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Reports

Studies

Obituaries

Biographies

Miscellanies

Front cover. General view of Site WNP-J-22\1, Al-Jabalain, White Nile State. Photo by Hamad Mohammed Hamdeen.

Sai Island: defensive architecture of a New Kingdom town in Nubia

Franck Monnier and Vincent Francigny

The study of fortifications in Nubia during antiquity, whether of local origin or the product of Egyptian military campaigns, has seen a real resurgence of interest in recent years following discoveries made at Kerma of some unique features used in the gates and defensive systems built for the *Menenou* of Thutmose I, as well as in its renovations under Thutmose II and Hatshepsut (Bonnet and Valbelle 2018). Conquered long before the capital of Kerma, probably as earlyF as the reign of Ahmose, the island of Sai does not present this scenario and seems not to have been protected with monumental fortifications before the reign of Thutmose III. One of the challenges of the excavation is to determine what happened at Sai between the arrival of the Egyptians and the reign of Thutmose III, during a period marked by multiple rebellions in Nubia that led to the destruction of the Egyptian buildings erected by Thutmose I at Kerma. One might indeed believe that further north, the military situation was better controlled by the Egyptians and that Sai provided everything needed for the establishment of a first significant stronghold beyond the 2nd Cataract of the Nile to support the conquest. But it is important to remember that the Kerma people of Sai, as evidenced by the large tumuli field at the heart of the island, represented the second largest concentration of population within the kingdom at that time, making the balance of power undoubtedly difficult to maintain for the Egyptians.

Another objective is to understand, once a fortified town was erected at Sai, what models were implemented by its builders and architects. If they were taking advantage of older building traditions used to construct and maintain the Middle Kingdom fortresses, then they may have deliberately reused features that conveyed a message of Egyptian royal authority over the local, subdued Nubian population.

Resuming fieldwork on the town

Despite the numerous setbacks in organising the Sai mission in recent years, it has been possible to continue the research initiated in the northern sector of the pharaonic city when excavations resumed. The intention was, on the one hand, to capitalise on the results of previous research programmes conducted by the University of Lille (Doyen 2009) and the ERC *AcrossBorders* (Budka 2020), and on the other hand, to understand the overall organisation of a city of which less than half had been excavated. The choice of the northern area was also motivated by the complexity of the remains unearthed there, including buildings of small sizes repeatedly modified, the presence of walls close to the surface seemingly belonging to another era, and finally, the difficulty in truly defining the nature and the limits of the defensive system (Adenstedt 2018), and the position of the eastern enclosure wall in particular.

Immediately to the east of the SAV 1 sector, excavated by our predecessors between 2008 and 2012 (Budka 2017), the presence of a large shallow depression located between the edge of the excavation and the rocky outcrops of the sandstone cliff a few metres away, seemed to offer an ideal context for the burial of remains due to a very dense deposit of aeolian sand (Figure 1). It was therefore decided to examine this area to verify potential clues regarding the angle of the enclosure wall, which was believed to have disappeared.

Once cleared, the area contained no remains exceeding the thickness of a brick. Erosion of mudbricks was particularly advanced due to their proximity to the surface and exposure to rainwater, even sporadically. Numerous disturbances, most often in the form of late-period pits, further complicate the understanding of the general structure, which at the time was monumental and probably played a key

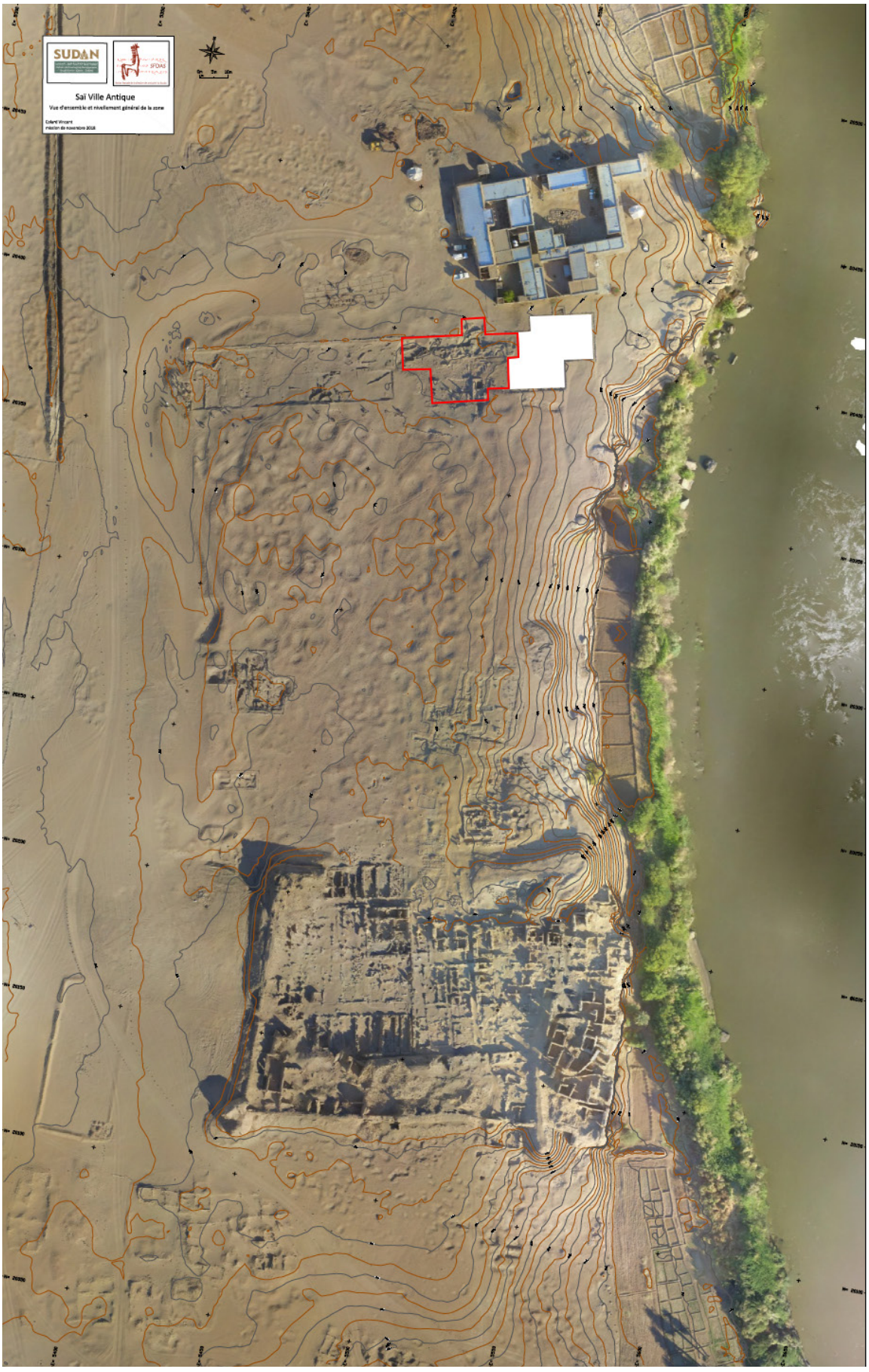

Figure 1. Orthophotography of the site with former excavation in red and newly investigated area in white

role in the observation and control of the river below.

As can be seen in the aerial photograph, the establishment of this massive fortification (Figure 2, in white) and the surrounding low wall (Figure 2, in green) is accompanied by a whitish deposit. This layer, which in some places is several decimetres thick, has been previously observed during excavations where it is described as a level of 'Pebbles mixed with whitish chalky nodules' (Doyen 2017, 35). At this stage, it is difficult to determine when this filling occurred. It directly flanks the walls and leaves no doubt about it post-dating them. A plausible hypothesis would be to see it as reinforcement of the newly constructed structures or the creation of a circulating floor between the enclosure and the defensive ditch, using waste produced by the cutting of sandstone blocks a few metres away along the cliff, where traces of extraction are numerous. Indeed, it is conceivable that the considerable effort required to create a massive mudbrick enclosure wall and possibly new buildings within the city led to a high demand for architectural blocks such as thresholds, lintels, and column drums. Stonework that inevitably generated a quantity of waste, the recycling of which may have helped mitigate the effects of erosion on the north face of the fortification most exposed to the wind.

