

THE ARCHAEOLOGY OF STONEHENGE - A PRELIMINARY SURVEY

GRAHAM KNUCKEY AND KEN KIPPEN

Abstract No archaeological data has been published from the Stonehenge region of central western Queensland. Indeed the only archaeological activity carried out in the area to this point in time, has been sporadic forays by one or two consultants, leading to a restricted amount of information being available for public comment. The following paper begins the process of addressing this situation by discussing archaeological sites found during the field component of a consultancy in the Stonehenge-Longreach district. General interpretations are offered regarding prehistoric human behaviour and the paper also highlights some problems associated with the interpretation of archaeological material in the field.

Introduction

The Mitchell Grass Downs has the second lowest number of site types (102) recorded for any of the Queensland biogeographic zones although it is the largest zone.

Border and Rowland (1990:47)

In response to the problem outlined above this paper provides information on and interpretation of archaeological sites in central western Queensland, obtained in January 1992 from an investigation carried out west of Stonehenge, as part of a consultancy (Figure 1). The Stonehenge district is on the southern margin of the Mitchell Grass Downs (MGD). The paper also discusses the influences of non-Aboriginal disturbance to sites of archaeological and cultural importance.

Full details of the surveys and significance assessments for the consultancy are described elsewhere (Davidson *et al.* 1992). In this paper we concentrate upon the existence of archaeological material and its interpretation as an indicator of pre-European human behaviour in the Stonehenge region. We also highlight common problems associated with the interpretation process and the value of employing local Aboriginal people as members of the field team.

Previous Study in the Region

Occasional records of sites around Stonehenge have been completed by local landowners and sent to the Queensland Heritage Branch but these are uncommon, only one of the sites relocated during our field survey was originally recorded by a local grazier. No formal archaeological research has been carried out, nor has publication resulted from study in the area covered by this report. Previous involvement in the region consists of sporadic forays by consultants carrying out work detailing the presence of sites and assessing whether those sites might be affected by the impact of impending developments (Qld. Heritage Branch files; DE: A15, Neal 1985 and DE: A16, David 1989).

The little information that is available is descriptive and very generalised. Such reports present a specific problem. Consultancy reports may contain analyses of the data collected and put forward interpretations of prehistoric human activity resulting from that data.

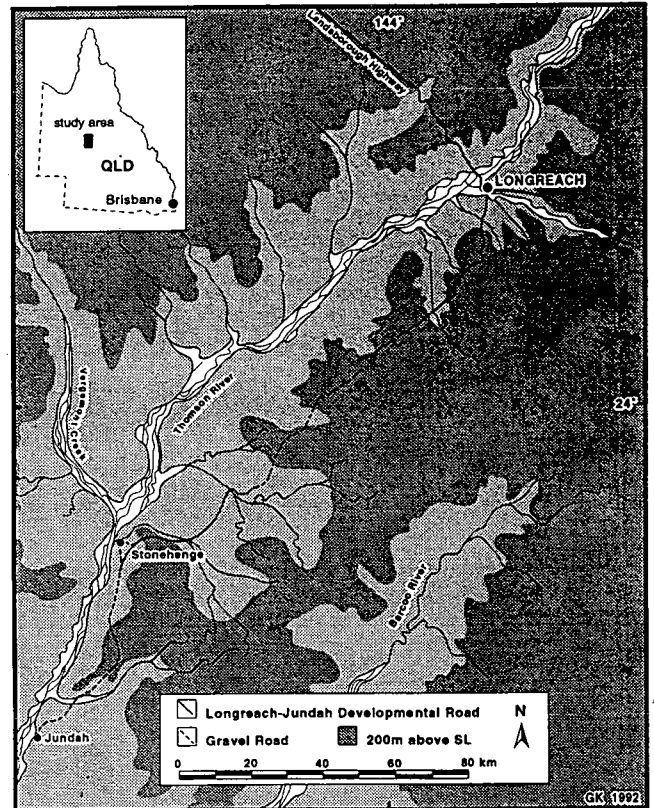


Figure 1: The Longreach-Stonehenge-Jundah district of west Queensland.

However this information is not available for public scrutiny. Copies only go to the relevant organisations directly involved thus restricting circulation. The only way sites found by consultants enter the public domain is through legislation which requires that all sites found be recorded and placed in the files of the various state government bodies responsible for the identification and maintenance of Australia's cultural (prehistoric and historic) heritage.

Therefore the only public information available is that contained on record forms; no detailed analysis can be documented on these forms nor is it their purpose to provide such information. The appropriate body in this case is the Queensland Heritage Branch, to which records of all sites found must be submitted as a prerequisite of being allowed to survey/disturb cultural resources in the first place.

