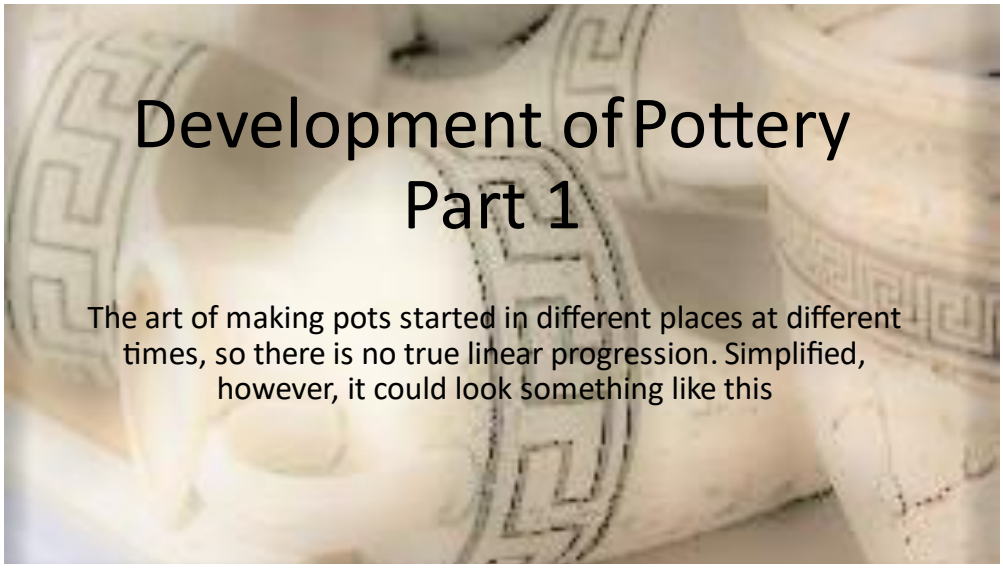


One definition of pottery is that it concerns making practical objects out of clay hardened by heat. What distinguishes it from 'ceramic art' is that pottery is all about commonly used items like vessels for holding liquids - water, wine and oil, or storing produce like grain and pulses, and plates and bowls from which food can be served. But this does not stop pots from also being works of art.

There is obviously a big overlap between pottery and ceramic art (which could mean anything from Ming vases to arcadian figurines and toby jugs), but the scope is too wide to do both and I will stick to practical pottery.

The basic steps in the development of pottery

Awareness of properties of clay when dried in the sun or hot ashes

Earthenware made simply by hand

Decoration (from the outset)

Invention of the potter's wheeland its spread

Invention ofkilns and the arrival of stoneware

Glazing

Porcelain (first started in China long before anywhere else)

This is a simplified view of how pottery developed, wherever that was.

What I propose doing is to say something about each of these processes, just to get an idea of how pottery developed in a general sense, and then to compare some of the distinctive types of pottery which archaeologists have come across in various places from different periods.

- Clay is very widespread. It's a sedimentary material formed from rocks eroded by various natural processes and transported to form layers in lakes and seas, and eventually ending up on dry land in the sort of environments where human beings have lived from the earliest times
- It is estimated clays form half of all sedimentary rocks, which themselves cover three quarters of the land surface. Early human would have been familiar with it, and recognize some of its properties
- Clay has what is known as plasticity
- From early times humans around the inhabited world would recognize that clay was a material that could be shaped, and that by experiment or accidental discovery they could make objects that hardened in the sun or in hot ashes, which they could go on to use for a variety of purposes

Awareness of the properties of clay when hardened by heat

Clay is very widespread. It's a sedimentary ... Clay is distinguished from other sedimentary rocks partly by its grain size; clay has very fine grains, less than 0.002mm, which is smaller than silt and sand.

Clay has what is known as plasticity. This means that when mixed with a limited amount of water it can be squeezed and shaped, with the deformed shape being retained when left alone. When the water content is removed by heating the clay will harden into its new shape. But if instead of being dried it becomes more liquid it will lose its shape. In other words, a clay object shaped to hold a liquid will only last if it is hardened by exposure to heat.

I could say a lot more about the geology and chemistry of clay, but that is not relevant here. What is relevant is that from early times humans around the inhabited world would recognize that clay was a material that could be shaped, and that by experiment or accidental discovery they could make objects that hardened in the sun or in the hot ashes of their fires, which they could go on to use for a variety of porpoises.

Having established that pottery started at a very early stage in human development I don't want to get side-tracked by the question of precisely where and when this first occurred. For the moment I want to stick with my simple approach, in order to understand the most likely order in which things occurred wherever pottery did develop, or whenever people picked up on skills imported from elsewhere. Certain things must exist before other things can come about. You wouldn't invent a potters' wheel, for example, if you weren't already making pots. You wouldn't develop a kiln producing significantly higher temperatures unless you had something to heat. The art of glazing, experimentation with additives, and improvements in firing technology follow a logical sequence.

