Field Archaeology: An Introduction

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CHAPTER TWO

What is an archaeological site? How is it formed and transformed?

Archaeological sites consist essentially of activity areas and rubbish. That is where people have done things in the past and left some residue of having done something. This may have been a great 'something' like constructing Machu Picchu or Stonehenge, or a very minor 'something' like flaking a flint axe or eating a shellfish. Some activity areas, like a sacred rock, may involve no surviving residue other than the natural rock, so one can never be certain that it was an activity area. Unless there is clear oral tradition or documentary evidence that it was a sacred rock, then it cannot be considered an archaeological site, simply a site that could have been used. What we now see as archaeological sites are of course not intact activity areas. They have been changed through time. They are being changed during the life of the activity area, changed at the point of discard or abandonment and changed after discard. Archaeological sites are therefore transformed or changed activity areas and rubbish. The American scholar Michael Schiffer, among others, has been very influential in the consideration of the processes of transformation, and what follows is loosely based on much of his work (for example, Schiffer 1976 and Schiffer 1987) but consideration of transformation processes goes right back to Charles Darwin and his study of earthworm activity (Darwin 1881).

Primary and secondary uses

It is important to remember that few artefacts or features have a single use throughout their life. Objects and structures can change in both their use and their meaning over both short and long periods of time. The first range of transformation processes takes place in the living context of the community making and using the artefacts and structures. Take a pot, for example. It could start its life as a container to eat from. It might then become cracked and considered no longer suitable for use as tableware. If in a very rich household, it might be discarded at this stage. Alternatively it could be relegated to the kitchen, perhaps to hold wooden spoons. In due course it might be replaced by a chipped but less damaged pot. The first pot could then be relegated to an outbuilding, perhaps to hold chicken-feed. Finally it is broken and can no longer be used as a container. The sherds could be discarded at this stage, or could be broken up to make hard core for the farmyard, or perhaps pulverized to make grog and added as a filler in some new

Figure 2.1 Medieval sagging-based cooking pot buried behind the farmhouse on Bullock Down, East Sussex. Re-cycled as a chicken feeder?

pottery being made. The pot, therefore, has a primary use and then a range of secondary uses, ending up being recycled in new pots. Often this process cannot be detected in the archaeological record. There would be no way of telling whether the grog in the new pots had been through this cycle of use or was the remains of kiln wasters that had gone straight from firing to second firing as grog. As a field archaeologist, however, one must be aware of possibilities of secondary use and the recycling of materials.

Sometimes secondary use is obvious in the archaeological context. Take, for example, the medieval sagging-based cooking pot in Fig. 2.1. When found it was rimless and carefully buried in the surface of the chalk behind a medieval house. In it were a few carbonized grains of wheat, barley, oats and vetch seeds. When removed from the ground, signs of burning on the bottom of the pot showed that it had been used for what sagging-based pots were made for in the middle ages, that is, as a cooking pot. However, the context of discovery indicates it was no longer being used as a cooking pot but had been put to a secondary use. Its context in a farmyard suggested an agricultural use. Perhaps it had been re-used as a feeding bowl for chickens? Could the carbonized seeds have been the residue of chicken feed, including some accidentally burnt during a drying process?

Building materials can often be seen put to a secondary use. Any inorganic material from a demolished building, like bricks or tiles, could be re-used as hard core for the construction of a new building. Alternatively, particular types of material can be re-used for specific purposes for which they are well suited. Fired roof-tiles, for example, withstand heat so are excellent for

