Long Live the Step Pyramid!

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Abstract: The paper discusses the role of the funerary complex built for Netjerykhet (Djoser) in the landscape of Memphis and Saqqara necropolis as a ritual, cultural and visual reference point. Additionally, an interpretation of its meaning and purpose, including the above- and underground structures as well as the so-called Dry Moat, is presented.

Keywords: Saqqara; Memphis; Old Kingdom; Step Pyramid; Netjerykhet; Djoser; cemetery

1. Introduction

Saqqara is the oldest part of the Memphite necropolis—an extensive area that served as a burial and commemoration place for inhabitants of Memphis starting from the early 3rd millennium BCE till the first centuries CE (and, at places, it still serves as such). Situated on a plateau rising ca. 40 m above the floodplain, the cemetery was visible from the residence and defined its western skyline. It was established at the very beginning of the Early Dynastic Period, but until the early 3rd Dynasty, the constituents of the skyline were rather inconspicuous—mastabas belonging to high officials [1] and tombs of kings of the Early Dynastic Period [2]. Although certainly quite impressive when viewed from a relatively close distance and from the same level, they were extensive in their ground-plan but not in height; thus, they did not significantly impact the horizon line when viewed from the floodplain to the east of the plateau. It is only the construction of a huge, innovative (last but not least, as the first monumental stone structure in Egypt) and highly distinctive funerary complex for Horus Netjerykhet—the first ruler of the 3rd Dynasty (the name "Djoser", under which he is much better known today, is not attested before the Middle Kingdom [3] (p. 32 n. 4)), that fundamentally transformed the landscape of Saqqara and thus that of Memphis (Figure 1) [4,5]). Allegedly created by an ingenious architect named Imhotep (himself an exceptional figure [6]), the Step Pyramid complex was intended not only to secure the king's afterlife but also to proclaim the presence of eternal kingship as an idea responsible for the stability of the universe. However, the world-shaping influence of the monument has not been limited to the time of its construction; it also strongly impacted later developments in the area and the consciousness of later generations.

The discussion presented here is based on the results of archaeological work (as published in the works quoted in references), as well as on personal observations made by the author on the site. As the research at Saqqara in general and on the funerary complex of Netjerykhet is still in progress, the interpretations proposed here should be regarded as hypotheses and may be verified in the future.
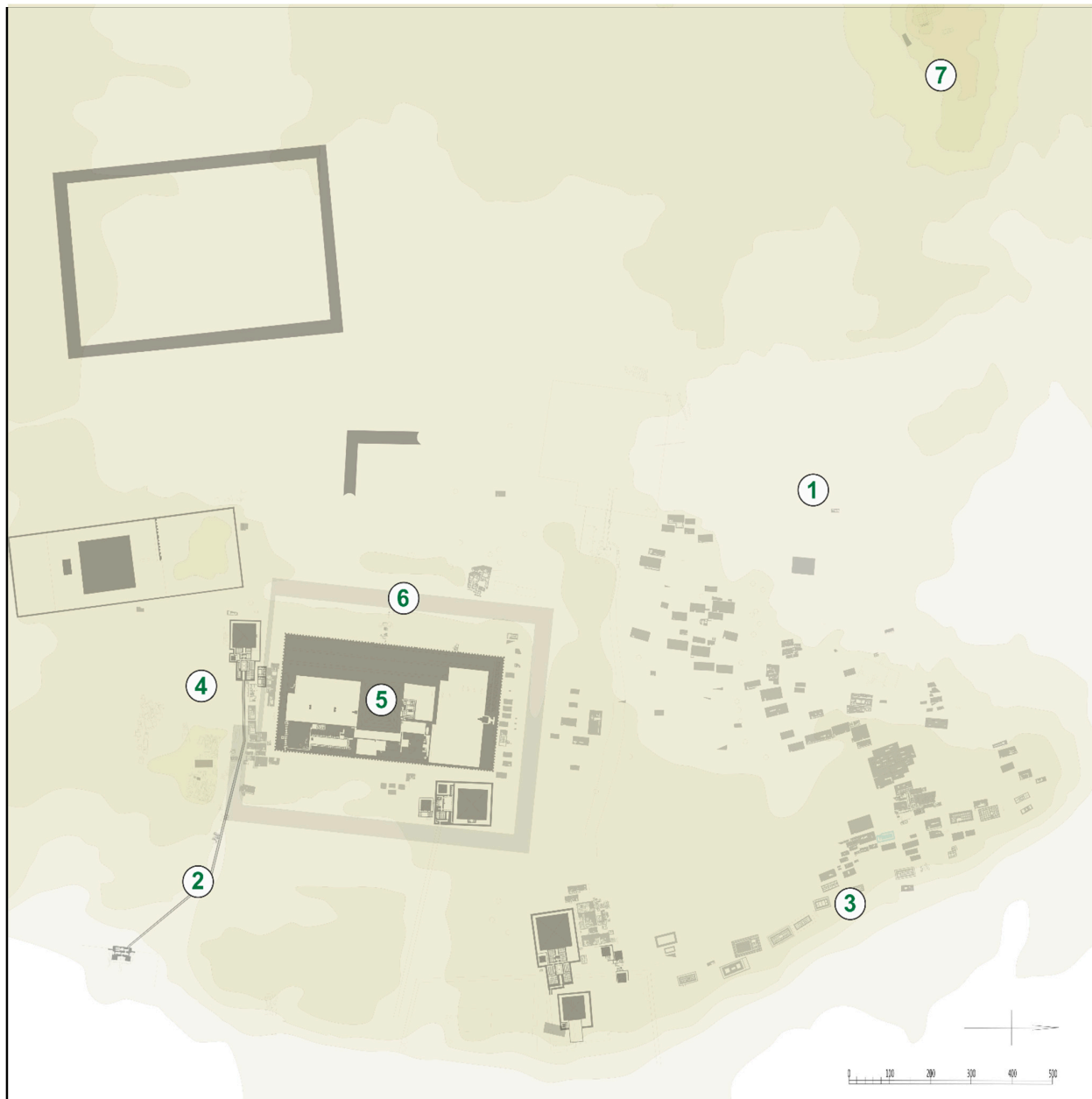
Figure 1. Plan of North Saqqara: 1–Wadi Abu Sir; 2–Wadi Unas; 3–Early Dynastic non-royal cemetery; 4–Early Dynastic royal tombs; 5–Netjerykhet's Step Pyramid Complex; 6–the Dry Moat; 7–Khaemwaset Hill.

