

What do Archaeologists do?

A guide to excavation techniques and finds processing

Is excavation always necessary?

There are several steps taken to help us make a decision. Research of any proposed redevelopment site and immediate vicinity is carried out. An archive search is made for any previous archaeological evidence or historical documentary evidence and exploratory trenches may be dug. It is not always the case that excavation is necessary or desirable. If it is, the future developer of the site includes time needed for the work into the building programme.

What happens on a dig?

Let us imagine that a decision has been taken to excavate a site. The area to be dug is marked out in a site grid of 5 metre squares. Working within this grid, anything found can then be plotted accurately onto a site plan. A convenient spot at the edge of the site is chosen as a temporary bench mark (TBM) which is then used to find the site's height above sea level (Ordnance Datum). This is achieved by using a theodolite or dumpy level to take measurements between the TBM and the nearest permanent bench mark to be found in the vicinity. Permanent bench marks were established by Royal Ordnance Survey. They indicate known points above sea level and are usually found inscribed at the foot of a building which is not likely to be demolished (eg. a church) or on a free-standing stone block.

Excavation

Digging a site entails the removal of layers (soils, rubble etc.) and features (eg. pits, walls, burials) found in those layers. Collectively these are called contexts. Contexts are removed in the reverse order of their deposition. So you start at the top with the most modern material and work down to the most ancient, until you hit natural undisturbed bedrock. Any finds discovered on the way down are removed for study. Soil samples will also be taken. After soil has been removed by sieving, various types of evidence can be revealed. Minute particles of metals may indicate ironworking while fish bones will tell us about the ancient natural environment and diet. Acute observation, spatial awareness, the ability to record in detail and interpret the fragmentary evidence, are probably the most significant skills of the field archaeologist.

No sex discrimination in Archaeology!

There are easily as many women as men involved in both field and finds work. A good sense of team spirit can be built up on site when everyone does the same jobs, all with a common aim.

A note about the weather

If you think that Archaeology means continuous fascination while getting a suntan, consider this... Snow and frost make the ground very hard to dig. A long, dry spell may mean the same. Very wet weather means the ground becomes muddy and dangerous. Too hot or too wet conditions both mean that it can become difficult to make visual distinctions in the soils. In very dry weather an area is sprayed with water to bring up the colours and shapes. In torrential rain it's time to abandon site and head for the tea hut!

Recording the Evidence

At various stages of the excavation the site is 'cleaned' so that layers and features show up distinctly, enabling recording of the evidence by plan and section drawing and by photography.

Planning will result in a drawn record of what the site looks like in a horizontal plane, at any one point in its history. On one part of the site there may be foundations of an Anglo-Saxon house, nearby a wooden well and further away, remains of an animal enclosure. Individual plans are drawn and eventually linked together to form the overall picture. A rectangular planning frame strung out in 10 cm squares is placed over an area to be drawn, in line with the site grid. Every detail seen within the frame is then plotted onto graph paper at a scale of 1:10 or 1:20.

Section drawing records the vertical view down through the layers (the stratigraphy), for example where the clay floor of a house has been re-surfaced several times. Whereas in the horizontal plane all measurements relate to the site grid, the measurements down through a section relate to the site's Ordnance Datum point, established at the very beginning of the excavation. Again the record is made on graph paper.

The Photographic record is made to supplement the drawn record. General shots of the site at different stages and of specific discoveries are taken together with working shots of people doing various jobs. There is usually a combination of black and white prints and colour slides. Photographs and slides are often used by the Trust in mounting exhibitions and giving talks to interested groups. People sometimes ask why we bother to draw the structures and finds that we discover, when it seems easier to use a camera. The answer is that there is really nothing quite as reliable as the human eye.

The written record is the final major component of site recording. The site has a unique code which is a combination of letters and numbers eg. TWD 97 (Town Wall Street, Dover excavated in 1997). In addition each layer or feature on site has a unique number starting with (1) as the first context encountered at the top of the dig while the highest number will be the last context, occurring near the bottom of the dig. Any finds from a context are labelled with the same site code and the context number so we know exactly where they came from. So you will see on an excavation 100's or 1000's of small white labels pegged into the earth, each indicating a context eg. 'TWD 97 (1086) Pit'.

A record sheet is completed on site for each context. One for example may note a clay floor of certain dimensions, with a burnt patch suggesting a hearth and fragments of Anglo-Saxon weaving loom weights scattered about. The archaeologist may well interpret this as an Anglo-Saxon house or work shop.

Any dateable evidence is going to help the archaeologist interpret the site. Pottery is the most abundant dating tool on an urban site. So while the dig is running, the thousands of pottery sherds (fragments) found are washed and marked in indian ink with site code and context number. They are then examined briefly for dating information which will help site people to date the particular period that they are currently excavating. See Pottery below and Archaeology in the Classroom for more about dating.

