



KEYWORDS: *Beeswax rock art – AMS dating – Arnhem Land – Northern Territory – CD-book*

THE BEESWAX ROCK ART OF THE NORTHERN TERRITORY: DIRECT DATING RESULTS AND A 'BOOK OF RECORD'

Paul S. C. Taçon, Erle Nelson,
Christopher Chippindale and George Chaloupka

Abstract. A detailed recording and dating program of Northern Territory rock art motifs made of pressed beeswax was commenced in 1991 with the participation of four Aboriginal communities. This has resulted in a comprehensive publication in CD format. Equivalent to almost 1300 pages as a printed book, it is one of the most detailed rock art records yet produced. About 140 AMS radiocarbon determinations suggest most of the art was made less than 1500 years ago but there are rare, well-protected examples up to 4000 years of age. We summarise some of the results and implications, as well as announce the release of the CD for sale, the proceeds of which are to be directed toward a university scholarship for Aboriginal students.

Dating rock art

There are many 'holy grails' in rock art research, but perhaps the most elusive is that of a reliable, accurate and valid age determination. As is evident in this volume or other recent publications (e.g. Ward and Tuniz 2000), much progress is being made with several techniques, but we still have a long way to go. Cabling together several strands of dating evidence can sometimes provide good age approximations (e.g. Chippindale and Taçon 1998; Rosenfeld 2000). More commonly, one or perhaps a few motifs from a particular 'style' or manner of depiction are sampled and numbers, said to be dates, are arrived at. These numbers are then argued to be suggestive of when an image was created, or perhaps what its minimum and/or maximum age could be. Often the image has also been put into a local rock art sequence so that the number can be checked to see if it makes relative sense. However, there are two inherent problems. The first is that in most cases we do not know the relationship between the image and the number. That is, we do not know how our 'date' is related to the rock art manufacture event. The second problem is that due to the high cost of dating and the destructive nature of sampling we usually do not have enough samples, numbers or dates either to provide a detailed dating picture for particular rock art bodies or to repeat trials so as better to verify results. In the Kimberley, for instance, much has been published about supposed dates of ancient paintings derived from mud-wasp nests (Roberts et al. 1997; Walsh 2000). Although bold, brave and pioneering this experimental technique has not yet been repeated at the same or other Kimberley sites (e.g. contrast results with much more recent AMS radiocarbon dates in Watchman et al. 1997).

Nevertheless, we are fortunate that a very few forms of

rock art are more amenable to dating than others, because they use carbon which we know does closely relate in its date to the making of the art. In northern Australia, for instance, there are hundreds of sites with figures, geometric designs and/or undecipherable images composed of strips, sheets and dot-pellets of beeswax affixed to shelter walls and ceilings. Wax and honey were collected from the nests of ground and tree-nesting native bees; the wax was then used to make the rock pictures soon after. The resulting beeswax designs are rich in carbon and, for those interested in sampling, are relatively easy to remove. The dating potential of these designs was first recognised by Brandl (1968), but it was not until AMS radiocarbon dating had been perfected that beeswax rock art could be sampled without completely destroying it. Thus, beeswax designs offer the best opportunity systematically to date a single body of art spread across a large region, repeatedly to sample from sites and particular images, and to obtain both reliable and accurate results. Furthermore, because beeswax rock art can be placed in local sequences and has many near-identical painted 'cousins' it can be used to better date parts of Northern Territory rock painting sequences. With this in mind, we set about comprehensively sampling, dating and studying this important form of rock art.

The beeswax project and CD book

First dating tests were made on several samples collected in 1991, after initial fieldwork and sampling by Chaloupka and the late Mick Alderson, in order to see if the project would produce good results. To our great surprise, the results were even better than expected, with two turtle images dating to about 4000 years ago (Nelson et al. 1995; subsequently validated by Watchman and

