is similar in consistency to a zucchini, and edible, but wait too long to harvest the gourd and it will be woody inside and not usable as a food source. He says that these hardened gourds had been used for a very long time as wine casks, but as of late had been used to make jugs and pitchers. Pliny (*NH* 19.24.73) suggests that when grown on a

trellis, the gourds grow long and thin, which makes them more nutritious and taste better. In Sicily, India, Africa, and elsewhere, the long green fruits are still a very popular vegetable (Janick, Paris and Parish, 2007, pp.1444-1445). Those to be used for preserving of seeds, and for making of vessels should be kept on the vine until winter, when they will be dried in the smoke of a fire (Plin. *NH* 19.24.73). Pliny (*NH* 19.24.74) even mentions that it is common to preserve the gourd in brine until the time when next years crop is ready to harvest.

Columella (11.3.49) wrote about bottle gourd as well. He says that it was used to make a wide array of vessels and instruments, and compares them to an Alexandrian gourd when dried. Columella mentioned a broad bottle gourd, which is used for Narycian pitch, attic honey, or a water pail or flask of wine (10.385-388). Something that I had never heard of before, was his comment that dried bottle gourds taught boys how to swim in pools (10.385-388). I am imagining that these hollow gourds would work as a floatation device, and perhaps were held on to, or strapped to the arms like modern inflatable swimming aids. Clearly, he was aware of many different shapes and sizes of gourds from a variety of places, and knew of their diverse usages. Writings from Dioscorides describe bottle gourd being used medicinally. The juice and ground-up flesh of the edible bottle gourd was used to reduce external and internal inflammation, to help children suffering from heat stroke, and mend earaches (*Mat*. 2.134). Additionally, we see the gourd used as a container when wine is added to a hollowed-out gourd, left to sit in the sun, and the wine drunk out of it to soften the stool (*Mat*. 2.134). These descriptions of this variable-shaped fruit most definitely fit our *Lagenaria siceraria* bottle gourd.

Now that we know how it was used, I would like to briefly discuss how many of these gourds would be needed if the poor were using them for storage containers. Excavations from houses in Crete, as a nearby example, revealed that there were less than 10 large storage vessels on average per household, and the most common size of *pithoi* was classified as small (Christakis, 2010, p.7). Based on the assumed diet of ancient Cretan farmers, we can assume that 70 percent of them were for cereals and pulses, 20 percent were for olive oil, and the remaining 10 percent for wine (Christakis, 2010, p.11). Gourds do not grow big enough to be classified as a large container, but perhaps medium- and certainly small-sized representatives would have been possible. Bottle gourds are not the optimal choice for longevity, as no intact remains of bottle gourds have survived from ancient times. However, if the gourds were sealed with some type of wax to prevent mould from infiltrating the organic material, or simply dried thoroughly after each use, there is enough evidence to suggest that these containers would have been a good choice for dry goods or liquid, based on their popularity among ancient writers alone.

	Short-Term Durability	Long-Term Durability	Accessibility	Cost	Portability

Bottle Gourd	Medium	Poor	Easy	Inexpensive/free	Easy
Ceramics	Medium	Excellent	Moderate	Moderate	Difficult

TABLE 1. PROS AND CONS OF USAGE OF BOTTLE GOURD AND CERAMICS FOR THE POOR IN ROMAN ITALY.

As Table 1 shows, bottle gourd may be the ideal vessel for the poor. When dropped, the dried gourds do not shatter as pottery does, though they may crack if mishandled enough. In the long-term, ceramics certainly last longer, as they are fired and have thick walls. Bottle gourds would have been easy to access, as they have been grown in Italy since antiquity (Lust and Paris, 2016, p.55), so you could potentially have gourds growing wild, or they could be cultivated from a mere few seeds. As outlined in the next section, bottle gourd containers are also very easy to make, whereas ceramics are more difficult to obtain, and to make as they require special equipment and skills. When considering the cost, 10 bottle gourds could be obtained from the market for about 4 *denarii* (Erim and Reynolds 1973, pp.101-104; Kropff, 2016, p.16). There is some missing information concerning the prices of ceramics from Diocletian's Edict, but we do know that one jar which could hold approximately two pints was two *denarii* (Erim and Reynolds 1973, p.108; Kropff, 2016, p.32). Let us say that one gourd contains 10 to 50 seeds, and you buy one gourd at the market that costs 0.4 *denarius*. Each seed that you plant from it can grow approximately five to 10 gourds, and considering the number of seeds you have, there is a yield potential of 50 to 500 gourds, assuming you have the space to grow them, and assuming there is no crop failure. Even if you could only grow one plant, after the first year you would get a minimum of five gourd vessels (plus the food from that first gourd) for the initial 0.4 *denarius,* which is 0.08 *denarius* per vessel, compared to the ceramic jar for two *denarii.* From then on, one would just save the seeds and would not have to purchase again. The math points out that bottle gourd containers were very inexpensive initially, and potentially free in the long term, whereas ceramics would have been bought by an artisan and were comparatively more expensive. Finally, bottle gourds are very light, so their portability is excellent, whereas pottery is very heavy and fragile, which is not ideal for moving around with. This is a very persuasive argument for why I believe the bottle gourd would have been the superior vessel, especially in regard to affordability.

