

GEO-ARCHAEOLOGICAL INVESTIGATION ON AN EARLY IRON AGE BURIAL SITE AT IHALA KALAWELLA ULPATHA, ANURADHAPURA DISTRICT

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Introduction

The archaeological site investigated in this paper is located at Ihala Kalawella Ulpatha in Anuradhapura District of Sri Lanka. The Ihala Kalawella Ulpatha Early Iron Age (EIA) burial site (N 7° 58' 28.09" E 80° 39' 58.81", 764 ft elevation from MSL) is administratively located within Waya Ulpatha GN division in the Palugaswewa DS division of the Anuradhapura District in the North Central Province of Sri Lanka (Jayaratne 2011, 2012, Jayaratne 2014, 2015). The objective of this paper is to examine the geo-archaeological background of the newly discovered Early Iron Age burial site at Ihala Kalawella Ulpatha.

Methodology

The methodology of this research is fivefold. First is the literature survey which helps to understand and summarise the geological background as well as the settlement history of the study area. Second is the cartographic survey. This approach is vital to obtain a basic idea on the physical and cultural landscape of the study area. Third is the field survey. Exploration methods play the main role in data retrieval from the field. Pedestrian survey method is the primary exploration method in this research. Eye observation is a vital data retrieval method to examine the archaeological and geological data from the field. Next is the sample analysis with expertise knowledge. This is beneficial to examine the geological background of the study area and its relationship with the archaeological context. Fifthly, the final step of the methodology is concerned with remote sensing approaches. The Global Positioning System (Magellan GPS receiver) and Geographic Information System (Arc.GIS 10.3) software have been used to obtain and locate the absolute locations of the study area and analyze and interpret the spatial locational significances of the Ihala Kalawella Ulpatha and its vicinity.

Results and Discussion

Geologically, the study area belongs to the Highland Complex in the geological map introduced by P. G. Cooray (1994). The Highland Complex (HC) is bounded on the West and the East by the Wannu Complex (WC) and the Vijayan Complex (VC) respectively. According to this lithological classification, the study area belongs to high-grade metamorphic rocks. There are six different types of rocks found in the study area (Jayaratne 2015). Details of the rock types can be summarized as follows:

a. Hornblende Gneiss:

Mineralogy: quartz - 45% to 50%, plagioclase - 40% to 45%, hornblende - 5% to 8%

Texture: fine to medium size grains

Structure: well-developed foliation, low fracture intensity. (Jayaratne 2015:162)

b. Granitic Gneiss

Mineralogy: quartz - 50% to 55%, K-feldspar - 20% to 25%, plagioclase 20% to 25%, biotite-5%

Texture: fine to medium size grains. Coarse grains in two locations

Structure: gneissic foliation, few fractures can be observed at some locations. (ibid: 164)

c. Quartzite

Mineralogy: mainly quartz with minor amounts of other accessory minerals

Texture: fine to medium size grains with interlocking

Structure: highly fractured (ibid: 165)

d. Marble

Mineralogy: calcite - 80% to 85%, dolomite, apatite and few other accessories

Texture: fine to medium size grains, coarse grains at few locations

Structure: high fracture intensity (ibid: 165)

e. Biotite Gneiss

Mineralogy: quartz - 45% to 50%, feldspars 40% to 45%, biotite about 10%

Texture: medium size interlocking grains

Structure: well developed gneissic foliation (Jayaratne 2015:165)

f. Biotite-Garnet Gneiss

Mineralogy: quartz - 45% to 50%, feldspar about 40%, garnet - 5% to 10%

Texture: fine to medium size grains

Structure: weakly developed gneissic foliation (ibid: 166)

Petrological and mineralogical studies can be taken as vital aspects in this study. Lithic resources are abundant in almost every archaeological site and lithic artefacts are invariably the best preserved of any remains. By nature, early human societies were more attracted to lithic as a raw material to make their ancient materials and monuments. The central point of the present research is also based on the EIA cemetery site in which the cist burial chambers are made with lithic slabs. Therefore, this research study focuses on identifying the rock types, their mineral compositions and places of origin to interpret the archaeological context in an environmental view. This approach is vital to determine and reconstruct the raw material deposits, technological aspects and ancient resource transport route network in the micro study area.

According to the detailed observations, it can be shown that the EIA people used four main rock types (the above mentioned except Quartzite and Marble) as raw materials to make their burial chambers. Field survey showed that all these rock types can be identified within approximately 1 km radius area around the burial site. Micro-geomorphological studies indicate that there are several boulder lines in the Tambahitiya Kanda hill range as well as the north-eastern side of the cemetery within a distance of several hundred metres. This aspect indicates that EIA people were sensitive to their surrounding landscape and used these rock boulders as a raw material to make their burial chambers. The field survey revealed the existence of an ancient quarry site with stone slab extraction marks on the boulder located approximately 400 metres distance from the north-eastern side of the burial site (Jayaratne 2015:294).

Several cut marks on the rock boulder, indicating stone slab extraction activities were observed (ibid: 295). These cut marks are vital to understanding the EIA metal technology. Iron usage can be taken as a prime aspect in this regard. Without sufficient iron technology they could not have extracted stone slabs from the boulder. In addition to this, there

are also a few conical holes on the top of the boulder. It is assumed that EIA people used these conical holes to temper their metal tools during the slab extraction. Field observations show that EIA people formed these extracted slabs as orthostats to make burial chambers. Cut marks on the orthostats indicate that they had used metal equipment to do this (ibid: 296).

According to the petrological observations, it can be concluded that the most common rock type used as a raw material for burial chambers is Biotite-Garnet-Gneiss which is 55% of the total. Next common type is Granitic Gneiss which represents 30%. Hornblende Gneiss and Biotite Gneiss are fairly low prevalence at 10% and 5% respectively. This is a possible feature due to the distribution pattern of the rock types in the micro study area. According to observations, Granitic Gneiss and Biotite-Garnet-Gneiss rock boulders are located quite close to the burial site. (ibid: 296) Locational significances analysis is an important task to understand and reconstruct the past status of an archaeological context. Therefore, the above mentioned petrological data related to the cemetery can be used as an effective way to reconstruct the EIA human-environment interactions and ancient human decisions.

Conclusion

The investigation of the site found that locational distance of raw materials has highly affected the decisions taken by the EIA communities. The study found that the inhabitants of the site always tried to find closely located raw materials for their burial chambers due to their socio-economic and technological dynamics. For example, if raw materials were located some distance away, they should need to spend more manpower and technology to transport huge stone slabs to create their burial chambers. Due to EIA technology and manpower constraints this would have been a difficult task. Therefore, it can be surmised that they might have been more encouraged to find raw material from their surrounding areas. This decision would be more beneficial to the EIA communities in many ways. Therefore, according to the petrological data in this research, it can be argued that EIA communities paid most attention to the availability of raw materials as a prominent reason to locate their cemetery in this place.

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