Research Article

RESCUE ARCHAEOLOGY AT OPEN-AIR SITES AROUND THE UNIVERSITY OF DODOMA, CENTRAL TANZANIA

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(Received August 2019. Revised March 2020)

ABSTRACT

A team of researchers from the University of Dodoma conducted a rescue study involving systematic and random land walkover surveys, interviews and group discussions with elders, and minimal excavations around the periphery of the institution. Findings indicate the existence of two traditions that are temporally separated by thousands of years. The lithic artefacts, analysed through a technological-attribute approach, suggest an older tradition that belongs to the Middle Stone Age prepared Levalloisian core technology that we estimate to have occurred between 60 and 50 ka. The cores were knapped in a unidirectional fashion using hard hammer to produce flakes or blades. The younger materials represent a civilisation of peasant farmers and probably pastoralists, the cause of whose disappearance is still unknown. According to oral history, these were the Wambambali people whose disappearance may have been a result of recurrent famines. This civilisation is represented by remains of pottery and of deserted settlements and buildings. Most of the pottery is in pieces (c. 86%) identified to be body parts, while others (c. 14%) represent rims, necks, and shoulders. The buildings were constructed using thatch and daub and they were likely burnt before settling in to solidify the structures. This research represents an important opportunity and has convinced us to now call on authorities and other stakeholders to ensure the protection of the cultural heritage through emphasising impact assessment studies prior to any destructive project.

Keywords: rescue archaeology, University of Dodoma, central Tanzania, lithics/Levallois technology, pottery, Wambambali civilisation.

INTRODUCTION AND BACKGROUND

Dodoma city forms the centre of the country and it is located 460 km inland from the business and metropolitan capital Dar es Salaam (Fig. 1). The city is rapidly expanding, mainly because of the Tanzanian government's decision to relocate its headquarters here from Dar es Salaam from early 2016, and the rapid growth of higher learning institutions in recent years. The decision to relocate government and parliament to Dodoma was made in 1973 under the late Julius Kambarage Nyerere government (URT 2010). For more than 30 years, this decision was only partially implemented.

During the 1980s, two colleges (Institute of Rural Development Planning and College of Business Education) were established in Dodoma and these colleges are steadily expanding. In 2007, two universities were officially opened. These were the University of Dodoma (UDOM) and St John's University of Tanzania. The former started small, in a building donated by the ruling Chama Cha Mapinduzi (CCM). The institution grew rapidly and within its first decade of operation had managed to accommodate a student population of around 24 000 in its campus colleges (www.udom.ac.tz). Having this number of students within the city of Dodoma, the UDOM became one of the development catalysts for the expansion of this once tiny town in central Tanzania. The UDOM, currently composed of seven campus colleges, is located about 8 km east from Dodoma City Council headquarters or central business district (CBD). The university is bordered by several city wards including Makulu to the south, Ng'ong'ontha to the east, Ntyuka to the north, and Iyumbu to the west. While noting the significant growth of Dodoma, expansion of human activities is not the only threat for the heritage resources. Natural factors including weathering and erosion were observed during fieldwork. This study follows an earlier phase which produced a database for heritage resources in Dodoma urban. The database is called Dodoma Capital City Historical Geographical Information System (Mwakipesile *et al*. 2018). This database is expected to make access to cultural heritage information easy, and it will be useful for cultural heritage institutions (e.g. museums), researchers, and tourists alike.

One of the authors (Rao 2018) spotted artefacts of archaeological and heritage importance in several locations within the university confines and the adjacent villages/suburbs. This research was, therefore, initiated as part of efforts to rescue or salvage heritage resources while also partly mapping the distribution of these materials in and adjacent the UDOM. It is a collaborative venture between the departments of History and Archaeology, Geography and Environmental Studies, Sociology and Anthropology, and the Institute of Development Studies. As a young institution with diverse aspirations, the UDOM has long-term plans of starting a museum that will serve central Tanzania and beyond. This is influenced by a collection of cultural heritage materials that is increasing and the need for the institution to play its role of educating the public. Hence it is expected that these materials will eventually be preserved and displayed in this envisioned museum for research, public education and enjoyment.

RESCUE ARCHAEOLOGY AND THE SIGNIFICANCE OF RESEARCH UNDERTAKEN

The term 'rescue archaeology' was coined in the early 1970s by British archaeologists (White 2015) who realised the crisis faced by the historical environment from rapid town and city

