

An urban agglomeration as big as Dongola and featuring buildings that were monumental, even if on a local scale, could not have gone without throngs of craftsmen and artisans of all kinds working for the building industry – brickmakers, lime producers, stonecutters, masons, carpenters and plasterers. This was especially true of the period from the 8th through the 12th century. The effects of their work can be seen in the excavated material.



Red brick used for vaults





## **BUILDERS AND ARCHITECTS**

Up for evaluation are the talents of local architects, capable of a creative combining of borrowed patterns, especially in religious architecture, with local building tradition and creative architectural designing, the highpoint of which was Dongola's own cross-over-rectangle plan, used in a number of churches and cathedrals.

The absence of written documents and sources precludes our understanding of the inner mechanisms of this group of artisans. Nor are we in a position to know what the status of these skilled workers was in Makurian society. Remains of makeshift workshops were recorded in the southeastern part of Building X, where containers for mixing lime were discovered. These must have been used when constructing Building X.



"Palace of Ioannes"



Capital of grey granite from the naos of the Third Cathedral (RC.I)



Keystone of sandstone from the Citadel (B.V?)



Surely, however, most of the workshops involved in the building industry must have been located outside the town. Stonecutters must have worked in the guarries supplying broken stone for the fortifications on the Citadel and sandstone blocks for the palaces, such as the facades of Building B.1 and the Throne Hall, as well as other structures that have not been excavated but which can be assumed from the preserved loose blocks originating from arcades and walls. Architectural elements of granite, such as column shafts, capitals and bases, must have been prepared in the immediate neighborhood of deposits of pink and grey granite. To facilitate assembly of thus prepared elements, individual pieces were identified with Greek letters carved into hidden structural planes (Gartkiewicz 1990: 185-203; Ryl-Preibisz 2001).

Brick-making, both mud brick and red brick, also took place outside the town, either



north portico of the First Cruciform Church (CC.I)

on the islands or in the Letti Basin, where access to Nile silt and water was easy. Brick production was geared to needs, the size of bricks being determined by the massiveness of the walls under construction and their shape and technical parameters conditioned by their place in the construction, be it pillar, arcade or vault.

A rounded evaluation of the building industry in Dongola and the role of artisans in this industry requires separate study, but even now there is every reason to believe that these craftsmen, working primarily on commission for members of the royal court and the bishopric, presented very high qualifications.

It is to be expected that the everyday as well as luxurious needs of the court, clergy and ordinary inhabitants of the town were supplied by numerous workshops in town. They also supplied a wider populace with the required goods, very likely forming the basis of a lively trade exchange. There is no archaeological evidence for a variety of crafts that were surely represented: textile producers, leatherworkers, jewelers, artisans processing ivory, goldsmiths and metalworkers. We can speak of iron-smelting, pottery workshops, and to some extent of glass production.

# **IRON-SMELTING**

Two circular mud-brick structures filled with gravel were located on the platform construction in the northwestern part of the citadel, outside the rampart that cut off the platform on the north and in the vicinity of the tower on the rock. Both were on bedrock level, a meter away from one another. Of the northern one, only a few centimeters have been preserved above bedrock. Its plan, however, is clear. It was a round structure, slightly flattened on the east where there was a 15 cm wide opening. Its maximum outer diameter ranged between 78 cm and 85 cm. Outside the opening in the eastern wall, a channel 70 cm long was hollowed in the bedrock, matching the opening in width;

around it the surface of the rock was clearly intentionally worked as a depression some 42 cm by 82 cm. Remaining presumably in some connection with this arrangement were three holes made in bedrock, one on each side of the depression (diam. 14–24 cm, depth 7–12 cm). Iron ore and charcoal filled the structure and formed a small mound nearby; the insignificant size of this mound suggests that it was connected with this one furnace only.

The southern furnace was also a round structure with a diameter of roughly 80–95 cm and slightly flattened eastern side. It was in much better condition than the northern one, although only the southeastern part of





Medalions with human busts impressed in sheet metal, 6th century



its wall has been preserved. The structure consisted of mud bricks set on end directly on bedrock; what has survived is some 40 cm high. On the east, there was an opening in the structure some 9 cm wide and 14.5 cm high. Outside, a channel 40 cm long was hollowed out in the rock, matching in width the narrow opening in the furnace. Along the same line but further to the east, there was a hole in the rock, 12 cm across and









Three examples of iron-smelting furnaces

14 cm deep. This furnace was also filled with alternating layers of iron ore and charcoal. It would appear that the smelting process in this structure had been abandoned at an early stage.

A <sup>14</sup>C dating of the charcoal from the southern furnace placed the last smelting process in the very beginning of the 6th century (AD 510), making them later than the furnaces uncovered in Meroe (Shinnie, Kense 1982; Tylecote 1982). A preliminary





chemical analysis by Thilo Rheren of the iron produced in the southern furnace demonstrated that the sample contained about 60% iron and about 30% silicon plus some trace elements, which were not determined.