2. The Funerary Complex of Netjerykhet

The monument designed for Netjerykhet was an element of a broader strategy aimed at creating a unified concept of kingship after the relatively recent political unification of Egypt. The innovative funerary compound incorporated earlier funerary traditions in an attempt to create an environment that would enable the rebirth and eternal existence of the deceased king [7] (pp. 35–71). In effect, it became a model microcosm that included different planes corresponding to components of the ancient Egyptian universe; this symbolism has already been subject to extensive discussion [8,9] (pp. 384–389). Now, the analysis can be further expanded based on newer research.

The funerary compound of Netjerykhet was founded in the central part of the necropolis of the royal residence—Memphis, between the oldest, non-royal cemetery in the north

and a group of royal sepulchers in the south. It occupies a walled rectangular area measuring 278 (E-W) by 545 m (N-S) and oriented ca. 4° E of N.

It has to be noted that the nature and implications of the astronomical orientation of this and other Egyptian monuments (especially royal ones) are doubtless meaningful and important, and the topic has already been extensively discussed [10–12]. However, it remains outside the scope of the present paper (it will be, however, included at a later stage of research), the more so that even the precise orientation of the Djoser's funerary complex is by no means clear, at least three different values having been quoted in various sources, ranging from 3° east of the true north [13] (p. 99), [14], through 4° E of N [9] (p. 40), [15] (p. 44), 4°2′55″ [16] (p. 68) to 5° W of N [17,18] (the latter being certainly incorrect).

