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ORIGINAL ARTICLE

Preliminary Analysis of Ceramic Styles in Fier, Lankan, and Daffo, Southern Jos Plateau, Central Nigeria

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Abstract Ceramic motifs, forms, and paste attributes of domestic pottery offer insights into regional historical dynamics, especially if the chronostratigraphic contexts of the ceramics can be established through excavations, radiocarbon dates, and historical traditions. This study examines recently excavated ceramic assemblages from the southern Jos Plateau, the first archaeological study of ceramic assemblages from this region. This paper focuses on the ninth/tenth, through twelfth/thirteenth, and nineteenth/twentieth centuries ceramic rim forms, decorative motifs, and clay properties from Fier, Lankan, and Daffo communities. The study sheds light on the similarities and differences in styles and functions regionally and across time. It also explores the roles that the production, distribution, and consumption of domestic pottery played in the process of regional networks and intergroup relations over a thousand and five hundred years in the southern Jos Plateau. Finally, this study provides a valuable framework for future archaeological research in the region by setting a foundation for standardized ceramic classification.

Résumé les motifs céramiques, les formes et les attributs de pâte de la poterie domestique offrent un aperçu de la dynamique historique régionale, en particulier si les contextes chronostratigraphiques des céramiques peuvent être établis par des fouilles, des datations au radiocarbone et des traditions historiques. Cette étude examine les assemblages de céramiques récemment fouillés dans le sud du plateau de Jos, la première étude archéologique des assemblages de céramiques de cette région. Cet article se concentre sur les formes de bordures en céramique, les motifs décoratifs et les propriétés de l'argile des IXe/Xe, XIIe/XIIe et XIXe/XXe siècles des communautés Fier, Lankan et Daffo. L'étude met en lumière les similitudes et les différences de styles et de fonctions au niveau régional et au fil du temps. Il explore également les rôles que la production, la distribution et la consommation de poterie domestique ont joué dans le processus de réseaux régionaux et de relations intergroupes sur mille cinq cents ans dans le sud du plateau de Jos. Enfin, cette étude fournit un cadre précieux pour les futures recherches archéologiques dans la région en établissant les bases d'une classification normalisée des céramiques.

Keywords Ceramic styles and functions · Archaeological sequences · Intergroup relations · Jos Plateau

Introduction

The bulk of archaeological remains on the Jos Plateau consists of ceramic sherds. These cultural remnants

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have been utilized by researchers to decipher the complexities of Iron Age archaeology including cultural changes and passage of production knowledge between different potter communities (Haour, 2003; Huysecom et al., 2009). The archaeological sites on the Jos Plateau are situated between the Later Stone Age and the present (6000 BC to present). However, this long-term ceramic sequence is minimally understood because studies of ancient potting communities are lacking. This study explores the interconnectedness of ceramic attributes (style and function) from three different archaeological sequences (ninth to tenth century, twelfth to thirteenth century, and nineteenth to twentieth century) between Fier, Lankan, and Daffo potting communities. It focuses on low-fired ceramic pots (700–1200 centigrade) in the region. This research thus sets out new evidence for ceramic production and a baseline for future studies in the southern Jos Plateau.

Settlement History

The Jos Plateau sits at about 1300 m above sea level in Central Nigeria. The landscape is characterized by rocky hills, lower valley bottoms, and lowland troughs. The region is broadly dominated by ethnic groups of Benue-Congo (such as the Berom, Tarok, Fyem, Bace, and Afizere) and Chadic (such as Ngas, Mwaghavul, Ron, Mupun, Fier, Kulere, and Goemai) origins, accounting for about 54 of the approximately 395 ethnolinguistic groups in Nigeria (Ballard, 1971; Blench, 1998, 2008; Crozier & Blench, 1992). The Benue-Congo languages belong to the Niger-Congo group of African languages while the Chadic languages belong to the Afroasiatic family (Ballard, 1971; Blench, 1998). In particular, Fier, Mupun, and Ron occupy Fier, Lankan, and Daffo, respectively, which are the areas of interest in this paper. The three languages (Fier, Mupun, and Fier) belong to the Chadic group (Blench, 2001, 2003; Longtau, 2012; Shimzu, 1974).

Historical literature and oral accounts (e.g., Ames, 1934; Frank, 1978; Meek, 1925; Temple, 1922) have documented the occupation sequences of these various groups on the Jos Plateau. These sources tend to give the impression that the Jos Plateau was unoccupied until the seventeenth century when people began to arrive into the area. However, later historical accounts (such as Tambo, 1978) reveal that indigenous groups populated the Jos Plateau until after the mid-2nd millennium AD, when a new group of people, mostly of Chadic origin, began to ascend the Jos Plateau. These societies were also observed occupying several other hill refuges of the Sudanic region, such as those of the Mandara Mountains, Guéra massif of Chad, Nuba Mountains in Sudan, and the Kabre Mountains in Togo (Langlois, 2005). The period of the migrations coincides with the period of marked aridity in the Lake Chad region and most parts of West Africa (Bakindo, 1985; Connah, 1969, 1971; MacEachern, 2012; Smith, 1976; Urvoy, 1949).

The migration of various ethnic groups from the Lake Chad region to the Jos Plateau, notably through Southern Bauchi, exemplifies a complex, intermittent migration process. Groups like the Barawa, Jarawa, and Bankalawa, with roots in Kukawa and Ngazargamu of present-day Borno, made temporary stops before eventually settling in Dass, where they established communities in areas such as the notable Mbula hill. Historical records suggest that while the Barawa were among the earliest inhabitants, the Bankalawa and Jarawa followed. Southern Bauchi served as a crucial transit point for these migrations, particularly for ethnic groups like the Ngas, Fier, Mupun, Ron, and Kulere. Interestingly, the Ron and Kulere were linked to specific settlements in Dass. These migrations were driven by the need for space and resources, prompting further southward movement toward the Jos Plateau (Longtau & Mangut, 2008; Mangut & Mangut, 2009).

Historical accounts late in the twentieth century views on migrations to the Jos Plateau, suggesting significant movements began around 1400 AD with the arrival of Chadic groups who encountered indigenous populations (see Tambo, 1978; Aliyu 1972; Morrison, 1976; Agi, 1975; Gonyok, 1973; Mangvwat, 1976; Fwatshak, 2006). Mangwat (1984) divided the history of the plateau into five phases: initial settlement by indigenous populations (200 BC–1000 AD), movements associated with the Kanem-Borno Empire (1000–1700 AD), migrations linked to the Kwararafa Empire (1600–1800 AD), the influx of populations during the Othman Dan Fodio Jihad (1800–1907 AD), and significant migrations during British Colonial rule (1907–1960). These phases reflect the dynamic demographic changes influenced by

political and social upheavals, though Mangwat's timeline lacks archaeological validation.

However, the Jos Plateau archaeological sequence goes back further than 200 BC, as given by Mangvwat (1984). Archaeological findings indicate that the Jos Plateau has been occupied since the Later Stone Age, with continuous human activity through the Early Iron Age up to the present. Notably, sites such as Dutsen Kongba provide evidence from the 6th millennium BC (York 1978), illustrating a long-standing human presence and cultural evolution. Other early sites include Nok, at the western edge of the Plateau (Fagg, 1972a; Junius, 2016; Höhn et al. 2018; Rackham, 2017; Breunig & Rupp, 2016), and Rop, which dated back to 1500 BC and 25 ± 120 BC (Eyo, 1972; Fagg, 1972b) respectively, providing crucial insights into the human populations that occupied the area during this period. Recent excavations at Fier, Lankan, and Daffo by the author (Mangut, 2021) provided evidence of continuity from the Early Iron Age to the present. The study is beginning to fill the chronological gap between the Early Iron Age and the 17th when Chadic populations arrived on the Jos Plateau.

The settlement history of Fier, Lankan, and Daffo combined can be divided into three distinct chronological sequences: ninth to tenth century, twelfth to thirteenth century, and nineteenth to twentieth century. Each reflects a different phase of occupation and cultural development. This horizontal approach to chronostratigraphy was necessary due to the fact that, whereas in parts of the world such as the Near East where there is a clear stratigraphy of successive human occupations (see Bertman, 2005; Kramer, 1971; 1960), in the case of the Jos Plateau whereby people were always on the move, to have a clearer understanding of the region's settlement history, there is the need to rely on more than one site. Therefore, while you have one stratigraphic unit at a site, the one above it would be in another site (Fig. 1). This scenario has been well captured by Sirio Canós-Donnay in what she refers to as 'shifting sedentism' (Canós-Donnay, 2022). The ninth to tenth century AD was the period that successors of the Later Stone Age populations populated Fier (see Fig. 2) and it marked the early settlement period of Fier. By the twelfth to thirteenth century AD, Early Iron Age populations that succeeded the Later Stone Age populations populated Fier, Lankan, and Daffo (see Fig. 2). Finally, in the seventeenth to twentieth century AD, populations that succeeded the Early Iron Age populations occupied Fier, Lankan, and Daffo (see Fig. 2). This was the period that the Chadic groups arrived on the Jos Plateau (Ames, 1934; Mangvwat, 1984).

The Chadic groups blended with the existing indigenous populations, forming hybrid communities such as the Fier, Lankan, and Daffo. This integration occurred progressively as a set of Chadic newcomers settled in Fier, a section moved to Lankan, and continued as they moved to Fai-a-Run in present-day Bokkos (see Fig. 1), creating the diverse ethnic landscape of Ron land (Ihenacho, 1985; Mangut, 1986, 1989, 1998, 2020, 2021). These interactions led to the assimilation of earlier Benue-Congo speakers like the Daress, Richa, Horom, and Mabo-Barkul (Blench, 2001) by the incoming Chadic groups, contributing to the complex cultural and ethnic composition of the region today (Mangut, 2020, 2021).

Therefore, the communities of Fier, Lankan, and Daffo share a common heritage, although they differ in language and customs. Their settlement patterns have been dynamically shaped by both internal and external developments. This study introduces a novel analytical framework, utilizing the attributes of ceramics to demonstrate cultural continuity and intergroup relations. By examining ceramics from Fier, Lankan, and Daffo, the research highlights the interconnectedness of these communities through their shared material culture.