In addition to the pits that pierce the New Kingdom structures, several walls disrupt the periphery of the enclosure. The two thickest, to the north and south of the corner bastion, have been dated by ceramics found within the matrix of the bricks or mortar to the Christian medieval period. Other structures with much thinner walls also appear within the space delimited by the enclosure, whose eastern wall only survived in a small section of its internal facing. Nevertheless, this is sufficient to confirm its position and to project its trajectory over a greater distance. More importantly, it shows the alignment of its internal face with the low wall running around the fortification, a detail that helps locate the northwest corner, where only a few elements of this wall and the enclosure have survived (Figure 3). During the last campaign in 2022, cleaning of the northeastern corner revealed the presence of one projection exactly where it was expected, supporting the projection proposed for the northern enclosure wall. These pieces of information provide tangible evidence about the appearance and the plan of this fortified town, allowing for a deeper analysis of its architecture and origins.

The fortified enclosure

The Pharaonic city was protected by a mud-brick enclosure and covered an area of around 243x117m. Several attempts have been made to reconstruct it in both plan and perspective.

Generally, the plan of its surrounding wall has been described as strictly rectangular (Azim 1975; Adenstedt 2018). Azim believed that it extended further to the east and that its eastern wall had been eroded along with the cliff by a long and slow erosion process. However, recent investigations have shown that the shoreline has moved little since the establishment of the town (Adenstedt 2016, 25). A geophysical survey carried out in 2011 revealed that some of the foundations of the eastern wall still exist (Figure 4). Magnetometry has highlighted a long section to the north. This has been uncovered partially near the northeast corner by the French archaeological mission in Sudan in 2017 (see above). Its layout is not parallel to the western wall as previously assumed, but turned slightly towards the temple entrance to the south. It seems, therefore, that the wall ran along the river bank and that perfect geometry was of little importance to the builders.

The existence of corner bastions has also been a long debate (Azim 1975, 120-122, pl. II; Andenstedt 2018, 141). The discovery of a large bastion at the northeast corner in 2017 provided definitive evidence of their existence (Figure 2). There is little doubt that each corner was equipped with one, as can be seen at Amara West (Spencer 1997, pls 3-4) or in the Nubian fortresses of the Middle Kingdom (Monnier 2010, 130-159).

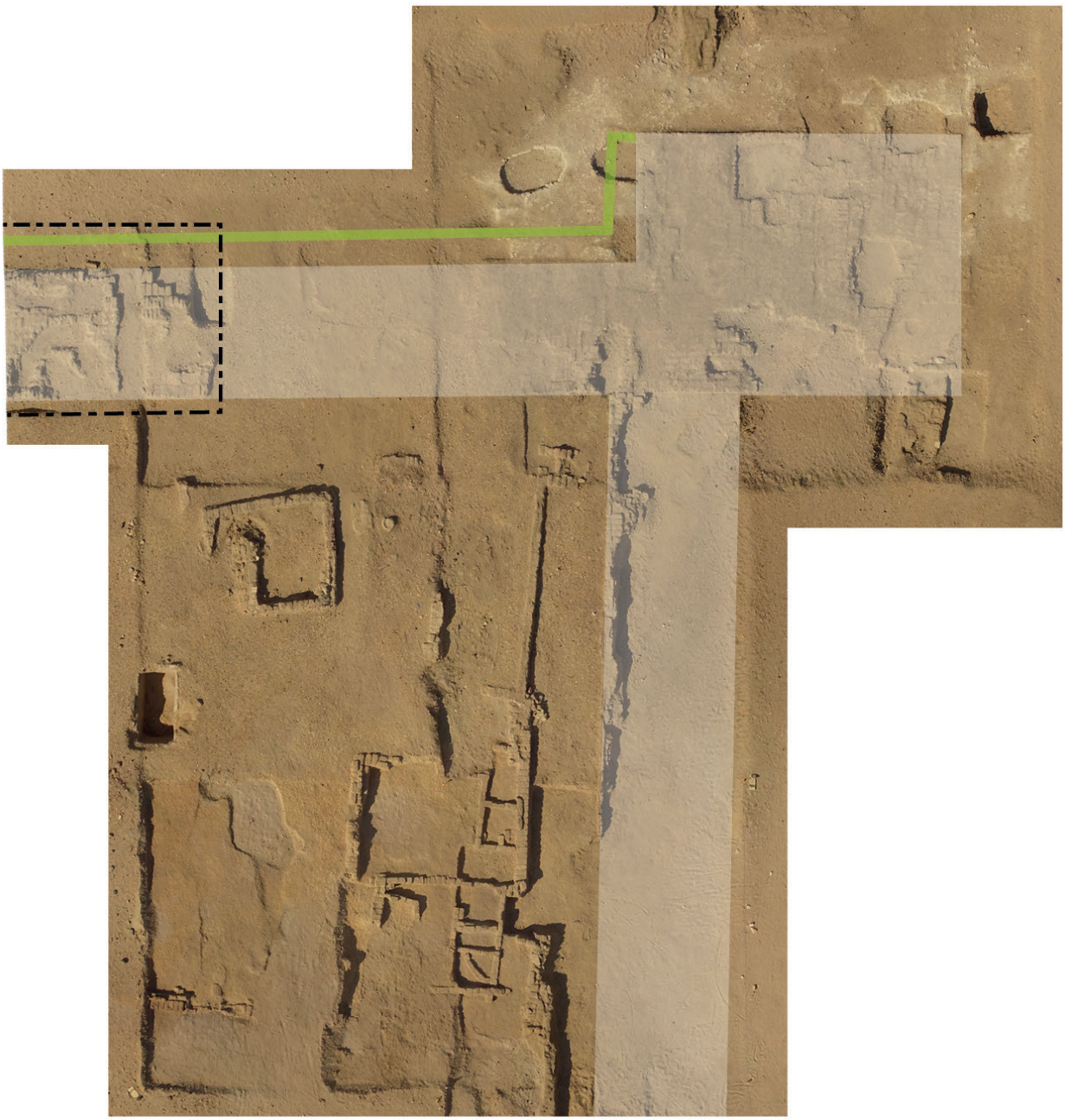

Figure 2. Newly excavated area in the north-east corner with limits of the former dig (V. Francigny).

The use of the term ‘bastion’ in the context of ancient fortifications might seem inappropriate, since in modern architecture, it characterises a low pentagonal structure flanking the curtain wall and provides increased defence at the base of the wall, in response to the emergence of artillery (Delair 2002, 55-56). There is no single term that strictly meets the definition of an Egyptian defensive device. In the military lexicon, the tower is higher than the curtain wall (Delair 2002, 13). It therefore dominates the wall to which it is attached. A tower can also be isolated or flanking, i.e., projected outward from the curtain wall to flank it and prevent the attacker from approaching. As a result, the flanking tower and the bastion have a similar function in most cases (Monnier 2013b, 193).

The latter term has been favoured by commentators for over a century. ‘Projection’, ‘salient’ or ‘extension’ might seem more correct, but they do not exclusively describe a defensive feature (Monnier 2013b, 203). For the sake of simplicity and convenience, in this article we will use the term ‘bastion’ for

Figure 3 – Photogrammetry with a projection of the north-west corner of the enclosure wall (S. Poudroux and V. Francigny).

large corner works and 'projection' for minor structures leaning against a wall at relatively short intervals, the latter designation remaining neutral whatever their assigned function (see below). 'Flanking towers' can also be used when projections are few.

Recent test pits made around the northeast corner bastion at Sai have revealed what appear to be traces of a moat on the northern front. Is this the beginning of a wide moat that once surrounded the town on the mainland side? A sloping mud surface of a ditch was also uncovered by the AcrossBorders team to the west of the enclosure wall (Budka 2017, 136). It could confirm the existence of an artificial depression around the town that magnetometry in 2011 revealed (Crabb and Hay 2011, fig. 13). Future excavations should clarify this point.

