

Recognising Rock Art

One of the main issues facing recording and researching rock art is how to distinguish between prehistoric cup and ring markings and other features on the rock surface, including marks which are:

- deliberately carved but with non-prehistoric origins
- the result of other human or biological actions
- the result of natural geological processes.

Experience of looking at rock art in the field certainly helps, particularly in recognizing what is **not** rock art, but the positive identification of simple motifs such as cup-marks remains challenging. It is inevitably subjective, and relies on each recorder's particular experience and knowledge of local geology. A familiarity with the range of 'non-rock art' features can help, as can a few basic rules of thumb, listed at the end of this Guidance note. Overall, if in doubt, record it.

Non-prehistoric carvings

Carved letters or inscriptions clearly post-date the prehistoric period, and carvings of images such as bronze axe-heads are certainly post-Neolithic. The animals and human figures used in Pictish carvings do not occur in the 'cup-and-ring' or 'passage grave' repertoires, although elements of the more abstract symbols such as the 'disc' and 'double disc' have been compared with cup-and-ring motifs. Remember that carvings from more than one period may appear on the same stone, and it is important that we recognise their differences and note them when we record the prehistoric carvings.

Prehistoric carvings: multiple forms

Even when they were created, before the effects several thousand years of weathering, prehistoric motifs must have had a range of appearances, depending on the surface chosen, the tools used, and the intent and skill of the artist. 'Soft' sedimentary materials such as sandstone and 'hard' igneous rocks like granite produce very different carvings, with fine-grained stone producing a sharper outline than coarse, composite stone. Stone tools used to 'peck' the rock surface (probably smoothed stones that can be easily held in the hand) create different carving effects to metal implements which may have been used to incise marks or score the surface. The stone tools may themselves have been different shapes and sizes, so that where the peck marks have been preserved, they can vary from clearly visible (several mm width) to very small. Some peck marks may have been deliberately smoothed whereas others were untouched. In some cases, the motifs may not have been completed, and may be quite rough.

There is enormous variation in the way in which similar motifs are presented. For example, the grooves of some rings are very narrow, whereas others are wide and less clearly defined. The spacing between rings can also vary, and some are more symmetrical than others. It is impossible to assess the carvings in aesthetic terms or to judge the 'skill' of individual carvers, and it is dangerous to make assertions about 'finely' and 'crudely' executed motifs. The differences in the motifs may reflect the skill, experience, or simply the stylistic preference of the 'artist(s)' – but may also be a by-product of the tools available or the geology of the rock surface. We must also remember that the 'composition' may have changed over time, with motifs enhanced or added over time, possibly by several different carvers, and caution is needed in interpreting the overall design.



Marks produced by human or animal activity

Marks on rock surfaces are not always carved deliberately and some may be the indirect result of other human or animal activities, either in the past or more recently. These include:

- plough marks (often found on boulders close to the ground or on edges of arable fields)
- quarrying marks (indentations where stone workers have inserted wedges to pry open strata, or drilled holes intended for explosives)
- hollows and grooves for polishing or sharpening stone and metal objects
- bullet percussion marks (often interpreted as cupmarks, and often found in the same areas as rock art (e.g. moors used for grouse shooting or military training))
- circular cup-shaped hollows made by the Pholas, a marine bivalve mollusk that bores into rock
- scratches made by animal hoofs or antlers scraping on horizontal rock surfaces
- gate socket stones (slabs with cup-shaped circular depressions which held gate posts).

Features created by natural physical processes

The features most often mistaken for rock art are those produced through natural geological processes. These are created either during the formation of the stone, or through later glacial action or weathering. Geological formation produces an enormous variety of features depending on the process involved, and the local conditions. Sedimentary structures such as cross-bedding and slumping can give the impression of 'man-made' design, and metamorphic, igneous and mineralised structures such as veins, folding, baking or fracturing of the rock can also produce deceptive rock art-like features.

The movement of glaciers over the surface of rocks and outcrops can result in the smoothing of the surface and the creation of scratches known as striations. The action of water (especially if acidic), wind, and changing temperature and humidity act can result in exfoliation or flaking of rock surface layers. These atmospheric conditions can also dissolve mineral concretions from the rock surface, or release of pebbles from conglomerate, creating solution hollows that look very like cupmarks. Repeated water action can also enhance natural curves and grooves on rock surfaces, creating deep channels and 'cups'.

Natural 'cups' (or 'cupules') are also a common geological feature caused by differential weathering of spherical concretions formed within sedimentary rock, such as shale and sandstone, or in some weathered volcanic rocks. Concretions vary in size, shape, hardness, and colour. They often appear in nodular patches, concentrated along bedding planes. When the bedding plane is exposed, differential weathering may cause the minerals to dissolve, leaving behind hemispherical depressions.

Inspiration, incorporation, and enhancement

The situation becomes even more complex if we consider that our prehistoric ancestors probably did not have a strict division between 'natural' and 'man-made'. Natural features on the rock surface may have been perceived as significant, and may have been the inspiration for creating the carvings. The carved motifs often seem to emulate geological patterns, or incorporate natural fissures and depressions on the rock surface. It can be particularly difficult to identify when natural features have been enhanced, for example where pecking has been used to widen, straighten, or elongate a fissure.



