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The 2020 Italian-Pakistani Excavation at Banbhore A New Picture of Daybul and its Last Occupation Phase

(11th Century-Early 13th Century CE)

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Abstract

The paper describes the main results achieved by the Pakistani-Italian teams during the 2020 archaeological field season at Banbhore. The excavation around Building 2 provided further attestations of ivory in this part of the fortified town during the last occupation of the site in the late 12th-early 13th centuries. The most remarkable discovery is a small ivory workshop, the only one so far known from a certain archaeological context, outside the SE corner of Building 2. Two localized ivory dumps found in the E-W streets suggest the presence of more ivory workshops in this area, and possibly a place used for the storage of raw materials.

Keywords

Banbhore; Ivory workshop; Ivory; Islamic period;

Premise: a New Picture

The 2019-2020 campaigns brought to the discovery of an ivory workshop. Topographic documentation and the clearing of the upper levels of the East-West street and its skirting buildings, confirmed that the excavated area and its levels closely associated on stratigraphy with sherds and vessels represented the final stage of life of the site (late 12th-early 13th

centuries CE), and that the East-West street between Buildings 1 and 2 likely used as an easy refuse dump (cfr. Piacentini Fiorani 2019a, and the herewith following article).

It was a new environment, an unexpected panorama: a final blooming phase of about two centuries before the site's abandonment and its end as an important 'town' and 'harbour' on the Indus delta.

Textual research-work in contemporary chronicles and travelogues had been carried out (Piacentini Fiorani 2014, Felici et al. 2016, Piacentini 2019a), and, combining textual and non-textual data, at last it has been possible to outline through precise chronologies the historical events that led to the decline of the once prosperous harbour and town of Daybul, outlet to the sea of Mansurah, superb capital-city of the Emirate of Mansurah (850 CE ca – first two decades of the 11th century). The 'decay' of Daybul but not its end. Daybul survived despite the depleting siege by the troops of Qavurd Khan b. Chaghri Beg, the Seljuk Sultan. After one year of military skirmishes, Qavurd Khan offered a

peace-agreement accepted by Daybul's authorities. It signed Daybul's reorganisation as an autonomous territorial district (*nahiya*) of the Seljuk empire under the leadership of a native ruler. It also signed a new political-administrative stage for the site. Part of the Makrani seaboard was annexed to Sindh, the western frontier set at Gwattar. All in all, Daybul and its territory were strengthened under the military umbrella of the Seljuks, marking for it a new strategic role within the geopolitical panorama of the time.

Whilst Mansurah was finished, Daybul restructured its power and the forces supporting it, rearranged its ancient 'urban plan' into two main areas: a residential quarter (which included the Mosque) for the ruling classes re-occupying the site, on the one hand; and, on the other, a large working area for artisans convening from different and often distant regions (Trenches 1, 4, 9, 11, 12). A quarter, or quarters...still to be investigated, where workforces could settle and start their activities.

The re-occupation and the new urban planning of Daybul can be dated to the end of the Habbari dynasty, that is the first two decades of the 11th century. This date may also sign the beginning of this new phase marked by its repositioning within the regional maritime policy of the Seljuks and the sharp Red Sea-Gulf competition as main commercial routes between the Occident and the Orient. Against this backstage it is possible to state that Daybul played a central role as corner stone and hinge of the Seljuk maritime political line aimed to impose its military control on the prosperous trades between the Orient and the Occident, a political line that would come to a drastic end with the disintegration of the Seljuk order at the end of the 12th century.

Under Qavurd Khan's military order and the Seljuk patronage, Daybul stood out again, as capital city of an autonomous district (fifties of the 11th century). It was re-peopled by its same traditional groupings (landowners and merchants), that reorganised Daybul's traditional forces and connections and, through political and matrimonial allegiances, reached new understandings with the Omani and Iranian seaboards. For one century and a half circa, Daybul played the role of international market for precious goods and watch-dog to the Gulf and the Strait of Hormuz. It reordered its own activities within the traditional environment of its customary

partners in the Western waters of the Indian Ocean, from Gujarat and the Asian subcontinent to Oman, from Pemba, Kilwa, Manda to the Lands of the Zenjis (Zanguebar). The 'Peoples of the Sea', with their own costumes, language and maritime codes, represented the network of this new maritime structure. Despite being definitely cut off from the rich hinterland of the past, Daybul still had an important market and a wide range of contacts and business, that allowed this harbour to blossom again within a renewed regional and global order.

These last archaeological campaigns and the extraordinary archaeological and architectonic data brought to light, the firm collaboration and support by the Department for Antiquities and Archaeology of Sindh, and our Trainees' excited involvement on the field have allowed to write the final page of Daybul/Banbhore's life, archaeological and architectonic data confirming the data provided by the available textual sources.

Much there is still to investigate, analyse and write. What can be stated at this point is that Banbhore has a long lasting history of nearly fifteen centuries (if not longer), which mirrors Sindh's history and culture. Imposing relics still stand out at the foot of a plateau on a secondary branch of the Indus deltaic region, and point to one of the most mighty harbours and towns of its times, a site coveted by invaders and conquerors for the riches there traded and accumulated in its storehouses, a site which however for fifteen centuries managed to survive human and natural ravages, and rebuilt itself on its own natural and human forces and resources.

Introduction

This paper presents the result of the field campaign conducted at Banbhore in 2020 (January 15th - February 19th).¹ The main goal of this season was to expose Building 2 in Trench 9 until reaching the ivory layers (SU 119) already identified, and partially excavated, in the 2015 season (Felici et al. 2016, 2018). Activities were therefore aimed at exposing: i) the East-West street between Building 1 and Building 2 (Mantellini 2019); ii) the perimeter and the

1 This paper includes the result of the excavation of Trench 9. For the excavation of Trench 11, under the scientific coordination of Ms. Naheed Zehra, see the Preliminary Report submitted to the DGAA. Elevation is measured in m asl, and reported here below just as m.



Figure 1. Trench 9 at the end of the 2020 Season (zenithal drone view, operator A. Tilia).

interior of Building 2; and, iii) the areas alongside Building 2, arguably two streets with a South-North axis (Figure 1).

The research work has been carried out within the Memorandum of Understanding - MOU signed in

November 2017 between the Università Cattolica del Sacro Cuore - UCSC, Milano (Italy) and the Directorate General of Antiquities and Archaeology - DGAA, Culture, Tourism & Antiquities Department, Government of Sindh (Pakistan).

