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THE THROWING PROCESS IN CERAMIC PRODUCTION

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Introduction

Crafts acquired the aura of a foil to the modernist sensibility in art which has deeply evolved even to incestuous designs. In pottery, particularly, artists found an ideal instrument with which to undermine cultural values "found out" to be decadent. Pottery is to democratize the reach of art; it is securely rooted in popular culture, as against modernism's moonings in an inbred, "high" culture. Pottery also benefits from its deep mystical connections with oriental and ancient thought, something attractive to those disillusioned by the nihilism of western civilization. Pottery's idolized initial longings found enthusiastic reception among artists in such obscure places such as the Philippines.

Forming pottery on wheel, called throwing was done by the early Egyptian and Greek potters. The wheel consisted of a flat rock turning on another rock with one hand, while the other hand, formed the clay. Today, the primitive stone-type wheel, but made of wood, is used by barangay potters in the Philippines as they tum out rice pots, water jars and flower pots. Pottery studios, schools offering ceramics and industries are now using electric potters' wheel for convenience.

Anyone who endeavors in practicing throwing will spend much time at the outset in mastering the centering, hollowing, raising and shaping before he attempts to produce wares.

This paper describes the throwing process as it is done at the Ceramics Research and Productivity Center of the University of Northern Philippines.

Materials, Tools and Equipment Used

The materials, tools and equipment needed in throwing are the following:

1. ready mixed clay

2. paring tool
3. cloth (small piece)
4. magnetic wire no.___ or thread
5. footrule
6. caliper (inside and outside)
7. water
8. electric potter's wheel
9. weighing scale

Ready-mix clay is a pre-formulated clay body composed of Vigan clay 60%, silica 25% and ball clay 15%. Clay is very abundant in Vigan, Ilocos Sur, most particularly in Bulala where clay deposit is rich, while ball clay and silica can be purchased from ceramics companies or from other sources.

Paring **teal** is a triangular shape cutter to remove the excess part of the bottom (side) of the article after shaping.

Cloth (small piece) is used to smoothen the rim and sides of the article after forming.

Footrule is used to determine the height of the articles; while caliper is used to determine the diameter of the article.

Magnetic wire is used to cut the bottom of the article from the potter's wheel plate.

Potable water is used to moisten the clay while turning on the **wheel.**

Electric potter's wheel is a machine used in turning clay to **any desired.** shape and any article.

Technical Definition of Terms

The following terms are defined as they are used in this study.

Biscuit Firing. The process of kiln firing pottery **ware before** it has been glazed. Earthenware is biscuit-fired at 1100-1150°C.

Biscuit ygrg. Pottery that has been fired but not yet glazed. Biscuit earthenware is porous and readily absorbs water; vitreous ware and bone China are almost non-porous even in the biscuit state.

Ball Clay. A sedimentary kaolinitic clay that fires to a white colour and which, because of its very fine particle size, is highly plastic. The name is derived from the original method of wining in which the clay was cut into balls, each weighing 30-35 pounds. Ball clays are incorporated in ceramic bodies to give plasticity during shaping and to induce vitrification during firing. In addition to their use in most pottery bodies and as suspending agents for vitreous enamals, ball clays are used to bone non-plastic refractories such as sillimanite.

Leather-hard. A term for clay ware that has been partially dried; at this stage of drying, the shrinkage has beeri largely completed.

Plasticity. The characteristic property of moist clay that permits it to be deformed without cracking and to retain its new shape when the deforming stress is removed. Plasticity is associated with the sheet structure of the clay materials and with the manner in which water films are held by the particles.

Pottery. This term is generally understood to mean domestic ceramic ware, **i.e.,** table ware, kitchen ware and sanitary ware, but the pottery industry also embraces the manufacture of wall and floor tiles, electro-ceramics and chemical stoneware.

Potter's Wheel. Revolving wheel on which pottery is formed by hand. It can be of the kick-wheel or electric powered type.

