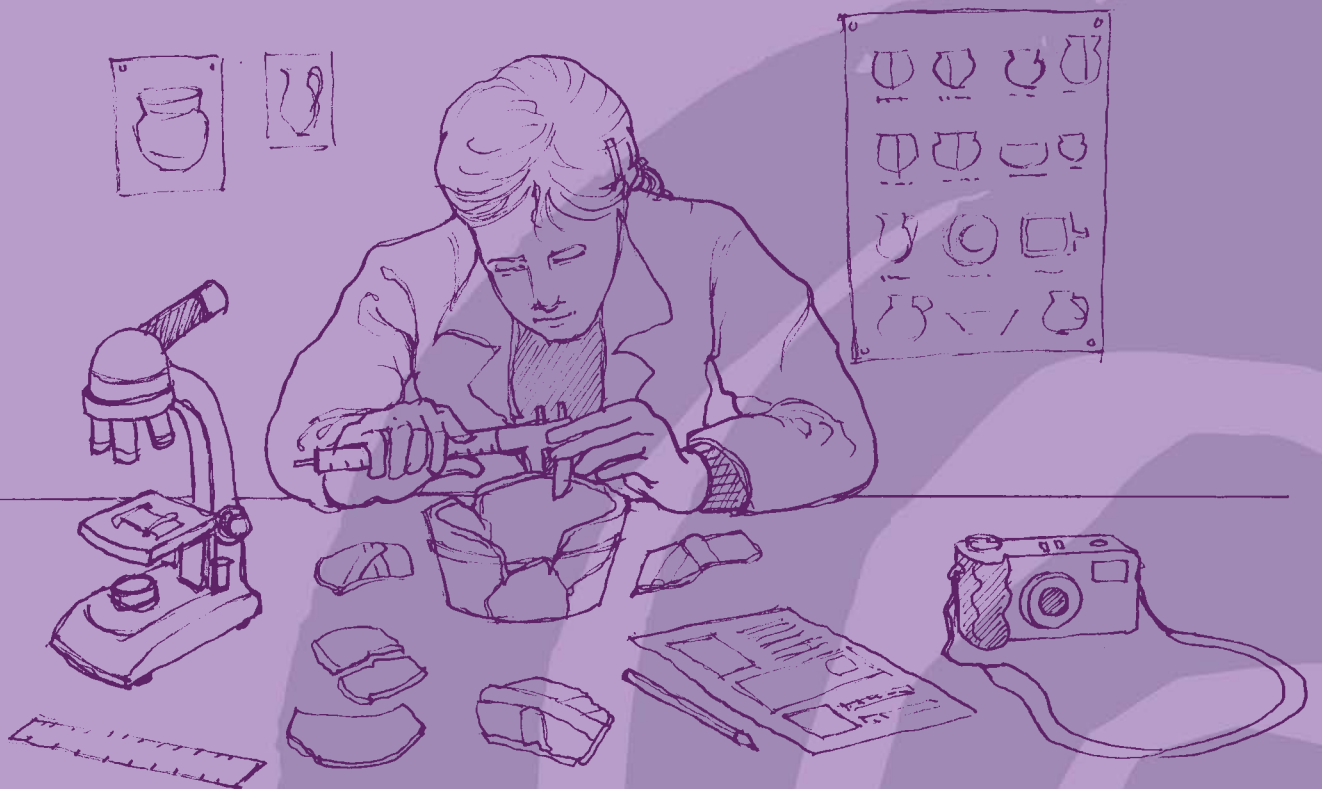


Post-Excavation

LESSON 2

Post-X—The next step



ARCHAEOLOGY
time in transition

ITS ABOUT TIME 2

**Aim(s)**

To give the students an understanding that post-excavation office work is an integral part of the excavation process.

**Objective(s)**

To outline the detailed work involved in post-excavation work in bringing all the information from the excavation together, carrying out detailed analysis and making this information available to others.

**Time Period**

Present Day

**KEY INFORMATION****Lesson**

- Archaeological excavation is the systematic removal, recording, conservation and interpretation of features and artefacts buried in the ground.
- A lot of information is gathered on an archaeological excavation (drawings, record sheets, artefacts, soil samples).
- Post-excavation is equally important as it processes this information: description, analysis and interpretation.
- Artefacts are studied, conserved and finally stored in a museum.
- The final report contains all the information relating to the excavation.