Within the enclosure wall, there is a number of the model (being, as a matter of fact, filled massifs with no or only symbolic internal rooms) and only a few functional structures built of limestone blocks above the ground level (Figure 2) [19]. Due to an almost complete absence of any inscriptions or representations that would hint at the function of the structures, the interpretation of their meaning is elusive, but it seems that as a whole, they constituted a simulacrum of the king's earthly domain, that is, of the world of living [20–22].
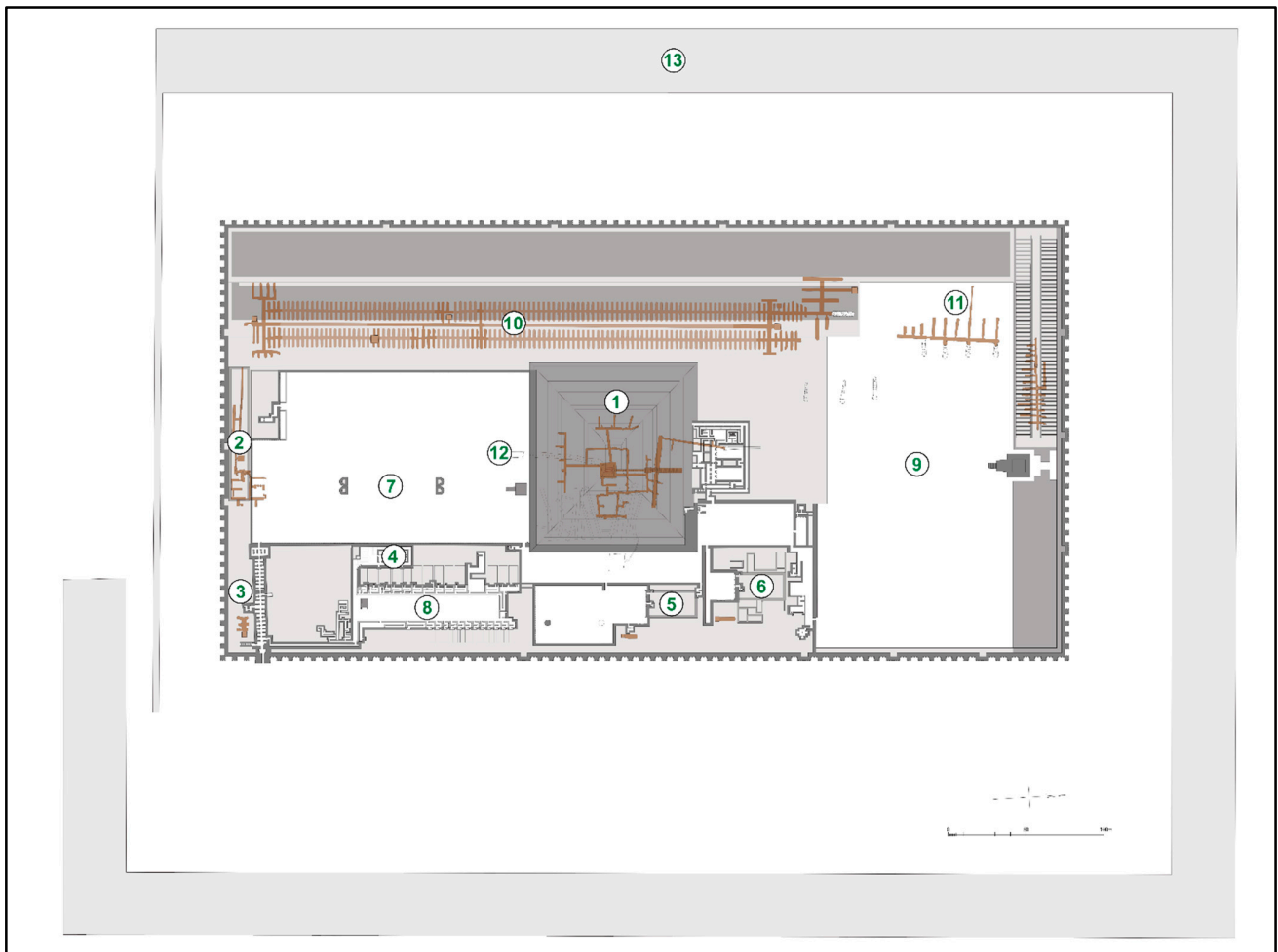
Figure 2. Plan of the funerary complex of Netjerykhet. 1–the pyramid; 2–the South Tomb; 3–the Building Askew; 4–Temple T; 5–the House of the South; 6–the House of the North; 7–the South Court; 8–the Heb-Sed Court; 9–the North Court; 10–Western Galleries; 11–Gallery C; 12–Saite Gallery; 13–the Dry Moat (drawing: the author).

The above-ground plane included:

1. Two burial place markers: the step pyramid and the mastaba of the South Tomb in the central and southern part of the complex, respectively [23] (pp. 2–9, 18–24).
2. Buildings interpreted as model palaces: the so-called Building Askew [15,24] (pp. 41, 45–46), "Temple T" [16] (pp. 145–153), the House of the South and the House of the North [23] (pp. 15–17), [16] (pp. 154–177), [9] (p. 386, n.136).
3. Cult places, including shrines for cult images (above all, those situated at the Heb-Sed court) [23] (pp. 10–13), [16] (pp. 131–132).
4. Ritual stages open spaces designed for performing rituals and gatherings: the South Court [23] (pp. 178–180), the Heb-Sed Court and probably also the North Court [9] (pp. 385–386).