Ceramic Styles in Archaeology

Debates on style in ceramic studies have been central in archaeology for decades (Ford, 1954; Rice, 1987; Sanz & Fiore, 2014; Spaulding, 1953; Whallon, 1972; Willey & Sabloff, 1980). According to Dunnell (1978), during the discipline's early days during the culture-history period, archaeologists explained similarities in artifacts through concepts such as diffusion, acculturation, tradition, horizon, trade, and migration. However, this method faced substantial criticism with the rise of New Archaeology and Processual Archaeologies in the 1960s. Scholars like Binford (1965) and Clarke (1968) argued that the culture-history approach lacked scientific rigor, advocating instead for a framework rooted in hypothesis testing and deductive reasoning. This paradigm shift marked

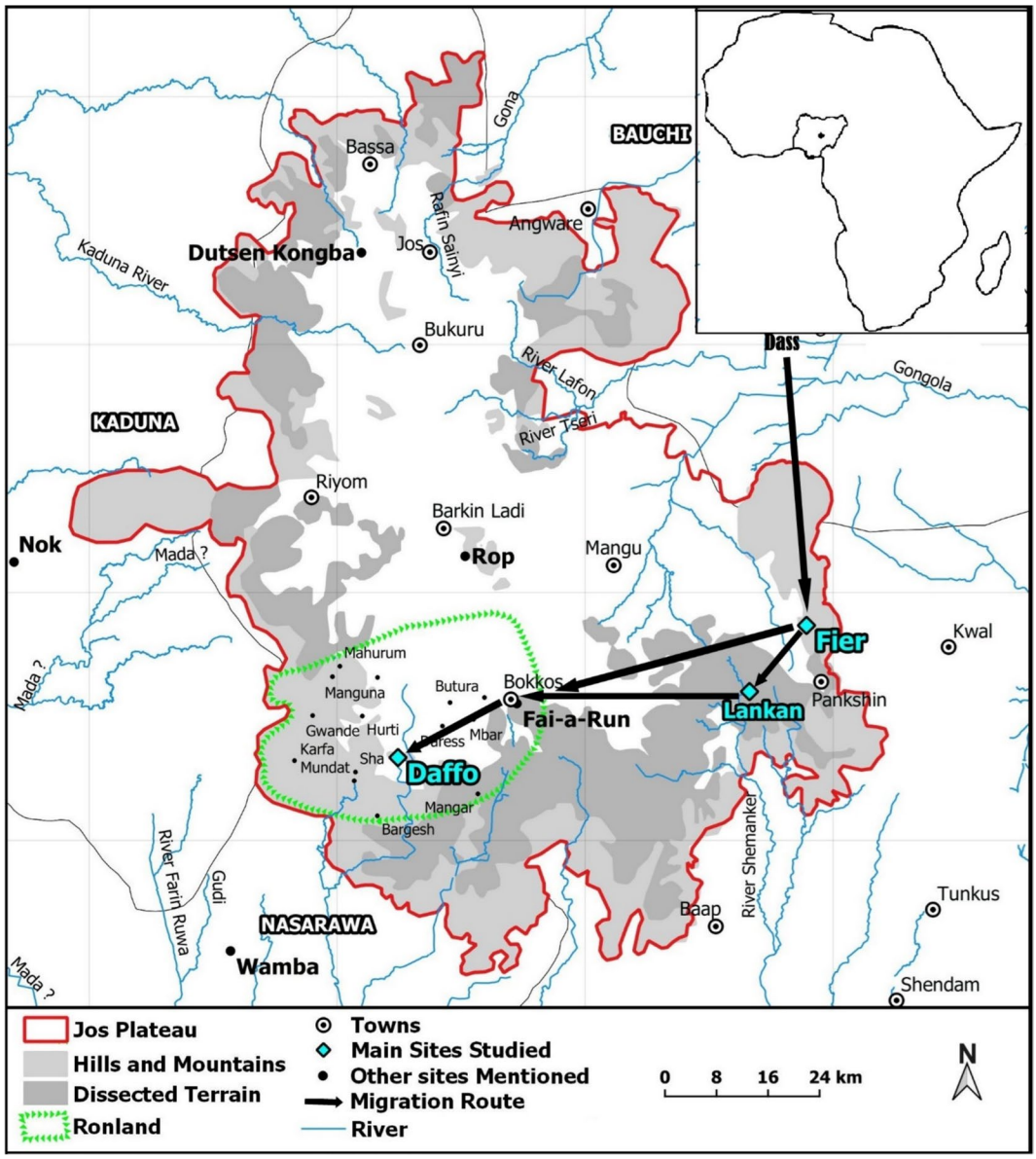

Fig. 1 Area of study and other places mentioned in text (made by the author)

a significant transformation in how cultural similarities were approached, leading to a more theoretically diverse, sophisticated, and interdisciplinary archaeology. However, the concept of style considered here centers on variations in material culture, particularly, ceramics. As Wiessner (1983) emphasizes, understanding these variations depends greatly on the behavior that generates them.

Style has been described as repeatedly doing something the same way. Furthermore, Rice (Rice, 1987: 244) describes it as "visual representations, specific to particular contexts of time and place, that at the least transmit information about the identity of the society that produced the style and about the situation or location where it appears". Rice (1987) thus argues that style is not rigid but open to new ideas and equally transmits new information when interpreted. Sinopoli (1991) argues that a pottery class might be adopted by a few members of a community. More members of the community may

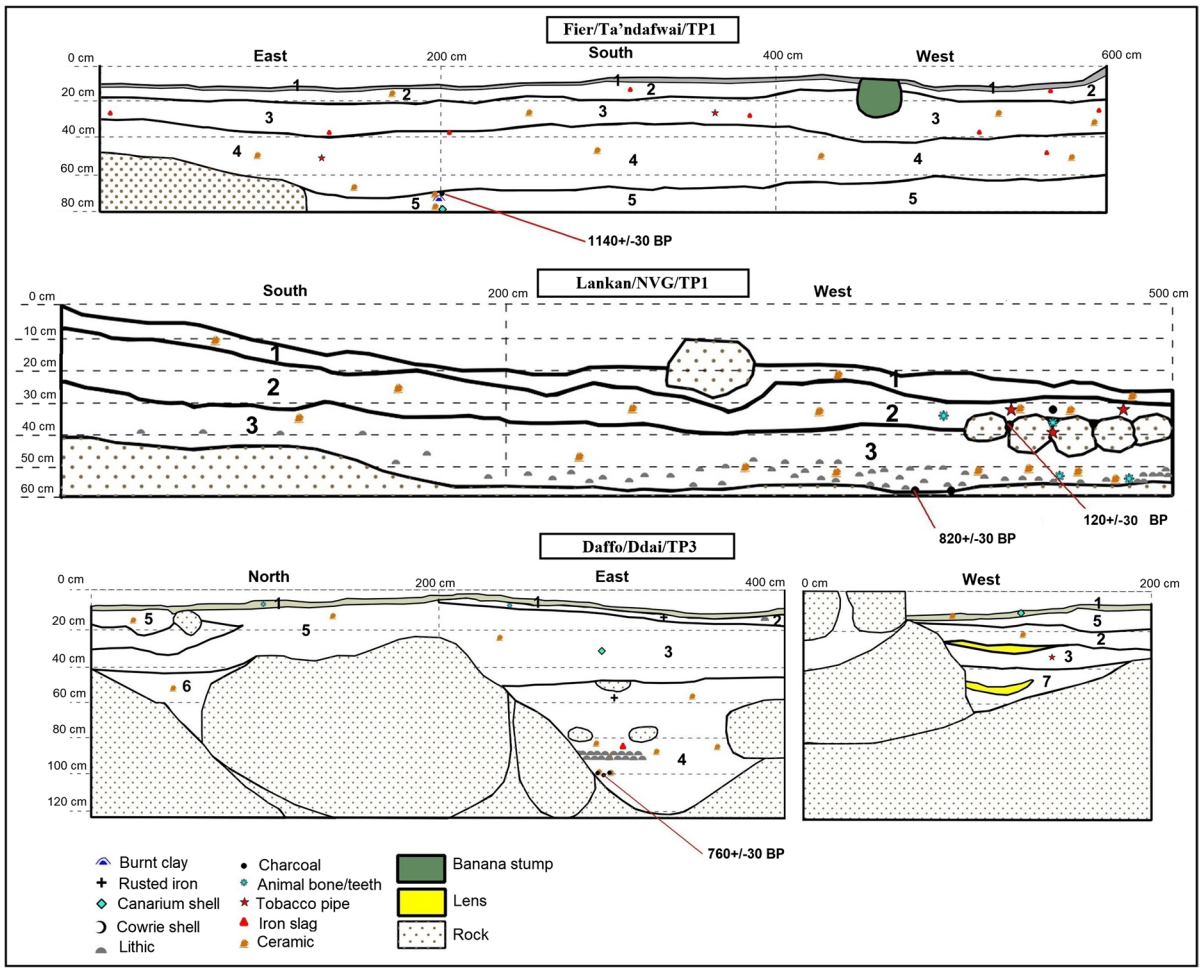

Fig. 2 Section drawing of excavation units at Fier, Lankan, and Daffo (made by the author)

begin to make and use similar pots, often with slight modification of the pottery form as time progresses. With time, after gaining widespread acceptability, the initial class of ceramic becomes less fashionable with the emergence of new classes that are introduced and are in vogue. As a result, the first class will decline in popularity and eventually go extinct (Sinopoli 1991). This explains the presence of certain ceramic types in the archaeological record at some point in time and their disappearance and appearance of some new types at some other point.

Variations in ceramic forms and decoration are constrained by time, implying spatial variations could "be used to distinguish between different prehistoric regions, and temporal variations could help in the important process of defining chronological sequences within those regions" (Sinopoli 1991:2). In basic ceramic classification, vessel forms are described as bowls or jars and plain or decorated. This is what Sinopoli referred to as binary typologies (Sinopoli 1991). However, Rice (1987) argues that both form and decorative styles, in most cases, relate to function, and design or decoration comprises several components or elements. She defines an element as the smallest unit of design which could be a single incision or a brush stroke, a combination of which makes up a design or decoration motif. The layout or location of decoration and/or the kind of decoration gives an idea of how a vessel is viewed and used. In addition, the smallest or basic units are the most recognizable components of a design. As a result, they are easily borrowed or imitated from artist to artist.

Identifying such elements thus allows inferences to be made about intergroup relations.

Vessel forms and functions are inextricable (Arthur, 2002; Kohtamaki, 2010; Rice, 1987; Sinopoly, 1991; Skibo, 2013). For example, very large jars, in most cases, serve storage purposes, and shallow bowls are used for serving. Orifice size helps in determining the vessel form and, consequently, the functions it serves. An orifice is the opening of a ceramic vessel. Bowls and plates have larger openings, while jars have smaller openings. Frank and Harlow (1990) and Rice (1987) note that cooking and processing vessels have larger orifices than storage jars. However, jars used for long-term storage have greater volumes than those for short-term storage. As noted by Rice (Orton et al., 1993; Shepard, 1961, 1987), while vessel morphology often plays a critical role in their functional use, it is not the sole determinant of their purposes.

Prudence Rice (1987) outlined four ways to determine the functions of ceramic vessels:

1. For ethnographic vessels or archaeological vessels where descendants of the original makers or users can be identified, interviews are conducted. In other cases, archaeologists rely on observational methods to make general statements about their uses, supported by documents, ethnohistorical accounts, and artworks.
2. Vessel functions can be inferred when found in context, for example, in association with a cooking place or with its content preserved.
3. Through ethnographic analogy, experimental studies, and inference.
4. By carrying out residue analysis, the contents and uses of vessels can be determined.

