Faculty of Arts

History Department

Journal of History & Future

Gold as a Lens for Understanding Meroitic Power,

Expansion, and Decline

Prepared by

Hend Elfiky

Lecturer at the Faculty of African Postgraduate Studies, Cairo University.

مجلد 39/ عدد 78/ يوليو 2025
Vol.39/ No.78 July. 2025
مجلة التاريخ والمستقبل/ كلية الآداب / جامعة المنيا
J.H.F / Faculty of arts / Minia University

Gold as a Lens for Understanding Meroitic Power,

Expansion and Decline

Prepared by

Hend Elfiky

Lecturer at Faculty of African Postgraduate Studies, Cairo University.

Hend.elfeky@cu.edu.eg

Abstract

The Meroitic kingdom, which flourished in the Middle Nile Valley from the third century BCE to the third century CE, was profoundly shaped by its relationship with gold, both as a material resource and an ideological symbol. Far more than a precious metal, gold served as a cornerstone of statecraft, religious expression, and economic organization. This study investigates how gold influenced the emergence of state power, the mechanisms of territorial expansion, and the factors contributing to the kingdom's eventual decline**.** By tracing the evolution of gold usage, from its sacred integration into early royal ideology to its diminished presence in later funerary and architectural contexts, the research identifies gold as a diagnostic indicator of Meroe's political and economic trajectory. Drawing on a combination of epigraphic evidence and archaeological analysis, particularly the variation in gold weights, including two unpublished objects housed in the British Museum and the Petrie Museum, this study demonstrates how changing patterns of gold visibility and institutional control mirror the transformation of Meroe's administrative and economic structures.

Keywords

Gold; Meroitic economy; long-distance trade; ritual use of gold; inscriptions; Gold weights; Petrie Museum: UC 44298 a–c, UC 44230 a–d; British Museum: EA 64423, EA65765**;** state development; political fragmentation; economic decline.

1. Introduction

Meroe originated as a city-state centered around a fortified royal capital and gradually expanded its influence over a vast territory stretching from Jebel Moya and Sennar in the south to the frontiers shared with Persian, Ptolemaic, and later Roman Egypt. Strategically situated along active caravan routes,[1] the city of Meroe functioned as a critical nexus linking the Nile Valley to the Red Sea and extending westward across the savanna. Its geographic location facilitated economic and cultural connections between Central Africa and the Mediterranean world. The rulers of Meroe governed a network of settlements and urban centers extending along the Nile, from Lower Nubia to Sennar on the Blue Nile, as well as key sites in the Butana region.[2]

For centuries, the Meroitic state-maintained control over a complex and strategically managed economic network. Trade routes were closely monitored and protected, serving both economic and ideological purposes. Trade not only ensured access to vital resources but also acted as a medium for cultural transmission and elite consolidation. Within this context, trade was shaped more by political authority than by market forces. Elites controlled imports via redistribution systems, while exports, especially gold, were extracted through tribute and taxation, reinforcing centralized rule.[3]Adams suggests that the wealth and authority of the Meroitic state were predominantly sustained by long-distance trade and commercial exchange. [4] This commercial system extended northward to Egypt and southward through the savanna, positioning Meroe as a linchpin in transregional trade in gold, ivory, and enslaved persons.[5] Historically, the state frequently relied on warfare and raiding, particularly along its peripheries, as key mechanisms for resource acquisition. [6]The exchange of gold played a pivotal role in this network, significantly contributing to the accumulation of wealth by the rulers of Meroe.[7]

Gold in Meroe was far more than a precious metal, it served as a political, economic, and spiritual cornerstone of both statecraft and religious ideology.[8] Within the highest tiers of exchange systems, particularly in ceremonial gift transactions, gold—esteemed as a prestige material—emerged as the quintessential offering. [9] Regarded as a tangible manifestation of divine essence, gold was associated with immortality, divine radiance, and cosmic order (*M3ʿt*). It played a central role in temple construction, royal burials, and cultic rituals.[10] State-sponsored mining expeditions into the Eastern Desert—

often coordinated with religious motivations, underscore the administrative capacity and ideological investment of Meroitic rulers. Under strong dynasties, gold extraction was seen as both an economic priority and a spiritual act.[11] The lower chronological boundary for this activity is likely marked by the growing influence of the nomadic Blemmyes, who began to disrupt mining operations in the Eastern Desert around 230 BCE.[12]

From the third century CE, the kingdom experienced growing instability. Tombs became smaller, temple activity declined, and state structures weakened.[13]

The contraction of long-distance trade, once concentrated in the hands of the royal court, indicated the decline of state power, a development that paved the way for the emergence of more locally based and regionally autonomous policies. Gold production likewise appears to have diminished as Eastern Desert tribes gained greater independence.[14] In response, Meroe shifted from a model of direct control to one grounded in barter-based exchange, adopting a frontier policy reminiscent of Roman diplomacy, whereby both the Blemmyes and the Noba were managed through alliance strategies that mirrored Roman practices of subsidizing or resettling potentially hostile frontier populations.[15]The conquest of Meroe by the Kingdom of Aksum in the fourth century AD constituted a pivotal turning point in the regional balance of power in Northeast Africa. The rise of Aksum undeniably played a decisive role in accelerating the economic decline of its Nilotic neighbor. As Aksum expanded its influence and secured control over major trade routes, it progressively undermined Meroe's commercial preeminence. This reconfiguration of power disrupted long-standing economic systems, diverted trade flows and resources, and ultimately contributed to the disintegration of the Meroitic state.[16]Aksum's strategic role in the acquisition and distribution of high-value luxury commodities. These goods were sourced either from regions under direct Aksumite control, obtained through local trade networks, or transshipped from more distant areas. Notably, gold imported from Sudan was exchanged for salt extracted from the Danakil Desert.[17]Aksumite expansion may have triggered population displacements that disrupted Meroitic society, as suggested by records of a third-century Aksumite military incursion into Meroitic lands.[18]While direct evidence of Meroe's response is lacking, some scholars propose that the state encouraged

the migration of Noba groups to reinforce agricultural and military capacity in the south.[19]

By the mid-fourth century CE, the Meroitic capital was largely abandoned, and centralized authority dissolved. Nevertheless, localized revivals, especially in Lower Nubia, suggest that the decline was not uniform but rather a fragmentation of the core.[20]At the core of the kingdom, the urban center of Meroe itself gradually lost its prominence, as public buildings were abandoned and the site ceased functioning as a political and religious capital, the construction of royal pyramid tombs ceased, and only a few rulers from this era are securely attested, most notably King Teqorideamani in 253 CE. Under his reign, official delegations led by Pasan took an active role in the religious life of Philae, with Pasan himself performing rituals that were traditionally reserved for the king. This growing Meroitic involvement reached its peak in AD 260 with a formal agreement between Meroitic envoys and the Philae priesthood, which granted the Meroites extensive authority, most notably, the unprecedented right to appoint temple prophets. This assertion of power was documented in both Greek and Meroitic inscriptions, and one embassy even reinforced its authority visually through temple imagery. Together, these records attest to a system of shared governance over temple estates and religious functions in the Dodecaschoenus.[21]Later genealogical reconstructions suggest the presence of several subsequent kings, but none appear to have ruled beyond 350 CE. [22] Despite the broader state-level decline, Lower Nubia experienced localized economic resurgence during the Late Meroitic period. This revival has been linked to improved irrigation and renewed interactions with Roman frontier economies. [23] Though often described as grassroots recovery, archaeological evidence suggests central support may have played a role. The fragmentation of Meroe thus did not equate to full collapse, but rather the erosion of centralized control. In its northern provinces, regional officials continued to administer local affairs, while the southern savanna regions experienced relative expansion and connectivity. Ultimately, Meroe's decline opened a power vacuum that was exploited by King Ezana of Aksum, whose campaigns targeted the Black and Red Noba, the Rhrhs, and the Medjay.[24]This fragmentation eventually led to the rise of three successor kingdoms, laying the groundwork for the Christian medieval Nubian polities.[25]

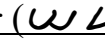
This study aims to examine how gold functioned as a central axis in the political economy, religious ideology, and territorial administration of the Meroitic kingdom. It investigates the relationship between gold production and state formation, its symbolic role in legitimizing power, and the extent to which changes in access to gold contributed to the kingdom's decline. By synthesizing archaeological evidence, inscriptions, and historical sources, the research seeks to assess whether gold can serve as a reliable lens for interpreting the rise and fall of Meroitic state power.

2. Gold terminology

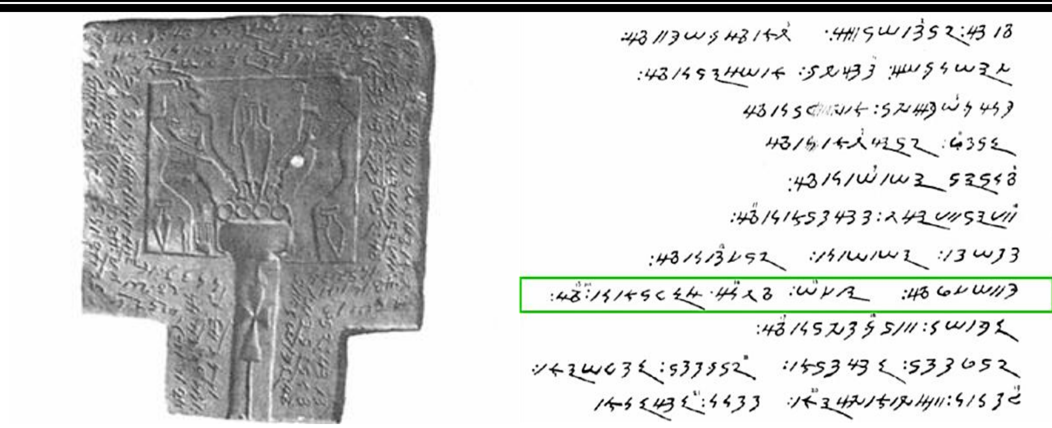
The Egyptian terminology [ *nbw* ("gold")],[26] related to gold mining is sparse. The *Turin Papyrus Map* mentions *bꜣk nbw*, meaning "gold mining", while the verb *jʿj nbw* refers to "gold washing", especially in the context *qnr n jʿj nbw*, meaning "transport troop of the gold washers", the leaders of these transport troops held titles like *ḥrj pḏt* "overseer of transport". [27] Goldsmithing in ancient Egypt was closely associated with the "metalworkers" group". In most cases, ancient Egyptian texts refer to them simply by the term "metalworker" (*nbtj nbt kꜣt*), unless more specific terms such as "goldsmith" (*ḥm n nbw*) or "he who works gold" (*irw nbw*) were used.[28]

The Meroitic terminology [*nbr* () -" gold/ [29] golden"] [Trans. C/Tardif/ Tardif A].
Appear as a noun in:

- REM 0278/12-13

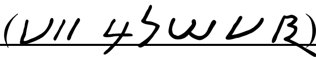
nbr () with following adjective: (fig.1).[30]

krorolo:absolowi:qorbtowi: nbr: wneli:ipẖetelo:wi
"gold (with the quality) wne": activity of Netewitar: "the gold (with the quality) wne, it is he, who makes it pẖe."[31]



(fig.1) Inscription Kar. 78, the offering table G.182 from Karanog.

- REM 1182/11

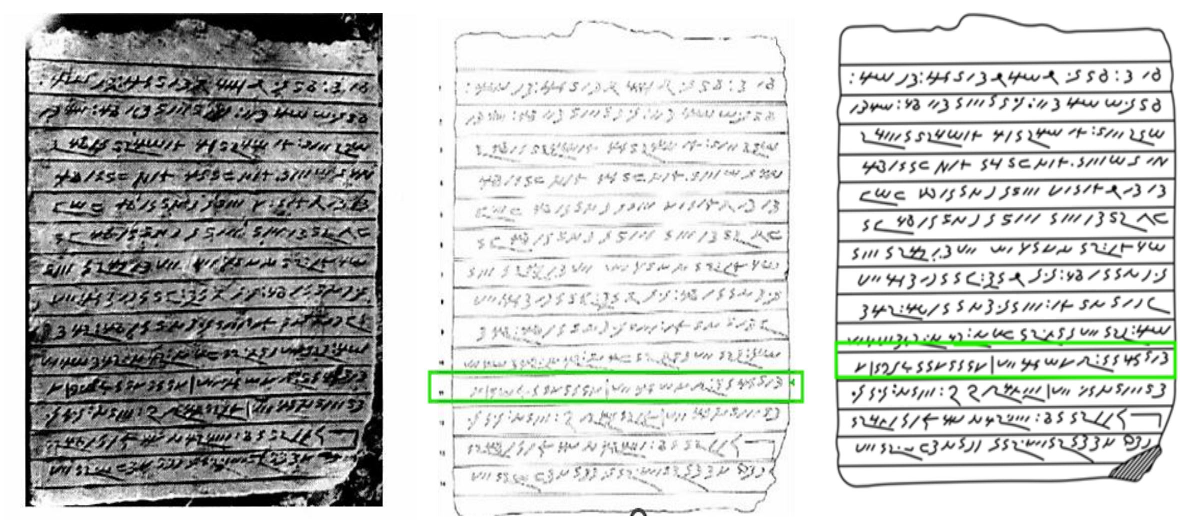
nbrlise () -" of gold" [Tardif A]

[*nbr* ("gold") + - *li* (article)+ -*se* (genitive)]

kid: kisrise qelile: nbrlise 1 belebel tore 1

qelile nbrlise –"a collar of gold" [32]

Gift of the Roman emperor Maximinus Daia[33] (fig. 2).[34]



(fig.2) Stela & Facsimile from Tomb 8 of the 1928 Necropolis at Qasr Ibrim& facsimile of the stela by Mohamed Ibrahim.

<u>As adjective in:</u>

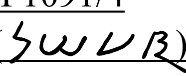
-<u>REM 1090/8-9:</u>

Koro: nkb[i] t: wilowi: *ẖlbine: nb[rl:] yetmdelowi:petedew: qr[e]tel:yetmd[e]lowi:*

The deceased, [M]Natemahar, is described as being in a *yetmde*[35]-relationship with the holder of this title:"golden *ẖlbine"*[36](fig.3).[37]

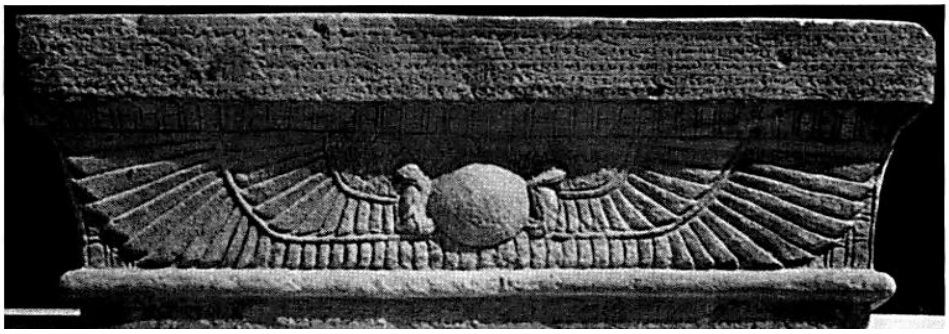
(fig.3) Fragments& Facsimile of a Stela from Tomb WT2 at Sedeinga & facsimile of lines 7, 8,9, by Mohamed Ibrahim.