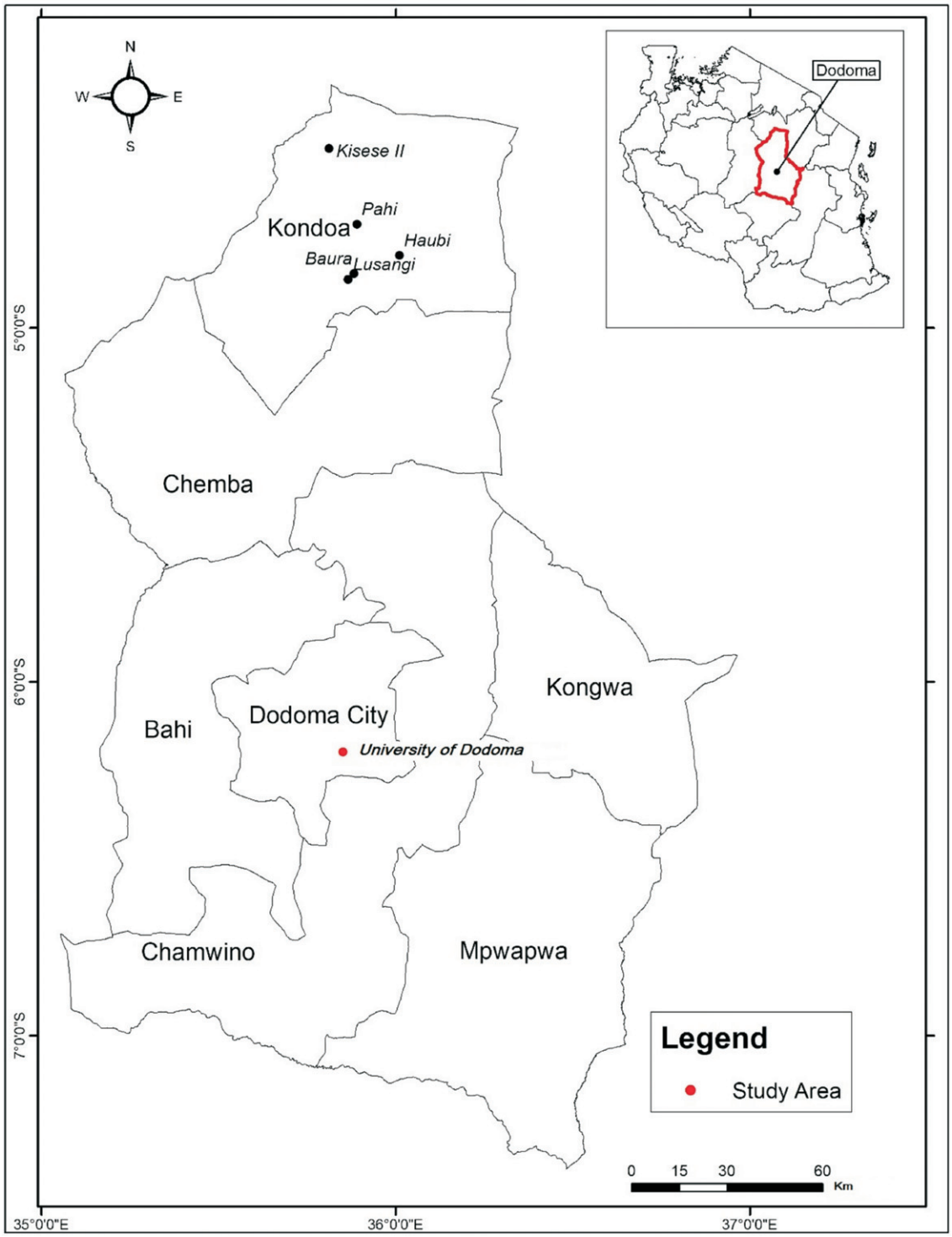

FIG. 1. *The Dodoma region showing the location of Dodoma city, the study area (red dot) and some sites mentioned in the text* (*map by N. Kasongi*).

growth due to industrialisation. Through an edited volume (Rahtz 1974), these archaeologists alerted authorities and the public to the threats facing cultural heritage and why it was important to save this heritage. Rescue archaeology then came to be understood as "[…] archaeological research undertaken to survey or excavate monuments, sites, groups of sites, even extensive surviving landscapes threatened with serious alteration or destruction" (Jones 1984: 2). Later scholars (e.g. Demoule 2012) insisted on the use of the term 'preventive archaeology' instead of rescue archaeology since the latter implied an archaeologist being behind the bulldozer in the sense that assessment of heritage potential is done *after* the site is already destroyed by heavy machinery. Preventive archaeology meant that archaeological excavations or surveys are integrated in development project planning (Demoule 2012). Damage of cultural or natural heritage may be caused by large-scale projects planned and executed by government or private entities, such as mining activities, construction of buildings, and transport systems like roads and railways (Alexander 1974: 17; Mabulla 1996; Hassan 2007; Lane 2011; Chirikure 2014). Small-scale projects can also adversely affect heritage materials although scholars have tended to focus on large-scale projects (Ichumbaki & Mjema 2018).

Our use of the term 'rescue archaeology' here suggests an archaeological intervention undertaken both ahead of and behind the bulldozer. It must be further noted that while

construction of the university infrastructure began in 2007, there are areas that have not been disturbed to date, even though construction activities are planned in such localities. Destruction of cultural heritage leads to the loss of invaluable information about our past or shared heritage. Notwithstanding the terminologies around rescue archaeology, contract or commercial archaeology, developer-funded archaeology, or salvage archaeology (Kristiansen 2009; Alexander 1974, 2011; Chirikure 2014; Ndlovu 2014), the main goal is to minimise or mitigate the threat facing heritage resources. This form of archaeology is undertaken within Heritage Impact Assessments that generally form part of Environmental Impact Assessments (Mabulla & Bower 2010; Oloo & Namunaba 2012; Chirikure 2014).

There are several cases of impact assessment studies in Southern Africa, especially in countries such as Namibia, Botswana, Zambia, South Africa, and Zimbabwe where such studies are mandated by existing heritage legislation (Chirikure 2014). While many of the reports of contract archaeology are poorly written and not often published (Ndlovu 2014), some have been reported in the world of academia (see Chirikure 2014 on Oranjemund in Namibia, and Arthur *et al*. 2011; Kaplan & Mitchell 2012; Nic Eoin & King 2013; King & Arthur 2014, for Lesotho water projects).

East African countries also have heritage legislation that generally protects and safeguards heritage, but its applicability differs from country to country. In Kenya, the National Museum is mandated by the National Museums and Heritage Act of 2006 to conduct cultural Heritage Impact Assessments (Oloo & Namunaba 2012). In Tanzania, cultural heritage is protected through the Antiquities Act No. 10 of 1964 (as amended by Act No. 22 of 1979) which empowers the Antiquities Department as the overseer of cultural heritage in the country. It gives the department powers to oversee all excavations and forbid excavations without permits. This Act is further strengthened by the Cultural Policy of 2008 that defines the roles of different stakeholders (individuals, institutions, and the public) (Ichumbaki & Mjema 2018) in protecting cultural heritage. The Environmental Management Act (Act No. 20 of 2004) also briefly mentions that one of the issues to be considered by developers is the archaeological or cultural potential of the area. This Act is combined with those discussed above to ensure that proper impact studies have been conducted before any development of the area that involves destruction. In practice, therefore, cultural Heritage Impact Assessment studies are enshrined within the framework of Environmental Impact Assessment.

Although contract archaeology or developer-funded archaeology is not as developed in Tanzania as in South Africa, a shared similarity is that many impact assessment reports are unavailable to the public (see Ichumbaki & Mjema 2018; *cf*. Ndlovu 2014). In addition, only a few have been published (Masao 2008, 2015, 2017; Mabulla & Bower 2010; Ichumbaki & Mjema 2018). Even with legislation, many development projects prior to the 2000s were carried out without Heritage Impact Assessments being undertaken (Mapunda 2001). Among such projects is one of the largest railway line projects, the central railway line, to have been undertaken in Tanzania (Ichumbaki & Mjema 2018). It seems that immediately after independence, impact assessment studies were not emphasised because heritage institutions which could act as watchdogs were young or non-existent.

While noting the importance of Heritage Impact Assessments, there have been concerns expressed over time. For instance, some scholars have decried the outright violation of laws, ethics, and the non-involvement of local communities by developers and contract archaeologists (Swanepoel & Schoeman 2010; Ndlovu 2014). These are genuine concerns which threaten heritage (Chirikure 2014), where collaboration of all stakeholders is key in ensuring that development activities and heritage conservation are not necessarily mutual enemies (see Ndlovu 2012).

The UDOM presents a scenario of a large-scale project initiated by government in order to increase access to higher education (*cf.* Kiriama *et al*. 2010; Chirikure 2014: 219). It was designed to be one of the largest universities in East and Central Africa to accommodate about 40 000 students when completed (UDOM 2010). It occupies an area of 15 000 acres (www.udom.ac.tz/about) and part of this has already been transformed through construction work. A parallel concern is that the city of Dodoma is growing rapidly and there are construction projects for various infrastructural developments. The construction of UDOM was not preceded by any cultural heritage impact assessment study. This may have been because of a political wish to fast-track the establishment of a new university in the country (J.S. Madumulla, pers. comm. 29 January 2020). Various heritage materials such as pottery and lithic artefacts and features could have been destroyed. Our research project was, therefore, motivated by the threat we realised because of all these construction activities around the UDOM and Dodoma urban area in general. We expect that the results of our academic work will promote an interest by developers and government in integrating impact assessments before further construction is commissioned.

