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Front cover: Village on the Island of Dirbi in the SARS concession above the Fourth Nile Cataract (photo: D. A. Welsby).
Bread Moulds from the Amun Temple at Dangeil, Nile State – an Addendum

Julie R. Anderson, A. Catherine D’Andrea, Amanda Logan and Salah Mohamed Ahmed

As discussed recently by Anderson and Salah in *Sudan & Nubia* 10 (2006), approximately 77,000 cone-shaped ceramic moulds were excavated from Kom K, a low mound situated behind the Amun temple at Dangeil (Plate 1). Ceramic cones of this type have been discovered at numerous Amun temple sites in Sudan and identified as moulds for temple bread offerings. In Sudan, Jebel Barkal, Sanam, Kawa, Tabo and Kerma Dokki Gel are among the sites where such moulds have been noted (Bonnet 2005, 233-4, figs 13, 14; Jacquet-Gordon 1981, 21; Ruffieux 2005, 259) and their use appears restricted to temples dedicated to the god Amun. In Egypt, they have been found in cemeteries, habitation and temple sites. H. Jacquet-Gordon created a typological series of such moulds, originating from Egyptian and Sudanese sites, dating from the Egyptian Pre-Dynastic period through to the 25th Dynasty and Kushite period (Jacquet-Gordon 1981).

The initial assumption, largely based upon Egyptian models, was that the grain used in the Dangeil moulds to make the offerings was either emmer wheat (*Triticum turgidum* ssp. *dicoccum*) or a free-threshing wheat (i.e., *Triticum durum/aestivum*). Free-threshing wheats were introduced during the late Kushite period (Rowley-Conwy 1989, 135) and have been identified in Lower Nubia at Qasr Ibrim and from a medieval context at Nauri in Upper Nubia (Fuller 2004, 70; Fuller and Edwards 2001, 98-100).

Emmer wheat and barley were cultivated in Egypt from as early as the 6th millennium BC. They were the staple grains used for the production of beer and bread until the introduction of free-threshing wheat which was widely adopted after 332BC and the conquest of Alexander (Murray 2000, 511-13). The cultivation of these cereals and the production of bread and beer are depicted in numerous private Egyptian tomb paintings and reliefs of various periods, wooden models of the Middle Kingdom (cf. Winlock 1955; Vandier 1978) and discussed in Pharaonic texts including administrative documents, household accounts, and letters such as the Hekanakhte Letters (James 1962; Baer 1963) and Wilbour Papyrus (Gardiner 1948; Adams 1997). It is also mentioned in classical sources such as Herodorus and Strabo. Archaeobotanical evidence of emmer and barley usage has been gathered from several hundred surviving Egyptian bread loaves and residues remaining on ceramic vessels and sherds. For example, several ancient Egyptian samples of barley mash (EA 35976) and bread loaves, usually round, oblong, or triangular in shape (i.e. EA 5391, 36192, 5339, 5397), may be found in the collections of the British Museum.

Further, that these grains were used to make bread in Lower Nubia, at least to some extent, as late as the X-Group period (4th - 6th century AD) is certain, as five round loaves of bread were discovered during the West Bank Survey from Faras to Gemai in grave 1 at site 3-T-27, a Ballana culture cemetery (Adams 2004, 130, pl. 24, e). It should be noted that these loaves were not mould-made, came from a cemetery context and better resemble those depicted on Kushite offering trays. Regrettably, extremely few examples of bread survive from Sudanese sites and archaeobotanical research has been limited until recently.

Archaeobotanical analyses of macrofossils, phytolith and starch grain studies, were conducted on mould sherds, grinding stones and soil samples from the Dangeil Kom K excavations by Dr A. Catherine D’Andrea, Simon Fraser University, Canada and Amanda Logan, University of Michigan. Upon receiving the results of the archaeobotanical analyses, it became readily apparent that the preconceived assumptions concerning both the grain and cooking methods used at Dangeil were incorrect. Sorghum phytoliths were found on the bread moulds, grinding stones and associated ceramic fragments analysed. Sorghum starch grains were also identified. This indicates that sorghum was the grain used for offerings at Dangeil, rather than wheat or barley as was the case in Egypt, and perhaps further north in Sudan. Based upon the starch and phytoliths alone, it was not

Plate 1. Ceramic moulds from Kom K.