From the defensive architecture point of view, the most interesting discovery of the two past decades is perhaps a low wall running very close to the north wall, following the contours of a remaining projection (Doyen 2017, 33, figs 9-10) (Figure 3). At first, we thought it was the top of a rampart such as those seen at the foot of Middle Kingdom Nubian fortresses. It seems, however, that it did not overhang a moat, and if such a moat did exist (see above), it was quite far from it. It was thin (around 0.32m) and left a passageway only about 0.70m wide (Doyen 2017, 33, figs 9-10), ending in a dead end at the base of the west face of the northeast corner bastion. This does not seem to have been a thoroughfare acting as a first line of defence. With the information currently available, it is difficult to ascertain its exact function. It is clear that this low wall offers no structural advantage to the main wall as it is independent of it. It differs from the classic Middle Kingdom rampart, which was pierced with loopholes to defend a moat. Middle Kingdom fortresses often had glacis to prevent attackers from positioning themselves at their base and thus escaping the defenders' view.

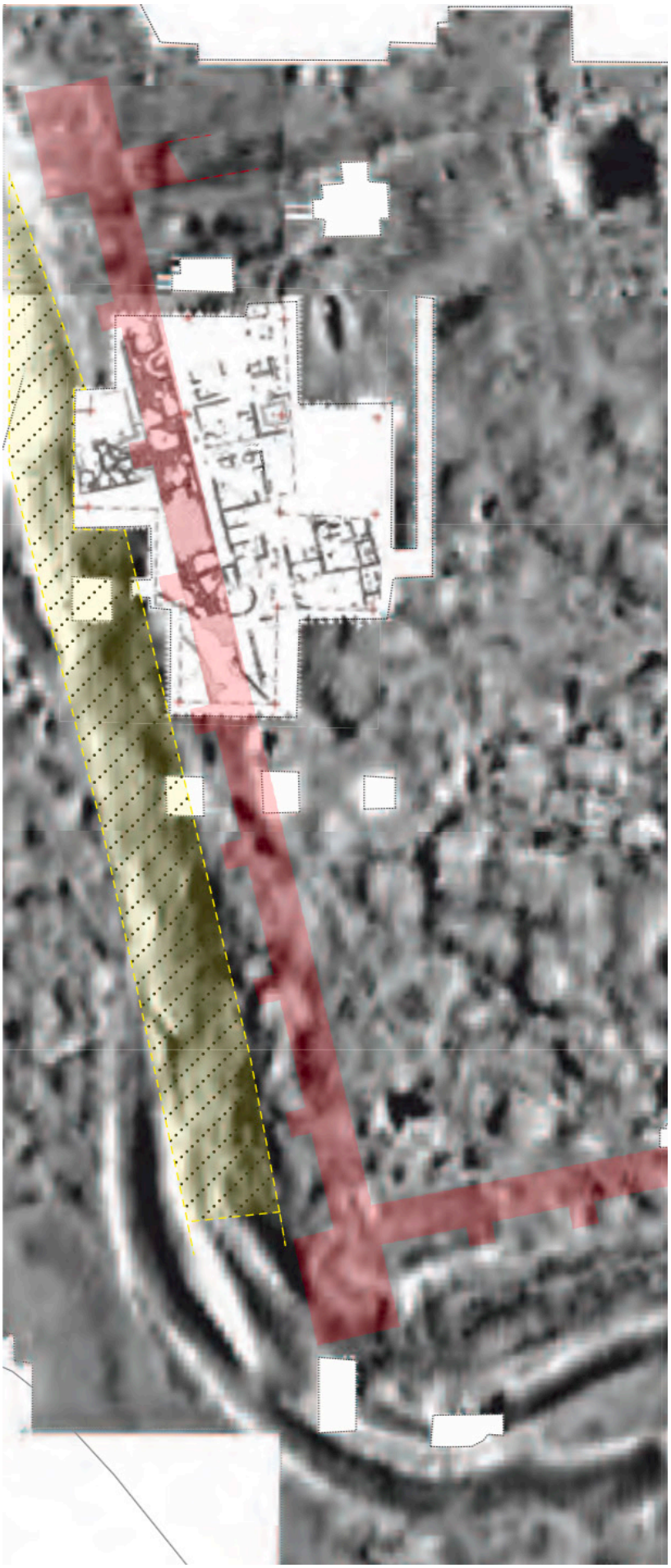

Figure 4. In yellow, geophysical irregularity probably corresponding to a defensive moat (V. Francigny, N. Crabb and S. Hay).

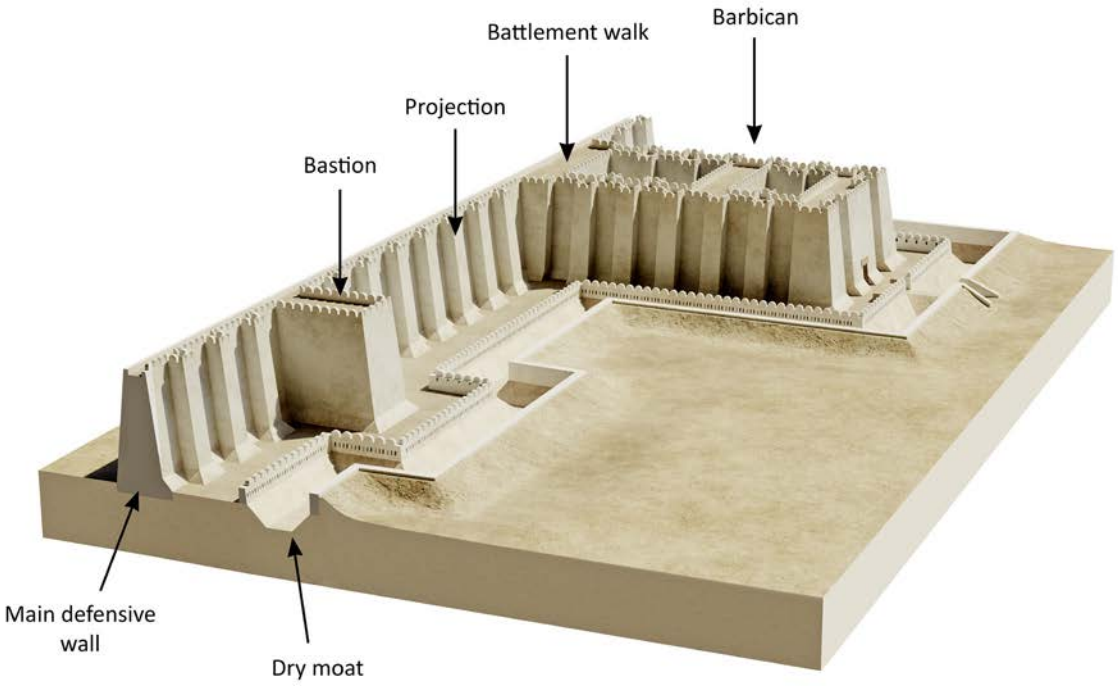

Figure 5. Keys terms of Egyptian military architecture (F. Monnier).

Figure 6. 3D reconstruction of the Middle Kingdom fortress of Buhen (F. Monnier).

At Sai, as in all New Kingdom southern fortresses, glacis are absent from the main walls. Perhaps we are here dealing with a device serving the same function, a small wall acting as an obstacle or even a retaining wall to fill the space between it and the enclosure wall with sand and rubble. In both cases, the aim would be to prevent any approach to the base of the wall. For the moment, these are currently mere hypotheses that further excavations should help to confirm or correct.

How to reconstruct a defensive wall: with bastions, flanking towers or projections?