The initial plan was to conduct research not only within UDOM and its periphery, but also at Mundemu Village in Bahi district, some 45 km north of Dodoma city, along the Kondoa/Arusha road. Mundemu Village also represents artefacts and features suggestive of the Wambambali civilisation, and this could have expanded our research coverage spatially. However, due to resource constraints, our focus was limited only to sites within the UDOM and its neighbouring areas (Fig. 2). Mundemu village will be part of later studies that we hope to conduct and expand to the entire Dodoma urban area in future years. The naming of these sites (Fig. 2) was done according to either their proximity to a given UDOM college or ward/village within which the site was situated. Thus, there is Makulu site in the western part of Makulu ward, Mkalama, Ntyuka site close to Ntyuka ward and a few metres from the Asha Rose Migiro Research Institute, College of Humanities and Social Sciences (CHSS) West, and CHSS East sites found respectively in the western and eastern parts of the college with same name. Another site is College of Education (CoED) West found on the leeward site of the hill in the western part of the CoED.

Dodoma region is known for harbouring the World Heritage Site of Kondoa containing rock art paintings (Bwasiri 2011, 2016; Bwasiri & Smith 2015). Rock art was first discovered by colonial administrators and officials including T.A.M. Nash in the 1920s (Bwasiri 2016) but was not studied until much later (Leakey 1983). Besides rock art, there is also an abundant evidence of Middle to Later Stone Age (LSA) and Iron Age sites in several parts of Dodoma (Masao 1976, 1990; Kessy 2005, 2013; Tryon *et al*. 2018). Most of these sites (e.g. Kisese II rock shelter, Haubi, Lusangi, and Pahi) are concentrated within the Kondoa District (see Fig. 1), which also contains the rock paintings World Heritage Sites (Bwasiri 2016). Some scholars (e.g. Kessy 2005, 2013) have focused on investigating the transition from LSA to Iron Age showing that these two technologies existed contemporaneously at some stage.

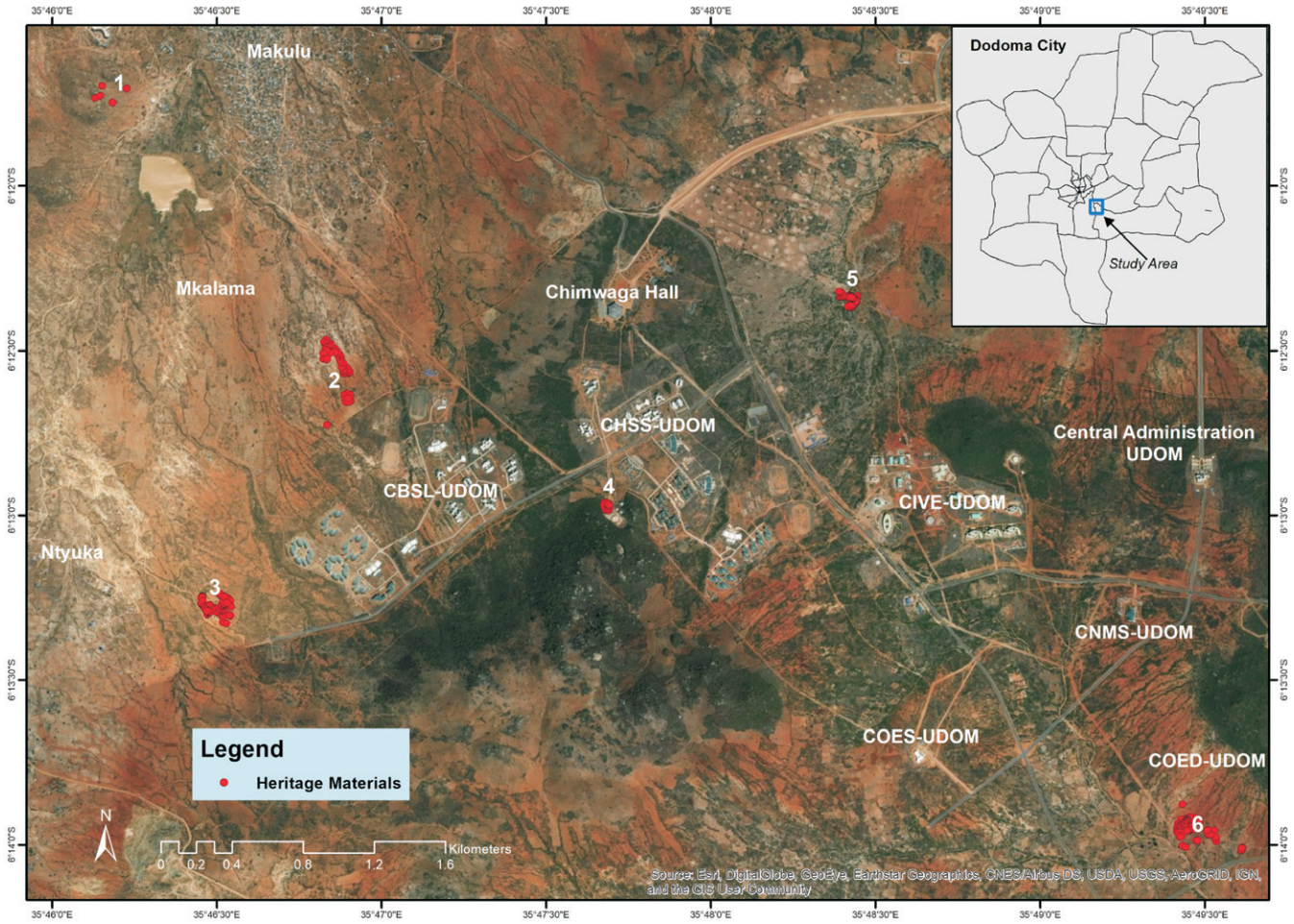

FIG. 2. *Distribution of cultural heritage materials/sites (red dots) on the proximities of the University of Dodoma. Numbers represent sites: 1, Mamkulu; 2, Mkalama; 3, Ntyuka East; 4, CHSS West, 5, CHSS East; 6, CoED West* (*map by N. Kasongi*).

During the period of German East Africa colonialism and later periods, Dodoma created the impression of being a region of precarious living particularly because of its repetitive famines and hunger (Schmied 1993; Koponen 1988; Maddox 1990, 1991, 1996). These famines sometimes resulted in massive deaths of human beings because people lived in marginal economic environments (Rigby 1969; Koponen 1988). Drought, due to unpredictable climate changes, has been a significant factor leading to these famines. Other factors such as floods resulting from extremely high rainfall have equally led to human challenges (Schmied 1993). As shown below, rains are on average low in Dodoma at about 350–900 mm in wet, or 200–400 mm in dry periods (Schmied 1993). The severity of famines that resulted from drought between 1917 and 1920 was also exacerbated by the colonial policies and interests of German East Africa and later British Tanganyika which disrupted social relations of production and reproduction (Maddox 1990, 1991). An interesting fact about Dodoma is that the Wagogo is not an ethnic label but rather an identity developing out of survival strategies. The founders of the Wagogo clans descended from different ethnicities while the language (Cigogo) developed as a *lingua franca*. The region received different migrants from all geographical directions, and now they identify themselves as clans of the Wagogo which has made them lack strong political cohesion (Rigby 1969: 13; Mnyampala 1995). Because of their multiple origins and alliances made with their neighbours, the Wagogo borrowed some traditions (age-set organisation) from other communities such as the Parakuyo/Maasai (called Baraguyu by Rigby 1969).

