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Prehistoric Petroglyphs of Heritage from Ukaguru Forest Savanna in the Central Tanzania: Preliminary Survey

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ABSTRACT: Our preliminary archaeological field research survey in the study area which is located in the Ukaguru forest in the the Ukaguru Mountains has yielded rock art engravings (petroglyphs). The area receives heavy rainfall and experiences cool climate and so found suitable for the production of plantains, vegetables, millet and paddy. We conducted reconnaissance and transect survey in this locality that was not previously explored. In the survey four big rocks with cupules and concentric circles were identified in the Ukaguru Valley. Few engravings have oval and "uterus-like" designs seemingly symbolize fertility.

Secondly, we took up ethnohistoric data collection, and ethnographic survey through participant observation and interview to verify about cultural traditions and practices of surrounding Kaguru people who speak 'chikaguru' language. This data support to understand the underlying phenomenon behind the petroglyphs. Finally, it is essential to protect and preserve the precious Ukaguru rock art cultural heritage and develop tourism.

1. INTRODUCTION

The origin of petroglyphs is chronologically very old concept measured by several scholars such as Anati (1994), Dowson (1992), Coulson and Campbell (2001) and Garlake (2002) etc. Petroglyphs are known for greatest cultural achievements of early humans and so occupied a prominent place in archaeological investigations to retrieve anthropological data relating to the early life-ways of ancient people who engraved the depictions on rock surface. The word 'Petroglyph' is etymologically derived from the Greek root 'petra' means rock, and 'glyphen' is carve. In general, it covers various activities like engraving, incising, pecking, chiseling, abrading, scratching and carving. Rock engravings are normally made by removing weathered outer surface of rocks such as dolerite to create color contrast with the same rock (Dowson, 1992) and in which another hard rock like quartz or chalcedony is used for the removal of flakes. Accordingly, the weathered surface was either scraped away over the whole area of the image, or the image was outlined in a single line, or the weathered rock was pecked out in a chopping motion. In the Northern Cape Province of South Africa, for example, the so-called cupules and grooves have been made in soft rocks irrespective of the color contrasts, because it is less important than the grain size strength of the rock (Deacon, 2002). Such grooves with reference to the above context do not seem to represent art but for using them in religious or sport activities. Through depictions of various figures or designs, ancient people expressed their life experiences which may be classified broadly under creativity, nascent science, religion and sports.

French army officials in 1847 have reported rock engravings in Algeria. In the year 1850, Heinrich Barth recorded rock engravings in Lybia (Willcox, 1984: 2; Le Quellec, 2004: 14). Since the beginning of such early reports, scholars began investigations on rock art paintings and engravings all over the African continent. As of that time there were around 50,000 rock art sites on record at universities, museums and heritage organizations which amount to as little as 10 % only out of the total number of sites (Smith, 2013). Smith (1997) himself recorded just over 700 previously unreported sites from a small area of Central Africa. In another report Eastwood (Eastwood & Eastwood, 2006) explored more than 1000 new sites. So, every year the number increases as new surveys report several hundreds of sites from different parts of the African continent.

In Africa, the earliest petroglyphs are known to have been emerged from the time of Homo sapiens around Circa 27,000- 40,000 (Garlake, 2002). The data suggest that Africa has recorded the largest number of rock art sites in the world, and specifically petroglyphs have been reported to be a widespread tradition in almost all the continents (Anati, 1994; Garlake, 2002; Fossati, 2017;

Inshall, 1999; Khan, 2008). Tubi's (2017) discussion on various African sites in different regions such as Algeria, Egypt, Cameroon, Central African Republic, Chad, Niger, Gabon in the reconstruction of African history is interesting. Particularly, the study of petroglyphs of Nigeria promotes the richness of the cultural history of Africa (Hussaini et al., 2019; Aleru et al., 2019; Bakinde & Giade, 2019).

