

# Post-Excavation

## LESSON 1

### The Ceramic Detective



ARCHAEOLOGY  
time in transition

IT'S ABOUT TIME 2

**Aim(s)**

To show how the study and analysis of artefacts is a key element in archaeology.

**Objective(s)**

To demonstrate 'the lifecycle of an artefact'—the exemplar used is a ceramic pot. The story follows the pot from its discovery through to its display in a museum.

**Time Period**

Bronze Age (2,000 BC - 500 BC).

**KEY INFORMATION****Lesson**

- This is a story about a Bronze Age pot from discovery, excavation, analysis and interpretation through to reconstruction.
- Pottery was important to people in the past and its study can help to provide an insight into past cultures.
- Everyday pots can tell us about daily life, like cooking and food storage.
- Pots used in burials can tell us about spiritual attitudes and beliefs.
- Pottery is durable in the ground and most archaeological excavations produce *sherds* (pieces) of pottery.
- Pottery can be dated by careful study of decoration style, material, shape, firing technique etc.

**Context**

- Pottery is durable in the ground over a long period of time.
- This makes pottery particularly important for archaeology.

**METHODOLOGY & MEDIUM**

- Instruction
- Discussion
- Active participation
- **Worksheet 1** The Story of a Pot
- **Worksheet 2a and b** Working as a Pottery Specialist
- **Student Handout** The Story of a Pot

Preparation: take **Worksheet 2a** and enlarge to A3 size, or take down off website. Cut (or tear) each pottery sample into 8-10 pieces and place in an envelope. Write the corresponding excavation number provided on the envelope. Some pieces may be left out of the envelope as in most cases the entire pot is not found in an excavation.

**SECTIONS**

- Section 1** Discovery
- Section 2** The Excavation
- Section 3** Post-Excavation
- Section 4** Dating the Pot
- Section 5** The Final Report



**Key Question(s)** How was the pot discovered? What did the archaeologist find?

Pottery survives very well in the ground and fragments of broken pots (sherds) are plentiful finds on most archaeological excavations. We are now going to look at the story of a pot which was discovered by a farmer while ploughing.



### Teacher Instruction

Distribute **Worksheet 1 The Story of a Pot.**

Discuss with the students what they see in each scene. Note—the illustration numbers refer to the numbers of the illustrations in the worksheet.

### Illustration 1

A farmer is ploughing a field. He displaces a large stone with the plough. When he goes to investigate this, he discovers it is covering a pit containing a broken pot. He is unsure what it is but decides to call on the local archaeologist to check it out. The archaeologist identifies it as a Bronze Age burial and the *National Museum of Ireland* and the *Department of the Arts, Heritage and the Gaeltacht* are notified of its discovery.



Burials like this often have no surface trace. Their discovery usually occurs by chance

- Agricultural activity e.g. ploughing.
- Quarrying or some other commercial activity that involves soil removal.
- Archaeological monitoring of topsoil removal (see *The Big Dig* T3,U2,L2).

See examples of these type of discoveries in *Mapping the Past* T3,U1,L1.

Pit burials are typical of the Bronze Age period (2,000 - 500 BC).

A large earthenware pot has been placed over a small bundle of cremated human bones, within a small pit that was covered by a capstone.



Some prehistoric burials, such as cist burials and pit burials, have no evidence above ground of their existence today. On the contrary cairns, barrows and megalithic tombs have significant visible remains (see *10,000 Years of Burial* T1,U4,L2).



**Key Question(s)** How is the pot recovered through archaeological excavation?

This might be undertaken by an archaeologist from the *Irish Antiquities Division* of *The National Museum of Ireland*, or a commercial archaeologist company may be contracted to conduct the excavation on behalf of the Museum.

### Illustration 2

The burial site in the picture will be archaeologically excavated because

- It is in a vulnerable condition as it has been accidentally exposed by ploughing.
- The information it yields will add valuable knowledge to our understanding of burial practices in the Bronze Age.



In the case of archaeological discoveries, whenever possible preservation-in-situ (leaving remains undisturbed in the ground) is the preferred option. Archaeological excavation is usually only undertaken when this option is not possible. In our case the burial has to be excavated, as the possibility of leaving it undisturbed in the ground is not feasible.

Once an excavation is deemed necessary the archaeologist who is going to carry it out applies for a licence from the Department of Arts, Heritage and the Gaeltacht (see *The Big Dig* T3,U2,L2).

### What is involved in an archaeological excavation?

The systematic removal of archaeological material and the detailed recording of this process.



### Teacher Instruction

Use this as an opportunity to review archaeological excavation *Excavation: What's it all about?* T3,U2,L1.



### Teacher Instruction

Ask the students to recall the key methods of recording used in an archaeological excavation.