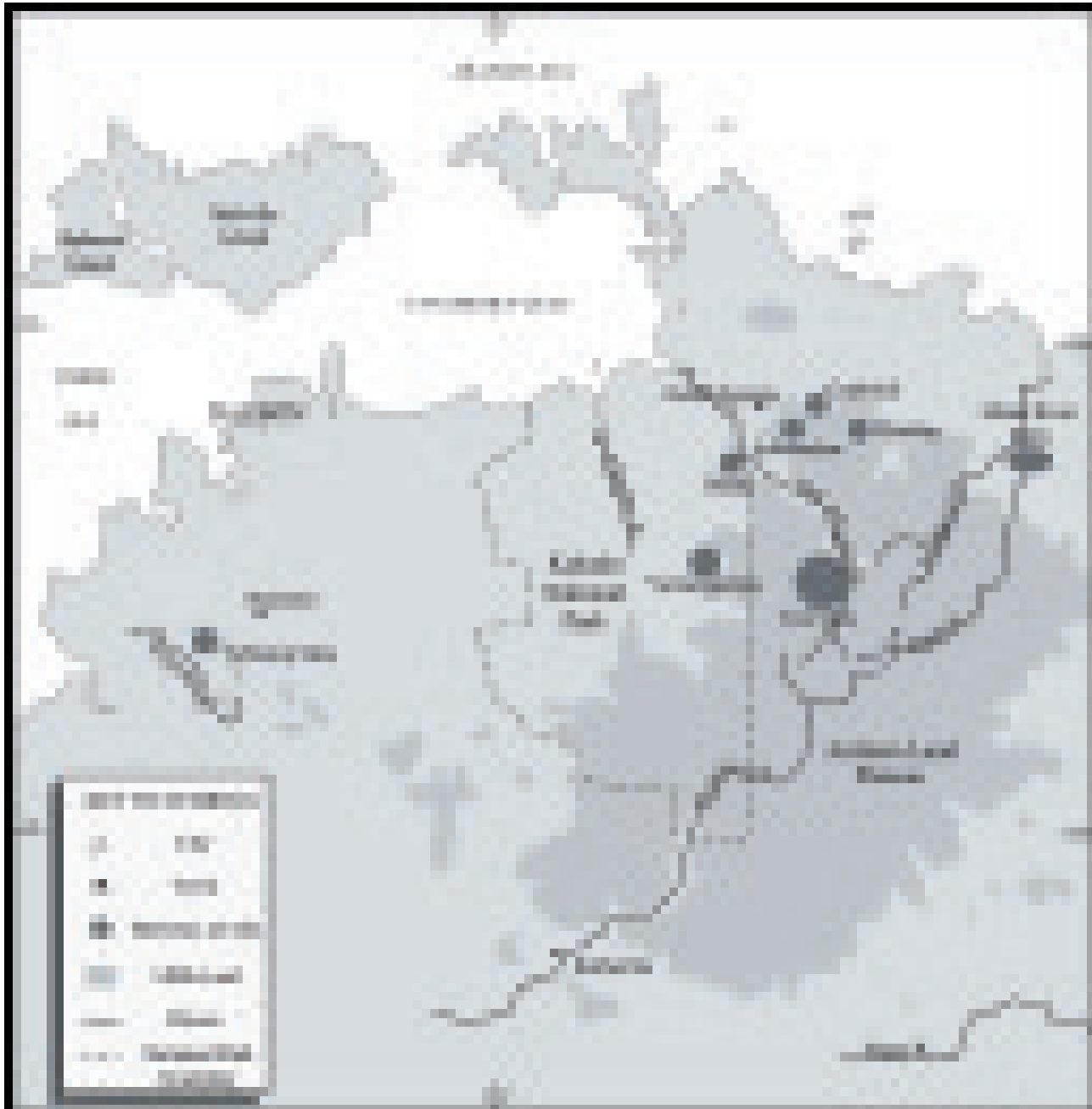


Figure 1. The 'Top End' of the Northern Territory with location of sites indicated.

Jones 2002). This experiment showed that not only could beeswax designs be easily sampled and dated, but also that they could last a long time in well-protected places. We then set about designing a comprehensive eight-year study. Although funding was successfully obtained from a number of sources we are particularly indebted to the Canadian Social Sciences and Humanities Research Council. We also consulted widely with Aboriginal traditional owners from four communities, involving them in as much of the project as they wished. They accompanied us to sites, advised us on locations to sample, assisted with sampling and provided interpretation when possible. They also assisted with writing up results and advising us on publication matters. Many traditional owners were very interested in learning more about the age of their rock art and, indeed, the project took place partly in response to

requests from one elder, now deceased, to scientifically date the art of his country.