Ways of making earthenware by hand

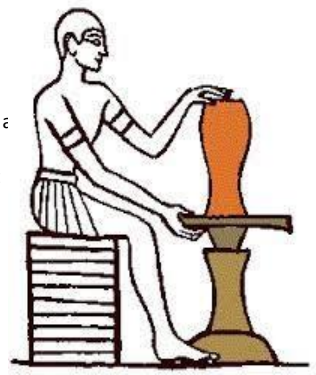
- Earthenware is the term applied to pottery which has not been glazed, and which is fired at temperatures below 1200 degrees C
- Before the invention of the potters' wheel a pot or vase would be built up by a method such as coiling (right) and smoothed to shape; a small cup or bowl might be made by hollowing out a lump of clay (pinch pot)
- In prehistoric times it might be decorated with an incised or impressed pattern, using bone, cord, fingernails, or anything to hand

  (examples will be shown later on)
- The most common type of earthenware today is terracotta, used in flooring more than for holding liquids, since it is not impermeable




Invention of the potter's wheel

- There are slow wheels and fast spinning wheels; the former, turned by hand, were the more primitive and less efficient; the latter were foot operated to startwith
- A 5,000 year old stone potter's wheel from Sumeria is often claimed to be earliest, though other places may have developed a simple form of potter'swheel
- The invention of the potter's wheel required a settled lifestyle; it greatly increased the speed of production of pots and other vessels, which led to the creation of a new urban occupation for men, using acquired skills and requiring an industry to supply materials and labour
- This is an example of technology spreading from a limited number of origins; there are places it did not spread to, and where it was not invented independently, such as Australia and the New World



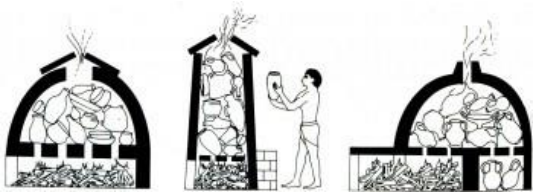
The methods just illustrated of forming pottery by hand require the clay to be turned around, which makes it a tedious and delicate process. To be able to spin the object round would make forming the clay both faster and more accurate. I doubt if anyone knows who first thought of doing it, but this was the invention of the potter's wheel.

The stone wheel found at Ur was probably a slow wheel, because spinning a heavy stone object is more likely to be done by hand, and the weight of the stone would give it momentum, so it would keep on spinning. An interesting fact is that the chariot wheel was invented in the same region, but a few hundred years later than the potter's wheel.

You may raise eyebrows at the comment that potters were naturally men. This is not actually contentious because the women of the community were already fully occupied, and men who took up pottery as an occupation did so instead of some other activity or going out to hunt. A good potter with a reputation and thriving business might need helpers, leading to specialization of labour.

In all probability the civilizations coming after the Sumerians, including the Egyptians, learned about the potter's wheel from traders and word of mouth, and continuously improved the technology. Tomb paintings in Egypt from 2500 BC show potters at work, with assistants helping to support large vessels on a wheel. In China, Neolithic pottery is thought to have been made by coiling until evidence shows wheel-based pottery maybe a thousand years after its invention in Mesopotamia.

The invention of kilns and the arrival of stoneware



- The word kiln is used to describe a furnace or oven which is designed to incinerate, bake bread or fire pottery
- The temperature required to make a pot effectively waterproof is around 1200 C for most clays. At higher temperatures there is a process of melting or deforming the clay known as vitrification
- Two requirements for consistent firing are maintaining a steady temperature and excluding oxygen. The latter is known as a reductive environment
- The development of proper firing kilns in Egypt coincided more or less with the growth of the wheel -based pottery industry previously mentioned. In China kilns of different design appeared later, associated with porcelain
- As with the potter's wheel, this technology was unknown in the New World until the arrival of Europeans

The second invention which fundamentally changed the nature of pottery was the kiln.

The word kiln is used to describe a furnace or oven which is designed to incinerate, bake bread or fire pottery. As early as 8000 BC kilns were being used in Mesopotamia for baking bread, but they were no good for firing pottery because they were unable to do two important things – maintain a stable temperature, and control or exclude oxygen. At that time one method of firing earthenware was to cover an open fire with tightly packed vessels, but this produced very uneven results and a high proportion of breakages. The temperatures reached were barely sufficient to harden the clay enough to make it impermeable.

The temperature required to make a pot effectively waterproof... Clay, as mentioned at the beginning, is a plastic material, and that plasticity is lost by heating it. If a sun-dried clay vessel is filled with water it will eventually collapse but, if heated, chemical changes that begin to take place at about 500 °C preclude a return to the plastic state no matter how much water it is later in contact with. There are obviously stages leading up to the highest temperature achievable, such as becoming largely waterproof at around 1200 C, but plain clay needs a temperature of around 1600 °C to vitrify. Note the word 'plain'.

