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Lecture

Conservation and Sustainable Development of Palaeoanthropological Sites: A Case Study of Isimila in Iringa, Southern Tanzania

Abstract

This study examines the significance of the archaeological site of Isimila in Iringa, southern Tanzania. The material culture of Isimila provides some significant insights on personalities and life experiences of Middle and Later Pleistocene humans who inhabited the southern highlands of Tanzania at that particular age. Cultural materials left by Pleistocene ancestors are marked with high surface density scatters of archaeological materials. In the late 1960s and early 1970s, Isimila attracted a number of scholars, but the site was left unattended until very recently when scientists from local and international institutions recalled attention to Isimila. In this study, I present sentiments raised by local communities about the place of heritage resources for sustainable development. It seems that local people are less informed about the heritage potentialities of Isimila. As a result, meaning and values assigned to it have not transpired into their daily life ways. Lack of communication between heritage practitioners and local communities has been highlighted as a leading factor for degradation of the cultural landscape including entrenched resources.

Introduction

Archaeological or heritage sites are appreciated when the landscape and cultural materials embedded in them are re-evaluated as well as reused by current people (Sangoby, 2007). This can only be appropriate if the past and present landscape is known and used to determine the significance of past human experiences, and how their effects on present wellbeing. The landscape is a significant component and analytical unit for a better understanding of the past ecosystem of hunter-gatherers and present peasant economy, which profoundly depend on reliability and distribution of local

environmental resources such as features, flora, fauna and precipitation (Bushozi, 2015). Thus, any attempts for conservation and management of any archaeological site should firmly take an emphasis on the landscape that was a focal point for land use patterns, mobility system, reliable ecological resources as well as other natural and cultural sympathies. Similar efforts should be delegated to local people who grow their own food, collect building materials and accumulate biofuel resources in the surrounding landscape. Such a social network was part of formation processes of archaeological sites, and it should be integrated in the conservation initiatives because in some cases, cultural heritage sites have been traditionally recognized and assigned central meaning, as well as values, that are invisible in heritage policies.

This paper discusses the significance of cultural heritage of Iringa with much emphasis on the archaeology of Isimila and the surrounding landscape. In this study, cultural heritage resources refer to inherited cultural resources used in ways that ensure their reliability to future generations. However, management of cultural and natural resources differ. Notions like planting a new tree for every one that's cut down or reproduction and cross-breeding for sustainable conservation of endangered species do not apply to the cultural heritage. Once the cultural assets diminish, they are irreplaceable and once they are reallocated, they will be unable to display their cultural sympathy or their relationship with the cultural landscape. One important and unanswered question is, 'how indigenous people imagine the reality of archaeological artifacts that have survived thousands or millions of years before their own history?' Respondents revealed that ideas of relevance and value of archaeological sites to them are not instinctive, and they have been erected by educated elites, not for the interest of local communities, but, rather, to serve the interests of scientists, tourists and heritage practitioners concerned with the history of humankind and tourism. Archaeologists, like other conservationists, have been accused of taking land from local people for conservation of wildlife or ancient culture. Generally, conservation initiatives have been pointed to as a central point for competition over land and mischievous utilization of local ecological resources. In addition, heritage legislations and policies are seen as uncertain and they are accused of refuting people's rights in management and conservation of their own cultural landscapes (Bushozi, 2014, 2015).

The cultural landscapes describe ways in which people have organized and distribute themselves across the broader geographical region. The distribution of people is practically determined by variables such as elevation, water resources and vegetation regimes, farming or hunting opportunities and annual precipitation. In Iringa Region, the connection between the people and the cultural landscapes is no longer prominent because most people have lost their traditional land to local and foreigner investors as

well as heritage institutions. Land developers, private investors and conservators have been delegated large areas for farming or wildlife and cultural conservation, in response to policies designed to transform as well as integrate the national income into the global wage-earning economy. In this case, local people have been left dispossessed of their traditional landscape and they have slowly encroached on cultural heritage sites seeking to fulfil subsistence needs, an act that is gradually threatening sustainability of inherited assets. People are looking for places for settlement, farming, livestock domestication, and biofuel consumption.

These basic human requirements are unclear and, as a result, competition over land is at its highest state, thereby leading to irregularity in climatic regimes (Cunningham, 2003). Subsistence needs have also been listed among the leading factors for intensive deforestation, rigorous resource harvest, debility in soil productivity and environmental devastation in developing countries (Cunningham, 2003; Bushozi 2015). Among long-term effects of such human actions they include expansion of irregularity in the ecosystem dynamics and transgression of cultural resources attached to the physical landscape. Heritage resources, in particular archaeological sites, are naturally assigned meaning and/or named after norms and social-value arising from the cultural landscape. In such consideration, past and present human activities were and even now are largely determined by their physical landscape. Consequently, the meaning assigned to the heritage resources should take into account public expectations (Keitametse *et. al.*, 2007). At present, the management plan of Isimila is somehow uncommitted to the local environment because it does not address curiosity and rightful custodianship of local communities. Therefore, meaning and values assigned to it are not influenced by public perceptions. Such an approach will possibly disperse significance of the site and, therefore, it is firmly advised that the government and heritage agencies should reexamine the management plan of the site including the heritage legislations and policies.