Silica. Silicon dioxide, SiO_2. For the various forms in which silica occurs – chalcedony, chert, coesite, ristobolite, flint, keatite, quartz, tridymite and vitreous silica.

yigan Clay. A natural mineral characterized by its plasticity as taken from the clay-pit or after it has been ground and mixed with water. The clay mineral had been taken in Bulala, Vigan, Ilocos Sur having a large deposit.

Wedging. A procedure for preparing clay or clay body by hand; the lump clay is repeatedly.thrown down on a workbench; between each operation the lump is turned and, sometimes, cut through and rejoined in a different orientation. The object is to disperse the water more uniformly, to remove lamination and to remove air.

Weighing Scale. **A** tool used in weighing the materials or Vigan clay, silica, ball clay and other materials.

Preparation of Clay

A clay body is a mixture of clay or clay materials/substances and other earthy materials or mineral substances, which are blended to achieve a specific ceramic purpose. Plenty of clay, found in nature, serves very well just as they are. This clay can be dug out of the ground kneaded with the right amount of water, and made into pottery without putting additional mixtures for such clays are natural clay bodies.

Vigan clay with 60% is added with silica 25% and ball clay 15% to produce a good blending for throwing. Clay for throwing must have a high degree of plasticity for easy forming, but at the same time, it must have coarser ingredients in order that it can hold its shape against the centrifugal force of turning and the tendency to sag or collapse.

A thorough wedging is required to ensure a complete mixing of the ingredients and to disperse the water more uniformly and to remove the lamination of air pockets.

Technical Description of the Process

Basically, there are two (2) steps followed in throwing: l) preparation of materials, and 2) throwing.

The materials needed are:

Vigan clay	6 kilograms	(60%)
Silica	2.5 kilograms	(25%)
Ball clay	1.5 kilograms	(15%)

The process is done following the procedures below:

1. Prepare all materials needed.
2. Weigh the materials before mixing them altogether.
3. Soak overnight the weighed materials in a container. This will allow water to penetrate deeply into the clay granules inorder to avoid lumps.

4. Screen the soaked materials with a mesh 40. This will be ready for throwing. **Note:** Wedge the clay at approximately 2-3 kilograms each fo easy wedging.

The Throwing Process

This process was done by observing the following steps:

1. Center the clay on the potters wheel. This is done by putting the clay into a ball and slap it down on the center of the potter's wheel plate. While the wheel is in motion dip the hands in water and put them down over the clay.
2. Apply pressure through the hands to the revolving clay at an angle approximately 45°C between the horizontal and vertical sides. Use enough water to keep the clay turning freely between hands. A thorough centered clay must be uniform circular motion without any distortion in its shape. (See Figure 1 and 2).

Figure 1

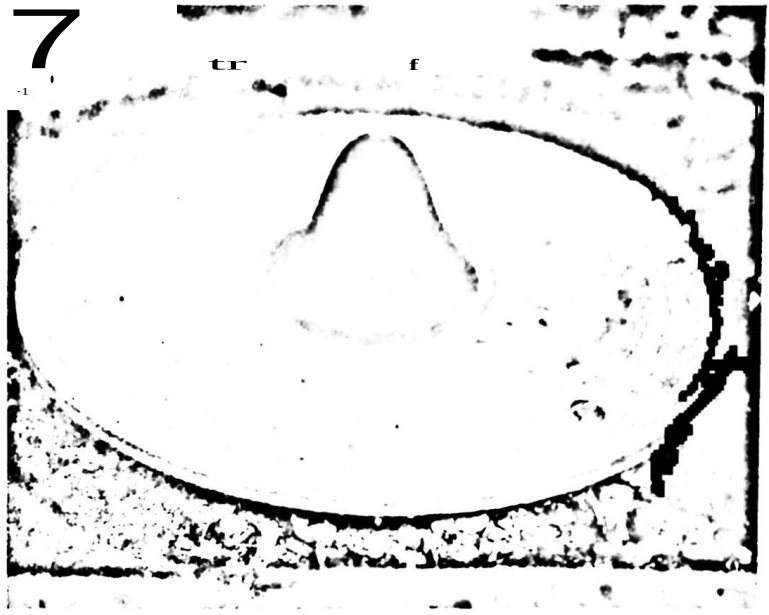

Figure 2

3. Hollowing the clay at the center with the thumb. Press the center hole with the thumb as far as convenience allows and carefully pull them outward enlarging the hole. (See Figure 3).