It is not amazing but quite natural for early modern humans to opt an immediate space in their habitat for rock art exercises including petroglyphs on the walls of rock shelters, caves and rock outcrops. Perhaps reliability of rock, ample space for drawings, pecking and carving etc., and variety in the selection of locations, techniques of making and depiction of various kinds of figures, designs and multiple scenes relating to different cultural expressions seem to be most conspicuous features Tubi (2021). It is world known truth that Africa continent is cradle of humankind and correspondingly rock art paintings and engravings were also found widespread from the Red Sea Coast that encompasses north central and southern parts up to extreme South Africa. South Africa is a storehouse of pictographs and petroglyphs. There is no discussion on later prehistory of this part of Africa without making reference to the abundant evidence of rock art.

It is worth mentioning to make a reference of few scholars who have worked on some important rock art sites in the region of South Africa. They include Lewis-Williams (1983), Dowson & Lewis-Williams (1994), Garlake (1995), Solomon (1997) and Russel (2000) etc. These investigations have brought to light the denseness, widespread nature and significance of the rock art on one hand and understanding of the connections with indigenous San and other mixed groups (Blundell, 2004; Ouzman, 2006; Eastwood & Smith, 2005) in the region. In Central Africa, particularly Mozambique, Eastern Zambia and Central Malawi are found rich in agricultural farmer rock art (Smith, 2013: 151) different from the hunter-gatherer art. In the Eastern Africa region, the geometric tradition of Central Africa was found widespread in Uganda, western parts of Kenya and with little exception Tanzania as well (Smith, 2013: 153).

Since the beginning of interpretative advances on rock art outside African continent mostly from 1970s, rock art publications in Tanzania have developed into general descriptions of specific types, styles and sites alongside a few short reviews and summaries unlike previous scanty research activity (Anati, 1986; Masao, 1991a, 1991b). Subsequently scholars in Tanzania have identified innumerable number of sites with pictographs and their analysis for thematic classification and meaning. Yet, archaeological investigations on petroglyphs are scanty. However, sporadic archaeological and ethnographic enquiries by a few researchers like Mabulla (2005), Itambu et al. (2018), Bwasiri (2011) etc. have revealed lot of insights to decipher the hidden meaning behind rock art. Particularly Central Tanzania region is studded with Precambrian rocks that form the eastern escarpments of the East African Rift Valley system, and so consequently has contributed to systematic study and documentation. Further it increases research interest on paleoenvironmental, archaeological and ethnographic data that might provide a context for the rock art in future (Anati, 1986; Lim, 1992; Masao, 1979; Chalcraft, 2005). In Ethiopia, Karora pastoral paintings (Vigliardi-Micheli, 1956), paintings in the limestone rock shelters such as Genda-Biftou and Laga oda (Willcox, 1984: 57) and Porc-Epic (Clark, 1954) near Harar etc are a few to quote. In Eritrea, several petroglyph sites such as Me'alewaya in the Adi Queyya town, Mai Nefhi petroglyphs resemble as those of Hamasen (Cervicek, 1976) on the west of Asmara, the capital of Eritrea were explored. Qohaito paintings are also famous in this region. It is further interesting to notice the ecological perspective of the rock art in this region (Krishna Rao, 2014). Fattovich (1988) connected the petroglyph sites around Asmara to Arabian rock art drawings which are dated to between 3rd and 1st millennium B.C.

In spite of these discoveries and other interpretive developments of rock art paintings and engravings, research on later type could not draw proper attention by scholars. However, surprisingly several paintings such as concentric circles and other "oval" and "uterus-like" designs resembling female sex motifs for instance in the Central Tanzania region (Mabulla, 2005) have been found reflected in the Ukaguru rock engravings. In the current scanty situation, the investigation on petroglyphs, archaeological material discoveries of Middle Stone Age (MSA), Late Stone Age (LSA), Iron Age and the Historical period along with the evidence of rock gongs, cupules and grinding hollows in the Singida area by scholars such as Itambu et al. (2018), Masao (1976) etc. have become an added incentive to encourage research investigation on petroglyphs.