Pots which have been fired and become vitrified are no longer earthenware, but come under the broad heading of stoneware. Stoneware, however, is more of a generic term than a specific one, as we will see shortly.

I mentioned *two requirements for consistent firing - maintaining a steady temperature and excluding oxygen. The latter is known as a reductive environment*, and is important because oxidation can affect the appearance of pottery, especially when it is being glazed.

The first proper kilns separated the earthenware from the fire, as can be seen in the top right of this slide. The three types of kiln, from l to r, are Egyptian, Mesopotamian and Greek. The Mesopotamian

model was very effective in maintaining a stable temperature by stacking the fired material vertically. The other picture shows a Greek potter attempting to seal his kiln to make a good reductive environment.

In 2020 there was a discovery in Bulgaria of what appear to be two Copper Age kilns for firing ceramics. They are relatively small, but do have two compartments, one for the heat source and one for the objects to be fired. This may show local innovation, but does not mean the technology was widespread at that time, between 4800 and 4600 BC.

The introduction of glazing

- The two main purposes of glazing in pottery are (i) to make the vessel impermeable for holding liquids, and (ii) to add decoration if required
- Glazes may be either clear or coloured
- The word vitrify comes from the Latin word for glass, as does the French *verre*, and the word glaze is clearly from the same root
- Different minerals in a glaze can produce a whole palette of colours for decoration
- The difference between underglaze, overglaze and inglaze decoration
- Fully glazed and vitrified pottery was not widespread until Roman times, although glazed stoneware was being produced in China 1000 years before

Glazing is technically complex, involving chemical changes in both the glaze and the clay body brought about by high temperatures in firing. I used the term vitrification earlier to describe what happens to the surface of plain clay when it is subjected to a temperature of 1600 C. It becomes a kind of amorphous glass.

Both glaze and the pot underneath fuse together when heated, and it doesn't have to be as high as 1600 C if either the glaze or the clay contains an ingredient which lowers the melting point of silica, the main component of glass. Such an ingredient (usually a metal oxide) is called a flux. The flux might also exist naturally in the clay itself.

You can see from this process that glazing gives permanency to a pot. It can also provide decoration because chemicals in the glaze can produce lots of different colours. In a previous life I once had a ceramic tile business, and picked up something about the art of glazing. Glazes change colour during firing, and the skill is to choose what looks like the wrong colour in the knowledge that the finished product will be the right colour.

Underglaze decoration is where a piece of earthenware is painted before firing. A clear glaze is then applied over the surface to produce the desired effect after firing, which is then fixed and permanent. Overglaze decoration is where a glazed pot if further decorated using various coloured glazes and then re-fired. The third version, inglaze decoration, is where a glazed pot is elaborated by further painting, before it is fired again causing the different glazes to fuse together.

Glazes for the decoration of hard objects like ornaments other than pottery were being used by the Ancient Egyptians in the 4th millennium BC, but these were not fired, and in fact glass as we know it was not invented until around 1500 BC. Glazed stoneware was being produced in China during the Shang Dynasty (1600-1046 BC) but it was not until late in the 1st millennium BC that it became widespread in the Middle East and the Roman Empire, with lead oxide being the predominant component of the glaze.

Porcelain

- Stoneware is opaque, but when feldspar or soapstone (steat is added to the clay and exposed to a temperature of 1,100 t 1,450 °C, the product becomes translucent and is known as porcelain
- There is no completely reliable distinction between some stoneware and some porcelain
- Porcelain is translucent, but some very thin stoneware can a be to some extent translucent
- The Chinese, who really know more about porcelain than th Western world, judge porcelain by the ringing tone it has wh... tapped
- Porcelain uses different materials from stoneware
- Porcelain was first made in China 2000 years ago; it was not successfully made elsewhere until late 16th century Japan, and later still in Europe in Saxony (Meissen) in the early 18th century
- Porcelain is more ceramic art than pottery according to our definition

I referred earlier to stoneware being a general term for earthenware which has been vitrified by heat, and the temperature at which clay is transformed in this way is around 1600 C. However, by adding minerals to the clay which vitrify at a lower temperature than pure clay, it is possible to make a non-porous pot at a slightly lower temperature. The clay holds the shape of the pot while the other ingredient vitrifies and create the required impermeability. Adding a bit of sand, which is rich in silica, is one such way.

The kaolin type of clay is best for making good quality porcelain, but a variety of materials such as glass, bone ash and alabaster can constitute the mix, which is made into a paste for forming.

In this country bone china, a form of porcelain with at least 30% of phosphates, became very popular in the 18th century, having been first developed by Joseph Spode. The names Worcester, Crown Derby, Doulton and Wedgwood are household names.

