

Ecological Perspective of Rock Art of Eritrea in East Africa

Sadasivuni Krishna Rao
Associate Prof. of archaeology
Dept. of History, School of Humanities
University of Dodoma, Tanzania (East Africa)

ABSTRACT--- *Rock art study is one of the potential areas of research analysis covering aesthetic, social, economic, technological and environmental aspects. Such interpretations can be derived from understanding the pictographs, petroglyphs and other associated material culture in an ecological context. There are instances of hunting-gathering subsistence activities, agricultural, pastoral economies, warfare, magic and religion etc are reflected in the rock art. Painted caves, open rock art sites and even portable art that were surveyed from different parts of the world have been analyzed to be the centers of coordination and integration of potential competitive groups (Jochim 1983). They are known as ceremonial centers where people gather for decision making relating to various social, economic and religious activities. Onset of Holocene led people adapting to new environments for new subsistence preparations of sedentary settlement and survival. As a result agro-pastoral economic activities along with the other small-scale foraging activities were adopted. Art and religion was expanded more in Africa particularly from Holocene time.*

Eritrea in East Africa is potential for rock art evidence. Several rock art sites such as cave paintings and engravings were identified from different landscapes of Eritrea. Some pictographs were painted in red and some were found painted in black color. An in-depth study of these rock art sites located in various environmental settings reveals the underlying philosophies of subsistence and settlement on one hand and technology and ecological adaptation of the communities on the other.

Keywords--- Rock art painting and engraving, ecological interpretation, pastoral and agro- pastoral economy.

1. INTRODUCTION

Rock art research has been recognized as one of the significant sources of cultural history interpretation. New directional rock art interpretations explore an in-depth expression and importance. Scholarly attempts to decipher the hidden language of rock art and its authors contribute to project true picturesque of the total environment and culture in space and time. The influence of functionalistic ideas and later structural and ecological perspectives in art interpretations substitutes the above fact.

Art as a hunting-magic, as mithogram, as ecological and as an aspect of social geography can be seen in different phases of development of rock art interpretation. There is lot of scope to make such analysis from a pictograph or petroglyph of a parietal art. Ecosystem concept for the assessments of spatio-temporal variability and complex interrelationships related to human existence and survival is an important element of ecological archaeology. The emergence of the concept of cultural ecology (White 1949, Steward 1955) that regards cultural patterns as adaptive responses to the basic problems of human survival and reproduction, is in fact a re- emergence of an integrated adaptive system of culture (Nanda 1994: 51) including religion of old anthropological view. The very emergence of religion that sometimes manifested through

art itself is an outcome of many experiences from most precarious circumstances of human existence and survival.

Such an ideology is found consistently pertinent in hunting societies of both extinct and existent. Confinement to spirit and appealing to nature by such hunting societies through art has become essential part of routine life of non-western societies. Thus, art has been attributed to mana-like power, ritual drawings of animals' image at a sacred spot are drawn immediately after the animal being hunted. Such activities are performed to signify the importance of nature that controls animals. Explaining the economic significance of art in an ecological context Jochim (1983) cited painted caves and portable art in relation to coordination and integration of potential competitive groups that involve in group hunting, asserting land tenure and also other back-up resources like salmon hunt.

During 80s scholars like Hester etc have long back opined that rock paintings illustrate band activities such as warfare, marriage, rain ceremonies, burial, abduction to women, sexual intercourse, homicide and theft. Fischer (Nanda 1994:391) in his explanation on art styles as cognitive maps, hypothesized that hierarchical and egalitarian societies would have different art styles indicating social differentiation. His study revealed that simple elements of art, designs with a

large amount of empty space, symmetrical designs and figures without enclosure relates to egalitarian society while the features attributed opposite to the former constitute the hierarchical society.

Various paradigms of the essence of rock art are summarized in the above. It reveals several contextual explanations relating to habitat, economy and society of an ecological perspective of parietal art. Such pictographs and petroglyphs are abundantly evident all over Africa. Even now some indigenous communities like San of South Africa still practice rock art in context of their belief in shamanism and trance performance (Lewis-Williams 1981, 1984, Lewis-Williams and Dowson 1988, 1989, Dowson 1992). Most of the rock art sites of Africa appear to be associated with Holocene times that began after the occurrence of major systemic changes at the end of last glacial. Evolutionary changes were also taken place in culture. Stone Age hunter gatherer gradually developed pastoral economy and agriculture. In East Africa the term pastoral Neolithic is used to refer to all societies with a later Stone Age lithic technology, pottery and an economic base depending on domestic stock (Bower et al. 1977).

During the struggle for economic stability and development in response to environmental changes, shifting from hunting-gathering to pastoralism and agriculture would have become part of routine life. As a result, religion and aesthetic sense played a vital role in the life of people and so its significance is enhanced through rock art.

There are many rock art sites explored throughout the Old world. Rock sites are plenty in Africa too. Our investigations in Eritrea in North East Africa brought to light several interesting aspects of culture.