The fieldwork dealt with the following operations (Figure 2):

1. Archaeological excavation, including topography and digital documentation;
2. Preliminary pottery analysis;
3. Preliminary study of the ivory.

As part of the MOU, the activities also included the training of ca 20 students from three universities of Sindh: Bahria University, Karachi; SALU University, Khairpur; University of Sindh, Jamshoro (Figure 3). Training comprised up-to-date archaeological approach and methods in excavation techniques, data acquisition/recording/management/processing/analyses, topographical survey and GIS, classification and study of pottery and other materials. At the end of the training, the level of learning of each student was evaluated with an individual test. All the students received a certificate of participation at the Technical Session held in Karachi on February 19th, 2020.

During the last campaign, a scientific collaboration was established with the Bahria University, Karachi Campus, with the aim of starting a systematic investigation of the maritime space around Banbhore, including an accurate mapping of the *intra-moenia* layout by non-invasive techniques.



Figure 2. A. Tilia engaged in training of students (photo G. Affanni).

A first geophysical seismic test has been conducted in proximity of Trench 9 by Ahsen Qureshi, Ph.D. student, under the supervision of Dr Salma Hanza, Department of Earth & Environmental Studies, Bahria University, Karachi Campus². (Figure 4)

The Italian Research Team of the 2020 season included:

2. See the preliminary report submitted to the DGAA.

Figure 3. Daily activities at Trench 9 (photo S. Mantellini).



1. Dr Simone Mantellini, Archaeologist, Field Director.
2. Dr Giorgio Affanni, Archaeologist, Ivory specialist.
3. Dr Agnese Fusaro, Archaeologist, Pottery specialist.
4. Mr Alessandro Tilia, Topographer, Surveyor.
5. Mr Daniele Redamante, Archaeologist, Excavation assistant.

1. Excavation of Trench 9: Stratigraphy and Architecture

The excavation covered an area of 15 x 10 m around Building 2 and Room 1 of Building 3, both inside Trench 9. The area was selected assuming that the southern wall of Building 2 would measure the same as the northern wall of Building 1 (11.70 m). Building 2 was actually only partially investigated in the previous campaigns, when consolidation and restoration were necessary after its exposure due to surface runoff (Mantellini 2019: 81-82).

1.2 Upper layers (S.M., D.R.)

The topsoil (SU 700, +8.58-9.10 m) and the upper layers (SU 703 +8.3 m, SU 707 and SU 708 +8.40 m) were deposits of colluvial origin composed by sandy clay with lenses of sand and fine gravel, and a marked South-North slope. The excavation of these layers opened a compact clay soil uniformly distributed over the entire area. Due to the difference in color, it has been distinguished as SU 701 (grey)

and SU 702 = SU 712 (yellow-reddish). They have both been interpreted as the result of the collapse of one or more mud-brick structures or walls. SU 701 was specially found in the north-east corner of the area (+8.68 m), while SU 702 (then established being equal to SU 712; +8.22/8.49 m) covered the rest of the area with a remarkable West-East slope. A rough alignment of mid-sized stones (SU 711, +8.36 m), possibly the remains of a later structure, was found in the eastern portion of the area between SU 700 and SU 702 = SU 712. In the same area, SU 702 = SU 712 also covered some sporadic lenses of fine reddish gravel (SU 716, +8.03 m)

1.3 Building 2 (D.R.)

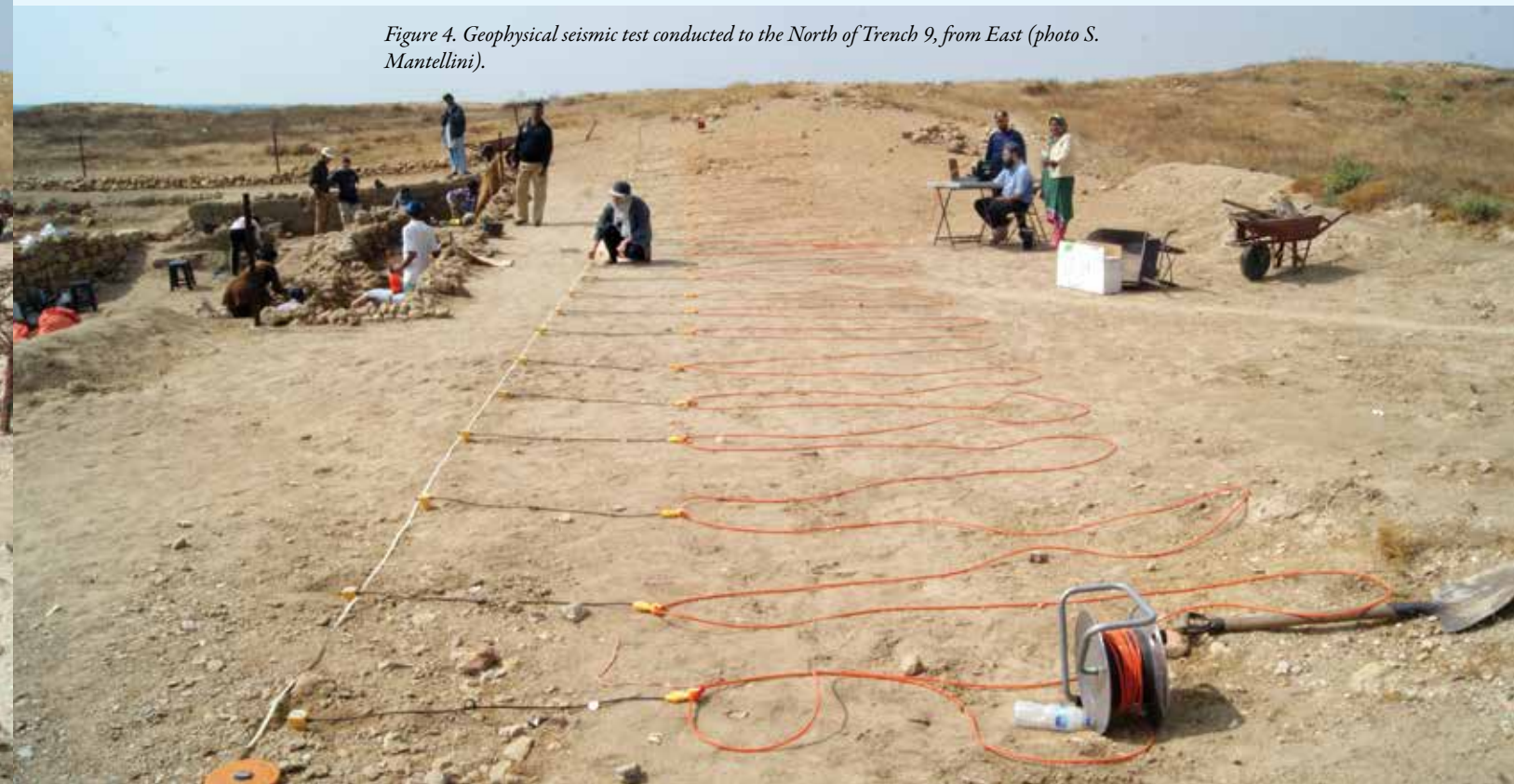
If the southern wall SU 836 and its threshold SU 837 were unearthed in 2017-2019 (Mantellini 2019: 81-82; SU numbers were assigned only in the last season), the removal of the upper layers exposed further the perimeter of Building 2 (Figure 5):