Context

- The *Big Dig* on site is only half the story. Now the archaeologists need to do their research in order to make sense of all the information they have gathered. Only then can a report on the excavation be written.
- Until a final excavation report is submitted to the Department of Arts, Heritage and the Gaeltacht (AHG) the excavation will not be completed.

**METHODOLOGY & MEDIUM**

- Instruction
- Visual–PowerPoint
- **Student Handout** Post-Excavation

**SECTIONS**

Section 1 Archaeological Excavation

Section 2 Interpretation

Section 3 Artefacts

Section 4 Soil Samples

Section 5 How Old?

Section 6 Conservation

Section 7 Storage, Display and Reports



Key Question(s) What happens to the information recorded by the archaeological excavation?

Slide 1 Post-X – The Next Step

We will now look at the detailed work involved in post-excavation work.

Slide 2 Archaeological Excavation

In the last lesson we looked at the process of excavation on-site. A lot of information has been gathered

- Drawings—plans and sections.
- Record Sheets—context, photographs, soil samples, stratigraphy, etc.
- Artefacts.
- Soil samples.

What happens to all this information once the excavation itself is finished? The next stage in this process is known as post-excavation or *post-ex* for short. How is all the information processed so that the archaeologists can make sense of what they have gathered?

- This work is equally as important as the on-site excavation.
- A full report on the excavation must be submitted to the Department of Arts, Heritage and the Gaeltacht (AHG).
- Until this happens the excavation has not been completed.

(The following slides feature the work of a commercial archaeological company as they process information from the excavations that were featured in the previous lesson *The Big Dig* T3,U2,L2).

Slide 3 Database

All the data from the excavation is entered into the site database.

- Here we see an archaeologist entering information from a *Context Record Sheet* into the database.
- The database facilitates cross-referencing of all data from the excavation.
- This is where the *context number* is vital as every piece of information collected is related to a *context number*.

Slide 4 Scanning Drawings

- All the scale drawings made during the excavation are scanned and converted into digital image.
- This is where the scale at which the drawings were made is very important—otherwise the images will not stitch together correctly to form composite plans.

Slide 5 Computerised Drawings

The computerised drawings are further enhanced using illustrator software.

- Here we see an archaeologist using two screens to create site plans.
- The features in the drawings are labelled with their *context numbers*.
- These drawings will appear in the site report and in publications so they have to be finished to a high standard.



Key Question(s) How is the information interpreted?

Slide 6 Reconstructing Structures

Once the plans have been put together and the information analysed it is time to reconstruct the features they once were part of. How do all the post holes, stake holes, pits, slot trenches, hearths etc. recorded during the excavation fit together as the remains of distinct structures?

The next three slides show how archaeologists reconstruct a three-dimensional image of two Bronze Age houses from excavated evidence.

- Here we see a photograph of the site when it was fully excavated. This is all that survives of two round houses of Bronze Age date, excavated in Mitchelstown townland, Co. **Cork**.
- A shallow slot trench shows the outline of the **houses**. The post holes once held upright timbers to support the roof.

Slide 7 Plan of Houses

This is the plan of these features as uncovered by the excavation. This is a composite plan of all the individual plans drawn as each feature was **excavated**.

- The outline of the house is preserved as a shallow slot trench.
- By carefully examining the pattern of post holes the form and shape of the roof can be deduced.
- A ring of post holes inside the wall held upright posts and these, together with a single post in the centre of the floor, held up the roof.
- All that survives of the walls of the houses is a circular slot trench. This is the foundation of the non-load-bearing wattle walls of the houses.
- There is a gap in the slot trench with a post hole on either side. This shows where the door was located.

Slide 8 Reconstruction Graphic

Here we see how an archaeological illustrator uses the information from the excavation to reconstruct the two circular **houses**.

- Firstly the upright poles are put in **position**,
- Secondly the walls **and** roofs are **added**.
- And finally we are given an idea of what these houses may have looked like in a Bronze Age setting.