For the present study, our focus is on the tangible heritage found within the UDOM and its neighbouring surroundings. We have recovered materials belonging to two distinct periods: the much younger settlements predating the arrival of the Wagogo communities; and the lithic artefacts that we attribute to the Middle Stone Age (MSA) period.

SITE CONTEXT AND STRATIGRAPHY

Dodoma is a semi-arid region with moderate rainfalls of around 300 mm to 900 mm over two seasons (Rapp *et al*. 1972; Christiansson 1981; Kassile 2013). The short rainy season is normally between October and January, while February to May is a long rainy season. There are, however, variations to this norm because rainfall may not start or end as expected (Kassile 2013). Prior to the 1980s, the mean annual rainfall was 567 mm (Rapp *et al*. 1972), but there has been a decline of about 4% on this average rainfall between 1980 and 2010 (Kassile 2013). Rainfall variations between decades are also noticeable (Kassile 2013). Arid conditions during the dry season are caused by high pressure due to intertropical convergence zone winds (Christiansson 1981). Temperatures reflect two major seasons: warm (October to December); and cool (June to August), whereas minimum recorded temperatures are 18° and 10°C, respectively. Maximum temperatures are 31°C and 28°C for warm and cool seasons, respectively (Kassile 2013).

Geologically, Dodoma urban and nearby areas are formed by unfoliated granites and foliated gneisses of various types. The unfoliated homogeneous rock tends to be more resistant and form the hills, watersheds, and inselbergs while valleys

are mostly associated with areas containing foliated rocks (Quennell 1955: 2; Rapp *et al*. 1972).

Erosion activities, probably spanning centuries, (Lane *et al*. 2001), have helped to expose previously buried archaeological materials. Through our surveys, we have observed at least three formations: i) a younger one that contains evidence of recent occupants (including the deserted settlements); ii) the calcareous or red layer; and iii) the greyish layer (Fig. 3). However, there might be further formations as we did not reach bedrock in our test excavations. The calcareous and the grey layers are very thick, each probably more than two metres thick based on estimates from the exposure but this remains to be firmly established through vertical excavations. Pottery remains and daub materials originate from the youngest formation. On the other hand, we could not ascertain which formation the lithic artefacts of MSA originate from. They could have come from any or more of the older formations.

RESEARCH METHODS AND TECHNIQUES

DATA COLLECTION STRATEGIES

As diverse information about the cultural heritage scattered at UDOM and its neighbouring areas was required, a combination of methods and techniques was employed to get these varied datasets. On the landscape, we systematically walked over the surface areas surveying in the six sites researched. The six sites were identified through a preliminary informal walkover survey by K.P.R. and S.K.R. The pedestrian archaeological surveys were aimed at identifying and collecting heritage materials found on the surface of the earth. To easily capture the location of individual artefacts and sites, we plotted each artefact or group of artefacts using Garmin Etrex 30x GPS with a ±3 m accuracy, and this exercise resulted in the production of the map showing the distribution of sites/individual or group of artefacts (see Fig. 2). Data gathered from this study were also used to update the database created in an earlier phase of this research (Mwakipesile *et al*. 2018) which initiated the mapping of heritage resources in Dodoma. This database (Dodoma Capital City Historical Geographical Information System) will eventually be linked to internet to enable the easy retrieval of information of an artefact or site (Mwakipesile *et al*. 2018).

To augment data from the surveys, we conducted test excavations in localities with the greatest concentration of artefacts. However, we are aware that these concentrations might have resulted from erosion. As a result, artefacts, especially lithics, may have been found out of their original contexts. Three test pits, using 10 cm spits because the stratigraphy is largely homogeneous in colour, were excavated during the fieldwork. Two of the three test pits (a 1 × 1 m, and a 2 × 1 m test pit) were located at CoED West site (Fig. 4). A third test pit (1.5 × 1.5 m) was undertaken at Mkalama site. The first test pit at the CoED site was excavated to about 80 cm below the surface. Although the deposits of CoED West test pit 1 were red in colour to 80 cm below surface, concretions occur from about 20 cm below the surface and increase downwards. We stopped at 80 cm mainly because of time constraints and we still wanted to test excavate the other formation which was exposed almost 200 m northeast of CoED test pit 1. The second CoED test pit, which was defined by greyish sediments, and which we think belongs to the older formations in the geological horizon, were discussed earlier. This was excavated to 90 cm below the surface. Excavations at both test pits at CoED West did not reach bedrock. At Mkalama site, a test pit of about 30 cm thick containing largely pottery and few faunal remains was excavated. Immediately after 30 cm below the surface, this thin layer meets with the red formation. Special excavation forms aided by GPS records were used to keep records of important information such as the nature of sediments, location of artefacts in the test pit, and physical dimensions.

Beyond pedestrian surveys and test excavations, we also conducted interviews with key informants and held group discussions using guiding questions. We conducted semi-structured interviews in order to give freedom to participants to express their views about the questions asked. The group discussion method used was single focus group which involves interactive discussion between all participants and a facilitating team (Morgan 1996; Nyumba *et al*. 2018). Both semi-structured interviews and focus group discussion strategies were used to gain the perceptions of the elders about heritage materials scattered on their landscape, and the people responsible for it. The elders interviewed were aged over 60 years and were identified through referral by our local assistants. They were thus identified as the most knowledgeable and enjoyed respect in the community. One of the team (E.T.) was also familiar with some elders who could provide information on our topic of study. He had previously interacted with them during an earlier phase of this study. The language of interview was Swahili but Cigogo was also used by elders who did not speak Swahili very well. In instances where Cigogo was used

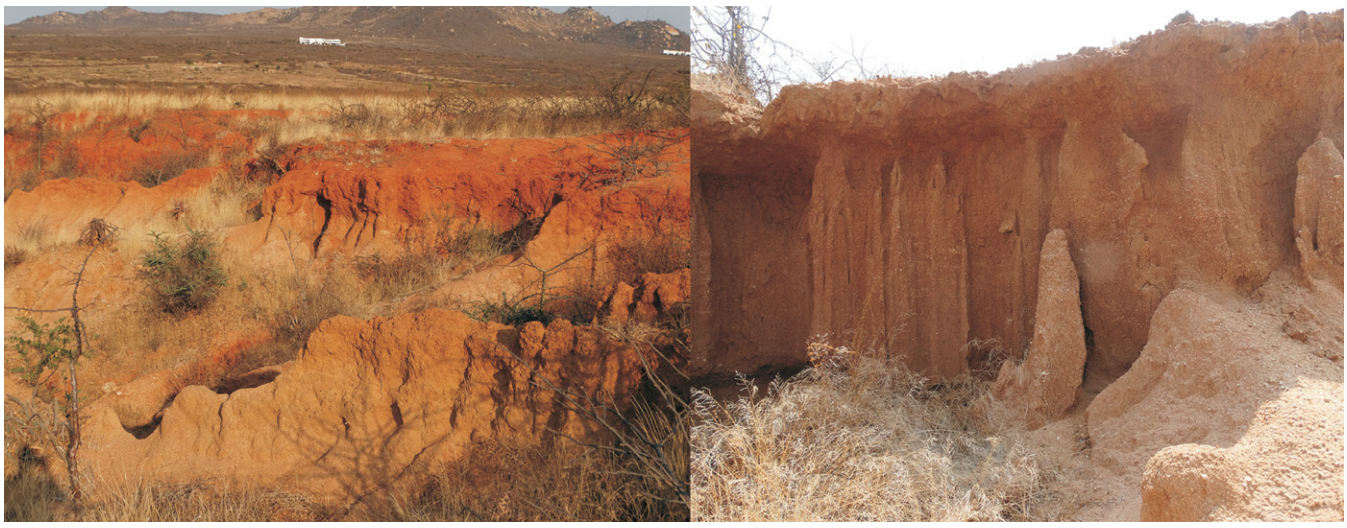

FIG. 3. *Naturally exposed stratigraphic sections as captured at College of Education West; a thin blackish layer overlying the red formation is not visible here.*