In this study, the first method was primarily employed to analyze archaeological ceramics from Fier, Lankan, and Daffo, inferring their functions accordingly. In addition, the study focuses on the styles of these archaeological ceramics to enhance our understanding of the interactions and cultural similarities across different time periods between these three areas, as highlighted by historical traditions. This research aims to contribute toward developing models that can be tested by archaeologists working in the region, thereby enriching existing theories of general human behavior.

Methodological Approach and Results

Excavations

Excavations were carried out at Fier, Lankan, and Fier: (i) to have a cross-section of the cultural deposits in the three respective areas; (ii) to recover cultural materials in their primary context from the three sites and compare them; and (iii) to recover datable materials so as to establish the sites' chronology. As a result, test excavations were opened at Ta'ndafwai, Nangvun, and Ddai in Fier, Lankan, and Daffo respectively.

The excavation at Fier revealed five stratigraphic layers/levels (Fig. 2). The excavation unit was labelled "Fier/Ta'ndafwai/TP1". The first (level 5) is the lowest which is very compact, loamy, and lateritic and contains very few ceramics, charred canarium shells, and burnt clay. This level provided the only radiocarbon date from the site and the earliest date among the three sites for human occupation which is 1140 ± 30 BP (854–981 cal AD at 78.6%, Beta 491108). This level is overlain by compact, loamy, lateritic sediment and contained ceramics, iron slag, burnt clay, lithics, and charred canarium shell (level 4). Level 4 is overlain by gravelly loam deposits that containe pottery, iron slag, baked clay, tobacco pipe fragments, canarium seeds, bones, and lithics (level 3). It is overlain by very loose and fine-grained deposits containing pottery, tobacco pipe, iron slag, canarium seed, bones, and recent materials such as bones and polythene bags (level 2). The final and uppermost level (level 1) is loose and contains pottery, iron slag, tobacco pipe fragments, and canarium seeds. No materials from levels 4 to 1 were dated; however, the occurrence of tobacco pipes relatively dates the levels to about the seventeenth century AD, which places them within the third chronological sequence (the seventeenth century AD and above).

The excavation unit at Lankan was labelled "Lankan/NVG/TP1" and three stratigraphic levels were identified (Fig. 2). The earliest level (level 3) has compact, sandy, dark grayish sediments and contains ceramics, animal bones, lithics, and charcoal. These finds came from the north-western corner of the unit. A charcoal sample gave the date 820 ± 30 BP (Cal 1170–1270 AD) which marks the earliest occupation period in Lankan. Level 3 is overlain by compact, sandy, pale brown sediment and contains ceramics, tobacco pipe fragments, animal bones, and charcoal (level 2). The finds at this

level came, mostly, from within a house foundation which was exposed at the north-western corner of the unit. A charcoal sample of this level gave the date 120 ± 20 BP (Cal 1800–1940 at 62.8%, ICA Miami—17C/0909). And level 2 is overlain by the uppermost level (level 1): a loose, sandy, fined-grained, yellowish brown sediment that contained ceramics, tobacco pipes ore likely fragments, and charcoal. This level is the latest occupation period as evidenced by a semi-circular house foundation made of stones running from the northern wall to the center of the unit. No materials in level 1 were subjected to radiometric dating. However, the presence of tobacco pipes places the level within the seventeenth century AD and later.

Finally, seven stratigraphic levels were identified at TP3' in Daffo (Fig. 2). Four of these levels (levels 1–4) are clearly seen undisturbed on the eastern and southern walls, while there are three other levels (levels 5–7) on the northern and western walls which are either independent of the four levels or are intrusions as a result of erosion and other post-depositional activities such as roots action. The lowest level (level 4) on the eastern wall is loose, gravelly sand, yellowish brown and contains very few ceramics. At the depth of 90 cm, there was a careful laying of stones to form a sort of stone tiles or floor. In addition to ceramics, other finds include pieces of iron slag and a rusted iron. The charcoal sample from below the stone tiles at the depth of 104 cm gave the radiocarbon date—760 ± 30 BP (1219–1284 cal AD at 95.4%, Beta 491,108).

Level 4 is overlain by a hard, finely grained, and brown sediment (level 3). At this same level, a hearth was uncovered and finds found include ceramics, lithics, tobacco pipe fragments, rusted iron, animal bones/teeth, and canarium shells. This level is overlain by loose, loamy with a few lateritic nodules and light brown sediment (level 2). Finds from this level include ceramics, a cowrie shell, rusted iron, animal bones/teeth, glass/bottle fragments, and lithics. Level 2 is overlain by the uppermost layer (level 1) which is very loose, fine-grained, and brown. Finds from this level include ceramics, canarium shell, animal bones/teeth, and glass/bottle fragments.

Vessel Forms and Decorative Styles

A total of 7757 potsherds were analyzed in this study, with 3537 sherds recovered from Fier, 2952 from Lankan, and 1268 from Daffo. Of these, 271 were rim sherds and 7486 were body sherds (detailed in Table 1). Among the 271 rim sherds, only 89 (32.84%) possessed diagnostic properties that allowed for the determination of vessel forms, while the remaining 182 (67.16%) were indeterminate (Tables 2 and 3). The analysis primarily focused on two aspects, forms and functions, and stylistic typology, which includes rim forms, paste properties, and surface patterns.

Rim and Morphological Attributes

Rim Analyses

The rim is the opening at the top or upper boundary of a ceramic vessel (Orton et al., 1993; Rice, 1987). Rim sherds play a vital role in determining

Table 1 Ceramics retrieved from excavations at Fier, Lankan, and Daffo

	Vessel part/depth	Surface	10 m	20 m	30 cm	40 cm	50 cm	60 cm	70 cm	80 cm				Total, *n* (%)
Fier	Rim sherds	13	31	27	23	24	8	2	1					129 (3.65)
	Body sherds	153	703	728	647	592	382	127	72	4				3408 (96.35)
		166	734	755	670	616	390	129	73	4				3537 (100)
Lankan	Rim sherds	25	19	11	15	37	8							115 (3.90)
	Body sherds	221	795	145	510	863	303							2837 (96.10)
		246	814	156	525	900	311							2952 (100)
Daffo	Rim sherds	4		4		3	2	1	5	4	2	1	1	27 (2.13)
	Body sherds	85	106	167	63	65	93	89	119	299	56	88	11	1241 (97.89)
		89	106	171	63	68	95	90	124	303	58	89	12	1268 (100)

Table 2 Rim attributes of sherds from Fier, Lankan and Daffo

Rim properties	Property type	Fier # (%)	Lankan # (%)	Daffo # (%)
Rim form	Very everted	-	1 (2.9)	-
	Moderately everted	28 (75.7)	29 (82.9)	14 (82.4)
	Vertical	6 (16.2)	-	3 (17.6)
	Moderately inverted	2 (5.4)	3 (8.6)	-
	Very inverted	1 (2.7)	2 (5.7)	-
Lip form	Round	19 (51.4)	27 (77.1)	10 (58.8)
	Flat	6 (16.2)	5 (14.3)	3 (17.6)
	Tapered	12 (32.4)	3 (8.6)	3 (17.6)
	Channelled	-	-	1(5.9)
Rim Profile	0.7–1 cm	27 (73.0)	21 (60.0)	13 (76.5)
	1.1–1.5 cm	9 (24.3)	12 (34.3)	4 (23.5)
	1.6–1.8 cm	1 (2.7)	2 (5.7)	-
Inclusions size (cm)	0.2 cm and below	17 (45.9)	21 (60.0)	7 (41.2)
	0.21–0.3 cm	9 (24.3)	6 (17.1)	4 (23.5)
	0.31–0.4 cm	11 (29.7)	8 (22.9)	6 (35.3)
Percentage of inclusion density	5%	4 (10.8)	3 (8.6)	2 (11.8)
	7%	33 (89.2)	32 (91.4)	15 (88.2)
Paste color	Dark brown	18 (48.6)	13 (37.1)	12 (70.6)
	Red	3 (8.1)	2 (5.7)	-
	Reddish brown	15 (40.5)	18 (51.4)	3 (17.6)
	Black	1 (2.7)	2 (5.7)	2 (11.8
Decorated (lip and inside)	Decorated	4 (10.8)	5 (14.3)	1 (5.9)
	Undecorated	33 (89.2)	30 (85.7)	16 (94.1)

Table 3 Number and frequency of vessels forms from Daffo, Lankan, and Fier

Vessel form	Fier # (%)	Lankan # (%)	Daffo # (%)
Cooking pots	27 (20.93)	18 (15.65)	11 (40.74)
Brewing jars	1 (0.78)	6 (5.22)	1 (3.70)
Storage jars	-	-	1 (3.70)
Jugs	1 (0.78)	4 (3.48)	1 (3.70)
Processing bowls	6 (4.65)	6 (5.22)	1 (3.70)
Serving bowls	2 (1.55)	1 (0.87)	2 (7.41)
Indeterminate	92 (71.32)	80 (69.57)	10 (37.04)

the shapes, types, and functions of vessels. Analysis of a rim sherd includes describing its morphology—focusing on the formal properties of the lip and identifying the type and location of decorative motifs, such as on the lip or neck. A significant challenge in this study has been the scarcity of rim sherds; they constitute merely 3% of the total sherds found. Furthermore, most rim sherds were fragmented, with only 33% retaining up to 5% of their original orifice. Egloff (1973:252) and Antonites (2020:254) emphasize that retaining at least 5% of the orifice is critical for accurate measurements.

To make up for the limited number and size of rim sherds, the study also analyzed the inclusions and tempering attributes of these sherds to infer their functions. This involved visually observing the types and sizes of rock mineral grains, such as mica and quartz. Ethnographic study of ceramics from Lankan (Mangut, 2021) suggests that cooking pots typically do not contain large grains, as they can fracture under the stress of thermal shock during cooking. In contrast, water storage jars are stationary, not subjected to heat stress, and very thick.

Rim Profiles

Rims vary in profile and thickness depending on the pottery tradition of the people being studied. Notably, in this study, three major rim forms were identified—everted, vertical, and inverted rims. Everted rims are characterized by their outward curve from the point

of attachment with the vessel body. Vertical rims, on the other hand, extend directly upwards from the vessel body, creating a perpendicular profile. Inverted rims curve inward from their point of attachment to the body. For this study, the three rim forms were further subdivided into five categories—very everted, moderately everted, vertical, moderately inverted, and very inverted, as detailed in the table and figures (Table 2, Figs. 3 and 4).