Reconstructing an Egyptian fortress, like any other ancient monument, involves its share of uncertainties. While archaeology remains totally silent on some details, we must be able to propose a reasoned picture that makes sense both in terms of military architectural principles and structures, and that does not contradict what we learn from the remains and iconographic documentation. Before most were destroyed by the waters of Lake Nasser, the Middle Kingdom fortresses still had significant remains that allowed scholars to draw up a list of indisputable facts. The most problematic points, whatever the period, lie in the upper part of the walls and how to perceive the projections that were always aligned on the outer face with varying frequency. Were they buttresses, bastions, towers, or supports? Were they higher or lower than the parapet? These are fundamental questions and few studies to date have dwelt on them at length (Lawrence 1965, 74-76; Monnier 2011 and 2013a; Vogel 2004, 119-124). The proposed reconstructions of Nubian fortresses contain many issues, and one still hesitates between very different solutions (see for example Adenstedt 2016 and 2018).

The splendid drawings of the fortress of Buhen made by Walter B. Emery (Emery *et al.* 1979, pls 6 and 11) were inspired by Steindorff (Steindorff 1935, pl. 6) who first imagined tall towers pierced with typical medieval loopholes, which certainly was not totally faithful to ancient reality. Lawrence subsequently proposed reinterpreting these 'towers' as piers on which wooden platforms pierced with trapdoors could have rested to provide vertical flanking of the bottom of the wall (Lawrence 1965, 75-76). The existence as early as the First Intermediate Period of wooden-supported bartizans upon walls without projections makes this hypothesis highly doubtful (Monnier 2014, 176-180). Overhanging bartizans or hoards could be erected without the need for masonry supports. Lawrence's device, by offering protection only to the foot of the main wall and not to the foot of the projections, merely shifts the problem rather than solving it.

We also note that the projections of the Middle Kingdom, being very close to each other, created 'dead zones' that were impossible to defend. It was a serious disadvantage that the construction of a simple wall with flanking towers would have avoided (Figure 7).

While these projections made little sense from a military point of view, it is possible that they acted as buttresses to increase the stability of the wall. This interpretation which was favoured by early researchers (Chabas 1902, 197-199; Weill 1900, 84-89) had never really gained ground until it was recently revived by Vogel (Vogel 2004, 119-124). Drawing on Egyptian representations of Middle Kingdom fortresses in the tombs of Khety, Baqet III, Khnumhotep I, and Amenemhat at Beni Hasan, and in the temple of Mentuhotep II at Deir el-Bahari, she interprets them as buttresses appearing at two-thirds of the height of the wall (Vogel 2004, fig. 15; updated in Vogel 2010, 15) and overhung by wooden hoards from which projectiles could have been thrown vertically onto enemies.

This opinion raises several issues. First, the depictions in the private tombs of Beni Hasan probably describe fratricidal wars between Egyptians on their own territory during the First Intermediate Period (Schulman 1982, 176; Shaw 1991, 15; Hamblin 2006, 449). Although they date from the 11th and early 12th dynasties, they relate to earlier events and to buildings that are more likely to be Egyptian than Nubian. These representations depict walls with thick glacis, as observed on the huge enclosure of the contemporary tomb at Dara (Monnier and Legros 2021). It is very unlikely that these were buttresses.

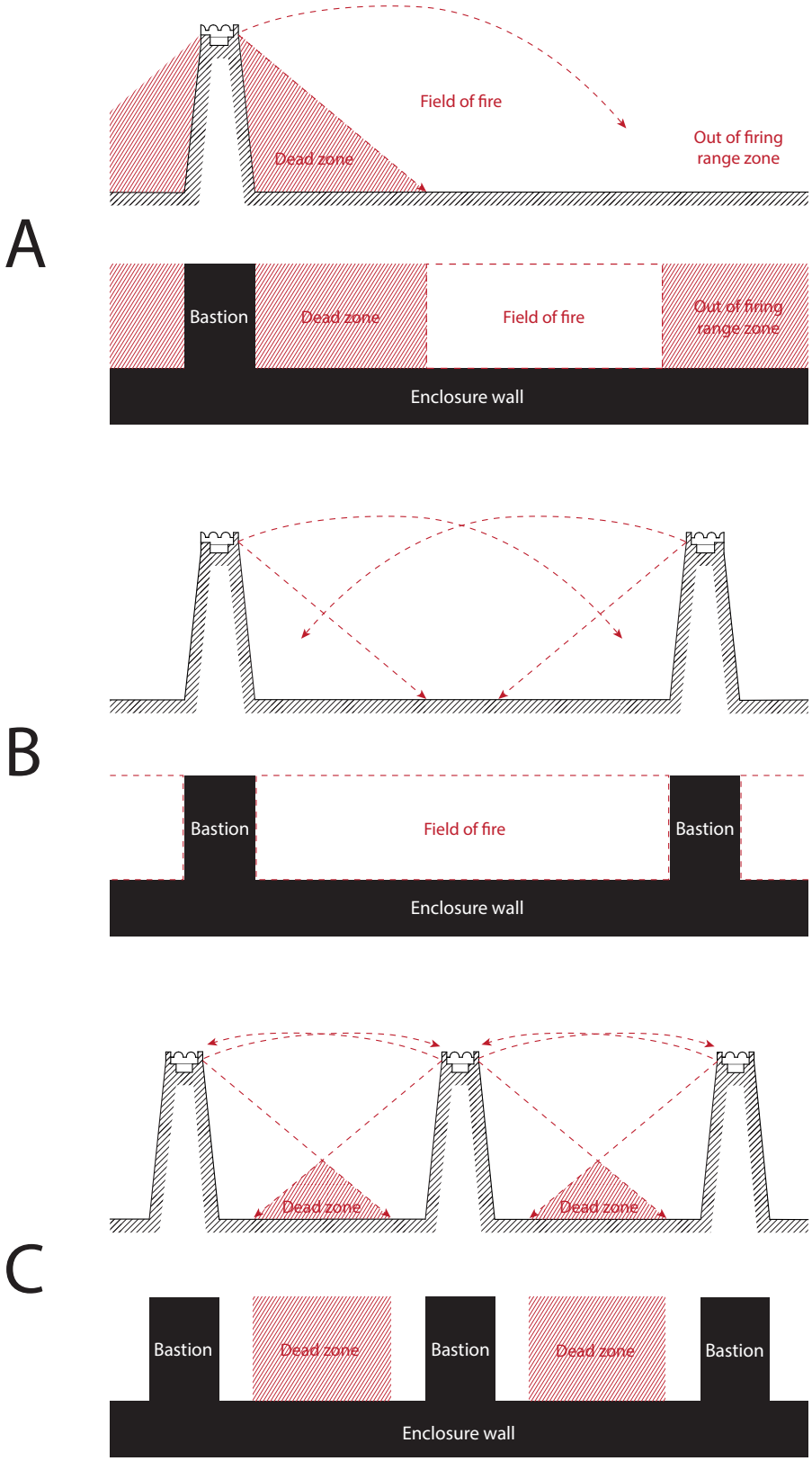

Figure 7. Illustration of the principle of horizontal flanking with bastions or flanking towers. Soldiers stationed atop a single bastion (A) provide protection of the main wall for a limited area within the range of their throwing weapons and the need to remain protected behind the crenellations. The dead zones disappear as soon as two bastions are placed flanking each other no further apart than firing range (B). If these bastions are too close to each other, dead zones reappear (C) (F. Monnier).

Finally, the fragmentary siege scene from the temple of Deir el-Bahari certainly does not depict a buttress as has long been assumed but a straight wall (Monnier 2014, 179).

Construction of walls at that time relied on extensive experience, and there is no reason to suppose the Egyptians would suddenly decide to reinforce them with mostly useless buttresses (see below), only to abandon them a century later. Furthermore, according to this hypothesis, how can we explain their absence in other similar fortifications?

Some contemporary fortresses and defensive constructions lacked them. These include Kubban (Emery 1935, 29-30, pl. 1), Ikkur (Firth 1912, 22-25), Kumma (Dunham and Janssen 1960, pl. XVI), Semna-South (Zabkar and Zabkar 1982) and the Great Wall of Aswan, more than 7km long, some 10m high, 5m thick at the base and with a wall batter angle of 82° (Jaritz 1993), identical characteristics with the enclosure walls of the great Nubian fortresses.