From the functional point of view, the Dongolan structures appeared exceedingly simple. Apparently, they were intended for a single process, being dismantled each time to remove the melt. Oxygen was provided through the opening in the eastern side of structure, presumably with the aid of leather bellows fitted into the rock-cut channel outside. Surprisingly enough, there seems to be no way to remove the slag from the furnace during the process. Quite clearly, the technology of smelting in Dongola must have differed in some respects from that reconstructed for Meroe and other African sites.

9.74

B.80

9.02

AIST

Pottery kilns on Site R; inset left, reconstruction of a kiln



Bronze censer, 11th-12th century, with impressed medallions

# PAINTERS

There were also true artists among the artisans employed in the arts and crafts in Dongola. For one thing, all the sacral buildings and many official and residential edifices were decorated with murals, mostly of a religious nature, but portraits and purely ornamental examples of painting have also been preserved. The most numerous set of murals, dated from the Late period, survives on the walls of the monastery and in the monastic annexes (Martens-Czarnecka 2011). The earliest of these date from the 11th century, but painting was known in Dongola already in the middle of the 6th century. The oldest baptismal fonts, one of which is in the Old Church and the other in the First Cathedral (EC.I), feature imitations of marble revetment painted on the plaster. The dado from the commemorative monument B III 1 on the Citadel is similar in character. This cruciform building from the beginning of the second half of the 7th century had excellent lime plastering and truly professional painting. Who the painter or painters were, we will never know, but they applied the tempera technique and a rich palette, suggesting perhaps that they had come from outside Makuria. Considering, however, that the next two coatings of plaster and successive layers of painting are even finer from the technical point of view, we are entitled to harbor the opinion that the painters actually represented a talented local atelier with a long tradition of working for the royal court.

A characteristic of the color palette of the oldest paintings indicated, according to D. Zielińska, that the color range appeared to be virtually unlimited: yellow, both warm and cold, ocher from vivid warm oranges through sienna and umber to violets of a warm and cold (pink) shades, as well as blues, emerald green and olive hues. The preserved fragments clearly demonstrated the use of pigment mixed on a palette during painting in order to obtain the exact shade desired at any given moment (Zielińska 2004).

Laboratory analyses by I. Zadrożna (Godlewski 2004a: 214–215) identified egg yolk and nut oil as binders. A. Nowicka's

Examples of wall painting on lime plaster, Commemorative Building (B.III.1)





examination of the pigments (Godlewski 2004a: 211–213) determined that Egyptian blue, iron oxide red, lampblack mixed with charcoal black, earth green and iron oxide yellow were used.

The murals from Building III.1 were executed on three successive plaster coats, over a period broadly believed to last about 350–400 years. Despite this, the plaster, examined under laboratory conditions by I. Koss, remained the same lime plaster with gypsum as microcrystalline binder. The second plaster coating, which was also used for the stuccowork, contained calcite beside gypsum as the microcrystalline binder (Godlewski 2004a: 208–210).

The time span represented by the interior decoration of the commemorative monument on the Citadel leaves no doubt that the Dongolan workshops maintained the quality of their work, using the best materials and exhibiting the highest professionalism when decorating important structures. It should be noted that the Cathedral of Paulos in Pachoras was not counted among buildings of special significance and it is more than likely that the royal workshops from Dongola would not have been asked to work in it. On the other hand, the recently discovered murals from the Lower Church in Banganarti were executed in all likelihood by painters of comparable class. Laboratory analysis, once they are done, will either confirm or refute this opinion.

# MOSAICISTS AND FLOOR-MAKERS

Mosaic floors decorated the Second Cathedral (EC.II) and the Second Mosaic Church (Żurawski 2012: 154–155, Fig. 15). An examination of the technology applied in their making points to a local workshop operating in Dongola in the second half of the 7th century. Both consisted of natural desert stones, white and black, small-sized and bedded in mud on earlier pavements that had been laid of irregularly broken slabs of stone. This ensured the mosaic

floors considerable stability. The mortar was too weak, however, and the floors required constant repairs, marring frequently the original geometrical design. The surviving Dongolan mosaic pavements are a good example of the aspirations of local artisans and local founders of new building projects to imitate models and patterns observed in distant lands, primarily Egypt and Palestine (Godlewski 2011)

It seems, however, that mosaics failed to gain popularity among Nubian elites and most of the floors in the churches and palaces were made of ceramic tiles or bricks laid in herring-bone patterns on a bedding of sand. Good examples of a pavement of this kind are a 6th century floor from Building IV in the southwestern corner of the Citadel and the floor of the Monastic Church (HC) on Kom H.

Pavements of stone slabs bedded in sand were also in use in the first Cathedral and in the Mosaic Church. In Building V on the Citadel, stone slabs were laid in lime mortar.



## WINDOW GRILLE MAKERS

Most of the windows in the churches, palaces and storeyed private houses had screens in the form of stone or ceramic window grilles. The reasons for this were both functional and aesthetic.

Sandstone grilles are seldom found and they are usually very fragmented. Whatever pieces have been recorded from the excavations in Dongola do not sustain a fuller characteristic of the workshops engaged in their manufacture.