Porcelain is more ceramic art than pottery according to our definition. There's no denying that porcelain is used for dinner sets etc, but more, I imagine, for special occasions than for everyday use, as it has limitations in terms of cost and fragility compared with stoneware pottery. I made a distinction at the beginning between pottery and ceramic art (at least for the purposes of this talk) and I think that porcelain has more to do with ceramic art than practical everyday pottery.

Palaeolithic ceramics

- Ancient peoples knew how to fashion clay and to harden it with fire, tens of thousands of years before they ever made earthenware pottery
- Found in the Czech Republic, a large collection of ceramic sculptures known as the Dolne Vestonici 'venus figurines' (right) has been dated to 26,000 to 25,000 BCE
- In 2006 a collection of animal figures dating back to 15,500 BCE was found in Croatia in a cave known as VelaSpila; this proves the technology was known that early, but in Europe at least it did not develop straight away
- In Europe it began with the 'venus figurines', then nothing for 10,000 years until Vela Spila, and then nothing for 9,000 years until it arrived in Europe again around 6,000 BCE
- In China, on the other hand, ceramics were being continuously made from at least 18,000 BCE, and it is from there that the art of pottery probably spread. What has been discovered consists of art objects, but there is every reason to suppose that the early potters in China made vessels for cooking and storage as well, though there is no archaeological evidence to show this

Despite what I said about concentrating on pottery as the art of making things useful for everyday life rather than an art form, I do need to mention the very earliest clay-fired objects discovered, even though they were essentially artistic and totemic, not practical. This is because ceramic art predates earthenware pottery by a very long way, and the first potters made use of what people already knew about taking a lump of clay, shaping it and hardening it in the heat of a fire.

Venus figurines, far more ancient, have been found in many places, but these are the earliest examples to be made from clay and fired, rather than carved from hard materials. There is a connection here to the Gravettian Expansion, which was covered by John Wykes' talks on the Populating of Europe. The venus figurines show that ancient peoples knew how to fashion clay and to harden it with fire, long before they learned how to make earthenware pottery.

…nothing for 10,000 years until Vela Spila, and then nothing for 9,000 years until it arrived in Europe again, initially from north of the Black Sea, around 6,000 BC. We ought, however, to consider the disruptions caused by the last Ice Age, and the need to re-populate parts of Europe once the ice retreated.

How pottery spread from China

- One direction was south and eastwards to Japan and Korea, and another westwards along the Amur River Basin into Siberia and eventually Central Asia
- Japanese pottery comprised both artistic and practical sorts. One important type of pottery was called Jomon (meaning 'corded') and lasted in several stages of development from 14,000 BCE to 1000 BCE

(top right) Japanese Jomon bowl

- The Amur River Basin runs from west to east, and contains part of anearly trade route passing north of Mongolia to what we now refer to as Central Asia

(bottom right) Amur potsherd

- The Steppes of Central Asia were the starting point for certain migrations into Europe, which suggests onelink in the chain from China to Europe, but not the only one. By 8000 BCE pottery became established in Persia, situated on the ancient trade routes, and from there it moved on to Mesopotamia and the Middle East
- When pottery did reach Europe its progress is defined by a series of recognized Neolithic Cultures, which we will look at a bit later

The Palaeolithic, or Early Stone Age, may have seen earthenware pottery being made in China, but in Europe it was not until the Neolithic that archaeologists have found any evidence of it. How it spread from China during the Palaeolithic before it reached Europe is worth looking at.

Jomon pots are traditionally divided into five categories: deep bowls or jars, bowls of medium depth, plates, containers with narrow mouths and long necks, and vessels with spouts.

The Amur River Basin runs from west to east… The Amur River today is for the most part the border between China to the south and eastern Siberia to the north. In the Amur River Basin have been found the ubiquitous venus figures, but in Siberia pieces of earthenware, or potsherds, from 11,900 BC were discovered near Lake Baikal.

Greece was influenced by techniques arriving from Syria and Iraq, and Greece was the starting point for spreading the good news around the Mediterranean and via the Black Sea region into Central Europe. In addition, pottery cultures developed in Scandinavia, possibly travelling up the great Russian rivers from Central Asia. It is intriguing that so many Neolithic and later cultures are named after the style of pottery they are associated with.