The role of a buttress is to contain the thrusts exerted by a mass of loose and/or granular material on a retaining wall, or by a covering structure on a wall. In the case of Nubian fortresses, the walls are self-supporting and subject only to their own weight. It might therefore be assumed that the buttresses act as stiffeners to prevent the wall from tilting. However, the average thickness at the base of these walls (around 5m), as well as their batter (nearly 80°), make the whole structure stable enough (Figure 8). In essence, the sloping faces of such a wall already act as buttresses (Monnier 2013a, 67-69; see also Lawrence 1965, 75). Not only does the projection bring no advantage to the structure, they also complicate defence by creating numerous dead zones.

Most of the fortresses studied so far have revealed little more than a few courses of masonry, but one of them, Kubban, still had walls almost 8m high before it was destroyed by the waters of Lake Nasser (Emery 1935, pl. 1). It was still possible to discern recesses along the entire height of the walls, which initially were thought to have received projections or buttresses (Lepsius 1849, pl. 111; Tresson 1927, 32; Emery 1935, 30). But Emery's archaeological report is very clear on this point: no projections or buttresses were built

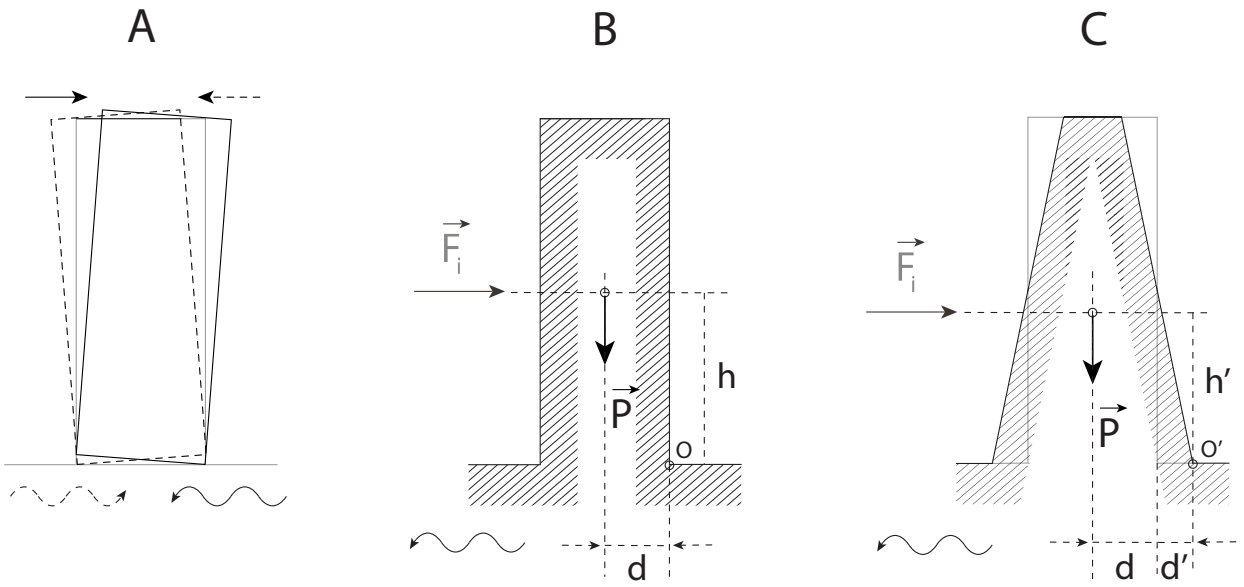

Figure 8. This technical illustration demonstrates the advantages of a wall with sloped faces compared to a straight wall. A wall with a batter angle around 80° (C), of the same height compared with a straight wall of a thickness 2d (B), and built with the same amount of materials, has a superior stabilising moment of more than 40%, and an overturning moment lower by nearly 10%. This represents a significant advantage, allowing the builder to do without stabilising elements or buttresses since the sloping part of the structure essentially fulfils this function (F.

Figure 9. The panelled outer face of the fortress of Kubban (after Emery 1935, pl. 1).

at Kubban (Emery 1935, 29-31, pl. 1) (Figure 9). The monument displayed a succession of grooves which, evidently, had no structural or military role, but only a decorative one.

In the Middle Kingdom, the regular reproduction of finely decorated *serekh* panels reappeared on the enclosure walls of Senusret I's funerary complex at Lisht (Arnold 1988, 59-60). It was in the complex of Senusret II at El-Lahun that the recessed (or niched) stone walls first built in the funerary complex of Djoser[1] (3rd dynasty) was reproduced in the Middle Kingdom (Petrie *et al.* 1923, pls V-IX, XXIII). This kind of enclosure was then faithfully reproduced by the successors of Senusret II, up to the 13th dynasty (Figure 10).[2] Considering how common the panelled motif was on royal funerary enclosures and stone sarcophagi, it is therefore evident that this architectural element acquired a totally renewed communicative character and symbolic power during the Middle Kingdom.

As we have already emphasised elsewhere, the economic and strategic value of this region motivated Egyptian rulers to conquer it and establish fortresses that fulfilled both a defensive and psychological role (Monnier 2011, 40-41). It was equally important to deliver a message to the local population and to the powerful kingdom of Kerma, a message intended to assert Egypt's sovereignty over the region. In our opinion, this is why they built fortresses adorned with multiple recesses and projections which were refined adaptations of the palace façade motif. In that way, these buildings stood clearly as symbols of royalty and power.[3]

Niched architecture in religious or funerary contexts has long been linked to fortresses whose bastioned layout seemed to have inspired them (Monnier 2010, 180-185). Recent research has definitively demonstrated that palace façade decoration (and then the panelled walls) had its origins in archaic royal architecture and iconography (Jiménez-Serrano 2007; Hendrickx 2001, 104; Wilkinson 1999, 225), breaking the hypothetical link with military architecture. Here we propose to keep this link by reversing the influence relationship.

Senusret I undertook a vast fortification programme in Nubia, installing and supplanting forts at Ikkur, Kubban, Aniba, Buhen, and Mirgissa (Obsomer 1995, 346-359, Monnier 2010, 118-148). At first, these were simple enclosures with large and rounded bastions. It was perhaps during his reign, or the following,

[1] However, this architectural practice may be attributed to Amenemhat II. Dieter Arnold claims to have detected some characteristic limestone blocks of niched architecture in the complex of this king at Dahshur (Arnold 2002, 24). No publication has yet confirmed these observations.

[2] Senusret III at Dahshur (Arnold 2002), Amenemhat III at Dahshur (Arnold 1987, 66-71, pls. 30-31, 62) and Khendjer at Saqqara (Jéquier 1933).

[3] This type of architecture in a military context is only found in Nubia during the Middle Kingdom.