- Very everted rim curves outward from the point of attachment to the vessel, forming an obtuse angle (131°–170°). This rim form is rare; only one was identified, and it came from Lankan at the twelfth-thirteenth century AD level.
- Moderately everted rim curves outward from the point of attachment to the vessel, forming an obtuse angle (95°–130°). This rim form is the most common type; it cuts across the three sites and was found in the three chronological periods identified (ninth to tenth, twelfth to thirteenth, and nineteenth/twentieth centuries).
- Vertical rim extends upwards from the point of attachment to the vessel, forming a right angle or slightly acute angle (86°–94°). This rim form was found at Fier and Daffo at levels that dated to the nineteenth/twentieth century.
- Moderately inverted rim curves inward from the point of attachment to the vessel, forming an acute angle (85°–45°). This rim form was identified at Lankan and Fier at levels that dated to the twelfth to thirteenth century AD and nineteenth/twentieth centuries, respectively.
- Very inverted rim curves inward from the point of attachment to the vessel, forming an acute angle (less than 45°). This rim form was identified at Fier and Lankan at levels that dated to the nineteenth/twentieth century.

Lip Forms

The rim lip is the terminal part of the opening at the top of a ceramic vessel (Rice, 1987; Santacreu et al., 2017). It could be round, flat, channelled, or tapered (Orton et al., 1993; Santacreu et al., 2017). The pottery recovered from Fier, Lankan, and Daffo shows the variety of lip finishes listed above in different chronological sequences. They served functional and aesthetic

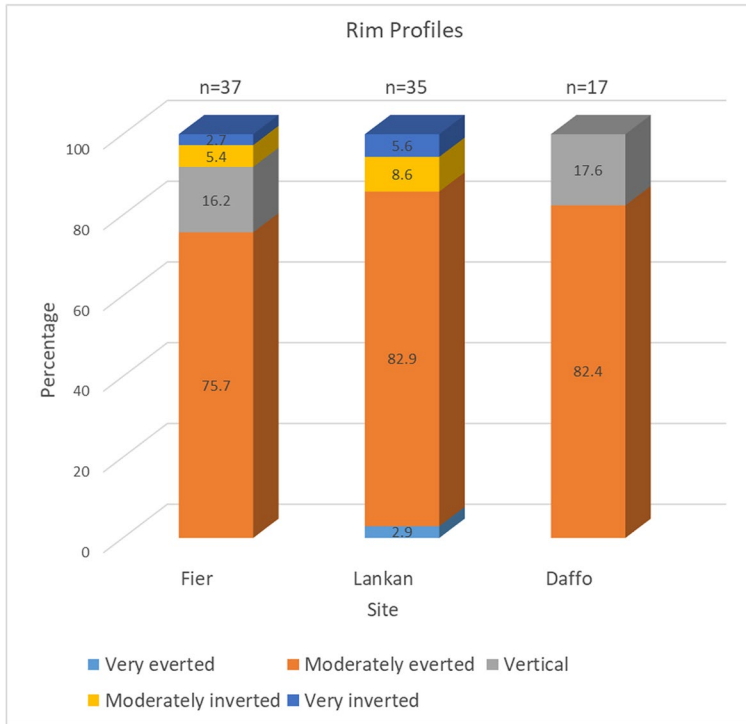

Fig. 3 Percentages of rim profile from Fier, Lankan, and Daffo (made by the author)

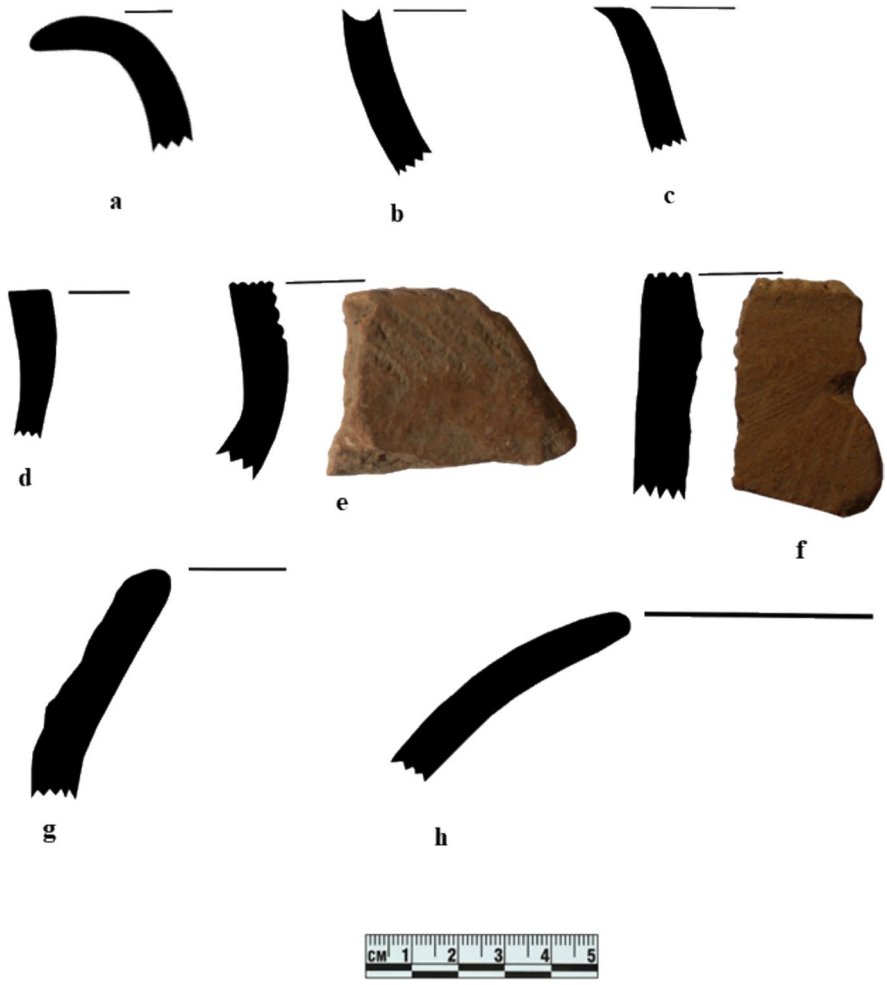

Fig. 4 Vessel profiles and lip forms. **a** Very everted rim with a round lip, **b** moderately everted rim with channelled lip, **c** open rim with a tapered lip, **d** vertical rim with a flat lip, **e** moderately everted rim with string roulette motif on the lip and in the inner wall of the rim, **f** vertical rim with angular punctates and vertical grooves in the inner wall of the rim, **g** moderately inverted rim with a round lip, **h** very inverted rim with a round lip (made by the author)

purposes. Additionally, some lips had string roulette or punctate decorations (see Table 2; Figs. 4, 5, and 6).

- A round lip is characterized by a smoothly curved or circular edge that creates a uniformly rounded vessel opening (Figs. 7, 8, 9, 10 and 11). This lip category was observed in ceramics from the twelfth century AD at Lankan (Fig. 12a, b) and the nineteenth/twentieth century at Fier, Lankan, and Daffo (Fig. 4a, g, and h). Specifically, one of the rim sherds from the nineteenth/twentieth century at Daffo had string roulette decoration on their lips and inner rim areas. In contrast, one rim sherd from the twelfth century at Lankan was distinguished by angular punctates on its lips (Fig. 4f).
- A flat lip features a straight edge; this rim style leads to a flat, level opening, providing a distinct angular profile to the vessel's mouth. Flat lips were identified on rim sherds from the nineteenth/twentieth century at the Fier, Lankan, and Daffo sites (Fig. 4d). Additionally, one rim within this category from Fier and four from Lankan had string roulette decorations on their lips (Fig. 4e).
- A channelled lip is distinguished by one or more grooves running along its edge, adding both decorative and functional elements to the pottery's mouth. A single channelled rim from the nineteenth and twentieth centuries was identified, and it was found at the Daffo (Figs. 4b and 13l).
- A tapered lip gradually narrows, either outward or inward, toward the vessel's opening, creating a conical or tapering profile. Tapered lips were identified on rim sherds from the nineteenth/twentieth-century levels at Fier, Lankan, and Daffo (Figs. 4c, 13n and m). In addition, one rim within this category from Lankan had string roulette on both the lip and the inner part of the rim (Fig. 12g).

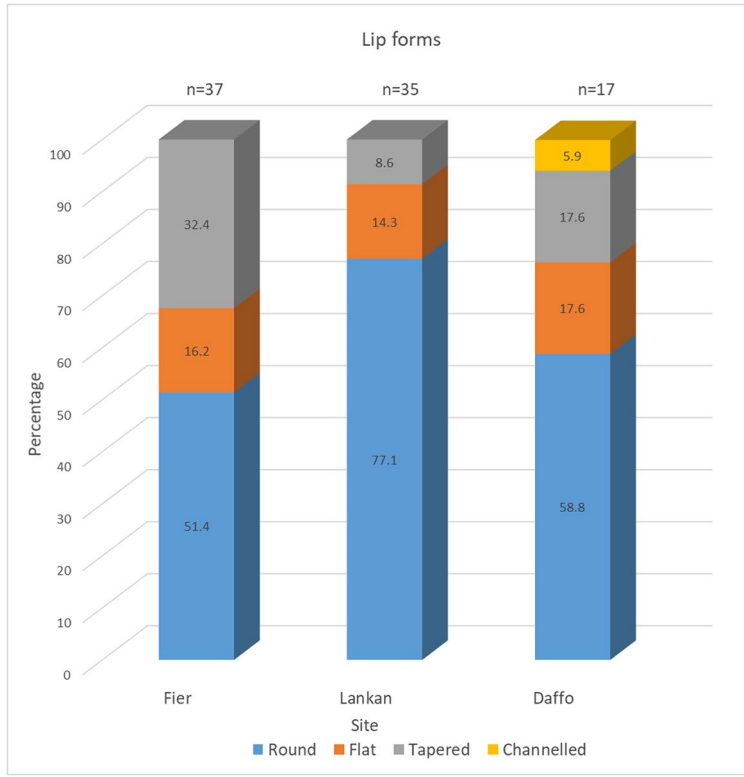

Fig. 5 Percentages of lip forms identified at Fier, Lankan, and Daffo (made by the author)

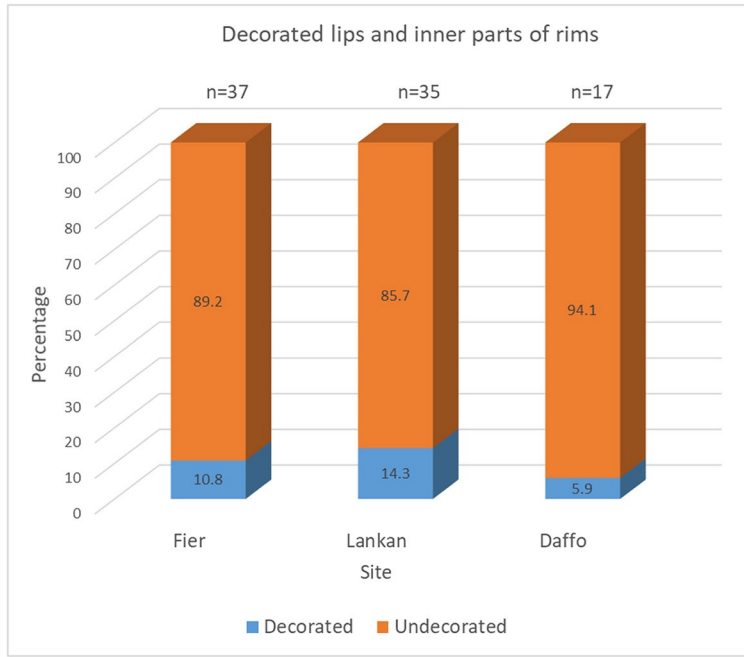

Fig. 6 Percentages of rims with decoration on the lip and inside the rims identified at Fier, Lankan, and Daffo (made by the author)