Pottery in Mesopotamia and the Middle East

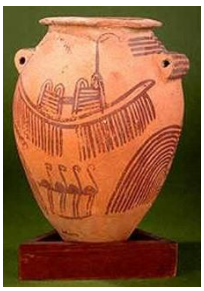
- A style of pottery known as Halaf originated in northern Mesopotamia (think of Syria and Iraq), and became influential, partly because it was produced for trade as much as personal use, and has been found elsewhere in Anatolia (Turkey) and the Middle East. The Halaf Culture thrived between 6100 and 5100 BCE. Examples of Halaf earthenware are pictured below, left and middle
- Halaf pottery is characterized by its painted decoration, with geometric patterns and depictions of animals, and sometimes using more than one colour. We should remember that at this time there were no effective pottery kilns, only baking ovens, so therefore no glazing
- The art of pottery spread from Syria down the eastern Mediterranean coastline, through the Levant, until it reached ancient Egypt; a Levantine Neolithic pot is pictured below right
- Although potters in Mesopotamia were still making earthenware, it is one of the places where the potters' wheel is thought to have been invented



It is perhaps surprising that an ancient Egyptian pottery culture did not appear until 2000 years later than it did in Mesopotamia. It was in the Bronze Age that Egyptians developed kilns and a pottery industry with fast-spinning potters' wheels, and became leaders in the field.

Types of pottery in Ancient Egypt

- Pottery in Egypt was developed to the extent that pieces of pottery made from Nile clay and presumably traded have been found around the Middle East
- The more common utilitarian pottery is called Nile Silt Ware, and was largely for everyday use. After being fired, it has a red-brown colour
- This piece was probably formed on a two-person operated wheel, then burnished to a lustrous finish and fired leaving a black upper section and lower, deep red section; it is an example of marl clay ware, which is regarded as superior to Nile Silt Ware and used for decorative purposes

Pottery in Egypt… There is a classification for Egyptian pottery known as the Vienna System, and within it there are two main categories – one for vessels made from Nile clay, and the other made from marl clay from Upper Egypt.

Nile Silt Ware… This type of pottery was used for utilitarian purposes, though it could also be decorated or painted

Neolithic pottery in Africa and America

- Although the pottery industry in Egypt was post -Neolithic, there was earthenware being made further south in the Upper Nile and in the Great Rift Valley where Sudan and Kenya are today. It would have been made by nomadic people living a savannah life, and a feature of their pots seems to be a globular shape, possibly for holding drinking water but with a narrow neck to slow down evaporation
- Neolithic pottery has also been found south of the Sahara, especially in Mali and the Sahel. The Ounjougou archaeological site in Mali is rich in artefacts from a culture which existed there from 9500 BCE to around a thousand years ago, when the climate no longer supported it. Earthenware made by coiling includes funerary items

Nubian Mali water jug Sahel late Neolithic Rio Alto, Ecuador




I don't have time to say too much about early pottery in the Americas, which certainly existed. The oldest examples found are in Ecuador are from what is called the Valdivia Culture, which flourished from 3500 to 1500 BC, and an even earlier one called Rio Alto, 4640 to 4460 BC - so relatively short lived. An archaeologist working at Rio Alto gave a description of the pottery found there, which is worth quoting.

Sherds are either black or black-and-brown, from bowls and globular, necked jars. They were made using grog and stone temper, including some large particles visible on the surface. The pottery is handmade and constructed from clay coils that were subsequently smoothed without burnishing on either the exterior or the interior. It appears to have been fired at a low temperature (800-1,000 degrees Celsius), and the appearance is typical of firing in reducing conditions (limiting the amount of oxygen during the firing process). The rough, geometric decorations were made with shallow, linear incisions that had irregular margins as well as finger-gouging and rows of round punctation.

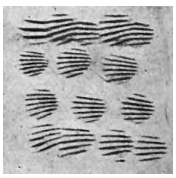
I thought it was worth quoting that because it describes processes similar, even identical, to those used in the Old World, with which there had been no contact since Palaeolithic times. It is just possible that hunter-gatherers crossing the Bering land-bridge took some ideas for making pots with them, but if so the evolution of techniques is uncannily similar.

Early Neolithic pottery in Europe

- Two of the main strands of the reintroduction of pottery to Europe started from Thessaly in Greece (Dimini/Sesklo)
- The Sesklo Culture spread north, becoming Linear in style, and divided into the Eastern and Western Linear Cultures
- The Cardial or Cardium Culture, named after the Latin word for a cockle, travelled west from Greece; pots of this type were often decorated with impressions of cockle shells

(from left, Sesklo, Danubian, Western Linear,Cardium)



Going back to the early Neolithic, when the first pottery appeared in Europe, we have the chance to follow a sequence of distinctive pottery cultures. As mentioned earlier there are three main strands in the introduction (or should I say re-introduction) of pottery to Europe, and the two main ones both started in Thessaly in Greece in a place called Dimini.

The so-called Sesklo Culture flourished there from 6000-4400 BC, then spread northwards into the Danube basin and evolved into a proto-Linear Culture. The term 'linear' denotes decoration using incised lines in the clay. It spread eastwards into Eastern Europe as far as the Black Sea, and then westwards into Central Europe.