The study area

The survey was carried out on Bancoora Station located approximately twenty kilometres west of Stonehenge (Figure 2). The survey zone was accessed from the Stonehenge - Warbreccan Road, along an access track that follows the eastern property boundary. The survey area is bounded five to ten kilometres to the north by a seasonal watercourse (Vergemont Creek) and the same distance to the south by another (Warbreccan Creek). Both are tributaries of the Thomson River which lies approximately fifteen kilometres to the east of the zone. Our interest here centres upon the sites that surround the contract survey zone.

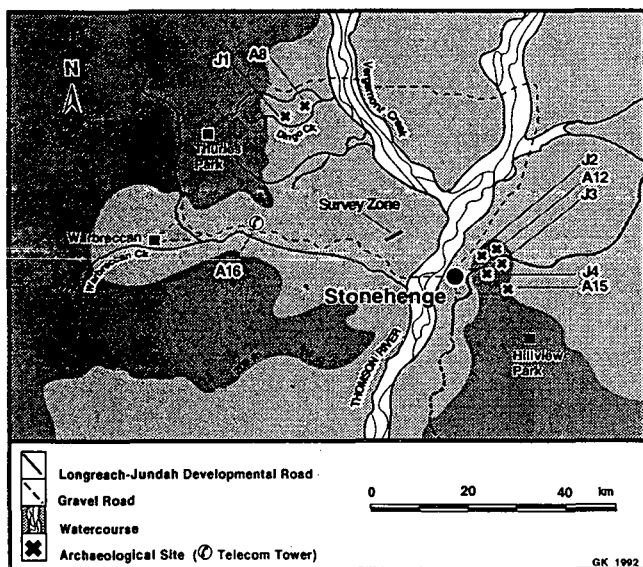


Figure 2: Archaeological Sites around Stonehenge

Geology, Vegetation and Soil

Stonehenge is on the margin of two biogeographic zones, the Mitchell Grass Downs and Mulga Lands (Border and Rowlands 1990). The geology of the region is dominated by the Glendower Formation comprising mainly quartz sandstone which in places has silicified to form silcrete (Senior 1969). Vegetation consists of Gidgee (*Acacia cambagei*), Wilga (*Geijera parviflora*) and Brigalow (*Acacia harpophylla*) associations. *Eucalyptus* and *Hakea* species occur sporadically. Red and yellow soils are present, along with red loams.

Method

Preparation for the fieldwork

Before commencing fieldwork a list of sites already recorded in the study area was obtained from the Queensland Heritage Branch in Brisbane. Five site locations are known in the Stonehenge area, within which a total of seven sites, situated northwest and southeast of Stonehenge, have been recorded (Figure 2).

To gauge some basic idea of the regional archaeology it was planned that the first week of survey would be spent relocating the Heritage Branch sites, acquainting

ourselves with the stone materials available and assessing for ourselves the value of these sites. Data were collected at each site from which later analysis provided an interpretation of prehistoric behaviour.

The field team

The archaeologists (G.K. and K.K.) were joined in the field by two Aboriginal consultants. Initially Nola James from the Dreamtime Cultural Centre in Rockhampton joined us to assist in finding an Aborigine with cultural knowledge of and personal ties with the study area. N.J. has an extensive knowledge of Aboriginal cultural matters throughout central and central-western Queensland. It was known that she could either help us locate the appropriate person, or find someone who could.

Consequently Arthur Walton was found in Quilpie and joined the team at that point. As it turned out A.W. is probably the last known Aborigine to have cultural ties with the Longreach-Stonehenge-Jundah region and as such is considered by Aborigines in the region to be its custodian. Both Aborigines were with the archaeologists in the field for one week. For a full discussion of Aboriginal involvement in the project see Davidson, Knuckey and Kippen (1992). The Aboriginal members of the field team, provided some indication of the cultural significance of each relocated site and of other sites found in the course of the consultancy.

Expectations

On the basis of data available to them, Border and Rowland (1990:60) state that by far the most frequent site types in the gidgee/mulgalands land systems (which includes the Stonehenge district) are stone arrangements (26% of the total sites recorded for the MGD), followed by artefact scatters (4.6%).

Based upon the above information and the site records available, our prior expectations were that sites discovered during the course of our survey would comprise artefact scatters and stone arrangements. Border and Rowland do not mention quarries as a major site type. However, our perusal of the site records available suggested that we might reasonably expect to find quarries during our surveys. It is important to emphasise that these predictions did not bias survey methods used or preclude the possibility of finding other site types while the surveys were in progress. After perusing the geological literature for each region, taking note of resource availability and given the data provided by Border and Rowland (1990), we expected the dominant artefact raw material to be silcrete (at least 70% of all artefacts) followed by chert, silicified wood, silicified mudstone and silicified siltstone. The latter two being found in similar proportions.