Even though Ukaguru area in general offers congenial atmosphere in the past for caravan trade and other several important historical events involving Arab, German and European trade colonies and conflicts, there is a big gap in the rock art research in the Ukaguru Forest savanna area. Earlier few cave paintings were identified (Culwick, 1931) in the region, yet intensive search on rock art specifically on engravings could not ascertain an attention of scholars. In this situation rock art discovery in the Ukaguru Forest savanna is certainly remarkable. Further the existence of local communities is an accessible factor to draw ethnohistoric and ethnographic data from them for meaningful explanation behind the petroglyphs through ethnoarchaeological interpretation. On the other hand, it is necessary to protect the natural and cultural resources to expedite a kind of community-based tourism (Tosun, 2001) development and poverty alleviation. In this context, our rock art research in the Ukaguru study area (see **Map**) fulfills the gap and promotes tourism development. For this purpose, the following objectives were formulated.

UKAGURU MAP IN TANZANIA (Central Africa)

2. OBJECTIVES

i) Identification and recording of rock art sites in the Ukaguru Forest area ii) Assessing the types and thematic styles of petroglyphs and iii) Ethnohistoric and ethnographic enquiry to facilitate ethnoarchaeological interpretation for drawing probable meaning behind the engravings.

3. MATERIALS AND METHODS

The following research methodology was adopted to achieve the above objectives.

i) The methodology includes **reconnaissance survey and Transect survey**. Since no archaeological sites with rock art evidence have been identified in the study area and adjacent Gairo locality in the past, consulting local people to explore their knowledge on rock art or any other evidence relevant to such archaeological evidence became an incentive to our research. So, we consulted local people and also forest department staff such as Mr. Yosuph Lugo, Mr. Panga Godwin and Mr. Elia Mtewere. We conducted our search on pedestrian survey. As a result, we could identify petroglyphs on open rock boulders. We recorded geographical landscape and location with hand-held GPS.

In the transect survey, transect lines are normally made on the baseline by creating a central datum point. The straight transect lines facilitate to begin archaeological survey systematically in order to cover more area to assist thorough investigation. The other tools and items used in the investigation are Compass, GPS, digital camera, binoculars, Bunsel chart and other usual excavation kit etc. In this survey we identified rock art engravings on huge rocks situated nearby our transect lines.

ii) Apart from the above, **ethnohistorical method** is another important aspect for interpreting archaeological fact. Ethnohistory in fact is emerged as a symptom of movements in both Anthropology and History tending towards integration of the structural and historical approaches to understanding culture (Sturtevant, 1968: 452). One of the roots of ethnohistory is the so called “direct historical approach”. This approach in course of time became an appropriate method in ethnoarchaeological interpretation for archaeological explanation. It is therefore our intention to apply ethnohistorical data to retrieve the hidden meaning behind the petroglyphs in the study area.

4. SIGNIFICANCE OF THE STUDY

In the wake of lack of knowledge and information on art and culture and archaeological exposition in the Ukaguru Forest area and adjacent Gairo locality, present investigation which has yielded evidence gains lot of importance. Especially survey on petroglyphs and underlying ethnohistory in the historically significant Ukaguru area is an additional asset to the academic world. The physical environment with natural landscape and climate with its fluctuations in different periods of time which effects human populations are to be understood as significant prime movers of subsistence and survival of people. Further present research in the area brings popularity in the public and attract an attention of heritage managers to highlight rock art petroglyphs in the Ukaguru environs towards tourism development.

5. RESULTS AND DISCUSSION

It includes i) Physiography, ii) Rock art evidence, iii) Ethnohistory, iv) Chronological probability and iv) conclusion.

Our preliminary field research survey has yielded rock art engravings in the Ukaguru Forest. As part of our methodology, library literature relating to peer-reviewed research publications on pictographs and petroglyphs was collected in the beginning. Later, a preliminary survey including pedestrian survey and ethnographic enquiry was conducted in the area. Our consultation with local people revealed few interesting details such as rural games and other rock art traditions. The rock art site is located near the place called 'Trial Plot' which is at a distance of about 6 km. from the Ukaguru Forest Department Office. From Trial Plot, just half kilometer away the rocks with petroglyphs can be witnessed (Photo-2). The total distance from the Gairo main town to Trial Plot is about 40 km. On the whole the site presents an undulated topography with thickets grown in hilly tracts and valleys.