Information leads to interpretation, which leads to reconstruction.



Some of the features illustrated, like the window, doors, cross-beams and the thatch roof, are not based on direct excavated evidence from this site. The activities shown are corn being trashed with a lathe and then the corn being ground on a rotary quern (see below for how evidence for corn was recovered from the excavation). This reconstruction illustration is an extract from the animated version on the NRA web site.



Key Question(s) What happens to the artefacts?

Slide 9 Artefacts

- The careful recording and analysis of artefacts is a very important part of post-excavation work.
- Some artefacts need careful cleaning and **conservation**.
- Pottery is an important artefact as it is found in most archaeological excavations.



Teacher Instruction

Tease out with the students why pottery is an important artefact (*The Ceramic Detective* T3,U3,L1).

- Pottery vessels were very useful in the past and therefore they were made in great quantities (used in storage and cooking mostly).
- Pottery is brittle and these vessels were easily broken.
- A broken pot has no value, it was just thrown away.
- Though brittle, pottery does not decay in the ground like organic materials. This is because it is made of fired clay.
- Pieces of broken pots are called *sherds*.

This slide shows a typical collection of earthenware sherds from a Bronze Age excavation.

- Pottery recovered from excavations is stored in boxes and labelled (identified by an individual artefact number and the number of the context in which they were found).

Slide 10 Piecing Together

- Sometimes sherds of pottery can be fitted together to form partial or complete vessels. If the pot is almost complete and in a good stable condition it can be conserved and restored and may even end up on exhibition in a **museum**.
- Here three sherds are fitted together to show the upper part of an *Encrusted Urn*. This comes from a Bronze Age pit burial, like that featured in the previous lesson.

Slide 11 Working with Pottery

The pottery sherds are washed and numbered in the ceramics workshop.

- **Here** we see the archaeologist at work with pottery sherds. On the desk, in the foreground, a number of vessels are being reconstructed.
- Because of the amount of pottery found on excavations its study has become a very specialised field. In most cases, once conserved and numbered, the pottery is sent to an expert in that particular type of pottery who will write a report on it. Such a report is added as an appendix to the final excavation report.

Slide 12 Numbering the Sherd

Here we see the archaeologist applying a number to each **sherd**.

- The number is written in ink and then covered by clear varnish.
- In this way the archaeologists will know from what context in the excavation the sherd came from and where it can be found in storage.



The number of each artefact is cross-referenced to the context that it was recovered from. The number on the artefact is related to the site code and the context that it is from. Each artefact from that context will get an individual number. For example, if the licence number is 00E0471, the context number is 45 and the find's individual number is 7—the correct artefact number is 00E0471:45:7. This is the number that is inked onto the artefact.

Slide 13 Washing Bones

- Many artefacts and especially animal **bones** have to be washed before they are sent to the relevant specialist for analysis.
- Animal bones can also be found in abundance on archaeological excavations for much the same reason as pottery sherds—once used they were useless and thrown away. Thankfully, people were generally not as tidy in the past as we are today and so their rubbish is often found convenient to where they lived. This is very handy for the archaeologist!
- Each bone is numbered in the same way as pottery sherds.

**Teacher Instruction**

Ask the students what will you find in our 21st century rubbish dumps? What will the finds say about our society?

Slide 14 Zooarchaeology Laboratory

As with the pottery, once the animal bones are processed they are sent off to the specialist. **This** slide shows the zooarchaeology laboratory in UCC where animal bones from various excavations are being identified and analysed.

**Teacher Instruction**

Ask the students to describe what they see

- A number of bones from an excavation are set out on the table.
- They are placed on plastic bags which contain the detail of the location and context of the site.
- The archaeologist is preparing a report on the bones.
- Lots of boxes on shelves for storage.
- Reference books and files on shelves.

Animal bones are very useful in terms of reconstructing past hunting and farming practices, which in turn tell us much about economy, diet and landscape.



Key Question(s) What happens to all the soil samples? What information can they give the archaeologist?

Slide 15 Comparative Collection

Here we see part of the comparative collection of animal bones in the laboratory

- These are rare examples which even the expert (who will be very familiar with cattle, sheep, goat, pig, horse and dog) will need to check.
- Bones like frog, kestrel and curlew are rare finds on excavations.
- Bird bones are very fragile and need great care to identify and recover. Many are recovered during wet sieving (see below).