‘Pot washing’ – a way to get involved

Washing pot sherds and other finds is an activity that volunteers can take part in. At the Trust, children from 9 years of age may be able to help during school holidays, if accompanied by a young adult or adult. It is quite something to realise that you are the first person to see an object in its clean state since it became buried.

Excavation Tools

The basic tools are those used in industrial and domestic workplaces. What are you likely to see on a site?



Pointing trowels for scraping away the soils.

Hand and tooth brushes for fine cleaning of walls, skeletons etc.

Dental pics and probes are useful for excavating skeletons and grave goods.

Pic-axes for more desperate means, like removing a dense flint and chalk wall.

Shovels, buckets and barrows for removing excavated soils off the site and onto an ever growing spoil heap.

Plastic trays for collecting finds.

Planning frames, drawing boards, notebooks, cameras to record the evidence.

Heavy duty measuring tapes for any appropriate measuring on site.

Ranging rods of various lengths measured out in divisions of centimetres or metres are placed beside a feature (eg. a burial) to give scale when photographing; divisions painted alternately bright red and white for clarity.

Theodolite for taking measurements against Ordnance Datum.

What happens after the dig?: Post- Excavation work

It is at the end of the excavation, armed with all available evidence that the final interpretations about the history of the site are made. Aside from the published report, artist reconstruction drawings may also be made giving an impression

of how a place may have looked at a particular period of its past (as in Roman Canterbury, a resource book for children; see 'Kent Contacts').

Ideally the site director needs to start writing up straight after the dig. But such is the pressure at times that another excavation may begin almost immediately, demanding the same staff. There is often much shuffling of work programmes to accommodate new priorities.

The next section focuses on Finds Processing; how we clean, categorise and record the material recovered. The word 'finds' is a collective term for both man-made objects (artefacts) and natural objects (eg. bones, shells) discovered on a site. A large urban dig generates literally tons of finds and a team must exercise a certain flexibility and develop various systems to process them.

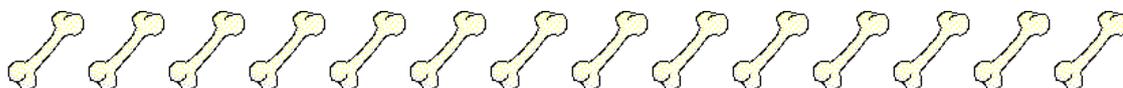
What we can learn by interpreting the evidence of finds is dealt with in Archaeology in the Classroom, where you will find practical exercises to try with children.

What do we do with the finds?

All the finds are recorded to some degree. They will be counted and weighed, some will be sketched and notes will be made. But only selected groups receive more intensive treatment and study. For example, a group of finds from a building may help to identify its function. These would be considered for illustration and publication, as would grave goods which told us about the status and occupation of the deceased. A group of pottery may be chosen because of its dating value or as evidence of trade.

Children often imagine that we can keep what we find but this is not the case. When the archaeologists have finished with the material it is passed on to a place where it can be stored and displayed, usually the local museum. We think of finds in categories. Bulk Finds, Pottery, Small Finds and Environmental Evidence are the main ones.

Bulk Finds



This covers a whole miscellany of materials and objects and includes: building materials (eg. slate and clay tiles, dressed stone, painted wall plaster, tesserae from mosaics, daub), common glass, claypipes, debris from metal working, shells and animal bone. Human skeletal remains are dealt with completely separately. Some materials may occur in both Bulk Finds and Small Finds categories. For example, a naturally occurring animal bone would be assigned to the former but if it had been crafted into an object like a hair pin, it would belong to the latter. Wood is rarely found as it is an organic material and usually decomposes in the soil. Wood in waterlogged soils however (eg. the bottom of a wood-lined well) can survive as normally destructive bacteria cannot live in these conditions. Also, the process of

mineralisation can aid preservation of wood. If a wooden object has remained in direct contact with certain metals (particularly iron) then traces of wood can survive at the point of contact.

Bulk Finds may be examined, recorded and published for various reasons. Hypocaust tiles from sites in the centre of Canterbury (beneath the Marlowe Shopping Arcade) helped us to identify a Roman public baths suite and told us a good deal about the function of the area in Roman times. As a result of the excavation of over 1300 skeletons from the Medieval site of St Gregory's Priory in the northern part of the city, an osteo-archaeologist is engaged in a long-term project examining all the skeletal remains. This involves ageing and sexing, reconstructing stature through bone measurement and determining some of the diseases and causes of death. Such analyses can provide valuable data about the health of our ancestors.