FIG. 4. *Test pits at CoED West site:* (**A**) *test pit 1;* (**B**) *test pit 2.*

translation was given by other elders who knew both languages. The advantage of using both languages was that we made communication easier between the informants and interviewers. The disadvantage for us would have been potentially losing some information through translation from Cigogo to Swahili.

The aim of the interviews and focus group discussions was to collect opinions from the local elders on the abundant but abandoned settlements of communities thought to have preceded the Wagogo societies (e.g. Mnyampala 1995). A total of seven elders were interviewed at Makulu (two), Ng'ong'ontha (four), and Ntyuka (one) wards about their understanding of the general peopling of Dodoma, with a focus on the Wambambali people briefly mentioned by Mnyampala (1995). In addition, observation was also used as research method. This helped us to identify the types of threats facing the cultural heritage, and the techniques used to construct the buildings used by the former occupants of the sites studied.

DATA ANALYSIS APPROACHES

The artefacts in this report were analysed using standard archaeological approaches such as identifying technological and attribute aspects for the lithics including a *chaîne opératoire* approach (Andrefsky 2005, 2009; Inizan *et al*. 1999). The general classification of the lithic artefacts includes waste, utilised pieces, and formal tools (see Deacon 1978). The *chaîne opératoire* approach reconstructs the organisation of a technological system at a given archaeological site by examining strategies of raw material procurement (whether direct or indirect); reduction sequences; and use, maintenance, and discard (Sellet 1993). The *chaîne opératoire* method is an important tool especially in making comparison with similar artefacts, particularly for lack of chronometric dating at this stage.

Pottery remains from the study were analysed by looking at a range of attributes including vessel type, texture, temper applied, decoration and decoration types, and surface finishes (Posnansky 1961a, b; Soper 1967, 1971; Robertshaw 1994; Rice 1996, 2015; Chami & Kwekason 2003). Besides this system of classification based on pottery form and decoration, pottery from archaeological assemblages may also be examined by chemical techniques such as emission spectroscopy and neutron activation (Perlman & Asaro 1969). These techniques were, however, beyond our reach as we do not currently have the relevant equipment to conduct them.

RESULTS

There are two main groups of artefacts or heritage materials collected. Excavations from test pits 1 and 2 at CoED West have not yielded any more than two quartz proximal blades (one at each test pit), and a few flaked stones. Due to the scarcity of artefacts from these two test excavations, the limited findings are not included in this paper. As a result, our focus is on artefacts from a test excavation conducted at the Mkalama site, and those collected from surface surveys. Therefore, materials analysed here include lithic artefacts collected from the surface, pottery artefacts both from the surface and the Mkalama test pit, and daub of collapsed buildings that, according to oral tradition, is attributed to the Wambambali people. The pottery, according to interviews, is connected to these deserted settlements and not the Wagogo traditions. The collapsed buildings are found along the edges of the hills, and probably the occupants chose these sites to avoid the impact of strong winds.

LITHIC TECHNOLOGY AND ITS CHARACTERISTICS

The lithic artefacts have been grouped into four classes (Table 1; Fig. 5). Chunks and flakes are dominant, forming 45.5% and 43.5%, respectively. There were more chunks found at the CHSS East site (*c*. 18% of the assemblage) than the ratios in other sites, while flakes have almost the same ratios (Table 1; Fig. 5). Blades (6.9%) and cores (4.2%) are marginally represented in the collection. This may be a function of a small sample size collected from disturbed surfaces. Many of the few cores presented in this study are from CoED West, while there were no cores collected from Mkalama site (Table 1; Fig. 5).

There are two main raw materials selected at UDOM and neighbouring sites, quartz and quartzite (Table 2). Chert is also

TABLE 1. *Surface lithic artefacts from UDOM and neighbouring sites.*

	Category									
	Chunk		Flake		Blade		Core		Total	
Site name	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Mkalama	32	7.9	44	10.8	4	1.0	0	0.0	80	19.7
CHSS East	73	17.9	45	11.1	5	1.2	5	1.2	128	31.4
CoED West	55	13.5	50	12.3	11	2.7	9	2.2	125	30.7
Ntyuka East	25	6.1	38	9.3	8	2.0	3	0.7	74	18.2
Total	185	45.5	177	43.5	28	6.9	17	4.2	407	100

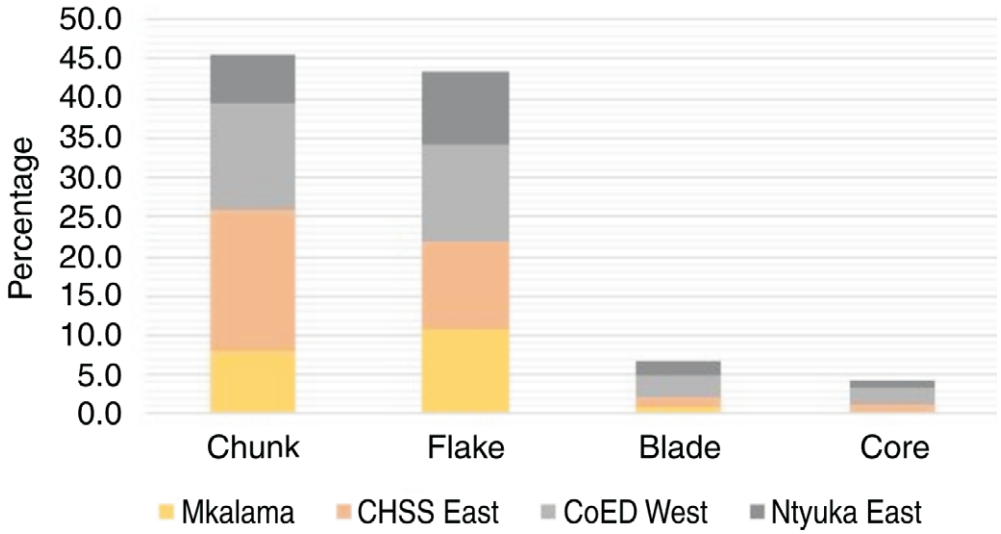

FIG. 5. *Percentage frequencies of lithic artefact types from UDOM and neighbouring sites.*

available but very rare, at 3.2% as in the Kisese II MSA assemblage (Tryon *et al*. 2018) approximately 170 km north of our study location. Quartz and quartzite raw materials have been sourced from locally available outcrops in the study area while the origin of chert is unknown (see also Tryon *et al*. 2018). Tryon *et al*. (2018) also noted that different types of quartz (e.g. course-grained and crystalline quartz) occur in veins and stream pebbles.