Eritrea with several rock art sites exhibit different pictographs and petroglyphs which are produced from the life experiences of ancient people. The evidences of such rock art have been

noticed predominantly from northern, Central and southern regions of Eritrea. Nakfa and Karora areas in the north, Central highlands including Adi Keih and Senafe area in the south are some of the areas relating to different environmental conditions found potential for parietal art. Habitation places, roofs and walls of caves and stone slabs of rock shelters have been used for painting and engraving various figures of animals and humans, and other objects of nature and warfare. All these can be attributed to different subsistence, ceremonial and defense activities. Subsistence may be related to hunting, pastoral and agricultural activities. Techniques of subsistence are expressed again with different techniques of art drawings. Size, color, effect are involved in the artistic expression which is the effort of the group or community.

Some of the examples are dealt here in order to analyze the relationship of different communities, their subsistence activity and environmental adaptation from rock art paintings and engravings. Major inferences from cultural ecological perspective are attempted to draw community adaptation to production and technology in the economy which results in different cultural systems (Steward 1955) in different environmental zones. With the above concept the following objectives are initiated.

2. OBJECTIVES OF THE STUDY

- a) To examine ideological, technological, environmental and artistic expressions of pictographs and petroglyphs of rock art sites.
- b) To find out various institutional activities such as subsistence (hunting, pastoral and agricultural etc), defensive and ceremonial purposes of the group or community.
- c) Understanding the rock art system and expression as part of lifestyle of the community under the concept of cultural ecology.

3. MATERIALS AND METHODS

Various materials were used during survey. After reconnaissance survey, systematic transect survey and excavations were conducted to examine stratigraphic levels, spread of cultural evidence and association of other material aspects. Area maps, Digital camera, Compass, GPS, and excavation equipment such as tape, range poles, range finders, pick-axe, knife, brush, sieve, soil chart, graph sheets, aluminum foil for collection of charcoal and charred bone samples for carbon-14 dating, and polythene bags for soil samples for the estimation of sand, silt, clay ratios were used during investigations.

The following methodology was adopted in the data collection.

- a) Collection of literature from journals, published books and archives
- b) Field visits to identify different landscape environments, site survey, photographs of rock art sites, pictographs and petroglyphs
- c) Ethnographic enquiry from the villages nearby the sites
- d) Analysis and interpretation of data espousing the concept of cultural ecology.

4. RESULTS AND DISCUSSION

There are several rock art sites in the whole of Eritrea. Only few important sites as examples have been cited here to envisage various interrelated aspects of rock paintings and engravings which reflect economic, technological, environmental and aesthetic activities.

1. Adi Quantsa: This painting (Fig.1) is all about pastoral scenario. Animal figures are spectacular and constitute a major group. Few human figures are also present. Over all 34 figures are painted in yellowish red. Two are at the right end facing the direction of movement of the rest of all animals. One among these two is a camel depicted with elongated body, neck and legs. A person with a stick in hand sits on the projected hump of the animal. There is one animal with furious look that looks like a chitah?. Other animal figures include humpless bovids, ovicarpids and camels. Horns of cattle and antlers of antelope are drawn. Red, yellow and green color combinations can be seen in all these paintings. An interesting feature of a picture is the movement of a group of cattle in the pastoral world. Other animals represented with dots on skin resemble spotted deer have been oriented to other directions.

This painting as a whole reveals pastoral economy of people with seasonal shifting as technique of subsistence in search of grazing pastures for livestock. During movement in the forest environments, it appears that people face problems with different wild animals.

2. Adi Aleuti: There are about fifty animal figures (Figs. 2, 3 &4) drawn. They are camels and donkeys. One human figure with a thick round headed long stick in hand is found depicted in red color at the top of the stone slab impressing a herdsman. There is a red painting resembling a Chitah with an elongated tail. The animal is orienting opposite to the rest of the animal herd that are painted in white. Except some five animals, the rest carry loads. The above painting shows the use of animal force as a means of transportation of loads in the economic activity through distance trading and marketing.

3. Hesmele (Qohaito): This rock art (Figs. 5,6&8) site is located in the Addi Qayye/ Adi Keih area where Adi Aleuti, Iyago, Me'alewaya sites are located. The site is situated at the distance of 110 km away from Asmara, the capital town of Eritrea. There are paintings on the walls of two cave-like rock shelters at Hesmele (Krishna Rao and Curtis 2007). In one of the rock shelters that was extended in north-south direction there are about 17 bovines on the north side and 8 human figures on the south depicted in red painting. Since the shelter faces east, paintings appear to be naturally protected from westerly wind and rain. Human figures in a row are drawn on the northern side of the wall. There are paintings of humpless cattle (*Bos taurus*) with pincer-horns. The second rock shelter is dominated by 21 humpless long-horn cattle, one human figure (shepherd ?), one sheep- all in one group on the north, 8 humpless long-horn cattle on the south and one

sheep on the southern most end of the cave wall. They are painted in black color. Some animals like wild lizards are also found painted in black, revealing the existence of such species in the surrounding environments. Interestingly this wild species is separated from the rest of paintings of the cattle cluster.

In the Hayneba village (Figs. 7 & 20) which is located adjacent to the rock art site, people explained that their pastoral ancestors painted figures with different color combinations which are prepared from the mixture of plant extracts and clay or ash.

Paintings of cattle including sheep indicate their predominance and the pastoral life of people. Perhaps monsoonal climate might be helpful in the development of bushy forest environment with patches of grasslands. Such semi-arid environs appear to have favored cattle breeding. Humpless cattle with long horns and sheep may have been used for not only breeding but also consumption of meat, milk and milk products. Of course there is also possibility of hunting wild lizards for consumption by these pastoral communities. Such instance of hunting such lizards is common now in many parts of the world including Eritrea in East Africa.