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1. Cf. Kenamun in Thebes (Davies 1930, pl. 58), Tji (Wreszinski 1936) and Mereruka (Duell 1938) at Saqqara, and Sm-nfr at Giza (Junker 1953).
2. Cf. Murray 2000, 508 for an extensive list of references.
3. For a detailed discussion of the analyses of residues and bread loaves see Samuel 2000, 542-44.
possible to distinguish wild from domesticated sorghum; however, charred grains of domesticated sorghum were also recovered indicating that the grain used was domesticated *Sorghum bicolor*. It is hoped that further identification of the sorghum variety will be possible with additional analyses.\(^5\)

Of note, domesticated sorghum dating to the 1\(^{st}\) century BC has been identified at Meroe. The Meroe samples were sieved and largely taken from various domestic deposits in the 50-metre trench. One came from the destruction and final floor level within temple M720. None of the samples came directly from bread moulds, other ceramics or grinding stones (Shinnie and Anderson 2004, 366; Stemler and Falk 1981). Further to the south, carbonised sorghum grains were also discovered at Jebel Tomat dating to the 3\(^{rd}\) century BC (Anwar 1989, 105).

It appears that the Kushites, at least those in the Meroitic heartland, adopted the Egyptian practice of using moulds for offerings made to the god Amun, but modified their usage to suit their own needs, local rituals and traditions. The victory relief of King Sherekaror (AD 20-30), carved at Jebel Geili, bears silent witness to indigenous belief in the connection between the god(s), late Kushite royal power and the food grain sorghum, as the god depicted gives the king the bounty of all of these things.\(^6\)

D. Edwards has noted the strong connection between the late Kushite rulers (Meroitic) and sorghum. He suggests, likely correctly, that this bond forms part of the ritual role of kingship in the region, perhaps as part of the king guaranteeing fertility, successful harvests etc. (Edwards 1996, 76).

Such modification of Egyptian practices has been discussed by L. Török with regard to the incorporation of non-Egyptian scenes into Meroitic pyramid chapel reliefs. “The inclusion into the chapel relief program of non-Egyptian scenes, such as the funerary dance of Nubian women accompanied by drum players, also suggests a Meroitic reinterpretation of borrowed rites” (Török 1997, 514). Further, while Török suggests that “the cults of the Nubian deities Apedemak, Arensnuphis, and Sebiumeker indicate a syncretism in which indigenous traditions were interpreted and articulated in Egyptian terms” (1997, 504), it seems that the converse was also true with Egyptian cultic traditions being interpreted and practiced by the Kushites using indigenous Kushite idioms.

It might be suggested that following its introduction, initially, this type of mould offering was restricted to the region north of Jebel Barkal. It is notable that few remains of early Kushite (Napatan) religious buildings, particularly Amun temples, have been discovered south of Jebel Barkal. A couple of datable blocks have been discovered at Meroe (cf. Grzymkowski 2004, 168, no. 148) in the Amun temple and Sun temple for example, but considering the amount of archaeological work conducted in the Butana region, and recently in the Fourth Cataract, this absence is striking. Religious structures certainly existed but might have been constructed of a material less durable than stone. They were also not necessarily dedicated to Amun. It is as yet uncertain as to how widely Amun was worshipped south of Jebel Barkal prior to the late Kushite (Meroitic) period, and in what incarnation or form.

Further, pending future archaeobotanical investigations, it may be hypothesised that the usage of wheat or barley for Amun temple offerings was determined by geographic proximity to Egypt and that this may have been restricted to the early Kushite (Napatan) phase. Archaeobotanical analyses conducted at Qasr Ibrim indicated that emmer wheat (*Triticum turgidum* L. ssp. dicoccum) and hulled barley (*Hordeum vulgare* L.) were the prevalent crops there during the early Kushite (Napatan) period. A major transition occurs at Ibrim during the late Kushite period around the mid-1\(^{st}\) century AD, wherein domesticated sorghum (*Sorghum bicolor* [L.] Moench. race *bicolor*) becomes the main grain crop in evidence, though barley remained in frequent use as well (Clapham and Rowley-Conwy 2006, 7; Rowley-Conwy 1989, 134). Currently, it is unknown if sorghum was used specifically for moulded offerings in Amun temples north of Jebel Barkal during the late Kushite (Meroitic) period. Were this the case, it likely followed the widespread adoption of domesticated sorghum and the accompanying irrigation technology required to facilitate such an expansion into that region.

So the question then arises, what sort of bread product can be made in a mould with sorghum, or is bread being made at all? With this in mind, a series of ethnoarchaeological inquiries and experiments were conducted at Dangeil with the assistance of Toma Hamid, whose time, culinary skill and insight we gratefully acknowledge. Sorghum is essentially gluten-free and does not rise.\(^8\) The modern bread-type products made with sorghum are flat, thin, unleavened and usually cooked on a hot griddle, such as *kisra* (Hamid 1993, 169-186; Lyons and D’Andrea 2003, 523) (Plate 2). The only sorghum foodstuff currently produced in Sudan in a mould is a firm stiff porridge, called *awda*.\(^9\)

At its simplest, to make *awda*, sorghum flour is mixed

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\(^5\) Cf. De Wet et al. 1979, for a discussion of variability in *Sorghum bicolor* and the characteristics of wild, versus domesticated sorghum.