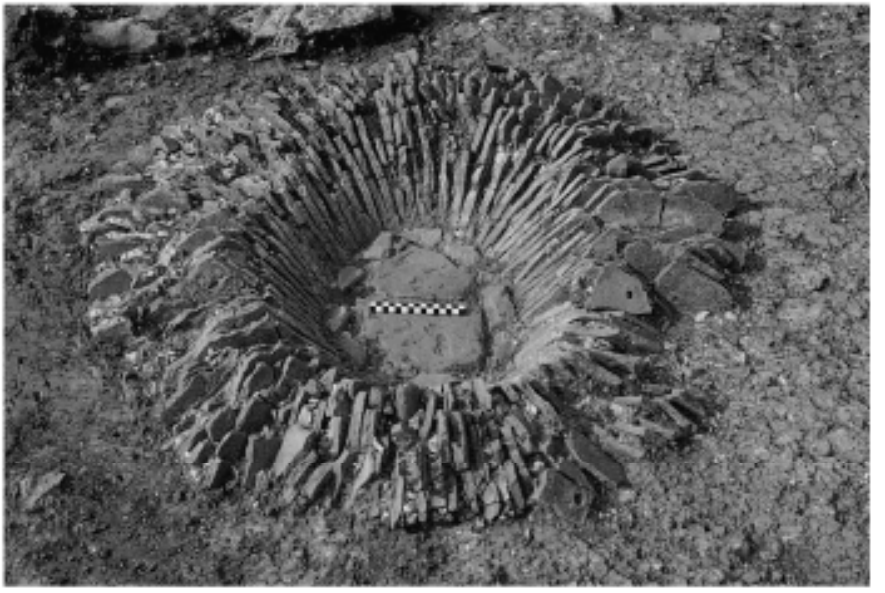

Figure 2.2 Medieval roof-tiles re-cycled in the sixteenth century to make a lead-melting hearth.

flooring or backing for hearths. Figure 2.2 shows medieval roof-tiles from a hall carefully re-used in the sixteenth century to make a hearth for melting lead during the destruction phase in a medieval castle. Of course here again we have the problem that although clearly made as roof-tiles (each has two peg-holes), there is no evidence that they were actually ever used on a roof. They may have been excess tiles, coming straight from the kiln. Clearly, however, they had a primary function and – whether used in that way or not – were put to a secondary use.

Grog, the recycling of old pots as filler in new pots, is easy to identify, but recognizing the recycling of other materials is more difficult. Bronze is a good example. Tools made out of bronze have a relatively short life because bronze itself is fairly soft. A bronze axe in regular use will quickly become blunt, chipped or even broken. Although they can be re-sharpened, when the damage is too great the axe is likely to be mixed with other broken bronze tools, remelted and recast into new axes. The material itself has been recycled in such a way that there is no way of establishing its original function. Was it originally an axe, chisel, pin or mixture of many different broken tools?

Sometimes, of course, objects are not used in such a way that they get damaged. A special pot, for example, could be carefully preserved unused on a shelf or only brought out for rare special occasions. It might be passed from generation to generation, achieving added value with age. It could become a cherished heirloom. Such an object might never reach the archaeological record or might do so hundreds of years after its manufacture. Such objects can change in

meaning through time, but they can also totally confuse archaeological dating as they appear in the archaeological record hundreds of years later than their date of manufacture. If this form of cultural transformation process is not recognized, then it can create severe problems when dating an archaeological deposit. The first problem to be aware of, when considering the creation of an archaeological site, is that it is the result of changing use of materials and features during the life of the site.

Rubbish and accidental loss

Secondly, archaeological sites result from how people discarded things and features during the life of the site, and how they finally abandoned the site. Rubbish, meaning anything considered of no further use in the living context, can be disposed of in a variety of ways. Essentially rubbish can be disposed of either where it is generated or somewhere else. An activity can generate rubbish and then those generating that rubbish can simply walk away from it. This could be considered rubbish in its primary position. Alternatively, the rubbish could be collected up and disposed of somewhere else, that is, in a secondary location. Rubbish in a primary location provides at least two pieces of basic information: what activity took place and where it took place. The second type of rubbish, redeposited or secondary rubbish, only indicates what activity took place, not where it took place. Clearly primary rubbish is of more value to archaeologists than secondary rubbish.