As to the question of how frequently the poor would have used bottle gourds as vessels, there is no way to know for certain, but we can make certain assumptions based on the information we have. We know that gourds were among the cheapest vegetables to buy, and that one gourd could provide handfuls of seeds. We know that the urban poor probably had some sort of garden, and that the rural poor might have had fields and plots of their own to use (Plin. *NH* 19.21), so bottle gourds could have been grown after potentially only buying one gourd from the market, or by obtaining seeds from wild sources. In one of his works, Martial (*Sat.* 11.31) makes fun of a miser who makes an entire dinner from gourd perhaps pointing to the fact that they were indeed cheap to obtain, and perhaps even quite abundant. Given these pieces of information, I think that bottle gourd probably did play an important role in

the lives of the poor. Certainty is not possible at this time, concerning what the poor in Roman Italy would have eaten, or what they would have used in their kitchens, but in the next section I will be using experimental archaeology to see what it might look like if my assumptions about diet and gourd implements were correct.

Crafting with Gourds

In order for bottle gourds to be utilised as vessels and other implements, they would have to be dried first, as we learned from Pliny the Elder (*NH* 19.24.73). This is a long process, so I could not use my own gourds. Instead, I ordered some dried bottle gourds of various sizes and shapes from an online store, and used them. For all of the gourds, I drew a line where I wanted to cut, and used the small blade of a Swiss Army knife to make the initial path that would be followed by a small, serrated, hand-held knife. Inside of the gourds is a sponge-like material, and pods full of seeds that must be scraped out (See Figure 1). Some of these were easier to empty than others, and it depended mostly on the shape and size of the gourd. There were three small gourds that looked ideal for the making of spoons. These were the most difficult to work with because of their size, but overall, the process was not very difficult. They are good for single mouthfuls of food, and are easy to hold (See Figure 2). A larger gourd with a long, curved handle looked like a ladle, so that is what it became. This was the easiest to cut because of its size. The cut off portion became useful as a good-sized bowl, so there was no waste. The ladle is large enough to serve soup or *puls,* or even to retrieve water (See Figure 3). One of the gourds looked like it could become a water or wine vessel (See Figure 4) as described by Columella (*Rust.* 11.3.49-50). I cut the top off, leaving a small opening that would be a good size for drinking out of. The innards were more difficult to get out of this gourd because of the narrow middle which trapped seeds left in the bottom. A simple bone that I had nearby was able to reach the bottom and crush some of the seed pod so the contents could be released more easily. To seal the top, I whittled a cork out of a section of a pine branch, fitting tight enough to prevent water from leaking out. The last gourd was much larger than the rest with a very narrow middle, so I used the large bottom section to make another bowl, which sits very nicely and balanced on its own, but is best to hold in one's hand to eat from (See Figure 5). Once cut, the gourds were sanded down, rinsed several times to remove the bitter dust, and dried. I believe that proper drying of gourd implements is critical to their longevity, as mould would certainly grow otherwise.

These gourds were very easy and efficient to craft implements from, as I was able to make three of them in one sitting. This owes to their thin shell, which is easy to carve. In comparison, one is certainly not able to craft three ceramic bowls in one evening that can be used immediately afterwards. This is a notable reason why I think bottle gourds would have been a better alternative to ceramics for the poor. You do not need specialized equipment or a kiln; only a simple knife, and a rough stone for cleaning, and you have a set of dishes that are light, portable, and durable.

Conclusion and Future Directions

There was a joy in the simplicity of making a beautiful bowl from a dried-up old vegetable that could be so sturdy and useful. When I realised that making these implements was so effortless, and so cost effective, I felt like I had accomplished the goal of my project. I knew that these could be made by the poorest people. To hold them in your hands is like holding history. This is not like a piece of pottery, as they are rarer to come upon, and underrepresented in ancient and modern scholarship. I would be partial to seeing more people utilising gourds for kitchenware. They could be sealed, stained, and decorated, and last a very long time indeed.

Bottle gourd was grown locally, was inexpensive at the market, was eaten, was made into containers and utilised in many other ways, and I believe it was the superior container for the Italian poor compared to pottery. Not only was gourd less expensive to purchase at the market, but the amount of additional gourds that could be grown from even a single seed makes it the more economical choice. The only thing that is not entirely certain is how frequently they were used. This is in part due to the fact that we do not have much information about how the poor grew food, besides snippets of information from Pliny, Palladius, and Livy, but this was mainly concerning city dwellers, and plebeians, who were free Roman citizens. What about non-citizens, like slaves, Latini, Socii, Peregrini, and Provinciales? This area is very underexplored, and future scholarship focusing on these issues is deeply necessary in order to learn more about *all* people who lived in Roman Italy.

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music & musical instruments
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Country Italy

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FIG 1. INNARDS OF A DRIED BOTTLE GOURD (BRITTANY BAUER, 2019)



FIG 2. BOTTLE GOURD SPOON (BRITTANY BAUER, 2019)



FIG 3. BOTTLE GOURD LADLE (BRITTANY BAUER, 2019)



FIG 4. BOTTLE GOURD WATER OR WINE VESSEL (BRITTANY BAUER, 2019)



FIG 5. BOTTLE GOURD BOWLS (BRITTANY BAUER, 2019)