- Drawing-to-scale.
- Photography.
- Written description.
- Record sheets.



Most pottery discovered on an excavation is already broken into fragments. A piece of broken pottery is known as a *sherd*.

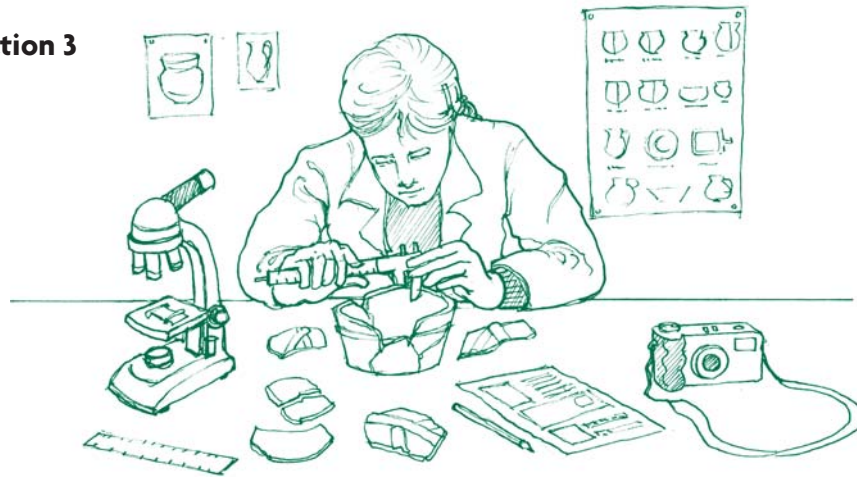
- The pot and cremated bones are recorded in situ (in position) and then carefully removed.
- The pot has been broken into a number of pieces (sherds) so each individual piece is recorded and removed separately.
- The pit is fully excavated and recorded.

Removing the pot from the ground can be a delicate operation, depending on how fragile the fabric of the pot is.



**Key Question(s)** What happened to the pot once it is removed from the ground? What did the archaeologist discover?

**Illustration 3**



Once the archaeologist is content that all the information is gathered from the excavation the next step is to examine the finds in the laboratory.

The pot sherds and cremated bone are prepared for examination.

The sherds of pottery are

- Washed—gently.
- Drawn and measured.
- Each sherd is numbered with the excavation number and its own unique number.
- Conserved—where necessary the pot may need some conservation work (e.g. chemical additives may be added to strengthen the pot) but in general ceramic clay needs little conservation—unlike wood or other organic material.
- Reconstructed—the sherds are pieced together and the pot reconstructed as far as possible.
- The cremated bones are carefully packed into an acid-free container and sent to a specialist for examination.



The archaeological conservator will try to keep any intervention to a minimum level, carrying out research to find the most suitable and least invasive method suited to the particular conditions. Every stage of the treatment is fully recorded and documented and after the object is returned to display or storage its condition will continually be monitored.

## INFORMATION AND ANALYSIS LEADS TO INTERPRETATION



### Teacher Instruction

Tease out with the students what information can be gathered from the study of the pot (see *Artefacts of Living* T2,U4,L2).

- Bronze Age people had the skill to make pottery—pottery has lots of uses.
- They decorated their pots.
- They used pottery for burials. They used a special type of decorated pot for this burial.
- They buried their dead in a special way.

**Illustration 4****What is the pot made from?**

Pottery is any article made from clay that is then baked or fired in a kiln or bonfire. The Neolithic people made the first pottery in Ireland, about 6,000 years ago.

**Teacher Instruction**

Discuss the different uses we make of pottery from practical objects through to art: cups, plates, bowls, flower pots, bricks, pipes, roof tiles, statues, garden ornaments etc.

Clay is an amazingly versatile material and it can be shaped into a variety of forms and designs such as household goods, burial containers and pieces of art.

**Clay**

- Cheap and easy to source.
- Occurs naturally—often close to rivers and lakes.
- Easily shaped—when water is added, clay is easily moulded and shaped. This property of clay is known as plasticity.
- Once the desired shape is achieved the object is let to dry out slowly.
- When fired the object is useful and durable.

The detailed scientific analysis of pottery clay can tell where it came from. This is called *petrological analysis*.

The clay for this pot was analysed by the ceramic specialist. It matched the profile of clay from the nearby source. This showed that the pot was made locally.

**Temper**

Clay needs the addition of a temper. A temper (small pieces of material e.g. sand or grit) is added to the clay before the pot is made. This helps the clay dry out evenly. Clay can be tempered with sand, grit, crushed shell or even crushed pottery.