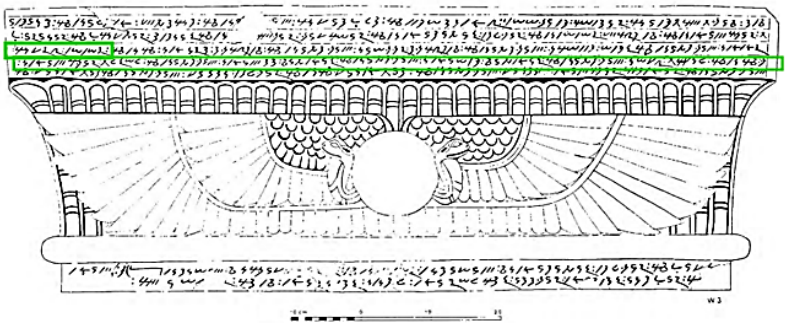
-<u>REM 1091/4</u>[38]

<u>*nbrl*, () -"the gold" [Tardif] [*nbr* ("gold") +-*li* (article)]</u>[39]

kroro: nkblit: wilowi: ḥlbıne: nbrl: yetmdelowi: petedew: qretel: yetmdelowi:

The deceased, [M]Natemahar, is described as being in a *yetmde*-relationship with the holder of this title:"golden *ḫlbine"* (fig.4).[40]





(fig.4) Lintel from Tomb W T 2 at Sedeinga, facsimile of inscription Sed. W 3,
facsimile of Lines 10,11 by Mohamed Ibrahim

3. Classical sources documenting Meroitic gold resources

The earliest known classical reference to Meroe's association with gold is attributed to Agatharchides of Cnidus, a 2nd-century BCE Greek writer affiliated with the Ptolemaic court. He records that Ergamenes I was the first Meroitic ruler to break away from the religious authority of the Amun priesthood at Napata by executing all the priests[41] within "*the golden temple of the Ethiopians*."[42] The Greek historian Diodorus Siculus, writing in the 1st

century BCE, described the process of gold extraction as involving the burning of hard rock to make it friable, and the breaking of softer rock using iron tools. These operations were supervised by specialists who directed the workers, although the labor itself relied more on brute strength than skill: "*The gold-bearing earth which is hardest they first burn with a hot fire,*[43] *and when they have crumbled it in this way they continue the working of it by hand; and the soft rock which can yield to moderate effort is crushed with a sledge by myriads of unfortunate wretches. And the entire operations are in charge of a skilled worker who distinguishes the stone and points it out to the labourers; and of those who are assigned to this unfortunate task, the physically strongest break the quartz-rock with iron hammers, applying no skill to the task, but only force, and cutting tunnels through the stone, not in a straight line but wherever the seam of gleaming rock may lead*."[44]

In the early 1st century CE, Strabo remarked that "*the island of Meroe has many mountains and large forests, and it is populated partly by nomads, partly by hunters, and partly by farmers. There are also copper, iron, and gold mines, and various kinds of precious stones.*"[45]

By ca. AD 40, Pomponius Mela noted a reversal in value perception due to material abundance. In Meroe, "*gold is more abundant than bronze*," *and thus bronze became the more precious of the two, while gold was used for mundane items or even fetters for criminals"*.[46]

Around the mid-1st century CE, Pliny the Elder affirmed the region's mineral wealth, stating: "*The intervening district between Napata and the coast is notably rich in gold.*"

Finally, in the early 3rd century CE, Philostratus recounted in his *Life of Apollonius of Tyana* that "*when Apollonius reached the border between Aithiopia and Egypt at Sycaminos (modern Maharraqa), he encountered a range of luxury goods, including 'uncoined gold, linen, ivory, roots, perfume, and spices*."[47]

In the *Alexander Romance*, ca. AD 300,[48] gold emerges as the central motif symbolizing the economic prosperity and material wealth of the Kingdom of Meroe. The narrative emphasizes Meroe's affluence through the lavish gifts Queen Candace sends to Alexander, including one hundred bars of pure gold, golden crowns, and cultic statues—portraying the kingdom not only as politically autonomous but also as economically advanced. The hyperbolic reference to a river flowing with water and gold further underscores the

image of a land rich in natural resources. The description of Candace's palace—with its gilded ceilings, gold-embroidered furnishings, and ivory-inlaid furniture—points to a high level of artisanal development and access to luxury materials. Even the mobile throne, drawn by elephants and adorned with royal ornamentation, reflects the investment in visual displays of economic power. Within this framework, gold functions not merely as a symbol of royal legitimacy, but as tangible evidence of Meroe's sophisticated economy and abundant wealth as imagined in the Hellenistic worldview,[49] as follows:

[7] "*My ambassadors are bringing you 100 ingots of solid gold, 500 Aithiopian youths, 200 parrots, 200 apes (sphinx), 201 and for our god Ammon, protector of the Egyptian frontier, a crown of emeralds and unpierced pearls, 10 chains bearing seals 80 ivory caskets."*[50]

21[1] "*for the apple trees glinted gold like the the lemon trees among the Greeks, and there were bunches of grapes that you could not hold in one hand, and pomegranates with the circumference of ...,205 larger than melons".*

22 [2] "*He saw (in Meroe) the palace shining with golden ceilings and stone walls. There were beds with silken covers, wrought in gold, and couches with feet of pearls and beryl. The head-rests were held together with thongs of leather, [5] A river was flowing there, gushing forth water mingled with gold, like another Pactolus."*[51]

4. Archaeological evidence of gold as an indicator of state development and decline in Meroe:

During the Meroitic period, Kush's gold economy exhibited features comparable to that of ancient Egypt, with ore likely processed near the Nile and possibly refined at the Temple of Philae, where gold workers were active and temples functioned as financial institutions.[52] Gold remained a principal export to Ptolemaic Egypt, and it is generally assumed that Egypt's relations with Meroe were motivated by the desire to secure access to both gold and iron.[53] Meroe's gold wealth was sustained through a network of small mines, the use of forced labor, and military control over gold-producing tribes; however, both the volume of production and the technical sophistication of its extraction declined over time. As in the late Ramesside period, the

Meroitic kings lacked the military capacity to dominate the Eastern Desert tribes, leading to the abandonment of high-risk mining zones and a shift toward riverine gold sources or barter with local groups that retained control over the desert mines, rendering the system politically fragile.[54]

Archaeological evidence from Lower Nubia, including basin-like installations within Meroitic territory, points to gold-processing activity likely linked to nearby mines such as Wadi Allaqi.[55] In a broader chronological perspective, spanning from approximately 700 BCE to 100 CE, gold-mining operations in Nubia, extending from Napata in the south to Wadi Allaqi in the north and across to the Nile Valley, were characterized by the use of stone mills typical of the New Kingdom period. Many of these grinding tools display signs of later reuse, often in the form of central depressions on originally flat, oval surfaces, yet their distribution remains largely confined to New Kingdom sites situated near the Nile. Although the more efficient rotary quern, introduced to Egypt under Roman rule, might be expected to have entered Nubian gold-mining technology through Meroitic–Roman contact, no conclusive archaeological evidence confirms its adoption. If large-scale gold mining in remote desert regions required centralized political control, its reestablishment in Nubia after the New Kingdom likely did not occur before the rise of the Twenty-Fifth Dynasty around 700 BCE.[56]

4.1. Gold-washing basins

Archaeological discoveries in Lower Nubia have revealed numerous basin-like installations, often interpreted as gold-washing facilities, suggesting a phase of intensified gold extraction. “Ameni’s report indicates that gold washing was already practiced in Nubia as early as the Middle Kingdom.[57] Although their function cannot be confirmed with certainty, their strategic placement near the Nile and the Roman frontier indicates a role in ore processing for trade with Egypt, supporting the view that the gold trade between Meroe and Egypt, initiated under the Ptolemies, continued into the Roman period. Gold from Wadi Allaqi is known to have reached Egypt, yet the absence of Roman occupation evidence in the area suggests that control remained with local desert tribes.[58] Architectural features, such as lion-headed spouts found at both Faras and Wadi el-Arab, reinforce a Napatan or Meroitic date, further supported by finds at Wadi el-Arab,[59] including a

Meroitic funerary stela (c. AD 250–300) and two ostraca from the 3rd century AD.[60] The Faras basins likely also belong to the Meroitic period, consistent with the adjacent settlement flourishing between the 1st century BCE and the 3rd century CE.[61] Stations south of Maharraqa may have served to process ore for exchange with Egypt, where gold could be traded for Roman luxury goods.[62] According to Diodorus Siculus, the process of gold washing involved rubbing and rinsing the raw ore on a sloped surface, whereby the heavier particles would settle at the bottom while the lighter, earthy material was carried away by the flow of water.[63] However, the design of these basins, lacking repeated washing cycles, water recirculation, and suitable gradients, would have hindered efficient processing, as noted by Vercoutter[64] and Adams.[65] Their location far from known gold sources, along with the absence of evidence for large-scale Meroitic mining nearby, suggests that post New Kingdom gold processing in the region was modest, relying on simple tools rather than specialized installations. Consequently, the interpretation of these basins as purpose-built gold-washing facilities cannot be sustained.[66]

4.2. Inscriptions

Although Kush had been politically separate from Egypt since the end of the 25th Dynasty, the 2nd–3rd centuries CE, marked the political and religious peak of Meroe in Lower Nubia during Phase II (c. 175–273 CE). In this period, Meroe capitalized on the decline of Roman-backed Egyptian temples to expand its influence, funding elaborate rituals at Philae with royal gold and integrating religious devotion, political authority, and economic investment.[67] Inscriptions in Demotic, Meroitic, and Greek from the Dodekaschoenus record diplomatic and cultic missions tied to major festivals such as Khoiak (commemorating Osiris, 27 November–26 December) and ʿq the Festival of Entry (24–25 April),[68] often naming artisans and officials—particularly goldsmiths—whose repeated presence underscores Meroe's sustained ideological engagement with sanctuaries that also served as strategic geopolitical sites.[69]

Beyond the Nile Valley, inscriptions from mining sites in the Northern Atbai Desert, including Egyptian, Greek, Latin, South Arabian, and Nabataean texts, demonstrate broad cultural interaction, while the absence of Meroitic inscriptions suggests that its script and elite administrative culture were

largely confined to agrarian communities along the Nile. [70]During the Roman Empire's Third Century Crisis (235–284 CE), a period marked by civil war, external incursions by the Blemmyes, and plague—Meroitic rulers took advantage of imperial instability to extend their administrative system between the Second and Third Cataracts. By the mid-3rd century, however, this system began to fragment: the north retained administrative continuity, while the south declined under invasions by the Aksumites, Blemmyes, and Noba, revealing growing regional disparities despite ongoing material prosperity.[71]

4.2.1. Royal Inscriptions

- Stela of King Harsiyotef from Year 35

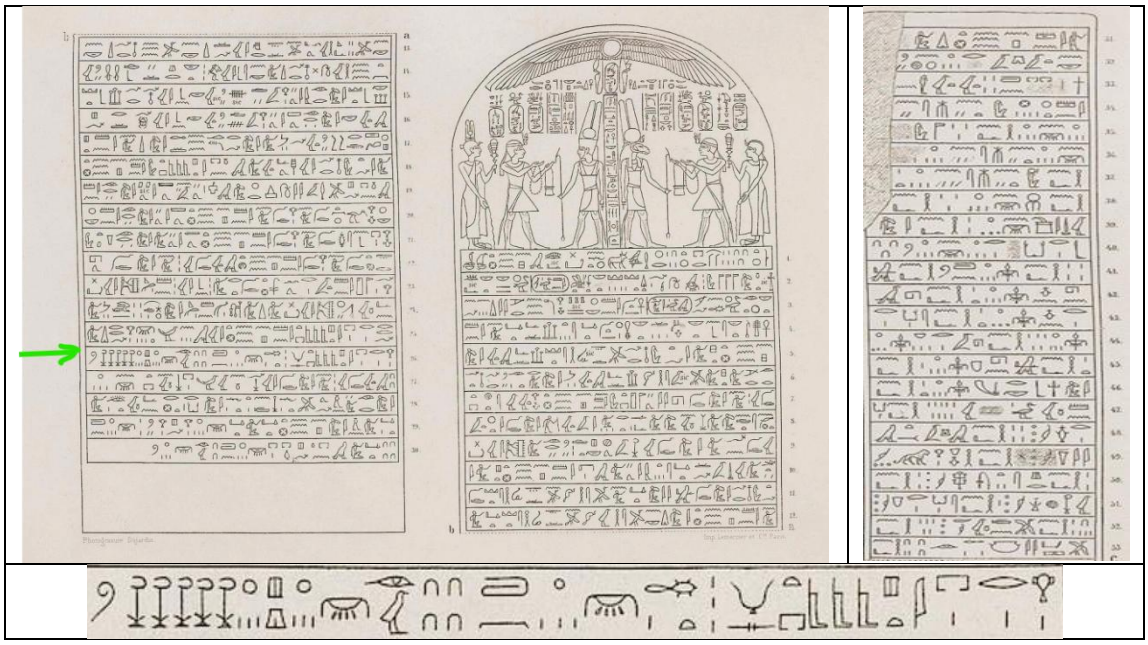
First half of the 4th cent. BC. Cairo JE 48864 (fig.5).[72] In this inscription, the quantity of gold originally expressed in *uten* units is converted into  *pek* according to a ratio of 1:128. This fractional value appears to result from a series of successive halvings—½, ¼, ⅛, 1⁄16, 1⁄32, 1⁄64, and ultimately 1⁄128.[73]

di=i (26) ḥr r3-pr ỉpt-swt (26) wp-s(t) ht nbw dbn 40 irw nbw pg 51(27)20
I put (26) on the temple, Karnak, specification, 'total': gold, deben-weight[74] 40; making: gold, thin sheets, (27) 5120.

di=i dit nbw hr p(3)=f ḥrwy 2 nbw dbn (30) 40
I had gold put on its two faces: gold, deben-weight (30) 40.

di=i dit m hnw n p(3)=f pr-ḥd nbw dbn 20
I had put in its treasury: gold, deben-weight 20.
irw nbw 100
making: gold, (deben-weight) 100.
twtw n ỉmn niwty nty msny n nbw
An image of Amun the city (god) which is made by the meseney-process in gold.[75]
ḥnᶜ 3 ntr (36) n nbw nty msny '2'
together with 'divine triad(s)' [—] (36) of gold, which are made by the meseney process, '2'.

(*37*) *ḥnᶜ Rᶜ nty msny lt*
together with a (statue of) We, which is made by the meseney-process, 1;
(*38*) *ḥnᶜ 'ᶜnḫ' n nbw 3*
(*38*) together with mirror(s) of gold, 3;
ḥnᶜ (*39*) *wdȝ n nbw 2*
together with (39) pectoral(s) of gold, 2;
hnᶜ Ỉ-(40)b-rȝ-kȝrȝ n nbw 13 (41)4
together with b(40) eads of gold, 13(41)4;



(fig.5) Facsimile of stela of King Harsiyotef, Cairo JE. 48864.

-Stela of King Nastasein from Year 8.[76]
Second half of the 4th cent. BC. Berlin Agyptisches Museum 2268.[77]
In Section 8 (lines 33–39), depict the final stage of King Nastasein's coronation ritual, Amun of Napata emerges from his sanctuary on the processional barque to consecrate Nastasen's claim to universal rule, with the gold offering serving as a tangible symbol of royal legitimacy. Section 9 (lines 39–46), present campaigns were directed against nomads, inhabitants of the eastern Nile region, whose raids mirrored those carried out by their forebears in previous centuries—most notably in the Kawa area. The records

provide a detailed account of the spoils taken after each victorious campaign, noting remarkable amounts of gold and cattle.[78](fig.6).[79]

On the left half: *rd wḏ3 n it=f* Giving a pectoral to his father.
On the right half: *di*(=*i*) *ir n=k nbw dbn n ibd sp 4*
I had made for you a deben-weight of gold in…. (Repeat) four times.[80]
hms(=*i*) *hr bt nbw* and (I) sat on the throne of gold, the king is once again depicted seated on the "golden throne".
⸢*n*-⸣ *n Ḥr n nbw 2*
of Horus of gold: 2, deben-weight 3.
The King made donations from the war booty to the temple:
(58) *nbw dbn 2000,* gold: 2000 deben-weight.[81]

(fig.6) Stela of Nastasein from Year 8,4th century BCE (Berlin ÄMP 2268).

-Kawa XIII, King Sabrakamani inscription (col. 6). [82]
Dated to the first half of the 3rd century BC, the S. face of the N. jamb, T temple. The inscription contains a list of donations.
(9) [ ] ⸢— — — — ⸣ deben 12 ⸢— —⸣
(9) [ ] ⸢— — — — ⸣ 12 deben-weight ⸢— —⸣
The description of the ceremony concludes with a series of royal donations to Amun of Napata: gardens and a vineyard in Napata, as well as additional gardens in Meroe, together with various kinds of incense, perfumes, golden statues, and ritual temple vessels.[83]

(fig.7) Fragment B, The British Museum, no.1777.

-Kawa XV. Fragment A of a stela of King Aryamani Years 9-24 (?)
From the first court of Temple A at Kawa. Early 3rd cent. BC.
Fragment A: British Museum 1777, (fig.7).[84]
(3) *nbw* [—] gold, [—];[85]

Fragment B: at the site (in two pieces).
(four columns and eight lines, reading from right to left):
(2) […*di*]=˹*i*˺ *n=k nbw* ˹—˺
(2) […] ˹I˺ [give] to you gold, ˹—˺ ,[86]

-REM 1141 [QI 1964/1], Qasr Ibrim. Queen Amanisakheto and prince Akinidad.
The stele was found in church, north aisle, reused in church flooring, and now in the British Museum, Inv.-Nr. EA 1836, dated to late 1st cent. BC early lst cent. AD.[87] It consists of 38 lines of Meroitic cursive inscription, cut into the sandstone surface. The passage suggests that the mention of Isis in both Meroe and the Abaton may have been intended to symbolize the full extent of the Meroitic kingdom. While the inclusion of Amun remains uncertain due to text damage, the donation list notably includes basic, abundant goods—like *ato* water, *asr* meat, and other everyday items—rather than precious materials such as gold. This indicates that the purpose of the text was to record the practical establishment and maintenance

of a cult for deities such as Amanap, Isis, Horus, and perhaps Mas. The context aligns with the post-21/20 BCE peace treaty between Rome and Meroe, reflecting the Meroitic rulers' reassertion of religious and political influence,[88] or it may indicate the beginning of a shortage of this product (fig.8).