A comparative collection is a range of known species used by an expert to identify unknown remains from an archaeological site.

Slide 16 Food Bones

Typically most of the animal bones are food remains—cattle, sheep, goat and pig being the most numerous in all periods from the Neolithic onwards. As well as identifying the type of animal, its gender and the age at which it was killed, the zooarchaeologist will also be looking out for evidence of butchery marks and any sign of disease in the bone.

- Here the bones from a particular context (represented by the plastic bag in which they were stored and on which they now rest—note the writing on the bag identifying where the bones came from) are being sorted into type.
- As with the pottery expert, the zooarchaeologist will also produce a report and this too will be added as an appendix to the final excavation report.

Slide 17 Soil Samples

We have seen that during the excavation samples of soil were taken from many of the contexts

- These are placed in sealed plastic bags that are labelled on the outside with a permanent marker.
- A waterproof label, written on permatrace, is inserted into the bag. This ensures that the archaeologists in the laboratory know exactly what part of the site they came from.
- The samples are now ready to be analysed. How is this done and what are the archaeologists looking for?

Slide 18 Water Flotation

- The soil is placed in a bucket and water added to it.
- This mixture is then washed through a fine sieve until the earth itself is washed through and all that is left is what is too large to go through the sieve's fine mesh.

What is usually found in the sieve?**Slide 19 Washing and Sieving**

- Here we see the soil sample being **washed** through the fine sieve.
- Usually what is left are things like plant seeds, pieces of charcoal, small bird bones.

Slide 20 Taking a Closer Look

The things that are left in the sieve are dried and then examined under a **microscope**

- Here we see the archaeologist examining material from the sieving process.

Slide 21 Seeds

And this is what was found under the **microscope**

- Cereal grains, identified as wheat, and seeds from the Knotweed (Dock) family.
- The seeds have survived in the ground because they were partially burnt or charred. This may have happened by accident when the seeds were being dried in a kiln or over a fire.

What do they tell us? These people were growing wheat, which means they could plough and harvest the crop. The wheat was ground into flour to make bread. The straw was used to thatch their houses. Also, dock was a weed in their crop.

SECTION 5 How Old?

**Key Question(s)** How do archaeologists find out the age of their finds?**Slide 22 Using Science**

Depending on what is found during an excavation a number of scientific techniques are available to determine the age of a sample. For example, charcoal can be dated by Radiocarbon Dating, and oak timbers by Dendrochronology.

- Water floatation and sieving (above) is used to recover charcoal from the soil samples.
- Radiocarbon dates can be obtained from organic material—charcoal is commonly used in Ireland.
- This work is done in specialist laboratories—the photograph shows part of the Radiocarbon Dating laboratory in UCD.



Carbon is present in living organisms, both plant and animal. Whilst the organism is alive a tiny but constant fraction of the carbon contains the isotope C14. Once the organism dies the amount of C14 begins to decline because the isotope is radioactive. By measuring the amount of C14 in something like charcoal, it is possible to say when approximately that sample was part of a living tree. The age determined is approximate as it depends on a number of variable factors, like the purity of the sample and the variable rates of carbon in the atmosphere over time. Therefore, this technique is used most widely for prehistoric samples where a variable of two or three hundred years is not a great difficulty. For example, to say that a piece of charcoal dates to sometime between 1,200 and 1,500 BC is usually valuable information, but to say that a sample dates between 1200 and 1500 AD might not be adding much to what is already known.

SECTION 6 Conservation



Key Question(s) How are perishable artefacts conserved?

Slide 23 Preserving Leather

Organic materials, such as leather or wood, when recovered from a waterlogged anaerobic environment will deteriorate rapidly once exposed to the air. If the material is to survive it must be conserved using specialised **techniques**. Here we see a leather bridle, which was found during the excavation of a 19th century military barracks.