5.1 Physiography

The Ukagura (presently called Ukaguru) which is also traditionally known as Kagura land occupies the landmass of the area of about 3000 square miles, and lies roughly 200 miles due west of the seaports of Bagamoyo and Sadani. During the18th and 19th centuries there was an important carvan route between the Indian Ocean and Lake Tanganyika that passed through Ukagura, following the Mkonda and Kinyasungwe rivers. Later on, this caravan route became the Railway Central line (Wynne-Jones et al., 2007). The Ukaguru forest in which the site located is in the Ukaguru Mountains (37° E and 6.46° S) which in turn form part of the Eastern Arc Mountains, the oldest mountains in East Africa (Griswold, 1991) extending diagonally from southwest to northeast along the Eastern Great Rift. The word 'Kaguru' refers to the highlands with heavy rainfall. Over all annual rainfall in the area is about 1300 mm. During the German occupation of the area in 1884, much land was preserved under reserved woodland which reflects a picturesque of dense semitropical forestland and supports abundant rain. On the other hand, the landscape with steep terrain with a network of valleys became an ideal protective "heartland" for refugees escaping raids, specifically from the Hehe community of the south and the Maasai of the north.

Geologically, the Ukaguru Mountains are made up of ancient crystalline Precambrian rocks that were uplifted over millions of years along fault lines. The most recent period of uplift began around 30 ma (mill. years ago), but the formation of fault zone and uplift process may be far older. The rolling hills and river valleys in plateau and the lowland are mountainous containing iron deposits. The advent of iron deposits seems to have prompted Kaguru people to develop their own ironworks in the Itumba Mountains, the heart of Kaguru until the colonial period (Beidelman, 1961: 538). Soils derived from these ancient rocks are not as fertile as the younger volcanic soils of mountains to the north and west.

5.2 Rock art evidence

In general, the hilly tract with forest-savanna exposes huge rock outcrops drained by the river Ndete which originates on the top of the Ndete waterfalls (Photo-1) in the Ukaguru Mountains. The river Ndete flows from Ukaguru Mountains to Mwumi through the rock art site. There are four huge rocks with cupules and concentric circles found in the Ukaguru Valley. Some rocks exhibit concentric circles (Photo-3) and some rocks have both circles and cupules. Few engravings have oval and "uterus-like" designs seemingly symbolize fertility. Some petroglyphs were unidentifiable presumably because of weathering caused by sun, wind and rain. There is no uniform pattern in the number of circles drawn. The circles vary from four to eight. The concentric circles and in few cases, a circle is encircled by another circle are found while in others the line began at the centre to draw the pitted line continuously to make circles one after another. These concentric circles and oval and "uterus-like" motifs (Photo-4) may be related to fertility. On one rock surface cupules were found pounded in a double line with linear pattern. There are instances of cupules (Photo-5) made in groups. On one rock surface two groups of cupules, each group with about eight cupules were recorded. For making of such grooves some hard stone like elongated hematite pebble (Photo-6) of about 6 inches with a pointed anvil at one of its ends seem to have been used. One such anvil was collected in the Ukaguru valley. The following description is related to four individual rocks with petroglyphs in the art site.

5.2.1 Rock art boulder-1: (35° 45' 2" E and 6° 11' 21" S): This rock is located about a kilometer away from the head-quarters of the Ukaguru Reserve Forest Department. The area is full of bushes and tall trees and grass with intermittent agricultural plains. Crops like maize, ginger, and other vegetables are extensively grown on the hill slopes. In the midst of the thicket a sedimentary rock (Rock-1) having dimensions of about 15 m length, 8 m width and 2 m height is situated in east-west orientation. The rock slopes from west to eastwards. On the top surface of the rock five concentric circles were found engraved in five spots. These circular engravings have inner circles that vary between four and eight. In some cases, inner circles are independent. That means circles are pitted one after another perfectly with a specific idea in the selected space. In other cases, a single circular line continues from the center till the end to make several circles which are therefore not independent. Circles at two spots are clearly visible while at other spots the circles are not visible because the figures are disappeared by weathering caused by sun, rain and wind. Thus, there is no uniformity in the pattern of making of these circles. Some figures have 4 or 5 circles and some have 7 or 8. In independent circles, a circle is encircled by another circle, while in others a single line is stretched circularly from the centre to make several circles till the end within the stipulated space. The circles are made by pitting the surface circularly.