(25) *k [e] l w: a to: a [p] e se l: s d te:*

"Water of the quality *ape* shall be offered" and meat *asr of the quality ape shall be offered" apesel p[lte]"*

(26) *a s r: a p e se l: p [l te]: a to: e*

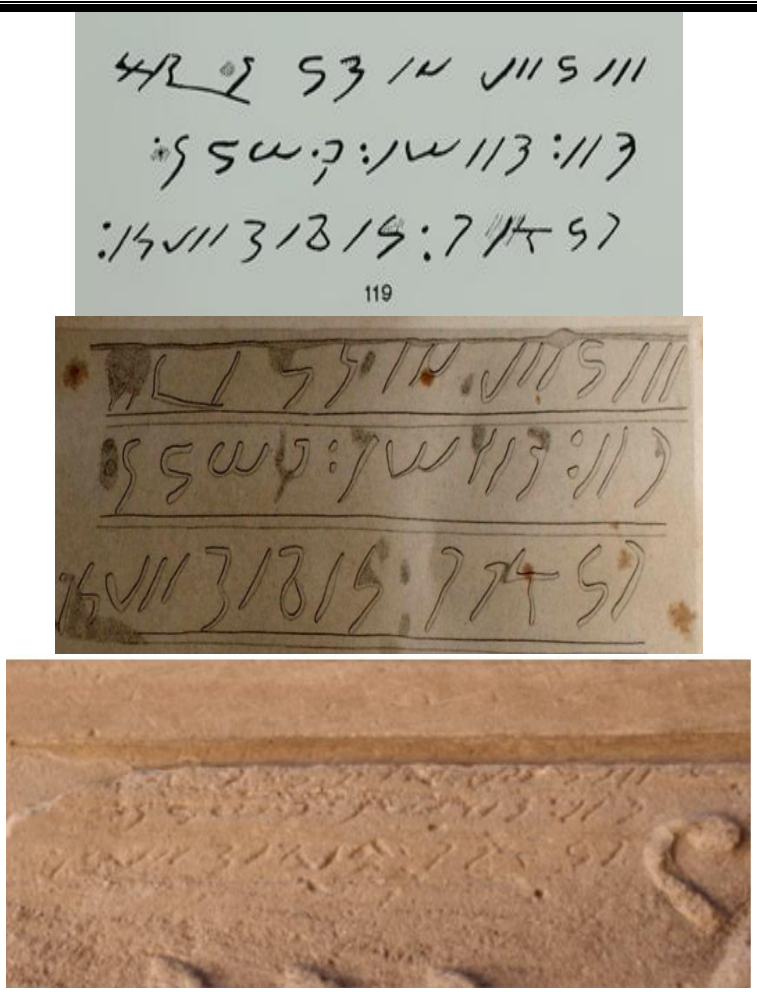
"Meat of the quality *ape* shall be donated". The text continues with another nomination of *ato* – "water".[89]

(fig.8) REM 1141, Qasr Ibrim, stela reused to repair the floor of the cathedral.

-REM 0119

Meroitic graffiti, belonged to king Yesbokhe-Amani found on the Hadrian Gate at Philae reference his name, it is dated to 300/350 CE. These inscriptions are positioned above a depiction of a king offering cultivated lands interpreted as symbolizing the revenues of the Dodekaschoinos—to the goddess Isis. It is plausible that the king himself, or a designated official, participated in religious ceremonies focused on the Abaton sanctuary, however, gold is not attested as an offering in these texts (fig.9).[90]

(1) Yesebqhemni (2) qo,, qoro,, mret (3) metet,, lo Wosselo,[91]



(fig.9) King Yesbokhe-Amani's inscription, Philae Island. (REM 0119).

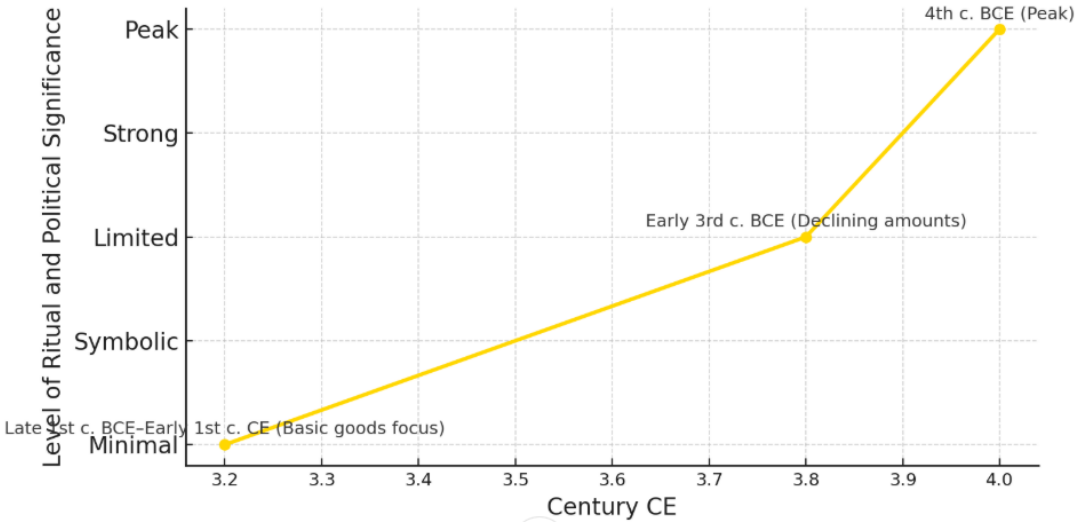
Table 1. Summarizes the changing patterns in the quantities of gold offered by Meroitic kings and queens to temples over time. These variations—in scale, frequency, and political significance—serve as indicators of Meroe's fluctuating economic capacity and its degree of control over gold resources, as outlined:

Approx. Date	Ruler / Inscription	Gold Mentioned	Type	Economic Implication	Conclusion
380–360 BC (Year 35)	Stela of Harsiyotef, Cairo JE 48864	Conversion of gold units from uten → pek at 1:128;	Votive + Craft production	Strong central administration, standardized weight measures, relative abundance	Peak / recovery of Kushite state in late 4th cent. BC

		specified amounts (deben / thin sheets)			
335–300 BC (Year 8)	Stela of Nastasein, Berlin ÄM 2268	Large votives "gold 2000 deben"; gold + cattle as war booty after eastern campaigns	War booty dedicated to Amun	Military and economic mobilisation, gold inflow from campaigns	Sustained strength after Harsiyotef (continued peak)
Early 3rd cent. BC	Kawa XV, Aryamani fragments (BM 1777 etc.)	Votive lists (gold mentioned, but fragmentary	Temple votives	Continuation of offerings, but gold data less clear due to text damage	Early slight decline / fluctuation in quantitative evidence
1st half of 3rd cent. BC	Kawa XIII, Sabrakamani	"… 12 deben" in a donation list; fragmentary text	Temple votives	Ongoing votive system but lower quantities and scattered references	Lower stability compared to 4th cent. BC
Late 1st cent. BC	Hamadab inscription (Amanirenas & Akinidad), BM EA 1650	Long royal text, no detailed gold amounts	Royal/religious document	Strong royal presence but absence of precise gold figures	Shift towards symbolic over quantitative gold display
Late 1st cent. BC – Early 1st cent. AD	REM 1141, Qasr Ibrim (Amanisakheto & Akinidad)	Donation list dominated by basic goods (water, meat…), not gold	Cult establishment/maintenance	Pragmatic ritual funding, possible relative gold shortage or resource reallocation	Signs of contraction / religious-political repositioning
300–350 CE	REM 0119, Meroitic graffiti of King Yesbokhe-Amani on the Hadrian Gate at Philae	No gold attested; inscriptions above scene of king presenting cultivated lands (revenues of	Royal offering scene (land revenues)	Indicates symbolic and territorial offerings rather than precious metal donations; reflects shifting economic-religious priorities	Late phase of Meroitic rule; gold absent from recorded offerings, suggesting limited availability

		the Dodekascho inos) to Isis			or change in ritual focus

The chronological sequence of royal inscriptions highlights the evolving role of gold as both an economic resource and a medium of legitimacy. Early monumental dedications gave way to symbolic references, reflecting the transformation of Meroitic political authority and economic stability. a trajectory clearly recorded in the following chart (fig.10).



(fig.10) Chronological Progression of Royal Gold Inscriptions in Meroitic Period.

4.2.2. Goldsmiths Inscriptions

Goldsmiths occupied a pivotal position in the religious and political spheres of the Meroitic kingdom, most notably through their involvement in annual ceremonies that entailed the gilding of statues of Isis and Osiris in prominent temples such as Philae and Dakka. This gilding was a sacred act within the Meroitic religious calendar, especially during the *ʿq* procession, a rite associated with kingship and renewal. Although gold smiths continued to produce technically competent work during the reign of the Meroitic kings *from (438-278 BCD)*, their designs generally lacked refinement and aesthetic sophistication.[92]

Inscriptions from Phase II of the Meroitic period frequently mention gold, gilding, and goldsmiths, reflecting their prominence in cultic practice. The

Khoiak Festival, a funerary rite held at Philae, [93]involved transporting gilded shrines—especially those of Isis—by boat to Biga Island (the Abaton), regarded as the burial place of Osiris.[94] The ritual included libation offerings symbolizing his resurrection and was performed by Nubian priests on behalf of the Meroitic monarch, adding a royal dimension and allowing ʿ*q* to be interpreted as a "ceremonial entry of the king." Graffiti inscriptions confirm these processions, describing the gilding of shrines and public celebrations sponsored by the Meroitic court, illustrating the integration of Nubian and Egyptian religious traditions under Roman rule and reinforcing themes of death, renewal, and divine kingship.[95]

Beyond their ritual duties, goldsmiths also undertook administrative and economic responsibilities within temple institutions. Royal delegations often included goldsmiths tasked with delivering gold for crafting cultic equipment, supporting priesthood, and gilding divine images. Their frequent appearance in inscriptions suggests they held institutional, possibly hereditary, positions as intermediaries between religious devotion and royal patronage. Many bore the title "agent," [96] indicating they managed cultic finances, particularly for Isis and the Nubian god Arensnuphis, while also collecting gold from Nubia, possibly Wadi Allaqi, transporting it to Philae, and producing ritual items. Graffiti near depictions of Horus of Kubban, whose cult center lay close to gold sources, further supports this multifunctional religious and economic role.[97]

-Sehel Island, Famine Stela, Dodecaschoenus. Early 2nd cent. BC.

The Famine Stela, though presented as an Old Kingdom inscription by King Djoser, was likely composed under Ptolemy V in the 2nd century BCE to serve political and religious purposes. It tells a fictional story of a famine and Djoser's donation of the Dodecaschoenus to Khnum, aiming to legitimize Khnum's traditional rights against the growing influence of the Isis cult at Philae. Scholars see it as a Ptolemaic reworking of earlier texts, using archaism to assert temple authority and historical continuity.[98](fig.11).[99]

(26) *ḥnʿ di r-10 m nbw*
And there shall be given one tenth of the gold,

(*28*) *hnʿ msprtyw hnʿ wr-ḥmw ḥnʿ* [*ḥm*] *ww nbw*
and the 'metalworkers' and the master craftsmen, and the goldsmiths,

ḥnᶜ, ᶜḫnᵓ rw (29) ḥnᶜ, Nḥsyw ḥnᶜ, ỉst, ᶜprw
and the ᶜprisonersᵓ, (29) and the Nubians, and the crew of Apiru,

ḥnᶜ wn mr ḥỉ tnw nbw ḥḏ ḥmt ᶜ3wt n m3ᶜt
And there shall be an overseer who measures the amount of gold, silver, copper, and truly precious stones,
ḫt r.3b gnwtyw r ḥwt nbw
(i.e.) the things which sculptors requisition for the "compound of gold",

(31) <r> ms *ᶜḥmw r sᶜḥᶜ šspw wn sh3*
in order to produce sacred images and to restore statues that are damaged.[100]

(fig.11) Sehel Island, Famine Stela.

Wayekiye family inscriptions:

The Wayekiye family was a prominent Nubian lineage of priests and civil administrators who held significant authority in both the religious and political structures of Lower Nubia during the mid-second century AD.[101] Spanning eight generations, its members occupied influential positions within temple hierarchies and royal bureaucracies, operating at the intersection of Meroitic and Egyptian institutions. They collaborated closely

with Egyptian priests at major cultic centers such as Dakka and Philae, while simultaneously serving as officials of the Meroitic crown. Their enduring prominence is attested by a substantial corpus of multilingual inscriptions—written in Demotic, Greek, and Meroitic—that document their sustained involvement in ritual and administrative affairs. The Wayekiye maintained their power through a carefully cultivated bicultural identity that integrated Egyptian and Nubian traditions. They adhered to a dual system of inheritance, combining Egyptian patrilineal descent with Nubian matrilineal succession—particularly the transmission of office from maternal uncles to nephews. Strategic intermarriage among elite families further consolidated their position, enabling the accumulation of multiple priestly and administrative titles. Their ability to navigate both cultural systems made them key figures in the governance of Meroitic Nubia and in the assertion of political and religious authority within the Roman-controlled Dodekaschoenos.[102] A central aspect of their religious function was the annual "work" involving the gilding of statues of Isis and Osiris. This ritual act—attested in Phase II Nubian inscriptions—was more than a decorative procedure; it represented a sacred obligation carried out by Nubian delegations sent from the royal court of Meroe. These missions brought gold offerings specifically designated for the production of cultic equipment, the financial support of the temple priesthood, and the gilding of divine images at Philae and Dakka. The act of gilding was a key feature of the Nubian religious calendar, especially during the celebration of the ao-procession for Osiris. The importance of gold in these rituals is underscored by the repeated mention of gold, gilding, and goldsmiths across the epigraphic record, highlighting the family's deep involvement in sacred material culture and their role as intermediaries between royal power, religious tradition, and the divine realm.[103]

-Dakka 33 First half of the 3rd cent. AD.[104]

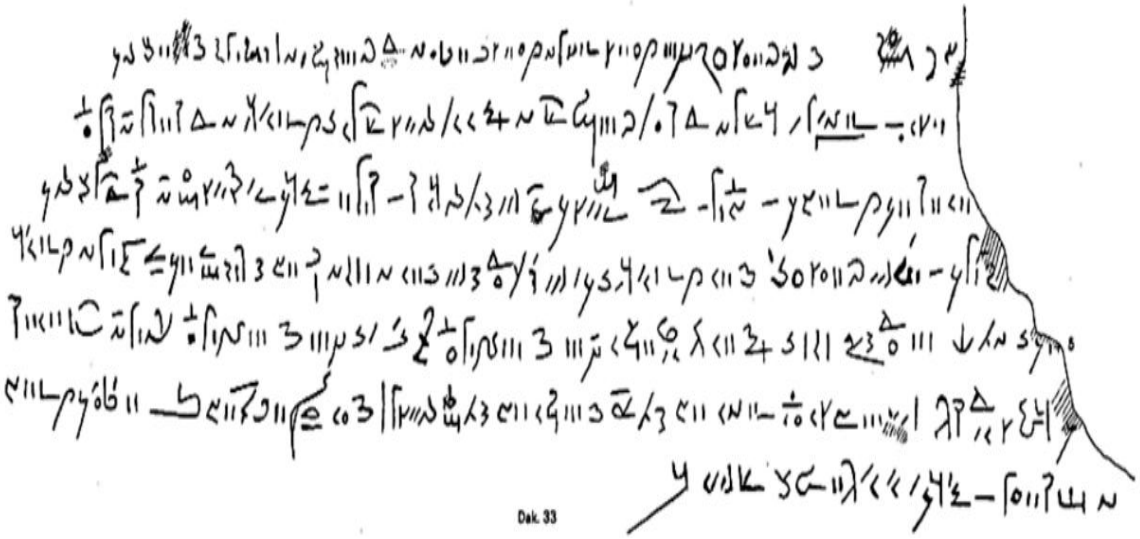
The Demotic inscription located outside above west door of the Sanctuary, likely dating to the reign of a Roman emperor whose name is now lost, can be chronologically framed by the presence of the epithet *nt xw* alongside the names of rulers such as Alexander Severus and Valerian. The first attestation of the *ʿq*-procession in Nubian graffiti dates to the second generation of the Wayekiye family, when Paese's son, Bek, recorded his performance of the rite at Dakka.[105] The Demotic graffito of *Bêk*, provides valuable evidence for

a centralized religious-administrative system operating in the Dodecaschoenus region during the Roman period. Bêk**,** son of Paêse**,** who held the titles *qoreñ* and "agent of Isis," played a key role in overseeing temple restoration works and organizing rituals for Thoth of Dakka **o**n behalf of Peqêreñ**,** suggesting his subordinate status within a structured priestly hierarchy. The recurrence of similar titles in contemporary inscriptions, such as those from the Augustan period, reflects the long-term stability of this administrative framework. Bêk's offices were inherited from his father, in accordance with the hereditary transmission of religious roles typical of Egyptian temple institutions. He was a member of the prominent Wayekiye family, further underlining the significance of lineage in the continuity of temple service (fig.12).[106]

(2) …–]*t n Bk sꜣ Pꜣ-Ỉst pꜣ ḳw ꜥ?ꜥ rny n Ỉst pꜣ rṯ n Ỉst ỉr hb r pꜣ ḳwe n Pꜣ ntr ꜥ3*
…] ꜥ-ꜥ to Bêk son of Paêse the qêren of Isis, the agent of Isis, to work on the shrine (?) of the great god.

