

PREHISTORIC ART IN KOONALDA CAVE (Australia)

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Introduction

Koonalda Cave lies in the Nullarbor Plain 54 miles from The West Australian border and 14 miles inland from the Bunda Cliffs which fall sheer into the Southern Ocean (see map). Although known to speleologists since the first detailed examinations were carried out in 1904 (Wells and Hunt, 1919), the archaeological significance of the cave was not recognised until 1960 when Dr. Alexander Gallus of Melbourne investigated traces of prehistoric activity observed during a visit to the cave in 1957. His excavation into the floor of the main chamber was part of a project organised by the Cave Exploration Group of South Australia and showed that the cave had been used as a flint mine, the evidence indicating that this activity had been carried on in the far distant past (Pretty, 1960). In a later excavation Dr. Gallus gathered charcoal which was radiocarbon dated to $18,200 \pm 550$ years B.P. (Aust. Inst. Abo. Stud., 1966), by far the earliest date obtained for human occupation in southern Australia.

The Koonalda dating was of particular significance as little more than a decade ago it was commonly believed that the aboriginal was a comparatively recent arrival on the Australian continent, predating European settlement by only a few centuries. The spate of archaeological work



Fig. 44 - Map showing the location of Koonalda Cave on the Nullarbor Plain in western South Australia.

which has followed in more recent years has completely refuted this view. The first indication of great antiquity for aboriginal man in Australia came as early as December 1929 when Hale and Tindale of the South Australian Museum excavated the Devon Downs rock shelter on the banks of the Murray, and found 20 feet of stratified deposits of human occupation (Hale and Tindale, 1930). More recent excavations at Fromm's Landing, 10 miles downstream, confirmed the dating of man in the Murray Valley to about 5,000 years (Mulvaney, 1960; Mulvaney, Lawton and Twidale, 1964). In the South East of South Australia, dates in the order of 8,500 years have been obtained at Cape Martin (Tindale, 1957), and Mt. Burr (Campbell, Edwards and Hossfeld, 1966). Much earlier dates have been established further north in the continent e.g. 16,000 years at Kenniff Cave, Queensland (Mulvaney, 1965), but Gallus's Koonalda dating was the first to place the antiquity of man in southern Australia on a comparable time scale.

Because of the great significance of the Koonalda finds and the need for further extensive examinations, involving the investment of considerable sums of money, the Au-

stralian Institute of Aboriginal Studies, which had partly sponsored Gallus's later work, set up the Koonalda Cave Project Committee in October 1966. Its task was to organise further archaeological investigations of Koonalda Cave, now named the Gallus Site in recognition of his discoveries. The Committee comprised the Principal of the Institute, Mr. F.D. McCarthy, Mr. Robert Edwards representing the South Australian Museum, Dr. A. Gallus, Mr. J.N. Jennings, an Australian National University expert in the geomorphology of the Nullarbor caves, Mr. D.J. Mulvaney, archaeologist of the Australian National University and Mr. R.V.S. Wright, archaeologist of the Sydney University. The expedition planned by the committee was led by Mr. Wright and carried out its field studies during January and February, 1967.

In the course of the examinations simple engravings, first noticed in 1960 on the walls of an extension of the main passage, were subjected to detailed study by the authors. A description of these interesting engravings forms the basis of this paper.

Description

Koonalda Cave, located about two miles north of the station homestead, is one of the largest of a number of deep caves found on the Nullarbor Plain — by far the largest area of limestone in Australia and one of the largest in the world (Dunkley and Wigley, 1967). The only entrance to the cave leads off from the north-west corner of a large sinkhole some 80 feet deep and 270 feet across. From the entrance there is a steep descent of about 200 feet over massive rock-falls to the floor of an enormous main centre chamber, 265 feet below the level of the plain. It is in this area, and some 400 feet into the cave, that the main archaeological excavations have been carried out. Leading off to the north from this main chamber is an extensive complex containing a series of lakes. A close examination of the hard, well consolidated walls of this sec-

tion of the cave revealed no trace of deliberate man-made markings.