It was also anticipated, based upon information taken from Queensland Heritage Branch site records, that quartzite artefacts (identified by B. David in 1989, at Heritage Branch site number A16 - see Figure 2) might be found in the vicinity of the Stonehenge survey zone and on any of the known sites. The chance to identify

possible prehistoric activity between the two quarry sites, A15 (recorded for the Queensland Heritage Branch in 1985) and A16, was of interest because the presence of two stone sources within fifty kilometres could give positive information about preferential use of lithic material. There are, however, no data to suggest the proportions of raw material from site A16 that might have contributed to the overall picture. This site and the other Heritage Branch sites are described in the following section.

Field technique

Twenty artefacts were measured randomly along a ten metre transect carried out over each site and Tables 1-6 (see Results) list data obtained from all silcrete flakes measured. Silcrete was the only stone type used in this analysis because it was the only material occurring in all but one of the sites (A16) where measurements were taken. Raw data on flake lengths is provided in the appendix attached.

Criteria used to identify sites were the same as those used by Davidson, Cliff and Sullivan (1991) during the assessment of the impact of the Burke River Pipeline upon existing archaeological sites. Their requirements propose that the candidate site must be an area that: i) covers more than two square metres and, ii) contains more than five artefacts with, iii) an average artefact density more than one per square metre, and be, iv) more than four times the average density of the background scatter. *If artefacts are made from a single raw material, the first criterion may be relaxed. This will not normally be applicable unless the other criteria are easily satisfied* (Davidson, Cliff and Sullivan 1991; 29). 'Background scatter' was identified as artefacts that do not match the above criteria.

Results

Field reconnaissance

Four of five known site locations surrounding Stonehenge were relocated and Heritage Branch records provided information on seven Aboriginal sites at these locations. Six of these were relocated and assessed to gain some idea of regional archaeology and to get some idea of the cultural and archaeological importance of those sites. They are referred to in this report using their Heritage Branch numbers, prefixed by the letter 'A'. Four sites were found while in the process of relocating and surveying the known sites in the area. These sites are prefixed by the letter 'J'.

The relocated Heritage Branch sites and four sites found by this field team are described below.

Site description and data collection

Stonehenge Quarry (A15) - This silcrete quarry was recorded by R. Neal in 1985. It was found during surveys that were in response to the proposed construction of a Telecom tower in the same area. The field team had no difficulty relocating the site using Neal's written description. This quarry includes stone

arrangements which have suffered disturbance, natural or otherwise, even since Neal's initial visit, and a vast scatter of artefactual material alongside the quarry itself. The area had been left undisturbed by Telecom or any other development and A.W. indicated the site was still 'alive', possessing cultural meaning and providing a link with the past. Tables 1 and 2 provide data recorded at the quarry itself (A15q) and from the adjacent artefact scatter (A15as).

Table 1: Measured attributes on silcrete flakes from A15(q)

Number of artefacts	16
Length -Mean	72.6
-Median	67.5
-Range	81.3
-Stan. Dev.	20
Retouched flakes (%)	3 (19)
Overhang removal (%)	0 (0)

Table 2: Measured attributes on silcrete flakes from A15(as)

Number of artefacts	14
Length -Mean	55
-Median	51.45
-Range	63.3
-Stan. Dev.	14.6
Retouched flakes (%)	1 (7)
Overhang removal (%)	1 (7)

Warbreccan I (A16) - In complete contrast to the Stonehenge Quarry (A15) is this grey quartzite quarry recorded by B. David in 1989. This survey was also in response to a proposed telecommunications development, the construction of a microwave repeater station. The development went ahead resulting in the complete destruction of the site, bulldozers clearing an area of between 200 and 300 square metres around the central compound, directly over where the quarry was presumably located. A remnant scatter of artefacts was found due north of the cleared area at the end of a trail blazed to allow the erection of the tower. Measurements of artefacts (flakes and cores) were taken in the hope they might add to the regional picture (these data were not

used in this analysis because no silcrete artefacts were measured). The reaction of both Aboriginal team members was that the site contained no culture, it was a 'dead' site because there was no way of recognising the original context of anything that was still present.

Nil Desperandum Stone Arrangements (A12, A13 and A14) - Rowlands and Rowlands (1982) reported three stone arrangements on the property Nil Desperandum to which they gave the labels Nil Desperandum 1, 2 and 3. We refer to them using their Queensland Heritage Branch file numbers and we relocated only A12 (see Figure 2). This site is approximately eight kilometres north of Stonehenge, on what is known locally as the "jump up". This arrangement was not recognised by A.W. as being the result of Aboriginal activity (past or present). A series of stone rings was found 200 metres west of Nil Desperandum 1 (A12) on the edge of a breakaway in the escarpment and one of the rings appears in a photograph (Plate 88) from the Rowlands and Rowlands (1982:202-203) report. However this ring and the others found are not present on the locality map drawn by the Rowlands. We named the site Nil Desperandum 1a (J2 in Figure 2) and a description of it is given below.

