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Mid-Holocene age obtained for nested diamond pattern petroglyph in the Billasurgam Cave complex, Kurnool District, southern India

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ABSTRACT

India has one of the world's largest and most significant bodies of rock paintings and engravings, yet not a single rock art site or image has been directly and accurately dated using radiometric techniques. Here we report on results from the Billasurgam Cave complex near Kurnool in southern India. Although this cave complex has been investigated archaeologically since the late 1800s, it was not until 2008 that a large petroglyph, consisting of the remains of three nested diamond designs on a stalactite, was noted. In order to determine if this petroglyph had been made recently, flowstone was sampled from on top of and below the engraving. Radiocarbon dating revealed a mid-Holocene age of about 5000 cal BP for the petroglyph, but we cannot rule out the possibility that the engraving is several centuries younger. Similar nested diamond designs at some rock painting sites and on a chert core elsewhere in India have been assumed to be Mesolithic. Our result is consistent with this hypothesis, although we note that it also consistent with the creation of the petroglyph in the early Neolithic. We conclude that the Billasurgam engraved diamond design was probably made by Mesolithic foragers of the Kurnool region and is the oldest surviving form of rock art yet directly dated in southern India.

1. Introduction

How old is it and what does it mean? These are two of the most commonly asked questions in rock art research, but in many ways they are related; knowing how old something is tells us about an aspect of its meaning. For instance, an age can inform us about the probable group of people that produced the rock art and/or changing relationships to local landscapes and environments. But assigning age and meaning to rock art are both highly challenging and controversial, with the literature littered with speculation and the possibility of miscalculation and misinterpretation (e.g. reviews by Bednarik, 1995, 2002; Pettitt and Pike, 2007). In recent decades, archaeological (e.g. Taçon and Chipindale, 1998) and broader scientific (e.g. Bednarik, 2001) approaches to rock art research have been advocated, especially for rock art dating. A variety of dating techniques has been employed, primarily accelerator mass spectrometry (AMS) radiocarbon and, more recently, uranium-series with fairly good success, and a number of other methods are being trialed (Langley and Taçon, 2010; Rowe, 2012; Taçon and Langley, 2012). After early efforts in East Timor (e.g. Aubert et al., 2006), Uranium-series dating was recently used to establish that the oldest surviving rock engraving in the United Kingdom is at least 14,000 years old (Nash et al., 2012), that in northern Spain a hand stencil is at least 37,000 years old and a red disk is over 40,000 years old (Pike et al., 2012) and that paintings in northwest Yunnan Province, China date to the mid-Holocene or earlier (Taçon et al., 2012). However, very few of the hundreds of thousands of rock art sites scattered across the globe have been directly dated and hardly any have been dated at all in much of Asia (Rowe, 2012).

The rock art of India (Fig. 1) is undoubtedly of global significance as many researchers have noted (e.g. Allchin and Allchin, 1994-95; Bednarik and Chakravarty, 1997; Blinkhorn, 2012; Boivin, 2004; Chakravarty, 1984; Chakraverty, 2003; Chandramouli, 2002; Ghosh,