Pottery



Pottery is the most abundant find on an urban excavation. It is usually found as domestic debris, in sherds or broken pieces, but complete vessels are often found as grave goods in burials which have been left undisturbed over the centuries. Its use as a dating tool makes it particularly valuable. We are able to date some types of pottery more closely than others, depending on the current state of knowledge. To be able to say that certain types of Roman pottery were in use between AD 100 and AD 125 would be considered 'good', while we may only be able to tie others down to a century.

What else can pottery tell us?

Pottery has a great deal more to offer. We can learn about domestic and industrial life by looking at the functions of pottery, distribution and trade by recording where it has been found (nationally and internationally) and in what quantities, which types of vessel were popular at different periods and the levels of technological skill in the past.

A great deal of attention is given to ceramics. But we must remember that a whole range of other types of vessels existed in the past. The majority of those made from leather or wood will have decomposed in the soil while ones made of pewter or silver may have been re-cycled or passed on as heirlooms. We have seen enough to know that all of these existed, but most non-ceramic vessels have simply not survived for us to find.

What do we do with the sherds?

After washing and marking, the pottery is identified by examining the clay and tempers used (the fabric), its shape (the form), how it has been made and any decorative treatment. An experienced archaeologist will be able to do this from

sherds alone. Tempers are materials added to the clay to open it up, allowing moisture to escape during firing and thus reducing the risk of shattering. Different temper can distinguish one culture from another. Local Iron Age pottery often had crushed flint added to the clay while sand was commonly used in Roman times and crushed shell in the Norman period. Pottery is quantified by counting and weighing the sherds. This helps to see how rare or common types were. Rim diameters will be measured to see how standardized the vessels were and samples from any internal deposits may be taken to identify the contents. Certain vessels will be reconstructed using domestic adhesives (eg. HMG) and drawn. Comparisons will be made with other groups of material from other sites. This data collection, or archive forms the basis of the pottery report. Pottery from antiquity is a subject in itself. You will learn more about dating and Roman pottery in particular in Archaeology in the Classroom.

Small Finds



This can be a misleading label as sometimes finds in this category are anything but small! The term is applied to those less common or precious objects in various materials, the vast majority of which have been crafted or 'worked' by man. They are easiest to define by example.

- Metals: Bronze, copper alloy, iron, pewter, silver, gold, lead, for making hair and dress jewelry, knives, tableware, coins, tokens, various fittings eg. on furniture, books and caskets.
- Bone: For hair and clothes pins, combs, buttons, various fittings as above, gaming pieces eg. dice, counters.
- Stone: Various types carved or 'dressed' as figurines, spindle whorls, whet-stones, marble veneers for walls, statues. Flint for scrapers, blades, arrowheads.
- Leather: For shoes, purses, knife sheaths, clothing. An organic material and therefore not common.
- Textile: Rare. An organic material. Traces can survive where there is direct contact between textile and certain metals and mineralisation has taken place, eg. in a grave where a bronze brooch was pinned to the cloak of the deceased.
- Shell: Buttons, oyster shells used as palettes.
- Glass: Painted window fragments, any rare pieces eg. Roman, Anglo-Saxon or Medieval vessels.

All Small Finds are registered after leaving the site. Like all other finds each one has the site code and relevant context number to show where it was found. In addition a Small Find is given a second unique number, marked in a triangle. It is then assessed for (a) stabilization to arrest disintegration and (b) for publication.

Conservation

Many archaeological finds are in relatively stable materials (eg. bone, clay) and need only to be cleaned with water. But other materials need more attention when removed from their buried environment. If badly corroded, iron is often X-rayed to define the shape of the hidden object and then illustrations are made from the X-ray plate. Basic principles apply for first-aid treatment of organic materials like leather and wood. If found wet they are stored in water, if found dry they are kept dry, until they can be conserved in a laboratory. To treat organic materials from waterlogged soils, the object is usually first soaked in a wax solution. The wax gradually replaces the water and strengthens the object. Any remaining moisture is then driven out by freeze-drying, like instant coffee.

Environmental Evidence



In order to make as complete a picture as possible of the past, we need also to discover as much as we can about man's natural environment. What flora and fauna were around at different times? Did they contribute to people's diet? Can we learn anything about the state of health and hygiene of our ancestors? To try and answer these questions, samples of soil are taken from excavations for sieving and analysis. Imagine a sample has been taken from the floor of a Medieval building. After washing away the soil, we may find fragments of bone from small animals and fish suggesting the room was a kitchen. Soils from a cess pit outside may contain further evidence of diet and Medieval parasites. Sieving can reveal evidence which could never be detected by normal on-site excavation techniques.