Eastern wall: SU 704 (2.06 x 0.55 m; +7.80/8.12 m) (continuing under the North section);

Southern wall: divided into SU 836 at East (2.90 x 0.75 m; +8.07/8.24 m); SU 837 the threshold/entrance (1 x 0.70 m; +7.47 m); SU 838 at West (6.26 x 0.66 m; +8.47/7.79).

Inside the central and eastern portion of Building

Figure 4. Geophysical seismic test conducted to the North of Trench 9, from East (photo S. Mantellini).



2, the upper layers covered a large mass of mud bricks (SU 717, top +7.88 m), ca 50 cm deep, which certainly points to the collapse of the upper part of southern and eastern perimeter walls (Figure 6). Nevertheless, bricks were well preserved and still arranged in rows so that it was possible to distinguish two main patterns according to their fabric and size:³ i) grey/yellowish sandy clay bricks prevail: 36/45 x 7.5/8 cm; ii) red bricks, made of a soft red clay rich in fine gravel, are instead fewer and smaller in size: 18/35 x 6 cm.

The aforementioned collapsed mud bricks covered two different groups of stones, both indicating the break of the lower stone courses of Building 2: the largest was SU 735 (+8.13 m), near threshold SU 837 and wall SU 838; and SU 757 (+7.23/7.72 m), in the South-East corner between walls SU 704 and SU 836. The western side of Building 2, where wall SU 838 was better preserved than elsewhere, was filled by several layers: SU 705 (+8.39 m); SU 709; SU 739 (+7.96

3 Only two of the three dimensions could be measured.



Figure 5. The area of 2020 excavation after cleaning, from West (photo S. Mantellini).



Figure 6. The collapsed mud-bricks SU 717 (zenithal drone view, operator A. Tilia).

m); SU 764 (+7.33 m). These accumulations share physical characteristics and materials, such as a brown to dark grey/black soft sandy-clayey and ashy soil, particularly rich in ceramic sherds, ivory fragments, osteological and carpological remains. Noteworthy finds from these layers are some clay figurines, one horse (BB.20.O.69, SU 709) (Figure 7) and two elephants



Figure 7. Terracotta figurine of a horse from SU 709 (BB.20.O.69, photo D. Redamante).

(BB.20.O.449, SU 739; BB.20.O.726, SU 764). The marked West-East slope that characterizes these levels suggests that they were intentional dumps, including remains of combustion and fires, originating from activities carried out near the building. After its abandonment, Building 2 underwent a slow and prolonged burial by natural and anthropic deposits from North, with its walls functioning as a sort of retaining barrier. There is, however, trace of sporadic occupations between the abandonment layers and the intentional filling, such as the fireplace SU 706 (+8.81 m) and an attempt of refurbishing SU 714 (bottom +8.57 m/top +8.76 m) the upper part of the western corner of SU 838. One of these squatter occupations is particularly worth noting (SU 718, +8.09/+8.32 m) because of the reuse of wall SU 838 as a shelter, and for several indications of anthropic activities (Figure 8). They include two fireplaces, SU 723 = Fireplace #3 (+8.31 m) and SU 734 = Fireplace #8 (+8.30 m), which yielded faunal remains and seeds, many ceramic sherds, a broken globular pot reused as a brazier,⁴ and

4 Seeds have been collected after sieving and their identification is currently in progress.

561 (411 complete and 150 fragmentary) terracotta beads from SU 718 (BB.20.O.305; Figure 9).

The discovery of mud-bricks is not unusual in Banbhore, as evidenced from the previous seasons in Trenches 7, 8, and 9 (Felici et al. 2016, 2018), but never in the form of such a massive architectural structure. This confirmed the existence of a mixed building technique, combining dry stone masonry made of small- and medium-sized stones for the foundation and the lower courses, and the wall built with rectangular unfired bricks of different shapes and fabrics.



Figure 9. The most complete terracotta beads from SU 718 (BB.20.O.305; photo D. Redamante).



Figure 8. The sporadic occupation in the southwestern corner of Building 2 with the vessel-brazier marked with a red circle, from East (drone view, operator A. Tilia).

In the eastern part of the building, the collapsed mud-bricks SU 717 and stones SU 735, and SU 757 exposed a natural deposit (SU 710, +7.81 m) made of a compact greyish sandy clay, which in turn covered an earlier structural collapse (SU 754, SU 751) of the eastern and southern walls.

More precisely, another part of stones SU 754 belonging to SU 704 and a compact yellowish sandy clay layer with inclusion of fine gravel SU 751 (+7.33 m) are likely recognizable as the upper part of walls SU 704 and SU 836. A portion of SU 754 was also covered by a deposit (SU 758, +7.00/7.70m) made of a compact grey sandy-clayey soil, rich in large ceramic fragments and a high concentration of more than 50 almost intact sheep shoulder blades (Figure 10).

On the western side of Building 2, both inside and outside, two new exposed layers were covered by previous dumps, again characterized by sloping towards its center (West to East). The first is a colluvium (SU 713, +8.39/8.48 m) made of a compact sandy-clayey yellow soil that also covered the remains of SU 839, the western wall of Building 2 (1.72 m x 0.70 m; +7.98/8.05 m; continuing under the northern section). The second is a soft dark-brown sandy clay deposit (SU 748, +7.32/7.51 m) rich in charcoal and ivory fragments. The finding of a large portion of an elephant tusk (BB.20.O.728; Figure 11) and two decorated ivory items (BB.20.O.539, BB.20.O.724; Figures 12, 13) suggests that SU 748 was an intentional dump. In its western portion, SU 748 covered the collapsed stones (SU 769) and loose mud bricks (SU 768) of the western wall.⁵



Figure 12, 13 Ivory piece BB.20.O.724 from SU 748 (photo D. Redamante).