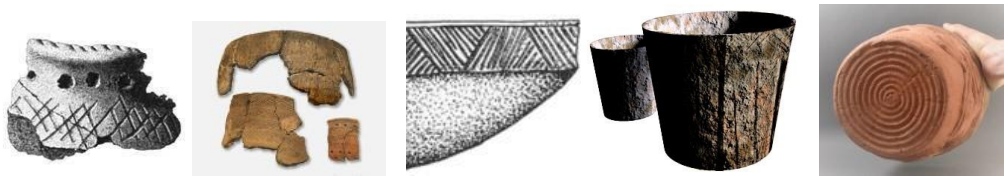
Eastern Linear Culture started around 5000 BC, and was found in Hungary, Bulgaria and Ukraine. The Western branch was about 500 years later, but extended further, covering the Czech Republic, Poland, Germany, and then France, Belgium and the Netherlands.

A very distinctive strand established itself along the Mediterranean, and is known as *the Cardial or Cardium Culture, after the Latin word for a cockle.* Between 6000 and 4500 BC this pottery culture extended through the Balkans, Italy, the Rhone Valley, and parts of Spain

Other Neolithic cultures

- A contemporary of Linear pottery was a style found along the Baltic coastline of Scandinavia called Pitted Ware. The people who made this pottery were still hunter-gatherers. Their neighbours in what is now Finland and the Baltic States were the Comb people, whose pottery shows the imprint of that very implement
- In Central Europe, to the north of the Western Linear, was the Stroke-ornamented Culture, dated 4600 to 4400 BCE and the Musical Note Culture
- Perhaps the closest to home are two distinct styles of pottery which originated in Orkney. The earlier of these from 4000 BCE is called Unstan ware, and the later one (from 2900 BCE) Grooved ware

(from left, pitted ware, comb ware, Unstan decoration, grooved ware (2)– both reconstructions)



Perhaps the closest to home are two distinct styles of pottery which originated in Orkney… They co-existed and are to some extent regionally located on Orkney, but it is mostly thought that the change from one to the other was down to fashion.

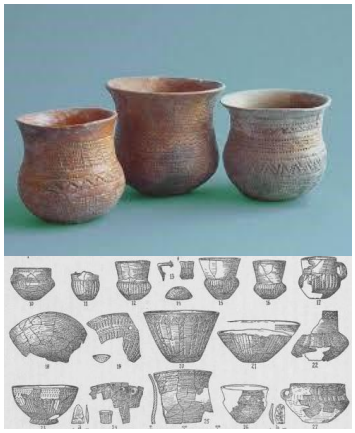
Unstan ware was actually a development of a tradition of flared bowls from the Atlantic seaboard of France and Brittany. Immigrant farmers from these regions came over to SE Britain with their baggage, and spread up the North Sea coast, all the way to Caithness and then over to Orkney. Their bowls were round bottomed, which made them easier to sit on the ashes of a fire. Unstan ware is shallower, but similarly round-bottomed, and with a band of decoration reminiscent of the original flared rim. It is associated with early Neolithic stalled cairns.

Grooved ware, on the other, was flat bottomed with intricate decoration of scored grooves. It was made from smoke-fired terracotta, and is mostly associated with settlements such as Skara Brae.

(video)

Transition into the Copper and Bronze Ages (1)

- The Funnel Beaker Culture (FBC) from 4100-2800 BCE was very extensive, covering a large swathe of Northern Europe
- The FBC is possibly as well known for its megalithic tomb structures as it is for the shape of its pottery
- The main distinguishing feature of FBC pottery, the eponymous funnel beaker, is a handle-less drinking vessel, sometimes but not invariably shaped like a funnelIt was hand-made from local clay and decorated with modelling, stamping, incising, and impressing
- This culture was largely overtaken by the succeeding Corded Ware Culture



The end of the Neolithic and the emergence of metal working happened at different times in different regions, but for the purposes of looking at pottery it is not really relevant which Age people were living in. I shall just give dates.

The Funnel Beaker Culture (FBC) was based in western, central and northern Germany, the eastern Netherlands, southern Scandinavia, and most parts of Poland, and was populated by the first real farming societies of Northern Europe. As we learnt from the Populating of Europe, these farmers arrived from Anatolia following a route along the Danube.

The FBC is possibly as well known for its megalithic tomb structures as it is for the shape of its pottery. It represents a massive economic shift from almost total dependence on wild resources to a diet based on tended cereals and domestic animals, and it was accompanied by a newly sedentary mode of life in complex settlements, the erection of elaborate monuments, and the use of pottery and polished stone tools.