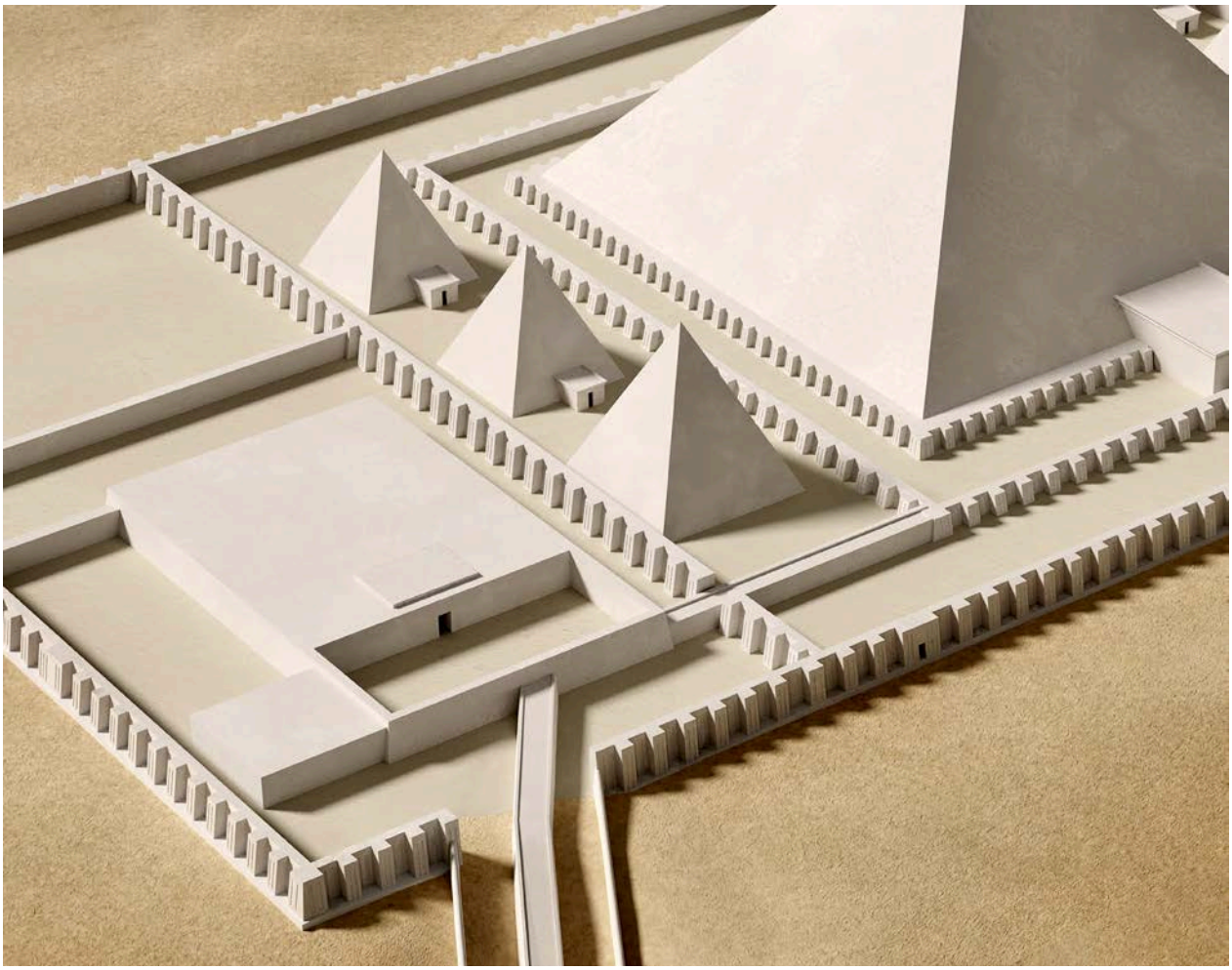

Figure 10. Niched enclosure walls in the funerary complex of Senusret III at Dahshur (F. Monnier).

that the panelled wall appeared in an architectural context other than funerary or religious. Excavations carried out as a matter of urgency before the creation of Lake Nasser often failed to establish a precise chronology for the early stages of fortresses construction. At Kubban, the first fortress with a smooth enclosure wall was replaced by a second, larger one with panelled walls (Emery 1935, 28). As we have seen, no projection was ever built there (see above). At Buhen, care was taken to build the inner fortress enclosure by placing projections against existing grooves. This suggests that these elements were built at a later date. The large western barbican was built in the same way, while the projections of the outer enclosure were integrated into the masonry of the wall (Emery *et al.* 1979, 22, 25). It seems that it was at this time (between the construction of the inner and outer walls) that the projections definitively supplanted the slightly recessed decoration. At Mirgissa too, some projections were integrated in the wall, while others were independent (Gratien *et al.* 2023, 21-22).

The panelled defensive wall is a kind that has not previously been identified.[4] It could be a relative dating factor, allowing us to date a Middle Kingdom Nubian fortification wall to the end of the reign of Senusret I.

It was perhaps under Senusret II that major modifications were made to the already established fortresses[5] (Obsomer 1995, 346-359). During his reign, niched architecture reached its full scope and

[4] The niched or panelled enclosures at Abydos and Hierakonpolis, previously referred to as 'forts', are no longer considered with fortresses. These were funerary or ritual monuments (Bestock 2008; Friedman 2007).

[5] Amenemhat II may have been the initiator of this programme.

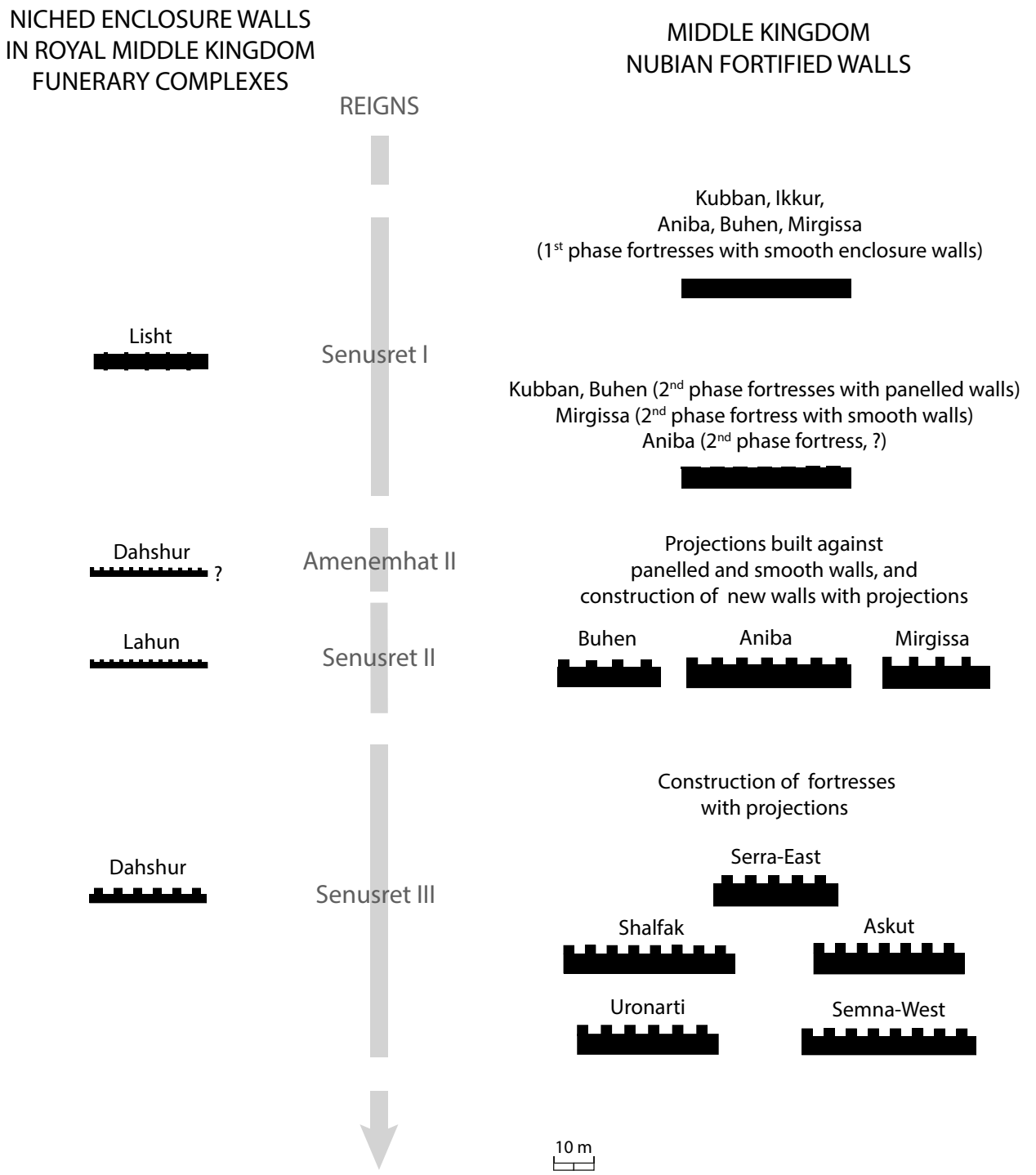

Figure 11. Evolution during the Middle Kingdom of Nubian fortified walls compared to the niched enclosure walls in royal funerary complexes (F. Monnier).

spread to existing buildings as well as new constructions (Aniba, Buhen and Mirgissa), in parallel with its application in the funerary complex at El-Lahun (Petrie *et al.* 1923, pls V-IX; XXIII).