The removal of the abandonment layers unearthed a portion (ca 20 m²) of a very compact floor made of beaten and slightly baked soil (SU 778, West +7.35 m, center +7.19 m, East +7.00 m) (Figure 14). The floor presents the evidence of holes and pits pertaining to a second use of the building, such as: i) two installations for pottery vessels (filling SU 790, cut SU 791, diameter 50 cm, depth 23 cm; filling SU 794, cut SU 795) diameter 60, depth 8 cm); ii) three small fired spots (filling SU 786, cut SU 787; filling SU 788, cut SU 789; filling SU 792, cut SU 793), having the same size (diameter 18 cm, depth 7 cm) and likely connected with minor melting activities as suggested by the microscopic remains of metal on its surface; iii) wide ash-rich lenses (SU 777); iv) and, a large rubbish pit (filling SU 780, cut SU 781)⁶. The only evidence in phase with the early phase of the floor is an alignment of four holes along the southern wall (hole #1 = filling SU 782, cut SU 783; hole #2 = filling SU 784, cut SU 785; hole #3 = filling SU 796, cut SU 797; hole #4 = filling SU 798, cut SU 799). Their size (diameter 18 cm, depth 23 cm) and location (ca 20 cm from the southern wall) suggest they belonged to a shelf/furniture rather than a roof support.



Figure 10. The deposit of sheep shoulder blades in SU 758, from South (photo S. Mantellini).



Figure 11. The elephant tusk from SU 748 (BB.O.728.SU 748; photo D. Redamante).

⁵ This evidence continues under the section; so its certain attribution will be possible only after the future enlargement of excavation.

⁶ See note 5.

1.3 Outside Building 2 (S.M.)

Outside Building 2, the most significant discovery refers to the presence of three different areas related to ivory manufacture.

Ivory #1 is located outside the eastern wall SU 704, in the former South-North street (Figure 15). 4.686 kg of ivory fragments (SU 719, BB.20.O.471; +7.70/7.81 m) were found uniformly scattered on a flat floor of ca 4 x 2 m (SU 770, +7.66/7.72 m) delimited by a stone alignment to the West (SU 760, +7.80 m). Floor SU 770 was cut by three holes. Two of them (SU 825 filling, SU 826 cut at North; SU 827 filling, SU 828 cut at South) are very small and shallow (diameter ca 5 cm, depth 3-4 cm) and they possibly pertained to the equipment used in the ivory processing. A slightly larger hole (SU 829 filling, SU 830 cut; diameter ca 20 cm) cuts the floor SU 770 outside the surface covered by the ivories.

Ivory #2 was found on the former East-West street, outside wall SU 838, near the SW corner of Building 2 (Figure 16). If the Ivory workshop #1 was almost flat, this area is characterized by a mound-shaped accumulation of ivory offcuts formed by six different layers of wastes: SUs 771, 779, 820, 821, 831, and 832 (top SU 771 +7.67 m, bottom SU 832 +7.41 m), for a total amount of 6.393 Kg of ivory. Each layer has been documented and recorded individually (Figure 17).

Ivory #3 yielded 1.513 kg of ivory fragments (BB.20.O.843) from the cleaning of the western section of Trench 9, exposed after the 2015 season (Figure 18). This deposit (SU 761, top +7.72 m, bottom +7.64 m) was only partially investigated, and its full exposure is planned for the next season.

Such an impressive amount of ivory in this area must be associated with the discovery of the ivory wastes SU 119 (ca 4,000 fragments) brought to light in 2015 in front of the threshold SU 837 of Building 2, i.e. between and at a similar elevation (+7.39/7.57 m) of Ivory #1 and Ivory #2 (Felici et al. 2016: 151-152, 155, 160, fig. 29).

According to the evidence above described, Ivory #1 can be certainly interpreted as a small workshop, while Ivory #2 and Ivory #3 pertain to dumps: Ivory #2 is perhaps connected to the same workshop Ivory #1 given the proximity to it, Ivory #3 (excavation to



Figure 14. The floor SU 778 of Building 2 with post holes, pits and melting spots (zenithal drone view, operator A. Tilia).



Figure 15. The workshop #1, from East (photo S. Mantellini).



Figure 16. The dump Ivory #2, from East (photo S. Mantellini).



Figure 17. The dump Ivory #2, detail of SU 820 (photo S. Mantellini).

be completed) instead seems to be connected to a discard of material from West.

1.4 Backfilling, preservation and consolidation (S.M.)

Following the decision by the Antiquities & Archaeology Department, Government of Sindh, to leave the buildings of Trench 9 and Trench 11 partially visible to tourists, the top of the walls of Building 2 were protected by using the same technique and material employed for the restoration of Building 1 in the previous season: stones were therefore fixed together and voids between them filled and strengthened with mud.

The backfilling of Trench 9 has been done at the end of the season. Traditional mats made of woven palm leaves have been used to protect the floor inside Building 2, while textile bags filled with loosen soil were used to protect holes and pits (Figure 19).

Moreover, the perimeter of the excavation area has been delimited by stones and an earthen barrier 0.50 m high (see Figure 1). Later, the area including Trench 9 and Trench 11 was fenced to prevent the access of unauthorized people.

Ca 15 m North of the Trench 9 northern border, an earthen barrier of 26 x 2.5 m fixed with stones was also arranged in order to avoid the damages caused by the run-off from the North slopes. The loose soil resulted from the excavation, and not used in the final backfilling, as well as the pottery rejected after the preliminary collection were accumulated Southeast of Trench 9 and East of the tourist path. The pottery rejected after the preliminary collection was also gathered North of Trench 9 inside a 2 x 2 m space delimited by stones (see Figure 1).

Figure 18. Backfilling and conservation at the end of the season (photo S. Mantellini).



