

Functional Uses of Stone Outcrops at Anuradhapura Vessagiriya: An Environmental Archaeological Study

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Rock formations of the earth are categorized into different types based on their natural characteristics. The rocks in Sri Lanka are also classified by geologists based on the basis of many factors. For an archaeologist, it is important to have a scientific knowledge about rocks in making logical explanations and interpretations about environmental selection of sites, historical constructions using rocks as raw material and the functional use of technologies in relation to raw material.

Vessagiriya archaeological site, which was investigated since the 19th Century, is located at the southern end of the heritage city of Anuradhapura. The central feature of the site is represented by three relatively large and scenically beautiful rock outcrops, named by archaeologists as Rock A, B and C. Recent investigations indicated that the rock outcrops were used from the pre historic period. The pre historic people used it as a protective safe haven. The Early Iron Age folk used the lower outcrops as a natural foundation for their settlements. The Early Historic (3rd Century BC) devotees chiseled the rocks and carved out shelters for forest dwelling Buddhist monks. They carved out drip-ledges to prevent rain water seeping into the caves and to engrave the earliest inscriptions of Sri Lanka. The advanced period of rock usage at Vessagiriya commences from the Middle Historic period (4th to 10th Century AC). It was noted during the 2007 archaeological investigations that the ancient people had an in-depth knowledge on the physical characteristics of rocks in selecting rocks as raw material, with special reference to the built environment. A whole range of architectural art representations were fashioned out of rock during the Middle Historic Period.

Metamorphic rocks are the most abundant rocks found in Sri Lanka. Due to the pressure and temperature changes, protoliths of these rocks have been subjected to mineralogical and structural changes. Most of these rocks can be easily broken through the foliation plane which was formed from the metamorphic process. We can identify well developed foliation

planes in all of the rock outcrops at the Vessagiriya archaeological site.

The layering of rocks are formed during the metamorphic or sedimentary processes and layers are markedly shown by their different colors. Rocks having dark light colors had been used for constructions at the Vessagiriya site. For example, metamorphosed limestone was used to construct the moon-stone *sandakadapahana*, steps etc. This indicates that the artist had applied his knowledge and technical skills for constructions considering naturally available raw materials.

Ancient constructions of large dimensions which can be seen even today were exploited through simple techniques. These techniques were applicable, since the raw material existed in a controllable manner in the environment. For example, they made *shila puwaru* (stone slabs) from naturally layered rocks. A location near Rock C in the southern part of the Vessagiriya displays such *shila puwaru* that had been separated from the parent rock.

In order to separate the rock, it had been broken along the holes created in the rocks. This was evident by the drill holes found on the edges of the main rock. Metal equipment that were used to separate the rocks by creating pressure inside the holes were unearthed by archaeological investigations. Six of such equipment are exhibited in the archaeological museum in Anuradhapura and two are registered under Nos. C. 7.12 and C. 7.10. This method is yet utilized to break rocks. The only difference between the ancient and present practices is the use of metal pegs and chemicals to create pressure at present.

As described above, the main reason for the built environment activity around Vessagiriya area (including Isurumuniya and Ranmasu-uyana) is the availability of natural resources suitable for constructions and art representations.