This temper gives the clay an open-body texture that allows water and other components of the clay to escape freely. The coarser particles in the clay also act to restrain shrinkage during cooling, which is carried out slowly to reduce the risk of thermal stress and cracking. Pots fired in a bonfire often have rounded bottoms; this was to avoid sharp angles that might be susceptible to cracking.

**HOW WAS THE POT MADE?****Illustration 5**

By studying the pot the archaeologist can tell how it was made. All prehistoric pots from Ireland were hand-made, using either of two methods

- Coil pots—most prehistoric pots were made using coils. The coils are laid one on top of another and bonded together. Coil pots can be made to any size.
- Pinch pots—the clay is pinched into shape for making small pots—the small pots in the picture would be made by this method (see *Archaeology in the Classroom 1* Module 5).



The picture shows a man making a pot. He has a willow basket full of prepared clay beside him. The woman is decorating her pot by making incised diagonal lines. Other decorating tools are beside her.

The archaeologist examining the pot found in the excavation discovers it was made using coils.



Next time you visit the museum look at the prehistoric pots. You can sometimes see the slight bulge of the coil in the wall of the pot.



The invention of the potter's wheel in Mesopotamia sometime between 6,000 and 4,000 BC revolutionized pottery production. The potter's wheel facilitated mass production of similar shaped pots. Specialised potters were then able to meet the expanding needs of the world's first cities that were emerging in this part of the world. The arrival of wheel-turned pots to this part of the world is associated with the arrival of the Celts after 500 BC. Wheel-turned pots only become common in Ireland during the medieval period.

### Adding decoration

Decoration on Irish Bronze Age pots frequently covered the whole exterior and even the base of the vessel. The typical decoration technique used was impressing to produce "toothcomb" patterns made with a variety of carved stamps. Another form of decoration is the additions of strips of clay to the exterior surface. The pot in our story had a piece of clay added to the outside of the rim to give it a collar. Hence the term *Collared Urn*.



In medieval times pots were often glazed. A glaze is a glassy coating applied to exterior surface of the pot. It made the pottery vessels impermeable to water and other liquids. Glazing also highlighted the surface of the pot if it was painted.

## FIRING – POTS BEING FIRED IN KILN

### Illustration 6

The clay pot is left to dry until all the water is removed, then it is subjected to a very high heat, called *firing*. This is an irreversible process and turns the clay into a durable ceramic object.

The most primitive way of firing a pot is to place it in a bonfire. An open fire is not ideal for firing because the temperature is hard to control and it is difficult to achieve the high temperature that is needed—i.e. exceeding 600 degrees Celsius. However it is the easiest and simplest method to fire a pot.



In Ireland we have no known remains of prehistoric pottery kilns. This is to be expected as bonfire kilns leave very little remains. The earliest constructed pottery kilns are pit-kilns –these were simple holes dug in the ground and covered with fuel. The ground provided insulation and resulted in a better control of the firing. More sophisticated enclosed kilns are known from Medieval times. These produced higher temperatures which were better for firing clay products.

Firing temperatures vary, depending on the material used and type of pot needed. The prehistoric pots in Ireland are earthenware pots. These were fired at temperatures of roughly 600 degrees Celsius.

Stoneware is another type of pottery that is tougher and impervious. It appears in medieval times and needed higher temperatures of between 1150 to 1300 degrees Celsius to fire.

- The pot from the excavation has been examined and the archaeologist can tell how this pot was fired: the outer and inner walls of the pot have been well fired (red coloured) but the centre (darker) is not fully fired as the kiln did not reach a sufficiently high temperature.
- It was probably fired in a bonfire kiln.

## SECTION 4 Dating The Pot



**Key Question(s)** How old is the pot?

### Illustration 7

In order to date the pot, its shape and size is examined and compared with a typology of known types (see *Artefacts of Living* T2,U4,L1). Bronze Age pottery from Ireland that comes from burials generally conforms to a limited number of types.



### Teacher Instruction

Distribute a prepared envelope to each student and **Worksheet 2b**. The worksheet is used after the sample pot is reconstructed.

Inform the students that they are now going to work as a pottery specialist. Explain what is in the envelope and ask them to

1. Take the pieces of pottery (sherds) out of envelope.
2. Write the excavation number provided on the back/reverse of each sherd.
3. Reassemble the pot.
4. Using **Worksheet 2b** figure out the date of the pot (match with similar type) and any other relevant information.

Ask the students for feedback on their pot. Leave Pot No. 7, the Collard Urn, to last, as this is the one found in our excavation.



The archaeologist now knows, based on the typology, that the pot in our story is a Collared Urn and is a typical pot used during the Bronze Age, about 4,000 years ago, as part of a cremated burial. We now have a date and function for the pot.