Figure 2.3 shows a good example of primary rubbish. Here a flint-knapper has prepared an axe and walked away from the rubbish, that is, flint flakes generated during the manufacturing process. If this material remains *in situ,* is rapidly buried and not subjected to natural movements and changes in its buried context, it may provide even more information than *what* happened *where.* It may also provide some '*how*' information. Was the flint-knapper crouching, sitting or standing? The pattern of the flakes may provide such information.

Rubbish can be disposed of in a secondary context more or less anywhere. In certain societies there may, of course, be rules or taboos relating to all rubbish or particular classes of rubbish. Clear differentiation in how and where different classes of rubbish are disposed of may hint at rules or taboos. Even if there are no such rules or taboos, rubbish can be disposed of in a variety of different ways, some of which may survive in the archaeological record and some of which may not, or only partially. Often rubbish is used to fill in unwanted holes. Although often referred to as 'rubbish pits' this is generally a secondary use of pits dug for storage, as cess pits, water holes or quarry pits. 'Rubbish pits' are of course of great importance archaeologically as although the actual rubbish may not be of the same date, it is generally, but not always, deposited in one act or over a short period of time, so the activity of rubbish deposition is of one date.

Rubbish can be disposed of in a variety of other ways. For example it can be 'middened', that is put in piles either close to or away from settlements. Unlike a pit, which has a finite volume, middens can be added to over very long periods of time, and because they are above

Figure 2.3 Primary rubbish. *In situ* waste flakes from prehistoric flint tool manufacture.

ground may be subjected to more changes than rubbish in a pit. Other types of rubbish disposal may leave little or no trace. Rubbish may, for example, be spread out over fields to enrich the soil. The organic element of the rubbish will break down and be incorporated into new growing plants. The inorganic material, pottery, flint flakes or metalwork, may survive spread over the fields' surfaces, be worm-sorted down to lower levels, or move down slopes under gravity. Coarser pottery will break up completely in this process. Rubbish dumped in rivers could totally vanish from the archaeological record or just leave odd hints in river alluvia, perhaps miles downstream from the area of deposition. Secondary rubbish disposal is therefore very varied and often difficult to interpret in more than a general way.

Some objects reach the archaeological record not through the deliberate disposal of rubbish, but through accidental loss. At first sight *loss,* being entirely accidental, would appear to be arbitrary without any associated patterns. This, however, is not strictly true. Loss has very strong biases in terms of size, value and where the object is lost. Clearly big things are less likely to be lost than small things. A cart is less likely to be lost than a coin. Even with big things there is a strong bias in favour of some objects not being lost and others being lost. This will create a strong bias in the archaeological record. Take transport, for example. There are many more boats surviving from British prehistory than carts. This, certainly from the later bronze age onwards, was probably not because there were more boats than carts, but just that boats lost in rivers and lakes are more difficult to recover than carts that tip off a track. There are clearly 'loss traps' that favour the loss andsubsequent preservation of some classes of artefacts (for example, boats) and not others (for example, carts).

Figure 2.4 Secondary rubbish in a latrine pit.

Size also plays a part in the loss of smaller artefacts. Large coins, for example, are easier to find than smaller ones. In the case of smaller objects, value also is particularly important. More effort will be put into finding a small lost gold coin than perhaps a larger copper-alloy one. Size and value are therefore factors which are important when considering loss. The value is, of course, the value to the person or community losing something, not the archaeologist's estimate of value. A scrap of bone from an ancestor may be of more value to the community owning it than any metal artefacts. If mislaid during a ritual, no stone may be left unturned in attempts to recover the bone scrap.

Where something is lost may also determine whether any effort is made to recover it. Take the Raeren copy of a Siegberg beaker found in a latrine pit in a medieval castle (Fig. 2.4). The beaker has lost its rim but is otherwise intact and certainly would still hold water. Clearly it is of no use as a drinking mug on the royal table, but as an exotic import it could be recovered and put to a new use in a servant's house. The reason no effort was made to recover it for secondary use was because of where it was lost, in a rich deposit of royal ordure!