The production technique is mainly unidirectional flaking involving freehand hammer percussion. Platforms of the flakes and blades are classified either as faceted, plain, broken, shattered, or very small. Faceted platforms (e.g. Fig. 6C & D) suggest that there was some preparation (Levallois technology) of the striking platforms before the flakes/blades were removed. Bipolar flaking marginally occurs in the quartz materials. The implications of this technology for the understanding of MSA behaviour is discussed below.

'WAMBAMBALI CIVILISATION': ARCHAEOLOGY AND OPINIONS FROM ELDERS

According to the elders, the pottery remains are part of the complex of settlements represented by collapsed buildings and believed to have been occupied by the Wambambali people. Most of the pottery artefacts are fragmented pieces or sherds which are classified as body, rim, neck, shoulder, or a combination of these attributes if a piece so contains them. It is noted that 85.7% of all sherds are body parts, while only 14.3% are rim, neck, shoulder, or a combination of these parts (Table 3). Only 2% of the sherds could be assessed to be either a jar or a bowl, while a majority of the pieces were indeterminate as shown in Table 3. Decorated pieces form 13.8% of the total analysed sample (Table 3) and most of the decoration is situated on the body parts while other decorations are on the necks and shoulders of sherds. Most of the decoration is composed of punctates but other sherds have comb-stamps, incisions, and wedge nicks (Fig. 7). The surface finish of sherds has been classified into four groups (Table 3). It is clear that the makers of this pottery tradition(s) preferred smoothing their pots while other pots were burnished, slipped, and still others have rough surfaces (Table 3). Pottery manufacture was more likely only by hand as no wheel use has been indicated by the sherds. During the production of pots, makers used quartz and other natural materials as temper, as observed on the pieces during analysis.

With regard to the remains of collapsed buildings, our observations indicate that the occupants constructed them using thatch and mud (Fig. 8) and they seem to have been very strong buildings. Thin poles were used to make walls and mud was applied to the walls. The house walls may have been very thick at the base, while narrowing upwards as suggested by observed bases. The daub is burnt for all these settlements, including other settlements of a similar civilisation some 45 km north, at Mundemu village in Bahi District which we observed

TABLE 2. *Lithic raw material selection at UDOM sites.*

	Raw material							
	Quartzite		Quartz		Chert		Total	
Site name	*n*	%	*n*	%	*n*	%	*n*	%
Mkalama	27	6.6	53	13.0	0	0.0	80	19.7
CHSS East	103	25.3	17	4.2	8	2.0	128	31.4
CoED West	48	11.8	77	18.9	0	0.0	125	30.7
Ntyuka East	41	10.1	28	6.9	5	1.2	74	18.2
Total	219	53.8	175	43.0	13	3.2	407	100

TABLE 3. *Attributes of pottery from sites in the UDOM and surroundings localities.*

	Attributes											Number
	Sherd type		Vessel type			Decoration		Surface finish				
Site	Body	Upper	Jar	Bowel	Indeterminate	Decorated	Undecorated	Burnished	Smoothened	Slipped	Rough	
Mkalama	74	32	4	3	99	27	79	22	61	4	19	106
CHSS West	239	34	0	1	272	53	220	39	151	0	83	273
CoED West	104	10	2	0	112	1	113	23	63	0	28	114
Ntyuka East	98	10	0	2	106	2	106	18	38	0	52	108
Total	515	86	6	6	589	83	518	102	313	4	182	601
% of category	85.7	14.3	1.0	1.0	98.0	13.8	86.2	17.0	52.1	0.7	30.3	100

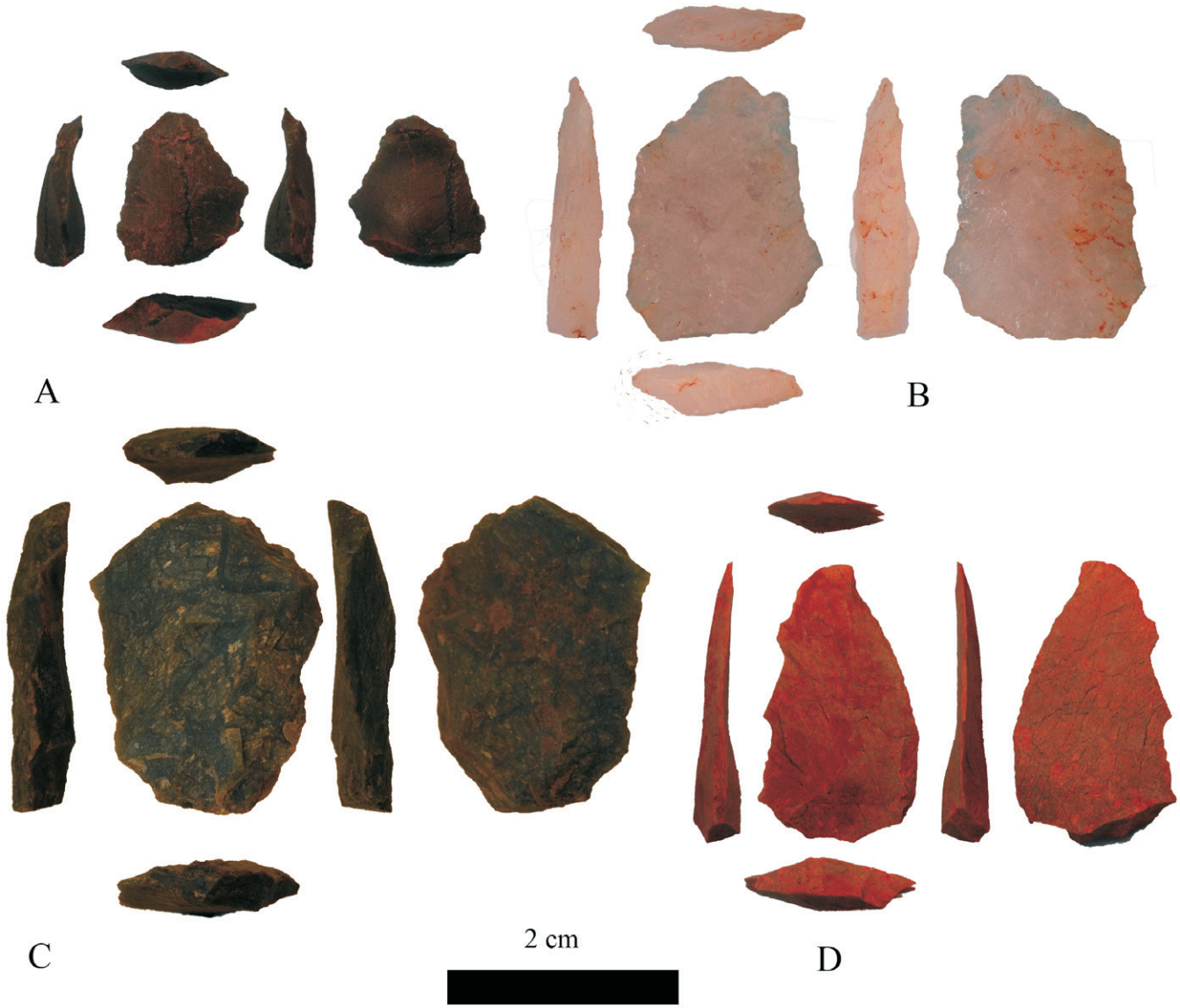

FIG. 6. *Flakes from sites located within the UDOM and surroundings:* (**A**) *CHSS East;* (**B**) *Ntyuka;* (**C**) *CoED West;* (**D**) *Mkalama.*