\(^6\) Cf. Haaland 2006, concerning the cosmology of food.

\(^7\) It is further noted that the widespread cultivation of sorghum in an arid area such as Lower Nubia would have to be accompanied by the adoption of saqia irrigation, because as a summer crop additional water would be required to compensate for the low Nile level. Emmer wheat and barley, being winter crops, have no such similar requirements [if they were grown exclusively on *nikoba* land (ed.)] (Clapham and Rowley-Conwy 2006, 7).

\(^8\) For a discussion concerning the botanical and chemical characteristics and behaviour of various East African grains, including sorghum, cf. Lyons and D’Andrea 2003, 523-524.

\(^9\) Some confusion exists over the terminology used to describe porridges and breads made of sorghum within different regions of Sudan and between rural and urban settings. Cf. Hamid 1993, 113.
with water and is often left overnight to ferment, though in some places in Sudan (e.g. western Sudan), \textit{aceda} is made from unfermented dough (Hamid 1993, 113-4). The following morning, the mixture is strained and heated over a fire in a pot (Plate 3). The mixture is continuously stirred and during the process of cooking the dough becomes progressively thicker (Plate 4). When it is done, the top is somewhat elastic. If it is overcooked or overheated, the product becomes inedible to the modern tongue, though this may not reflect ancient preferences. This particular aspect was amply illustrated during our experiments. Moulds, such as bowls, are lubricated with water or sometimes with a little oil then the cooked sorghum porridge is added (Plate 5). At this point, the porridge is ready to eat. When the thick stiff porridge is removed from the mould, it maintains its shape (Plate 6). The moulds themselves are not baked or cooked and consequently display no evidence of burning.

An experiment was conducted wherein some of the sorghum \textit{aceda} mixture was added to a Kushite bread mould that was nearly complete. Were the mould complete, it would have been necessary to break it to remove the contents, but in this case, it was not required. The \textit{aceda} took the shape of the mould, becoming somewhat cone-shaped. The production of \textit{aceda} or an \textit{aceda}-type firm porridge may be suggested as one possibility for the use of the bread moulds. However, due to the small size of the majority of the moulds...
There is evidence to suggest that the Kushites consumed beer, although direct archaeobotanical evidence is lacking. For example, the classical geographer Strabo mentions that the Ethiopians [Kushites] consumed millet [sorghum] and made a drink from it (Strabo XVII, II, 2). A Kushite graffito from Musawwarat es-Sufra, situated in the Meroitic heartland of the Keraba, depicts two people, identified by the excavators as ‘happy beer drinkers’, drinking out of a jar through a straw (Hintze 1979, 140-141, fig. 16). Lines are drawn around the drinker’s head and it has been suggested that these are to indicate that the drink is intoxicating. The method of consumption shown in the graffito is one currently used by beer drinkers in the region of the southern Blue Nile (Hamid 1993, 22, fig. 1.3) and in parts of central Africa such as Uganda (Haaland 2006, 6, fig. 5). Later, during the 10th century AD, an Egyptian official from the Fatimid court Ibn Selim el-Aswani (as related in the geography of Ahmad ben Ali Maqrizi) recorded that ‘white dhurra’ was used by the inhabitants of Soha to make beer (mizr) and during the 12th century AD, the Arab geographer Al-Idrisi noted that millet (alzurr) was used for making beer (mizr) in the kingdom of Makuria (Vantini 1975, 274, 613).

At this point, it remains uncertain whether a sorghum beer or a firm porridge was produced in the Dangeil moulds. It is hoped further archaeobotanical study of the sorghum phytolith signature and starch grains will be able to determine which of these possibilities the Kushites chose to offer to their god Amun.

**Acknowledgements**

The work at Dangeil by the Berber-Abidiya Archaeological Project gratefully acknowledges the support of the National Corporation for Antiquities and Museums, The British Museum, the Foundation Michela Schiff Giorgini, USA, and the Royal Ontario Museum, Canada. The archaeobotanical component of the project is based at Simon Fraser University and the University of Calgary, Canada. It is led by Dr A. Catherine D’Andrea and Dr Diane Lyons. Support by the Werner Grenn Foundation is gratefully acknowledged. For additional information please see Anderson and Salah 2006.

**Bibliography**


Bonenet, C. 2005. ‘Le site de Doukki Gel, L’enceinte de la ville Égyptienne et les travaux de restauration,’ Genava LIII, 227-238.