Past and present environments of the study area

Isimila is a relatively famous site in the Iringa Region. It is located almost 21 kilometres (km) southeast of Iringa town, and it has brilliant records of the terminal Acheulian technology scattered in the exposed northeastern *Korongu* (Figure 1). Iringa region is geographically located in the southern highlands of Tanzania biosphere (Bushozi, 2011). It is composed of highlands and escarpments ranging from 1200 metres (m) to 2700 m above sea level with isolated lowlands in the northern part. Annual temperature varies according to altitude and wind movements. In the highlands, annual average temperature is less

than 15° degrees Celsius (c) and in the lowlands; it ranges between 20° C and 25° C (Bushozi, 2011, 2014). Annual precipitations exhibit unimodal rainfall patterns from November to April and they depend on the Indian Ocean Sea Surface Temperature (SST) and the Inter-Tropical Convergence Zone (ITCZ) that regulate monsoon winds and rainfall distribution in the region (Landman *et al.*, 2005). Monsoon winds largely depend on the movement of sun from the Tropic of Capricorn (23.5° South) to the Tropic of Cancer (23.5° North) and ocean currents, which cause a warming effect on adjacent landscapes, leading to humid conditions and rainfall formation. Recently, the climate has become more seasonal, and precipitation has decreased, which has likely been the cause of severe drought as well as decreases in topsoil moisture and sediment runoff, processes that lead to the rise of exposed sediments and eroded gullies (Landman *et al.*, 2005). However, paleoecological and archaeological evidence suggests a consistency and uniformity in the environmental setting of the region for most of Pleistocene and it was probably one of the fundamental factors for the long history of human subsistence in this region (Garcin *et al.*, 2006; Mumbi *et al.*, 2008; Finch *et al.*, 2009).

Past environmental evidence from contiguous highlands, in particular, the Uluguru (Finch *et al.*, 2009) and Udzungwa mountains in the Eastern Arc (Mumbi *et al.*, 2008) contain records of plant microfossils from the last 50 thousand years, indicating unwavering vegetation regime of montane forest and miombo woodland and even during the Last Glacial Maximum when most of the East African regions experienced the worst dry episodic trends. Archaeological evidence from Isimila (Cole and Kleindienst, 1974; Hansen and Keller, 1971; Bushozi, 2014); Magubike (Bushozi, 2011; Biittner, 2011; Willoughby, 2012; Miller and Willoughby, 2014) and Mlambalasi (Sawchuk and Willoughby, 2013) indicates that the region was one of the few refugia where humans remained during the worst Pleistocene glaciation episodes when tropical Africa experienced the nastiest arid-dry conditions in a “mega-drought” (Scholtz *et al.*, 2007). It is likely the landform, in particular the Eastern Arc Mountains, and Indian Ocean Sea Surface Temperature (SST), which govern monsoon wind transmissions, are among factors for the steadiness of climatic condition in this region (Mumbi *et al.*, 2008). Conducive climatic conditions, as demonstrated in the enduring archaeological records, may have been among primary factors that attracted humans to inhabit and populate the region from the Middle Pleistocene to present. Ecological system and the geomorphologic processes have preserved better archaeological records. However, norms and values, which link cultural and physical landscape, are not integrated in the current Tanzanian heritage policy (Cultural Heritage Policy, 2008). The need to integrate cultural heritage, in particular archaeological records, with physical landscape is based on the fact past human experiences

depended largely on the environmental stimulus. Therefore, archaeological records are reminiscent of the cultural landscape that reproduced them and, thus, they should be valued, interpreted and recognized in relation to the physical setting that favoured the reality.