In the year 2010, we have systematically conducted survey and excavation (led by S. Krishna Rao, Department of Anthropology and Archaeology, Adi Keih college of Arts and Social Sciences, Eritrea) in the rock art site. Datum point on the south-west corner (N 14.85967, E 039.36797 and Altitude 7947) was fixed before starting excavation. Each level is restricted to 10 cm. The excavation (Figs. 9, 10 & 11) has yielded different materials from the depths of seven levels. They include black ware, red ware, charred bones, charcoal, hearth with charred stones, and few core flakes. Samples were collected for carbon dating. Outside the cave the survey has yielded pottery of both red ware and black ware and pottery with handles and designs. Flake tools such as end scrapers, side scrapers, pointed tools made on chert and round hammer stones were also found. Quartz flakes and other debitage were found abundantly scattered in the site. On the southeastern border of the valley under survey a heap of ash was found.

Rock paintings at Hesmle generally appear to be similar to both the Sorre Hanakia and early Dahthami stages of the so-called Ethiopia- Arabian style of rock art possibly dating to between the 3rd and 1st millennium B.C. (Brandt and Carder 1987; Agazi Negash 1997; cp. Cervicek 1979). There is a rectangular stone structure/ building (Fig. 12) nearby the rock art site may date to 1st millennium B.C. or early 1st millennium A.D. (Krishna Rao and Curtis 2007).

The pastoral economy as principal subsistence resource in these highlands resembles Savanna Pastoral Neolithic. With the beginning of the domestication of animals during Neolithic must have pushed people toward the livestock development that necessitates search for grazing grasslands. However hunting and gathering had been supplementing the subsistence. Gradually they appear to have shifted to shifting and terrace agriculture

with indigenous techniques. But in highlands agriculture is mostly depending on seasonal rains and so pastoralism is continued to be main adaptable phenomenon.

4. Iyago painting: Among the group of paintings (Figs. 13-17) in the Qohaito landscape in the Akle Guzai highlands, Iyago rock art caves are potential for paintings of long-horned humpless cattle, human figures and other wild animals. They are all painted in red color. In one of the caves, there are about 50 painted figures of cattle extended from north to south on the wall of the cave which has the length of about of 5 meters and height of 2 meters. They are like semi-schematic stylized paintings. Figures such as ‘man riding the animal’ and ‘jumping-up posture of a man’ are interesting paintings. Rest of the paintings focus on pastoral background.

Near the site stone flake scrapers, potsherds of red ware and black ware were found. Stone scrapers may have been used in different functions such as skinning and cutting animal flesh etc. Within the Qohaito valley some Cushitic-speaking communities like the pastoral Saho are practicing terrace agriculture with their traditional digging stick (spade with long wooden handle) on the adjacent hill slopes. The rock art area is a rocky plain with weathered sandstone exposed throughout. The valley with green vegetation and grasslands, patches of terraced cultivation and other natural environs of Qohaito landscape seem to have offered a congenial situation particularly to pastoral communities during monsoon season beside small hunting and gathering activities.

5. Me’alewaya engraving: The village is located on a hillock which is about 5 km away from Addi Qeyya town. There is a mound-like archaeological site with prehistoric cultural evidence. A huge stone boulder with a flat surface facing west to the southeast corner of the prehistoric site exhibits engraved figures. There are about 7 anthropomorphic figures were pecked on the stone slab (Fig. 18). The human figures with spears (wooden spears?) in their hands are interesting. Some humans figures are found with raising arms. Two humpless cattle figures were also found engraved. Below these human figures one cattle figure and a sheep figure were drawn. The height of some human figures is more

than a meter. These petroglyphs resemble as those of Hamasen (Cervicek 1976) on the west of Asmara where bovinds including Zebu cattle, ovine and horns of a ram were found engraved.

In the site a stone wall alignment and a few fragmentary stone structures were noticed. At present, one family has built a residence adjacent to the site for living. From the center of the mound site a thick (1.5 cm) globular jar which has 85 cm height and 70 cm diameter was removed by the residents of the house for their domestic use (Fig. 19). In fact its rim was broken. Burhu Kidane, the resident has explained that they store water in the jar which gives cooling effect. Some potsherds of red ware, microlithic tools made on obsidian and quartz were found spread all over the mound. A carved stone chair with upward pointed back rest facing west in the site appears to be meant for a leader or a Chief of the village.

According to the local legend there was war between the feudal Lord of this region and his nephew in relation to the claim of inheritance of land property. When the nephew claimed his father's land property after the death of his father, his uncle rejected the claim. Then war broke out and finally nephew had won. As a token of success and heroic memory pictures were engraved on huge stone slab. Chronologically this art site might go slightly after Qohaito paintings.

Plant leaves, oil substance like bone marrow or butter mixed with fine clay of different colors are used for the preparation of different colors. As an alternative to clay, the above extract is sometimes mixed with ash from firewood to bring out a new color.

The area is studded with sedimentary rock and granite igneous rocks. Vegetation is semi-arid type. Short bushes and other drought resistant plants like xerophytes are spread. An ethnographic enquiry reveals that the rock art was practiced by their ancestors who derived their subsistence from pastoralism. Since there is enough grassland environment associated with little aridity, pastoral economy was an open option than struggling for agriculture with scarce technological knowledge in cultivation in the very beginning of Iron.