The effect of time

When identifying rock art we also have to take into account the impact of thousands of years of exposure. Although stone is a hard material, our damp climate can alter the appearance of the rock art and the rock surface. Weathering may erode peck marks, and obscure, distort or destroy motifs. The extent to which the rock art is affected depends on the:

- geological composition and ‘hardness’ of the rock
- period of exposure – buried surfaces will survive better and appear ‘fresher’
- elevation and orientation of the rock surface. On horizontal or gently sloping surfaces, cups, grooves and other depressions are more likely to collect or channel water, and this may deepen or distort these features. Elevated rock surfaces, or surfaces orientated towards the prevailing weather, are also likely to erode differentially and more rapidly
- micro-climate of the rock. Woodland or thick vegetation surrounding the rock traps moisture, creating a damper environment, and accelerating erosion.

All these factors may affect the appearance of any given rock surface. They can create features which look artificial, but can but also obscure, distort, or destroy natural elements and carved motifs. The diagram on the next page shows the geological, physical, and human processes that shape the rock art we see today.

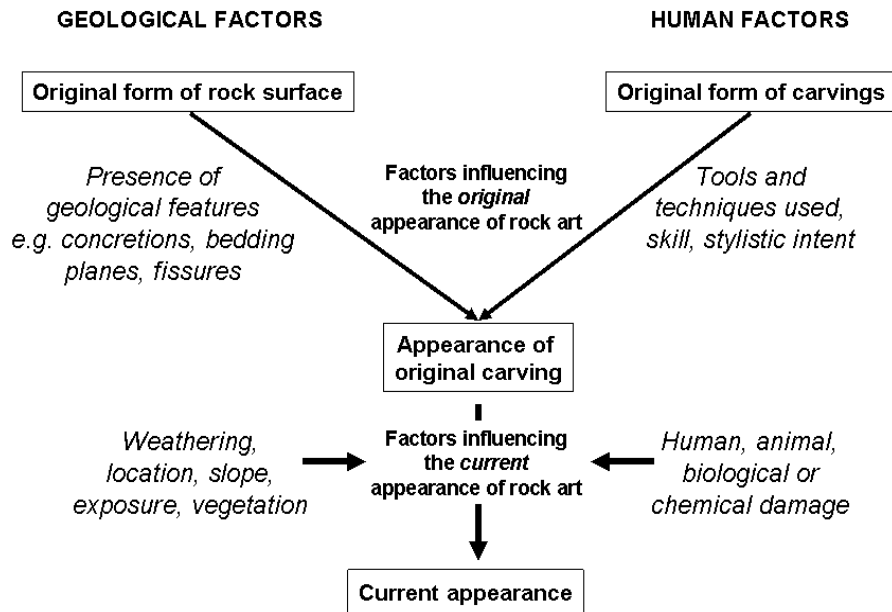
Natural or not?

So how do we determine if the markings we see on rock surfaces are prehistoric carvings or something else? For panels with complex designs of concentric rings and spirals there can be little doubt of a human origin, but the majority of British rock art consists of simple cups or grooves. These need to be examined in detail before they can be firmly identified as ‘rock art’. Cupmarks are the most common of all motifs and are found in a variety of contexts – on outcrops, boulders, on standing stones, capstones, kerbstones, cist covers, and on portable cobbles. Cups vary in size and shape, and can be found on vertical, horizontal or sloping surfaces. They occur in random clusters and in patterns (‘domino’ or ‘rosette’ or lines), within motifs (e.g. ‘cup-and-ring’), and may be linked or enclosed by grooves. Cups can also occur in isolation, and panels with only a single cupmark are usually the most difficult to evaluate.

As noted above, cup-like features can be created by a range of natural and human agents: differential weathering of concretions in the rock; natural erosion of sandstone and limestone; actions of molluscs; bullet ricochets; or even wear from gate-posts (some examples are given on the next page). In many cases it is extremely difficult to distinguish these features from carved cupmarks, but there are a number of rules that can help. For example, it is always a good idea to look at rock surfaces nearby to see if you can spot irregular features that result from weathering or geological processes – if such marks are present on other rocks then it is more likely that the cup-like features are natural.

Check list for identifying cupmarks: We have created a ten point check list for determining the probability that markings on the rock surface are prehistoric carvings. The more of the following that you can tick for your cup-like feature, the higher the probability that it is human-made:

1. **regular, rounded shape when viewed from above**
2. **shallow depth, with hemispherical or conical cross section**
3. **smooth internal surfaces**
4. **upper edges that are smoothed, rather than sharp or occluded (i.e. over hanging)**
5. **limited size (usually 0.5-2 inches in diameter, although they can occasionally be larger)**
6. **on rocks that are not geologically prone to differential weathering or natural cup-like features**
7. **arranged in rows or in other artificial positions and groupings unrelated to any geological peculiarities in the stone**
8. **close to other, clearly identifiable rock art**
9. **on a rock surface with definite cupmarks or other motifs**
10. **surrounded by a ring or multiple rings**



Summary of the geological, physical, and human processes that shape the rock art we see today

Examples of natural 'rock art-like' features