After three years (1991–94) of fieldwork at widely separated sites across the Northern Territory's 'Top End', the samples were processed at Simon Fraser University, Vancouver for radiocarbon dating by John Southon and others at the Lawrence-Livermore National Laboratory (California). The results have now been published as a complete 'book of record' in a CD Rom format that can be read using Adobe Acrobat Reader™ (Nelson 2000). Small components or related studies have also been published in print (Chaloupka 1993: 156–61; Nelson *et al.* 1993, 1995; Taçon and Garde 2000). As well, the dating potential of beeswax designs and some initial results have been reported for the Keep River and the west Kimberley regions (e.g. Taçon *et al.* 1997; Welch 1995; Walsh and Morwood have AMS dates for Kimberley

wax motifs in press). In this short note we outline the CD contents and highlight some of the more important results. Future papers will deal with some of the implications of the study and provide more detailed analysis.

The beeswax project was planned with two specific goals in mind:

- (a) to provide the first detailed recording of beeswax art at various sites in different regions of the Northern Territory;
- (b) to radiocarbon-date a large number of these figures to provide direct information on the antiquity of this art form.

In order to maximise geographic diversity, fifteen sites were chosen from four main areas (Fig. 1): Arnhem Land Plateau (7), Kakadu National Park (2), Mann River (3) and Tabletop Range (3). An accurate determination of the location of each site was made using a Global Positioning System (GPS) device. These data have not been provided in the CD so as better to protect the sites, but have been placed on register with the Northern Territory Museum so that they may be made available to those with legitimate interest in pursuing further studies.

Since we had no study of this sort to use as a guide, the methods used to define the beeswax figures, to describe and record them and to provide location information were developed as we progressed. In choosing the figures to be radiocarbon-dated, we simply tried to obtain samples from the range of styles and apparent degree of weathering represented at each site. Determining the means by which we would record the art so that the information could be distributed and preserved was another challenge. At the outset of the project, the technology for digital recording of imagery was yet in its infancy for any but professionals in the field with access to very specialised equipment. After much discussion, a digital approach was adopted. Fortunately, imaging technology developed at such a pace that it met our needs during the course of the project and has greatly surpassed them at the end.

The entire data set gathered during the project is presented in four sections of the CD. Part I introduces the project and provides background information on the art itself and on technical aspects of the project. Detailed descriptions of present ethnographic knowledge of beeswax art from western Arnhem Land and the Mann River region of central Arnhem Land then follow. The final papers of this section deal with the project methodology, starting with a detailed description of the definitions made and the methodology adopted to locate and describe the art in the field. The subsequent paper describes the methods used to transfer this information to digital format and to produce this digital 'book'. Finally, technical information on the beeswax itself and on the radiocarbon-dating method used to date it is presented. This paper contains a complete list and evaluation of the radiocarbon data obtained.

Part II presents the sites themselves and the results obtained. Each site is discussed in turn, giving an overview description of the site and its locale, a short description of the painted rock art at the site and then a detailed discussion of the beeswax rock art and the chronological determinations

for each site. No attempt is made to provide any detailed archaeological or art-historical interpretations of this art form, as that was not a goal of the project.

Gunbirdi I- 18

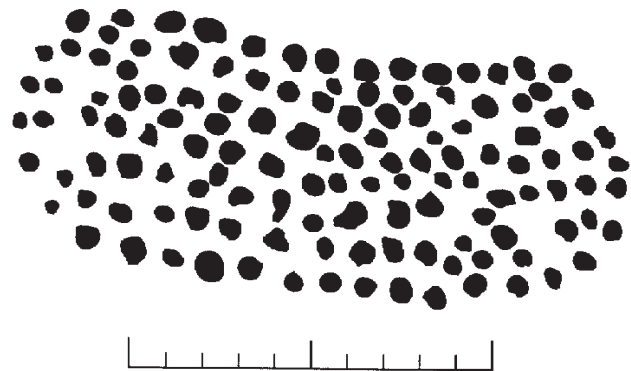


Figure 2. Silhouette of a beeswax horizontal solid dot rectangle with rounded ends, Gunbirdi I-18 (100 ± 70 radiocarbon years BP).