5.2.2 Rock art boulder-2: About 10 m away from the first rock, there exists another rock with almost same dimensions north of Ukaguru Reserve Forest Department. On the surface of the rock only one circular figure with around one foot diameter was found engraved. In this figure five circles were pitted. Outer most circle is encircled by four inner circles. About 2 to 3 cm wide groove is made to prepare a circle. A pointed iron or hard rock piece, "anvil" might have been used to make a groove of a circle. In the past, people would have followed similar technique for making circles. All these circles were so uniformly pitted as if the circles were crafted by a modern artist. Whether the circles are symbolic or entertainment game spots, it will be known to some extent after an in-depth ethnographic enquiry. Because some of the indigenous communities had such entertainment games till recent times, present day information relating to rural practices of games and sports shall throw some feedback on petroglyphs. Also, there are references of few communities who enjoy rural games which are very interesting even today. These games include children's rock gongs, pitted holes / cupules and stone carroms / balls relating to games like grooved chess-like board etc.

5.2.3 Rock art boulder-3: This rock is located 66° west of Ukaguru and 300 m away from the second rock. Two vertical rows of engraved grooves like cupules appear on this rock. They are made in double rows in a linear line covering the length of about 2 m. The line of cupules is in a horizontal axis along the length of the rock. Each cupule has the diameter varying between 3 and 6 cm and depth about 0.5 cm. The purpose of making such cupules seem to have been used as game sockets. Many evidences on country side of contemporary time show such games with cupules arranged in small squares and rectangles involving children, youth and adults. Appearance of cupules in long rows reveals that a group of people appear to have been participated in certain games. Long rows of cupules in this case of rock-3 also convey that a group of children, youth or adults might have involved in the game. As already referred to Singida rock gongs and cupules by Itambu et al. (2018), these rock gongs and cupules seem to have been used as "kids play stones" and pounding medicinal plants, herbs and nuts. These games relating to cupules of squares or rectangles reveal the creativity of ideas and thought process on one hand and entertainment on the other among folk participants.

5.2.4 Rock art boulder-4: This rock is situated 174° north of Ukaguru. Actually, two different rocks exist side by side. The length, width and height of the first rock are 10 m x 5 m x 3 m respectively. This rock exposed seven circles of which two of them are found incomplete. Perhaps these circles were under process of making, but eventually left incomplete for the reasons unknown. Some more similar incomplete circles were not only found on this rock but also on other rocks. On this rock five circles are clearly visible, four petroglyphs with concentric circles were engraved in the four corners within the available rock surface. The distance between any two circles varies from 1 m to 1.5 m. Dimension-wise almost all circles except two, look alike. This pattern is common in all circles on all the study rocks. On the adjacent rock with dimensions of 6 m x 3m x 3 m, two circles were found, one is bigger and the other is incomplete. The bigger petroglyph has five inner circles. The second one was confined to only a small circular groove or hole which is not full-fledged, because it was left unfinished after initiating. **Photos (Ukaguru Engravings):**

1 2 3 4 5 6

5.3 Ethnohistory of the rock art site:

Actually, the Ukaguru Mountains in central Tanzania are located in Gairo (or Geiro) district of Morogoro region. The mountains are on the east of Dodoma, the capital of Tanzania. Though presently Ukaguru is a relatively remote and underdeveloped portion of the territory, its location on the caravan route west to the lakes in the past became a focal point for several important events in the Tanganyika history. The history reveals that in the late 1870s, the Arabs supported Senyagwa Chimola, a local Kaguru leader at Mamboya and recognized him as "Sultan" of all Ukaguru. That is how the Kaguru controlled the local and adjacent areas up to Geiro and extended clan ties (Beidelman, 1962). The name Ukaguru is derived from the word "Kaguru" (or Kagulu), the local people. Kaguru (or Kagulu) people speak 'chikaguru' (or Kikagulu). According to the 2004 Survey Report Profile, Tanzania, the prefix 'Ki' designates a language of a certain ethnic group.