Ceramic grilles, on the other hand, are more than abundant. While the conditions of their deposition explain their mostly fragmentary nature, there are still some better preserved examples (from House A.106 on the Citadel, for example, and from the Third Cathedral (RC.1)) that are either

Terracotta window grille fragment from House A.106



whole or easily reconstructed (Gartkiewicz 1990: 202-211). The grilles from the monastery are also interesting as a set. It seems that ceramic grilles were produced in local workshops, in the town and in the monastery perhaps, meeting the specific requirements of particular window openings. The openwork ornament of the grilles was mostly based on a cross design or else they were geometrical. Figural representations were also quite popular, as were fish, birds and animals. The inside of the grilles was well finished, smoothed and carved, and painted often with elaborate shading. Virtually no two grilles are alike, such was the individual treatment accorded these fine products of the local crafts.

Naturally, the industry produced just as many, if not more, standard grilles, made to specification, technically correct but with no ornamental flairs, mostly with a simple openwork pattern of circles. Stucco grilles with glass window panes are a rarity.



#### Terracotta window grille from House A.106







Terracotta window grille fragments: top left, from the Pillar Church; top right, from the Monastery; below, selection from the Third Cathedral

### POTTERS

An extensive district of pottery kilns (Site R) was found in the northwestern part of the town, west of the permanent settlement and fronting the river. Excavations combined with magnetic prospection confirmed at least 12 pottery kilns operating in Dongola between the 6th and 12th-13th centuries. A study of a few of these kilns by Krzysztof Pluskota has determined the technical parameters of this unusually dynamic production (Pluskota 1990; 1991; 2001). The products included tableware — luxury products, as well as common wares, mainly amphorae and water jars (qawwadis). Significantly, the production of these particular workshops did not include window grilles, which were an exceedingly common element of sacral and civil architecture, or any kind of sanitary installations, like ceramic pipes and lavatory pans, which have been found both in houses on the site and in the monasterv.

Dongola became an important pottery production center already in the beginnings of the 6th century. Early Makurian tableware has been recorded in the tumulus tombs. These were chiefly wheelmade bowls and cups, which originally were produced outside Dongola and which developed into the typically Dongolan small, thin-walled

Terracotta oil lamp, 6th/7th century



bowls, both red and white, ornamented with a simple engraved, impressed or painted decoration. New forms included plates, big bowls and bottles, which were imitations of the so-called Aswan Ware of Late Antiquity. Excavations on stratified sites (CC, NW and SWN) have yielded 6th-century tableware

Early pottery (bowls, bottle) produced in Dongola, first half of the 7th century



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from the oldest private dwellings in the northwestern corner of the fortifications, from the platform construction in this area and House A.111, underlying House A.106, followed by products of the 7th century recovered from the fill of the toilet depositories in House A.106 and Building I. Some of the oldest examples of tableware, mostly thin-walled bowls, originated from archaeological fill preceding the construction of the Old Church and Building X.

Of particular historical importance is a set of amphorae imported from Aswan, Middle Egypt (LR 7), the Mareotis region and even Palestine, found in the fill of the toilet depository in Building I, "Palace of Ioannes"







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(Danys-Lasek 2012). Accompanying the amphorae were numerous mud stoppers (more than 100) used to seal amphorae. These mud stoppers bore rectangular and circular stamps with inscriptions. Vessels imitating Aswan amphorae started being produced locally in the beginning of the 7th century. The red amphorae without impregnations were quickly adapted in the 7th century to serve local needs; their capacity was later increased, making them more bulging in shape. Presumably already in the 8th century, they started to be "tagged", bearing the names of individuals to whom they, or rather the wine in them, was supposed to be delivered. The wine was either locally produced or supplied within the quotas set down in the *baqt* peace treaty signed with the Caliphate in the middle of the 7th century. Excavators found amphorae "addressed" to Bishop Maria and the archmandrites Michael Psate and Silvanos in House A.106.

Interestingly, the production output of the pottery workshops in Dongola was sufficiently big and varied to make imports negligible in number, at least in the archaeological record excavated so far.



Different types of amphorae (7th-9th century)

## **GLASS PRODUCERS**

Glass products are not very abundant in the archaeological record from Dongola: mostly cups, lamps, plates, open forms, found as small shards that seldom permit the full form to be reconstructed. No glass slag or workshops have been observed, thus the prevailing opinion was that whatever rare glass vessels were found on the site, they must have been traded in from distant Egypt. Small bottles were certainly used as packaging for fragrance and cosmetic oils that were imported to Dongola.

Excavations in room 15 of Building I in the southwestern part of the citadel (Site SWN) brought to light a lump of glass characterized by a high clearness and a few pieces of lowquality products that could have been made by little-skilled artisans. These objects were dated by the archaeological context to the first half of the 7th century. The glass lump indicates that pure glass in the form of lumps was brought to Dongola from the far-off specialized workshops of Egypt. It was heated on the spot and retooled into vessels. The examples of glass products from Building I should be considered as waste from such a workshop working for the needs of the court.



Glass fragments from unit B.I.37





Broken stems of glass lamps