

The Process of Pit Firing

Introduction

My interest in pit fired pottery comes from my desire to strip back the complexities of life and to demonstrate the essential processes involved in the production of pottery. So much of our lives is surrounded by mass production that is epitomised by catalogues of mass produced wares from Asia and these wares can be bought at very cheap prices from homewares shops. These items are functional, well produced but lack character or expression of individuality that would make them objects of art.

Early pottery has been found in places such as Jomon, Japan (10,500 BC), but the earliest ceramic objects like the Venus of Dolní Věstonice figurine discovered in the Czech Republic, date back to around 25,000 BC, and pottery vessels from Jiangxi, China date back to 20,000 BC. The earliest pottery probably developed by accident and there are two main theories of development. It may have been from observing how the earth became baked around fire pits or it may have come from the accidental burning of clay-lined baskets. The clay was used to line baskets made of natural fibre in order prevent loss of grains or seeds that were stored in such baskets.

Pottery developed in response to needs and so pots had a purpose. This included storing grains or flour, carting, cooking pots, ritual and funeral rites. The rulers of Egypt had their internal organs mummified in canopic jars. The first use of pottery vessels for storing water and food is probably around 9000 or 10,000 BC and so pottery is one of man's most ancient industries. There is no 'Pottery Age' unlike the Iron or Bronze Ages. "Jomon" (which means "cord pattern" in Japanese) refers to the ancient pottery produced by Japan's first Stone Age culture, during the period 14,500 and 1000 BCE. This ancient pottery would have been fired in an open fire rather than a kiln as the earliest known kiln found in Iraq dates from 6000 BC.

Fires and fuel

It is only after firing that a clay object becomes pottery.

On- ground firing

The earliest method for firing pottery was in a bonfire. Firing times were short and peak-temperatures were probably about 600 °C. On-ground firing produces the least predictable results of any of the low temperature firing techniques.

In Mali, Africa, pottery is fired on a mound. The mound is made with sticks on the base with pots placed in and on the branches and grass is mounded on top.

Dung is used in some cultures for firing pottery. An example is the American Indians such as Marie Martinez from the 1950's. A smothering effect is caused by the manure which cuts off the oxygen and turns the iron oxide of the red clay to black.

Pit Firing

Pit firing is also one of the oldest known methods for the firing of pottery. Kilns have since replaced pit firing as the most widespread method of firing pottery, although the technique is used by some studio potters. A pit can be considered a rudimentary kiln as the pit sides help to contain the fire and act as insulation. Not all clays are suitable to use in pit firing, and additions of grog 'open up' the clay and make it more resistant to heat shock. Temperatures can reach approximately 700-900 degrees centigrade and so the pottery is porous but sturdy.

Pit-fired work is usually not glazed but colour can be generated by spreading metal oxides and carbonates around the pieces which volatilise and result in bright colours on the surfaces of fired ceramics. Pots are

often burnished.

Pit firing involves digging a pit of the appropriate size, laying a bed of sawdust or dried leaves, which will burn slowly, at the bottom of the pit and the pottery placed on top of this. The pots are then covered with combustible materials such as leaves and some kindling, with larger pieces of wood on top. The pile is lit and left to burn and smoulder for several hours.

Kilns

Kiln technology is very old as the earliest known kiln dates to around 6000 BC. A chimney on the kiln improves the air flow or draw of the kiln, with fuel burning more completely and temperatures are much hotter allowing for glazes to be used and vitrification to occur.

Cultural forms and functions

Africa

Traditional African pottery is unglazed and fired in on-ground fires by individual villagers and although the tradition is as old as 8000 BC, these practices continue even today. Pots are made mostly by women potters. After drying the clay, the pots are put in a pile and covered with wood, bark or dried cow dung and fired outdoors in an open fire. Temperature may be controlled by mixing fast and slow burning fuels. Individual pots can be fired but up to 250 pots may be fired together. Zulu beer pots were made using the coil method and pots with necks were called uphisi or uphiso. The neck was added to avoid spillage when beer was transported.

China

The earliest Chinese pottery dates back to 20,000 BP from the Xianrendong cave in Jiangxi, China. Early Chinese pottery was hand built but by 3000 BC the wheel was in use. The earliest pottery in China is associated with hunter-gatherers who started domesticating plant seeds and they made pottery for everyday use as well as finer pots for special occasions. The earliest pots were fired in on-ground fires but kilns were probably used as early as 3000 BC. Glazes appeared in the second millennium BC and Chinese potters have used kilns to produce high temperatures ever since.

Japan

Early Japanese pottery was made by the Jōmon people of Japan from around 10,500 BC. "Jōmon" means "cord-marked" in Japanese and refers to impressions of rope on the surface of the pottery created by pressing rope into the clay before firing.

Upper Mesopotamia - the area between the Tigris and Euphrates rivers, today covered by south-eastern Turkey, northern Syria and northern Iraq.

Pottery making began in this area from the 7th millennium BC. The earliest forms, which were found at the Hassuna site (22 miles south of Mosul), were hand formed from slabs, undecorated, unglazed low-fired pots made from reddish-brown clays. The potters seem to have used open bonfires.

Peru

Utilitarian pottery is used by local Peruvian families with clay pots fired in outdoor pits using sticks, twigs, and dung for fuel.

Native Americans

Native Americans developed pottery as far back as 3500 BC but these cultures did not develop the high temperature fired pots or glazes. Pottery jars are made in the south west of the USA where polished black pots are made with dull-finished decorations.

Contemporary practice

Today low-firing techniques are used by African rural people and for producing ceremonial pots in some cultures, such as in Fiji. Mostly, low temperature firing is used by studio potters to produce art pieces. Some examples of these potters is presented below. I am inspired by potters who produce the colours produced in pit firing and although most pots are produced on the wheel, some sculptural forms are made and I pursue the pinch pot technique as one of the most basic pot forming techniques.

Magdalene Odundo was born in Kenya but has lived and worked in England since 1971.

Sumi von Dassow lives and works in Golden, Colorado. His pots and finishes are some that I would love to emulate.

Dawn Whitehead is an Australian potter based in Ballarat and describes herself as a ceramic artist, designer, maker and teacher. She has written and published a book entitled 'Pit Firing Ceramics: Modern Methods, Ancient Traditions'. I like her rounded sculptural forms and the colour patterns so typical of pit firing.

Vicki Hardin is a studio potter based in San Angelo, Texas. The textured surfaces and colour patterns appeal to me as they are reflective of the earth's materials. The pots below look to me to be made from coils.

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