

Methods to discover archaeological sites



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What are the main methods used to discover archaeological sites in the landscape? Critically assess the pros and cons of the methods you identify using relevant examples.

The archaeologist uses a range of techniques to actively discover and locate archaeological sites within the landscape; these methods are non-invasive and non-destructive and fall into four broad categories:

- Desk Top Surveys • Surface Surveys
- Geophysical and Geochemical surveys • Aerial Surveys (Grant et al, 2002. p5).

In addition to these, some sites may be discovered by chance, for example when quarrying, dredging and peat cutting or simply out in walking in the landscape. These broad categories all complement each other and the most relevant methods in each case will depend on the terrain of the area being investigated and the resources and time available for investigation. Also, the questions being asked and the degree of accuracy required will have an effect on how these techniques are used (Greene. 1991. p54).

Desk Top Surveys:

The desk top survey is office based and uses existing documents such as maps, historical documents, previous archaeological records, pictures and literature, all of which can all provide hints and references to archaeological sites. Maps can be used to locate sites, and are among the most basic resources available to the archaeologist. Early 16th century maps are not always to scale but can be very useful, Ordnance Survey started publishing maps in the early 19th century and, by analysing a succession of maps of an area, much can be learnt from the changes in use of the land and buildings. (Grant et al, 2002. p8). Old tithe maps and terriers, usually found amongst <https://assignbuster.com/methods-to-discover-archaeological-sites/>

the deeds and papers relating to the ownership and management of estates and properties, may offer insight about forgotten sites (Barker, 1993).

Although the majority of early records have not survived, there is still a wide range of available which the archaeologist may find of value. Legal records, including wills and court records, can provide boundaries of ownership and clues to the functions of buildings. The Domesday Book and other tax records and tithe awards can identify the economic use and boundaries of land,

Pictorial records such photographs paintings, and engravings, and descriptive accounts written in books, diaries and travelogues can all be of value. Of particular interest is the work of William Stukeley (1687 - 1785), an accurate and observant recorder who travelled extensively throughout Britain, and William Camden (1551 - 1623), whose thorough and detailed descriptions were published in the first general guide to the antiquities in Britain, ' Britannia' in 1585 (Greene pp24 - 27). These records can be freely found in museums, libraries and private collections and may offer a rare record of an archaeological feature. Details of any previous archaeological excavations, finds and previous survey results are all held in local SMR and national NMR offices and can offer insight into possible sites for exploration.

There is often much truth hidden in the legends and stories of antiquity and a study of these may provide a clue to a forgotten or place. Most traditions and myths are founded on real people and places which, over time, can become exaggerated and unbelievable. (Grant et al. 2002. p8). By sifting the embellishment from these legends the archaeologist is often left with a helpful factual narrative. This is a cheap and effective way of gleaning

information, but it can be time consuming. During interviews with local residents in Kythera, Greece a vast amount of anecdotal information was generated on the use of the landscape of the island, its' abandonment and reuse, and the connections between people, villages and churches which all helped to place archaeological work into context (Johnson & Wilson. 2003).

The desk top survey is of particular value where investigations are part of the planning process to ascertain whether there are likely to be archaeological remains which could be lost or threatened as a part of the building and development of the land. (Grant et al 2002. p6). Many historical records are free to access and can be found in libraries, museums, County Records and Archives Offices, on the internet, at Local and National Sites and Monuments Records offices and in private collections.

Surface Surveys

These are visual surveys which seek to find traces of possible sites and are carried out, most usually, on foot. A surface survey can be systematic or unsystematic, although the most commonly used, is a systematic approach (Renfrew & Bahn. 2008. p78). The purpose is to make a survey of archaeological finds within an area to determine if they might point to past human activity (Lynch. 2006). A grid is normally laid out on the ground to aid mapping and a team of walkers go over each area on the grid, recording sites and finds. The overall record of the types and scatter of the artefacts found can give a good idea of the age of a site and its possible previous uses (Adkins et al 2008).

Fieldwalking is an effective and relatively cheap way of surveying land and has a vital place in the discovery of archaeological sites. Once the finds are identified and analysed, the data can also help to provide information about the date of a site and its possible functions. Results are generally more reliable where the region is walked repeatedly as a long term project (Renfrew & Bahn. 2008. p 79). It does have some limitations in that different fieldwalkers may have differential types of collection across the same sight. Fieldwalking works best on arable land, but needs to be carried out at times in the arable cycle when vegetation is low. (Grant 2002). Tesserae found during field walking at Rowler Manor in Croughton, Northamptonshire led to the discovery in 1991 of a Roman Villa along with a mosaic pavement (Dawson, 2008)

Geochemical and Geophysical Surveys

The activity of humans significantly alters the geochemical composition of soil, and the archaeologist can use chemical testing to determine areas of alteration to the soil by human activity.