(3) [*Ḏḥwti n P3-nb*]*se ỉw=f ḥḏ=f n nb n ꜥrꜥ 8ꜥ (r-) ḏr=f*
[Thoth of the Pnub] *S*, gilding it with gold of ꜥone eightꜥ all over,

(5) *ḏd Ỉ,ỉr py šY ꜣꜥ Ḏḥwti n Pꜣ-nbse* (*6*) [*r dỉt n=*] *f ꜥḥꜥ kỉ iꜣyt ꜥꜣt nfrt ỉrm te=f ḥmyt ỉrm ne=f ḫrṯw šꜥ– ḏ.t*
That this great divinity, Thoth of Pnubs, should (6) [give hi]m long life, great and good old age,
with his wife and his children forever,
ỉw ḏbe ḫpr ỉw wꜣḥ=f ḥḏ (*7*) *Pꜥ ḳwe n rn=f r ḏꜣḏꜣ st 200*
for that he had gilded (7) the shrine in question on 200 places.



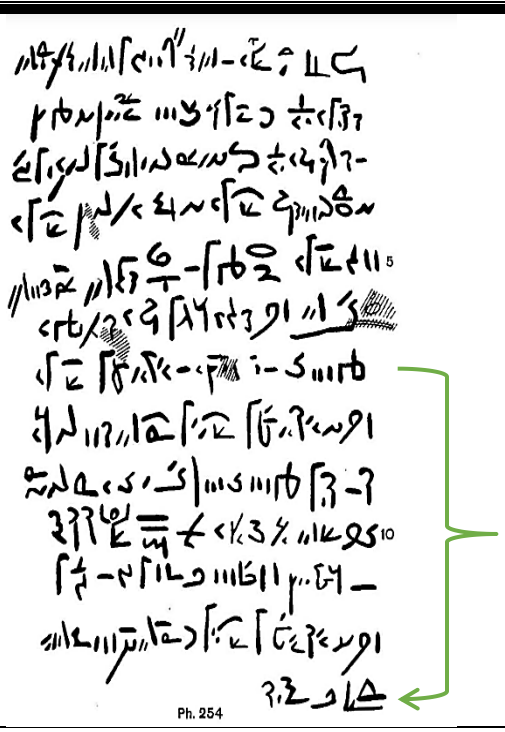
(fig.12) Facsimile of Dakka 33, Outside above west door.

-Ph. 254, (lines 7-13)

Demotic graffito of Wyte from Generation 6 of the Wayekiye family, dated to the reign of Ptolemy XII Neos Dionysos (80–52 BC),[107] refers to a **gilded statue of Osiris,** inscribed on the southwest wall of the Pronaos (PM 267), specifically on the pilaster south of column one, which also forms the northwest face of the Second Pylon near the stairway leading into the pylon:

ỉw=y ỉr n tȝ wp.t n twt nʾIs.t ḥnˁ pȝ twt n Wsr ḫn tȝ md.t rmt n nṯr ỉw=y ỉry.w ḏd r ỉr=t ỉn.t=n ḫr rnp.t nb(t) mtw=t tỉ n=nḥḥ n ˁnḫ ỉw wȝḥ=y ḥḏ=w n nb ḥnˁ pȝ twt n Wsr nt ḫn n py ˁ.wy qbḥ (fig.13).[108]

“I doing the work of a statue of Isis and the statue of Osiris out of my piety; I doing them that thou bring us each year and give us much length of life, I having gilded them with gold together with the statue of Osiris which is in this House of Coolness.” [109]



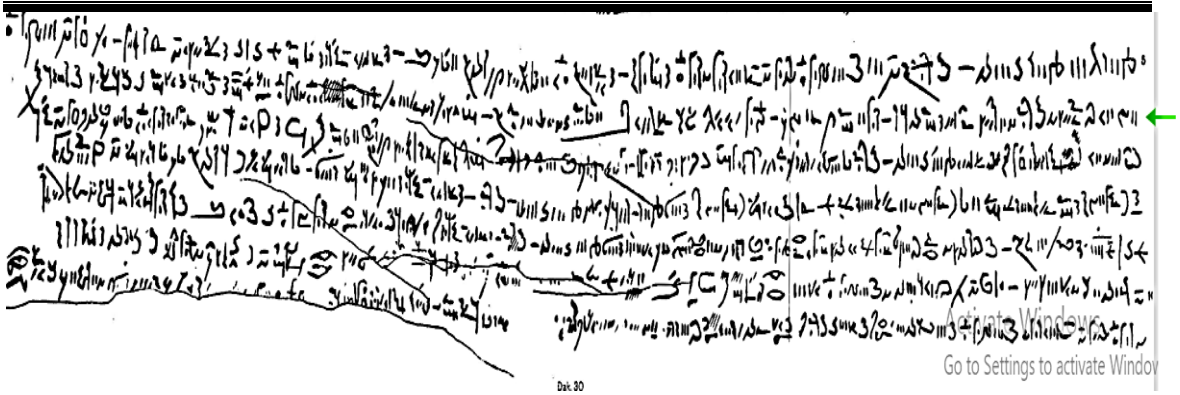
(fig.13) Facsimile of Ph.254.

- Dakka.30. Dated to Mid-3rd cent. AD

Hieroglyphic and Demotic graffito of Hornakhtyotef II, located outside over west door. Hornakhtyotef II, a senior priest from the Wayekiye family, held hereditary titles including *lesonis* of Thoth at Dakka and *chief ritualist* at the Meroitic court. Trained in astronomy and magic, he played a dual role in temple administration and royal ritual service. His inscriptions, particularly Graffito 251, indicate that during his tenure he received five royal letters from Meroe, demonstrating Meroitic control over the Dodecaschoenus. His celebration of the Isis festival at Philae "on behalf of the kings" further confirms his official status as a Meroitic priest acting within Egypt. This reflects a political-religious compromise in which Meroitic priests held delegated authority in Lower Nubia (fig.14).[110]

(6) *iw=n ḥḏ=f n nb r ḏ3ḏ3 n st 500*

(6) overlaying it with gold on 500 places,[111]



(fig.14) Facsimile of Dakka 30, outside over west door.

***Wrš* family inscriptions:**

The family of *Wrš* should be placed roughly in the second half of the 3rd century.[112]

There is an inscription from Wrš's father dated to AD 265,[113] and several from his son—some found at Philae and one from the quarry at Girtas (Qirtassi). This artisan appears to have worked under a Meroitic king, who is named in the hieroglyphic portion of inscription Ph. 68 as part of the dating formula.[114]

-Ph. 68, (lines 1-13)

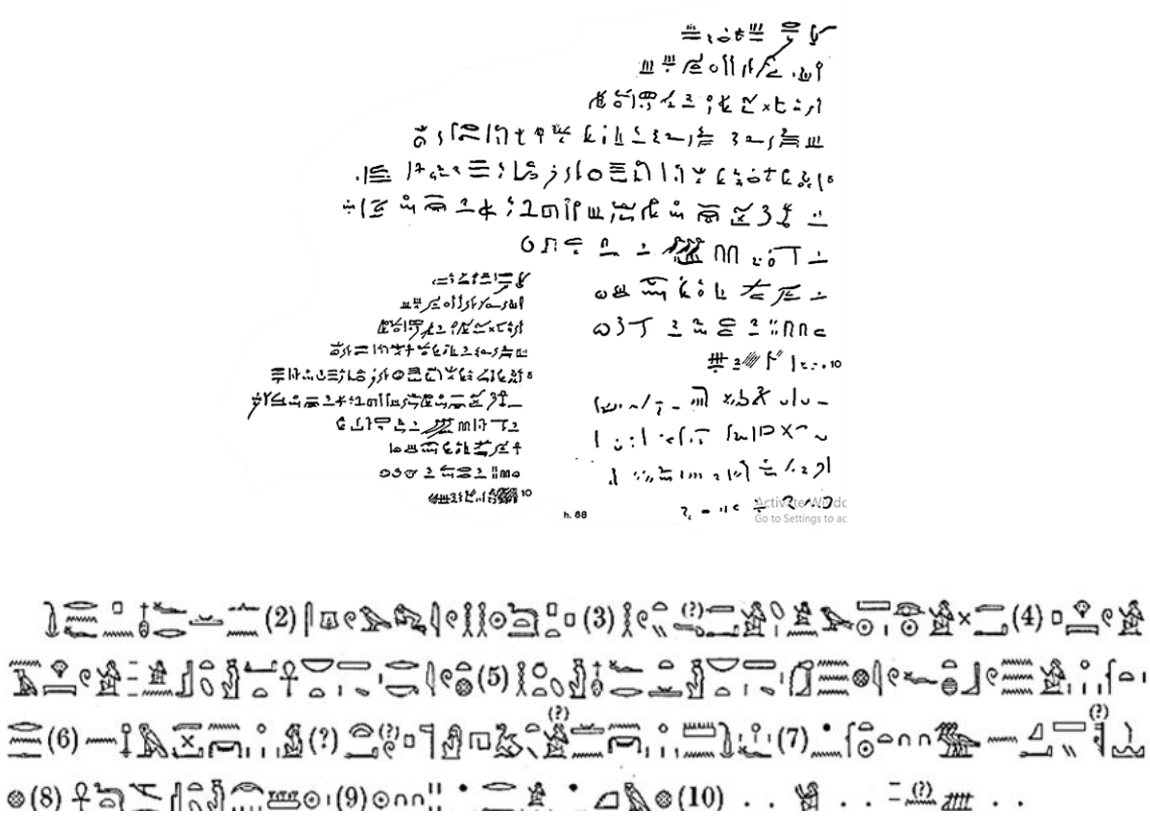
The graffito inscribed on the stairwell wall of the eastern wing of the Back-First Pylon and associated with the Khoiak festival at Philae temple, it is a bilingual text composed in red ink, with the initial ten lines rendered in hieroglyphic-hieratic script and the subsequent lines in demotic.[115] The inscription commemorates *P3-di-p3-ḥwte,*[116] son of *Wrše*, a prominent goldsmith and cultic official, who held titles such as "Master of the Masters of Isis," "Bearer of the Epiphany of the God," and "Gilder of His Monuments." It records his ritual anointing in the 20th regnal year of a Meroitic king named *Bʿw n* Qʿš Biunqash—a ruler otherwise unattested but whose name includes the toponym Kush—on the 24th of Choiak, according to the Egyptian calendar. The demotic section includes a conventional benediction, invoking the eternal preservation of *P3-di-p3-ḥwt* good name. The name of his great-grandmother, *T3-p3-Mrwe.t*, suggests a Meroitic lineage,[117](fig.15).[118]

rn=f pȝ n nfr nn(2)sgw ỉw nḥḥ ḏt pȝ tỉ pȝ (3) ḥwty sȝ n wrše(4) pȝ ḥry.w nȝ ḥry.w n ȝs.t dj.t ꜥnḫ nb.t tȝ-wj rȝk (5) ḥnw.t nfr.t nb.t tȝ-wꜥb ỉw=f tḫb ḥsb.t rn=s(6) n ḥm n nb.w(?) ḫꜥw pȝ nṯr ṯȝw n nb.w mntj=f(7) ḥsb.t 20 n Ḳꜥ-šy(8) ꜥnḫ-ḏt mr ȝs.t ibd 4 ȝḫ.t(9) 24 n rmṯ n kmt

The inscription continues in demotic:

(11) *n Pȝ-ti-pȝ-ḥwte sȝ n Wrše (12) pȝ[ḥry] ḥry.w n ꜥS.t… (13) ḥnꜥ ne-f…sn-w(?)…*

"This his good name remain un (2) destroyed forever and eternity: Petep(3)howt, son of Wersh (4) the master of the masters of Isis, giver of life, lady of Philae (5) good mistress, lady of the Abaton; he being anointed in the year named (6) as (?) gold-worker, bearer of the epiphany (?) of the god, gilder of his monuments, (7) in year 20 of Biunqash (8), ever-living, beloved of Isis; Choiak (9) 24 of the Egyptians (10)……..(11) for Petephowt son of Wersh (12) [master of the masters] of Isis…..(13) with his… brethren(?)…'[119]



(fig.15) Ph. 68, Facsimile of Ph.68, Philae. The first pylon.

-Ph. 305

The graffito located on the Second Pylon, south wall of bridge, records a formulaic invocation for the enduring remembrance of *P3-ti-p3-ḥwte*—son of *Wrše* identified as a goldsmith. "May his name remain here year by year", before a possibly deified concept or localized divinity associated with "refreshment" (*Qbḥe*?) (fig.16).[120]

rn-f 𓂝 *ty ḫr rnp·t bḥ p šy n p* [*qbḥe?*] *P*[*-ti-p3-ḥw*]*te s Wrše p ḥme nb.*
"May his name remain here year by year before the divinity of the [Refreshment (?)]—Pete-phowt, son of Wershe the goldsmith."

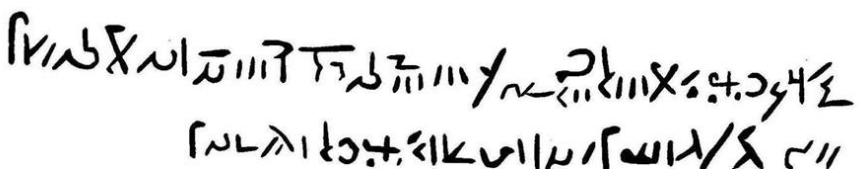
(fig.16) Facsimile of Ph.305, Philae, Second Pylon, south wall of bridge.

Asklepiades family

Agatharchides description of Aithiopia, 2nd cent. BC.[121] The artisan family of Asklepiades, inscription Ph. 303 of Asklepiades II serves as a connecting link and also as a valuable dating reference for the family of Wrš, who belonged to the same professional group. *Wrš* appears together with Asklepiades II in Ph. 303—certainly his colleague.[122]

-Ph. 303 (line 1-2)

(1) *Rn-f mn ty Śglypyte sy n P3-ti-p3 ḥwt* (2) *irme Wrše s3 P3-ti-r-ḥms-nfr.*
"May his name remain here: Asklepiades, son of Petephowt, together with Wershe, son of Peteahmensnefer" (fig.17).[123]



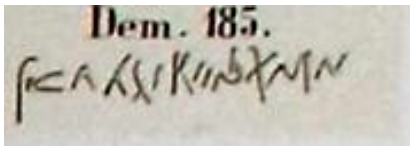
(fig.17) Facsimile of Ph.303, Philae, Second Pylon, south wall of bridge.

-Girt.1, no.185

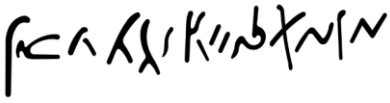
Another Demotic inscription for the same individual situated approximately 12 miles south of Debod, the kiosk at Kertassi[124] is the sole surviving structure of what was once a temple dedicated to Hathor and "Isis of the Quarry."(fig.18).[125]

P3-ti-p3-ḥwṯe s3 n Wrše

"Petepehowte, son of Wreshe,[126] was left by a master craftsman and goldsmith serving under a Meroitic king".[127]



(Girt.1, no.185), Kertassi



(fig.18) The niche with the figures and inscriptions from the east & facsimile by Mohamed Ibrahim.

-Ph. 416, Demotic graffito of Pasan AD 253.[128]

This inscription of *Pasan*, a high-ranking Meroitic envoy, inscribed at Philae in AD 253, placing it in the second half of the third century CE, carved on the south side of the western façade of Hadrian's Gateway at Philae, it is housed in the Louvre, sq. No. 27a.[129] It documents two official visits he made on behalf of King Teqorideamani (Taqereramani). During his second visit, he was ceremonially received by the priests and people of Philae, offered royal gifts and personal donations, and performed rituals typically reserved for the king. The delegation stayed for several months, participating in festivals, likely the Choiakh festival of Osiris. Pasan was joined by other Meroitic officials, including Wayekiye and Abratoye (the peseto or viceroy of Lower Nubia), who also brought gifts. The graffito includes a prayer in which Pasan asks for a safe return to Meroe and expresses hope to return to Egypt with another envoy, ***ḥr-w3.*** The text mentions delivering royal gifts to "Caesar" (likely Emperor Trebonianus Gallus), probably through the Prefect

of Egypt, and possibly refers to the appointment of a Meroitic high priest at Philae. The theological language emphasizes Isis as a divine helper, reflecting Kushite religious influence and the role of Philae as a key site of Meroitic-Egyptian-Roman interaction.[130] The inscription consists of twenty-six long lines inscribed on a single block of stone. [131]This was a period marked by political and economic instability in Roman Egypt, alongside increased Blemmyan activity and the gradual weakening of Roman control in the south — conditions that created more space for direct Meroitic engagement with Philae. It records substantial quantities of silver and gold—supplied by the Meroitic king, his son, and high-ranking officials, fashioned into finely crafted cultic vessels and presented at Philae.