Burials

The burial of the dead can be considered as a very specific type of rubbish disposal. There are many ways of disposing of the dead, some of which survive in the archaeological record

while others do not. Sometimes human remains may be recycled as cult objects, like the bones of the medieval saints. More usually they are discarded through inhumation, cremation, excarnation or water burial. Clearly some forms of burial leave better archaeological traces than others. It should also be remembered that disposal of the dead, rather than being a single act like Christian burial, may be a process lasting over many years. In some areas of China, for example, traditional burial involves inhumation burial in wooden coffins for seven years. The bones are then dug up, put in special burial pots and placed on hill slopes overlooking the sea. These ancestors are then visited at least once a year, offerings are made and ceremonies held. Chinese may travel thousands of miles to be with their ancestors for the annual Ching Ming festival held on the 106th day after the winter solstice.

Disposal of human bodies may also involve the discard of artefacts with the body: 'grave goods'. These are extremely valuable to archaeologists as they usually represent a contemporary deposition, even if all the objects are not of the same date. Heirlooms could be put in a grave, or there might be a tradition to bury certain things even if they were no longer in current use. There is always the problem of how far grave goods actually represent real everyday objects and how far they are specially made for burial and therefore tell us something about burial practices but nothing about everyday life. Some objects are clearly made specifically for burial, like the jade suits of Imperial China, but other grave goods like beakers in the early British bronze age may have been either ritual, or everyday, drinking vessels put to a secondary use as grave goods. The actual vessels buried may, however, have been made specifically for burial in the style of those in everyday use.

Abandonment of a site

At some stage in the life of an activity area, a settlement, or even a city, it may be abandoned. At this stage all features, pits, buildings, roads, will be abandoned but also a range of artefacts, which although still perfectly usable, will be left behind. Some sites like Ozette in Washington State, or Port Royal, Jamaica, may be abandoned as the result of natural disaster without any time for the inhabitants to recover even the most valuable artefacts. All is abandoned under a mudslide or the sea. Usually, however, sites are abandoned more slowly and the inhabitants can decide what to take and what to abandon. Crucial decisions will have to be taken. These may depend partly on the relative value of artefacts and partly on how far the people are moving.

Unless specifically designed as mobile, structures are rarely taken to the new settlement unless it is very close. It is often easier to prepare new roof timbers than to salvage old timbers, which may already be in the process of decay. Specific ornamental elements may, however, be taken. Distance is clearly an important element in the decision-making process when movement is being planned. If the settlement is moving only a very short distance, even bricks could be salvaged for re-use. They are unlikely to be taken, however, if the group is moving either very

Figure 2.5 Re-usable materials in the process of being scavenged from a deserted building.

far or along a difficult route. The same applies to mobile artefacts. Those that are heavy and easily replaced are more likely to be abandoned than light and scarcer artefacts.

In the weaving process, for example, loom weights are heavy and easy to replace whether made of clay or stone. They are, therefore, often abandoned. On bronze age and Saxon sites in Britain, for example, lines of loom weights are often found, looking as though they have been simply cut off the vertical loom and abandoned. Finely-decorated bone weaving combs, with their greater labour input and the skill required in their manufacture, are more likely to be taken to the new settlement. Valuable objects may, however, be deliberately abandoned when a site is deserted if their abandonment has some specific cultural or religious meaning. Bronze artefacts are sometimes found in abandoned later bronze age houses in Britain. Some may have been casual losses but others may have been votive offerings left as part of abandonment ritual.

Once a site has been abandoned other communities in the area may see it as a useful local resource of firewood or building materials. It may not have been considered sensible by the original community for all structural timber to be taken long distances simply for firewood. A local community, however, would see the wood as a valuable local resource. Buildings could be systematically scavenged for local use, resulting in partial or complete removal of wood, bricks, stone or indeed any other reusable materials (Fig. 2.5).

Finally, when the settlement has been levelled, it could be changed by further human actions. The site could be levelled further for new building, or cut away to make terraces for new

houses or agriculture. The site could be ploughed, resulting in artefacts being moved around in the plough soil, but also moved down slopes. Any further human disturbance of the ground might result in elements of the site being moved around and redeposited.