Figure3

4. Widening the hole. Enlarge the hole by pulling out carefully with the four and middle fingers supported by the left hand. (see Figure 4)

Figure 4

5. Lift the clay to the desired thickness. The clay is lifted for several times until the desired wall thickness is obtained. (See Figure 5).

Figure 5

6. Shaping the body. From the cylindrical form, the final shape is drawn using finger tips only. To make a jarlet, the clay is gently stretched out to increase the diameter. (See Figure 6).

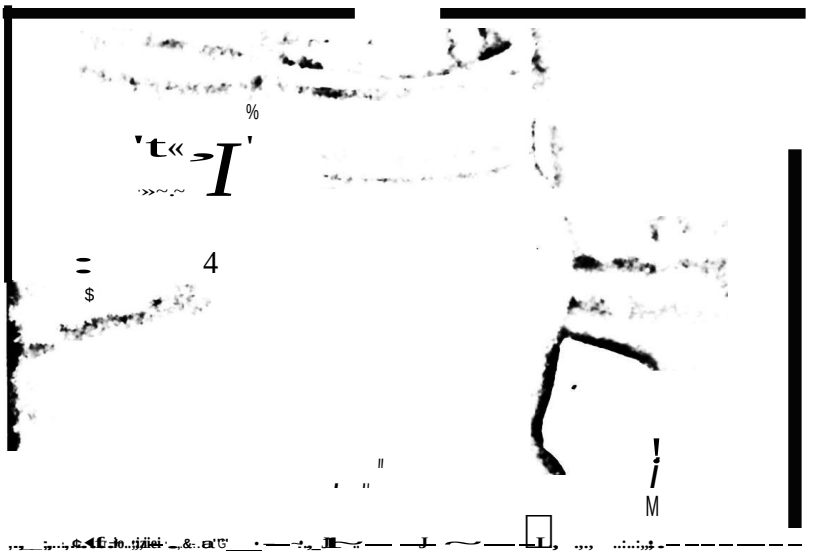

Figure6

7. Finish the rim. This is done by pressing gently with a wet sponge to the required shape (See Figure 7).

Figure 7

8. Trim the bottom. Trim the sides at the bottom to the desired shape with a trimming tool. (See Figure 8)

Figure8

9. Finish the sides. Finish the side by pressing gently with a wet sponge or soft cloth from the bottom to rim from two to three times. (See Figure 9)

Figure 9

10. Cut the bottom. Cut the bottom of the article with a string or a magnetic wire to separate the article from the plate of the potter's wheel. Stretch the string/magnetic wire and pass at the bottom of the article. (See Figure 10).

Figure 10

11. Transfer the article. Transfer the article from the plate of the potters' wheel to the drying area. (See Figure 11)

Figure 11

12. Put and center the article at the potter's wheel (inverted position). When the article is hardened, put and center the article at the potters wheel with an inverted position. Lock the article with a moist clay such that it will not move while cutting the foot rim (See Figure 12)

Figure 12

13. Make the foot rim. This is done by cutting the bottom with a trimming tool around 1/8 dip, leaving ¼ at the sides for the foot. Finish the bottom by pressing with a wet sponge. (See Figure 13).

Figure 13

14. Dry the article. The article is ready for complete drying for several days before firing. (See Figure 14)

Figure 14

Results

The following were observed during the throwing of some ceramics products:

1. Articles of the same shape and size were not unifonn.
2. Shrinkage was observed when the article was still leather-hard and after biscuit firing.

Recommendations

1. Clay for production should be properly and thoroughly **wedged** to eliminate air pockets that cause cracks.
2. Care should be properly observed in the process of throwing to attain a uniform shape and size of articles.

3. Shrinkage is inevitable that clay always shrinks when hardened. Reducing of shrinkage could be done through proper proportioning of the ingredients.

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