



Cultural implication based on pollen from the ancient mortuary complex in Sri Lanka



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ABSTRACT

Archaeo-palynological evidence from Galsohon-Kanatta, a megalithic cemetery in Yapahuwa, North Western Sri Lanka suggests that floral material (i.e. flowers) from several species of pinophyta and angiosperms were deliberately deposited in urn-cist burials as part of the mortuary ritual carried out during the post-cremation processing of corpses during the Early Historic Period (420 cal BC – cal AD 20). Materials from subtropical flora (e.g. *Pinus* sp. *Tsuga* sp. *Nymphaea* cf. *tetragona* and *N. cf. alba*) and native flora (e.g. *Pandanus* spp. and *N. cf. lotus* and *Nelumbo* cf. *nicifera*) were undoubtedly deposited. This suggests that contacts between communities in many parts of Asia and ancient Egypt were significant during the Early Historic Period. Societies at that time living in an agricultural landscape were more likely have used rice grains as part of burial ritual. Expansion of a maritime trade-network in the Indian Ocean, which coincided with persistently strengthening monsoon, enabled the establishment of these exceptional contacts.

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1. Introduction

Flowers, seeds, leaves and wood of species are used to symbolize various aspects of human life, e.g. love, joy, loyalty, fertility and sympathy from birth to death at religious and cultural occasions, e.g. funerals and weddings (Heilmeyer, 2001). The red rose remains as a popular flower for symbolizing love in many human societies, while a few societies consider the red rose a symbol of war and politics. Lilies symbolize purity and even fertility in Christianity, while Buddhists, Hindus and Egyptians consider the lotus as a sacred flower. Arts, be it painting, sculptures, ceramics and music depict the use of flowers for symbolizing various socio-cultural connotations (Wilkinson, 2003). It is said that contemporary human societies have a role in using beauty and aromas of flowers at different levels. Investigations suggest that difficulties occur as to when exactly humans started to use flowers in public and ceremonial contexts, due to the lack of relevant evidence in the stratified archives (Leroi-Gourhan, 1975; Martínez et al., 1998; Clark, 1999; Alatorre et al., 1999; Lagerås, 2000; Lentz et al., 2008; Nadel et al., 2013). Pollen evidence from Shanidar Cave in the

Zagros Mountains of northern Iraq suggests that body of an adult Neanderthal might have been laid to rest on a bed of flowers (Leroi-Gourhan, 1975), however this idea has been questioned with some studies relevant to pollen taphonomic issues (Sommer, 1999). Nadel et al. (2013) reported 13,700–11,700 years-old well preserved plant impressions and phytolith evidence for grave linings made up of flowers, from Natufian burials at Raqefet Cave, Israel, suggesting that such use of flowers from Lamiaceae, or Scrophulariaceae species for preparation and decoration of graves. Raqefet Cave evidence also suggests that grave preparation was a sophisticated planned process, embedded with social and spiritual meanings at the time when agriculture originated during the terminal Pleistocene (Hillman et al., 2001; Munro, 2003; Willcox, 2008; Willcox et al., 2009; Ibáñez et al., 2014). Archaeo-botanical evidence of sunflower (*Helianthus annuus*), a Mexican domesticate by 4600 cal yrs BP (Lentz et al., 2008) from the site, Cueva del Gallo, Morelos, Mexico indicates that floral materials from sunflower was used for ritual activities in burials ca. 2300 cal yrs BP (Martínez et al., 1998; Alatorre et al., 1999). By post-Classic Aztec times and among the indigenous Mexican cultures, e.g. Nahua, Otomi, Zoque and Popoluca, sunflower and Amaranth (*Amaranthus* spp.), another Mexican domesticate appears to have been used as symbolic components for ritual activities (Lentz et al., 2008). It is generally believed that prehistoric humans may have used flowers to express

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their feelings towards the deceased as a part of their mortuary ritual. Archaeo-palynologically, this has been observed by a few scholars in Europe and North Africa. Evidence of 60,000 year old Neanderthal Man in Iraq (Leroi-Gourhan, 1975), 3300 year old Bronze Age man in Southeast Denmark (Glob, 1974), 3330 year old Egyptian pharaoh Tutankhamun (Hepper, 1990), 4000 year old Neolithic man in southern Sweden (Lagerås, 2000) and 4000–2750 year old Bronze Age humans in Scotland (Clark, 1999) all indicate the use of some sort of floral tributes as a part of ritual at a time when inhumation was observed. In these records, the flowers from yarrow (*Achillea millefolium*), blue water lily (*Nymphaea caerulea*) and corn flower (*Centaurea depressa*), smell fox (*Anemone nemorosa*), meadowsweet or dropwort (*Filipendula ulmaria* or *F. vulgaris*) and Brassicaceae species have been identified as materials used for ritual offerings. But no palynological evidence has been found for understanding prehistoric and historic, social (e.g., spiritual and ritual meanings) and environmental (e.g. vegetation and agriculture settings) issues relevant to Southern Asian burial archaeology during the Iron Age and Early Historic Periods.