Dingo Creek Campsites (A8) - These sites were originally reported by Mr. A. Tindall and the area of the camps was relocated on Thurles Park Station, the camps themselves however were not found. A large volume of water had been through the area twelve months previously (January/February 1991) and on the information of Mr J. Tindall, son of A. Tindall, the camps were only ever recognisable as small piles of mussel shell and occasional hearths. The 'bora ground' mentioned by A. Tindall on the Heritage Branch site record was not found. Even though the camps were not, for the Aborigines, apparent, A.W. made it clear that the waterhole at this location provides a cultural link with their past.

Fourex Hill (J4) - This place is on the western margin of the "jump up" closest to Stonehenge. We only became aware of the site after N.J. and A.W. had left the area, therefore no comment on cultural importance is possible. Various local people suggest it was a quarry but the place is badly damaged by graders (see discussion of J3 below); artefacts were present but not in high densities. Artefacts were measured (Table 3 below) but because of the extensive damage the area was not recorded as a site, even though it has been included in this report. It was difficult to determine firstly if a site (as previously defined) existed and secondly what type of site it may have been.

Nil Desperandum 1a (J2) - Three hundred metres west of Nil Desperandum 1 (A12) the field team found a series of stone arrangements, the majority of which were rings and possible associated pathways. Throughout this area, across Nil Desperandum 1 and continuing east exists an extensive background scatter of artefacts; Table 4 below provides a list of data collected at this site. Nil Desperandum 1a was recognised as being of Aboriginal origin by A.W., who knew the site from previous visits.

He did not, however, recognise Nil Desperandum 1 as being authentic, saying the arrangement did not exist when he was last there. Nil Desperandum 1 (A12) is probably the result of grader activity during the construction of the Longreach-Jundah Developmental road.

Table 3: Measured attributes on silcrete flakes from J4

Number of artefacts	18
Length -Mean	33.9
-Median	32.5
-Range	42.1
-Stan. Dev.	9.3
Retouched flakes (%)	4 (22)
Overhang removal (%)	1 (5.5)

Table 4: Measured attributes on silcrete flakes from J2

Number of artefacts	20
Length -Mean	48.4
-Median	48.7
-Range	56.4
-Stan. Dev.	13.1
Retouched flakes (%)	4 (20)
Overhang removal (%)	3 (15)

The Moodya Ground (J3) - The name was suggested by A.W. as the relevant description of an area, used by Aborigines in the past, of obvious and concentrated activity recognisable even today. The site was found while looking for the Nil Desperandum sites and is located on the south eastern margin of the "jump up". It is a substantial scatter of mudstone and silcrete material including many stone arrangements, and an area where silcrete appears to have been quarried. The artefact scatter has been badly damaged by graders which have used the area as a 'borrow pit' from which fill was taken for the road construction to the north. The presence of intense European activity compromises to an extent the archaeological integrity of the site in that the largest proportion of the scatter is disturbed and it cannot be ascertained to what extent the stone arrangements have been either rearranged, rebuilt or created by non-Aboriginal people. Table 5 shows the data collected at this location.

Table 5: Measured attributes on silcrete flakes from J3

Number of artefacts	16
Length -Mean	32.8
-Median	34
-Range	30.7
-Stan. Dev.	8.6
Retouched flakes (%)	4 (25)
Overhang removal (%)	3 (19)

A.W. however, knew the area well and made it clear that the site is still 'alive' despite the grader damage. Culturally J3 was important in the past as a meeting place and was also used for teaching traditional laws to young people. It also has sacred significance as described in part by Arthur (see Davidson *et al.* 1992).

Dingo Creek 1 (J1) - This site is located approximately two kilometres east of a dam that marks the confluence of the northern and southern branches of Dingo Creek (Figure 2). It is an open artefact scatter dominated by silcrete flakes and Table 6 below lists data collected at this site; mudstone artefacts occurred intermittently. The site is situated on the western side of a small, semi-permanent waterhole and is 60 metres (east/west) by 15 metres (north/south). Dingo Creek 1 has been recorded for inclusion in Heritage Branch files in Brisbane. A.W. considered the combination of the artefact scatter and the semi-permanent water source of importance, as was the case with the other 'watered' sites.

Table 6: Measured attributes on silcrete flakes from J1

Number of artefacts	17
Length -Mean	35.7
-Median	37.2
-Range	23.2
-Stan. Dev.	5.9
Retouched flakes (%)	6 (35)
Overhang removal (%)	7 (41)

As expected silcrete proved to be the most common lithic raw material present, comprising over 70% of the total artefacts found during the survey. Table 7 lists the lithic raw materials found during the contractual survey. Only the silcrete artefacts measured were used to formulate Tables 1-6 and they show that, on site, the frequency of silcrete overall was also high; from 70% to 100%.