Djarrng - 26



Figure 3. Silhouette of a solid wax animal-headed female human-like figure, Djarrng-26 (310 ± 70 radiocarbon years BP).

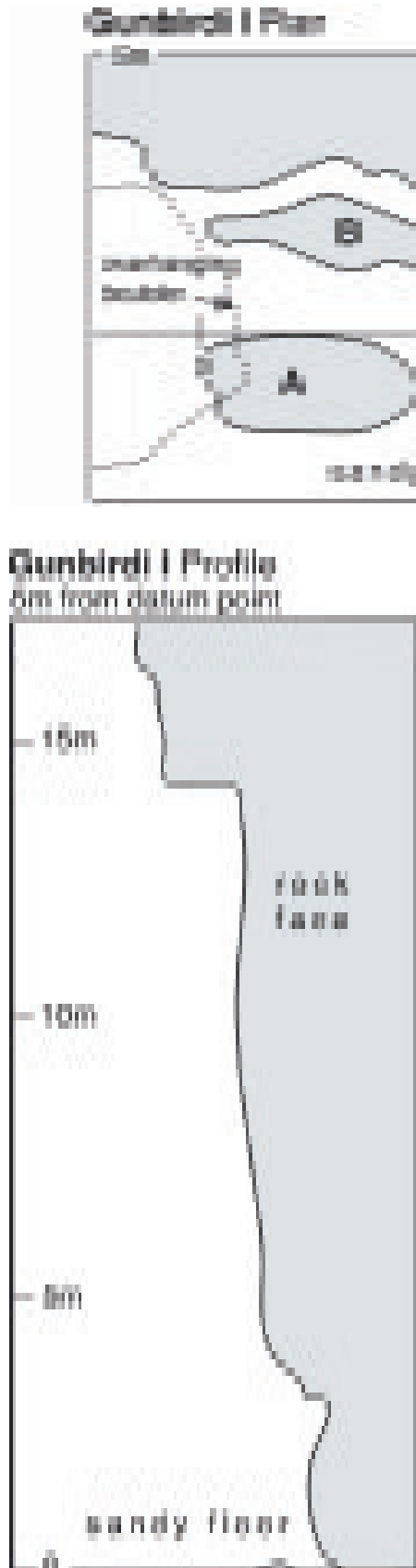


Figure 4. Examples of plans and profiles in the CD publication, Gunbirdi I.

Part III contains the bulk of the field data. Here, there are digital black and white silhouettes for each of the approximately

600 figures defined in the course of the project, as well as descriptive notes and adequate location information to allow future researchers to re-locate each figure in the field. These digital silhouettes (e.g. Figs 2 and 3) have been very accurately produced from colour photographs, so that the scale of magnification can be changed to either examine overall impression or tiny detail. Digital colour photographs of all defined figures are also provided. They, too, can be magnified to reveal detail. There are also general photographs of the sites and of the people involved in the study, as well as plans and profiles of the rockshelters (Fig. 4). Part IV contains brief first, non-exhaustive interpretations of the results.

Significance for north Australian rock art chronologies

The test sites revealed surviving beeswax rock pictures spanning some 4000 years of time, proving that under the right circumstances beeswax can survive in rockshelters for considerably longer than previously thought (Nelson et al. 1995). Specifically, two turtles in simple x-ray form over at least five layers of paintings yielded the oldest dates of about 4000 radiocarbon years BP. A non-figurative design was dated to about 1300 years ago while the rest, including a large human male figure, were found to be less than 500 years of age. In the larger project, the oldest date was from Anbarndarr I, about 1800 years, while ages of between about 1100 and 1500 years ago were obtained for nine figures at four Arnhem Land Plateau sites (e.g. Fig. 5). Two figures were dated to about 800 years ago and one, from the Mann River, to 700 years BP. The rest of the figures (117 of 130 non-test figures or 90%) were found to be less than 650 years of age.

This result accords well with predictions by several researchers (e.g. Chaloupka 1993; Lewis 1988; Taçon 1989; Taçon and Chippindale 1994) about the age of the most recent phases of western Arnhem Land rock art. It also supports ideas that other phases, such as Yam Figures, Dynamic Figures and Large Naturalistic Animals are much older. Weathering and other taphonomic forces undoubtedly have contributed to the weighting towards recent beeswax figures and there may also have been a florescence in this form of image-making after 700 years ago, with the practice also spreading to the Mann River, Tabletop and other regions (but see Bednarik 2001).