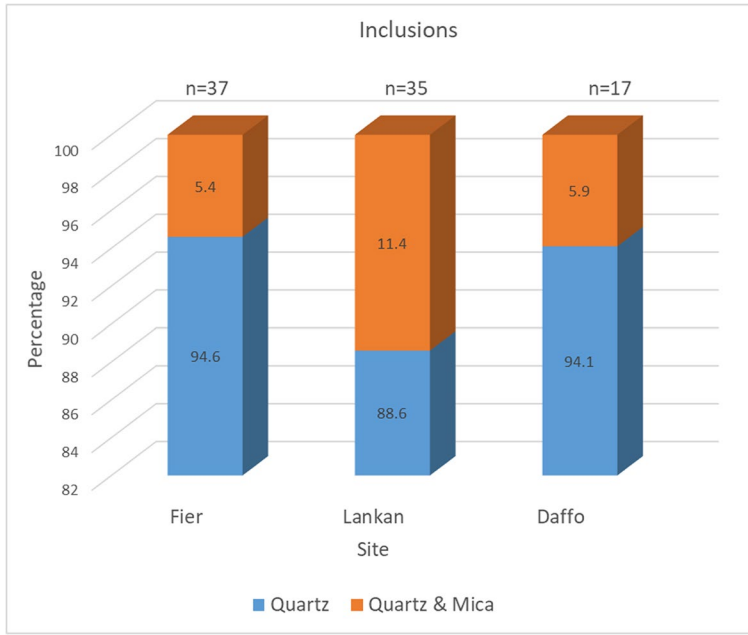

Fig. 7 Percentages of quartz on the one hand and quartz and mica on the other, identified at Fier, Lankan, and Daffo (made by the author)

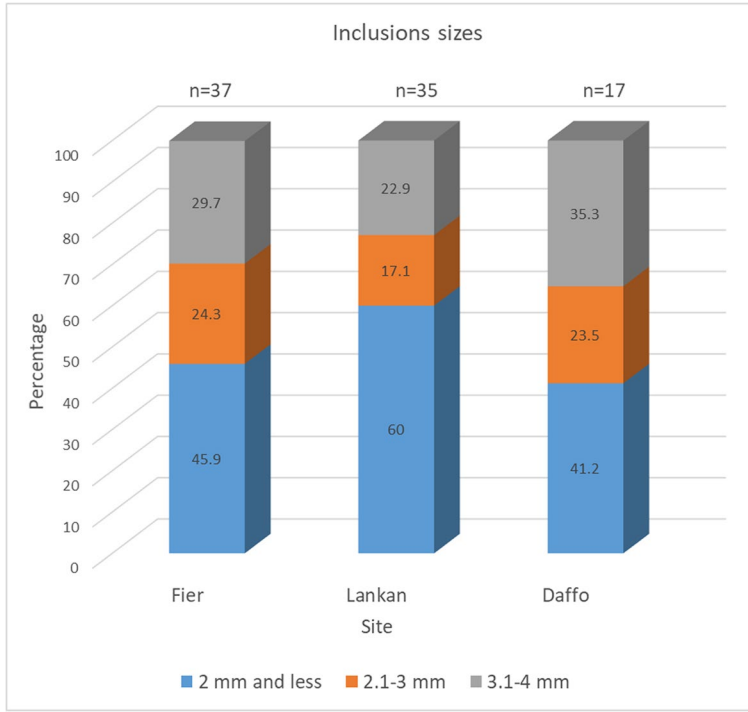

Fig. 8 Percentages of inclusion sizes identified at Fier, Lankan, and Daffo (made by the author)

Rim Thickness

The analysis of 89 rim sherds revealed variations in thickness across different types, ranging from 0.7 to 1.8 cm, 0.8 to 1.8 cm, and 0.7 to 1.1 cm for Fier, Lankan, and Daffo respectively (Table 2 and Fig. 7). These data suggest that vessels with thinner profiles (0.7–1.2 cm) were serving bowls,

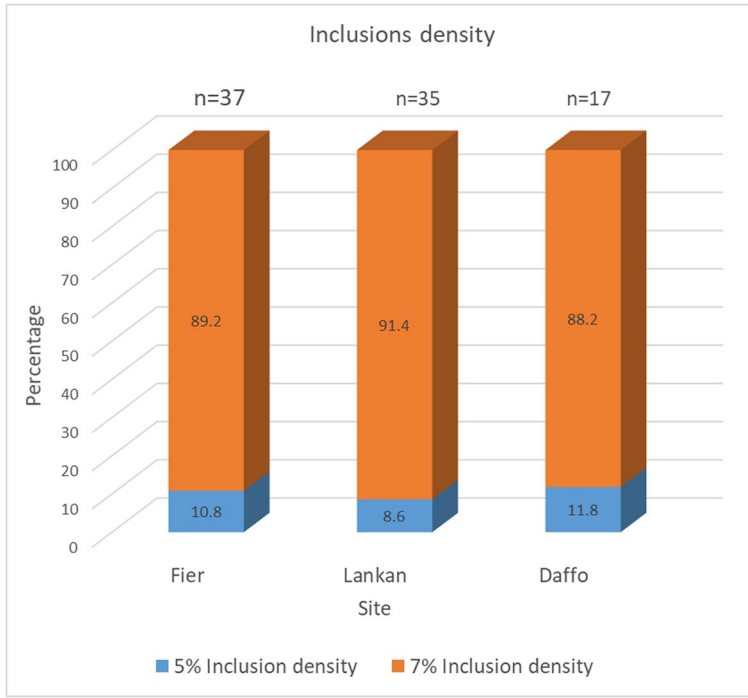

Fig. 9 Percentages of inclusion density identified at Fier, Lankan, and Daffo (made by the author)

cooking pots, and jugs, in contrast to thicker ones, which served storage, brewing, and processing purposes. However, bases generally deviate from this pattern. Being the parts that the vessel rests on, bases are inherently thicker than other parts of the vessel (Table 2 and Fig. 7m, n, o).

Paste Attributes

Using a hand-held lens, the tempers of the rim sherds analyzed were identified. Observed inclusions predominantly consisted of quartz and mica, which were systematically compared across Fier, Lankan, and Daffo (see Table 2 and Fig. 7). In addition, the quartz and mica inclusions were categorized into three distinct grain size ranges: (i) 2 mm and less, (ii) 2.1–3 mm, and (iii) 3.1–4 mm (Table 2, Fig. 8).

Further analysis classified the rim sherds based on the density of these inclusions, identifying densities of five and seven percentages and compared across Fier, Lankan, and Daffo (Table 2 and Fig. 9). Additionally, the rim sherds were sorted by color, falling into four categories: dark brown, red, reddish brown, and black (see Table 2).

Vessel Shape

The study examined 89 rim sherds; in turn, six vessel shapes or types were identified. These sherds were grouped based on their morphology and functional repertoire. Ethnographic insights were employed to interpret the findings, drawing on observations of contemporary usage in the local areas, as depicted in the figures (Fig. 10). Moreover, ethnographic work carried out in other parts of West Africa provided context for understanding these ceramic forms (Smith, 2007; Soper, 1985; Goselain, 2000; Smith et al. 2010).

In the study, vessel shapes from Fier, Lankan, and Daffo were broadly classified into two categories—jars and bowls—and further subdivided into six distinct classes, as illustrated in the figures (Figs. 11 and 12). The first four classes are jars: cooking pots, brewing jars, storage jars, and jugs. The remaining two classes are bowls: processing bowls and serving bowls. Jars are generally elongated with a height greater than both their rim and body diameters. In contrast, bowls are more spherical, characterized by a rim or body diameter exceeding their height. The distinguishing features of each of the six vessel types

