

# Education Pack for Junior Certificate History

## Introduction

This education pack has been designed by the Brú na Bóinne guides as an aid for teachers and pupils of the Junior Certificate History syllabus. The first half of this document is intended for teachers and outlines Brú na Bóinne as an exceptional archaeological landscape into which aspects of the History syllabus can be explored in a practical and accessible manner.

## Teacher's note

The second half of the document is a series of student activities, which are both educational and fun. The *Saoi an Bhrú* certificate may be awarded to the student with the best aptitude for learning and highest performance within the activities. This certificate may be sent to us (**Brú na Bóinne Visitor Centre, Donore, Co. Meath**) where the student will enter a draw for a free family heritage card, entitling the student and their family to free access for one year to all O.P.W run heritage sites in Ireland.

(Please note that only one original signed and stamped certificate from each school will be accepted for this draw)

## Brú na Bóinne Archaeological Complex

Brú na Bóinne is about eight kilometres inland from Drogheda and describes an area where the river Boyne meanders into a dramatic loop or bend. Brú na Bóinne - *The palace or mansion of the Boyne*- is the name given to one of the world's most important archaeological landscapes. Today about forty mounds can be seen within the complex, dominated by the three great passage tombs of Knowth, Dowth and Newgrange.

In recognition of the international importance of this archaeological landscape, the United Nations Educational, Scientific and Cultural Organisation (UNESCO), has designated the Brú na Bóinne area a World Heritage Site. Sites selected for World Heritage listing are deemed to be of outstanding universal value to humanity and are approved on the basis of their merits as the best possible examples of cultural or natural heritage. The passage tombs, associated monuments and Visitor Centre at Brú na Bóinne are in the care of the Office of Public Works.

Most of the information we have on the monuments at Brú na Bóinne is as a direct result of archaeological investigation. Excavations at Newgrange and Knowth began in 1962 by Professor Michael J. O'Kelly and Professor George Eogan respectively. Investigations at Newgrange lasted thirteen years, while those at Knowth lasted nearly forty.



Map showing the position of the monuments within the bend in the Boyne

## **The Role of the Archaeologist**

Archaeologists try to unravel the mysteries of past cultures by studying material remains such as objects, houses and tombs as well as a range of other evidence. In this way a picture of life in the past is formed. Though there are many different approaches, two central techniques are survey and excavation.

### ***Survey:***

This is the evaluation of sites in the field. Archaeologists carefully record all visible features of sites and monuments and then compare the results to see if any pattern can be seen. It is in this way, for example, that we can say there are 4 different type of megalithic tomb in Ireland. These tomb types have features in common, but they differ in important details, such as shape of the burial chambers and the mounds. Aerial photography and geophysical and geochemical methods are used to investigate sites, which are no longer easily visible on the ground.

### ***Excavation:***

By contrast with survey, excavation focuses on a particular site in great detail. The principle is to peel off layers of evidence, starting with the upper or most recent layer and ending with the lowest or earliest layer. A detailed grid is placed over the site and every object and feature found is measured, planned and photographed. Much of the analysis takes place after the actual work in the field. During the excavation the following tools are commonly used.

#### **1.) A trowel.**



This is used to get a smooth or even surface on the soil and to excavate features like post-holes or ditches.

#### **2.) A clipboard and site map.**



Here archaeologists note and record any artefacts or features that may have been found during excavation.

#### **3.) A ranging rod**



These regularly occur in photographs of artefacts or features to give a sense of perspective.

## **The Dig**

An excavation is often referred to as a 'dig'. After the initial survey is complete and the archaeologist has identified a suitable area for excavation, the following steps are followed,

- 1.) The site is divided into a series of boxes or grids (often ten metres by ten metres square).
- 2.) The upper layer of grass and soil is removed or stripped away.
- 3.) Troweling occurs in order to smooth or 'clean' the area during which artefacts or features may be identified.
- 4.) The exact location of artefacts and features are recorded using grid co-ordinates on the site map.
- 5.) At this stage artefacts and samples from the dig (e.g. soil, charcoal, bone and seed) are sent for scientific analysis.
- 6.) When all the information has been gathered from the dig the archaeologist enters the final phase, which is to analyse, interpret and draw conclusions from the findings, this is done with a view to publishing for public and historic records.

One of the most important aspects of the analysing process is to determine the age of the artefact or feature. The most common way to determine this is by radiocarbon dating.

## **Radiocarbon Dating**

This system of dating is for estimating the age of anything that was once alive, by measuring the amount of a radioactive form of carbon called carbon-14. Every dead thing emits carbon-14 at a steady rate, which can be measured. Depending on how much carbon-14 remains in the dead sample, archaeologists can tell how old the sample is. The less carbon-14 that remains, the older the sample is.

## **Dendrochronology (Tree-Ring Dating)**

Each ring in a tree's trunk represents one year of growth. In Ireland, archaeologists have a continuous record of tree samples dating back as far as seven thousand years. Therefore if a suitable sample of timber is obtained from a dig, it can be cross-referenced to this established record and an accurate date can be obtained. By combining tree-ring dating with radiocarbon dating archaeologists can get a more accurate system of dating, this is known as 'calibrating'.