6. Mai Nefhi engraving: A rock art site on the bank of the River Mai Nefhi is represented by an art of engraving in a cave (Figs. 26-28 &30). The site is located at the distance of about 23 km southwest of Asmara in Eritrea. There are 15 Petroglyphs found spreading horizontally at the bottom of the wall. They are human figures chiseled out (relief) on the surface of the wall of the cave. Size difference in the figures indicates age discrimination while variation in the head design, either flat or round indicate sex difference. Normally round shape goes with women. They appear to represent a family relating to a specific ceremonial cause or importance or confinement of the spirits that protect life. (Krishna Rao 2007). Even among Kalhari such belief in the spirit beings is represented by the material forms like sculptures to manipulate for human ends (Serena Nanda 1994: 383).

Adjacent to the site chert and quartz microliths, potsherds of thick red ware and brown ware, chiseling stone points, grindstones are found spread on the surface. Some iron slags were also found scattered here and there. In an enquiry in the Himberti village which is located near the site, it was revealed that they had been practicing painting and engraving since ancient times. They are referred to as ceremonial or ritual art in the context of belief in survival and subsistence. Mai Nefhi art could have served as a ritual or sacred spot to coordinate and integrate the normally dispersed and potentially competitive groups whose periodic cooperation was necessary for surplus energy involving economic tasks as agriculture.

Unlike 'hunter's rock art' and 'San rock art of shamanism', these Mai Nefhi rock art engravers appear to be associated with some agrarian society. Before the advent of

iron, copper metal was thought to have been penetrated to northern Ethiopia from the Nile Valley by the time the southern Arabians arrived (Phillipson 1977: 92). There is a general argument that there was a migration of 'Negroid' farmers who were thought to have brought agriculture and iron working from the Western Sudan and spread them throughout central, eastern and southern Africa. It is contextual to refer rock art painted caves of West and Central Europe which are ecologically connecting ritual spots (Jochim 1983). Fattovich (1983, 1988) relates undated petroglyphs at sites around Asmara to Arabian rock art drawings that date between the 3rd and 1st millennium B.C. Compared to other pastoral rock art sites, the Mai Nefhi rock art may be dated to later than the former, and possibly goes with Pre-Axumite date of an agro-

pastoral site at Sembel Qushite (Fig. 29), which is dated to 550 B.C. (Department of Archaeology, University of Asmara Excavation at Sembel Qushet, Eritrea 1998-1999).

River water may have been exploited by people for agriculture with traditional digging stick. Even now villagers of Adi Ghebrai and Himberthi adjacent to the Mai Nefhi River raise crops such as wheat, barley, sorghum and also vegetables. At the same time live stock was also developed to use them in agriculture and other routine consumption of milk and meat. There is also trading of grains, vegetables, and livestock in the traditional market center of the Himberthi village. Agriculture seems to have developed with the advent of iron and culture contact with the southwestern lowlanders like Kunama (Figs.

24&25) of Nilo-Saharan linguistic stock (Kunama habitat is located about 60 km away from Mai Nefhi by shortest route).

5. DISCUSSION

The above description of rock art paintings and engravings shows that the activity is dominated by pastoral communities. However occasionally wild animals have also had place in the parietal art. Human figures are either painted or engraved in the group of painted cattle including ovicaprids (sheep and goat) and also in the group of wild animals with hunting activity. Particularly these paintings appear to have focused on three interesting phenomena. One is pastoral life of people, secondly warfare as attributed by the engravings at the site Me'laeway in Addi Queyya (Akle Guzai region) and finally ceremonial occasions of the communities.

It is an acceptable phenomenon among people of the community to gather in art centers for communication and coordination to undertake certain communal tasks. During such occasions, paintings and engravings are depicted to reflect the routine life of pursuits. Even now indigenous people elsewhere in the world draw paintings on the wall of the religious place/shrine (icons) of the residential settlements during ceremonies (Krishna Rao et al 1992). Even in Tanzania, certain tribes/ indigenous people such as Datoga, Kombanguuru etc ceremoniously decorate the body with white paint.

Technical aspects: As to the techniques of application of colors to depict pictures, red, white and black colors are prepared. For long-horn cattle and human figures red color is dominant pigment used, while white color and red color pigments were found used in

the paintings of cattle at Adi Aleuti (Qohaito). At Hesmele both red and black color pigments were in use. At the second cave art site, where excavation was taken place black color paintings were dominant. At Me'alewaya in Addi Qeyya area and Mai Nefhi in Central region of Eritrea human figures were engraved. For this, fine line scratches might have made by a sharp stone flake or point. Sometimes small-incised elements are often unnoticed even in sites where other visible rock art is found (Zelalem Tekla 2003: 8).