The most common geophysical test is phosphate analysis. This chemical is present in most living things and the presence of domesticated animals, people and plants in a landscape will increase the concentration of phosphates in that landscape. Areas of high saturation of phosphates can then be explored further to ascertain the significance of the activity (Renfrew & Bahn. 2008. p105). At Plas Gogerddan, Ceredigion in Wales, geochemical analysis was used to determine that burials on this Early Christian Burial site could be identified using phosphate analysis and possible grave sites of further burials were recorded (Murphy 1992).

Geophysical surveying has developed considerably over the last few years and is used with great success in archaeological site prospection. There are two main methods of geophysical surveying, these are electrical resistivity and magnetometry (Bowden 1999. p 120).

Resistivity surveying involves passing an electrical current through probes set into the ground, and is based on the ability of sub-surface materials to conduct that current, Generally, higher resistance features such as buried walls have a limited moisture content and infilled ditches and pits which retain moisture will give lower readings. (Reference)

The technique is especially suited to the discovery of stone structures. Its success is affected by local geology and also the weather conditions. Very dry or very wet conditions, as well as variations in the temperature can affect the quality of the results as they affect rate of flow of the electric current. The resistivity equipment is heavy to use and the survey can take some time to complete, but this is a cost effective method of survey.

Magnetised iron oxides are present in the soil and past human activity alters and redistributes these, creating stronger and weaker responses which can be detected as magnetic anomalies.

It is very portable and good for rapid surveying of land. The results produced can be very detailed and they are very useful for identifying buried ditches, pits, kilns and hearths. (Reference)

The subsoil of the land can influence the results; the most responsive soils being are chalks and limestone. Igneous subsoils are the most difficult to investigate with this technique and the results on clay soils can be erratic.

Resistivity and magnetometry techniques were used in karstic terrains in County Cork, Ireland, which identified the position of a previously unknown cave (Gibson et al, 2004).

A number of newer techniques including Ground Penetrating Radar (GPR) and Geographic Information Systems (GIS) are also available and becoming popular tools for the archaeologist. GPR was developed for use in defence and engineering. It is an expensive process and is of greatest value where buried deposits are close to the surface of the soil. It has the benefit that it can take readings through tarmac surfaces, and therefore is useful in urban environments (Grant et al. 2002). GIS is a powerful computerised mapping system with the ability to analyse quantitative data, which is useful for plotting scatters of finds and test hypothesis. GIS was effectively used at Tel Shiqmona, Israel, to conduct coastal and marine surveys and to evaluate the potential of Maritime trading with the Phoenicians (Breman. 2003)

Aerial Surveys

The use of aerial photography was pioneered by O G S Crawford, an Archaeologist and Observer in the Royal Flying Corps during Word War 1. Crop marks, soil marks and shadow marks all cause patterns which can be observed from the air. Most aerial photographs for archaeology use are taken at an oblique angle which give better views of a site, although they do

distort the perspective. It is important to include a landmark in the photographs in order to provide a fixed point for mapping a site (Riley 1982).

Aerial Photograph of Crook Laithe Settlement, Linton, Yorkshire

This technique is most effective on arable land and upland areas, least effective on heavily ploughed land and ineffective on heavily built up areas and land with plastic covering over crops. Aerial photography is valuable to the archaeologist and an immense number of archaeological discoveries have been made using this method (Riley, 1982). In a survey in Augacatel, Mexico, where heavy jungle prohibited the economical use of ground surveys, 25 photographs were taken revealing up to 63 possible man made structures (Matheny, 1962)

The weather conditions are important and photographs are best taken when the sun is low in the sky (early morning or evening) on a clear day, as the shadow marks will show up best under these conditions (Adkins 2002). The costs of flying are expensive, but since the equipment and film are comparatively cheap and large distances may be covered in one flight, this is an effective and crucial technique to employ in archaeological prospection.

In addition to these techniques, some sites are discovered quite by chance. In 1985, a farmer found a number of bones and a small round lead object on a sandbank in Orkney. After showing his finds to an archaeologist, this lead to the discovery of a Viking boat burial (Towrie 2010). Whilst digging a well, some peasants unearthed fragments of terracotta, which lead to the discovery of arguably, one of the most spectacular discoveries of the 20th century, The Terracotta Army of Qin Shi Huang in China (Tianchou 1996).

The high cost of archaeological excavations mean that it is important for the archaeologist to know where to dig in order to avoid expensive mistakes. The techniques outlined above all assist the archaeologist in the discovery of sites in the landscape, so that future excavations can be carried out in the most cost and time effective manner.

‘ It is remarkable how much can be revealed about a site without excavation’
(Greene 1991. p 42).

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