2. The pottery evidence and a first chronological hypothesis (A.F.)

During the 2020 campaign a total of 4,987 sherds and more complete items were classified and analysed. All the ceramic assemblages considered are typical of the uppermost layers of the citadel that were already characterised and described in detail after the previous seasons (Felici et al. 2016: 130-137, 143-147, 148-152; Fusaro 2019). The assemblages show a very strong similarity or identity in their composition, comprising almost always the same glazed and unglazed wares. Moreover, the preliminary stratigraphic analysis of the pottery confirms that there is a huge quantity of matching sherds belonging to the same objects that were found in different layers, distant from one another horizontally within the excavated area and/or collected at different depths. Indeed, a large number of ceramic items are highly fragmented or they can be ascribed to incomplete items with many missing fragments. Among the matching sherds belonging to the same vessel but recovered in different layers, there are also four items whose fragments come from dump SU 118 above the ivory layer SU 119, uncovered in the 2015 field campaign. The four items recovered from SU 118 (green monochrome carved bowl inv. no. 118.882, yellow monochrome carved bowls inv. nos. 118.863a and 118.863b, and a pot imported from the Indian subcontinent inv.no. 118.884) match with fragments brought to light in SUs 733, 738, 756, and 764 exposed South of Building 2 during the 2020 campaign,⁷ very close to SUs 118 and 119 excavated in the 2015 season.

The identification of a large amount of matching sherds within the stratigraphic sequence leads to a number of suggestions that partially confirm the archaeological hypothesis: i) the majority of the layers are dumps; ii) many layers labelled with

⁷ The only exception is SU 764 that was inside Building 2.

different SU numbers should be considered the result of a unique anthropic activity; iii) the soil and the associated mixed material generating the dumps possibly come from only one place, outside Trench 9, that can be considered the source of this massive material discharge.

Both the similarity of ceramic assemblages and the abundance of matching sherds within Trench 9 point to a very short time span for the phases identified in this campaign, that correspond to the latest occupation of the site of Banbhore. Its chronological attribution can be suggested especially by considering some unique items as reliable chronological markers. These are: three green and yellow monochrome glazed large deep bowls with carved and cut decoration (inv.nos. 118.882, 118.863a, 118.863b), whose production is usually attributed to Iran and dated to the 11th-13th or more probably 12th-13th century (Figure 20);⁸ and one green monochrome glazed

⁸ Specimens of the same type were found in other sites of the Indian Ocean, such as Sharma (Rougeulle 2015: 248, figs 197.1-3, dated to the end of the 11th-early 12th c.), Shanga (Horton 1996: 286-289, figs 209a-b), Kilwa (Chittick 1974: 305, pl. 115a, dated to the late 12th-late 13th c.), Manda (Chittick 1984: 81, pl. 34a-b, dated to the 12th-13th c.), and southern Iran (Priestman 2005: 253-254, pl. 106).

Figure 19. Green monochrome glazed bowl with carved and cut decoration, inv.no. 118.882 (drawing A.H. Ansari, photo A. Fusaro).



stoneware jar with a medium-high neck and short vertical handles (inv.no. 1144), that has been possibly identified as the so-called Martaban jar from southern China. The latter type replaced the more ancient Dusun jars as large containers circulating in the maritime trade of the Indian Ocean, from the 11th century onwards.⁹

Among the vessels useful for proposing a reliable dating, there is a good amount of specimens, both glazed and unglazed, that show traces indicating reuse or ancient restoration. In the first case they consist in single sherds of broken vessels showing well-smoothed fractures, that were reused for purposes other than its original one (such as game pieces, tools, etc.); in the latter case, they comprise glazed imported vessels that were evidently highly esteemed and, after their breakage, were repaired by making piercing holes for stitching the vessel pieces together, or specimens whose broken parts show well-smoothed fractures (especially in the case of broken rims) for extending the vessels life and use (Figure 21). These reused or restored items

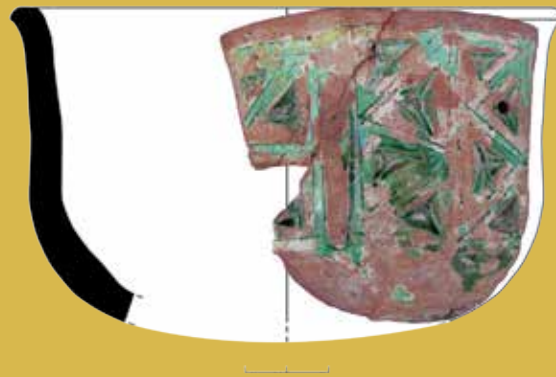


Figure 20. Fragment of an unglazed red conical bowl/lid from SU 726 and, above, detail of the well-smoothed broken rim (photo A. Fusaro).

clearly testify to a very late phase of occupation of the Banbhore's 'walled area', when the local production strongly decreased and the import of items from farther lands was no longer active.

Further indication of the late occupation comes from numerous fragments (153) related to the globular body or the convex bottom of unglazed local pots, mainly belonging to the red ware. Once the closed pots were already broken, these portions of the vessels were reused as hemispherical containers.

The presence of fire traces (40 specimens) and soot marks (113 sherds) on their inner surface (Figure 22) allows interpreting them as temporary fireplaces, portable heaters or more properly braziers installed occasionally. The most emblematic case is a convex base of a broken globular pot, full of soot marks on the inner surface, from SU 718 (see Figure 8). It was found still in place, lying



Figure 21. Fragments of unglazed red pots with soot marks on the inner surface from SU 705 (photo A. Fusaro).

⁹ Items identical to that found at Banbhore were recovered from other sites, especially Shanga (Horton 1996: 305, fig. 227-k); see also Pradines 2010: 225-226, and Zhao 2015: 286, figs. 215.9, dated to the 11th-14th c. and attributed to the Guangdong and/or Fujian kilns.

in the south-western corner of Building 2, located in a strategic position, well-protected from the wind. The embers or burning coals were collected inside the vessel and they were easily thrown away once the fire was extinguished. In some of the fragments recovered, the soot marks appear very thick and with reddish/brown tinges; we cannot exclude that they also contained food remains, thus suggesting that the braziers were also possibly used for cooking food on the embers.

All considered, the preliminary analysis of the pottery from the upper layers excavated in the 2020 season leads to date the latest occupation of this area to the late 12th-early 13th century. This chronology could be considered a *terminus ante-quem* for the activity of the workshops. The ivory workshop #1 (SU 719) only gave very small and badly preserved fragments that could not be classified. The ceramic material recovered from the layers related to the ivory spots #2 and #3 largely conforms to composition and features of the pottery assemblages from the dumps excavated in Trench 9, thus suggesting that the findings from these two areas are in a secondary deposition and also belong to a dump.