1. It is a large coil-made earthenware pot.
2. The collar is decorated with incised lines or twisted-cord impressions.
3. It is a type known as a *Collared Urn*.
4. This type dates to the Middle Bronze Age c. 1,950 - 1,500 BC.
5. There are about 50 examples of *Collared Urn* discovered in Ireland to date.

The results of the cremated bone study shows that this pot covered the remains of an individual male (his age is unknown as the bones were too fragmentary).

## SECTION 5 The Final Report



**Key Question(s)** What happens to the information? Where will the pot end up?

### REPORT AND EXHIBITION

#### Illustration 8

In accordance with the licence, the archaeologist who carried out the excavation has to prepare a detailed report on what was found.

- A preliminary report is placed on the web site **www.excavations.ie**
- The final report will contain a detailed description of the burial, the cremated bones, the pot and a discussion of their archaeological significance.
- This report is lodged with the *Department of Arts, Heritage and the Gaeltacht* and with the *National Museum of Ireland*. The report may also be published in an appropriate academic journal or/and in a local historical journal.



#### Teacher Instruction

Discuss with the students why the report is important.

- The report allows other archaeologists and the wider community to share in the knowledge gained by the excavation.
- Without a report the information is lost!

Finally, after its conservation, the pot either ends up in storage in the museum or is put on display. Most museums only display a small percentage of their entire stock. Most pottery recovered from an archaeological excavation consists of small sherds. However, a find like an intact Collared Urn may be deemed worthy of exhibition to the public.



It would be impossible to exhibit all the pottery found on archaeological excavations and the vast majority will be stored away carefully by the museums. These artefacts will be made available to archaeologists who wish to study them.

## RECONSTRUCTION

### Illustration 9

The final image is a reconstruction drawing of a burial of the type found in our excavation. In this case, as well as the *Collared Urn*, other grave goods are being placed with the burial including another smaller pot, shell beads and an arrowhead.

### Conclusion

- Pottery was important to prehistoric people and its study can help to provide an insight into their culture.
- Everyday pots can tell us about daily life, like cooking and food storage.
- Pots used in burials can tell us about spiritual attitudes and beliefs.
- Pottery is durable in the ground and most archaeological excavations produce *sherds* of pottery—some in large quantities.
- Pottery can be dated by analysing decoration style, material, shape, firing technique etc.

See Projects section: *Museum Visit and Taking a Closer Look*.

## WEB LINKS

WWW.



National Museum [www.museum.ie/](http://www.museum.ie/)

Museums [www.xs4all.nl/~tbreen/links.html#museums](http://www.xs4all.nl/~tbreen/links.html#museums)

Introduction to Ceramics and Pottery [www.expertvillage.com/video-series/603\\_ceramics.htm](http://www.expertvillage.com/video-series/603_ceramics.htm)

Making a Basic Coil Pot <http://pottery.about.com/od/stepbystepprojects/ss/basiccoil.htm>

Irish Museums Association [www.irishmuseums.org/](http://www.irishmuseums.org/)

National Roads Authority [www.nra.ie](http://www.nra.ie)

**1. Discovery**

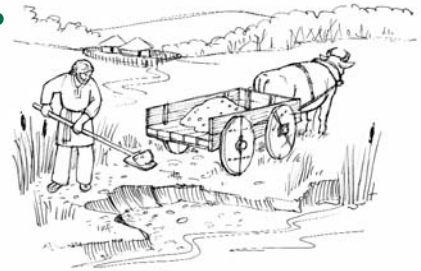
**2. Recovery**

Archaeological excavation


**3. Post-Excavation**

**4. Information and Analysis leads to Interpretation**

Where did the clay come from?


**5. Information and Analysis leads to Interpretation**

How was the pot made?


**6. Information and Analysis leads to Interpretation**

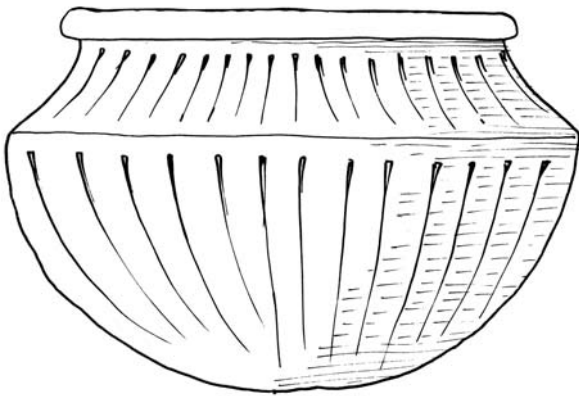
Where was it fired?