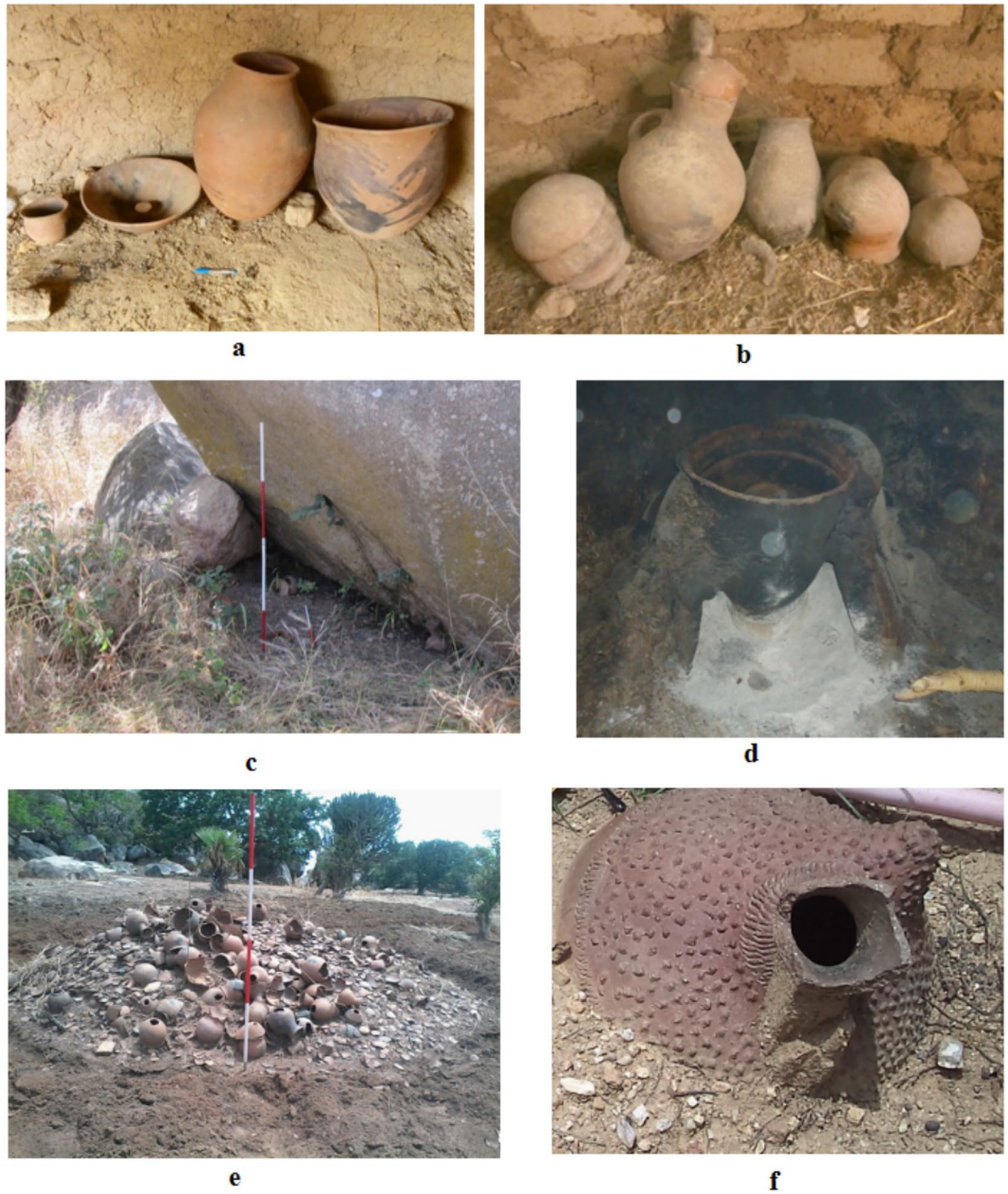

Fig. 10 Present-day ceramics use and surface finds at Fier and Lankan. **a** At Fier, from the left: cooking pot, granary cover, storage jar, and brewing jar. **b** In a ritual hut at Fier: from the left, serving bowls, storage jar with a cooking pot placed on its mouth, smaller storage jar, cooking pot, and a cooking pot. **c** At Fier: jars placed at the base of a boulder as part of circumcision rituals. **d** At Lankan: a brewing jar fixed permanently in a fire place. **e** At Fier: a heap of jars dropped to honor departed elders. **f** At Lankan: a half-buried storage jar (made by the author)

identified in this study are based on their unique morphological attributes and the specific functions they serve.

Cooking pots have unrestricted orifices, slightly constricted necks, and rounded bases. The body diameter is generally equal to or slightly greater

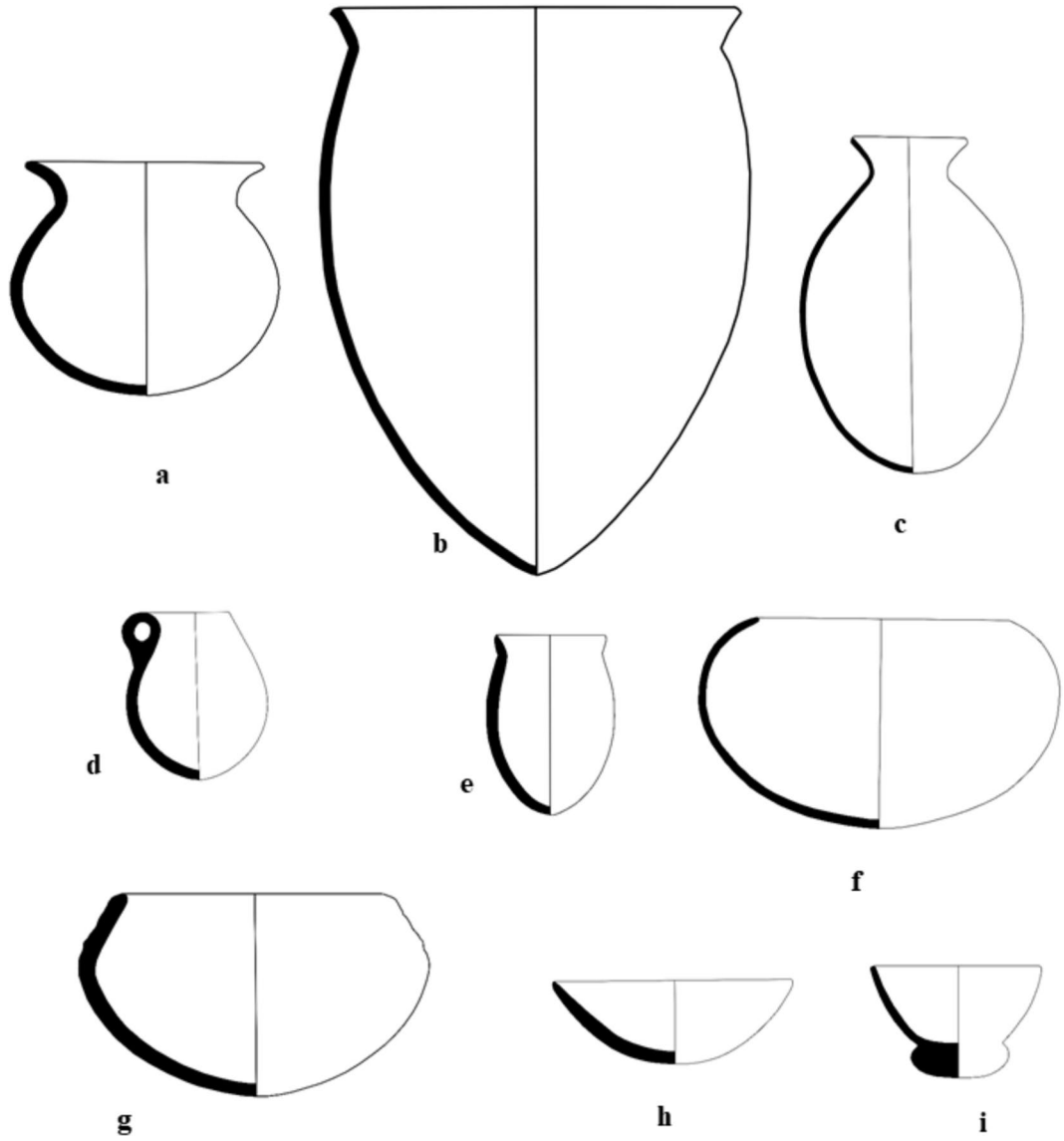

Fig. 11 Vessel shapes identified. **a** Cooking pot from Lankan; **b** brewing jar from Lankan; **c** storage jar from Daffo; **d**, **e** jugs from Lankan; **f**, **g** processing bowls from Fier and Lankan; **h**, **i** serving bowls from Lankan and Daffo (made by the author)

than the rim diameter, with the height surpassing the rim diameter. In addition, they have rounded bases. They appeared in Fier, Lankan, and Daffo with counts of 27, 18, and 11, respectively (Table 3, Fig. 13a and b). Brewing jars have unrestricted orifices and slightly constricted necks. However, their heights are greater than both their rim and body diameters, and they have slightly pointed bases (see Fig. 11b). Their distribution was 1 in Fier, 6 in Lankan, and 1 in Daffo (Table 3, Fig. 12c). In the case of storage, they feature an unrestricted orifice and a constricted neck, sometimes long, with a height greater than the rim and body diameters. They typically have rounded bases, though a few exhibit pointed bases (exclusive to Daffo, see Fig. 11c). However, similar types are currently in use in Fier (see Fig. 4a, b, e) and have been found as surface collections in Lankan (Fig. 4f). One was found in Daffo while none was found in Fier and Lankan. However, jugs have an unrestricted orifice and a

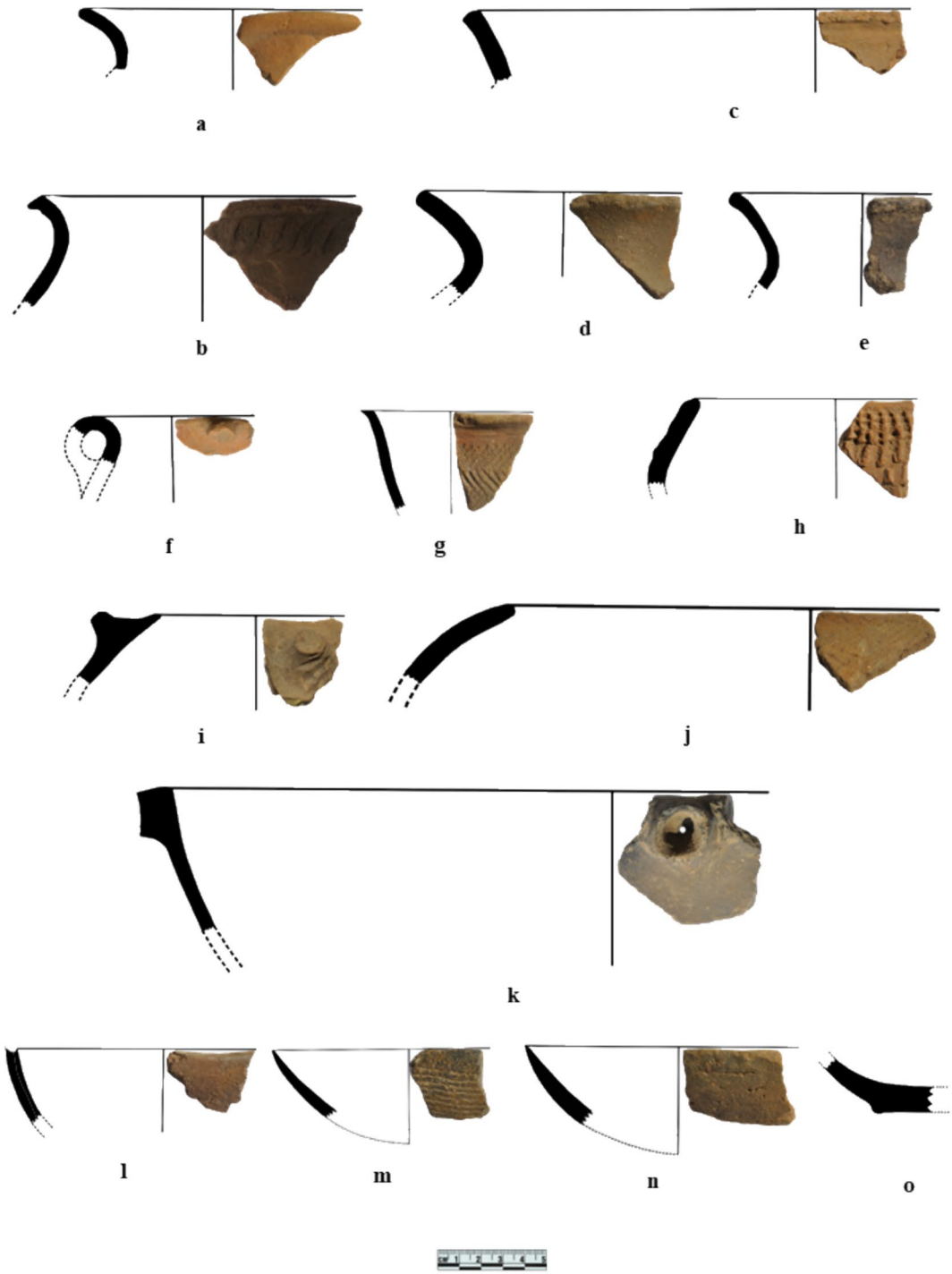

Fig. 12 **a**, **b** Cooking pots from Lankan and Fier; **c** brewing jar from Lankan; **d** storage jar from Daffo; **e**, **f**, **g** jugs from Lankan; **h**, **i**, **j**, **k** processing bowls from Lankan, Lankan, Fier, and Daffo respectively; **l**, **m**, **n**, **o** serving bowls from Daffo, Lankan, Fier, and Daffo respectively (made by the author)

Fig. 13 Selected decorations identified. **a** Burnished, **b** string roulette I (twisted cord roulette), groove and wavy line, **c** dragged comb variant, **d** geometric pattern, **e** horizontal incisions, **f** crisscrossing, **g** carved roulette I (carved roulette), **h** carve roulette II (square grid), **i** carved roulette III (circular carved roulette), **j** string roulette I and folded strip roulette, **k** string roulette II (cord-wrapped stick' roulette), and **l** alternate twisted cord roulette (made by the author)

slightly constricted neck. Their height exceeds the rim diameter, and they have rounded bases. Some variations are slightly globular, with body diameters exceeding rim diameters, and narrow from the rim to the base. Jugs may or may not have handles. Jugs were found in Fier, Lankan, and Daffo in counts of 1, 4, and 1, respectively (Table 3; Fig. 12e, f, and g).