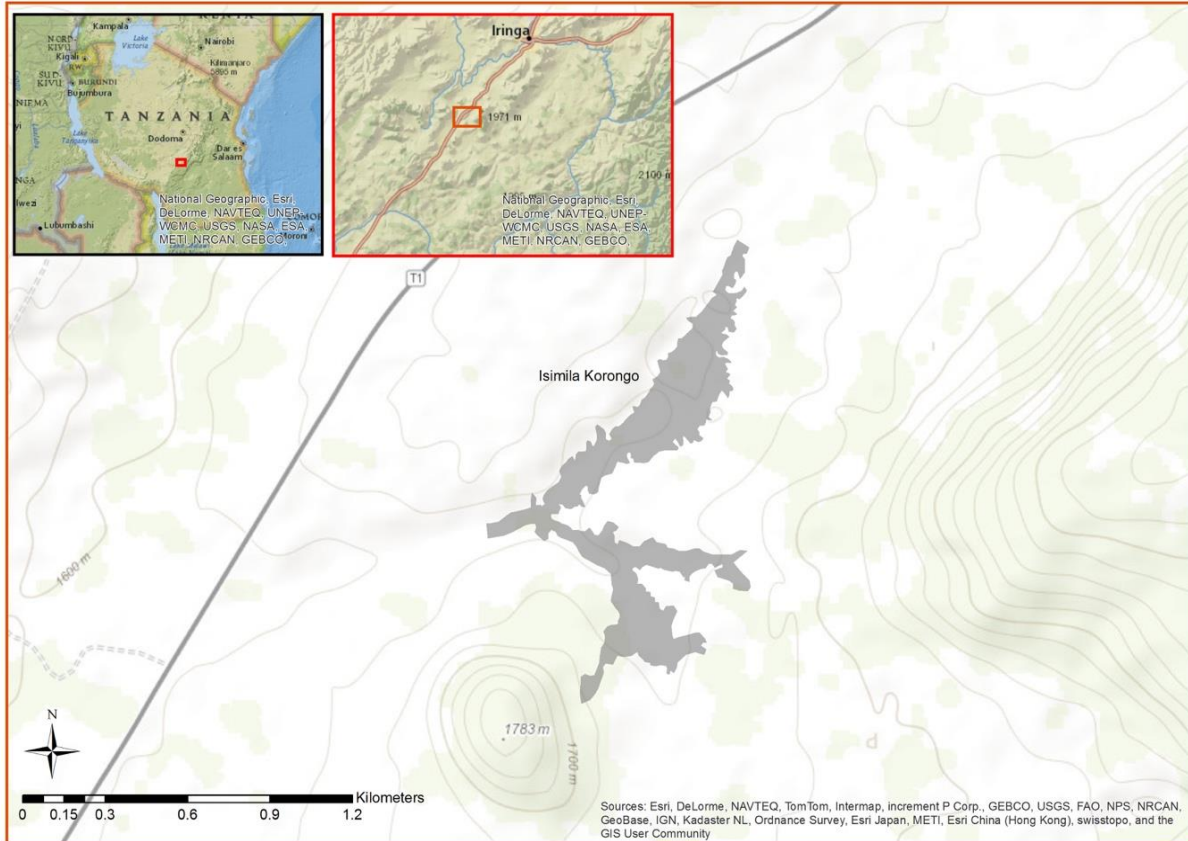


Figure1. The northeast and southeast branches of Location of Isimila Korongo (Cole et al., 2015)

Research methodology

This study was conducted using various methodologies depending on objectives to be achieved. They included interview, archival documents, field survey and test excavations that have been carried out in Iringa Region from 2006 to present. In order to explain various methods that this study utilized in gathering information, it is useful to arrange them in groups depending on a system of procedures used in a particular field. The first group consists of interviews conducted with villagers and Local Government and Antiquities officials at Magubike, Kalenga, Kihessakilolo and Isimila. Interviews with villagers and government officials were conducted to gain a complete understanding of the state of awareness and interactions of local communities, local government and heritage agencies for

sustainable heritage management. Also, they were intended to gather information in regard to conservation and development, including heritage agencies future plans. The Demographic profile of interviewees covered both genders (males 106: 59.6%, females 72: 40.4%) aged between 25 and 67. Economic status is even in most of the rural areas of Iringa, such that almost everyone is a farmer and, therefore, the issue of land crisis was persistently stated. Local people provided intimate details of their relationship with cultural landscapes and the ways in which rock-shelters, with paintings or archaeological artifacts, have been used for religious practices and ritual activities over time (Itambu this volume). This study also extracted information from local government and Antiquities officials. They both cited unawareness among local communities, protectionist heritage legislation and ambiguous development projects as the leading threats for sustainable heritage management. Interviews were mainly conducted during the undergraduate field school carried out from 2012 to 2015 at Magubike, Kalenga and Isimila (Bushozi, 2014).