Finally, it is worth considering the remarkable difference in the ceramic assemblages between the upper layers from the eastern and the western parts of the excavation area. In the former the ceramic fragments from SU 710 and SU 712 above the ivory workshop #1 (SU 719) and the upper fillings of Building 2 in its eastern portion (SUs 708, 716, 717) are extremely small, very badly preserved, with surfaces and fractures shabby and damaged; some also have abundant calcareous and earthy-calcareous deposits covering the surfaces. All these features are probably the result of their prolonged exposure to atmospheric agents. The same characteristics were not detected in the ceramic assemblages recovered in the western part of the trench. This difference could further confirm that the eastern portion of the trench continued functioning as a street for long time, while the rest of the area inside and outside Building 2 was used as a dump for discarding large quantity of materials.

3. Preliminary study of the ivory (G.A.)

The following notes concern the study of the ivory assemblage from the excavation of Building 1 in the 2019 field season. However, in consideration of the unique discovery of the ivory workshop in primary

context exposed at the end of the present campaign, some preliminary observations on the ivory from the 2020 season are also presented here.

The assemblage of ivory objects recently uncovered in Trench 9 (campaigns 2015, 2017-2018, 2019, 2020) counts more than 30,000 pieces and small fragments for a weight of more than 50 kg. This is the most abundant recovery of ivory artefacts ever known from a certain archaeological context. Due to the great amount of production waste and the peculiar context of site dispersion it is sound to say that the area housed ivory manufacturing and its waste deposits.

The ivory offcuts discovered in Trench 9 have been processed through a fieldwork protocol (Affanni 2015) already successfully applied on the ivory assemblages from Arslan Tash in Syria (Fontan, Affanni 2018) and Old Nisa in Turkmenistan (Affanni 2018). This protocol was used in order to reconstruct the production cycle, as well as to identify ancient production techniques and tools used for carving and decorating the objects (Affanni 2019). If the 2019 season was dedicated to a general assessment of the ivory assemblage from Trench 9 aimed at identifying material, tools and techniques used by the ancient artisans (Affanni 2019), the present study focused on the selection of the most interesting pieces (107 in total) from the 2019 excavations.

Regarding the identification of the material, the peculiar conformation of the ivory assemblages hitherto discovered at Banbhore makes its identification with elephants unquestionable (Affanni 2019), although establishing the Indian or African origin of the raw material would be possible only through DNA analyses. However, the preliminary analysis of some alphabetical inscriptions on the ivory raises interesting observations on this matter. One piece (BB.17-18.O.921/2; Affanni 2019: 105, Figure 1) bears signs only on the outer surface of the tusks (the cement), and it has been cut in pieces during the carving operations. It means that the inscription was made and read before the work began, providing two options on the identity of the writer: the artisan himself, who wrote some notes after purchasing and before starting work on the tusk. Or, it refers to the person(s) who handled the tusk before the artisans acquired it, like merchants or palace officials, who needed to register information

directly on the tusks. As the characters used were not only Arabic but also Devanagari (Z. Quadri, personal communication), a local rather than an African origin of the raw material is therefore highly probable, as also suggested by the general small dimension of the pieces and the geographical position of Banbhore (Affanni 2019, 105).

The study of the material from 2019 also confirmed that the artisans made good use of the ivory. They used both the solid medium and upper part of the tusk, as well as its lower end. The latter is characterized by the presence of the pulp cavity and was probably considered a less expensive material. The first procedure to produce artefacts from elephant ivory is the preparation of segments of the tusk either in the form of cylinders, when obtained from the solid part, or hollow cylinders when obtained from the part with the pulp cavity. One hollow cylinder has been found in Building 2, SU 748, during the 2020 excavation (Figure 11). By dividing the cylinders into smaller pieces, the artisan would produce raw shaped objects that could be further worked to become complete artefacts. The tools used for the extraction of raw shaped objects were a saw, an ax and a carving knife (Affanni 2019, 106).

In the later stage, raw pieces were reduced in size. Material was removed by using lathe, knives, gouges, and chisels in order to carve the intended objects. This process results in a huge amount of waste and rejected chippings of different sizes, including very tiny shavings produced by the use of the lathe. The lathe was the most used tool for the purpose both to remove material or to engrave deeper lines with a decorative function. Waste production from lathe operations are consistent with a bow lathe, where a strip of material is attached to a curved stick to create a bow, which is then moved forwards and backwards to apply an alternating rotation movement to the object to be carved with a chisel. This tool required only one worker to operate it, however, holding and moving the bow meant that the turner only had one hand to support the chisels, and so would often use his feet/toes to control them. To work a piece on the lathe it has to be secured on two sides of the rotation axis, the headstock and the tailstock, each of them touching the piece with a metal point which would leave a tiny hole in the piece. The very last part of the pieces, the one holding onto the metal points was cut out and it became a waste (Affanni 2019).

The use of this kind of lathe may be confirmed by the exceptional discovery of the ivory work space during the last season, in particular the ivory workshop #1. The removal of the layer with ivory offcuts, chippings, and ivory powder (SU 719) exposed the floor SU 770 where the craftsman sat to work. Here two small holes (SUs 825-826 and SUs 827-828) likely indicate how the lathe was fixed onto the pavement, and the shallow depression into the floor SU 770 was the place where the artisan used to sit. A small mound of compact ivory shavings and powder may be the place where he used to put his right heel to hold the tailstock part of the lathe. This means that the bow was operated with the left hand and the chisel was used with the right hand and the left foot. With the right hand he also used to throw away offcuts. This could be guessed because the left side of the lathe was very close to the limit of the working space and the majority of the waste was found on the right side of the lathe, implying that offcuts were taken from the lathe and thrown away with the right hand in the direction of the right side of the artisan. It is therefore arguable that the artisan working in this place was probably right-handed as he used the right hand to hold the chisel, an operation that needs a strong and firm hand, and to discard pieces, while he used the left to operate the bow.

The decoration of the pieces was done through chisels, both hand-held or with the aid of lathe to make lines and hand drills. Polychromy was also employed to decorate the ivories, as a final treatment, using two kinds of pigments, black and red. Only in-depth analyses could confirm the chemical-mineralogical composition of the pigments, but arguably black was obtained from coal or charred wood and red was most probably obtained from iron oxides.

The material from the 2017-2018 and 2019 campaigns shows that a specific kind of waste was produced and discarded during the process meaning that some specific types of objects were made in the workshop. Complete and final objects are rare in Trench 9. Their shape could be inferred only on the basis of the wastes and incomplete pieces discarded during the production process. On this matter, two ivory pieces (BB.20.O.539 and BB.20.O.724, see Figures 12-13) found in 2020 inside Building 2 (SU 748) are worth noting because they are finished and possibly are game pawns.