Natural transformation processes

Even if a community simply walks away from its settlement or activity area, the site is unlikely to remain as left. Even in the case of natural disasters like Ozette, Port Royal or Pompeii, natural processes will be at work changing the remains. These processes are often known as natural or post-depositional transformation processes, as opposed to the human or cultural transformation processes already described.

Wind can be an agent both of destruction and preservation. Exposed elements of a site, like a masonry tower, may be either continuously or seasonally subjected to wind erosion. Fine particles can be blown off masonry, for example, and this material then acts as sand-blasting on the adjacent bit of masonry. Softer elements, like mortar between the stones, are likely to be abraded first, perhaps loosening stones which then fall off revealing a new surface to wind erosion (Fig. 2.6). All these particles must, however, end up somewhere and if they fall to the ground at another part of the site they may build up a deposit which protects that area from further wind erosion.

Figure 2.6 Mortar eroded out of medieval masonry through wind action.

Water is another natural agent of either destruction or preservation, depending on local conditions. If the site is permanently waterlogged even organics are likely to survive, but usually water acts as an agent of destruction. River or coastal erosion can remove whole sites, washing the remains downriver or even out to sea. The rolling action of artefacts in fast-moving water may simply abrade them, as in the case of lithics, or may totally destroy them as would happen to soft ceramics. Flash floods on otherwise dry land can also damage or remove sites.

Freezing water may also preserve or destroy. If the site is permanently frozen, the organics will survive as if put in a deep-freezer. Rapid or seasonal freezing and thawing is, however, extremely destructive. Water in the cells of organic material or within the voids in stone or ceramics will expand on freezing, blowing apart small parts of the object. Over time the whole object can be broken up in this way. Ceramics, particularly if low-fired and porous, can be broken down into their constituent elements of clay and filler and so effectively vanish back into the soil. These constituent elements will become impossible to trace if they are moved about in the soil.

Animals are one of the main causes of movement within the soil. These may be big burrowing animals like rabbits, small earthworms, or even microscopic soil mites. The effect of burrowing animals can be devastating on an archaeological site. Whole layers can be dug out of burrows and redeposited on the surface. If the burrows then collapse, all layers above can be broken up and drop into lower deposits. Burrowing animals often live in colonies which can result in large-scale destruction of buried archaeology. Usually this destruction is clear in the archaeological record, but if it happened centuries earlier and the site has re-consolidated, it may not be clear and so could result in misinterpretation of the data. Land crabs in loose sandy deposits create particular problems as their burrows often fill in with sand from above as soon as the burrow is dug. Artefacts can drop with the falling sand, moving them from one layer down into the next.

Earthworms, like wind and water, both preserve and destroy sites. Earthworms burrow to over 2 m down. They do this by swallowing the earth in front of them and then, in the absence of any underground cavities they can fill with this soil, will bring it to the surface where it is discarded as worm ‘casts’. Charles Darwin (1881) calculated that in some areas ten tons of soil are dumped on the surface of each acre of land each year. This has the effect of moving objects down the profile. Objects abandoned on the surface will have soil cast above them and they will collapse as voids are made by the worms below. This process will aid the preservation of the object as it will be protected from wind, water and frost. The process may, however, move the object into a lower layer, thus confusing the dating of the site. In practice, however, objects tend to move down the profile in broadly the sequence in which they were laid down. The real problem comes in relatively shallow soils with a compact bedrock (Fig. 2.7). On the shallow, chalk soils of southern England, for example all artefacts can be worm-sorted down to the same layer just above the chalk. This gives the characteristic chalkland soil profile of stone- (and artefact-) free topsoil, the worm cast, and the stony layer (with artefacts) just above the bedrock. All stratigraphy can be lost with prehistoric, historic and modern artefacts all found in the same layer.

Figure 2.7 Effect of worm-sorting on shallow chalk downland soils (with possible posthole below).