## Neolithic Life in Brú na Bóinne

### When was the Neolithic period?

The earliest inhabitants of Ireland arrived around 8000 BC and were known as *hunter-gatherers* due to their nomadic lifestyle, hunting local wildlife such as red deer and wild boar, and gathering naturally occurring foodstuffs like nuts and berries. This was the Mesolithic period and lasted from approximately 8000 BC-4500 BC.

By 4000 BC the gradual introduction of farming techniques from Eastern Europe brought a huge change in lifestyle, this was the beginning of the Neolithic period and was from approximately 4000 BC - 2500 BC.

### A changing landscape

At this stage in Ireland's history around 95% of the country was densely forested. In order to develop these new farming techniques, stone axes were employed to clear small areas of woodland. Mattocks and wooden ploughs were then used to till the land in preparation for the sowing of crops. Flint knives, scrapers, arrowheads and bone needles were used in day-to-day hunting and domestic work. Crops such as wheat and barley (which were used in porridge and bread making) were cultivated, while the domestication of livestock such as cattle, pigs and sheep or goats was also being developed.

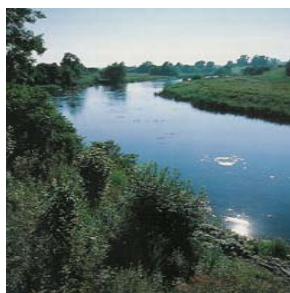
Clusters of houses began to emerge, built from upright timber poles faced in wattle and daub and thatched with straw or reeds, leading to the establishment of permanent settlements and a growth in population. Hunting, fishing and foraging continued to be practised and supplemented the farmed produce.



Reconstruction of a Neolithic settlement at Newgrange

### The importance of the river

The river has been an essential resource for this newly emerging farming society. The Boyne, acting almost like a Neolithic motorway, provided transport and communication. However, it also served as a fresh water source for cleaning and drinking while the seasonal migration of salmon would have been a very welcome additional source of food for these opportunistic people. The Boyne Valley provided an excellent environment for these settlements to acquire the wealth, skills and workforce that enabled these early inhabitants to construct their monuments.



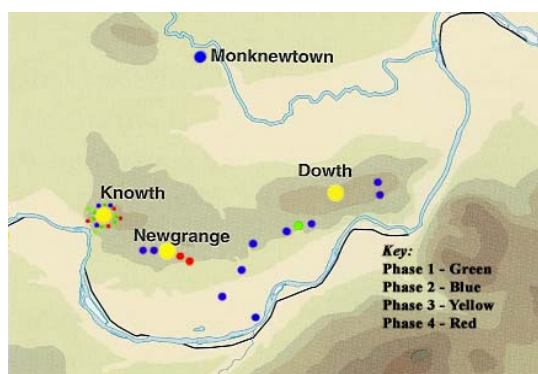
View of the River Boyne from the Visitor Centre

## Passage tombs in Brú na Bóinne - Newgrange

As the Neolithic society flourished developing their domestic needs, their attentions soon turned to their spiritual needs.

### What is a passage tomb?

The majority of these monuments are known today as passage tombs, they are so called because the structure consists of a narrow passage ending in a small chamber where human remains were found. The passage and chamber is then completely covered in a cairn (circular mound of small stones). The cairn is then enclosed at the base by a series of large slabs known as kerbstones. There are 40 known passage tombs in Brú na Bóinne. Knowth, Newgrange and Dowth dominate the 37 smaller satellite tombs. However, these monuments were not all built at the same time, 4 distinct phases are evident spanning from approximately 3400BC – 2800BC.



Map outlining the 4 phases of passage tomb construction in the Boyne Valley

### Newgrange

The passage tomb we know as Newgrange was constructed during the Neolithic period at approximately 3200BC. The cairn covers an area of just less than half a hectare and is around 11 metres high and has an average diameter of 80 metres. The cairn is encircled by 97 *greywacke* kerbstones and a further 450 similar stones make up the passage and chamber structure. The front section (now restored) is faced with a white quartz wall randomly interspersed with sea-rolled granite boulders. The tomb passage faces towards the Southeast and is 19 metres long. The passage is lined with *orthostats*, 21 on the right and 22 on the left. The chamber is cruciform or cross-shaped containing 3 recesses or side chambers. The right hand (Eastern) recess is the largest and most decorated, containing 2 stone basins. The roof of the chamber is a corbelled vault, which rises 6 metres above ground level. This is achieved when large slabs are placed one on top of the other narrowing like a dome as they ascend, until finally a single stone or *capstone* closes off the structure.



Aerial view of Newgrange

## Materials and construction

Great effort and time was needed for the planning, gathering of materials and construction of these monuments. This is clearly evident from the vast distances the builders travelled to acquire the particular stone types. The majority of structural stones in the Boyne Valley tombs are *greywacke*. This stone type was quarried in the Clogherhead area, north of Drogheda and shipped along sea and river, then finally logrolled from a docking point on the Boyne up to the construction area at Newgrange. The façade at Newgrange consists of white quartz, which has its origins in the Wicklow Mountains to the South of the site.