**7. Dating and Typology**

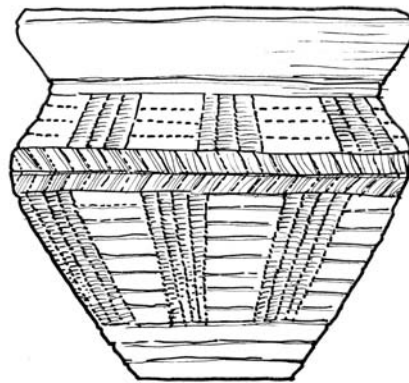
**8. Exhibition**

**9. Bronze Age Burial**

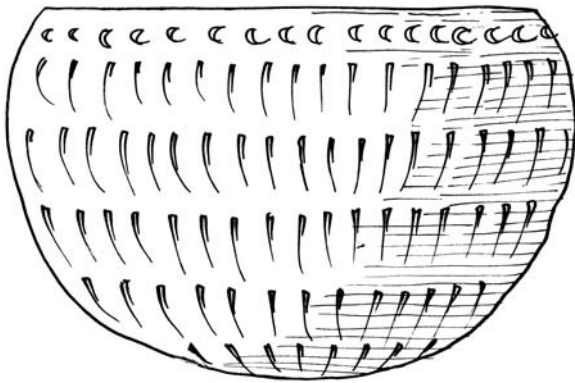

Samples of pottery found on archaeological excavations in Ireland.  
Enlarge to A3 size.  
Higher resolution of the images are provided on this CD.



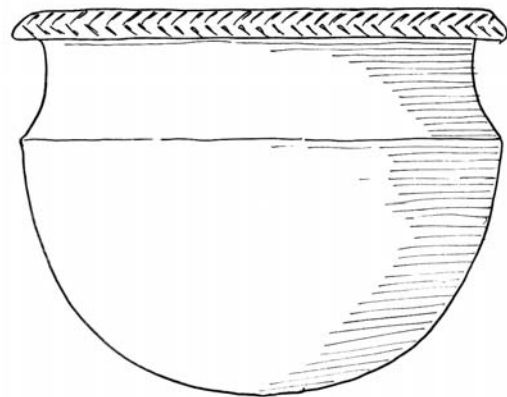
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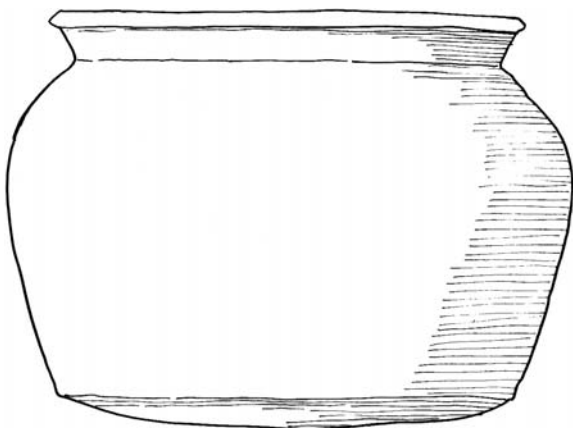
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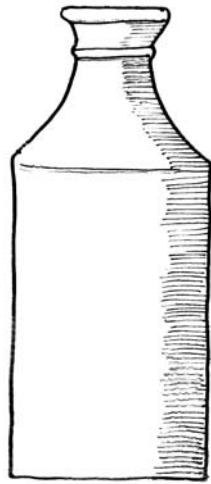


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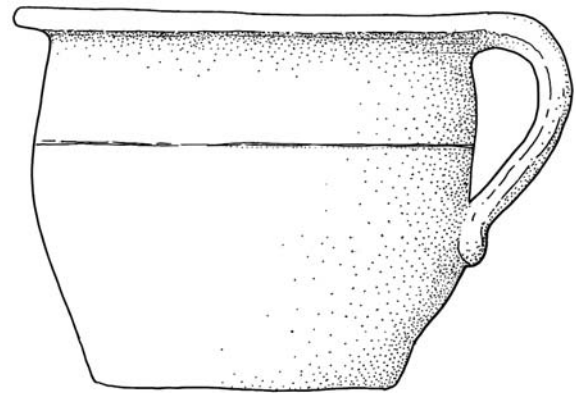


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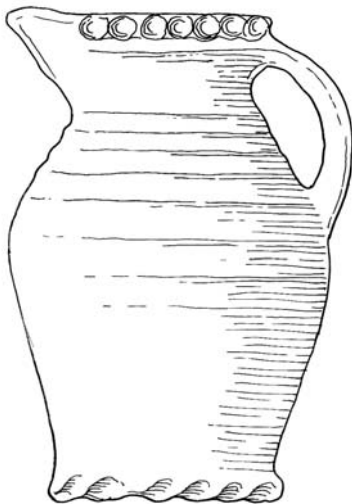