Table 7: Artefacts found in the Survey Zone, (see Figure 2); identified as background scatter. No sites were found in this zone.

MATERIAL TYPE	NUMBER OF ARTEFACTS	PERCENTAGE OF TOTAL
Silcrete	61	73.5
Mudstone	14	16.8
Chert	3	3.65
Sandstone	3	3.65
Siltstone	1	1.2
Silicified	0	0
Wood		
TOTAL	83	100

Discussion

Artefact scatters

This section is necessarily a simplified view of the artefactual resources present in the Stonehenge region. This analysis cannot be all encompassing because of the time restrictions placed upon data collection, it can indeed only reflect the simplicity of the collection process through the amount of data presented. Extensive measurement of large numbers of artefacts, analysis of their spatial relationship with each other and with those found in other sites, was not possible. Of those measured only artefacts of silcrete were included in the analysis because silcrete occurred most often. Silcrete was not the only artefact raw material measured on site.

An assumption that the quarry A15 was the primary source of this material has been made. Limitations to knowledge of the regional archaeology at this point, give no alternative but to accept this assumption. The analysis itself indicates that A15 probably was the source of the silcrete artefacts found during the field survey.

Specific attributes found on artefacts (in this case flakes) can suggest what people were doing with their stone resource at a site and a comparison of these attributes on artefacts from different sites may be suggestive of group movements and activities such as artefact manufacture and maintenance. With this in mind three attributes, artefact size (flake length), retouch and overhang removal are discussed to illustrate how even a basic analysis can provide information about what may have been occurring in the region in the pre-colonial past. These three attributes were chosen because they are easily identifiable and their presence has been related to human movement within the environment, as is discussed below (see, for example Hiscock 1988a).

Characteristics that indicate quarrying activities were found on stone flakes from two sites (A15 and A16) in the vicinity of Stonehenge. These sites had been designated as quarries by previous archaeological surveys. Large, primary flakes were found at these sites (for example A15) and large flakes may have meant a 'tool

maker', or stone knapper, was not concerned about the supply of raw material (being at its source) and therefore, did not need to be careful about how the material was used. In other words conservation and rationing of the raw material was not necessary.

A profusion of large primary flakes at a site may also mean the knapper was more particular about which pieces of stone were removed - a 'luxury' thought to be only possible in places where the raw material was readily available. As a consequence large flakes can indicate the source of a raw material or its proximity. Figure 3 shows in general that large flakes were found most frequently in the proximity of the raw material source.

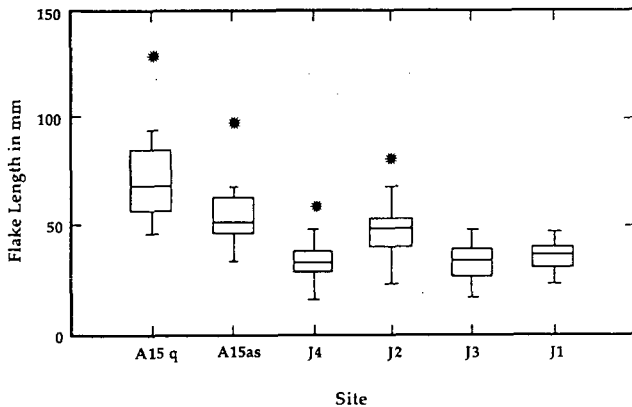


Figure 3: Box plot demonstrating the range of lengths of silcrete flakes from each site. See text for an explanation of the box plots.

It has been suggested that artefact size (defined in this case as flake length) declines as distance from the quarry increases (Hiscock 1988b, Davidson *et al.* 1991) and Figure 3 also illustrates this (J1 being approximately fifty kilometres northwest of A15). The apparent anomaly shown at J2 in Figure 3 may be the result of a number of factors not least of which could be site disturbance. Closer analysis and more data are required to shed light on this problem.

The 'Box plot' diagram above illustrates the range of flake lengths at each site. The box identifies the central 50% of each group of measurements whilst the median is shown by the horizontal line within each box. The lines that extend from the box indicate the outer quartiles of the distribution marking the minimum and maximum values. Asterisks mark values that fall outside the range, these are often called outliers and can influence the mean. All data represented are listed in Tables 1-6.