Willcox (1984: 118) opined that pecking and incision techniques in engraving would have been used after a first drawing of the intended picture by charcoal or a colored mineral on the rock. Smith (1997) explained that in pecking, many tiny impressions are made on the surface by smashing a pointed piece of hard rock against a soft rock surface, by using a pointed stone chisel and stone hammer. Pecked petroglyph will thus be made up of thousands of small impressions each forming a tiny part of the overall shape. In this incision, repeated scratching of one rock against another is done which is particularly difficult compared to pecking. Hard stone chisel and hammer may have been used at Mai Nefhi for the preparation of chiseled out glyphs. The engravers seem to have adopted 'linked punctuation'. It was an application of a strong chisel-edged tool that was made out of a hematite rock or an iron is hit by a hard hammer. The technique involves in a sketch by pecking and then engraved a U-shaped groove. In this way linking neighboring depressions is produced for such circular figures (Oslisly 1996: 365). Locally available lumps of hard rock might have been converted into chisel and hammer. The engraved figures of Mai Nefhi were shown in a schematic pattern explaining that they belong to a big or joint family. This art site specifically near the water reservoir might have been a central point for ceremonial gatherings of people.

There is also possibility of using an anvil stone than a stone chisel and hammer to peck / engrave the figures of humans with long spears at Me'alewaya. People with spears in the plateau region indicate that the people who moved with their cattle from one place to another in search of grazing pastures kept spears and other weapons to protect themselves and also cattle from wild animals. As part of ceremonial representation of their life ways, naturally available rocks and caves were chosen for paintings and engravings. Stylistic representations of cattle and humans which were depicted either single or in-group particularly in the valleys and on cliffs of Qohaito show pastoral habitat and their overview to watch bottom valleys and other wild animals.

With regard to other associated evidence in and around the rock art sites discussed above, stone flake scrapers such as side scrapers and end scrapers, flake points, quartz microliths, grindstones, pounders, potsherds of red ware and black ware are found scattered as surface evidence from different localities. The material culture may have supported various subsistence activities such as cutting animal flesh, skinning, food processing, pounding and other household functions such as cooking in pot, consumption of food, storing milk, meat, grain etc. Though black ware is predominant,

both red ware and black ware were in use. Evidence of a stone hearth which appears to have temporarily made out of few stone blocks, charcoal and ash in the Hesmle excavation reveals about a temporary camp settlement of pastoral community. Association of charred bone fragments probably of goat/sheep indicate roasted meat eating and other intensive processing food habits of people. Similar stone supported hearths are even now being used by pastoralists or nomads during their movement with cattle and sheep for grazing.

Further it seems possible to have animal foods chiefly from the domestic herds rather than from hunting wild animals as explained elsewhere in the context of intensive processing of animal bones in East African pastoralism (Marshall 1990). In the semi-arid environment People in the beginning were contended with pastoral economy. It is contextual to mention Willcox (1984: 61) who had referred some of the human figures with spears in hands to guarding the cattle in relation to pastoral subsistence. After acquaintance with technique of cultivation by contact shifting toward agriculture could have been gradually developed. Such situation was probably attained at the end of Neolithic and beginning of Iron. Thus it appears apparent to say that there is no place for hunter-gatherer art in Eritrea though hunting-gathering had been continued for a long time. That's how people had tend to become agro-pastoralists and continued even during Pre-Axumite period.

Ethnographic enquiry: Hayneba village is located on the east of the Hesmle rock art site. It is situated at the distance of about 500 m away from the site. Saho elders of the village on enquiry explained that their ancestors depended on pastoralism / agro- pastoralism and the figures were depicted by them. They used ash, fine clay, plant leaves, oil substance like marrow or butter in different color combinations. Even age old people in Himberti village near Mai Nefhi site revealed that they had such practice of painting and engraving until recent past.

In another reference it was revealed that the Saho were settled in highlands as pastoral nomadic community traditionally. Later ecological conditions might have pushed them to expand toward coastal lowlands where they are still found practicing megalithic circles (Figs. 21-23) in memory of the dead (Krishna Rao and Yosief Libsekal 2004). This Cushitic pastoral Saho in the Qohaito plateau of the Akele Guzai area are nomads in search of grazing grasslands for their livestock such as goat, sheep and cattle. Now a days they keep camels for their transportation and selling. In an enquiry it was revealed that they were totally nomads depending on pastoralism beside supplementary hunting and gathering. There is possibility that the ancestors of saho were responsible for the stone using pastoral rock art in these highlands. Gradually, they became semi-nomadic or transhumance and thereafter settled agriculturalists. That is why before they introduced shifting/terrace agricultural practices they had implements made out of available raw materials in their highland environments.

With indigenous techniques or skills they prepared weapons, household objects and other decorative pieces and musical instruments. Hides of livestock, wood, grass, leaves, stone, bone, horn, clay, cowrie shells and animal skin hides were used to prepare bags, bottles, shields, pouches, food-storage baskets and clothing. Baskets and mats are made out of leaves, grass, roots and twigs. Sharp edged spears are made to protect from wild animals. Stone tools such as gubi (for hunting/ protecting) and zirga (grinding stone) are made out of a sedimentary rock or basalt for domestic use. It is noticed that few clans had acquaintance with pottery making technique. With locally available black clay, smooth and shiny

black ware pottery but without decoration was prepared. Such pots were used to store milk, milk products, porridge and water. Pottery being fragile and problematic during transportation for pastoral Saho, it is neglected.