Intensive field surveys and excavations were organized at Magubike, Mlambalasi, and Isimila by the Iringa Archaeological Project (IRAP) that was first initiated in 2005. The overall objectives were to identify and map all potential archaeological sites, to reconstruct Pleistocene human settlements and subsistence patterns, to recover paleoenvironmental data in order to reconstruct human past experiences and to reconstruct the cultural chronology of Isimila (Biittner *et. al.*, 2007; Bushozi, 2011; Biittner, 2011; Willoughby, 2012; Miller and Willoughby, 2014; Sawchuk and Willoughby, 2013; Cole *et. al.*, 2015). Field methods included systematic and random surveys, spatial documentation of archaeological sites based on the Geographic Information System (GIS), test excavations to some prominent sites and consultations with government officials, including local communities on sustainable heritage of potential documented sites (Bushozi 2014). During field surveys, we recorded a large number of open air archaeological sites and rock-shelters endowed with archaeological and historical records ranging from the Middle Pleistocene to the historic period. Some of them were unlawfully excavated by treasure hunters and land developers, but a few of them, especially Magubike and Mlambalasi rock-shelters, as well as Isimila, were legitimately and systematically excavated. During field surveys, we also documented essential threats arising from anthropogenic actions such as unlawful excavations, human encroachment on archaeological sites, and establishment of quarry-sites in the site catchment areas. Natural threats like erosion and weathering processes were also documented (Itambu this volume). The project results, so far, identified strong environmental parameters that mark the connection between archaeological sites and the surrounding landscape.

In order to understand the past environment, land use system and cultural chronology of Isimila an interdisciplinary research project was established at Isimila, running from 2013 to present (Cole *et. al.*, 2015). Generally, the project aimed at establishing the stratigraphic integrity of Isimila based on reliable dates, in particular, Electron Spin Resonance (ESR) and Optically Stimulated Luminescence (OSL) dating. A further aim was the assessment of the impact of geomorphologic processes on the future of the site and understanding patterns of lithic raw materials procurement, transportation and uses based on landscape approach.

Historical background of Isimila

Research in and around Isimila has a long illustrious history, with a unique position in the study of cultural evolution in East Africa. Works in this region are highly associated with F. C. Howell, G. H. Cole, M. R. Kleindienst, Hansen and Keller who led multidisciplinary research programmes between 1957 and 1972 (Howell *et. al.*, 1962; Cole and Kleindienst, 1974; Hansen and Keller, 1971). Prospection and test excavations by Howell and his colleagues (1962) led to the discovery of multiple open air sites on the erosion gully near an extinct Pleistocene lake. Most localities documented lithic and fauna remains in stratified contexts interpreted as sand horizons and designated as Sand 1 to 5 from top to bottom. Cultural materials at Isimila are found in different geological strata, notably, Beds 3, 4, and 5. The age estimates of the strata are unconfirmed, except for Sand 3 that was dated through uranium series to about $260,000 \pm 70,000$ Before Present [BP (Howell, 1972)]. However, new dating attempts are in progress to reach respectable age estimates and a cultural-chronology of the site (Cole *et. al.*, 2015). The most common lithic artifacts that have been repeatedly reported include hand axes, cleavers, scrapers, hammerstones, big-flakes and cores, but small tools and debitage resulting from tool manufacturing processes have received less scientific attention, thereby restraining our current interpretations. Preliminary results (Bushozi and Bundala forthcoming), suggest that lithic artifacts were knapped using a variety of techniques including alternative knapping and Levallois technologies. Artifacts are highly scattered in the ancient lake locus giving an index for the necessity of water bodies to past human experiences and subsistence strategies. It is likely that the site was regularly utilized by hunting and gathering groups, most probably during dry seasons when prey was concentrated close to water bodies. Archaeological remains are fairly rapidly accumulated in the relatively lacustrine environment of a seasonally flooded modest lake or swamp (Hansen and Keller, 1971).

However, the chronology, taphonomy and geomorphology of Isimila remain poorly understood. As noted before, new attempts have been embarked upon to reconstruct the cultural chronology of the

site and re-examine site formation processes, including deposition as well as post-deposition processes, using modern analytical techniques and theoretical perspectives (Cole *et. al.*, 2015). Archaeologically, such dense scatters of materials (Figure 2), may suggest that food acquisition strategies including hunting, foraging and processing practices were carried out through defined parameters along the lakeshore (Cole *et. al.*, 2015). Such application intensifies that the ancient lake played a substantial role, primarily as a habitat, harvest and hydrological supply. Local ecological systems, in particular, lake biomass and the surrounding hills acted as a basis for prehistoric population's adaptation and experiences over time and space. Therefore, the site cannot be presented in a satisfactory way without bearing in mind the influence of the surrounding landscape that attracted and supported human existence in the past. As noted in previous sections, the current management plan does not incorporate the prehistoric land-use system. This was realized after intensive surveys on the surrounding landscape revealed that the hills exhibited potential evidence for being used as sources of raw materials and possibly for settlements in rainy seasons when the lowland was covered by the ancient Lake of Isimila.