The Kaguru are a Bantu-speaking society which numbered about a hundred thousand cultivators inhabiting a small area of about 3,600 sq. miles in eastern Tanzania (Beidelman, 1978). This area was known for great geographic and ethnic complexity. The lower unforested slopes are good for pasture, and some mountain valleys provide small areas for cultivation. Being ideal for defensive warfare during pre-Colonial times the less warlike Kaguru prone to practice meager mixed economy of herding and hoe cultivation. They live in large settlements on the plateau and defend from the raids for livestock, grain, metal goods and slaves. Normally they

build rectangular huts with small branches of trees, and then plastered with earth. Traditionally they build small round cone-shaped hut for ancestral worship. The plateau Kaguru was placed with other ethnic highlanders who were also matrilineal and had similar lifestyle patterns such as polygyny, ancestral worship, use of rain stones, magical medicines etc. Gradually the situation was changed and so of late, the Kaguru live in small hamlets of 3 to 20 huts or sometimes lone homesteads. Such hamlets are evenly and thickly dispersed every hundred yards in the river valleys while in the mountains and hills they are scattered (Beidelman, 1961).

Since agro-pastoral economy is the livelihood of tribes of central Tanzania including Ukaguru communities such as Kaguru, Nguu, Kamba etc. (Sangeda et al., 2013), the Ukaguru valley environs allow the inhabitants to use the hill and forest land for grazing their livestock and cultivation of vegetables and food crops. Ugali (stiff maize porridge) and rice are the main staple food items. Ugali or rice topped with a vegetable or meat stew is a typical meal. Though the plateau is subject to pronounced fluctuations of rainy and dry seasons, the water courses fulfil the annual requirements of people and livestock. The seasonal pastoral movement and possible agricultural production might drive people to involve in games and arts such as rock engravings, rock gongs etc. in the Ukaguru valley. There are several wooden images such as masks and other anthropic figurines carved by the Kaguru since ancient times which show their mastery in the carvings or engravings and also reflection of the thematic expression. Hence, the present Ukaguru prehistoric petroglyphs reveal artistic, technological, aesthetic and religious importance of the society.

5.4 Chronological probability

The evidence of engraved circles, fertility motifs, cupules, rock gongs etc. reported from several sites all over world has not been confined to a single time period. There exists an inevitable problem in the age calibration of art of whatever form on absolute terms. The estimation of age and cultural attribution of a specimen from art style as only traditional means is unreliable. The evidence of 'cupule art of Singida' in Tanzania (Itambu et al., 2018: 171) is an interesting reference in the group of petroglyphs such as cupules, grinding hollows and rock gongs. Identification of grinding hollows as that of Singida from Simiyu district of north-western Tanzania (Saanane, 2016: 171) is an additional support to the above evidence. However, this study area is largely surrounded by Late Stone Age (LSA) assemblage, MSA evidence and Historical structures as well. Contextually, it is worth mentioning to verify Clark's classification of second series of petroglyphs (Willcox, 1984: 68) which were evident from Bur Dahir rock shelters and fallen rocks in South-Western Ethiopia where a set of shallow pits were known to have been used for playing the almost universal African game here called *garre* but named with different names elsewhere. The other glyphs include parallel cuts, concentric semi-circles, single and paired, H-shapes etc. Cervicek (1976) by analogy with similar indications at other petroglyph and mural art sites in NE Africa and the Near East, regarded the most probable dates of these engravings as the first half of the first millennium A.D. Normally pitting the rock surface for making circles or other petroglyphs is possible only with hematite stone or iron anvil. The raw material availability in the Itumba mountains in the Ukaguru, and iron smithing and tool making activity of the Kaguru furnish the supporting reference for the use of iron. In most of Africa south of the equator, farming and iron-working performed at approximately the same time (Phillipson, 2005:214) and that the iron implements and arms enhance the efficiency in various activities such as the clearance of forest, the working of wood, the quarrying and carving of stone, the cultivation of ground and the attacking enemies. Among the early Bantu-speakers, the metal iron seems to have been considered as 'a thing of value'. Until the arrival of absolute chronology, the Ukaguru rock art on the basis of chronologies of neighboring sites for all purposes may be tentatively dated to between 1st millennium B.C. and 3rd Century A.D.