The analysis of retouch in the context of this paper has demonstrated two trends. Its high frequency at the quarry (A15) gives support to the previous suggestion regarding large primary flakes; that artefacts were being struck more than once as part of the selection process at the source, before being either retained (and removed) or thrown away. Also, the frequency of retouched flakes tends to increase with distance from the raw material source. The occurrence of retouch, away from the source,

supports the reduction in flake size previously mentioned (Figure 3) and may suggest the knapper was trying to conserve the raw material in hand, in order to postpone a return to that source. Figure 4 illustrates this trend in the Stonehenge area, with the presence of retouched flakes increasing with distance from A15. Any interpretation of the reduction in frequency of retouched flakes from the quarry itself, to the artefact scatter associated with it can only come from further study of a broader database.

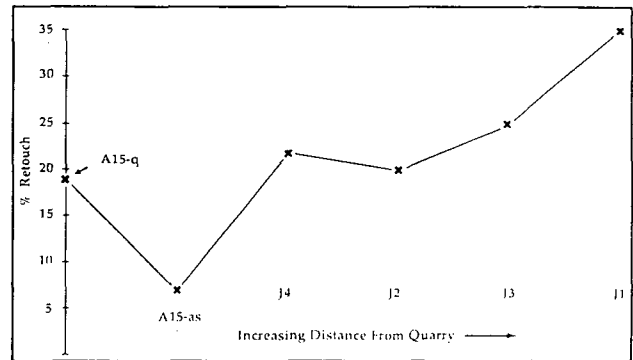


Figure 4: The percentage of retouched flakes present at each site.

The process of overhang removal is another artefact modifying technique but it is a more specific method used by a knapper to gain better control of a core in order to improve the quality and quantity of the flakes produced. The technique is clearly visible as minute flake scars on the proximal end, of the dorsal surface of flakes removed from a core prepared in this manner. It is illustrated clearly in Figure 5 that the incidence of this preparation technique has increased in the same manner as the frequency of retouched flakes. This may also be interpreted as a person taking care to get the most possible use out of a piece of stone, so as to avoid a premature return to the material source.

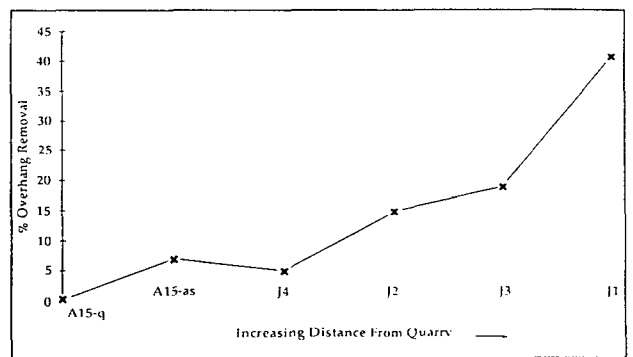


Figure 5: The percentage of flakes present at each site, displaying overhang removal flake scars.

Retouch is not always an indicator of careful preparation of the resource material and the high frequencies of retouched flakes at the quarry seem to support this. The low occurrence of overhang removal at the quarry seems to indicate that care to maximise

resource use (efficient use of cores, for example) was not important. The different frequencies of retouch and overhang removal at the Stonehenge Quarry (A15q), as shown in Figures 4 and 5, support the suggestion that more care was used on the same material, as distance from the source increased.

The results shown for sites J2, J3 and J4 have (as previously described) probably been distorted by some form of non-Aboriginal activity. There is however no way of testing either the influence of this activity or the frequency of possible distortion that may have resulted. Yet, it is still possible to recognise silcrete as the main raw material from which artefacts were made, even though any preference for it cannot be demonstrated without analysing the other raw materials present. The results of this analysis also suggest that the prehistoric occupants of the region moved across the landscape roughly from east to west and as they did so they attempted to ration and conserve their supply of stone.

We suggest that this inferred preference for silcrete by knappers in the Stonehenge region may be an indicator that these people did not have access to the extensive trading systems that have been described for the Boulia region to the northwest, by Roth (1897); systems that included fine grained lithic material as an item of trade (Hiscock 1988c). Considering the relative proximity of Stonehenge to this trade network, specific study of access to trade systems and the relationships of these people to those further north would be of great interest. One possibility is that practices such as subincision, not practised according to Tindale (1974) by the people in the Longreach-Stonehenge-Jundah region, could have been a cultural barrier that excluded these people from the major trade route through western Queensland into South Australia. The problem here involves the chronological sequence of the sites involved and the age of the cultural practices mentioned; boundaries delineating the use of these practices are known to have moved, back and forth, through time (Peterson 1976).

Building hypotheses using negative evidence is of limited use and therefore the negligible amounts of cryptocrystalline raw material types found cannot be used to reduce the proven importance of silcrete. This importance is emphasised by the low proportions of fine grained material and the almost total absence of quartzite artefacts from all sites surveyed. There also seems to have been an apparent disinterest in the quartz pebbles which are fairly common in the region. The reason for the latter may simply have been that quartz was unsuitable for flaking. The limited scope of this study did not facilitate further pursuit of these questions.