Southern Asia is a large region, featuring rich Iron Age/Early Historic Periods remains (McIntosh, 1990; Deraniyagala, 1992; Moorti, 1994; Brubaker, 2001, 2008; Indrapala, 2009; Rajan and Yathees Kumar, 2014). Works conducted during the last few decades show that biological, social, economical and political issues attributed to the Southern Asian Iron Age (1200–300 BC) and Early Historic Periods (300 BC–AD 100) have not yet been adequately addressed (Begley, 1981; Awr, 1979; Seneviratne, 1984; Deraniyagala, 1992; Bandaranayake, 1989; Moorti, 1994; Somadeva, 2006; Brubaker, 2001; Tripathi, 2001; Kennedy, 2002; Bauer et al., 2007; Rajan and Yathees Kumar, 2014), and the Iron Age is generally thought to have originated from the preceding Neolithic Period (3000–1200 BC) based on the available archaeological records (Allchin and Allchin, 1968, 1982; Bauer et al., 2007; Fuller et al., 2007; Kingwell-Banham and Fuller, 2012). However, few systematic analyses of distribution, chronology and material culture, funerary customs, including the typology of ‘megalithic’ Southern Indian Iron Age communities have been made showing remarkable variations in Iron Age site maintenance, political ideas, trade network, trash disposal, residence, use of domesticated plants and animals, metallurgy and rituals (Allchin and Allchin, 1968, 1982; Brubaker, 2008; Johansen, 2010; Sudyka, 2010, 2011). This suggests that socio-economic conditions during the Iron Age may

have coalesced to ignite new social behaviours with some spiritual, ritual, environmental issues and site taphonomy, and they might have transformed into the Early Historic Period as well. We believe that palynological evidence of species exploited in the burial context may support our understanding of some of these issues. Thus, the present paper aims to provide radiocarbon-dated (AMS) archaeo-palynological evidence of tropical and subtropical flowers used as part of a broad spectrum of environment creation, socio-economic and mortuary rituals during the Early Historic Period.

1.1. Site environment

The investigated stone cist burial site is known as GalSohon-Kanatta (cemetery) covering 5 ha in extent. It is located at 240 m above sea level (m a.s.l) in the south east of Maho about 1.6 km from Yapahuwa in the North Western Sri Lanka (Fig. 1). The prehistoric and historic heritage in the surrounding area of Yapahuwa has been preserved in the stone caves, rock shelters, inscriptions, graves and other ruins. The historical remains in the surrounding area beyond the cemetery consist of rock shelters engraved with early Brahmi inscriptions, walls, moats and a palace (Godakumbura, 1964–1968; Paranavitana, 1970; Deraniyagala, 1997). A survey done by the Department of Archaeology, University of Peradeniya in 1997 has revealed about 109 visible burials at this site. Landscape of the study site is generally flat. This includes relatively small wash divides, depressions, a tributary of the Deduru oya, several small irrigation tanks and cultivated fields, e.g., wet rice, garden and slash-and-burn. These wash divides, depressions and plains are surrounded with inselbergs, tors and exposed blocks. Crystalline bedrock is dominant and loamy-sandy-reddish-brown (5 YR-3/4) soil commonly occurs in the area. Ecologically, the study area belongs to the Dry Zone of Sri Lanka having an annual rainfall of less than 1750 mm mainly from the north east monsoon. The major vegetation type is dry semi-evergreen forest, which includes *Drypetes* sp. *Manilkara hexandra*, *Bohemia racemosa* and *Grewia tiliifolia* as most common taxa.

2. Material and methods

Excavations at the cemetery were conducted employing planum and context system by a team from the Archaeological Survey Department and the Department of Archaeology, University of

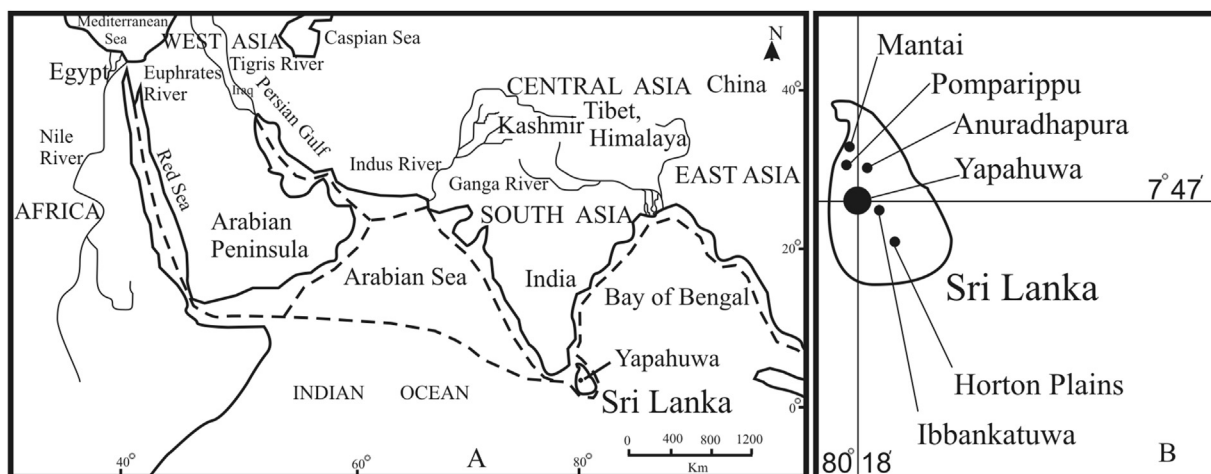


Fig. 1. A: Sri Lanka lies in the Indian Ocean and its strategic location astride the ancient maritime route between Near and Far East, and South Asia. Dash-lines indicate maritime trading routes during the Early Historic time. B: Map of Sri Lanka. The study site, Yapahuwa is located in North Western part of the country and the first capital, Anuradhapura found in the 5th century BC in the North Central and the ancient port of Mantai located at the North-Western tip are also included. Mantai was the leading port and urban centre with internal and external contact established in much of Asia between the 5th century BC and the end of the 10th century AD. Megalithic burial sites investigated (Ibbankatuwa and Pomparippu) are included.

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