In addition, some localities at Isimila, the southern *Korongu* (Figure 1) in particular, have received little archaeological attention or been left unattended for a number of decades. However, recent field surveys and test excavations along the place discovered potential archaeological findings such as Acheulian artifacts eroding from exposed sediments (Bushozi and Mariam forthcoming). Analysis of collected samples is underway, but it is revealing significant past human signs that were unseen in previous studies. The southern *Korongu* also constitutes natural pillars that are one of the leading tourism attraction packages in the area. In addition, results from Portable X-Ray Fluorescence (PXRF) suggest that raw materials used to produce stone artifacts at Isimila were sourced from hills scattered across Isimila landscape (Cole *et. al.*, 2015). Uplands and hills that surround Isimila landscape also provided residential campgrounds to Pleistocene inhabitants of this region, particularly during the rainy seasons (Hansen and Keller, 1972). As it was noted in the previous section, granite outcrops used for raw materials were quarried causing debris flow west of Lukingi Hill (Figure 2). Thus, localities that played crucial roles for prehistoric human survival at Isimila, including the southern *Korongu*, are excluded in the current management plan due to the lack of research results.

Analysis of results

Most of the analysis and conclusions are derived from qualitative data, making it subjective at the best. Each conclusion is justified through an integration of previous works and background and contextual observation from the field, together with limited quantitative data. This approach provided important

insights into interaction between human beings and the physical landscape including ways in which such interactions influenced each other over time and space. Competition over land was highly ranked according to 153 (86%) respondents. In Iringa, such perception is deeply rooted from colonial times when most of the productive land was taken by foreign investors for large tobacco farms, forest reserves or transformed into national parks. A similar colonial trend has been widely implemented by the post-colonial government by delegating large areas to foreign and local investors for farming, cattle ranches, and national parks for wildlife conservation and tourism. The government intention is to transform and integrate the national income into the global wage-earning economy (Igoe, 2004). Local people have lost their land at the expense of economic transformation policies and have been partially forced to rely on small scale farming and wage economy. Minimum wages paid to them cannot satisfy their subsistence requirements and, therefore, they are obliged to produce their own food in restricted areas.



Figure 2: The dense and reallocated archaeological artifacts at Isimila (Bushozi 2014)

Consequently, land disaffection is somehow tied to the political ambition to integrate the national income into the global market economy, but it has led to intensive deforestation and competition over physical resources (Cunningham *et. al.*, 2003). Policy makers have underestimated the trend of population influx. As a result, they have been continuously grabbing land from local people and dispensing it to foreign and local investors and/or transforming it into national parks or game reserves. People are being evicted and forced to live in less productive areas. To meet subsistence requirements, people have been clearing areas for farming practices; bucolic fuel consumption (charcoal and firewood), and settlements (Cunningham *et. al.*, 2003; Bushozi 2015). During field surveys, we observed intensive deforestation and loss of indigenous tree species as well as soil erosion and gully formation in most parts of the surveyed areas (Figure 3). The current land use practice revealed that Iringa can be listed among the leading places for biodiversity inconsistencies, soil dehydration, topsoil erosion, nutrient loss, diminution of intensity and extinction of wild resources together with decreased ecosystem productivity, inconsistency of the hydrological cycle and irregularity in climatic conditions. These variables together have contributed to the ecological fragmentation which again threatens biodiversity and ecosystem collapse (Mhamo and Inyang, 2011). For Isimila, listed anthropogenic actions have led to sediment runoff, extension and dislodgment of the northeast and southeast gullies, the transportation, reallocation and reorganizing of artifacts from different stratigraphic units into secondary deposits, which can obscure future research interpretations (Figure 2).

We also encountered a huge rock-mining pit on the edge of the Lukinga Hill (Figure 3) that was recently established to extract gravel for highway construction. Gravel, unconsolidated debris and sediments from quarry-pit have been gradually moving downslope to Isimila, mingling with archaeological artifacts. In addition, graceless human engagements such as farming near the site, grazing within site boundaries and clearance of trees have been broadly damaging the site by transporting, reallocating and simultaneously admixing artifacts from different layers (Figure 2). However, enduring debris flow revealed at Lukingi Hill may increase these threats and create mysterious geomorphologic as well as conservation challenges. Heritage agencies are encouraged to undertake immediate and serious mitigation measures. Otherwise, the geochronology of the site will be completely obscured or inherited archaeological resources will be completely washed out.