The main passage extends to the north-west. Jennings (1961) describes it as narrower and more irregular in profile than the north complex. Near the junction the floor is at the same level as the main chamber. It then rises more than 100 feet abruptly beneath a collapsed dome. The floor of this passageway is composed entirely of loosely packed boulders and rocks. As the rock fell from the ceiling a dome-shaped pile was built up leaving a space of from eight to 30 feet between floor and ceiling. The passage terminates about 300 feet in from the top of the steep ascent from the main chamber. At this point both ceiling and rock-pile slope sharply down to a junction. Here a narrow passage, known as the «squeeze», about 15 feet long and 12 inches high, forms the only connection between the north-west passage and a branch of the other northern complex containing the lakes. It issues on to a narrow ledge overlooking one of the lakes about 50 feet below. Doming also occurs along the side walls, to which the rock-pile drops away irregularly. It is on the walls of this section of the cave that all the engravings are found. They are intermittently spaced along both walls, commencing near the top of the rock-fall and with the greatest concentration at the innermost end near the «squeeze». The entire area is in constant darkness, daylight penetrating only to the outer face of the rock-pile leading up from the main chamber. Koonalda Cave is the only known Australian site where extensive art work is found in total darkness.

The condition of the limestone walls varies considerably along the extent of the engraved passage. In the softest parts the surface is composed of a layer of compacted white powder. This soft surface varies in consistency and depth. In some places it is nearly one inch thick and can be marked by the lightest finger touch; in others it is rather more consolidated and a firmer pressure is needed to mark it. There are some areas where the walls are consolidated. These do not yield readily to finger pressure but can be quite easily scratched with a hard object. It was the nature of the surface which determined the type of markings on the walls of the north-west passage of Koonalda Cave.

Wall Engravings

The wall engravings or markings are of two basic types: incised lines cut or scratched into the harder surfaces and hand smears made by running fingers over the soft, compactible areas.

Incised Markings

Incised lines cut into the harder surfaces with the aid of a sharp piece of flint or possibly scratched with the end of a stick, form about 20% of the Koonalda art. The marks range in width from fine scratches to well-defined V-shaped grooves up to 1/4 inch wide. The greatest concentration of these abraded grooves was found on the walls close to the entrance to the «squeeze», where the surface is firm-

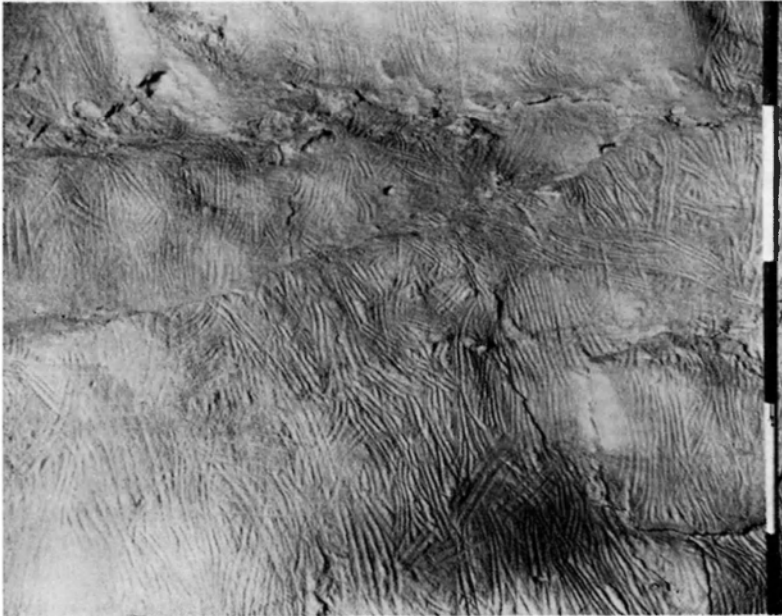


Fig. 45 - One of the large areas of finger markings on the walls at the end of the north-west passage. Scale in feet.



Fig. 46 - Prehistoric flint miners are believed to have cut these marks into the harder surfaces of the art passage. Scale in inches and centimetres.

ly consolidated. There are even a few marks on the walls beyond the «squeeze» adjacent to the ledge overlooking the lake.

For the most part the grooves occur in random groups. Although indiscriminate criss-crossing is common, there is only one group which could be said to form a recognisable pattern. In this, parallel lines intersect to form a simple grid about three feet by four feet. It is high up on the wall about three feet out of present reach and must have been made with a stick. Other grooves, without the precise V-shaped cross-section, are found scattered along the walls among the other engravings.