5.5 Implications of the study

This research study shed light on future research and economic development. It has allotted a space for young scholars for fresh archaeological survey in surrounding areas to expect rock art sites including petroglyphs, thereby reducing the concept of their absence in this region. Secondly, the research activity in the area or areas popularize the concept, importance and security of the cultural property and heritage among the public both in the rural and urban centers. This is how it draws the attention of people to offer service either voluntary or salary-based. Further it paves the way for tourism development which includes laying of roads and other construction activities to facilitate tourists and visitors in the areas. Thus, this study contributes to the social and economic development.

5.6 Recommendations

Role of local communities has prominent part in sharing the tips of indications during identification of sites and their safety measurements in the promotion of heritage importance and tourism. It is therefore necessary to induct the service and suggestions of the rural public in the routine development activities of government or non-governmental heritage organizations. Since the tourism is the central for main income source, it is necessary to focus on rock art research and explore as many sites as possible. Finally the archaeological sites, particularly art sites which are fragile and delicate to withstand from natural and animal disturbances must be properly taken care of by arranging fencing or compound walls around the sites along with the supervision of security guards.

5.7 Conclusion

Although the origin of rock cupules has remote antiquity as far back as Lower Paleolithic Period elsewhere in Asia, its association with perfect circles in the present context somewhat appears to be of Holocene affinity. In some regions rock gongs were found associated with other cupules which are associated with rural games for youth is evident from our preliminary ethnographic enquiry, and that the folk communities have played games with small stones using cuplike holes / cupules made into the surface. Although wind, rain and dust disturb the rock engravings, they are survived in the Ukaguru forest savanna zone. The rocks with petroglyphs are situated near the place called "Trial Plot" which is about 6 Km from the forest department office. All the four rocks which are located with a few hundred meters distance apart in the vicinity of the Trial Plot exhibit concentric circles, cupules, cupules in parallel lines and female uterus-like motifs on the rock surface. The different types of rock art engravings reflect both artistic craftmanship and thematic expression. Perfection of pitted circles truly attribute the crafting caliber of the makers of these petroglyphs. On the other hand, the petroglyphs appear to have been related to different themes such as games, woman fertility, grinding hollows and so on.

These engravings might have been made on the rock by pecking with a hard pointed tool like iron chisel, the evidence of which is furnished by an occurrence of a hematite pointed chisel in the site. In case of concentric circles, there are inner circles. The number of circles vary from four to eight. Perhaps in this case, the engraver might have started from the inner most circle which was followed by consecutive outer circles one after another. In other few cases, the circles are continuous till they reach the outermost. Making cupules in a parallel line, and in some cases groups of squares is spectacular. Perhaps they are made by agro-pastoralists to enjoy the fun of games and sports. It was ethnographically revealed that the rural youth and also adults use such holes in the rock surface as groups of squares in the game boards even now.

From the point of cross-cultural view, the makers of the Ukaguru petroglyphs may have been related to the people descended from the prehistoric agro-pastoralists. The evidence of ground and polished tools, pottery and other Late Stone Age and Middle Stone Age materials in the adjacent areas of Dodoma region is the eyewitness to support the above view. Further, the development of iron tools and iron smithing which can be witnessed among some of the contemporary indigenous communities reveal that the tentative chronology of the Ukaguru petroglyphs from all the probability can be broadly dated to between 1st millennium B.C. and 1st millennium A.D. Obviously, extensive archaeological survey and detailed ethnographic information are required to understand the meaning of these petroglyphs and the social phenomena connected with them. It is our future target to focus on more scientific study to arrive the above objective. Further, we recommend that the Cultural Heritage Managers and other stakeholders need to rescue and preserve such pristine prehistoric petroglyphs of Ukaguru to promote tourism.

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