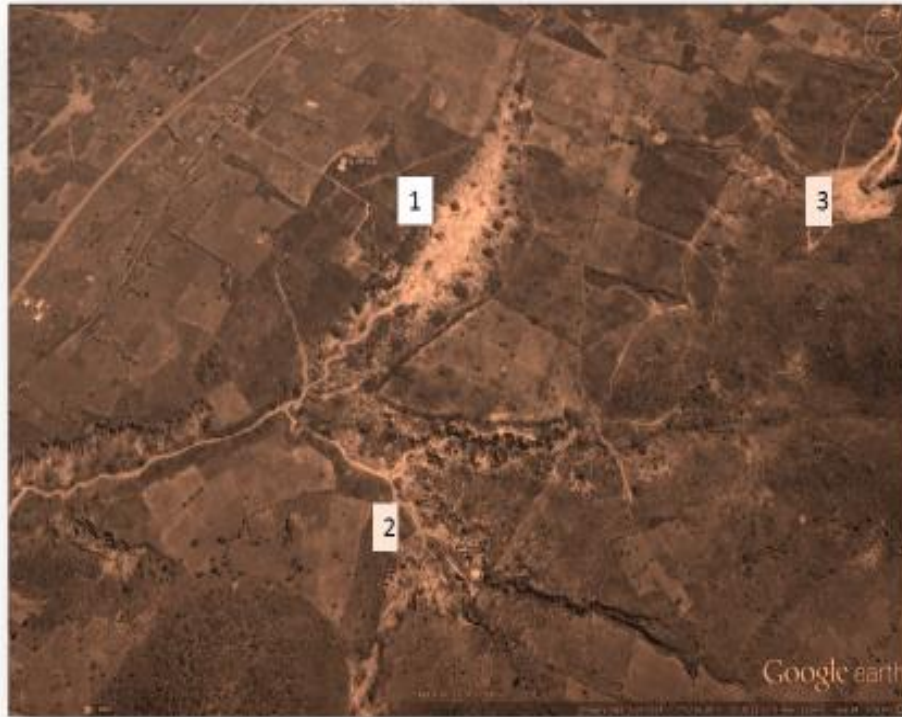


Figure 3. Map of Isimila indicating the northeast southeast gullies (1 and 2), gravels quarry site at Lukingi hill (3) including deforestation in the surrounding landscape (Cole et al. 2015).

Interviewees disclosed growing unwillingness among local communities for implementation of the Cultural Heritage Policy of 2008. Such reluctance, in some way was influenced by the current Antiquities Act of 1964, which was interpreted by stakeholders as authoritarian legislation (Kamamba 2009; Bushozi, 2014). To a great extent, the Antiquities Act of 1964 and its amendments of 1979 lack integration of the local communities in the resource management systems. Interviewees declared that both natural and cultural heritage legislations were created based on forced evictions and protectionism. They were meant to deport people from their ancestral land and impound their valuable property in order to create national parks, forest reserves and cultural heritage sites (Bushozi, 2015). Despite amendments that have been made to heritage legislations, they still take a colonial outlook including prohibiting people in park boundaries and outlawing their traditional activities in the proximity to the sites (Igoe, 2004). Taking the Antiquities Act as an example, it is obvious that it is descended from the colonial Monument Preservation Ordinance of 1937 that did not recognize local communities as

partners in sustainable heritage management and conservation (Kamamba 2009). The act imposes strict regulations and conditions on local people, thereby giving injunction to conservators to prosecute those who disregard the rules.

For the local people, such injunctions are deep-rooted in the colonial doctrine, which denied and undermined the legitimacy of indigenous cultural systems through religious ideologies, western education systems and protectionism laws. Traditional resource management systems that have been ecologically friendly and effective in sustainable resource utilization were disrupted by colonialists. Colonialists used religious doctrine and education systems to publicize as well as impose western cultural values. A similar approach was used to suppress African traditional beliefs. This suppression has persevered in most postcolonial African regimes. Emerging African generations have been raised in ways that make them sceptical of their own cultural values, belief systems and traditional knowledge (Kamamba, 2009; Musiba, 2012; Bwasiri, 2011; Bushozi, 2015). For archaeologists, who are tracing the link between the past and present, the situation is worse and, in some cases, even the material culture found in the archaeological records has been linked to colonialists. As it was experienced in central and north-central Tanzania (Mabulla and Bower, 2010; Bwasiri, 2011; Bushozi, 2015), some indigenous people believe that rock paintings are linked to the German colonialists. This is not surprising because their forefathers who should have nurtured this link were intentionally diverted from their belief systems in order to diminish indigenous values for future generations and disintegrate a symbolic value bond that links people and their cultural landscape. Despite the fact that competition over land was highly ranked in relation to the current encroachment on heritage sites, the impact of protectionism rules, ignorance and lack of synchronization bond between the past and present should not be ruled out completely. Even though public outreach programs have been discussed among researchers and heritage practitioners, in actual sense, they have had an inconsequential impact (Bushozi 2014, 2015).

