Sixteenth-Century Scale Weights from Santa Elena

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As people go about their day-to-day commercial transactions, products are often bought and sold based on weights and measures. If a product is not already packaged at a standard weight or volume, then some form of measurement has to be made. The concern over accurately determining the amount of a good involved in a trade by the use of a measuring device dates back at least to the second millennium B.C. in Egypt (Kisch 1965:2-3). In our modern world, this often happens without our involvement or often our cognizance, whether a product is being weighed on a digital scale at the market or fuel volume internally gauged by a fuel pump, for example. In earlier times, though, measuring the weight or volume of something was a more involved process, a process that involved the use of containers of standardized volume, balances, scales, and weights, all of which can end up in the archaeological record.

In the Spanish colonial Americas, the concern with measurements dates back to the early days of the conquest, with decrees being made that regulated the use of weights in commerce and offices being established for inspectors and regulators as early as 1525 in Mexico City (Carrera Stampa 1949:3-4). This was, of course, reflective of the concern with weights and measures that already existed in the Old World. Small weights have been found at the early colonial towns of La Isabela (Deagan and Cruxent 2002:219-220) and Concepción de la Vega (Deagan 2002:261-264), from the 1540-1542 Coronado expedition at El Morro (Mathers et al. 2010), the Luna site (Worth et al. 2020:491), Santa Elena, and other colonial sites.

The weights from Santa Elena primarily fall under what are known as nested cup weights, which would have been used with some type of balance scale. These weight sets were either stored in a wooden case or were nested together and stored in a master cup, which had a latching lid to secure the set together. In the case of a set that was stored in a master cup, the weight of each cup is half that of the next larger cup and the sum of all the smaller cups. Figure 1 shows what such a set looks like, with all of the inner cups removed and separated; this example, which is not from Santa Elena, dates from approximately 1545-1560. Nested weights were generally made of brass (though copper, silver, and very rarely pewter were also used) and had a considerable range in total weight (Kisch 1965:126-127). This range in total weight signifies that sets were manufactured and intended for the weighing needs of various types of commerce. Nuremberg, Germany, which was an important center of copper-smithing, produced all or nearly all nested weights in the 16th century, exporting them across Europe and the Near East (O’Neill and Shultz 1986:429). The lid of the master cup was required to be stamped with the mark of the maker, as well as with a mark indicating what country or city it was produced for.

In looking at the examples from Santa Elena, we unfortunately have not found a
master cup or its lid and are thus unable to identify the maker of the weights or to confirm beyond a doubt that they were made in Nuremberg. What we have found are three individual nested weights and part of the handle and the two supporting posts for it that were attached to the lid of the master cup, all of which are made of brass (Figures 2 and 3). The handle and attachment posts are a near match to those seen in the complete set shown in Figure 1. These weights appear to be from a single set, and their weights of 6.7, 3.4, and 1.7 grams would tend to support this idea. However, other details call this identification into question. The medium and small weights were found near each other, while the large weight was recovered approximately 85 meters away. This does not necessarily mean that they could not have been part of a single set, as brass bell fragments that mend were found approximately 105 meters apart. The second reason has to do with the stamped marks that are found on the interior base of the weights. While nested weights were made close to a standard weight, it was left to an adjuster or sealer in the location of the end-recipient to verify that the weights met the standard in use, which was done by filing the bottom of the cups until the correct weight was attained. The adjuster would then stamp his mark on the inside of each cup (Kisch 1965:163; O’Neill and Shultz 1986:430). In the case of the weights from Santa Elena, each stamped mark is different. This suggests that these weights may be from three separate weight sets, or perhaps that someone cobbled together a complete set from multiple incomplete sets.

Another nested weight cup, this one made of lead, was also recovered close to where the medium and small brass weights were found (Figure 4). As mentioned above, these weights were typically made from brass, so the discovery of one made from lead is unusual. While the bottom of the cup has broken away, in all other respects, it is consistent with the brass weights.