There are many common features between beeswax figurative art and what are argued to be the more recent rock paintings. This indicates that the recent rock art of the north of the Northern Territory, comprised primarily of large monochrome and polychrome figures, but including beeswax designs and some petroglyphs, was made over at least the past 4000 years. Between the Kimberley and Arnhem Land other forms of evidence, including peak deposition rates of ochre at several excavated sites, suggest most of the painted and beeswax art was made over the past 3000 years (see David et al.

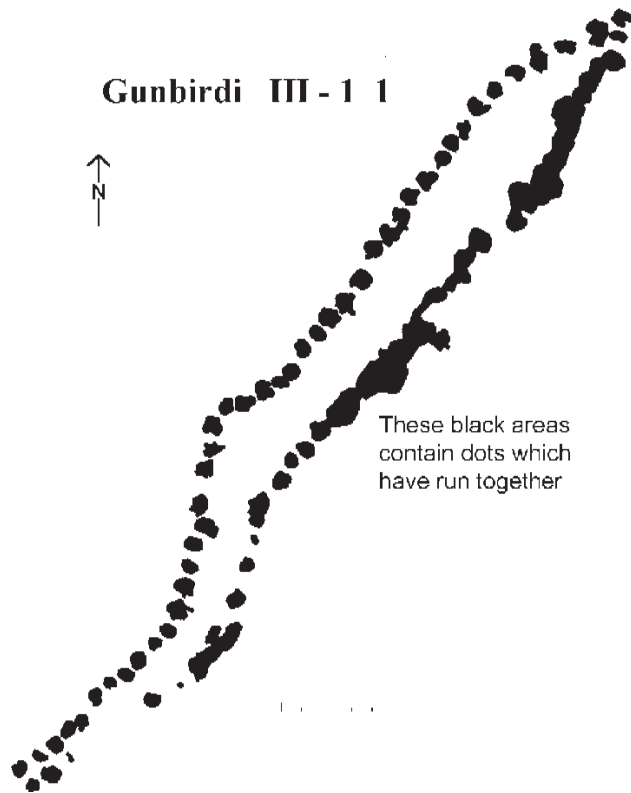


Figure 5. Silhouette of long, narrow elongated ovoid of wax dots, Gunbirdi III-11 (1110 ± 70 radiocarbon years BP).

1999 for the Wardaman region, Taçon et al. 2003 for Keep River). Thus a large, regional trend is evident across this part of northern Australia for the past 3000–4000 years, even though the particular art bodies within the region vary from each other in terms of subject matter, colour preferences and manners of depiction.

The beeswax study is helping clarify the age of surviving north Australian Holocene rock art, as well as highlighting changes in production (e.g. see Bednarik 2001). It also provides us with minimum ages for older art forms. However, it is curious that the oldest beeswax figures date close to some so-called 'Bradshaw' (Gwion Gwion) paintings (Watchman et al. 1997) and some cupule petroglyphs (see Watchman et al. 2000). This may highlight problems with the 'dates' obtained by these other studies, but since the beeswax results show that particular rock art traditions can last for at least 4000 years those forms of art may also extend across several millennia. What is also suggested is that we need to conduct large-scale dating programs on the painted and engraved art of a magnitude comparable to the beeswax study. Only in this way will we be better able to establish the age of various forms of rock art, outline the details of chronologies, and chart patterns of rock art change in northern Australia.

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Dr Paul Taçon
Anthropology, Australian Museum
6 College Street
Sydney, N.S.W. 2010
Australia. E-mail: pault@austmus.gov.au

Dr Erle Nelson
Archaeology Department
Simon Fraser University
Burnaby, B.C. V5A 1S6
Canada

Dr Christopher Chippindale
Cambridge University Museum of Archaeology and
Anthropology
Cambridge CB2 3DZ
United Kingdom

Dr George Chaloupka
Northern Territory Museums and Art Galleries
P.O. Box 4646
Darwin, N.T. 0801
Australia

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