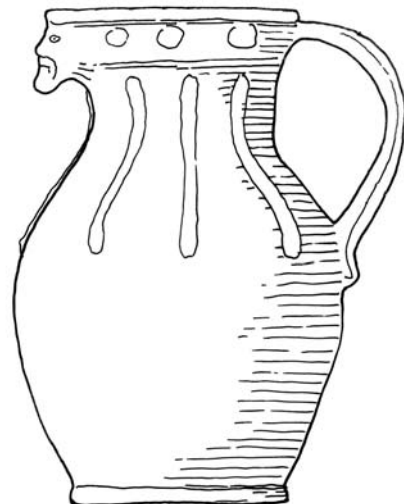
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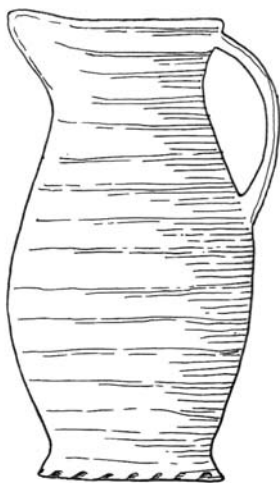
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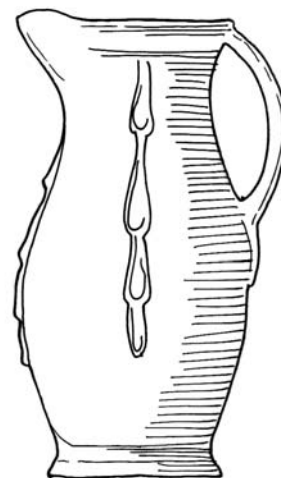
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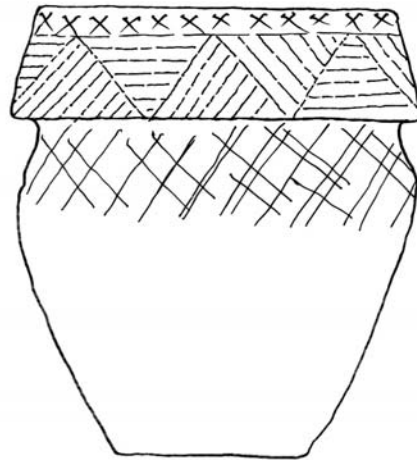
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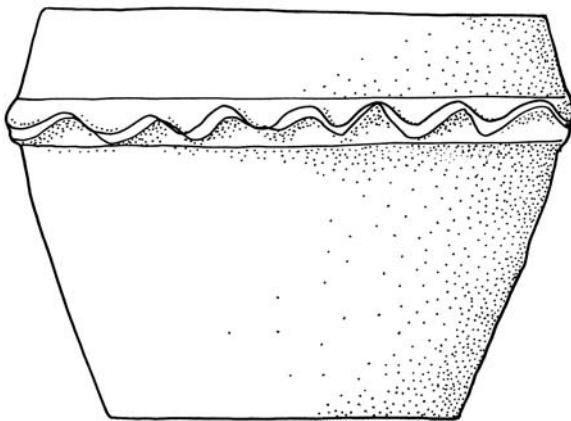
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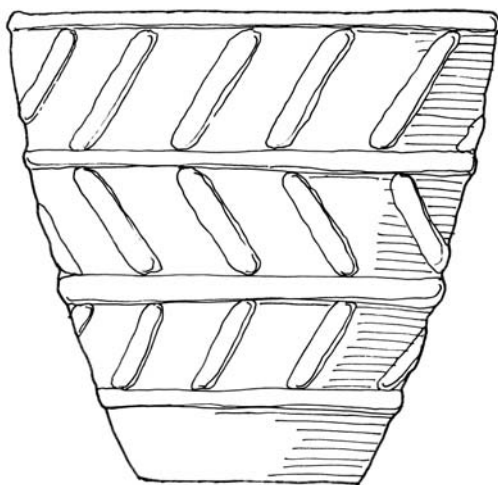
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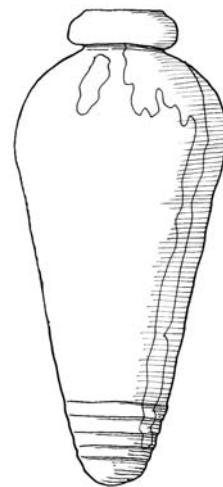
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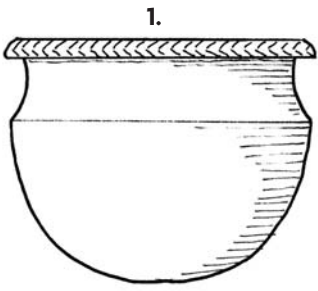
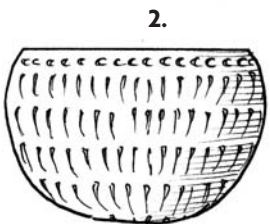
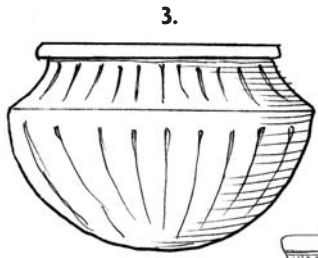