A counterpart to the superstructure, there is an underground level that comprises an extensive arrangement of rooms and passages. The substructure of the complex was modified and expanded in several phases that resulted in several groups of structures of different dates, functions and locations:

1. Apartments related to the royal burial situated ca. 28 m below the ground level (Figure 3) [23] (pp. 3–6, 18–20), [16] (pp. 27–38, 94–110).
2. Additional burial apartments, much simpler and situated slightly deeper than the royal ones (ca. 32m below the ground level); these were intended for members of the royal family [16] (pp. 47–67), [25] (pp. 5–34).
3. Storage rooms along the north and west side of the compound (the latter, situated ca. 6m below the ground level, possibly pre-dating Netjerykhet) [23] (p. 17), [16] (pp. 180–183). It has been suggested that the galleries were originally the tomb of Netjerykhet's predecessor, Khasekhemwy [26,27].
4. Subterranean installations related to specific model buildings within the complex (Building Askew, House of the North and House of the South).
5. Structures post-dating the complex added to it as a monument of the glorious past (most notably, the so-called Saite Gallery providing secondary access to the pyramid's substructure [23] (pp. 90–91), [16] (pp. 43–46) but possibly also Gallery C in the northern part of the compound [27].
6. Structures of uncertain date probably not to be identified as elements of the original design: the shaft tombs (D) and possibly Gallery C in the northern part of the complex.
7. Other structures, interpretation of which is not possible at the present stage of research; it seems that not all of them have already been identified, and even recently, several previously unknown passages were found [19] (pp. 32–33), [28].

The ritual axis of the complex is determined by a twin tomb intended for the king's body and his immaterial double, *ka*. The two elements, signaling the king's presence, are separated (and connected in a sense) by a symbolic stage for eternal repetitions of the Sed festival, the ritual by which the eternal kingship residing in a ruler's physical person was renewed and revigorated [29].

On the above-ground plane, the twin tomb consists of the Step Pyramid and the South Tomb mastaba, with a ritual stage between them that includes a throne-dais and two sets of semi-circular *ḏnbw*-markers (that symbolized the limits of the land; it was between them that the king performed the ritual run to take possession of his domain) on the South Court [16] (pp. 178–180), [30]. Under the ground, there are two actual burial places (each having a sarcophagus placed on the bottom of a deep shaft) with two parallel sets of distinctive rooms, including the so-called Blue Chambers decorated with faience tiles imitating reed mats, while the ritual stage is symbolized by relief panels with representations of the king in various moments of the ritual [31].