The interspersed granite boulders were collected from the North shore of Dundalk Bay. The long distances involved suggest a similar sea-faring route may have been a more practical choice than travelling across land. The majority of the cairn consists of a river rolled stone acquired from the banks and terraces of the river Boyne around 1km below the monument. It is estimated that some 200,000 tonnes of material are present in the cairn.

Today we cannot be certain of the building practices used by this Neolithic culture. Archaeologists have suggested various theories. It is most likely that logrolling, the erection of wooden scaffolding and earthen ramps were employed.



Artists impression of men logrolling a large boulder



## Megalithic Art

Brú na Bóinne contains around 60% of all Western European passage-tomb art. Many of the structural stones at Newgrange are decorated with Megalithic art (Megalithic, derives from the Greek words *Mega* meaning large, and *Lithos* meaning stone). Flint or quartz chisels were used to incise the stone. Although many theories have been put forward regarding the meaning of these carvings, no one can say for certain exactly what the carvings represent. Anything from simple decoration to a written form of communication has been suggested. Many also believe that the artwork was of spiritual significance to its creators.

Here are some typical examples of Neolithic art in the Boyne valley: -

### 1. The tri-spiral



### 2. The lozenge



### 3. The chevron



### 4. The concentric circle

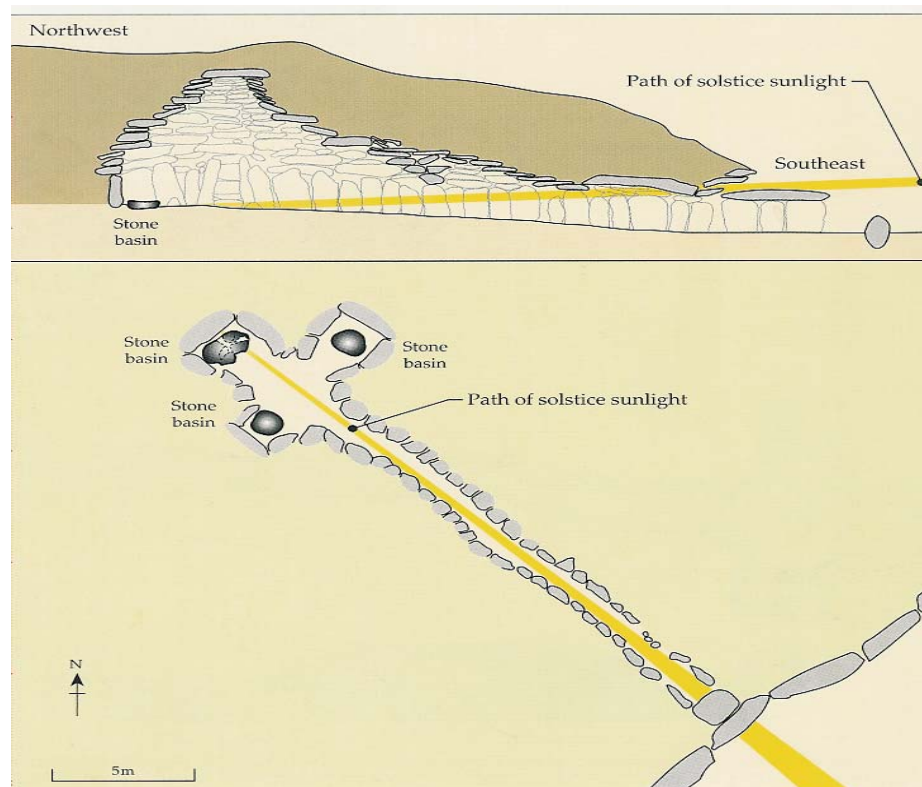


### 5. The serpentiform



## Functions of Newgrange

Generally Newgrange is referred to as a tomb, since cremated human remains were deposited onto the stone basins within the recesses of the chamber. Excavations at Newgrange revealed the remains of 5 individuals. Several artefacts were also found in the chamber, for example polished stone balls, stone and bone pendants and perforated stone beads. However we must not dismiss the possibility of other functions such as ritual, celebration and worship. The Monument may have been a focal point for any number of social gatherings and religious ceremonies; this theory is supported by the fact that Newgrange has a distinct solar alignment. The passage and chamber inside are aligned in a southeasterly direction, facing the rising sun on the Winter solstice. A small window-like opening above the doorway known as the *roof box* allows the mid-winter rising sun to penetrate the central burial chamber, thus dramatically illuminating it. This event can last for up to 17 minutes depending on weather conditions. The phenomenon is not limited to just one day, but can occur on any morning between 18<sup>th</sup> and 23<sup>rd</sup> of December. There is no shortage of speculation as to why this was done. Many believe that the sun was worshipped as a deity and just as it revives the earth and brings new life at springtime, it may have similarly revived the spirits of the ancestors within the tomb. We may never know what the exact function of these monuments were but we can safely say that this Neolithic society were not only skilled builders and astronomers but also had a respect for their dead and possibly an organised belief in an afterlife.



Side and upper cross-section of sun illuminating Newgrange