Senusret III extended the southern frontier as far as Semna. New fortresses were built at Serra East, Askut, Uronarti, Shalfak, and Semna-Heh (Tallet 2005, 53-75). These fortresses featured a now-classic system of defensive walls with very close outer projections. The alternating recesses and projections seemed to follow a pattern also seen in the Pharaoh's funerary complex at Dahshur (Arnold 2002, 19-25). The recesses were approximately 2m wide, 1.5m deep and separated by a recess about 3m at its widest (Monnier 2010, figs 81, 97, 100).

The main difference between a Middle Kingdom Nubian defensive wall and a New Kingdom fortified enclosure was the frequency of the outer projections. In the latter case, they were much more widely spaced. Their presence was not systematic since some walls lacked them, like Aniba (Monnier 2010, 131, 132, 160-164). Were they then still perceived as a symbolic element or had they regained the simple function of flanking towers? It is difficult to say. A small fort built around the 7th century BC at Dorginarti (between Buhen and Mirgissa) seems to have been decorated with a panelled motif (Heidorn 2023, 207-217). It indicates that Egyptian symbolism and formal features could have played a significant role up to the early phase of Kushite domination over Lower Nubia when conceiving a Nubian fortress, even if it was possibly not standard practice.

The fortresses and enclosure walls that were depicted in the New Kingdom, such as those on the reliefs of Seti I at Karnak (Monnier 2014, 183, 200-202), clearly feature flanking towers (or bastions). They appear to be topped with a cantilevered platform to defend the foot of the wall. However, these are absent from all the three-dimensional models of fortresses known to-date, such as a libation basin discovered at Mit Rahina (Anthes 1965, 72, pl. 24) (Figure 12), a crown in the shape of a *ṯsmt*-bastion (Berlandini 1984) or even a model fortified enclosure (British Museum EA36903). All represent classical projections that are crenelated like the walls. This discrepancy between the three-dimensional models and the engraved or painted representations is intriguing. It is certainly of interest to note here that at Dorginarti again (see above), a bastion remained intact up to the top. It still preserves some of its crenellations and nothing indicates that there was any overhanging structure (Heidorn 2023, 17-18). Furthermore, its walkway was no higher than that of the main wall. Even if it was of a later date than the fortified city of Sai, it is still another reason to think that it is unwise to depict cantilevered structures of any kind in prospective reconstructions until this is better understood.

The flanking towers and bastions were designed to flank each other, so it is doubtful that they would have dominated the wall by increasing its height, as the battlement walk was intended to provide an easy way between the various parts of the enclosure. Most Egyptian representations agree on this point (Monnier 2014), as well as the remains of the fortress of Dorginarti (see above).

The pharaonic town wall at Sai was around 4.3m thick. Considering the 80° slope of its outer face (Doyen 2017, 32), the wall had to rise no higher than 9m to ensure a sufficiently wide walkway.

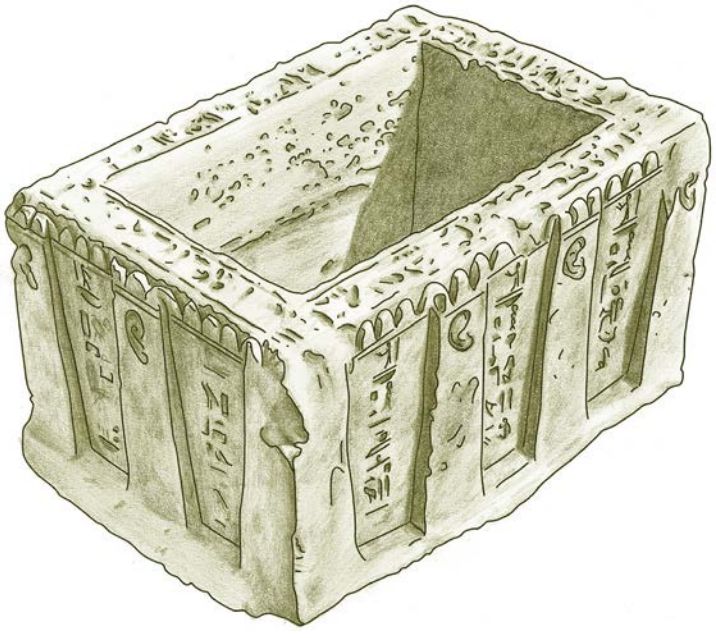

Figure 12. New Kingdom libation basin dedicated to Ptah depicting a fortified enclosure with bastions (F. Monnier).

If the flanking towers were arranged at more or less regular intervals on the northern front, as we assume, they would have been separated by a distance of around 11m. Here too, further surveys will have to determine whether they were invariably found on all sides of the town, and how often.

Following this initial phase of resuming the work on the pharaonic town, a final excavation season was able to take place in 2022, before the onset of the conflict in Sudan, consolidating the observations made so far on the fortification. The inner side of the eastern enclosure wall could be

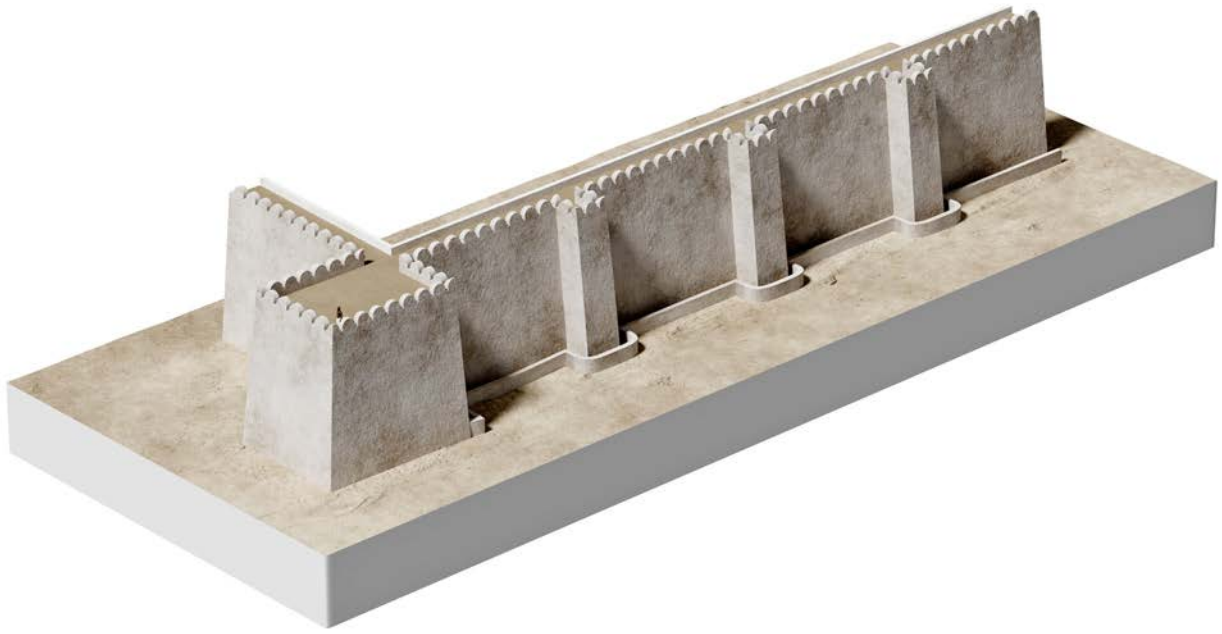

Figure 13. 3D reconstruction of the northern wall and the northeast corner bastion of the New Kingdom fortified city of Sai (F. Monnier). The moat that must have existed is not depicted here as information is still incomplete.