in one of our visits to the area. Information about these buildings and the people who occupied them is scanty and this includes passing references by Mnyampala (1995: 42–43). Mnyampala (1995) commented that not much was told by the elders about Wambambali (also known as Wenyenzere) apart from them having been responsible for the deserted settlements. The Wambambali are considered to have existed before the arrival of Bantu groups and "[…] deserted homesteads still contain grinding stones. The remains of their houses are burned like bricks. Perhaps they fled because of famine or war" (Mnyampala 1995: 42–43). Another mention of Wambambali is by Suleiman (2018) who only included them in a list of migrants who came to settle in Dodoma. Our observation shows that these people who constructed the settlements occupied much of the area of what is today's Dodoma urban area and some of its neighbouring districts (e.g. Bahi). However, the entire distribution of this civilisation has not yet been ascertained.

Interviews and focus group discussions from a group of elders in the wards nearby UDOM show that not much is known about the people who constructed the settlements and associated artefacts. This knowledge has been passed on even from Mnyampala's time. As was the experience with Mnyampala (1995), the information we received from the elders has been passed from older generation. Elders in our interviews and focus group discussion argued that when the different sections of the Wagogo were migrating to Dodoma, they found these deserted settlements and their associated pottery remains and other artefacts. Therefore, from the oral tradition, these settlements have been attributed to the people named Wambambali. While we also attach ownership of these settlements to the Wambambali, our future intentions are to conduct further investigations on these settlements to glean a picture of this civilisation.

The elders we interviewed mentioned that the oral tradition theorises that a majority of Wambambali may have moved south, while a minority went north and became alienated from their origins by other cultures there. These elders were also puzzled as to why this civilisation collapsed and we take up this point further in the discussion, giving our perspective on possible causes for the demise. In addition to the remains of the buildings and associated artefacts such as pottery and grinding stones (not collected because of their large size), our local assistants (not interviewed) showed us what they thought were human bones from graves at Makulu site.

These bones were on the surface and according to our assistants, they came from destroyed graves through the course of

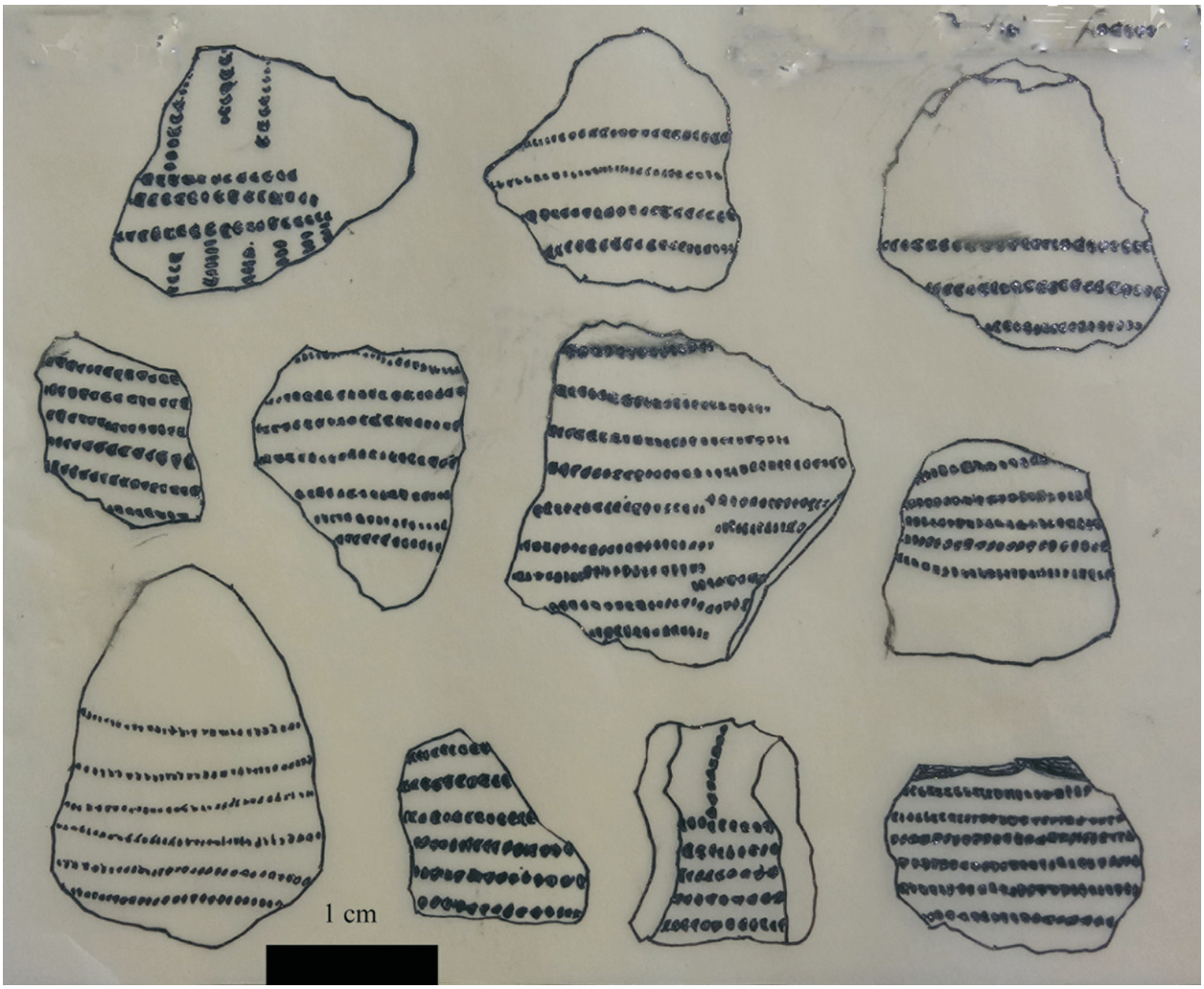

FIG. 7. *Some of the pottery decoration from artefacts found at CHSS West* (*illustrated by K.S. Rao*).

cultivation. This also makes us assume that these so-called destroyed graves do not have a connection with the people who are currently cultivating these areas. If there was a connection, these people would have taken care not to destroy the graves. Because of ethical concerns, these assumed human bones were not collected. Ethics goes to the way we as archaeologists conduct ourselves in the society. In instances where human bones are identified, we must be guided by applicable laws (see Walker 2004, 2008; White *et al*. 2012). For instance, the Tanzanian Antiquities Act No. 10 of 1964 (amended by Act No. 22 of 1979) provides general protection for relics older than the year 1863 but it is silent on the collection of human bones. The Tanzania Graves (Removal) Act No. 9 of 1969 (URT 1969) further gives direction on the demolition of graves on lands required for public purposes. However, it is also silent on what procedures archaeologists must follow to collect human bones, or indeed, if they may collect human bones at all. Therefore, we thought it important to respect the dead (see White *et al*. 2012).