Changes through chemical action are usually much slower than the natural processes described so far. Rainwater, even when not affected by industrial pollution to form 'acid rain', is slightly acid. This will affect particularly calcareous materials like lime mortar used in building. The mortar will be dissolved and wash away, perhaps finally resulting in the collapse of the structure. As the rainwater then passes into the soil it may take humic acids into solution from dead plant-tissues. This acid water will then affect buried artefacts and structures, dissolving away elements. These dissolved elements may survive in the soil and so could potentially be identified by archaeologists as chemical traces, but it is more likely that they will be washed out of the soil into rivers and finally the sea.

In addition to the chemical elements in soil moving down the profile and down slopes, soil itself is constantly on the move. As well as being cast onto the surface where worms are present, it is also constantly moving down slopes as the result of gravity, a process known as soil creep. The so-called 'sheep tracks' often visible on slopes are little natural terraces caused by the gradual movement of soil downslope under the influence of gravity. These natural terraces gradually move downhill. Where there is a good vegetation cover, the movement is slow as the vegetation holds soil particles on the slope. Once the vegetation cover is broken, however, the movement can be quite rapid and it is often accentuated by water washing down the slope. The effect of this process can be seen at the bottom of fields where the moving soil may be trapped to form a lynchet, or in the bottom of valleys where depths of colluvium build up. Artefacts can

move down slopes as part of this process and be redeposited in the new soil deposits. As will be seen in Chapter Six, although a site on a hilltop or slope may vanish, its material remains may form an essential dating tool for the re-formed lynchet or valley-bottom deposits.

In addition to worms, insects and mites, most soils – except those desiccated or waterlogged – contain fungi and bacteria. Anything organic in the soil will be affected by these organisms and, unless they have an inorganic element like calcium in bone or silica in some plants (phytoliths), will vanish as the result of fungal and bacterial action.

Growth of any vegetation on an archaeological site can affect the archaeology, changing or even destroying it. Standing masonry can be broken up by roots growing in cracks and forcing them apart. In the short term, roots and branches may hold masonry together, but when the plant dies and rots, then the masonry may collapse into the voids made by the rotting roots. If this happens above ground, the effect may be very visible and dramatic. Root action below ground is equally devastating, but may remain invisible until revealed by the field archaeologist excavating the site. Recent root action is usually straightforward to interpret, but ancient root action is not always so clear, particularly after worm-sorting and soil creep has affected the deposits. The broken-up wall may end up looking deliberately slighted by human action.

Natural earth movement can include both very minor shifting of surface layers or major movement as the result of earthquakes or volcanic action. Some deposits, like clay, have a tendency to slump down slopes, taking whatever is above with them down the slope. When this process detaches pieces of buildings it is often clear archaeologically. However, the slumping of deposits without features, like lithic scatters, is often more difficult to trace if the deposits have reconsolidated over time in their new location. Major earth movements like earthquakes usually create such devastation to archaeological deposits that their effect is easily traceable. The same applies to transformation as the result of volcanic action.

Two examples of abandonment

We will now look at a couple of examples of these processes in action on buildings, one masonry and the other timber. Naturally every example will be different, but the broad processes are often very similar with only detail varying from site to site.

Masonry buildings can be constructed in a variety of ways. We will consider a small medieval farmhouse like Building 5 excavated at Kiln Combe, Bullock Down, Beachy Head, East Sussex, in England in 1976 (Drewett 1982a). This consisted of a small rectangular house 8.5 m × 5 m. It was constructed by cutting a level platform into the hill slope. The walls were then constructed on this platform without the use of foundation trenches. The walls were made of local flint held together with lime mortar made from the local chalk. The structure would have been roofed with timber, holding thatch. The doorway was in the southern corner and inside was a large bread oven and smaller cooking hearth. Furniture would have includedwooden tables,