Although few in number they include the only two examples of concentric circles in Koonalda, measuring about eight inches in greatest diameter.

Finger Markings

The majority of the engravings appear to have been made simply by running the tips of the fingers over the softer parts of the walls. This action has compressed the surface material leaving clearly defined U-shaped depressions. While these sometimes occur singly, they are normally found in groups of four parallel lines. In some extensive flat areas at the end of the art passage they cover several hundred square feet, the wall surfaces being completely taken up with randomly criss-crossing sets of these parallel finger marks. In other places they are more scattered.

On most sections of the walls vertical strokes predominate but there are several areas where there are numbers of horizontal lines set closely together. Sets of meandering



Fig. 47 - These wall markings have been made by drawing fingers across the soft surface of the walls. One vertical mark above the scale is recent. Scale in inches and centimetres.

parallel lines, ranging in length from a few inches to about two feet, are the form most frequently found. Placed at various angles, many of them cross other markings apparently indiscriminately. Where there is a pattern, it is unusually simple. There is one group of 10 vertical parallel finger markings, 18 inches to 24 inches long. As it would require at least three controlled hand movements to make this series, definite intention to complete a pattern may be inferred from it. Another instance found on a section of the wall isolated by massive rock-falls is a row of 37 parallel slanting finger markings, each about six inches long. Immediately below them is a set of 74 fine incised lines of the same length, slanting in the opposite direction to form a herring-bone type of pattern four feet long. This regular pattern, involving two techniques and repeated controlled movements, also indicates deliberate intention.

A number of large boulders near the base of the wall on the left side of the end section of the art passage were found to bear many markings. On closer examination it was noticed that these had fallen from the adjacent wall exposing a decayed surface beneath. It was established that all the markings had been made on the walls of the cave while loose boulders with suitable surfaces were ignored. In places there are sizeable engraved sections breaking away from the main wall and further collapses are likely to occur in the future.

The different types of engravings are not always found in homogeneous groups. While incised lines tend to occur mainly on the harder rock surface, they have also been executed amongst, and even on top of, areas of finger markings. Most of the soft surfaces have been marked to some degree, but there are suitable areas unmarked.

Antiquity

The situation in the complete darkness of the least accessible part of the cave is highly unusual and particular attention was paid to any evidence bearing on the likely age of the engravings.

There is nothing to suggest that aboriginals have ventured into Koonalda in recent times. Accounts of aboriginal tribes in the Nullarbor coastal region in historic times (Tietkens, 1887; Howitt, 1904; Bates, 1938) tell how they feared the plain and its associated caves. A hideous, gigantic snake, called *ganba*, was said to live on the plain and devour all living things.

The occurrence of incised lines in Koonalda is one indication that the activities of prehistoric man in the cave may be of some antiquity. Often termed abraded grooves, they belong to a technique recorded over a wide area of the continent and assigned by McCarthy (1964) to the earliest phase of Australian rock art. Edwards (1965-1968) has summarised occurrences at sites in South Australia and the Northern Territory and given dates of between 5,000 and 7,000 years for examples found in an archaeological excavation at Ingaladdi, 100 miles south-west of Katherine in the Northern Territory.

As they require special surface conditions which have so far been found only in the depths of Koonalda Cave, there is nothing in Australia to compare with the finger markings. Recent acts of vandalism provide some standard of comparison with the vast bulk of engravings. There are a few fresh finger markings on the cave walls which have definitely been made by very recent visitors. They include names, initials and dates, and some random markings similar to the other engravings. Even these casual markings are easily distinguishable. Their fresh condition shows the changes which the other engravings have undergone. In the markings of recent origin the concavities where the fingers have pressed into the soft surface are smooth and compacted. The small ridges between the lines drawn by separate fingers are sharp, and have a delicate fringe of powder along their extreme edge. The older markings, on the other hand, have lost the smooth impressed surface. Close examination shows many fine cracks running across them, giving a rougher, eroded appearance. The delicate edge between the indented lines has broken away, leaving a rounded ridge. This makes the older marks seem shallower than the fresh ones. All the

finger markings in Koonalda are either entirely fresh or in the same uniform state of erosion. There are none in an intermediate condition. While the timing of the process of weathering is not known, these facts do lend support to the great antiquity of the engravings, for in this deep, remote part of the cave the atmospheric conditions have remained constant since the cave took on its present form, rendering weathering very slow.