Another inadequately communicated subject matter is the place of heritage resources in rural-economic development. Dialogue with respondents revealed a state of unawareness among the local communities on ways in which cultural heritage can be used for poverty eradication. People are misinformed about the meaning and significance of cultural heritage, in particular the relationship between archaeological remains and their socio-economic development and livelihoods. This is partially because cultural heritage management for sustainable development is not part of the education system and even tourism practitioners are uninformed on this topic. A top-down platform, inherited from colonial regimes, widely used in management, as well as conservation of natural and cultural heritage resources,

has, through the issuing of commands and directives, greatly discouraged local people from engaging and using heritage resources for sustainable development (Bushozi, 2014, 2015).

Discussions

Research results indicate that the site was continuously inhabited and discarded depending on availability of environmental resources. Such natural parameters provided opportunities for Pleistocene hominins to adapt and exploit ecological resources as well as develop the social networks needed to utilize the nature. Therefore, past human experiences cannot be well-understood based only on material remains. Other components including deposition and post-deposition processes, ecological supply and anthropogenic actions need to be integrated. They also include an understanding of the past environment, which influenced human habitation in the area. Environmental information will enhance archaeological interpretations on varied parameters such as land-use patterns, hunting practice, raw material sourcing, settlement patterns, mobility systems at regional or interregional scales, and ways in which ecological systems are integrated into belief systems, cultural identities as well as individual personalities.

Despite current limitations on archaeological interpretations, the dense archaeological scatters of Isimila provide an excellent example of how the natural landscape has been adversely modified and affected by human activities in the past. Ongoing geomorphologic processes and the extinct ancient lake (Howell and Keller, 1971) provide useful information on how the landscape has consequently undergone notable alterations, which have in some way affected current conservation challenges. If serious conservation measures are not undertaken, inherited resources can be completely destroyed due to increasing human population within site catchment areas. The concept of heritage for sustainable development through tourism can only be applicable only if ecological variables that support human life in the past, such as hunting and camping grounds, sources of drinkable water and lithic raw materials, are incorporated in the management plan and tourism trading package (Nicholas, 1994, Bushozi 2015). Therefore, future management plans should integrate natural landmarks such as pillars and surrounding hills that attract visitors in, which played a significant role to support human existence in the past. This attempt should be consistent and transparent, and, ideally, revolutionize heritage policies and legislations so as to provide room for local communities and tourism practitioners without promoting a lack of respect among stakeholders.

These discourses are not limited to Isimila similar discourses were noticed in other potential archaeological sites across the region. They comprise sites like Magubike, Mlambalasi, Kalenga and Kihessakilolo rock-shelters, just to mention a few. With the exception of Kalenga, other listed sites are not even registered in the local government or national cultural heritage lists. Even though the Cultural Heritage Policy of 2008 allows the local government to administer cultural resources in accordance with the Antiquities Division, this information has not been widely communicated to local authorities. Magubike residents acknowledged the profound history of humankind in the rock-shelter that has carried the name and symbolic value of their village, but they did not understand how to use such knowledge for their wellbeing and they were uninformed about the legal obligations and restrictions. The cultural sequence of Magubike ranges from the Middle Stone Age (MSA) to the historic period. Interestingly, the MSA contains the earliest bead shells radiocarbon dated to about 51 thousand years ago and also projectile weapons and human remains dated by Electron Spin Resonance (ESR) between 160 and 195 thousand years ago (Bushozi, 2011; Willoughby, 2012; Miller and Willoughby, 2014). A similar situation was recorded at Mlambalasi rock-shelter, where a large site complex bearing a funeral monument of Chief Mkwawa, the nineteenth-century leader of Wahehe community who strongly resisted German colonization, as well as remains of terminal Pleistocene human burials are preserved (Bushozi, 2014; Biittner *et. al.*, 2017). To a small degree, local community and a Non-Governmental Organization (NGO), have designed and instigated cultural outreach, as well as tourism programmes, at Kihessakilolo rock-shelter, which is located on outskirts of Iringa town almost 0.5 km west of Iringa-Dodoma highway. The shelter's wall is characterized by hunter-gatherer rock art, dominated by naturalistic animals, human figures and geometric designs depicted with red and dirty-white pigments (Bushozi, 2015).

Attempts such as those at Kihessakilolo should be widely encouraged in different places across the country. The Heritage Policy of 2008 emphasizes on heritage for sustainable development and highlights use of heritage resources for economic gain, social services and infrastructure development. However, the conception of community-based sustainable heritage management and development programmes have been continuously receiving diminutive attention because the current management system has been designed and organized on top-down platforms. Under such a scheme, government heritage agencies provide comprehensive directives and instructions to other stakeholders and do not entertain the custodianship system. In such situations, the public feels that legislation amendments, including heritage policies embarked by post-colonial governments in Africa, have failed to decolonize colonial

conservation systems, which deny rights of local communities in decision making and management of their heritage. Local communities' beliefs have also been overlooked in the management and conservation processes (Bushozi 2014; 2015).