(9) *pȝ(=y) ḏnf (n) nȝ nbw r.*(10) *di=w pȝ=y pe(=y) ṯsy3*

(9) my portion of the (pieces of) gold that (10) my lord gave me,

(10) *iw= n iry=w n wʿ ḳbḥe n nbw*
(10) and made them (the gold pieces) into a libation jar of gold,

iw n3 nbw n rn=w (11) ir n lytret 4t 1/2
the (pieces of gold) in question (11) amounting to four- and one-half pounds (litras)[132],

(11) *w3ḥ Wyngy3, p3 mšʿ n p3 mw dit in=w nb lytret 2t*
Weyenegeya, the general of the water, had had 2 pounds (litras) of gold brought,

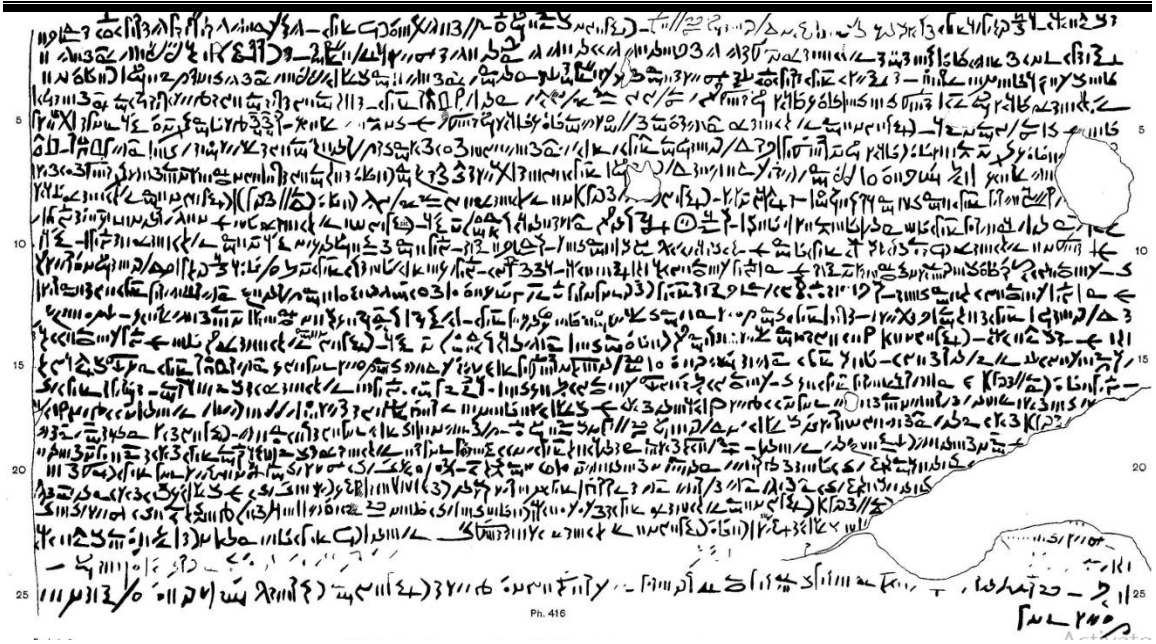
(*11*) *lw=w iry=w n sgt n nb r fiy hry t3 h3t n 1st n p; 3 sw-10*
and they were made into a golden sistrum to be raised before Isis during the three tenth days of the month,
w3ḥ Pȝ-Sʿn ḥnʿ Ḳrny3 pȝ=f sn ʿn (12) dit in=w nb lytret 1t
Pasan together with Qêren, his brother, too, (12) had sent one pound (litra) of gold,

(14) *w3ḥ=y dit nbw lytret 2t ˹1 /2˺* (15) *r wʿ phylet*
I had given 2 ˹1 / 2˺ pounds (litras) of gold (15) for a phialê,

ỉn=f kỉ wšb lt (16) n nbw ỉw w3ḥ Tḳrrmn dỉt ỉn=s s r ḥwt-nṯr n 'Ỉst
He brought another *wesheb*-vase (16) of gold, which Teqorideamani had sent to the temple complex of Isis,

lw=f ỉr n lytrt 3t 1 /2
and which amounted to 3 1 /2 pounds (litras),[133]
ỉrm kỉ lytrt 3t
and another 3 pounds (litras),
ỉw=f ỉry=w n šḥtpt n nbw
"which he made into a golden incense vessel",

The gold pieces (10) that my master had given me, intended as offerings before his mother Isis, were supplemented by an additional contribution, which we fashioned into a golden ewer and inscribed with the name of our Master. The total weight of these gold pieces (11) amounted to 4½ pounds. Wayankiye, the *strategus* of the water, presented two pounds of gold, which were crafted into a golden sistrum to be carried before Isis during the three decades. Furthermore, Pasan and Qēreñ, his brother (12), contributed one pound of gold, which was fashioned into a *ḥesō*-vase for libations to Osiris Onnophris, the great god. From Choiak day 1 to Pharmuthi day 1, during the festival in the temple of Isis—celebrated with our brethren (13), the *qēreñ*s of Isis, the prophets, and the seers (G.M.) of the priesthood—we spent eight days feasting on the dromos of Isis, with wine, beer, and meat. The people of the entire city joined in the merriment (14), honoring the king as their sovereign and sharing in our own banquets, which we had prepared despite our poverty, in the name of the king, our Master. On this occasion, I donated 2½ pounds of gold (15) for a *protome* bearing the face of Isis. On Pharmuthi day 1, Abratoi, the king's son, arrived in Philae, and we celebrated with him in the temple of Isis. He brought a *weshbe*-vase (16) of gold, sent by Teqirramane to the temple of Isis, weighing 3½ pounds, along with another three pounds, which he fashioned into a golden censer (fig.19).[134]



(fig.19) Philae. Gate of Hadrian, Ph.416 south jamb.

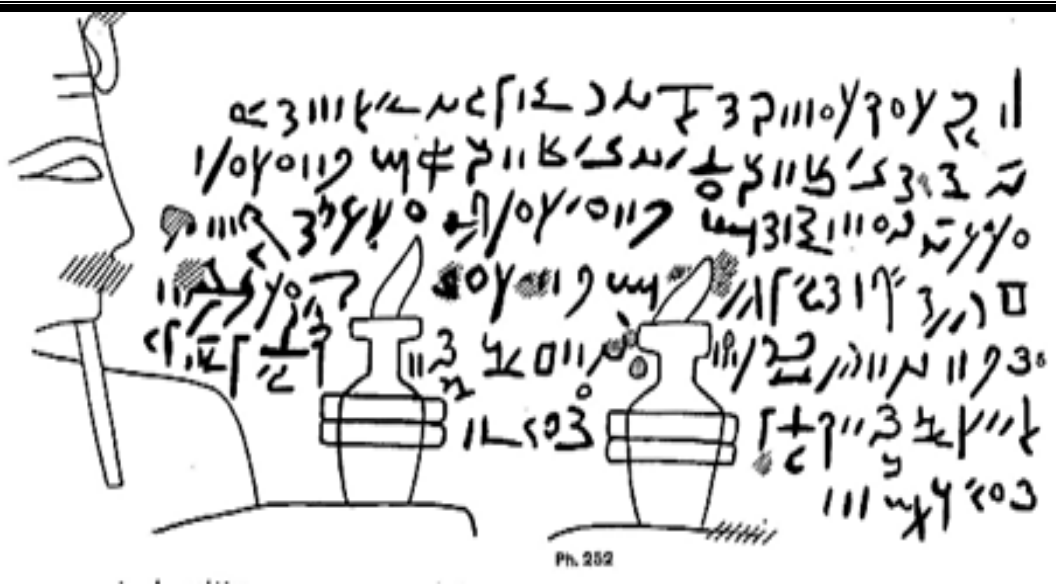
Abaryte family

-Ph.252, (line 5)

The Demotic graffito of Teos (*Ḏd-ḥr ʿ3*), located on the inner face of the west tower of the Second Pylon at Philae, stands adjacent to a relief depicting Ptolemy VIII pouring milk over an altar laden with offerings before Osiris Wennefer and Isis. Authored by Teos the Elder (Djed-hor) in the fourth regnal year of Emperor Aurelian (AD 273),[135] it includes a postscript by Abaryte, a Meroitic artist and goldsmith of Isis, who describes himself as the son of another goldsmith from a lineage spanning 303 generations. The graffito records a journey in AD 273 that included visits to Philae and the Abaton, likely undertaken during the Osirian Khoiak festival, indicating a religious pilgrimage.[136] A previously proposed alternative dating to AD 363—based on the name L'wlyne, interpreted as "Julianus"—is rejected, as Greek regnal year dating fell out of use after AD 306.[137]

(5) *mḥete 3bryte ḥme-nbw n Ist* (6) *šr ḥm nbw šʿ– ḏ.t* (7) *mʿ 303*.

(5) commemorates Abaryte goldsmith of Isis (6) son of a goldsmith forever (7) for 303 generations. (fig.20).[138]

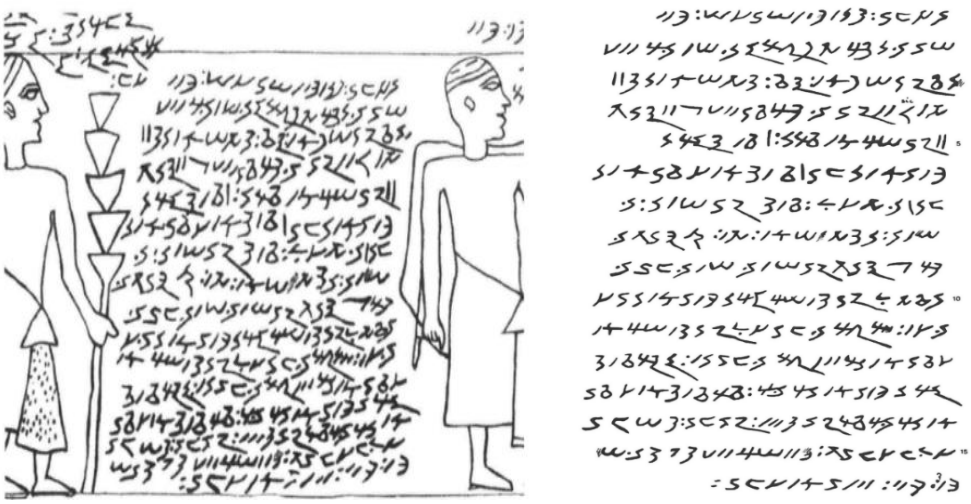


(fig.20) Ph.252, the northwest face of the Second Pylon near the stairway leading into the pylon, Philae.

- REM 0101 Philae, north wall of the 'Meroitic chamber'[139]

Dated to second half of the 3rd cent. AD., (fig.21).[140] It is considered a letter authored by one of the members of the diplomatic mission, describing the offerings presented to the deities at Philae and at the Abaton, and referring to the royal patrons who had dispatched the delegation.[141] The inscription, likely records a key diplomatic episode and mentions royal names (Maloqorebar and Lakhideamani), whose identities and relationship remain debated. A representation of Mastaraq(ye), a Meroitic envoy and member of the diplomatic mission led by Manitawawi and Bekemete accompanying the inscription.[142]

(1)tdḥe,, Mloqorebr,, qo(2)ret [=qoresel ?] Lḥidmni Ptrotrise(3)lw Armte,, kw,, sdrtelḥ 2 (4)do 6 atmi wese 12 keñ (5)2 Arite wil,, 1 Wos Pil(6)qetel ḥe 1 Wos Tebwetel (7)ḥe 1 tdbto,, Wos Arol,, t(8)rot,, *t sdrte,, do,, 5 keñt [=keñsel] (9)ḥi 10 keñ Aro trot ḥet (10)twdto Asori Pilqeteleb (11)tbo,, yiniṭhebto Asori Te(12)bweteli yiniṭhelo,, pki Wos (13)Pilqeteliti [=Pilqeteliselil],, wi Wos Tebwe(14)teliti wi a*sy,, aḥe,, mrḥe(15)bto ḥbḥñ,, qorises Mstr(16)q,, qo,, yetebḥe,,[143]



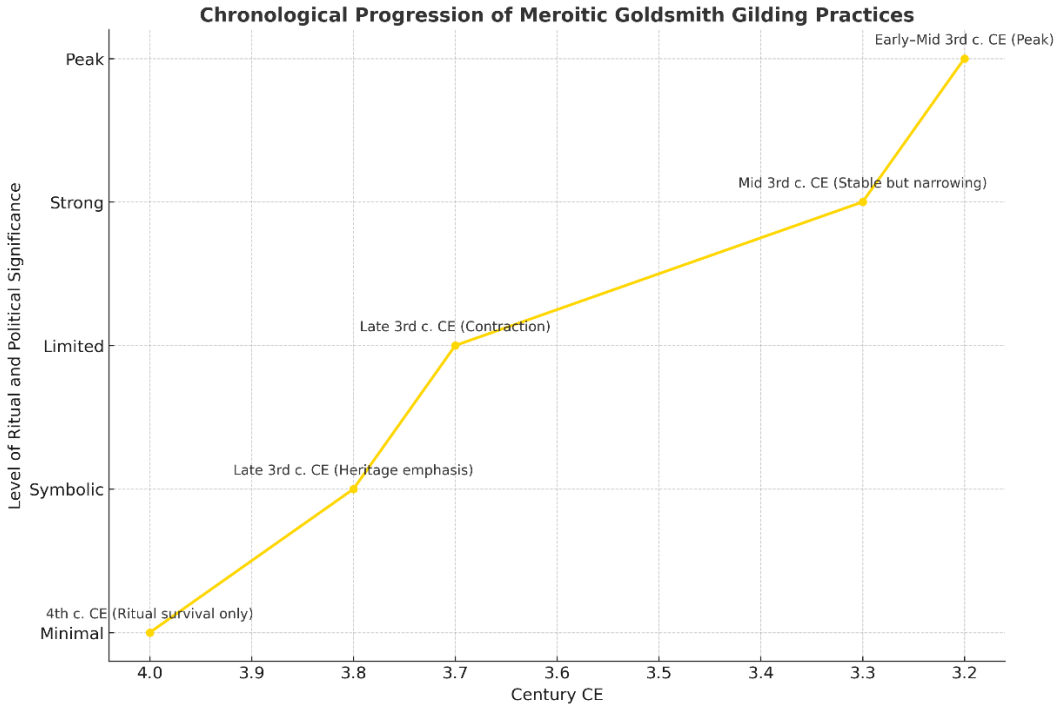
(fig.21) Facsimile of the inscription REM. 0101 of the Meroitic chamber, Philae.

By the late third and early fourth centuries CE, the weakening of Meroe's political authority and its inability to control primary gold sources made it increasingly difficult to trace gold production and circulation through inscriptions. The epigraphic record from this period becomes fragmentary, reflecting both the kingdom's economic contraction and the reduced scale of royal-sponsored cultic donations. This era also corresponds to the uncertain final phase of Meroitic rule, when figures such as Aryesebokhe—attested only by a single offering table (REM 0815)—and several others known solely from offering tables with royal formulae (e.g., Amanikhedolo, Mashaqadakhel, Amanipilade) may have been regional elites or princes rather than sovereigns. Their adoption of royal titles suggests attempts to assert legitimacy in a politically unstable context. The atypical architecture of Aryesebokhe's presumed tomb (Beg N 16) and the burial of an unnamed queen in Beg N 26, possibly the "Lady Queen" of a contemporary Latin graffito, further illustrate the transitional and fragmented nature of Meroe's final century.[144]

Table 2. Outlines how gilding practices in Meroitic temples changed over time, reflecting shifts in their scale, frequency, and political importance as indicators of Meroe's economic strength and control over gold as follows:

Period	Key Inscriptions / Evidence	Gold Activity	Economic Interpretation
4th – 2nd century BC	Famine Stela (Sehel), early 2nd cent. BC: detailed allocation of gold to craftsmen, priests, Nubians, and temple restoration.	High quantities, precise allocations; centralized control over production and temple distribution.	Golden peak — strong centralized economy, large-scale temple patronage.
Early 3rd century AD	Bêk, son of Paêse (Dakka 33, Ph.254): gilding of Thoth's shrine with 8 parts gold; hereditary offices; organized priestly hierarchy.	Substantial but targeted use of gold for cultic projects, tied to specific rites.	Still significant temple economy, though focused on specific high-status projects.
Mid–Late 3rd century AD	Wrš family inscriptions (Ph.68, Ph.305): gilding in multiple places; hereditary goldsmith roles; linked to royal patronage.	Evidence of continued craftsmanship and gilding, but on a reduced scale.	Signs of contraction — skilled artisans active, but gold use more symbolic and limited.
Late 3rd century AD	Abaryte inscription (Ph.252): mentions goldsmith lineage over 303 generations, no actual gold amounts recorded.	Gold references symbolic, focused on lineage rather than material quantities.	Shift towards symbolic continuity amid reduced resources.
Mid–3rd century AD	Pasan's missions (AD 253): delivery of gold pieces (litras) for cult objects; royal and diplomatic context.	Measured, diplomatic use of gold; quantities smaller than in earlier centuries.	Diplomatic-symbolic economy — gold as prestige gift rather than economic driver.
Late Meroitic (4th century AD)	REM 0101 (Philae, 'Meroitic chamber'): numerical donations, but no genuine gold references.	Absence of true gold evidence despite ceremonial context.	Collapse phase — loss of direct gold control, economy reliant on symbolic acts.