Processing bowls are characterized by restricted orifices, no necks, and body diameters greater than their rim diameters, and accompanied by rounded bases as shown in the figures (Fig. 11f and g). They occurred in Fier, Lankan, and Daffo with counts of 6, 6, and 1 (see Table 3, Fig. 12h–j). Notably, the singular processing bowl from Daffo deviated from this pattern, featuring an unrestricted orifice and a handle (Fig. 12k). In contrast, serving bowls are smaller than processing bowls. They have unrestricted orifices and no necks, with rim diameters exceeding their heights. They have unrestricted orifice and no neck, the rim diameter is greater than the height, and they have either rounded or flat bases (Fig. 11h and i). Occurrences of serving bowls were recorded as 2 in Fier, 1 in Lankan, and 2 in Daffo (Fig. 12l–o). Specifically, one of the serving bowls in Daffo had a flat base, a feature shared by one bowl each in Fier and Lankan (see Fig. 12o).

Surface Finishing

Surface finishing could be in three stages; however, potters could choose to stop at either the first or proceed to the second and/or third stages. The first stage of finishing is after the pre-forming, which defines the vessel's surface, whether wet by smoothing operations during its malleable stage or leather-hard by brushing and additional smoothing when the clay hardens but is still workable (Roux, 2017). The second stage is when ceramics are subjected to further surface treatment to alter the external appearance and texture of the vessel. This can involve either burnishing or polishing to achieve a glossy finish, or coating techniques that involve applying slips, glazes, or organic materials like graphite, silica, or carbon to add color, texture, or protective layers to the ceramic (Roux, 2017). The third stage of finishing is by applying decorations using either low-relief (one-dimensional) painting, negative relief (recessed décor), or high-relief decors (two-dimensional) techniques (Roux, 2017). The low-relief technique involves painting the ceramic surface. Negative relief or recessed decor includes impressed-rolled, simple, pivoting, embossed; paddled; incised–simple, pivoting, scratching, carving; and excised-excised, pierced, while high-relief decors involve applied elements or modelling on the surface (Roux, 2017).

There are different reasons for surface finishing. According to Rice (1987), slipping, burnishing, and other surface treatments are used to reduce the rate of penetration of liquid, facilitate heat absorption or reduce the rate of evaporation, and make cleaning easier. Rice further argues that rough finishing enables users to have a better grip. Similarly, Rouse (2019) gave reasons for applying decorations, which include social, functional, symbolic, aesthetic, economic, or trade reasons and technological advancement. Decorations serve social purposes by depicting group identity, status, or wealth, marking cultural distinctions. Functionally, certain textures and shapes enhance usability, such as improving grip or modifying thermal properties for cooking efficiency. Symbolically, motifs on ceramics often reflect religious beliefs, myths, or cosmic concepts, adding deeper cultural significance. Aesthetically, decorations contribute to the beauty and appeal of ceramics, enhancing both their utility and display value. Economically, distinctive decorations can increase patronage of ceramics in both local and distant markets. Technologically, decorative techniques reflect a society's technological advancements and experimentation to display their level of technological sophistication.

Roux (2019) emphasizes that decorative motifs on ceramics are intricately tied to the social and technological fabric of societies, influencing and reflecting their economic, symbolic, and aesthetic values. Similarly, Kingery (1987) categorizes motifs into diverse styles, from simple geometric shapes like lines and circles to more complex naturalistic depictions of flora and fauna. Anthropomorphic patterns illustrate human figures, while zoomorphic designs feature animal imagery. Abstract motifs are stylistic representations that may not directly mimic visible forms, and symbolic patterns often convey cultural or religious meanings.

In the archaeological excavations across Fier, Lankan, and Daffo, ceramic sherds recovered were classified based on their surface finishing, as shown in

the table (Table 3). At Fier, out of 3537 sherds, 763 (21.57%) were plain or undecorated and lacked any specialized surface treatment, while 1405 (39.72%) were eroded. In Lankan, of a total of 2952 sherds, 1799 (60.94%) were decorated, 1019 (34.52%) as undecorated, and 134 (4.54%) were eroded. Meanwhile, at Daffo, of the 1268 sherds recovered, 699 (55.13%) were decorated, 221 (17.43%) were undecorated, and 348 (27.44%) were eroded.

Analyzing the decorations on sherds from the three sites draws heavily on ethnographic studies from various parts of Africa. For example, Soper (1985) identified four types of materials used for applying roulette decorations: unmodified objects; rigid roulettes made from carved wood, clay, or stone; flexible roulettes, such as strings or cords; and composite roulettes. Building on this framework, later research by Smith et al. (2010) expanded the categorization of roulette tools to eight types, including flexible fibers of vegetal origin, wood, inflorescences, shells, bone, metal wire, synthetic cords (like nylon or plastic), and recycled objects (involving plastic and/or metal). This detailed classification enhances our understanding of the various techniques and materials used in the decorative processes observed on the ceramic sherds.

Therefore, 22 single and 12 composite decorative motifs were identified from the three sites combined (Table 4, Figs. 13 and 14). Single motifs, here, refer to sherds with only one of the identified decorations, whereas composite motifs feature combinations of two of the motifs. At Fier, 15 single and 4 composite motifs were identified, including burnished surfaces, grooves, geometric patterns, horizontal and crisscrossing incisions, various roulettes (such as square grid, twisted cord, cord-wrapped stick, and alternate twisted string), punctates (circular and angular), corrugated surface, thumb impressions, bosses, and slipping. Lankan displayed a slightly greater diversity with 17 single and 7 composite motifs, including burnished surfaces, grooves, dragged comb variant, horizontal incisions, various roulettes (square grid, circular carved, twisted cord, cord-wrapped stick, alternate twisted string, folded strip, knotted strip, plaited fiber), punctates (circular, angular), corrugated, thumb impression, and bosses. Lastly, Daffo yielded 12 single and 3 composite motifs, including burnished grooves (horizontal, wavy line), various roulettes (chevron, square grid, twisted cord, cord-wrapped stick, folded strip, knotted strip, plaited fiber), and circular punctate.

Discussion

The study is motivated by the lack of a long-term sequence of ceramic styles on the Jos Plateau. In fact, the ceramic sequence and relationship between Fier, Lankan, and Daffo is minimally understood based on their ceramic attributes and different chronological sequences. These sites, as documented in historical literature and from oral accounts, Fier, Lankan, and Daffo, share similar migration histories and have ancestral connections. This study revealed three chronological sequences or phases: ninth to tenth century AD, twelfth to thirteenth century AD, and nineteenth to twentieth century (modern era). Typological and stylistic aspects considered in this study are vessel shapes/forms, functions, and decorative motifs.

The rim and morphological attributes of the ceramics provided insights into the utilitarian and aesthetic dimensions of ceramic-making in the southern Jos Plateau. Three primary rim forms—everted, vertical, and inverted—were identified, each corresponding to specific vessel functions. From these rim sherds, the overall vessels were reconstructed, and inferences were made about their possible functions. Two major vessel shapes were identified: jars and bowls. Based on their functions, these vessel types were further categorized into six forms; cooking jars, brewing jars, storage jars, jugs, processing bowls, and serving bowls. No rim was retrieved from the ninth/tenth-century level; however, from the thickness of the body sherds which are 1 cm and below, they are likely to belong to small vessels such as cooking jars, jugs, and serving bowls rather than brewing or storage vessels. But for the twelfth/thirteenth- and nineteenth/twentieth-century phases, the six vessel types were well represented.

Based on the rim characteristics recorded—vessel shape, rim profile, lip form, and inclusions—cooking, brewing, and storage jars and jugs generally have moderately everted rims. The exception is one cooking jar from Lankan, which had a very everted rim (see Figs. 4a and 11a). In contrast, processing bowls have either everted or inverted rims, and serving bowls have everted rims (Figs. 11 and 12). Regarding the rim lip, the dominant form across the six vessel shapes identified is the rounded lip. However, a jug and a serving bowl from Lankan and Fier, respectively, had tapered lips, and a serving bowl from Daffo had a channelled lip (Fig. 12f).

Table 4 Number and frequency of vessel decorations from Daffo, Lankan, and Fier

Decoration	Fier # (%)	Lankan # (%)	Daffo # (%)
Burnished	588 (42.95)	1315 (73.10)	277 (39.63)
Grooves	41 (2.99)	8 (0.44)	2 (0.29)
Dragged comb variant	-	2 (0.11)	-
Geometric pattern	4 (0.29)	-	-
Horizontal incisions	4 (0.29)	2 (0.11)	19 (2.72)
Crisscrossing lines	1 (0.07)	-	-
Carved roulette I (chevron)	-	-	9 (1.29)
Carved roulette II (square grid)	4 (0.29)	12 (0.67)	2 (0.29)
Carved roulette III (circular carved roulette)	-	26 (1.45)	-
String roulette I (twisted cord)	85 (6.21)	213 (11.84)	149 (21.32)
String roulette II (cord-wrapped stick roulette)	140 (10.23)	63 (3.50)	9 (1.29)
String roulette III (alternate twisted string roulette)	2 (0.15)	6 (0.33)	-
Folded strip	-	1 (0.06)	58 (8.30)
Knotted strip roulette	-	1 (0.06)	45 (6.44)
Plaited fiber roulette	-	6 (0.33)	117 (16.74)
Wavy line	-	-	2 (0.29)
Circular punctate	2 (0.15)	11 (0.61)	1 (0.14)
Angular punctate	9 (0.66)	19 (1.06)	-
Ridges (corrugated)	405 (29.58)	8 (0.44)	-
Thumb impression	49 (3.58)	83 (4.61)	-
Bosses	1 (0.07)	7 (0.39)	-
Slip	4 (0.29)	-	-
String roulette I + grooves	-	1 (0.06)	7 (1.00)
Thumb impression + corrugated	27 (1.97)	7 (0.39)	-
String roulette I + folded strip	-	-	1 (0.14)
Knotted strip roulette + grooves	-	-	1 (0.14)
String roulette I + angular punctate	-	1 (0.06)	-
String roulette II + grooves	-	1 (0.06)	-
String roulette II + circular punctate	-	3 (0.17)	-
Bosses + carved roulette III	-	2 (0.11)	-
Grooves + bosses	-	1 (0.06)	-
String roulette I + string roulette II	1 (0.07)	-	-
String roulette I + thumb Impression	1 (0.07)	-	-
Corrugated + grooves	1 (0.07)	-	-

Notably, some of the rim lips were decorated. For example, some of the cooking jars had string roulette on the lips and inner part of the rims, as was recorded at Fier, Lankan, and Daffo (Fig. 4). One of the decorated lips from Fier had angular punctates. Similarly, some of the brewing jars from Lankan (Fig. 12c) and Fier had a string roulette on the lip.