The first procedure to obtain artefacts from elephant ivory is the preparation of tusk segments. By dividing those segments into smaller pieces the artisan would produce raw shaped objects that could be further worked to become the final objects. Here below is a brief description of the main classes of objects hitherto identified in the material from Trench 9. Plaques, either thin or thick, were obtained by cutting longitudinally a full or hollow ivory cylinder. Some thin plaques were discarded as rejects (BB.17-18.O.901/4, Figure 24) while some others were used as the starting point for the production of other objects; thick plaques haven't been found as rejects as they were most probably all transformed into different types of objects. The remains of those plaques are basically two kinds of wastes: the first looks like perforated strips (BB.19.O.100/10; Affanni 2019: 107, fig. 8) and the object removed from them could have been something like hemispherical pawns (BB.19.O.100/12, Figure 23). The second is the internally rounded corners (BB.17-18.O.910/1, Figure 25) or the internally rounded sides (BB.19.O.121/7, fig. 26) from which circular objects would have been carved out. Many broken rejects of annulus shaped items (BB.19.O.100/8; Affanni 2019: 106, Figure 2) that have been found during the excavations may probably fit as those circular objects coming from the inside of thin plaques. However, the objects fitting with the thicker plaques haven't been identified yet.

Using the hollow part of the tusk in proximity of the culmination of the pulp cavity, the artisans produced artefacts that could probably have been handles (BB.19.O.100/36, Figure 27) for different classes of items, such as fans, mirrors, knives, etc.



Figure 22. Ivory thin plaque, Inv. no. BB.17-18.O.901/4 (photo G. Affanni).



Figure 23. Ivory hemispherical pawn, Inv. no. BB.19.O.100/12 (photo G. Affanni).



Figure 24. Ivory offcut with internally rounded corners, Inv. no. BB.17-18.O.910/1 (photo G. Affanni).



Figure 25. Ivory offcut with internally rounded sides, Inv. no. BB.19.O.121-7 (photo G. Affanni).



Figure 26. Ivory handle, Inv. no. BB.19.O.100-36 (photo G. Affanni).

The last offcuts so abundantly found in the excavation are the lathe offcuts. They are produced on the two sides of an object worked at the lathe. Three kinds of lathe offcut have been found: i) lathe offcut from the tip of the tusk fixed with a nail (BB.17-18.O.906/1, Figure 28); ii) lathe offcut from the solid part of the tusk fixed with a nail (BB.17-18.O.894/1; Affanni 2019: 106, Figure 4); iii) lathe offcut from the solid part of the tusk fixed with a clamp (BB.19.O.100/4, Figure 29).



Figure 27. Ivory lathe offcut, Inv. no. BB.17-18.O.906/1 (photo G. Affanni).



Figure 28. Ivory lathe offcut, Inv. no. BB.19.O.100/4 (photo G. Affanni).



Figure 29. lathe offcut from the solid part of the tusk fixed with a clamp- BB.19.O.100/4,

Concluding remarks (S.M., A.F.)

The results from the 2020 season finally confirmed the presence in the central area of the fortified site of Banbhore of an important ivory manufacturing center during the Islamic period, which makes Banbhore the only ivory workshop known in the archaeological record worldwide. The preliminary study of the ivory made also possible general hypotheses on its production process, including the identification of the general typologies of waste/objects, the tool(s) used by the artisan(s), and also the provenance of a single tusk fragment.

The three ivory spots exposed during the last season, and the ivory layer SU 119 unearthed in 2015, formed a large manufacturing area in this part of the site, including further potential working areas nearby, as suggested by the ivories from the dump Ivory #3 and the upper deposits. By combining the data from the 2020 season with the information available from the stratigraphic sequence and material from the 2015 campaign (Felici et al. 2016: 151-152), it is possible to frame the functioning of the ivory workshop outside Building 2 to the early-middle 12th century. It is worth noting that this activity corresponds to the latest occupation of Banbhore, a time usually considered as a period of decay of the settlement (Piacentini Fiorani 2019b: 13-14). This decline is well testified by the reuse of the earlier streets in this important urban crossroad for the installation of the ivory workshop.

The sporadic occupation of this area is even more evident in the episodic anthropic activities unearthed outside and inside Building 2, where the reuse of stone walls and the presence of many fireplaces indicate the presence of a sporadic occupation. It occurred in a very short time span probably between the end of the 12th and the early 13th centuries CE.

Building 2 itself revealed four significant phases, two of them referring to an anthropic occupation, and two of abandonment. The earliest phase, only partially exposed, is characterized by a beaten floor cut by four small circular holes along the southern wall. The same floor was later cut by bigger holes and pits, before the abandonment of the building witnessed by the collapse of its perimeter walls. The building was filled by both natural accumulations due to atmospheric agents and anthropic fillings.

The marked slope East-West and South-North and the dark color of the stratigraphy in the western part of the trench, either inside and outside Building 2, well indicates the presence of intentional discharge of material from a higher place located to the North/North-West of the excavated area. Contrary to the upper fillings in the eastern part of the excavation, which have a rather horizontal distribution and a sandy soil fabric with few materials, the layers on the eastern side are also characterized by many finds, such as pottery, charcoal, animal bones, and ivory. A second squatting frequentation of this building is attested in its western portion, as testified by the refurbishment of the south-western corner, along with the finding of numerous broken vessels reused as braziers and fireplace #3.

As a future perspective, the discovery of the ivory manufacture suggests opening entirely the area around Building 2 in order to understand the size of such a unique craft quarter. Activities scheduled for the next campaign are therefore: i) to completely expose Building 2; ii) to complete the excavation of the ivory # 3 in the western section; iii) to extend the excavation to the stone structures detected to the North-West of Building 2 (same building? a new building?) to validate the hypothesis of further workshops.