The fresh condition of several scrape marks made by a boulder wedged under many feet of rock-fall provides further evidence of the slow rate of weathering in the static conditions of the cave. There are also instances where fallen boulders have jammed against the side walls occasionally intersecting engravings. While dating the art to a time before the fall of rock, this also led to a search



Fig. 48 - The finger marks on the right are recent and provide an interesting comparison with the adjacent similar but older markings.

wherever possible for continuation of engravings below the floor level provided by the rock-fall.

In one place a small opening between rocks led down into a large cavity some 23 feet high and 27 feet long. This had been formed by several large rocks resting against the wall and preventing a complete fill. The floor of this inner cave was 50 feet below the top of the rock-fall. The herring-bone pattern of finger markings and incised lines was with many other engravings on the main wall in this sub-floor-level situation.

It was established that all the markings were made at about the same general period. Subsequent, occasional rock-falls from the ceiling have covered some of the engraved areas of the walls while others remain exposed. As most of the rock-falls came from the ceiling in the main part of the art passage the end section is the least affected and remains largely as it was when prehistoric man made the marks.

Although there are no datings for rock-falls in Koonalda they are known to date to pre-settlement times and do lend support to the general hypothesis that the art is of some considerable antiquity.

The fact that the art passage is in total darkness led to a search among the boulders for evidence of burnt material which could have resulted from torches. Numerous pieces of charcoal and stick fragments were found to have filtered down between the rocks. A sample of these, collected by Mr. Wright a few inches below the rubble and rock dust, was subjected to radiocarbon dating and gave a result of around 19,000 B.P. It would seem from this that the engraving and flint mining activities in Koonalda may have been contemporaneous.

Experiments carried out by lighting a fire of sticks demonstrated that in this area of total darkness it required only a small blaze to give quite considerable illumination. It is intriguing to postulate how prehistoric man managed to go through the confines of the «squeeze» and onto the narrow ledge carrying sufficient lighting to avoid the fall of 50 feet to the lake below.

Discussion

The significance of the engravings is unknown. It has been suggested that they are the result of attempts to locate nodules of flint or perhaps pointers to exposed seams to be found in places below the art. Some consider the incised marks may be grooves left by sharpening bone points (Pretty, 1960) while still others feel they were accidentally made by people groping their way along the walls in darkness.

If the flint mining activities in the main chamber are contemporary with the art, as suggested by the separate dates obtained, it does not seem likely that the connection between them was a utilitarian one. There are ample supplies of flint readily available in the first main chamber of the cave, and the north passage, inaccessible from the art passage, alone has water supplies. These factors, combined with the difficulty of access through the darkness to the most remote part of the cave, suggest a considerable motivation.

The only parallel situation is found in the caves of Europe, such as Altamira and Rouffignac, where similar finger markings are believed to date to the beginning of the Upper Palaeolithic which occurred some 30,000 years ago. Breuil and Berger-Kirchner (1961) consider them to be the earliest signs of man's artistic endeavours. Called 'macaroni', they were at first merely a jumble of meandering lines out of which developed more purposeful figures. It could be that the simple wall markings made by the flint miners of Koonalda are the first stage of artistic evolution in Australia, isolated deep inside the darkness of the cave for many thousands of years.

A detailed monograph of the findings of the 1967 expedition to Koonalda is being prepared by the Australian Institute of Aboriginal Studies. This will incorporate specialist reports on all aspects of the archaeological investigations undertaken.

The planned extension of work on the Nullarbor Plain by the Institute may provide further evidence for unravel-



Fig. 49 - Engravings of parallel lines which intersect to form a simple grid, about 3 by 4 feet.

ling the prehistory of this interesting region. The importance of the Gallus Site was formally recognised by the South Australian Government on May 30th, 1968 when Koonalda was declared the first prohibited area under the Aboriginal and Historic Relics Preservation Act (1965). As a result of this declaration, no one may legally enter the cave without the express approval of the landowner or the Minister of Education in South Australia. The preservation of Koonalda's extensive engravings is thus ensured for the generations to come.

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