This chart synthesizes archaeological, epigraphic, and metrological evidence to provide a graded sequence of development for Meroitic goldsmith. A trajectory clearly recorded in the following chart (fig.22).

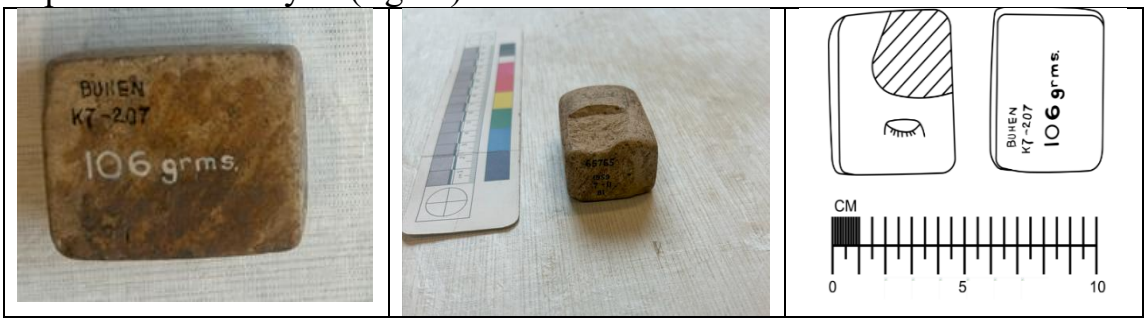


(fig.22) Visual timeline chart showing the progression from **Peak → Contraction → Symbolism** in Meroitic gilding practices by author.

4.3. Weights

Archaeological findings indicate the occurrence of Egyptian weight forms within ancient Sudanese contexts,[145] with examples dating to the Predynastic Period and specifically associated with the Naqada culture, discovered in [possibly Qasr el-Sagha or Qasr Ibrim—location identification remains uncertain due to textual ambiguity]. Reisner uncovered three inscribed gold weights at Uronarti, near Semna, marked respectively as (a) "gold 7," (b) "gold 6," and (c) "gold 5," corresponding to actual measured masses of 92.43 g, 86.26 g, and 61.43 g. [146] These values reflect an average unit closely aligned with the ancient Egyptian *beqa* standard (~13.28 g), in use since the Thinite Period. Similar weights from the same era were also found at Quft, a significant gold-working center. [147] A Middle Kingdom example of gold weights is represented by the unpublished artefact EA65765**,** preserved in the Department of Egypt and Sudan at the British Museum. This rectangular limestone weight, inscribed with the hieroglyphic symbol for gold, is

attributed to the Middle Kingdom and was excavated by Professor Walter B. Emery at Buhen in Nubia (Sudan). The piece measures 5.10 × 2.50 cm and weighs 105 g**.** It is in good condition but is currently not on display. The weight entered the Museum's collection in 1959 as a donation from the Egypt Exploration Society.[148](fig.23).



(fig.23) Weight no. **EA65765, British Museum, photo by author& facsimile by Mohamed Ibrahim.**

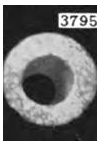
Egyptian weights continued in use at Meroe, albeit with certain variations in their values. These were most likely small fractional weights employed for the precise measurement of high-value materials—particularly gold—within a fractional system based on a unit of approximately 13 g, as evidenced by archaeological research on early gold-weighing practices. Analysis of their dimensions and values provides important insight into the cycles of economic prosperity and decline experienced by the kingdom, as follows:

-Weight no. EA64423

The unpublished artefact EA64423, housed in the Department of Egypt and Sudan at the British Museum, is a ring-shaped object of diorite with tapering edges, tentatively identified as a weight, it was recovered from the site of Jebel Moya in the Blue Nile province of Sudan.[149] The piece measures 14.70 cm in maximum diameter and 1.80 cm in maximum thickness, weighs approximately 408 grams, and is preserved in fair condition. Currently not on display, it entered the Museum's collections in 1946 as part of the bequest of Sir Henry Wellcome and is recorded under registration number 1946,1012.23[150](fig.24).

(fig.24) Weight no. EA64423, British Museum, Photo by author& **facsimile by Mohamed Ibrahim.**

-Weight no.3795



Shaped in the distinctive form of a mace head and carved from grey syenite, this weight registers 1503.5 grains (≈ 97.5 g) and standard corresponding to approximately *10 qedet***,**[151]distinguished by its notable aesthetic quality[152](fig.25).[153]

-Weight no.3943a

Fashioned from breccia in the form of a mace head, this weight measures approximately 924 grains (~59.9 g)[154]and is likewise associated with the 6.6 *qedet* standard[155] (fig.26).[156]

It is important to note that small fractional weights were used for the precise measurement of high-value materials-, particularly gold, within a fractional system based on the early gold *deben* unit (~12.9–13.0 g),[157] as demonstrated by the following example:

-Weight no. UC 44230 a–d

The group UC 44230 a–d in the Petrie Museum comprises four polished stone objects, likely used as weights, originating from Meroe and dated to the Meroitic period. The assemblage includes: (a) a red jasper cylinder weighing 4.14 g, (b) a brown stone cylinder weighing 2.25 g, (c) a brown pyrites (?) cube weighing 2.40 g, and (d) a black pyrites (?) cube weighing 3.02 g. All pieces are probably from findspot M4.101, excavated by Garstang in 1913 and formerly part of the Wellcome Collection;[158] piece (a) bears a pencil inscription “990.” The materials are identified as jasper and possible pyrites, with dimensions ranging from 0.8–1.5 cm in height and 0.9–1.2 cm in width.[159]This group of objects has not yet been published in the scholarly

literature and is known primarily through the Petrie Museum Collection Online Database (University College London, UC 44230 a–d. (fig.27).

(fig.27) Weight no. UC 44230 a–d, Petrie Museum, photo by author& facsimile by Mohamed Ibrahim.

Table 3. Presents the measured weights of objects (UC44230a series) and their calculated equivalents in the Egyptian weight system. The conversions are shown against both the *qedet* (≈9.1 g) and *deben* (≈91 g = 10 *qedet*) standards.

Object	Measured (g)	Qedet Equivalent (~9.1 g)	Deben Equivalent (~91 g)
UC44230a	4.14	≈0.45 qedet	≈0.045 deben
UC44230b	2.25	≈0.25 qedet	≈0.025 deben
UC44230c	2.40	≈0.26 qedet	≈0.026 deben
UC44230d	3.02	≈0.33 qedet	≈0.033 deben

-Weight no. UC 44298 a–c

The group UC 44298 a–c in the Petrie Museum comprises three stone objects, likely used as weights, originating from Meroe and dated to the Meroitic period. The assemblage includes: (a) a stone piece weighing 9.85 g, (b) a stone piece weighing 5.10 g, and (c) a stone piece weighing 4.23 g.[160] All items were acquired by Garstang in 1911 and are recorded as part of the former Wellcome Collection, stored in a small box marked "Meroe II, 116" and listed as part of M2.116 in the Wellcome book (Petrie Museum of Egyptian Archaeology, UC 44298 a–c, Collection Online Database, University College London[161] (fig.28).

(fig.28) Weight no. UC 44298 a–c, Petrie Museum, photo by author& facsimile by Mohamed Ibrahim.

Table 4. Presents the measured weights of objects (UC44298 a series) and their calculated equivalents in the Egyptian weight system. The conversions are shown against both the *qedet* (≈9.1 g) and *deben* (≈91 g = 10 *qedet*) standards.

Object	Measured (g)	Fraction	Qedet Equivalent	Deben Equivalent	Base Unit (g)
UC44298a	9.85	3/4	≈1.08 qedet	≈0.108 deben	12.9
UC44298a	9.85	3/4	≈1.08 qedet	≈0.108 deben	13.0
UC44298b	5.1	2/5	≈0.56 qedet	≈0.056 deben	12.9
UC44298b	5.1	2/5	≈0.56 qedet	≈0.056 deben	13.0
UC44298c	4.23	1/3	≈0.46 qedet	≈0.046 deben	12.9
UC44298c	4.23	1/3	≈0.46 qedet	≈0.046 deben	13.0

Table 5. Relationship between form, material, and chronology of weights and their alignment with distinct metrological systems (with a focus on the *qedet* standard for gold)from the Petrie Museum.[162]

No.	Object Description (Photo)	Type Name (Petrie)	Material	Chronology	Probable Weight System
1	Red cylindrical	Cylinder 	Red jasper	Amratian–Gerzean period, later reuse	Qedet (Egyptian) for gold, unit approx. 13.64 g
2	Brown cylindrical	Cylinder	brown stone	Same as above	Qedet probable part of the

					ancient Egyptian system
3	Brown cube	cuboid (sharp/rounded edges) 	Brown stone Pyrites	Sharp edges (Dyn. 1), rounded (Dyns. 4–6), sharp again (Dyn. 12)	Stater (Attic) unit 8.6 g, introduced to Egypt via Greek influence
4	Black cube	cuboid 	Dark stone Pyrites	Dyns. 22–30, common in the “Sela” standard	Sela (Phoenician) unit approx. 11.33 g
5	Light green oblong	Oblong/Barrel 	Bronze	From Dyn. 3, peak in Dyn. 18	Qedet Egyptian gold standard
6	Dark green mottled oblong	Oblong/Barrel 	Bronze	Influenced by Syrian models, peak in Dyn. 18	Qedet, same Egyptian standard
7	Small dark green oblong	Oblong (small) 	Bronze	Fractional unit of the gold standard	Qedet fraction of a full unit

Conclusion

The textual and material evidence demonstrates that the prosperity of Meroe was fundamentally based on its ability to control, extract, and redistribute gold. From the fourth to the second centuries BC, royal inscriptions such as the Famine Stela and the donations of kings (Harsiyotef and Nastasein) reflected a phase of centralized power and abundance, in which gold was

directed toward temples, priests, and royal projects, becoming the tangible medium of authority and religious legitimacy. Craft practices such as gilding and fine goldsmithing further enhanced the image of wealth and power, underscoring gold's role as both an economic and symbolic foundation of the state.

With the prosperity of the Meroitic kingdom and the expansion of gold's role in religious rituals and monumental architecture, the kingdom consolidated its cultural and political identity. Yet subsequent changes reveal a clear trajectory of decline: the archaeological record indicates a reduction in the scale and quality of goldworking, while the Meroitic weights document a shift from a precise metrological system based on a fixed unit (c. 13 gm) to the proliferation of smaller fractional weights (¼, ⅕, ⅙). This contraction reflects a decreased flow of gold and shrinking networks of exchange, pointing to a gradual economic downturn.

The graffiti of Philae, especially Demotic and Meroitic, add another dimension to this transformation. They highlight the continued presence of artisans and goldsmiths into the fourth century CE, though with a stronger emphasis on symbolism and hereditary identity rather than substantial production. These inscriptions also reveal a shift in Meroe's economic strategies: reliance on gold was progressively replaced by an increasing focus on agricultural resources, integrated into religious legitimacy through the cult of Isis. This adaptation illustrates how the state responded to the loss of direct control over gold mines by adopting alternative policies such as agricultural management and its deployment as an instrument of authority.

Taken together, these strands of evidence, inscriptions, craft practices, and weights, demonstrate a progressive trajectory: from centralized abundance that enabled Meroitic kings to undertake large-scale projects supported by a stable metrological system, to a symbolic phase where large quantities were replaced by smaller, more representative elements. Gold, therefore, was not merely an economic resource in Meroitic history but a critical interpretive lens through which both the rise of central authority and its gradual erosion, culminating in the kingdom's collapse in the fourth century CE, can be understood.

Tracing the material and symbolic trajectories of gold not only illuminates the economic and political structures of Meroe but also opens promising avenues for future research into the relationship between natural resources

and religious-political legitimacy in the Nile Valley. Renewed investigation of mining sites, the study of unpublished weights and coinage, and expanded analysis of Meroitic and Demotic inscriptions could together provide a broader framework for understanding the dynamics of rise and decline in Meroe, and their connections to wider regional and transregional developments in antiquity. Nevertheless, the precise sources of gold referenced in inscriptions from the Twenty-Fifth Dynasty and subsequent periods, as well as those associated with archaeological finds in Kush, remain unidentified, and it is not yet possible to estimate with accuracy the volume of gold exported during this era.

This study thus highlights the importance of integrating archaeological, epigraphic, and metrological evidence in reconstructing ancient economies and political systems. It also calls for interdisciplinary approaches, combining archaeology, philology, and material science, to further explore how resources like gold shaped, sustained, and ultimately failed to preserve state power in ancient Nubia.

Acknowledgement

I am deeply indebted to the curators of the Petrie Museum—Catriona Wilson, Head of the Petrie Collection, and Lisa Randisi, Curatorial and Collections Assistant—as well as to Christina Geisen, Curator on Duty at the British Museum, for kindly granting me permission to examine and photograph the weight pieces discussed in this study, several of which are presented here for the first time. Their assistance in enabling the precise weighing of these objects has been of immeasurable value. I also wish to express my profound gratitude to Professor Jochen Hallof, one of the world's foremost Meroitic scholars, for his generous support and for providing essential scholarly resources that greatly enriched the present research. Finally, my heartfelt thanks are due to Dr. Hasnaa Abdellatif, Lecturer of Ancient Egyptian Language (Demotic) at the Faculty of Archaeology, Fayoum University (Egyptology Department), for her meticulous review of the Demotic texts included in this work and for her insightful observations.

Footnotes:

[1] Soghayroun, Intisar el-zain, Meroe, the City State, the Kingdom, the Empire why Meroe? University of Khartoum, 2019, p.35-36.

[2] Fagan B.M., People of the Earth: An Introduction to World Prehistory, 10th Edition, Upper Saddle River/N.J., Prentice Hall, 2001, p.438; Edwards, David N.: *The Nubian Past: An Archaeology of Sudan,* London, Routledge, 2004, p.143.

[3] It can be understood that the commodities exported by the state—chief among them gold, were not primarily produced through free trade or individual prospecting. Rather, they were collected from the population or from regions under state control through systems of tribute (imposed levies or dues) and taxation (a formalized fiscal system enforced by the state). Accordingly, the state maintained direct control over resources and managed their redistribution, granting the ruling elite or central authority a dominant position within the economy. This form of control, particularly over high-value resources like gold, served as one of the primary tools for reinforcing the prestige and authority of the central government, see: Haaland, Randi, The Meroitic Empire: Trade and Cultural Influences in an Indian Ocean Context, *Afr Archaeol Rev.* 2014, 31, p.653.

[4] Adams W.Y., Ecology and Economy in the Empire of Kush, *ZÄS* 108, 1-11. 1981, p.3.

[5] Fagan B.M., People of the Earth, 2001, p.438; Edwards, D., *The Nubian Past,* 2004, p.143.

[6] Edwards, D., *The Nubian Past*, 2004, p.164.

[7] Crowfoot, J. W. & Griffith, F. Ll., *The Island of Meroë and Meroitic Inscriptions, Part I: Sôba to Dangêl*. Archaeological Survey of Egypt, Memoir 19, London, Egypt Exploration Fund, 1911, p.7.

[8] *Helck, W., Westendorf, W., Lexikon der Ägyptologie, Vol. II, Wiesbaden: Harrassowitz (LÄ)* II 1976, 729-730.

[9] Rahmstorf, Lorenz, In Search of the Earliest Balance Weights, Scales and Weighing Systems from the East Mediterranean, the Near and Middle East, in: Alberti, M.E., Ascalone, E., Peyronel, L. (eds.), *Weights in Context: Bronze Age Weighing Systems of Eastern Mediterranean*, Studie Materiali 13, Rome, Istituto Italiano di Numismatica, 2006, p.16.