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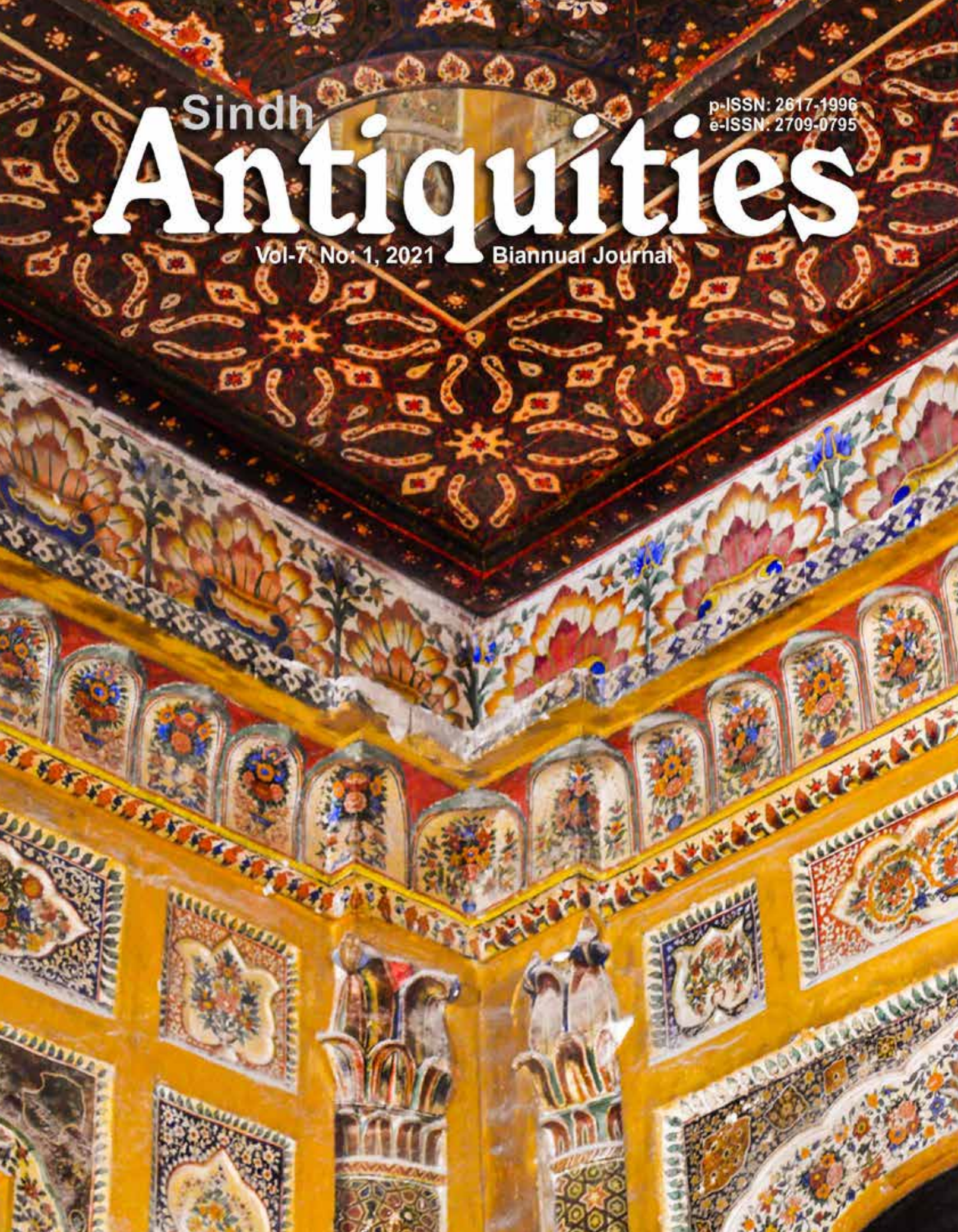
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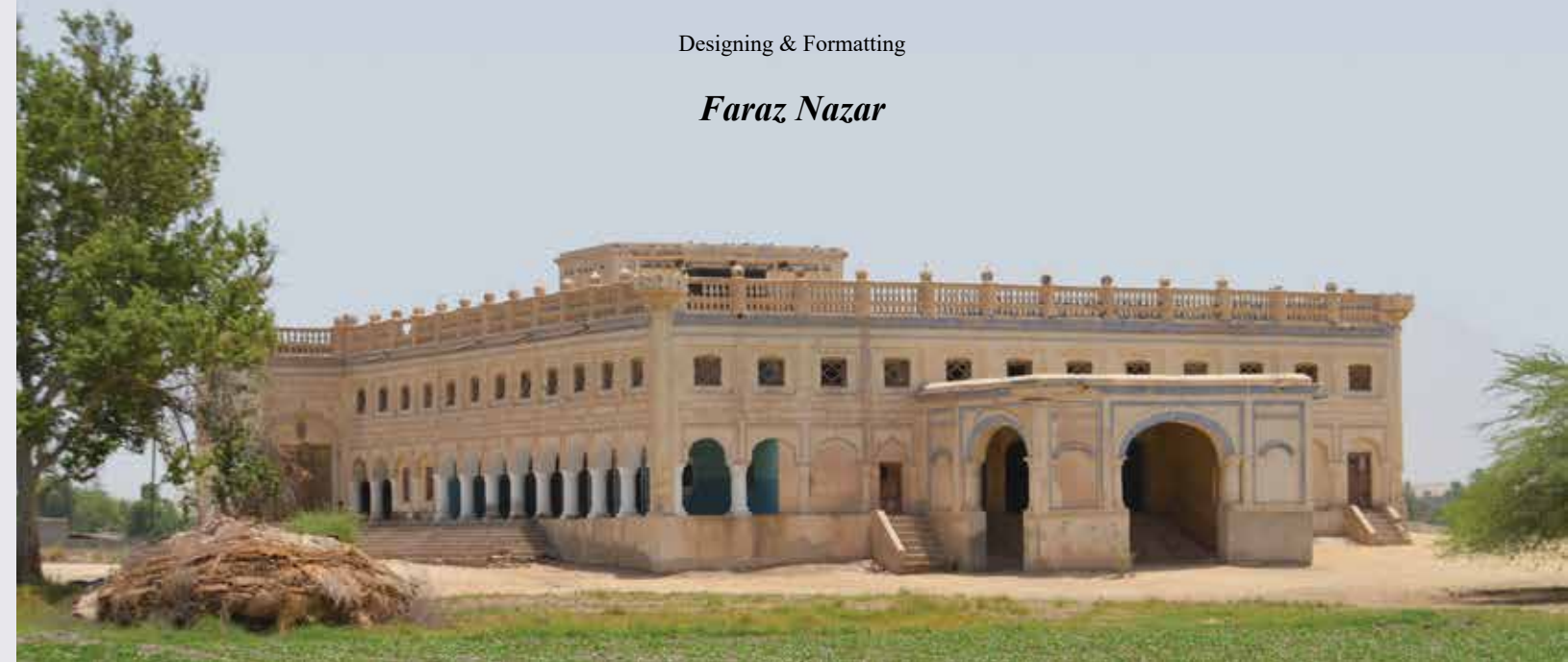
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