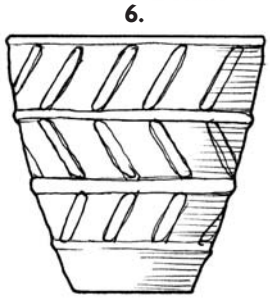
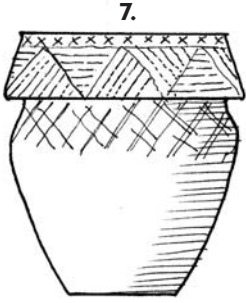
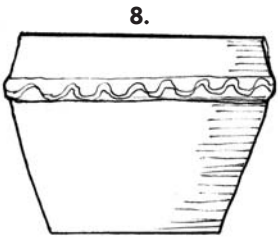
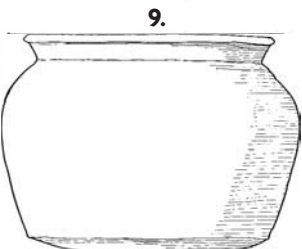
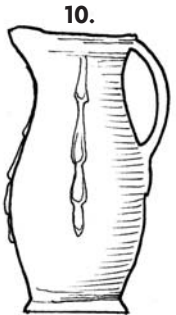

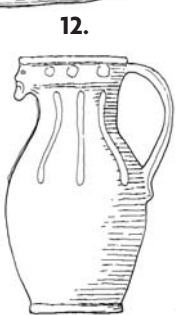



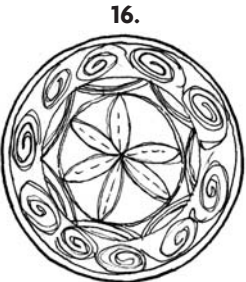
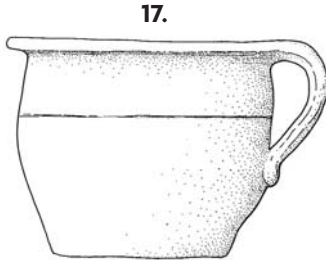

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All these pots have been found on excavations in Ireland and many are on display in museums throughout the country. Pottery was first introduced into Ireland in Neolithic times (4,000 - 2,000 BC). All prehistoric pots are handmade using either of two methods: most are made using coils of clay laid one of top of another and bonded together. The pinch method was used for making small pots.

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<b>POST-MEDIEVAL</b> 1600 - 1700 AD	<div data-bbox="331 1776 499 2045">15. </div> <div data-bbox="579 1776 826 2056">16. </div> <div data-bbox="858 1798 1185 2056">17. </div> <div data-bbox="1257 1821 1345 2067">18. </div>

### Prehistoric

1. **Western Neolithic Ware** Irish Neolithic pottery (4,000 - 2,500 BC). Domestic pottery, probably used mostly for cooking. The round base prevents cracking when fired. Similar to other pots found in Europe.
2. **Carrowkeel Ware** Irish Neolithic pottery (4,000 - 2,000 BC) associated with *passage tombs*.
3. **Ballyalton Bowl** Irish, dating to early and middle Neolithic c. 3,500 - 2,500. Its name derives from a court tomb in Co. Down. Associated with burials.
4. **Beaker** A distinctive inverted bell-shaped profile. Local examples made in Ireland but similar pots found across the western part of Europe around 2,500 - 2,000 BC. Decoration applied all over surface.
5. **Vase Food Vessel** Early Bronze Age pottery c. 2,100 - 1,700 BC, found in Britain and Ireland but not on the Continent. Sometimes found on domestic sites but majority found in *cist burials*.
6. **Vase Urn** dating to the Early Bronze Age—2,000 - 1,750 BC. Found in *cist burials* and *pit burials*. Pot inverted over the cremated remains.
7. **Collared Urn** dating to the Middle Bronze Age c. 1,950 - 1,500. It is usually only the collar area that is decorated with incised lines or twisted-cord impressions. It is mainly associated with pit burials. There are about 50 known examples.

### Early Medieval, Medieval and Post Medieval (4th century AD - 19th century AD)

Pottery is scarce in Ireland from the first millennium AD but all examples are hand made. With the arrival of the Normans in 12th century wheel-thrown pots appear, firstly imported but subsequently made in Ireland.