Stone arrangements

There appears to be a relationship between the occurrence of sources of silcrete and the location of silcrete stone arrangements. Stone arrangements are found at or near silcrete outcrops which show evidence of quarrying activity (J3 and A15 for example). This may indicate that either silcrete from these outcrops or the outcrops

themselves, had some kind of ceremonial or religious significance (Border and Rowland 1990). It could just as easily mean that the source of stone was a convenient location for ceremonial gatherings, and this would seem more probable because both J3 and A15 are close to permanent or semi-permanent water. Satterthwait and Heather (1987) state in their discussion of earth rings in southeast Queensland, that regardless of the reasons for construction and use, particular environmental conditions were necessary with regard to the location of an earth ring. Though the requirements differ, the same can be said for the Stonehenge arrangements. The study of stone arrangements, as with trade networks mentioned above, would benefit from further and more specific research.

Insight into the possible uses of stone rings at the Moodya Ground (J3) also come from Satterthwait and Heather (1987) who describe two different functions for earth rings of varying morphology studied in the Moreton Shire of southeast Queensland. It was suggested that rings with pathways were used for initiation ceremonies while those without associated paths were used for dispute settlement. Satterthwait and Heather acknowledge however, that the historical sources from which they got their information, mention that some rings were used for both activities and other activity besides. Many circles from this site (J3) and from J2 appear to have pathways associated with them and the above information supports A.W.'s statements regarding the cultural and spiritual importance of the area regardless of the damage occasioned by graders.

Interpreting the data

Taking into account the problems discussed earlier regarding data collection, it has nonetheless been possible to make some suggestions about human subsistence patterns in the Stonehenge region, in the recent past. A more worrying problem and one that applies to a range of Australian sites much wider than just those presented here (but especially to stone arrangements), involves the interpretation of data collected from sites that show signs of non Aboriginal disturbance.

Of all the sites surveyed in the Stonehenge region only two (A15 and J1) have not been visibly affected by development of some sort. Such disturbances reduce the scientific integrity of the sites involved. For example, the condition of artefacts within a site and their location, may be altered by events other than those of interest to the archaeologist, that occurred before European settlement. Unfortunately there is a high level of disturbance apparent on a number of sites around Stonehenge. Disturbance resulting from the construction of telecommunications towers or bitumen roads, or both. This means that only a very generalised picture of what may have occurred before European colonisation can be obtained. Stone arrangements are a good example of the extent of this problem.

Stones arranged into some recognisable pattern will always be subject to critical scrutiny because in many cases it is difficult to identify them as arrangements

deliberately made by people. When a pattern has been identified it is often impossible to establish if it has been created by the Aboriginal people being studied. If it can be identified as 'authentic' then the problem of aging the structure invariably arises as well.

The interpretation of the arrangements at the "jump up" sites, A12, J2, J3 and J4 are especially susceptible to criticism. Extreme damage has occurred to sections of each site, within the last ten to fifteen years, related to the construction of the bitumen road and the Telecom tower on the eastern margin of the escarpment. It is impossible to determine to what extent the designs present are untouched, rearranged or created by non-Aboriginal influences. Indeed there is in fact a non-traditional stone arrangement present. A list of local towns, made of stones, including Jundah, Windorah and Stonehenge occurs next to the bitumen on the "jump up" escarpment. A.W. suggests it was probably made by those who built the road. It is at this point that the value of cultural information and the presence of Aboriginal advisers becomes evident.

A dichotomy exists here (one that is not particularly necessary) between cultural and archaeological information used to authenticate a site, as in the case of A12, and information used to evaluate an authenticated site's potential value, as with J3. The presence of A.W. enabled the immediate identification of arrangements that were not authentic, for example A12, and his presence also ratified the cultural importance of J3, even though in an archaeological context it is compromised by the non-Aboriginal activity apparent. This site (J3) is still of archaeological use however, if it is placed within a more complete regional archaeological picture of the district.

Conclusion

There is no doubt that a number of the sites visited were of considerable cultural importance to both Aborigines in the field team, especially A.W. Some sites, the Moodya Ground (J3) for example, possess a large amount of archaeological material that may be used by archaeologists to create a regional picture of the activities that have occurred in the prehistory of the area, and this is in spite of the widespread damage that has resulted from road construction. Other sites do not provide as much archaeological evidence but are still of great importance to Aborigines. The Dingo Creek camps (A8) are an example and it was clear to both archaeologists that this site was significant judging by the reaction of both Aborigines while we were there.