Conclusion:

Ecological considerations to art interpretation: Eritrea is located at the northernmost end of the East African Rift. High central plateau varies from 1800 to 3000 m above sea level and enjoys 610 mm of rainfall annually on average, and so it maintains cooler and wetter conditions. It preserves semi arid in western hills and lowlands. Weather is sunny and dry toward Asmara, the capital of Eritrea with short rains during February to April and more rains from June to September. Maximum temperature in Asmara is 26 degrees. Some rock art sites and agro-pastoral bearing Pre-Axumite sites were identified from Greater Asmara (Department of archaeology, University of Asmara 1998-1999).

On the whole Rock art is widespread in the crystalline highlands compare to lowlands and coastal extension. On the eastern and western slopes of the Central highlands, escarpments (Beyin et al. 1996: XIX) exist. Eastern escarpment exists between eastern slope of coastal highlands and coastal plains, while the western escarpment exists in between western slope of the Central highlands and the South western lowlands. The Central highlands lie at an altitude of over 1500 m. It receives the annual rainfall of about 500 mm. The warm to cool semi-arid climate prevails in the region. There is lot of soil erosion. The vegetation mainly includes Juniperous procera and *Olea of ricana*.

Flake and blade tools resembling Middle Stone Age, and microliths, pottery, polished axes and grindstones resembling Neolithic were found in different locations of highlands region. Agro-pastoral based Pre-Axumite culture dated to 550 B.C. (Department of Archaeology, University of Asmara, Eritrea 1998-1999) was evident from Sembel Qushet site (Fig.29) of highlands region. Several Pre-Axumite settlements with agro-pastoral based economies were also found in the southern highlands of Eritrea (Anfray 1967). Also such urban centers with Pre-Axumite settlements were found in Qohaito plateau (Schmidt and Wright 1995; Wenig 1997) and other locations in highlands. Pastoral Neolithic communities might have developed agriculture economies gradually after acquainting with technology required for new subsistence. Until that time these hunter gatherer communities would have adapted to prevailing grassland and shrub jungle environments to develop pastoralism for their sustainability. There is general notion of agrarian and urban people being influenced by nature and natural laws if not more as in

the case of hunter gatherers (Conkey 1984: 256). The patterning of movement and use of the landscape by humans known as 'environmental structuration' (Preziosi 1979) is an interesting phenomenon of application to agro-pastoral life.

It appears logical to bring in an ecological aspect to the rock art locations. Broadly there are three types of rock art, painting, light engraving and more engraving (chiseled out). As the first two types are limited to southern part of Central highlands ex. (Qohaito and Me'alewaya), the last type is limited to north of Central highlands (ex. Mai Nefhi). Compared to Qohaito plateau the Mai Nefhi plains area is potential for agriculture may have been exploited from the extension of water storage facility like Mai Nefhi River. Mai Nefhi engraved cave may have been a ceremonial meeting place of various clans of the community. Absence of plains landscape, technological barrier must have led late hunter gatherers to focus on bushy and grasslands environment for developing pastoralism as the means of survival. Slowly nomadic way of pastoral life seem to have sown seeds to establish permanent settlements by preparing agriculture fields for shifting or terrace cultivation in which domestic cattle force was used. There is necessity for security at home and during movement, and thus perhaps such ideas have been expressed in the depiction of petroglyphs at Me'alewaya. These petroglyphs remind us of pictographs of Karora area of Nakfa highlands in the north of Eritrea where some of the human figures are found armed with spears perhaps to guard the cattle in connection with pastoral economy (Willcox 1984: 61).

The Mai Nefhi type of chiseled out rock art seem to have been drawn by agriculturalists who might have been influenced by the Kunama community, an offshoot of Nilo-Saharan linguistic group (Ehret 1993, Murdock 1959). The ancestors of this community are known to have brought agriculture first time to Eritrea.

6. CHRONOLOGY

Broadly, there are two aspects of worth consideration. One is painting or pictograph and the other is engraving or petroglyph. In the pictographs, one can see the depiction of cattle as major portion beside instances of mixed paintings of cattle and wild animals along with human figures drawn either single or in group. This appears that pastoral Neolithic communities would have initiated such aesthetic and ceremonial attempts of ecological experiences. In the case of