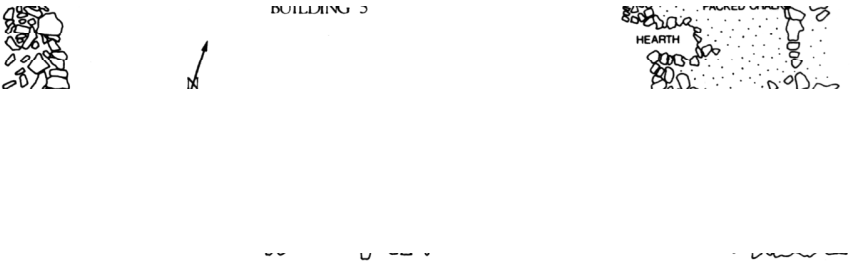

Figure 2.8 Plan of a household unit. Medieval farmhouse, Bullock Down, East Sussex.

benches and beds. Grain was ground between quernstones, wool spun with spindle whorls, and food cooked in large sagging-based cooking pots. A small family, perhaps a couple with several children, lived in the house (Fig. 2.8).

At some stage during the sixteenth century, probably as a result of the increasing value of sheep, the tenants of the house were evicted. One can imagine the scene of a cart being loaded up with the few portable valuables owned by the family, perhaps the table and stools, clothes, knives and cooking pots. The house was then abandoned. Some artefacts like a small chalk spindle whorl were lost in the process. The large mayen lava quernstone was abandoned as it was already beginning to shatter through age, and the evicted tenants would not expect to need it in their new urban life. Some objects were therefore lost in the process of final abandonment of the site, while others were simply left where they were.

Given the somewhat isolated location of the farmstead, human scavenging of the site is unlikely, although roof timbers may have been taken away for use as firewood. It is more likely that the site was simply left to natural processes of destruction. The untended thatch would come adrift from the roof and be blown off or collapse into the structure. The roof timbers would rot and fall in, making the mortar in the walls vulnerable to wind, water and chemical action. This would finally result in collapse of the walls, a process which would protect the lowest course or two of the wall from further erosion. As the house was constructed on a slight platform cut into the hill slope, soil creeping down the slope would be caught on the platform, thus protecting the floor and footings of the house.

While used as part of sheep runs, the remains of the house were well protected under developing downland turf. With a decline in sheep, however, scrubby bushes grew on the site with roots breaking up the buried masonry. Rabbits burrowed among these roots as earthworms cast soil onto the surface. Finally the site was ploughed up during the Second World War to provide more food in southern Britain. The preserving terrace was being slowly ploughed away when archaeologists intervened in 1975 before the site was finally obliterated. Similar sites elsewhere survive only as a spread of rubble with a few potsherds and animal bones in the modern plough soil.

Some buildings are constructed entirely of organic materials which will survive only if waterlogged or desiccated. Amerindian (native American) houses in the Caribbean were constructed entirely of organic materials. The small structure excavated at Hillcrest, Barbados, is a good example of a simple Amerindian shelter (Drewett 1991). It was constructed by setting five wooden posts, which were probably linked with some sort of ring beam, into holes dug in the ground. The structure was probably roofed with plaited leaves (Roth 1970). Most activities took place outside this small shelter, including potting, spinning cotton, cooking and making conch-shell tools. Debris from these activities was spread around the outside of the structure. Virtually everything usable was taken when the site was deserted around AD 1400. The structure itself was left to natural transformation processes. The structure may have been demolished very rapidly by hurricane action. Even if this was not the case, tropical rain and wind would soon have removed the unattended roof material. This would have exposed the posts to rapid bacterial action in the warm, humid climate. The posts would have rotted first at ground level, and then fallen onto the damp earth to rot rapidly. Deposits within and around the hut structure would have been churned about in the soil through the action of digging land-crabs and rapidly-growing tropical roots.

Every archaeological site is, therefore, the end-product of a wide range of transformation processes. These take place during the life of the site, then at the point of abandonment, and continue as ongoing processes both natural and cultural. Very rarely are archaeologists dealing with the intact remains of past activity. All remains are transformed in some way, and without recognizing these transformation processes archaeologists could totally misinterpret the nature of a deposit, or even a whole site.