Arts & Humanities Research Council

How forensic archaeology uncovers the truth about the past

Forensic archaeology has evolved over the last 20 years and is now an established field, which provides a crucial contribution to criminal investigations. Evidence from forensic archaeological investigation has proved decisive in many trials. Forensic archaeology is only made possible by the application of archaeological research methods.

What is forensic archaeology?

Forensic archaeology is the application of techniques and methodologies, originally developed for the purposes of archaeological research, specifically to aid legal investigations. In the UK, forensic archaeologists are archaeology faculty members employed to work with a search team to help locate and excavate buried evidence at a crime scene. They also play an important role in coordinating and integrating with experts in other forensic fields, such as forensic entomologists, forensic botanists and forensic pathologists. The discipline provides an important service to society in uncovering and resolving the events of a crime or disposal site.

Forensic archaeologists will draw on their research expertise in order to identify and answer a unique set of questions for each target. The circumstances of each investigation vary considerably and an important aspect of a forensic archaeologist's work requires asking the right questions to resolve the particular circumstances of the crime. For example: How was the grave dug? Is there foreign material in the grave? What is the identity of this person? How long has the body been buried and how can we tell?

It is important to collect as much evidence as possible as there is only one opportunity and often limited time to excavate. A forensic archaeologist will therefore devise and lead a specific strategy to optimise the available evidence, advising on appropriate methods or sequences of methods to apply in searching and in recovery. In this way archaeological techniques can be used to discern events prior to or around the time of death of the victim, gain information about the circumstances of burial, manner of death and the tools used for interment, and thus assist in identifying the third party responsible for the crime.

Before the development of forensic archaeology in the late 1980s, it was common for police to dig up graves hurriedly in pursuit of evidence. Yet since then forensic archaeology has developed into a discipline in its own right and is widely accepted internationally. Recent high profile cases include investigations at the former Children's Home in Jersey, and at the house fire in Shropshire where archaeologists were deployed to recover evidence. The subject has developed significant research agendas, notably in geophysics, in taphonomics, and in GIS and landscape analysis. It also integrates with behavioural sciences (eg offender profiling).

Forensic archaeology foci

The main types of focus for forensic archaeological investigations are as follows:

- Potential gravesites: forensic archaeologists help to locate gravesites, for example in the case of a clandestine burial
- Surface body disposals: such as bodies hidden in woodland or covered with materials but not properly buried, or dislocated skeletal remains
- Buried items: such as personal effects from an offence or potential offence, such as firearms, drugs, or contraband
- Mass graves: recovered through UN investigations into war crimes (e.g. former Yugoslavia or Iraq)
- Civil cases: such as identifying markers (e.g. buried walls) in boundary disputes

Forensic archaeology methods and related disciplines

Investigations: some of the main methods are as follows:

- Stratigraphy: sequential uncovering of layers of earth and the excavation of test sites identifies material remains in relation to relevant strata and shows the context of each find. This is important in drawing conclusions regarding the formation and dating of a buried environment where a person may lie.
- Surveying is a method used by field archaeologists to collect information about the location and distribution of evidence of past cultures. It can also be used to record multiple points, and can be used to reconstruct graves and their contexts in three dimensions.
- Aerial photography and satellite imagery, including thermal imaging, can be used to show the changes in vegetation, shadow or soil marks that can indicate a suspect site. These can then be followed up by detailed investigation on the ground.
- Geophysical prospection: electrical, magnetic and electro-magnetic methods are used to identify buried walls and other archaeological features. Methodologies are now being developed to improve the effectiveness of this for the identification of both single and mass graves.
- Environmental profiling: this can include palynology which can identify a specific environment where an offence occurred, and entymology which can be used to indicate the interval since death.
- Osteoarchaeology: the study of human bones which can determine features such as the age, sex, stature and ethnicity of remains and indicate states of trauma during life.
- Forensic taphonomy: originally developed in the field of palaeontology to explain how and why extinct animals became fossilised and preserved. This is the study of the process of, and timeframe of, decomposition and examines the decay, dispersal and erosion of remains after death according to immediate environmental conditions.
- Stable isotopes: isotope ratios reflect the chemical make up of food and drink a person has consumed during their lifetime. This technique can be used to determine the likely geological origins of the individual.

The uses of forensic archaeology

Over the last 20 years forensic archaeology has played a significant role in the criminal justice system. Its practitioners have provided evidence that has supported criminal prosecutions and led to the conviction of offenders. Archaeological evidence was first used in a UK Crown Court in 1988 and has since been recognised in War Crime Tribunals and at the International Criminal Count (ICC) at The Hague.

In a number of UK cases, successful prosecutions would not have been obtained without the submission of archaeological evidence, some offenders would not have been convicted and justice would not have been achieved. Moreover, the increasing use of DNA evidence now means that murder convictions can be achieved without the body being recovered. Archaeologists are also now used for 'social' purposes to assist in locating such remains ('cold' cases) even although there is no legal requirement to do so, in order to repatriate victims to their families.

The importance of forensic archaeology also lies in the investigation and recovery of mass grave sites from massacres, genocides and war crimes. Many NGOs and international organisations employ forensic archaeologists in the recovery of missing persons. These organisations include the International Commission on Missing Persons (ICMP), the International Committee of the Red Cross (ICRS) and the Inforce Foundation. This type of work plays an important role in the peace process in post-conflict, transitional societies where reconciliation is aided by resolving the uncertainty regarding the fate of the 'disappeared'. The work of these organisations includes training people from the area in the forensic archaeological methods to undertake their own investigations. This type of investigation is also increasingly developing a role in disaster victim identification (DVI). These methods are applied to recover the bodies of victims of natural disasters such as the tsunami in South East Asia in 2004, and hurricane Katrina that devastated the US state of Louisiana in 2005.

Forensic archaeology timeline

1972 First use of the term "bioarchaeology" by the British archaeologist, Grahame Clarke.

1977 Recognition of the field of Osteoarchaeology by US archaeologist, Jane Bukistra.

Late 1980s Increasing police interest in the use of forensic archaeology.

1988 First evidence from forensic archaeology used in a crown court.

Mid 1990s Regular use of forensic archaeology in police investigations.

1996 International Commission on Missing Persons set up by President Clinton at the G7 Summit in Lyon.

1999 Council for the Registration of Forensic Practitioners set up in the UK to promote public confidence in forensic practice, including forensic archaeology.

2001 The NGO Inforce set up in the UK for the scientific location, identification and recovery of victims of war crimes.