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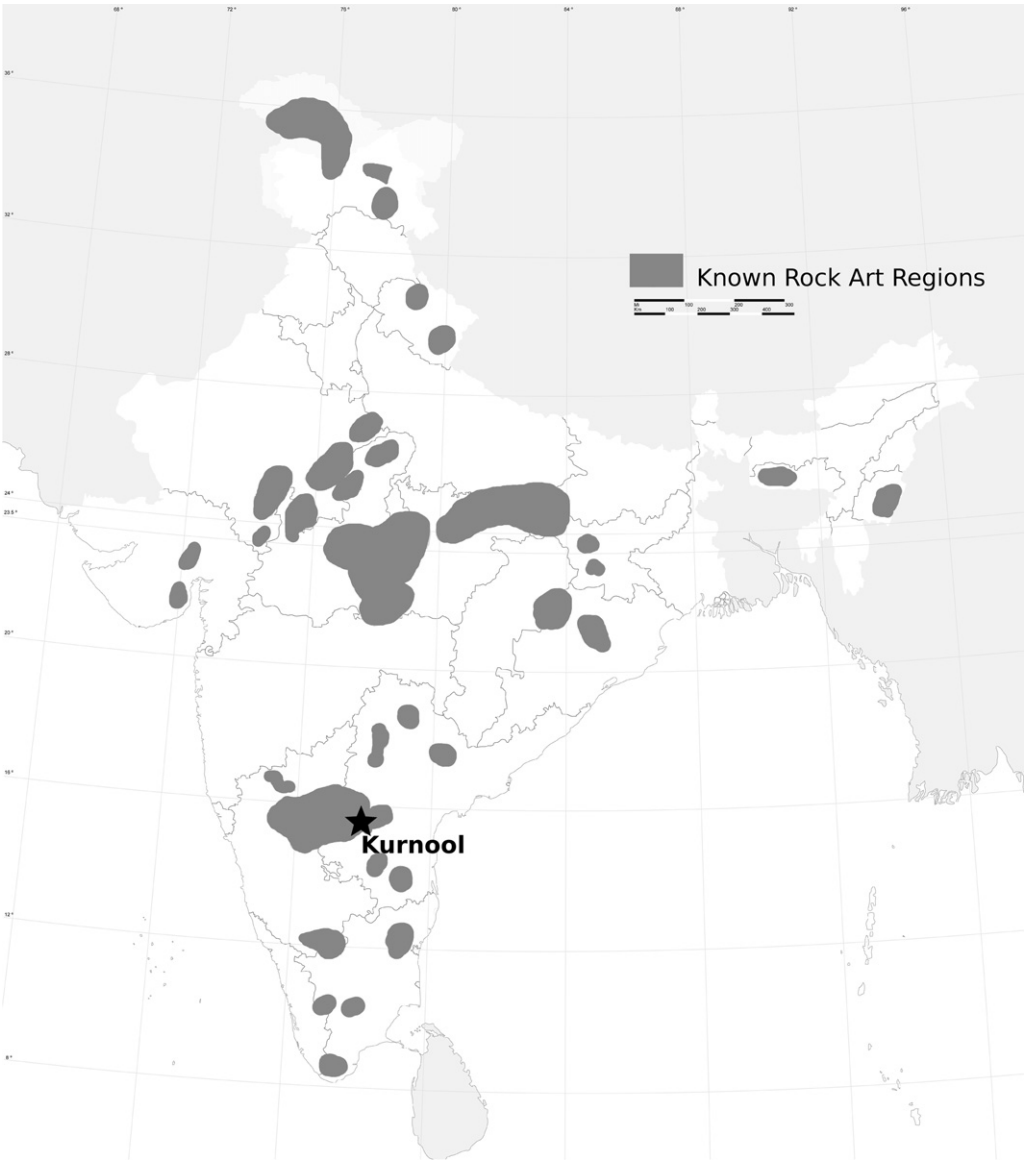

Fig. 1. Rock art regions of India with Kurnool indicated. The Billasurgam Cave complex is located about 50 km southeast of Kurnool.

1998; Mathpal, 1984, 1998; Neumayer, 1992, 1993; Pandey, 1992; Pradhan, 2001; Taçon et al., 2010), especially with the rock art of the Bhimbetka area a UNESCO world heritage site, but it has not been well dated nor integrated with the excavated archaeological record (Blinkhorn et al., 2012). In 2008 and 2009, as part of an extensive and continuing archaeological investigation of the Kurnool area of southern India, we sampled two sites to obtain minimum ages of what are considered to be the oldest surviving forms of rock art in the area. These consist of small naturalistic outline paintings in a rock shelter (Taçon et al., 2010) and engraved geometric designs in a cave. The latter engravings, the subject of this paper, were discovered on 8 January 2008 by Ramdas, an Indian villager assisting with public outreach and excavation and someone who had previously worked with N.B. on a rock art project in the Bellary District of the south Deccan plateau to the west (Boivin, 2004). Despite extensive research on the cave complex (see Haslam et al., 2010 for summary), the engraved panel was not noted previously, partly because of its obscure orientation in relation to natural corridors through the complex. Here we report on initial dating results for this petroglyph.

1.1. Kurnool rock art and the Billasurgam Caves

The Kurnool District of south India is an area of outstanding archaeological significance, rich in exceptional Palaeolithic deposits (Clarkson et al., 2009; Petraglia et al., 2007, 2009a) and an abundance of varied hunter–gatherer, Neolithic and Megalithic sites (Allchin, 1962; Blinkhorn, 2008; Murty, 1985, 1992). Field surveys undertaken since 2003 have located 88 rock art sites in the vicinity of the Jurreru Valley and in the Billasurgam Cave complex, close to Betamcherla (Fig. 2), although many hundreds of rock art sites remain undocumented. Several different styles of rock art associated with various time periods have been identified (Boivin et al., 2009; Taçon et al., 2010) and connections to the rock art of other parts of India and beyond are under investigation (Blinkhorn et al., 2012). The rock art is also being studied in relation to the excavated archaeological record, environmental change and cultural change, with a chronology linked with numerical as well as relative dating.

The extensive Billasurgam Cave complex, situated about 50 km southeast of Kurnool, has been investigated for faunal remains (Murty, 1975; Prasad, 1996) and archaeological material (Murty,