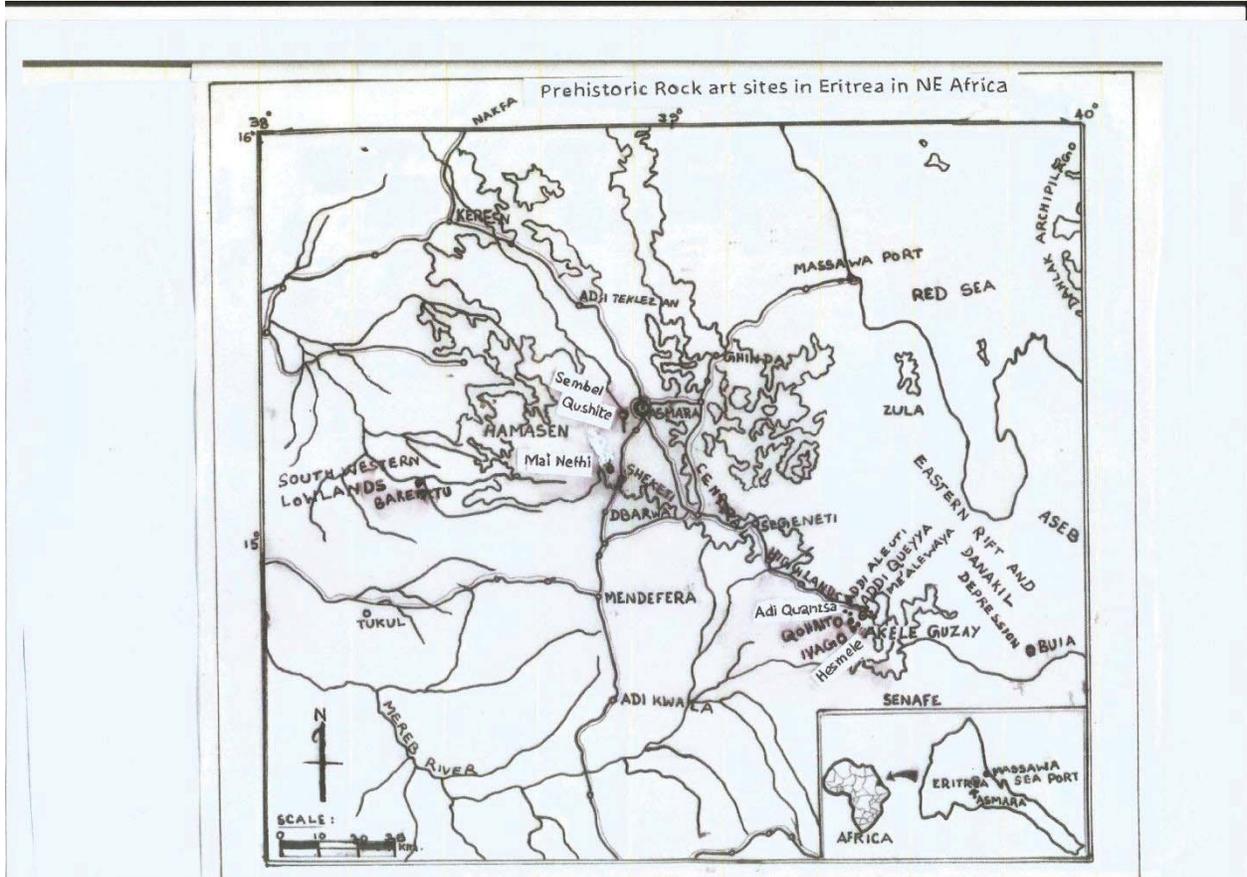
petroglyphs two types are exhibited. One is simple fine line small-incised scratches that were used throughout for the depiction of human or animal. The second type is a chisel out or relief engraving which involves more effort with hard hammer or even an iron chisel. This later task seems to be associated with agro-pastoral folk communities contemporaneous to Pre-Axumite times.

It is a preliminary attempt to concentrate ecological aspect as pertinent provoking idea for future rock art research. Nevertheless more research in linguistic aspects of people who got adapted to various ecological conditions in order to withstand to the situations of adaptive responses need to be focused.

7. REFERENCES

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1. Pastoral rock painting at Adi Quantsa
(From Eritrea Horizons, 2003, Vol.3:1)



2. Depiction of cattle at Adi Aleuti (From Eritrea Horizons, 2003, Vol. 3:1)



3. Pastoral rock art at Adi Aleuti



4. Pastoral rock art at Adi Aleuti



5. Hesmele: Humpless long-horn cattle



6. Hesmele: Painting at rockshelter-2(Cave)



7. Hayneba Village near Hesmele site



8. Rockshelter-1: Humpless long-horn cattle



9. Archaeology students for transect survey at Hesmele rock art site



10. Excavation in the painted rockshelter-2 (cave) at Hesmele



11. Excavation levels at Hesmele site



12. Rectangular stone structure dated to 1st millennium B.C. near Hesmele site



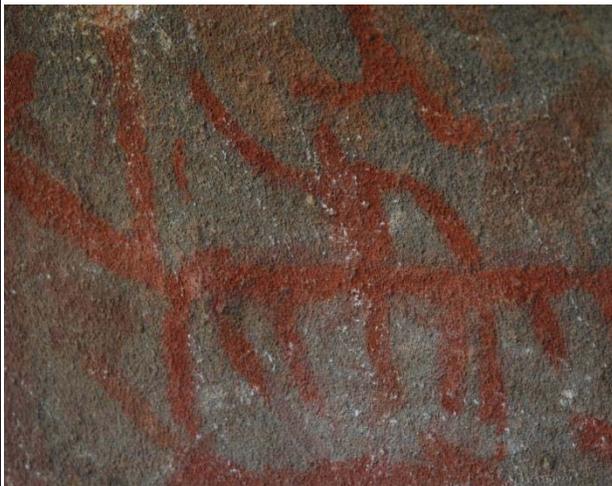
13. Cattle painting at Iyago (Qohaito)