Figure 14. The archaeological site of the fortified city of Sai as it stands today with the new 3D reconstruction of the northern wall (F. Monnier and V. Francigny).

followed for nearly 20m south of the corner bastion, confirming the slightly oblique orientation of part of its layout. Future excavations, when they can resume, will aim to uncover the southeast angle of the fortifications, whose location should coincide with a relatively well-preserved portion of the Ottoman fortress built in the 16th century, which in several places lies directly on ancient Egyptian masonry. It would also be interesting to continue research on the rest of the eastern wall where a gate was probably built to allow access to the river in the event of a siege. Examination of the western part of the enclosure, for which we have little information despite the monumental gate that crosses it, will need to confirm the pattern of projections and the possible presence of a defensive moat. Finally, the mission will continue to search beneath the levels of this enclosure and in its surroundings for traces of an earlier defensive system corresponding to the early stages of the Egyptians' settlement immediately after their capture of this strategic island in the course of the Egyptian conquest of the Nubian territory.

References

Adenstedt, I. 2016. *Reconstructing Pharaonic Architecture in Nubia. The Case Study of SAV1, Sai Island*. CAENL 3, Vienna.

Adenstedt, I. 2018. 'The fortifications of the Pharaonic town on Sai Island. A reinvestigation', in J. Budka and J. Auenmüller (eds), *From Microcosm to Macrocosm. Individual Household and Cities in Ancient Egypt and Nubia*. 135-146.

Anthes, R. 1965. *Mit Rahinet 1956*. Philadelphia.

Arnold, D. 1987. *Der Pyramidenbezirk des Königs Amenemhet III in Dahschur*. Mayence.

Arnold, D. 1988. *The South Cemeteries of Lisht. Vol. I. The Pyramid of Senwosret I*. New York.

Arnold, D. 2002. *The Pyramid Complex of Senwosret III at Dashur.* New York.

Azim, M. 1975. 'Quatre campagnes de fouilles sur la forteresse de Saï, 1970-1973', *Cahiers de Recherches de l'Institut de Papyrologie et d'Égyptologie de Lille* 3, 91-125.

Berlandini, J. 1984. 'La chapelle de Séthi I. Nouvelles découvertes: les déesses Tsmt et Mn-nfr', *Bulletin de la Société Française d'Égyptologie* 99, 28-52.

Bestock, L.D. 2008. 'The early dynastic funerary enclosures of Abydos', *Archéo-Nil* 18, 43-58.

Bonnet, C. and D. Valbelle. 2018. *Les Temples Égyptiens de Panébès 'Le Jujubier' à Doukki Gel – Soudan.* Paris.

Budka, J. 2017. *AcrossBorders 1, The New Kingdom Town of Sai Island, Sector SAV1 North.* CAENL 4, Vienna.

Budka, J. 2020. *AcrossBorders 2, Living in New Kingdom Sai.* AESL 1. Vienna.

Chabas, F. 1902. 'Les inscriptions relatives aux mines d'or de Nubie', *Bibliothèque Égyptologique* 10, 183-230.

Crabb, N. and S. Hay. 2011. *Sai Island, Batn el Hagar, Sudan Geophysical Survey Report.* Unpublished report, May 2011.

Delair, P.-É. 2002. *Histoire de la fortification jusqu'en 1870. I.* Thionville.

Doyen, F. 2009. 'The New Kingdom town on Sai Island (Northern Sudan)', *Sudan & Nubia* 13, 17-20.

Doyen, F. 2017. 'The architecture of SAV1 North', in J. Budka (ed.), *AcrossBorders 1, The New Kingdom Town of Sai Island, Sector SAV1 North*. CAENL 4, Vienna.

Dunham, D. and J. M. A. Janssen. 1960. *Second Cataracts Forts. Semna, Kumma.* Boston.

Emery, W. B. 1935. *The Excavations And Survey Between Wadi es-Sebua And Adindan 1929 - 1931.* Cairo.

Emery, W. B., H. S. Smith and A. Millard. 1979. *The Fortress of Buhen I. The Archaeological Report*. Egypt Exploration Society 49. London.

Firth, C. M. 1912. 'The two mud-brick forts of Ikkur (Kur, or Kuri)', in C. M. Firth (ed.), *The Archaeological Survey of Nubia: Report for 1908-1909, I.* Cairo.

Friedman, R. 2007. 'New observations on the fort at Hierakonpolis', in Z. Hawass and J. Richards (eds), *The Archaeology and Art of Ancient Egypt. Essays in Honor of David B. O'Connor.* Annales du Service des Antiquités de l'Égypte Cahier 36. Cairo, 309-336.

Gratien, B., L. Miellé, M. Azim, J. Pelegrin, and F. Morfoisse. 2023. *Mirgissa IV. La forteresse haute et les enceintes*. Cairo.

Hamblin, W. J. 2006. *Warfare in the Ancient Near East to 1600 BC. Holy Warriors at the Dawn of History.* London-New York.

Heidorn, L. A. 2023. *The Second Cataract fortress of Dorginarti.* Chicago.

Hendrickx, S. 2001. 'Arguments for an Upper Egyptian origin of the palace-façade and the *serekh* during Late Predynastic-Early Dynastic times', *Göttinger Miszellen* 184, 85-110.

Jaritz, H. 1993. 'The investigation of the ancient wall extending from Aswan to Philae, second preliminary report', *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 49, 107-127.

Jéquier, G. 1933. *Deux pyramides du Moyen Empire.* Cairo.

Jiménez-Serrano, A. 2007. 'The funerary meaning of the niched architecture in Egypt during the third millennium BC', *Göttinger Miszellen* 213, 23-38.

Lawrence, A.W. 1965. 'Ancient Egyptian fortifications', *Journal of Egyptian Archaeology* 51, 69-94.

Lepsius, K. R. 1849. *Denkmäler aus Aegypten und Aethiopen, plates, vol. I,* Berlin.

Monnier, F. 2010. *Les Forteresses Égyptiennes du Prédynastique au Nouvel Empire.* Brussels.

Monnier, F. 2011. 'La signification des enceintes à redans dans les forteresses nubiennes du Moyen Empire', *Göttinger Miszellen* 228, 33-49.

Monnier, F. 2013a. 'Éléments raisonnés pour la reconstitution d'une forteresse à redans du Moyen Empire', *Göttinger Miszellen* 239, 65-74.

Monnier, F. 2013b. *Vocabulaire d'architecture égyptienne.* Safran.

Monnier, F. 2014. 'Une iconographie égyptienne de l'architecture défensive', *Égypte Nilotique et Méditerranéenne* 7, 173-219.

Monnier, F. and Legros, R. 2021. 'Le complexe funéraire monumental de Dara (reconstitution et datation)', *The Journal of Ancient Egyptian Architecture* 5, 59-82.

Obsomer, Cl. 1995. *Sésostris I^er^. Étude chronologique et historique du règne.* Brussels.

Petrie, W. M. F., G. Brunton and M. A. Murray. 1923. *Lahun, II.* London.

Schulman, A. R. 1982. 'The battle scenes of the Middle Kingdom', *Journal of the Society of the Study of Egyptian Antiquities* 12(4), 165-183.

Shaw, I. 1991, *Ancient Egyptian Warfare and Weapons.* Buckinghamshire.

Spencer, P. 1997. *Amara West, the Architectural Report I.* Egypt Exploration Society Memoir 63, London.

Steindorff, G. 1935. *Aniba I.* Glückstadt.

Tallet, P. 2005. *Sésostris III.* Paris.

Tresson, P. 1927. 'Le journal de voyage du comte Louis de Saint-Ferriol et la découverte de la stèle de Koubân', *Bulletin de l'Institut Français d'Archéologie Orientale* 27, 29-37.

Vogel, C. 2004. *Ägyptische Festungen und Gernison bis zum Ende des Mittleren Reiches.* Hildehseim.

Vogel, C. 2010. *The Fortifications of Ancient Egypt 3000-1780 BC.* Oxford.

Weill, R. 1900. 'L'art de la fortification dans la haute Antiquité égyptienne', *Journal Asiatique* 15, 1-119.

Wilkinson, T.A.H. 1999. *Early Dynastic Egypt*. London.

Žabkar, L. V. and J. J. Žabkar. 1982. 'Semna-South. A preliminary report on the 1966-68 excavations of the University of Chicago Oriental Institute Expedition to Sudanese Nubia', *Journal of the American Research Center in Egypt* 19, 7-32.