[10] Aufrère S., *L'Univers minéral dans la pensée égyptienne II.* Inst. Franç Arch Orient, *Archéo-Nil* n° 7*,* Le Caire, 1997, p.114.

[11] Aufrère S., L'Univers minéral, 1997, p.124-125.

[12] Klemm, D., *Gold and Gold Mining in Ancient Egypt and Nubia: Geoarchaeology of the Ancient Gold Mining Sites in the Egyptian and Sudanese Eastern Deserts*, Berlin-Heidelberg, 2013, p.15.

[13] Arkell A.J., *A history of the Sudan: from the earliest times to 1821,* University of London Athlone Press, London,1955, p.170.

[14] Arkell A.J. 1955, *A history of the Sudan: from the earliest times to 1821,* University of London Athlone Press, London,170; Török, László, The Kingdom of Kush: Handbook of the Napatan-Meroitic civilization. Leiden: Brill, 1997, p.479.

[15] Török, László, *The Kingdom of Kush: Handbook of the Napatan-Meroitic civilization*, Leiden: Brill, 1997, p.479.

[16] Phillipson, David W.et al., *Archaeology at Aksum, Ethiopia,* 1993-7, British Institute in Eastern Africa, London, 2000, p.475.

[17] Stuart Munro-Hay, *Aksum An African Civilisation of Late Antiquity,* Edinburgh, Edinburgh University Press, 1991, p.12.

[18] Török, L., *Meroe: Six studies on the cultural identity of an ancient African state* (Studia Aegyptiaca XVI), Budapest: Universitas, 1995, p.146-147.

[19] Török, L., *Meroe: Six studies*, 1995, p.146-147.

[20] Edwards D., *The Nubian past,*2004, p.185.

[21] Török, L., *The Kingdom of Kush,*1997, p.477-478.

[22] Edwards D., *The Nubian past*, 2004, p.185.

[23] Török, László. "The Historical Background: Meroe, North and South." In: Hägg, Tomas (ed.), *Nubian Culture: Past and Present***.** Stockholm: The Scandinavian Institute of African Studies, 1987, pp. 188–208.

[24] Török, L., The Historical Background: Meroe, 1987, p.188-208.

[25] Elzain, Intisar, Meroe, the City State, 2019, p.37.

[26] *Erman, A. & Grapow, H., Wörterbuch der ägyptischen Sprache, (Ẅb)*, *Bd. II, Berlin, 1926–1931,* p.237.

Aufrère revisited an earlier interpretation of the hieroglyphic sign for gold𓏏, suggesting that it may not have originally represented a (golden) pectoral, as commonly assumed, but rather a tool associated with gold processing. He proposes that the sign depicts a frame covered with textile, wherein the elements traditionally interpreted as

beads hanging from a collar are more accurately understood as droplets of water, see: Aufrère, Sydney, *L'univers minéral*, 1991,pp.353-354.

[27] *LÄ* II, 1976, p.737.

[28] *LA* II, 1976, p.734.

[29] Rilly, Claude, Meroitic, *UCLA Encyclopedia of Egyptology (UEE)*, Version 1,2016, p.9.

[30] Griffith, F. Ll., *Meroitic Inscriptions. Part I.* ASE 19. London: Egypt Exploration Fund, 1911, p.157; Woolley C. L., et Randall-Maclver, D., *Karanog: The Romano-Nubian Cemetery.* Eckley B. Coxe Expedition, vol. 15. Philadelphia, University Museum1910, pl. 2; Porter, B.& Moss R. T*opographical Bibliography of Ancient Egyptian Hieroglyphic Texts, Reliefs and Paintings*, Vol. V. Oxford, 1951, pp. 77ff; Eide T. et al. Bergen, *Fontes Historiae Nubiorum*, (*FHN)* 11, Vol. II, University of Bergen, 1996, pp. 674 152, 735 183 n. 361.

[31] Hallof, Jochen, and Hallof Gabriele, *Analytisches Wörterbuch des Meroitischen / Analytic Meroitic Dictionary. Band 4,* J. H. Röll Verlag, 2022, p.959.

[32] Rilly, Claude, *Le méroïtique : Données grammaticales, lexicales, position linguistique. Deuxième partie : Lexique méroïtique*, Doctoral diss., École Pratique des Hautes Études (EPHE), Section des sciences historiques et philologiques, December 2003, 152 ; Hallof, Jochen, *Analytisches Wörterbuch*, 2022, 959.

[33] Maximinus Daia was appointed Caesar in 305 A.D. under the new imperial system known as the *Tetrarchy*, which followed the abdication of Emperors Diocletian and Maximian. He was assigned authority over Syria and Egypt as part of a broader reorganization of Roman rule that included two Augusti and two Caesars, see: Peter D. Papapetrou, Maximinus Daia, a Roman emperor who may have had Graves' disease and died of a thyrotoxic crisis, *Hormones* 2013, 12(1), p.142.

[34] Millet, N. B., *The Meroitic Pottery from Qustul Cemetery Q,* Oriental Institute Publications 105, Chicago, 1982, p. 70, pl. LXXXIX, l; Griffith, *Meroitic Inscriptions,* 1911, p. 66, 99, Index C p. 117; Hintze Fritz, *Meroitische Inschriften aus dem Gebiet von Meroe,* Berlin, 1963, p.14 [127]; Millet, *The Meroitic Pottery* ,1982, p.72.

[35] The Meroitic-language graffiti were usually brief, giving only the author's name and title, but sometimes listed relatives' titles to show social status. The term *yetmede* indicated a family link—likely through the mother's lineage—to someone of high rank.

Detailed listings of relatives' titles appear more often in Nubian funerary inscriptions in Meroitic, see: Inge Hofmann, *Steine für die Ewigkeit. Meroitiesche Opfertafeln und Totenstelen,* Vienna-Mödling: Druckerei St. Gabriel, 1991, p.193.

[36] Hallof, Jochen, and Hallof Gabriele, *Analytisches Wörterbuch des Meroitischen / Analytic Meroitic Dictionary. Band 4,* J. H. Röll Verlag, 2022, 959.

[37] *Répertoire D'épigraphie Méroïtique,* Tome III - REM 1001 à REM 1278, Paris, CNRS,2000, p.1566-67.

[38] Funerary lintel no. 1569 from the western necropolis of Sedeinga was discovered among surface debris near the northeast corner of the first pyramid of tomb WT2. The sandstone monument features a cavetto cornice and torus molding and measures 40 cm in height, 110 cm in width, and 15 cm in thickness. The inscription is a cursive epitaph composed of seven lines, preserved in good condition, and is dedicated to an individual named "*Ntemḫr*", see: *Répertoire D'épigraphie Méroïtique,* p.1568.

[39] Hallof, *Analytisches Wörterbuch,* 2022, 960.

[40] Schiff Giorgini, Michela, Sedeinga 1964–1965, *Kush* 14, part II, 1966, p.255, pl. XXXII; Leclant, Jean, Fouilles et travaux en Égypte et au Soudan, 1968–1969, *Orientalia* 39,1970, p. 257, fig. 7A, 262, fig.7; *Répertoire D'épigraphie Méroïtique,*2000, p.1568.

[41] In ancient Meroe, the powerful priesthood could command the king's death, claiming divine will. This tradition ended when King Ergamenes, trained in Greek philosophy, defied them. He stormed the golden temple—a symbol of Meroe's immense wealth—and killed the priests, asserting royal authority over religious rule, see: *FHN* II, p.647.

[42] Agatharchides of Cnidus, Fragments preserved in Diodorus Siculus, *Library of History* III.2.6, see: Diodorus Siculus, *Library of History*, Book III, esp. III.2.6. In: C.H. Oldfather (trans.), *Diodorus of Sicily in Twelve Volumes*, Vol. II, Books II.35–IV.58. Loeb Classical Library 303. Cambridge, MA: Harvard University Press; London: William Heinemann, 1935; *FHN* II, 1996, n. 142, p. 647.

[43] The reference to fire-setting, as mentioned in the account of Agatharchides, remains questionable. There is currently no archaeological evidence confirming the use of fire in mining operations within this region—a method otherwise well-documented in Western mining tradition, see: Dubois L'ouverture par le feu dans les mines: histoire, archéologie et experimentations, *Revue d'Archéométrie* 20,1996, pp. 33-34.

[44] Diodorus Siculus**,** *Library of History*, Book III, 12-14, 1935. pp.117-123.

[45] Strabo. *Geography*, Book XVII, 2. [2], Ed. and trans. Jones. H. L., Loeb Classical Library 267. Cambridge, MA: Harvard University Press; London: William Heinemann, 1932 (repr. 1969).

[46] Silberman, Alain. 1988. Pomponius Mela : Chorographie, Collection des Universités de France, Les Belles Lettres, Paris 1988, 3.86. (= FGrH 673.F24).

[47] Philostratus. *Life of Apollonius of Tyana*. Translated by Conybeare. F.C., 2 vols. Loeb Classical Library 16–17, Cambridge, MA: Harvard University Press; London: William Heinemann, 1912–1913, VI.2.

[48] A particularly prominent episode within the Romance is the fictional diplomatic and symbolic encounter between Alexander and Queen Candace of Meroe (Book III, Chapters 18–24), which features an exchange of letters and an elaborated narrative depicting Meroe as a land of immense wealth and sovereignty. These letters may derive from a now-lost epistolary novella that was subsequently absorbed into the Romance, see: *FHN* II, p.504.

[49] Stoneman, R. 1991. *The Greek Alexander Romance* (Trans., Introduction, and Notes), London: Penguin Books, Book III, Chapters 18–24.

[50] *FHN* II, 1996, p.508.

[51] The Pactolus River**,** located in ancient Lydia (modern-day Sart Çayı in western Turkey), was renowned in antiquity for carrying naturally occurring deposits of electrum**,** a natural alloy of gold and silver, in its waters. Ancient sources, such as Herodotus (Histories 1.93) and Strabo (Geography 13.4.5)**,** explicitly mention the river's association with gold and electrum that contributed to the legendary wealth of the Lydian kings, especially Croesu, see: *FHN* II, 1996, 509.

[52] Its widespread adoption in Nubian gold mining contexts occurred during the Early Arab Period (ca. 9th to mid-14th century CE), with its distribution primarily limited to the Eastern Desert and extending westward only as far as Umm Nabardi, roughly 200 km east of the Nile, see: Klemm, D., *Gold and Gold Mining in Ancient Egypt and Nubia,* 2013, p.15.

[53] Rostovtzeff, M., *Social and Economic History of the Hellenic World*, Clarendon Press, 1941, p. 381-383.

[54] Arkell, *History of the Sudan*,1955, p.170.

[55]Vercoutter, Jean, "The Gold of Kush", *Kush* VII,1959 , p.139.

[56] Its widespread adoption in Nubian gold mining contexts occurred during the Early Arab Period (ca. 9th to mid-14th century CE), with its distribution primarily limited to the Eastern Desert and extending westward only as far as Umm Nabardi, roughly 200 km east of the Nile, see: Klemm, D., *Gold and Gold Mining* ,2013, p.15.

[57] Klemm, D. & Klemm, R., "Gold of the Pharaohs – 6000 years of gold mining in Egypt and Nubia", *African Earth Sciences* 33, 2001, p.665.

[58] Klemm, D*., Gold and Gold Mining,* 2013, p.15.

[59] *Vercoutter,* Jean, "The Gold of Kush", *Kush* VII, 1959,128-153.

[60] Emery, Walter B., *The excavations and survey between wadi Es-Sebua and Adindan*, 1929-1931, vol.1, Cairo: Government Press, Bulâq,1935, p.110.

[61] Griffith, F. Ll. "Oxford Excavations in Nubia", Oxford Excavations in Nubia, *Annals of Archaeology and Anthropology,* (*LAAA)*, XI, Liverpool,1924, p.120.

[62] Scholars have long debated the function of the Lower Nubian basins, offering various secular interpretations such as cisterns, public baths, gold-washing stations, or winepresses. However, these theories fail to fully explain the basins' consistent architectural features, associated water channels and wells, and strategic placement near seasonal watercourses like wadis. This placement suggests a deliberate interaction with the Nile's inundation, implying a more symbolic or ritual function. Supporting this interpretation is the presence of sculpted lion figures at water-related Meroitic sites such as Basa, Umm Soda, and Musawwarat es Sufra, which scholars interpret as apotropaic guardians marking sacred spaces. Their association with water installations hints at a symbolic link between lions and the life-giving flood of the Nile. This connection is reinforced by lion-shaped waterspouts found in the Lower Nubian basins, which resemble full-bodied crouching lions with water issuing between their forepaws—a style rooted in Egyptian, not Classical, traditions. A key comparison is the so-called "Royal Bath" at Meroe, which Török reinterpreted as a "Water Sanctuary" used for libation rituals connected to the inundation, featuring leonine spouts and animal protomes. Smaller tanks in the Royal Enclosure mirror this sanctuary's design, suggesting a standardized ritual function. Taken together, the architectural and symbolic parallels between the Lower Nubian basins and the Meroitic water structures

support the theory that these basins served not secular purposes, but ritual roles linked to the Nile's inundation and associated ceremonies, see: Henry C. Bishop-Wright: "Reconsidering the Lower Nubian 'winepresses and their Leonine Spouts,"*Sudan & Nubia,*23, 2019, p.158ff.

[63]Diodorus, Siculus, *Library of History*, Volume II: Books II.35–IV.58. Translated by C.H. Oldfather. Loeb Classical Library 303, Cambridge, MA: Harvard University Press, 1935; repr. 2007, Book III, 14.1–3.

[64] Vercoutter, "The Gold of Kush", *Kush,* 1959, p.122.

[65] Adams, W. Y., "Sudan Antiquities Service Excavations at Meinarti 1963-64", *Kush* XIII, 1965, p.163-164.

[66] Henry C. Bishop-Wright: "Reconsidering the Lower Nubian 'Winepresses' and their Leonine Spouts" , *Sudan & Nubia,*23, 2019, pp.162-163.

[67] The Nubian inscriptions in the Dodecaschoenos region are divided into three distinct chronological phases:

- **Phase I**: ca.10 BC – ca. AD 57.
- **Phase II**: ca. AD 175 – 273.
- **Phase III**: AD 408 – 456.

The first evidence of Nubian epigraphic presence at Philae appears in the early Roman period, particularly in legal agreements inscribed on the First Pylon. The individuals mentioned in these agreements are identified as Nubians based on their non-Egyptian names and foreign titles. During Phase I, the term "Nubian" refers to local officials from Lower Nubia who were active participants in cultic associations within the temples of the Dodecaschoenos.

In Phase II, the Nubians mentioned were priests serving the Meroitic kings but belonged to an elite family from Nubia—the Wayekiye family—attested at sites such as Medik (near Sayala) and Gebel Adda (further south near Abu Simbel). These individuals were not local to the Dodecaschoenos but lived nearby, which gave them greater familiarity with Egyptian language, culture, and religion than the Meroitic kings they served. Thanks to this cultural competence, Nubian priests could perform temple rituals on behalf of the Meroitic rulers, while administrators—often from the same Wayekiye family—acted as political envoys at Philae. See: Ashby, Solange, *Calling out to Isis:*

The Enduring Nubian Presence at Philae, *University of Chicago,* Illinois, PhD. Theses, 2016, p.16-17.

[68] This festival likely included the gilding of Isis' statue and its ceremonial transport to Biggeh Island at the beginning of each of the three ten-day ritual weeks, allowing the goddess to preside over the offerings and libations made in Osiris' honor, see: Ashby, *Calling out to Isis*, 2016, p.132.

[69] Bumbaugh, Solange, *Meroitic Worship of Isis as Seen Through the Graffiti of the Dodecaschoenus*, PhD. Theses, University of Chicago, 2009, 3.

[70] Crowfoot, J. W. & Griffith, F. Ll., *The Island of Meroë and Meroitic Inscriptions, Part I: Sôba to Dangêl*. Archaeological Survey of Egypt, Memoir 19. London: Egypt Exploration Fund, 1911, p.47.

[71] Török, László, *The Kingdom of Kush*, 1997, p.476-477.

[72] Grimal Nicolas, *La stèle triomphale de Piankhy au musée du Caire*, Institut Français d'Archéologie Orientale, 1981, 40-61, Pls. X-XXV ; Mariette, Auguste, and Maspero, Gaston, *Monuments Divers recueillis* XXV *Egypte et en Nubie*, Paris, (Planches),1872. Pl. XI, XII, l. 26-40.

[73] Griffith, F.L., "Notes on the Egyptian Weights and Measures", *Proceedings of the Society of Biblical Archaeology,* Vol.10,Harrison and Sons,1892, p.39.