A different kind of weight was found some distance away, near the Spanish pottery kiln. This weight is a solid brass disk stamped with the impression of a castle (Figure 5). It was possibly made in Cuenca, Spain, as the Gothic “C” mark upon it matches that on a 4 maravedis coin from the site with “C” being the mint mark for Cuenca. In a book by Juan de Arphe y Villafañe (1572:21-23), there is a section that deals with assaying gold in which illustrations of weights and their markings are presented, along with their relation to the division of the mark. The mark was a standard weight system, which for gold was subdivided into various categories; one mark was equal to 50 castellanos, 400 tomines, or 4,800 granos (Deagan 2002:236-237; Carrera Stampa 1949:17). The example from Santa Elena is the weight equivalent to 2 castellanos, 16 tomines, or 192 granos. A brass weight from the Luna site, Pensacola, Florida, is very similar to this weight, other than being of the larger 10 castellanos size (Worth et al. 2020:491).

In addition to the verifiable weights, there are three other objects that could also be weights. One is a rectangular piece of folded lead, stamped with the design of a ship with the mast surmounted by the Roman numeral two, or possibly an H (Figure 6). (A line drawing of this artifact can be seen in Legacy December 2016.) The other two artifacts are small, round lead disks, one of which has three crossed lines stamped into it (Figure 7). While weights made of lead are not unknown, they are not as common as brass. That, plus the unusual nature of these three objects, calls into question whether or not they are actually weights. They could be some form of game tokens, or in the case of the lead stamped with the ship, a merchant’s
seal. Their proximity to the locations of the brass weights, however, does lend credence to their being some type of weight.

Having looked at all of the weights and associated artifacts, what can they tell us about weighing activities at Santa Elena? From historical documentation, we know that the Spanish were concerned with weights, given the need to be accountable for goods placed under their control. The accounts of the Juan Pardo expeditions out of Santa Elena (1566-1568), are a good example of this, with the weights of various goods (usually gun powder, matchcord, and lead shot) left at each of the forts Pardo established being enumerated (Hudson 1990:148-152). At one of these outposts, Fort San Juan, the remnants of an iron steelyard scale have been found (Rodning et al. 2016:328-329). Though such scales for weighing heavy amounts have not been found at Santa Elena, they were known to be in use there. In 1578, Captain Alvaro Flores de Quiñones inspected the fort of Santa Elena, and the “steelyards, scales, weights, and measures, by which they give out, weigh, and measure the food and rations that are given to the soldiers” were inspected (Ross 1925:365-366).

The weights that have been found at Santa Elena, measurable in grams instead of pounds, were clearly for weighing at a much finer scale. The presence of a weight for gold is likely indicative of the hopes of the Spaniards for what they would find in the New World. As Santa Elena was not a center for the mass production of goods, the nested weights are probably not tied to commerce. A more likely need for them, or the use that they were put to, would have been for weighing silver. There is some historical documentation that suggests the soldiers at Santa Elena may have been paid in pieces of silver instead of minted coins. The recovery of 21 pieces of silver, called plata corriente, from the site offers supporting evidence. These plata corriente, which never had a standard size or value when complete, were broken in smaller fragments as needed and used in the place of minted coinage (Proctor 2007:146-151). Weighing these fragments of silver would have been necessary in order to figure out what their value equated to in terms of minted coinage.

Finally, it is interesting and informative to note where all of the weights at Santa Elena have been recovered. With the exception of the large nested weight and the disk weight, all of the weights, the master cup handle and posts, and the possible weights come from the residential lots thought to be associated with Governor Miranda, occupied between 1580 and 1587. Most of the items were found around Structure 7, with the handle and posts being found near Structure 5 (see Figure 5: Brass disk weight from Santa Elena. (Photo by H.A. Johnson) Figure 6: Possible lead weight with stamped design of a ship from Santa Elena. (Photo by H.A. Johnson)
Interestingly, two of the four Spanish coins and over half of the plata corriente found at the site have also come from this same area. While this may be ascribable to this area being the most extensively excavated portion of the site, it seems likely that what is being seen is a concentration of numismatic elements and weighing paraphernalia at the location of the town’s governor, which is not surprising. Of the other two weights, the nested weight comes from an area south of Miranda’s lot, between it and Fort San Marcos (II), an area that has not received a lot of investigation. The disk weight comes from the vicinity of the Spanish pottery kiln, which is some way distant from the forts and the part of the town that has been extensively excavated.

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