8. **Souterrain Ware** dating to c. 8th - 12th century AD. Little pottery during this period except this ware found in the north-east of Ireland.
9. **Leinster Cooking Ware** Irish hand-made cooking pot. This is the typical shape of a medieval cooking pot with its flared rim. Bonfire fired. Late 12th - 14th century.
10. **Saintonge Green Glazed Jug** A wheel-thrown white earthenware pottery made in Bordeaux France. Jugs are generally tall, elegant and green-glazed. Associated with import of wine. Dates mainly to the early 13th century.
11. **Bristol Ham Green Ware Jug** hand-made green-glazed jugs, dating to 12th to mid 13th century. It was made in Bristol and imported into Ireland by the Anglo-Norman's.
12. **Bristol Redcliffe Ware** a wheel-thrown ware that replaced Bristol Ham Green ware by the mid-13th century. Less widely imported into Anglo-Norman Ireland as pottery being made locally by this time.
13. **Dublin Type Pot** a typical locally made jugs in Anglo Norman Ireland of the 13th/early 14th century. The shape and design is very similar to the contemporary imported Bristol jugs.
14. **Seville Coarseware Olive Jar** a wheel-thrown pot made in Seville, Spain. It was imported into Ireland in the 17th century and contain expensive items such as olive oil and almonds.
15. **Cologne/Frechen Bartmann Stoneware Jug** wheel-thrown stoneware glazed jug made in Germany in 16th/17th century. Stoneware is the result of firing to a very high temperature ( c.1500 degrees centigrade). The jugs are also known as Bartmann or "bearded man" for the whiskered face that adorns the neck.
16. **North Devon Sgraffito Ware** a 17th century wheel-thrown domestic earthenware plate made in North Devon. England. It was decorated by scratching (sgraffito) through the white slip—giving brown decorations with a yellow background. Commonly found on Irish excavations as platters and plates. It was the principal ware taken to America by The Pilgrims.
17. **Glazed Red Earthenware** A domestic wheel-thrown earthenware chamber pot made in Ireland. Glazed on inside.
18. **Stoneware Bottle**—stoneware jar made in the 18th /19th century. Made in England to contain small quantities of liquid such as ink.

**1. Discovery**

Discovery of new sites: can occur as a result of agricultural activity, quarrying or some other commercial activity that involves soil removal. Archaeological excavation is carried out only where necessary.

**2. Recovery—Archaeological Excavation**

Archaeological excavating is the systematic removal of archaeological material and the detailed recording of this process.

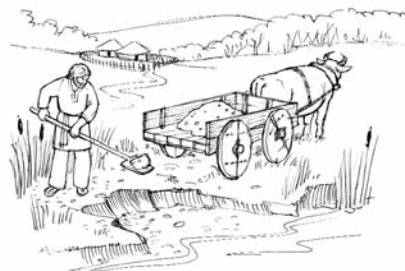
A pit burial was found. The pot, termed a *Collared Urn* was inverted over the remains of a cremated human.

**3. Post-Excavation**

Conservation/cataloguing  
Each sherd is numbered and catalogued. A pottery specialist will study and write a report on the pot.

**4. Analysis leads to Interpretation**

The clay was sourced locally from the river bank.

**5. Analysis leads to Interpretation**

The pot was hand-made using coils. Pottery comes in many shapes and forms and is used for a variety of purposes.

**6. Analysis leads to Interpretation**

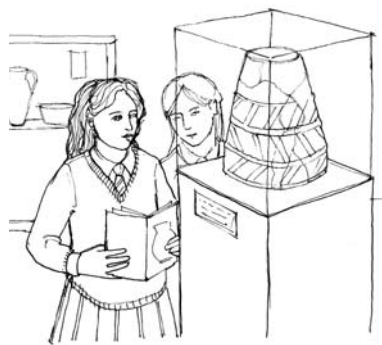
Clay has to be fired to a high temperature to turn it into a durable ceramic pot.

**7. Dating and typology**

Pottery is useful, easily made, plentiful, durable and breakable. This makes pottery artefacts particularly important and a valuable source of information for archaeologist. A chronological typology of pots is one method used for dating them by comparison with similar types.

**8. Exhibition**

Exhibition—most pottery found on excavations are fragmentary sherds. Only in exceptional cases are enough sherds found to reconstruct a pot.

**9. Reconstruction**

Archaeological excavation gathers information which leads to interpretation: a Bronze Age pit burial using an earthenware Collared Urn dating to Middle Bronze age (c. 1,950 - 1,500 BC). It is c. 35cms in height. It was used to cover (in an inverted position) the remains of a cremated human. The archaeological excavation and the study of the pot tell us about the customs of burial in the Bronze Age.