The archaeological importance of a site requires physical evidence of past activities and herein lies the problem facing archaeologists and non-Aboriginal people in general. Is it necessary that non-Aborigines must have physical evidence to validate the cultural importance (to Aborigines) of a site? How acceptable to the non-Aboriginal community should an argument be without that evidence? Traditional and/or purist researchers may argue that archaeologists should be interested only in the physical evidence, regardless of its cultural status, but the

study of Australian prehistory in the 1990s requires a modification of this view. Even with the required evidence, data collected must still be interpreted and this paper highlights problems that may influence the archaeological interpretation of sites (consider also the variation that occurs between individual field workers). Cultural information offered by living Aborigines is an advantage. It may be that in the near future archaeological investigation in the field cannot do without their advice.

Acknowledgments

A number of people assisted in the production of this paper and we would like now to acknowledge their help. First and foremost we thank Nola James and Arthur Walton for accompanying us into the field. Thanks to Mike Rowland and the Queensland Heritage Branch for providing site records and answering various questions. For their comments on earlier drafts we would like to thank, Jane Balme, Bernard Huchet and Iain Davidson. Lastly, without the assistance of Daryl O'Brien from the Department of Defence, this paper would not have been published.

References Cited

- Border, A. and M. Rowland 1990 *The Mitchell Grass Downs Biogeographical Zone (Queensland): A Heritage Resource Assessment*. Report to the Heritage Branch, Department of Environment and Heritage, Brisbane and the Australian Heritage Commission, Canberra.
- Davidson, I., R. Cliff and T. Sullivan 1991 *Burke River Pipeline. A survey of the impact on archaeological sites*. Prepared for the Cyprus Gold Australia Corporation.
- Davidson, I., G. Knuckey and K. Kippen, with N. James 1992 *Jindalee Operational Radar Network (JORN) Queensland - Archaeological and Anthropological Survey Report*. Prepared for the Project Development and Communications Division of the Department of Defence, Canberra.
- Hiscock, P. 1988a *Archaeological Investigations In The Boulia District, Southwestern Queensland*. A report to the Australian Heritage Commission: Brisbane.
- Hiscock, P. 1988b *Prehistoric Settlement Patterns And Artefact Manufacture At Lawn Hill, Northwest Queensland*. Unpublished PhD thesis. University of Queensland: St. Lucia.
- Hiscock, P. 1988c A cache of tulas from the Boulia district, western Queensland. *Archaeology In Oceania* 23 (2):60-70.
- Peterson, N. (ed.) 1976 *Tribes And Boundaries In Australia*. Australian Institute of Aboriginal Studies: Canberra.
- Roth, W. 1897 *Ethnological Studies Among The North-West-Central-Queensland Aborigines*. Queensland Government Printer: Brisbane.
- Rowlands, R. and Rowlands, J. 1982 *Aboriginal Stone Arrangements: Report On Field Work. Parts 1 and 2*. Report prepared for the Australian Institute of

Aboriginal Studies: Canberra.

Satterthwait, L. and A. Heather 1987 Determinants of earth circle site location in the Moreton region, southeast Queensland, *Queensland Archaeological Research* 4:5-53.

Senior, B. 1969 *1:250,000 Geological Series - Explanatory Notes: Jundah, Queensland*. Bureau of Mineral Resources/Department of Mines: Canberra/Brisbane.

Tindale, N. 1974 *Aboriginal Tribes Of Australia*. Australian National University Press: Canberra.

APPENDIX

Table showing the length of all silcrete flakes measured at each site.

Site	Length (in mm)	Site	Length (in mm)	Site	Length (in mm)
A15 - q		J4		J3	
	66.3		27.9		42.7
	85.9		33.1		37.2
	62		30.5		37.4
	56.6		37.1		27.2
	68		47.8		40.8
	76.3		31.9		44.4
	55		28.6		23.7
	46.7		38.2		28.5
	93.9		33.9		19.5
	49.6		29.9		33.8
	73.7		58.6		34.3
	92.8		22		25.7
	128		16.5		47.8
	67.1		39.7		29
	83.1		29		17.1
	56.6		43		36.4
A15 - as			36.7	J1	
	43.9		26.1		37.7
	51.5	J2			28.5
	47.7		25.2		41.1
	51.4		37.5		30
	68.2		41.1		37.2
	53.7		50.3		42.6
	97.1		48.6		34.6
	46		54.6		42.8
	45.4		39.1		37.5
	33.8		42.7		47
	65.7		44.4		34.4
	46.9		80		40.1
	62.9		23.6		33
	56.5		58		38.6
			67.5		30.4
			52.8		23.8
			47.8		28.8
			38.2		
			53.3		
			67.3		
			49.2		
			48.8		

Graham Knuckey and Ken Kippen
 Department of Archaeology and Palaeoanthropology
 University of New England
 Armidale NSW 2351