Corded ware 2900-2350 BCE (approx)

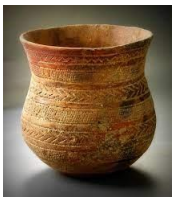
- Cord-decorated pottery is the hallmark of a Culture which extended across North and Central Europe; pottery reflected social changes, including funerary practices
- The forerunners of this new culture were the Yamnaya, aggressive cattle herders from the Pontic/Caspian Steppes; using wagons to transport their goods meant they could take their pottery and bulky belongings with them. An example of their work (top right) shows an element of cord decoration
- The male dominated Yamnaya migrants mixed with the women of the Neolithic farming communities as they moved westward into Central Europe, and other cultures developed over time, producing pottery decorated with impressions of twisted cord



Corded ware examples left and right; Globular Amphora vessel centre

Bell Beaker Culture, 2800-1800 BCE

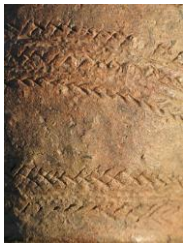
- The Bronze Age also saw the flourishing of the Bell Beaker Culture. This culture, named like so many others after its distinctive pottery style, started in Western Europe, specifically in Portugal, shortly after Corded Ware but independently of it
- The Bell Beaker Culture took over the whole of Iberia and peripheral regions of France and the Alps. Significantly it moved into Britain and Ireland, and here it lasted longest
- One reason why bell beakers remained so popular in Britain and Ireland may be that they were primarily used for the consumption of alcohol
- There are two main types of bell beaker decoration, one with an all-over pattern, and the other with corded bands (as shown on the right)



The Bell Beaker Culture succeeded in supplanting corded ware in Central Europe as far as Poland. Its predecessors were the Funnel Beaker people to the north. It *took over the whole of Iberia and peripheral regions of France and the Alps. Significantly it moved into Britain and Ireland, and here it lasted longest*. This does not mean a mass migration of people, but rather the movement of ideas through trade and their adoption. The culture included things besides pottery, and there are other interesting issues around DNA, but these are outside the scope of this particular talk.

Recap on various ways of decorating Neolithic pottery





Clockwise: tools, fingertip impressions, bird bones, incisions, burnishing, whipped cord, twisted cord, comb

Putting the pottery of prehistoric Europe in context

- Right up to the time of the Beaker people, whose culture lasted longest in Britain and Ireland, the pottery of the various European cultures mentioned so far was all hand-made earthenware, hardened in domestic fires
- There were no spinning potter's wheels, such as were beginning to be used in Mesopotamia; the technology for fast spinning wheels did not become general even in Egypt until around 2500 BCE
- Proper kilns for firing were also not known in prehistoric Europe, unless there were isolated examples like the one recently found in Bulgaria
- People living in Europe from the Stone Age to the Bronze Age were accustomed to making and using their domestic earthenware according to their local culture, but this changed as trade increased
- Soon pottery became an internationally traded commodity, with well known brands being found widely, especially within the Roman Empire

Classical Greek pottery

- Pottery in Greece continued to developed in its own way, and the 1st Millennium BC saw a series of decorative styles evolve into what I call Classical Greek
- The first style started in Mycenae, and was geometric. The early geometric style used circles and arcs, then Greek keys, chequers, triangles, herringbone and swastikas
- A fully geometric stage saw the introduction of animals and people, drawn in an angular way and in silhouette, often as a frieze
- Trading with Egypt brought about Eastern influences, and saw curved lines take over from straight ones, and depictions of the sphinx, siren, griffin, gorgon, chimera and lion
- From 600 BC Athens became the dominant centre for Greek pottery. Figures of humans replaced those of animals and monsters, and started to form a narrative

I explained earlier how pottery first reached Neolithic Europe from Greece, specifically from Thessaly, up the Danube and along the Mediterranean.

Pottery in Greece continued to developed in its own way, and the 1st Millennium BC saw a series of decorative styles evolve into what I call Classical Greek. Pottery survives better than paintings, for example, so the increasingly clever pot decorations tell a story about ancient Greece and so are archaeologically important.

A fully geometric stage saw the introduction of animals and people, drawn in an angular way and in silhouette, often as a frieze. The pots made at this time were the earliest in Greek art to show narrative scenes from popular myths, particularly those about Heracles.

Trading with Egypt brought about Eastern influences… This style flourished in Corinth around 700 BC. The Corinthian painters created a silhouette technique in which figures painted in the characteristic black glaze were incised with thin lines to show detail.

From 600 BC Athens became the dominant centre for Greek pottery… Black glaze was used for figures, as in the picture bottom left, and this was incised to provide detail. Later this was reversed with lighter coloured figures on a black background, as in the picture bottom right.

Hellenistic influences continued into Roman pottery, as they did into so many other aspects of Roman life.