Material inclusions varied significantly across vessel types and locations. Cooking vessels from Daffo were characterized by smaller quartz grain sizes of 3 mm and below, whereas those from Fier and Lankan exhibited larger grains ranging from 3.1 to 4 mm, with a consistent inclusion density of 5–7% (Figs. 7, 8, and 9). Brewing jars followed a similar pattern with large quartz grains (3.1–4 mm) and similar densities. Conversely, storage jars from Daffo had notably smaller grain sizes (2 mm and below) and lower densities (5% and below), compared to the larger grains and higher densities seen in Fier and Lankan (3.1–4 mm; 5–7% density). Jugs and processing bowls across all sites presented quartz grains ranging from 2 mm and below up to 3 mm, with densities consistently at 5% and below

Fig. 14 Selected decorations identified. **a** Folded strip roulette, **b** knotted strip roulette, **c** wavy line, **d** circular punctate, **e** plaited fiber roulette, **f** corrugated (ridges), **g** angular punctate, **h** thumb impression, **i** bosses, and **j** slip (made by the author)

(Figs. 7, 8, and 9). Serving bowls also mirrored this trend in grain size and density.

In terms of chronology and function, cooking jars cut across the second and third chronological phases in the three locations (Fier, Lankan, and Daffo). They were used in cooking/heating daily meal, herbs, and water. Even today, the cooking pots remain in use in Fier, Lankan, and Daffo (Fig. 10a and b). Brewing vessels cut across the second and third chronological phases. They were mainly used for preparing liquor (ligit, in Ron language). Due to their pointed base, they are usually supported so that they can stand (Fig. 10d). Storage jars occurred in the third chronological phase in the three study areas. Based on the present-day use in the area (Fig. 10a, b, c, e, and f), the vessels might have been used for storage of mostly liquids such as water, gruel, or liquor. They might have also been used for long-term storage of grains such as fonio (*Digitaria exilis*), finger millet (*Eleusine coracana*), and beniseed (*Sesamum*,

fwalal in Ron). Jugs occurred in the second chronological phase at Lankan and in the third at Fier, Lankan, and Daffo. Based on knowledge of present-day use (Fig. 10b), they were used to serve drinks such as water, gruel, and liquor. Processing bowls occurred in the second chronological phase at Lankan and in the third at Fier, Lankan, and Daffo. They were used in processing activities such as washing of grains. Finally, just as in the case of processing bowls, serving bowls occurred in the second chronological phase at Lankan and in the third at Fier, Lankan, and Daffo (Figs. 11h, i and 12l–o).

There are vessels that are produced for multipurposes and use other than their originally intended purposes. For example, due to their large size when compared with other vessels, brewing jars could be used for temporary storage of liquor or water during marriage ceremonies. Similarly, smaller jars with narrow and elongated necks were vessels of choice for rituals at Fier and Lankan (Fig. 10b and c). As observed at Fier, the foreskin of a circumcised child was dropped into such a jar and placed at the base of a rock shelter (Fig. 10c). Another ritual involving the use of the same vessel type is that in which the jar is dropped at a specific place whenever an elderly person dies as a sign of respect (Fig. 10e). In the same vein, sometimes processing bowls are used for short-term storage of grains such beniseed and fonio. They could, as well, be used for community service during ceremonies.

In terms of paste color, the three sites had a high percentage of vessels that are dark brown which occurred from the first chronological phase through the second and third and cuts across the six vessel forms identified (Fig. 11). This is followed by reddish brown and black ceramics which also occurred in the three sites but appeared from the second chronological phase through the third. Reddish brown vessels identified include cooking and brewing jars from Lankan (Fig. 12a and c), jugs from Lankan (Fig. 12f and g), a processing bowl from Lankan (Fig. 12h), and a processing bowl from Fier. While black vessels identified include a cooking pot from Fier (Fig. 12b), a serving bowl from Lankan (Fig. 12m), and a processing bowl with a handle from Daffo (Fig. 12k). Red ceramics appeared only in Fier and Lankan, and they occurred in the third chronological sequence.

In addition to the different surface finishing/decorations identified on rim sherds, body sherds also yielded very interesting decorations. Consequently, the early phase (ninth/tenth chronological sequence) was characterized by plain ceramics. At Fier, no stratigraphic levels produced absolute dates that could place the levels in the second phase (twelfth to thirteenth century AD). However, the fifth level, especially between the east and south walls (Fig. 2), share similarities in ceramic decorations, such as burnished, twisted cord, and cord-wrapped stick roulettes, with the second phase level at Lankan and Daffo which, by association, places the level at that period. From the second chronological phase, there began to be some level of homogeneity in ceramic styles in Fier, Lankan, and Daffo, indicating there was the sharing of ideas and probably the movement of pottery and/or people within the region. Consequently, 22 surface finish/decoration types were identified on both rim and body sherds from the three sites. Among these, burnished, square grid, twisted cord, and circular punctate are common to Fier, Lankan, and Daffo and they occurred in the second chronological phase through the third, while grooves, incision, and cord-wrapped stick roulette are equally common to the three locations but occurred only in the third phase.

Furthermore, motifs such as alternate twisted string roulette, angular punctate, corrugated, thumb impression, and bosses are common to Fier and Lankan (Table 4, Figs. 13 and 14), and they occurred in the second phase through the third. Knotted strip roulette and plaited fiber roulette are common to Lankan and Fier, and they occurred in the second through the third phase, while folded strip roulette is common to Lankan and Daffo but occurred only in the third phase. In contrast, geometric pattern and slip are unique to Fier and occurred only in the third phase. Similarly, circular carved roulette and dragged comb variant are unique to Lankan. However, whereas the former occurred in the second phase through the third, the latter occurred only in the third phase. In the same vein, chevron and wavy lines are unique to Daffo and they occurred in the third phase.

The study highlights the widespread distribution of basic ceramic styles among the archaeological sites of Fier, Lankan, and Daffo. Six vessel forms—cooking jars, brewing jars, storage jars, jugs, and processing and serving bowls—were identified as common across the three sites (Table 3, Figs. 11 and 12). Additionally, seven decorative motifs were common to the three sites, indicating a significant cultural

exchange or similarity (see Table 4). Despite these commonalities, certain decorative motifs were either shared between two sites or unique to one, reflecting distinct historical experiences at the respective sites. For instance, specific motifs found only in the Ron assemblages, such as carved roulette and wavy lines (see Fig. 20), highlight unique interactions through trade, particularly with the lowland communities to the south after the migration of the Ron people to Ron land, including Daffo (Mangut & Mangut, 2006; Mangut, 2023.

Similarly, the study suggests regional interactions influenced ceramic designs, particularly in the southeastern Jos Plateau. According to Lohor (2010), the Fier (of Fier site), Mupun (of Lankan), the Mernyang, Ngas, and Chip had close interactions, which are reflected in the shared decorative motifs such as thumb impressions, corrugated surface finishes, and angular punctates (see Table 4). These decorative styles have been identified in the Mernyang and Miship-speaking areas (Dafwang, 2023; Kwapnoe, 2018). Notably, the absence of certain forms and typologies in neighboring areas does not necessarily indicate they never existed; rather, ceramic techniques and styles may evolve or vary over time and across different regions.

Conclusion

The study of the southern Jos Plateau, focusing on the ceramic styles found in Fier, Lankan, and Daffo, provides an in-depth examination of the region's historical and cultural trajectories. Through extensive excavation efforts, a rich dataset of ceramic sherds was analyzed, revealing a complex interplay of form, function, and decorative styles that underscore the varied cultural influences and interactions over centuries. The analysis was grounded in a methodical approach that combined stratigraphic analysis and radiocarbon dating, allowing for the mapping of the chronological sequence of human occupation from the Later Stone Age through the Historic period. This ensured the accuracy of findings, highlighting settlement continuity and cultural evolution.

The ceramic analysis across Fier, Lankan, and Daffo, as detailed through the study of 7757 potsherds, reveals distinct similarities and differences in vessel forms and decoration styles that reflect the cultural interactions and unique characteristics of each site. Common vessel types identified across all three sites suggest a shared functionality in daily life, yet the diversity in the number of items points to varying local demands or cultural preferences in ceramic use. Furthermore, the excavation revealed a rich variety of rim and lip forms that provide deeper insight into the pottery-making traditions of each area, underscoring the intricate craftsmanship involved in ceramic production in the southern Jos Plateau.

In terms of decoration, the analysis showed a broad range of techniques and motifs. This variation highlights regional artistic expressions and the possible exchange of cultural and artistic ideas among the communities. The presence of unique motifs in some sites suggests localized aesthetic preferences or the influence of distinct cultural interactions facilitated by trade and migration. The surface finishing techniques employed in the ceramics also varied, ranging from simple applications like burnishing to more complex decorative strategies involving roulettes and embossing. These finishing touches not only enhanced the utility and aesthetic appeal of the ceramics but also served as cultural markers that distinguished the communities. Collectively, these findings paint a vivid picture of the dynamic cultural landscape of Southern Jos Plateau, where ceramics serve as a critical lens through which to view the historical and cultural evolution of the region.

Furthermore, before now, researchers working on ceramics from the Jos Plateau did their ceramic classification independent of what their counterparts had done in the region. However, this study has set the pace for the development of standardized methods of ceramic classification, which would serve as a point of reference to future researchers in the region. However, future researchers should consider carrying out ethnographic studies to build on the knowledge established from this work.

Finally, the lack of adequate archaeological studies in this region has made the chronology of the region unclear. However, due to limited resources, the chronological context established for this study is very coarse, and the sequences are not continuous. However, as more work is done, the chronological gaps will be filled. In future studies, more samples would be dated; this would tell us more about the ninth to tenth century and earlier and, as well, fill the gaps between the tenth and twelfth and the fourteenth and sixteenth centuries.

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