- Although dating to the period of the Crimean War (1853 - 6) the bridle was perfectly preserved in a waterlogged deposit. It is now being cleaned and conserved in a conservation laboratory. Without this treatment the leather will rapidly become dust due to drying and bacterial attack.
- After cleaning, the leather bridle was soaked in a solution of glycerol to help lubricate the leather and prevent dimensional change when being freeze-dried. Freeze-drying is the process that preserves the leather.

Slide 24 Preserving Wood

In this slide a wicker basket is being conserved

- Here the wood is being soaked in a solution of polyethylene glycol (a synthetic wax), before being freeze-dried.



Key question(s) What happens finally to all the information and the artefacts?

Slide 25 Storage

- Here we see all the artefacts from the excavations we have been looking at in temporary storage before they reach their final destination in permanent storage at the National Museum of Ireland.
- Perhaps at some time in the future a researcher needs to examine some of this material. It must be stored and labelled properly if this is to be possible.

Slide 26 The National Museum of Ireland

- The National Museum is the repository of the national collection of archaeological artefacts.
- **The** National Monuments (Amendment) Act 1994 provides for State ownership of all archaeological artefacts found in the State. Under the Act all finds of archaeological artefacts must be reported to the National Museum.
- **The** National Museum and other designated museums have the primary responsibility for the long-term storage and curation of this material.

Slide 27 Exhibition

Some of the artefacts may eventually be put on public display. Informing the public about archaeological discoveries is an important responsibility for the archaeological community.

- Here we see artefacts on display in a temporary display showing material found in a local excavation.

Slide 28 The Report

All the information gathered by an archaeological excavation is finally put together in a report. This will give a detailed description of the archaeological excavation with a full interpretation and analysis of what was discovered. The report is a permanent record of the archaeological excavation.

- As part of the condition of every excavation license a full excavation report must be submitted to the Department of the Arts, Heritage and the Gaeltacht (AHG) and the National Museum of Ireland.
- Where appropriate, an account of the excavation may be published in a historical journal or in book form. Increasingly excavation reports are being posted as a .pdf file on websites. A brief outline of all excavation carried out in the country is available on **www.excavations.ie**.

WEB LINKS

WWW.



Finds Processing

www.archeox.net/finds-processing

Post-Excavation

<http://www.flickr.com/photos/wessexarchaeology/collections/72157623519330023/>



Archaeological excavation is the systematic removal, recording, conservation and interpretation of features and artefacts buried in the ground. Lots of information is gathered in this way

- Drawings: site plan, context plans, sections etc.
- Artefacts and soil samples.
- Record Sheets—contexts, photographs, soil samples, artefacts etc.



The post-excavation processes involves

- Describing all the features and artefacts.
- Analysing and interpreting this information.
- Processing soil samples.
- Specialist reports—pottery, seeds, bones, textiles, etc.
- Preparing all the drawings and photographs for a report.
- Producing a final report with all the findings from the excavation.



Two bronze Age houses found during the construction of the Mitchelstown by-pass in 2007.

Information leads to Interpretation

Information gathered

- Circular series of post holes inside circular slot trench.
- Large central post hole.
- Gap in slot trench with post holes for door.

Interpretation

- Circular set of upright posts and central post, supported roof.
- Light (non-load-bearing) wall of wattle-and-daub formed walls of house with a door on one side.

Reconstruction



An animated version of these illustrations were prepared for an exhibition in the Cork Public Museum in 2008.

Information on archaeological excavation on all major road works, including these illustrations are available on the National Roads Authority website- www.nra.ie.



Some of the artefacts are sent away to specialists. For example, the animal bones are sent to a zooarchaeologist. These specialists reports will be included in the final excavation report.

Samples of charcoal or some other suitable material, are sent to radiocarbon or dendrochronology laboratories for dating evidence.



Excavation Report

A final written report is prepared and sent to the National Museum of Ireland and the Department of Arts, Heritage and the Gaeltacht. Where appropriate the report is published in book form or in a scholarly journal. A short report on all excavations in the country is available at: www.excavations.ie.



The **National Museum of Ireland** and other designated museums have the primary responsibility for the long-term storage and curation of archaeological artefacts. Under the *National Monuments Act*, finds of archaeological objects must be reported to the National Museum. It is illegal for any person to carry out an excavation at an archaeological monument without a licence from the State.