FIG. 8. *Daub remains from CHSS West*.

We were careful not to create an impression of being grave robbers before we consult the community, thus respecting the social protocols or taboos for collecting the 'dead'.

DISCUSSION

The current paper is a result of a preliminary investigation which was aimed at rescuing archaeological resources that are threatened by the expansion of Dodoma city (including UDOM) and other natural processes. As we noted above, we collected several types of artefacts and are currently in different stages of analysis. Future research will have to ascertain the provenance of the lithic artefacts as they have typically spread on surfaces because of erosion activities. We also expect to establish the absolute chronology both for MSA and the later traditions, here referred to as the Wambambali civilisation, using relevant dating methods.

CHSS East only provided lithic artefacts and no pottery artefacts were collected. This may be due to heavy vegetation on the site at the time of this research. On the other hand, CHSS West was a small site but with high concentration of pottery artefacts, grinding stones, and the remains of the buildings (daub). In areas outside the UDOM boundary, human activities like cultivation have been and are still taking place, constantly causing deposition and redeposition of the archaeological materials. In many sites within the UDOM, except CHSS West where there is some cultivation in an area of approximately 600 m^2, cultivation is no longer taking place. The academic institution is still growing, with new infrastructural developments taking place. Therefore, cultivation, infrastructural developments, and erosion continue to threaten heritage resources around our area of study.

Although rare, the lithic artefacts which appear together on the surface with pottery remains are reminiscent of MSA techniques, especially Levallois or the prepared core technology. This judgement is from an attribute perspective, as approached from a *chaîne opératoire* analytical framework. A closer site to the present study which has shown a Levallois technology is that of Kisese II rock shelter in Kondoa District (Tryon *et al*. 2018; see also Tryon & Faith 2016) about 170 km north of our area of study. Other sites in Tanzania that exhibit Levallois-related technologies include Nasera rock shelter (Mehlman 1977; Tryon & Faith 2016) and Mumba rock shelter (Mehlman 1979; Diez-Martín *et al*. 2009) in northern Tanzania, Mlambasi and Magubike (Biittner *et al*. 2007; Willoughby 2012; Biittner *et al*. 2017; Werner & Willoughby 2017) in southern Tanzania, and recently discovered sites on the Kilwa Basin of coastal Tanzania (Beyin & Ryano 2019). Although there are no datable materials from this research, this assemblage is tentatively assigned a date of between around 60 and 50 ka, and the site could form one of the migration routes at this time or simply be a result of normal human occupation. Our report of MSA technology in this area broadens our understanding of the behavioural origins, development and geographical coverage of the MSA human and activities in Dodoma adding to the classic site of Kisese II rock shelter (Tryon *et al*. 2018).

The pottery component associated with remains of buildings or settlements probably suggests an occupation dating to six or more centuries before the German colonisation of Tanganyika (now Tanzania mainland). Mnyampala (1995: 42) argues that the occupation by this group, Wambambali also known as Wenyenzere, predates the arrival of Bantu groups in Dodoma. The elders we interviewed also hold this view and acknowledge that this information was passed down from older generations. Mnyampala (1995) places the arrival of the Wagogo in Dodoma to around 1300 AD. If Mnyampala and the continuing oral tradition are correct that these settlements and associated artefacts predate the arrival of Wagogo in Dodoma, this suggests that the origins and development of Wambambali civilisation may go far back to the end of the first millennium AD. However, extensive excavation is planned to be part of the next phase of research to collect datable materials from their scattered settlements that will help to determine the correct age of this civilisation. It appears that these people (Wambambali) were farmers who relied on rainfall for their crops, and grinding stones (Fig. 9; see also Mnyampala 1995) found along with pottery remains attest to this. Observation shows that the farmers preferred to live on the sides of the hills probably to protect their settlements against strong winds.

As Dodoma is semi-arid and drought-ridden region, it is not surprising to suggest that the decline of this civilisation was due to crop failure resulting from prolonged droughts. Nyagava (1988) also holds that drought was a key factor in the peopling and migration in and out of some areas in the nearby Iringa region. As discussed earlier, Dodoma is one of the areas prone to drought as was observed during colonial times. Mnyampala (1995) theorises that there was a foreign invasion of this civilisation. His theory derives from the fact that the daub remains of these settlements appears to be burnt. However, this claim is disputed by other writers (e.g. Nyagava 1988) who attribute the burning of daub to be part of the construction process before the house was occupied as has been seen from living traditions in Iringa region, some 260 km south of

FIG. 9. *Grinding stones from the research area (photographs by K.S. Rao*).

Dodoma. We also hold the view that the burning of the houses was part of the construction process. This is more circumspect because it is impossible that all the buildings would burn to the same extent if fires were caused by invasion. The burning of these settlements, still visible in the archaeological record, is a prolonged process occurring before settling in the house, in contrast to sporadic fires caused by invaders. Our study is a call for heritage managers and practitioners and researchers to act before this heritage is lost through unmitigated construction works.

CONCLUSIONS

The study found the existence of two traditions in the areas within and neighbouring the UDOM. One is a Levalloisian MSA technology. This is reminiscent of technologies found at other sites in Dodoma (e.g. Kisese II rock shelter), other areas of Tanzania, and beyond. The evidence broadens our archaeological understanding of the region during MSA times. Another tradition is the Wambambali civilisation. Accordingly, this tradition may have survived through farming and livestock keeping. Its demise may have been caused by famine brought on by droughts or crop failure. Our proposed ages for both traditions are tentative and are subject to the discovery of datable materials. As the lithic materials are from the surface and have been scattered by natural processes such as erosion, future focus will be on ascertaining the correct provenance of this MSA technology in the older layers of the sites. Stratigraphic study involving dating materials using relevant procedures will be the next phase of research by this team. Further studies on the later prehistory will address questions about the Wambambali civilisation which seems to have been dominant during its peak but whose information is yet obscure. Elders believe that the Wambambali moved south and a smaller group went north and became absorbed there. The collected heritage materials will form the basis for an envisaged museum within UDOM as a way of protecting heritage. All this is in an effort to call on heritage agencies to address the threat facing the cultural heritage we have identified in our study.

ACKNOWLEDGEMENTS

We acknowledge the generous support of the University of Dodoma for funding this research and allowing access to the university areas. However, opinions expressed here are not necessarily those of the University of Dodoma. During fieldwork we worked with assistants who acted in various capacities. From the local community, Aklay Mbula, Samson Masaka and Joynamese Hassan joined us and were very instrumental in conducting field research. We thank our former UDOM students (Janeth Elimuu and Simon Mbaanga) for their assistance during fieldwork. We also thank the Department of Antiquities for granting a research permit and Dr Emmanuel Bwasiri who represented the authority during fieldwork. Finally, we thank regional authorities, including the office of the Regional Commissioner of Dodoma and City Council of Dodoma, for research clearances in accessing its suburbs.

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