[74] Before the Twenty-sixth Dynasty, ancient Egypt lacked coinage, and commodity values were expressed through weight-based systems, most commonly in copper, less often in silver, and rarely in gold. The standard unit was the deben (≈91 g), subdivided into the kite (1/10 deben), though the kite was not used for copper, where the smallest unit recorded was two deben, see: Janssen, Jac. J., *Commodity prices from the Ramessid period: an economic study of the village of Necropolis workmen at Thebes,* Leiden, Brill 1975, p.101.

[75] *FHN* II,1996, pp.444-445.

[76] The last extant, fully preserved monumental royal inscription composed in hieroglyphic Egyptian—the granite stela dated to Year 8 of King Nastasen from the great temple of Amun at Napata—offers substantial evidence concerning Kushite political history and the socio-political context of the latter half of the fourth century BC. Comparable to the Harsiotef Annals, the text underscores a marked divergence between the character of

documents produced in Kush during the fourth century BC and those produced in contemporaneous Egypt, see: Török, L. *The Kingdom of Kush*, 1997, pp.388-395.

[77] *Urk*. 111.2, 137-152; Török, L. *The Kingdom of Kush*, 1997, pp.388-395.

[78] Török, L. *The Kingdom of Kush*, 1997, pp.391.

[79] Pope, Jeremy, "History and the Kushite Royal Inscriptions", in: Geoff Emberling, Bruce Williams (eds.), *The Oxford Handbook of Ancient Nubia*, Oxford University Press, 2020, p.400.

[80] *FHN* II,1996, p.473.

[81] *FHN* II, 1996, p.491.

[82] Macadam, M.F.L., *Temples of Kawa* I, The *Inscriptions*, London, Oxford University Press, 1955, p.19.

[83] *FHN* II, 1996, p.533-535.

[84] Macadam, Temples *of Kawa I*, 1955, 17-20.

[85] *FHN* II,1996, p.529.

[86] *FHN* II, 1996, p.531.

[87] Edwards, "Stelae from Qasr Ibrim*"*, *Sudan & Nubia* 11, 2007, 82-90.

[88] *REM* 2000: 1670-1671; Plumley, Pre-Christian Nubia 1971: 19; 20, fig. 8 (photo); Hallof, Jochen. *The Meroitic Inscriptions from Qasr Ibrim. III. Inscriptions on Stone, Wood, Parchment and Gourd: Text*. Dettelbach: Verlag J.H. Röll GmbH, 2020, p.21.

[89] Ferrandino, Gilda, and Vincent W. J. van Gerven Oei. "Potential Old Nubian Cognates for Meroitic *aleqese*." *Sudan & Nubia* 24, 2020, p.295; Hallof, Jochen. *The Meroitic Inscriptions from Qasr Ibrim, 2020,* pp.17-18.

[90] *Lepsius, Denkmäler aus Ägypten und Äthiopien*, (*LD*) vol. VI BI.1 no.3; Griffith, F. Ll. *Meroitic Inscriptions. Part II. Napata to Philae and Miscellaneous.* Archaeological Survey of Egypt, Twentieth Memoir. London: Egypt Exploration Fund, 1912, no.119, PL. XXXV; Mansour, Ahmed. 2019. *Ancient Voices from the Philae Island: The Heritage of Speaking Stones*. *International Journal of Heritage and Museum Studies* 1, no.1 (October): 15–30. Faculty of Tourism and Hotels, Fayoum University, p.24, fig.10.

[91] The Meroitic graffiti (REM 0119) at Philae mention King Yesebokheamani**,** identified as *goro* ("ruler"), together with the goddess Isis**.** Their careful placement on opposite walls above royal reliefs suggests an attempt to give a monumental appearance to the king's devotional presence. While it is theoretically possible they were inscribed on his

behalf rather than in his presence, this is unlikely, since Greek, Demotic, and Meroitic *proskynemata* were normally intended to commemorate the actual presence of the writers in the act of devotion, see: *FHN* III, p.1049.

[92] Reisner, G.A., "Outline of the Ancient History of the Sudan', *Sudan Notes and Records*, Vol. II, 1919, p.62.

[93] Emile Chassinat, *Le Mystère d'Osiris au Mois de Khoiak*, 2 vol. Cairo 1966-68.

[94] Pope, Jeremy, "The Demotic *Proskynema* of a Meroite Envoy to Roman Egypt (Philae 416)." *Annual Meeting of the American Research Center in Egypt (ARCE)*, Dallas, Texas 23–25 Apr. Chicago, 2009, p.1-3.

[95] Ashby, Solange, *Calling out to Isis: The Enduring Nubian Presence at Philae*, Chicago, Illinois, PhD. Theses, 2016, p.149.

[96] The title agent, was so prevalent in Phase I, see: [96] Ashby, Solange, *Calling out to Isis: The Enduring Nubian Presence at Philae*, Chicago, Illinois, PhD. Theses, 2016, p.133.

[97] Ashby, Solange, *Calling out to Isis: The Enduring Nubian Presence at Philae*, Chicago, Illinois, PhD. Theses, 2016, p.160.

[98] *FHN* II, 1996, pp.611-612.

[99] Barguet, P., "la Stèle de Famine à Séhel", *IFAO* 34, Le Caire, 1953, Pl. II-A.

[100] *FHN* II,1996, p.610.

[101] Ashby, Solange, *Calling out to Isis*, 2016, p.12.

[102] Burkhardt, Adelheid, *Ägypter und Meroiten im Dodekaschoinos: Untersuchungen zur Typologie und Bedeutung der demotischen Graffiti*, Berlin: Akademie-Verlag, *Meroitica* 8,1985, 96; Ashby, Solange, *Calling out to Isis*, 2016, p.118-119.

[103] Ashby, Solange, *Calling out to Isis,* 2016, p.137.

[104] Griffith, F. Ll., *Les temples immergés de la Nubie : Catalogue of the Demotic Graffiti of the Dodecaschoenus.* Vol. I–II, Cairo, Institut Français d'Archéologie Orientale, 1935–1937*,* Dak. 33 ; Burkhardt, *Ägypter und Meroiten* 1985, 102 f.

[105] Ashby, Solange, *Calling out to Isis*, 2016, p.134.

[106] Griffith, *Text*, vol. I, 1937, p.32; *Catalogue*, vol. II, 1935, Pl.VI; *FHN* III, p.968.

[107] Ashby, Solange, *Calling out to Isis: The Enduring Nubian Presence at Philae*, Chicago, Illinois, PhD. Theses, 2016, p.159.

[108] Griffith, *Catalogue*, Vol. II, 1935, p.84.

[109] Ashby, Solange, *Calling out to Isis,* 2016, p.136.

[110] *FHN* III, p.986-988.

[111] Griffith, *Text,* vol. I, 1937, Dak. 30, p.29; *Catalogue,* vol. II, Pl.V; Burkhardt, *Ägypter,*1985, 99 ff.

[112] Burkhardt, *Ägypter,*1985, p.33.

[113] Burkhardt, *Ägypter,* 1985, p,32- 34.

[114] Griffith, *Text,* 1937, vol. I, p.58; Burkhardt, *Ägypter*, 1985, p.33.

[115] E side of First Pylon- on the stair well wall Hieroglyphic/ Hieratic (1-10) & demotic (lines 11-14).

[116] *P3-di-p3-ḥwt*, son of *Wrš*, this individual is also attested in multiple graffiti at Philae (Ph. 68, 212, 305, 325), underscoring his prominent role across the region, see: Bumbaugh, Solange, *Meroitic Worship of Isis as Seen Through the Graffiti of the Dodecaschoenus,* PhD. Theses, Chicago, 2009, p.9.

[117] Ashby, Solange, *Calling out to Isis: The Enduring Nubian Presence at Philae*, Chicago, Illinois, PhD. Theses, 2016, p.160.

[118] Graffito Ph. 68 is the sole example bearing a specific date, thereby providing the only firm chronological anchor for his activity in the third century CE. See: Griffith, *Les temples immergés de la nubie catalogue of the demotic graffiti of the dodecaschoenus*, vol. I ,1937, Ph.68, p.58.

[119] Griffith, *Les temples immergés de la nubie catalogue of the demotic graffiti of the Dodecaschoenus*, vol. I ,1937, Ph.68, p.58; Burkhardt, *Ägypter*, 33.

[120] Griffith, *Text*, vol. I ,1937, Ph.305, p. 92; *Catalogue,* vol. II, 1935, pl. XLVII.

[121] Diodorus Siculus 3.2.1-7.3.

[122] Burkhardt, *Ägypter*,1985, 33.

[123] Griffith, *Text,* vol I, 1937, p.92; *Catalogue*, vol. II, 1935, XLVII.

[124] Kertassi, is located 24 miles south of Philae, this site is considered the most probable source of the stone used in the construction of the Philae temples, see: Roeder, Günther M., *Von Debod bis Kalabscha*, l'Institut français d' archéologie orientale, 1911 vol. I, pp. 221–224; vol. II, 123, pls. 66–67.

[125] Bumbaugh, S, *Meroitic Worship of Isis*, 2009, p.9.

[126] L.D. VI 93, Dem.185 ; Roeder, Günther, *Les Temples Immergés de la Nubie*, 1911, vol. I, 221, nr.1 ; vol. II, pl. 69 b, Taf 115 b.

[127] It seems that this unknown Meroitic King is the same king in graffito of Philae (Ph. 68).

[128] Griffith 1937, Ph. 416; Burstein, Stanley, *Ancient African Civilizations, Kush and Axum*, Markus Wiener Publishers, 1998, No. 12, p.69-72.

[129] Grifith 1937, vol.1, 115.

[130] *FHN* III, 1998, p.1008-1010.

[131] Kuckertz Josefine, "Meroe and Egypt." *UCLA Encyclopedia of Egyptology (UEE)*, ed. Willeke Wendrich, Los Angeles: UCLA, 2021, p.5.

[132] Pounds" refers to a weight measurement—specifically, in the ancient system, a "libra" (plural: "litrae" or "litras") was a Roman unit of weight, roughly equivalent to 327.45 grams in modern terms.

[133] 3 1/2 litras = approximately 1.15 kilograms.

[134] Grifith 1937, vol.1, 116; 1935, vol. II, pl. LXIV.

[135] The name 3bryte appears to be distinctly Meroitic in origin, and the presence of the final *t* is linguistically secure and leaves little room for doubt. see: Burkhardt, *Ägypter*, 1985, p.33.

[136] FHN III, p.1042.

[137] Griffith, *Les temples immergés de la nubie catalogue of the demotic graffiti of the Dodecaschoenus*, University Press, Oxford, vol. I 1937, Ph. 252; vol. II, 1935, pl. XLI; Burkhardt, *Ägypter und Meroiten* ,1985, p.33.

[138] Griffith 1937, Ph. 252; Burkhardt 1985, 33; *FHN* III, 1998, p.1041.

[139] The extent of Meroitic influence during the third century appears to have been so significant that they were granted the privilege of maintaining a distinct cultic space on the island, see: Dijkstra, J. H. F. *Religious Encounters on the Southern Egyptian Frontier in Late Antiquity (AD 298–642).* Orientalia Lovaniensia Analecta 164. Leuven: Peeters, 2008, p.61.

[140] Griffith, **F. Ll.** *Meroitic Inscriptions. Part II. Napata to Philae and Miscellaneous.* Archaeological Survey of Egypt, Twentieth Memoir. London, Egypt Exploration Fund, 1912, p.39, pl. XVIII, pl. XXVIII.

1912, p.39, pl. XVIII, pl. XXVlII ; Leclant Jean, Heyler André, Berger el Naggar Catherine, Carrier Claude, Rilly Claude, *Répertoire d'épigraphie méroïtique*, Tome I - REM 0001 à REM 0387, 2000. pp. 229-231 ; *FHN* III 1998, No. 267.

[141] Rilly, Claude. "Histoire du Soudan des origines à la chute du sultanat Fung," in : Olivier Cabon, Vincent Francigny, Bernard François et al. (eds.), *Histoire et civilisations du Soudan de la préhistoire à nos jours.* Études d'égyptologie 15. Paris : Soleb ; Saint-Pourçain-sur-Sioule : Auteur Bleu, 2017, p.320.

[142] Manitawawi was a high official of the Meroitic king, active in the Dodecaschoenus region, and belonged to the fourth generation of the Wayekiye family**.** He is attested in several inscriptions. Bekemete**,** son of Qêrefi**,** served as a senior official in Lower Nubia**,** see: *FHN* III,1998, p.1029.

[143] *FHN* III, 1998, p.1026.

[144] Kuckertz, Meroe and Egypt, 2021, p.22.

[145] During the Old Kingdom, a weight standard of approximately 13.6–13.9 g appears to have been the sole system in use. This has been referred to as the *Egyptian Gold Deben/Stater Standard* or the *Beqa*. The term *deben (dbn)* was attested from at least the Fifth Dynasty, as evidenced by finds at Saqqara, see: Rahmstorf, L., In search of the earliest balance weights systems, 2006, p.14. During the New Kingdom period (circa 1550–1069 BCE), a change occurred in the weight system whereby: 1 deben = 91 gm, subdivided into 10 units called qedet (qdt)—pronounced in Egyptology as qedet or kite—meaning that each qedet was approximately 9 grams. This Deben–qedet system remained in use up to the Late Period, see: https://www.ucl.ac.uk/museums-static/digitalegypt/weights/weight.html.

[146] Khartoum Museum no. 2481. Dynastic Egyptian weights varied between 13–15 gm**,** averaging about 13.9 gm**,** with fluctuations of up to ±7–8%. Similar variability appears in Middle Kingdom Uronarti**,** where inscribed gold weights range from 12.2–14.4 g**.** Despite such imprecision, these measures were accepted for weighing precious metals, see: Rahmstorf, Lorenz. **"**In search of the earliest balance weights systems from the East Mediterranean, the Near and Middle East," in: Alberti, M. E., E. Ascalone, and L. Peyronel, (eds.), *Weights in Context: Bronze Age Weighing Systems of Eastern Mediterranean Chronology, Typology, Material and Archaeological Contexts.* Proceedings of the International Colloquium, Rome 22nd–24th November 2004, Rome: Istituto Italiano di Numismatica, 2006, p.16.

[147] Petrie, *Ancient Weights and Measures*, London, 1926, pp. 17-19.

[148] https://www.britishmuseum.org/collection/object/Y_EA64423.

[149] Archaeological evidence from the village of Gebel Moya, excavated by Henry Wellcome, indicates direct trade relations with Napata during the reigns of kings such as Taharkqa, Tanutamon, and Aspalta. Anthropological analysis of the human remains revealed a mixed population with predominantly negroid characteristics, closely resembling the current inhabitants of the area. These findings suggest that the Gezira was likely within the political sphere of influence of the Kushite rulers at an early stage and was subsequently incorporated into the territory governed from Meroe. The implications of these discoveries are substantial for reconstructing the early history of the Sudanese interior, see: Reisner, G.A., "Outline of the Ancient History of the Sudan", *Sudan Notes and Records*, vol. II, 1919, p.65.

[150] Online collection. Available at: https://www.britishmuseum.org/collection/object/Y_EA64423. Accessed: 15 July 2025.

[151] The syenite mace-head weight registers 1503.5 grains (≈ 97.5 g)**.** Applying the same conversion, it equates to about 10.7 qedet (97.5 ÷ 9.1 ≈ 10.7), again closely reflecting the qedet standard used in the Egyptian weight system.

[152] Petrie, *Ancient Weights and Measures*, 1926, p. 15, pl. XXXVI.

[153] Petrie, *Ancient Weights and Measures*, London, 1926, pl. XVI.

[154] Petrie, *Ancient Weights*,1926, pl. XXXVII.

[155] The breccia mace-head weight measures 924 grains (≈ 59.9 g)**,** calculated using the conversion 1 grain ≈ 0.0648 g**.** In relation to the Egyptian deben system **(**1 deben ≈ 91 g = 10 qedet**),** this corresponds to approximately 6.6 qedet (59.9 ÷ 9.1 ≈ 6.6).

[156] Petrie, *Ancient Weights* ,1926, pl. XVI.

[157] Rahmstorf, In Search of the Earliest Balance Weights, 2006, p.16.

[158] (Personal communication with Catriona Wilson & Lisa Randisi in the Petrie Collection of Egyptian and Sudanese Archaeology Library, Culture, Collections & Open Science).

[159] Online collection. Available at: https://www.ucl.ac.uk/culture-online/petrie-museum-uc-44230. Accessed: 10 June 2025.

[160] Personal communication with Catriona Wilson & Lisa Randisi in the Petrie Collection of Egyptian and Sudanese Archaeology Library, Culture, Collections & Open Science).

[161] Online collection. Available at :https://www.ucl.ac.uk/culture-online/petrie-museum-uc-44298, Accessed: 23 July,2025.

[162] The present table has been compiled by the researcher, drawing upon the classifications and descriptions presented in thesis of Petrie, *Ancient Weights*, 1926, p.4,5, 6,31,36,40.