Likewise, the current notion of heritage or conservation for sustainable development through tourism does not sufficiently resonate with stakeholders, including heritage agencies. It seems as if heritage agencies have changed their primary perspective, from conservation to tourism, attracting visitors to cultural and natural sites in pursuit of economic gain. The tourism industry has been marketed without considering the necessity of conservation needs and carrying capacity of conservation areas. The need for safety measures arising from escalating tourism and other matters of wellbeing are also underestimated in current heritage and tourism programmes. The tourism model encourages crowding people into heritage sites, which makes it difficult for pasture to recover and it also disorders archaeological artifacts after being trampled. People believe that heritage agencies and tourism practitioners are working to their disadvantage, particularly if conservation situations seem to impoverish them.

There have been several initiatives by international agencies, including the United Nations (UN), United Nations Education, Science and Culture Organization (UNESCO) and World Heritage Committee (UNESCO-WHC) that delineate and declare on uses of heritage for sustainable development. Remarkable conventions and declarations such as the *Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict* (1954), the *Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property* (1970) and the *Convention Concerning The Protection Of The World Cultural And Natural Heritage* (1972), emphasize the role of heritage resources in human development. Local people believe that heritage agencies want them to appreciate the significance of inherited resources, but do not make determinations to compensate their lost resources at the expense of conservation. To them, the abandonment of farming, in aid of conservation of natural and cultural heritage, is a much greater loss than what is gained from tourism or casual labourers. Regardless of the conservation challenges they pose, they do not feel responsible for this. To them, tourism and immoderate investments cause worrying ecological effects, the consequence of which have mostly been borne by the public.

Significantly, heritage agencies support the Rio declaration of 1992 on duty environmental and development and UNESCO declaration of 2013 on the integration of culture in heritage management and conservation and the role of inherited resources on sustainable development and poverty

eradication. UN and UNESCO declared that new economic development and industrialization in developing countries should discourage destruction of natural and cultural sites. The Rio declaration of 1992 requires states to recognize and duly support the identity, culture and interests of local communities and enable effective participation of local people in the achievement of sustainable development (United Nation 1992). The most recent UNESCO resolutions, Johannesburg (2012) and Hangzhou (2013), insist on the necessity of integrating cultural heritage in sustainable development and poverty eradication programmes. UNESCO ambitions are to incorporate and integrate sustainable heritage in development programmes in order to eradicate poverty and attain the public interest in sustainable heritage management as well as conservation. UNESCO's declarations insist that stakeholders incorporate environmental and cultural impact assessment in the process for implementation of development projects and integrate local communities into economic development programmes. However, it is likely these declarations and conventions were not collectively comprehended and that they have not had much of an effect on people's welfare.

Concluding remarks

Sustainable conservation and management of the Isimila site, and the other adjacent sites in the region at large, will only be successful through comprehensive capacity building and sensitization (training heritage personnel including village officials), accompanied by more research for better future interpretations and focusing on preservation measures that guarantee future accessibility of the site. These premises can only be achievable if heritage policies and legislation governing cultural resources are redefined to liberate and permit legitimacy of local communities. Currently, local people do not feel obligated or responsible for managing heritage resources in their areas, and such negligence has been sighted as one of the leading factors for incapacitation in heritage management (Igoe, 2004). In any attempts for sustainable heritage management and conservation, it is important to understand challenges intimidating management processes. To a great extent, challenges threatening cultural heritage sites are associated with diminutive knowledge over the past landscape and ecological systems; weak and lasting changing attitudes over environmental management; inconstancy of laws and regulations as well as cumbersome bureaucracy in land management and associated heritage resources. The primary responsibility of maintaining, safeguarding and sustainable use of heritage resources requires the full-time commitment of all stakeholders. The need to protect these resources has become increasingly realized in recent years because of challenges arising from globalization and unmediated investments including development projects. Both natural and cultural dynamics continue to damage

cultural heritage sites. These challenges also affect natural wildlife and wider ecosystem parameters. To address these challenges, conservation initiatives should be drawn based on multidisciplinary approaches, whereby the issue of community outreach, environmental management, decolonization of heritage legislation, redefining heritage assets in reference to the cultural landscape and poverty eradication paradigms should constitute the heritage roadmap. The bond between heritage practices and the tourism industry should be redefined based on heritage for sustainable development, environment management and the welfare of people.

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