Amphorae

- *Amphora* means 'two-handled vessel' and although commonly referred to as 'Roman' in this country, it was a form of pottery also used by the ancient Egyptians and Greeks, and continues to be used in some parts of the Mediterranean today
- It is a coil-made, kiln-fired, self-colour vessel produced for long-distance trade; it can be packed neatly into the base of a boat to provide ballast
- They come in different shapes and sizes, to suit their purpose; wine was stored in the long thin amphorae, and oil in the globular amphorae
- They were used for stewed fruit, salted fish and the disgusting fish sauce which the Romans called *garum*
- Stoppers were made of cork and sealed with pitch
- Many amphorae have been found with date stamps on their handles, impressed in the clay, which has provided useful information in the study of ancient trading patterns

The practice of date stamping started in Greece, and there are differences of opinion as to why it was done. One theory is that these *tituli picti*, as they are called, date the contents of the amphora, but for cheap wine, say, there is not much point in that. Another theory is that the die applies to the vessel, not the contents, and provided some sort of licence to use that particular amphora for trade within a customs area.

Monte Testaccio – an amphora dump in Rome

- Monte Testaccio is a rubbish dump on the edge of the old City of Rome, made entirely of broken pottery (mostly amphorae)
- The mound covers an area of 20,000 sq. metres, with a circumpherence of one kilometre; today it stands 35m high, but would have been much higher
- It is estimated to comprise around 53 million amphorae, many of which bear *tituli picti*

Early Roman pottery

- Not a lot has been said and studied about the pottery of the early Roman Republic, as it has been rather overshadowed historically by the arrival of Samian Ware. There were developments in Etruria and Campagna in the last few centuries BC, learning much from the Greeks about glossy slipped pottery and stamped or moulded decoration
- The use of moulds for the forming of vessels enabled relief decoration to be built in, and the decoration itself owed much to the Greek styles mentioned earlier. These developments were key to the success of Samian Ware in the 1st century AD

Roman pottery – Samian Ware

- Samian ware appears to be a generic term for a particular style of pottery which was made in a few identifiable places within the Roman Empire
- Another way to describe Samian Ware is Roman Red Gloss Pottery, and within this broad category are several other terms used for variations of the style, such as *terra sigillata*, Arretine ware and African Red Slip Ware
- Rather than being formed on a potter's wheel, Red Gloss Pottery was moulded, so that a low relief pattern could decorate the outside surface, and the inside surface could be similarly decorated using a different mould
- As there was no glazing involved, kilns did nor reach particularly high temperatures, but they were very large and industrial in scale

(right – kiln and bowl found at La Graufesenque in Gaul)

Samian ware appears to be a generic term for a particular style of pottery which was made in a few identifiable places within the Roman Empire. One word that figures in almost anything to do with Roman archaeology is 'Samian'. I often wondered where Samia was or is, and now realize there is no such place.

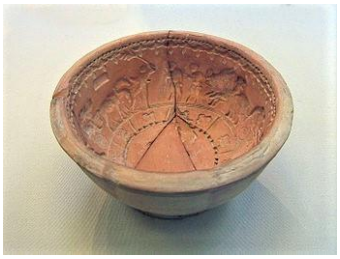
The whole area of terminology is fraught and best avoided. Different definitions have been used at different times for regional pottery, and the only sure way to be correct is to say 'red gloss ware' and 'red slip ware'. Having said that I may still use specific terms and risk being imprecise.

Rather than being formed on a potter's wheel, Red Gloss Pottery was moulded, so that a low relief pattern could decorate the outside surface, and the inside surface could be similarly decorated using a different mould. This meant that a large output of identical plates, bowls etc, could be churned out consistently.

As there was no glazing involved, kilns did not reach particularly high temperatures, but they were very large and industrial in scale. One kiln excavated in Southern Gaul (pictured here, together with a vessel made in that same location), is estimated to have covered an area of 75 square metres, to have been about 7 metres high, and large enough to fire 30,000 vessels at one time. The levels built up inside would have been disassembled after each firing and rebuilt for the next. The temperature might have been around 1000 C.

More facts about Roman Red Gloss Ware

- It was first produced in north Italy at the end of the 1st century BCE, but by AD43 it was nearly all being made in Gaul (see map). The principal factories remained there for the next two centuries, although there were small-scale producers in Colchester and possibly in London
- The various regional types had their own distinctive appearance. The initial Italian ware (called Arretine Ware, from Arezzo) developed from Graeco-Roman pottery, and were typically thrown in a mould (bottom right)
- Of the other manufacturing centres
  - South Gaulish cups, plates and bowls were reddish-brown with white/yellow flecks and a high red gloss (made by painting with a slip before firing
  - Central Gaulish vessels of all types including funerary ware were a deep orange colur
  - Eastern Gaulish were also yellow, but softer and more porous than other types
  - British, from Colchester in the late 2nd Century, had a red-brown core with a good brown or yellow-brown slip; fine-textured matrix with occasional larger white (chalk?) inclusions



Besides Colchester Samian Ware there were several other types of pottery being produced in Britain during the period of Roman occupation, but I don't think I have time to look at them today. I have also spoken superficially about Samian Ware, and there were other types of pottery around at the time. I think there is enough distinctive British and Irish pottery, including Saxon, Medieval and later types of ware, to make up a further talk on pottery - if the group is interested.