14. Iyago painting: Cattle and human figures



15. Iyago painting: Man riding on animal



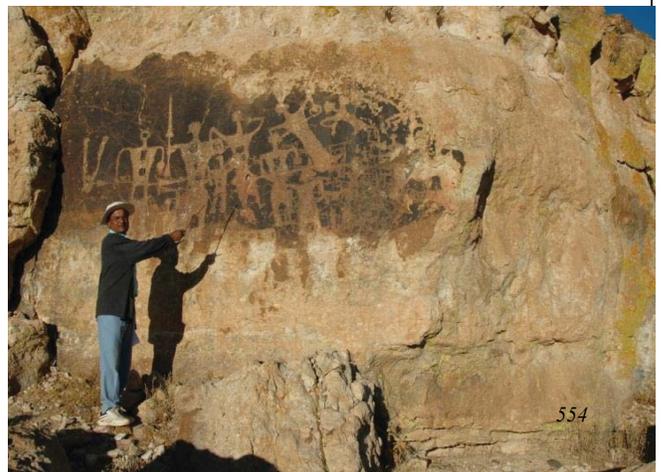
16. Humpless long-horn cattle at Iyago



17. Iyago Painting: human figure



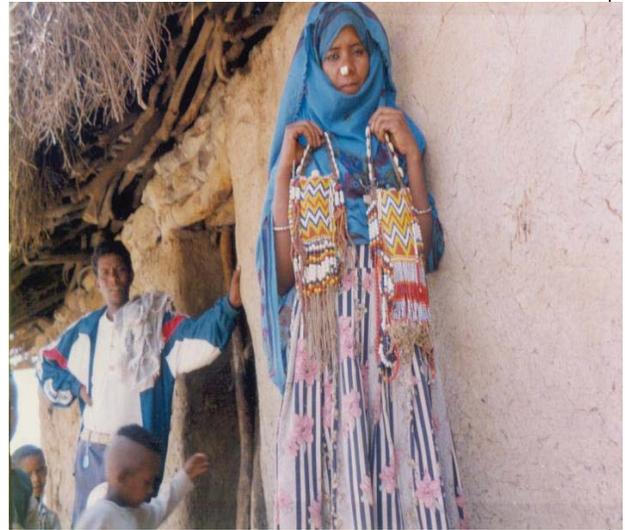
18. Me'alewaya engraving (Adi Qeyya): Human figures with spears in hands



19. Metara site (Prehistoric red ware pot shifted from the site to the settlement) near Me'alewaya site



20. Saho woman carrying artistic crafts



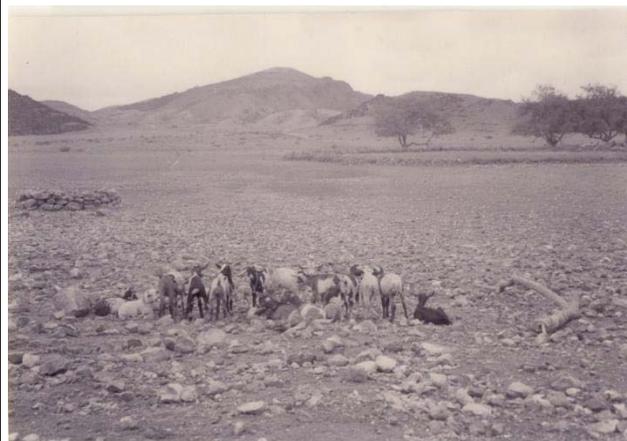
21. Saho megalithic burials



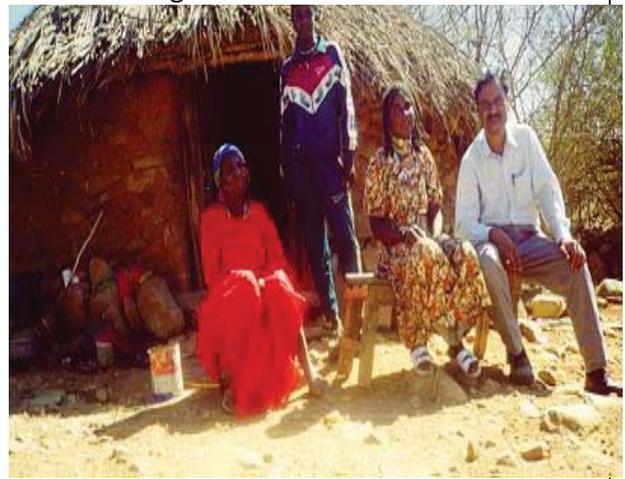
22. Some megalithic structures in the Danakil Depression



23. Megalithic circles and Saho cattle in the Danakil Depression



24. Settlement of Kunama (Nile origin) who introduced agriculture in Eritrea



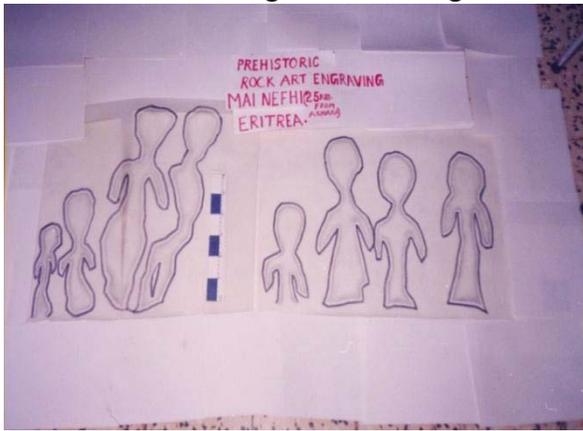
25. Kunama woman arranging firewood



26. Chiseled out human figures at Mai Nefhi



27. Mai Nefhi drawings of human figures



28. Mai Nefhi River and cave with engraving at the edge of the bank



29. Excavation at Sembel Qushet (Pre-Axumite site)



30. Chiseled out human figures at Mai Nefhi (same as Fig. 26)