Another integral part of the compound is the Dry Moat, an enormous trench cut in the bedrock, up to 40 m wide and over 20 m deep, enclosing an area of ca. 750 by 600 m around the temenos [32–38]. Only parts of its southern and western channels have been excavated so far, but they give a hint at the complexity of this structure (Figure 4).
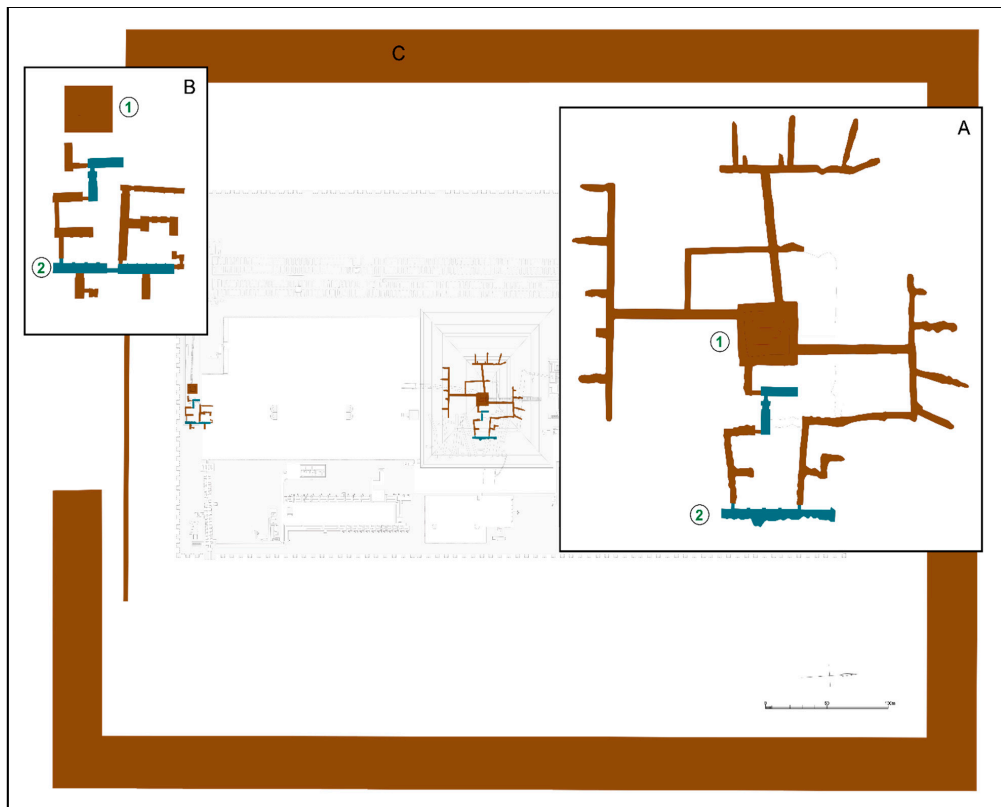
Figure 3. Superstructures of the twin tomb (**A**)–the pyramid; (**B**)–the South Tomb; 1–sarcophagus chamber; 2–Blue Chambers) and the Dry Moat (**C**) (drawing: the author).
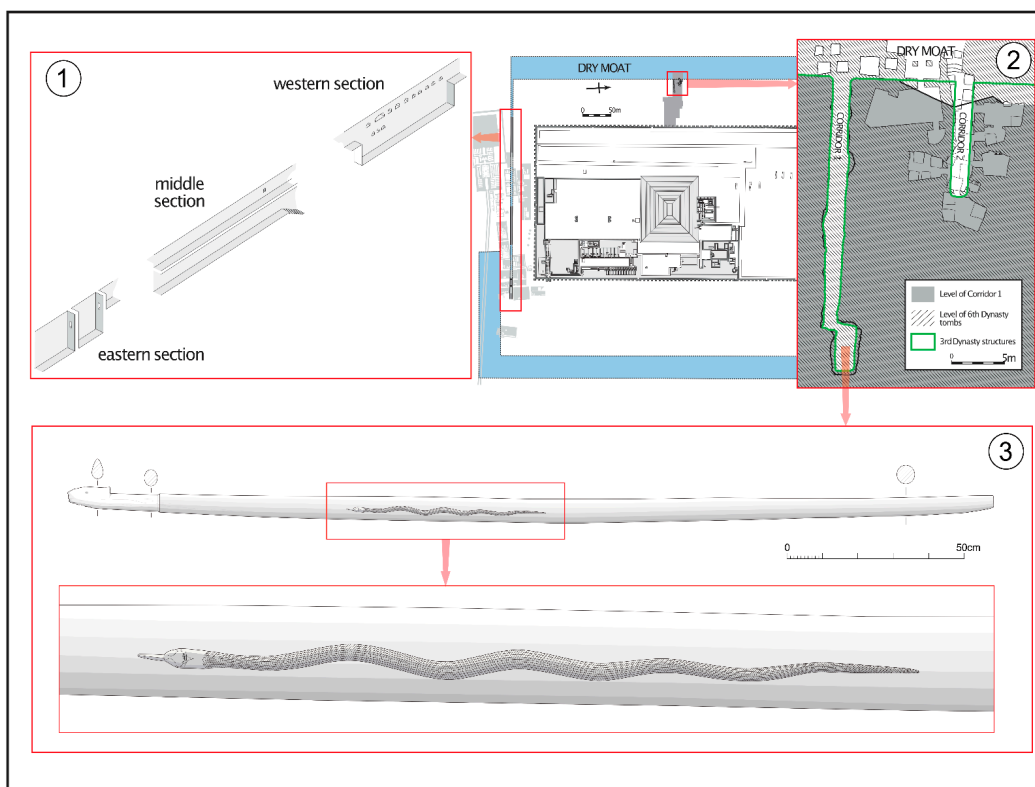
Figure 4. The unearthed sections of the Dry Moat (1–the southern channel; 2–the western channel; 3–the harpoon found in Corridor 1) (drawing: the author).

In the southern channel of the Dry Moat, the unearthed sections are ca. 3 m wide and 25 m deep, and distinctive features have been identified there: dividing walls with door-like openings situated at a hardly accessible height, a roofed compartment with stairs and large (ca. 3 m high) niches hewn in one bank of the trench [33,37–39].

The explored part of the western channel is ca. 40 m wide at the ground level, with the banks sloping at an angle of ca. 30°. Although its initial form is obstructed by later additions (non-royal tombs of late Old Kingdom date [37,40]), two elements that seem to be features of the original design can be identified. One of them (the so-called Corridor 1) is a 20 m long corridor ending with a chamber that contains a wooden ritual harpoon that, although devoid of any inscription, can be dated to the reign of Netjerykhet based on its decoration [38] (p. 14). The other structure was most probably planned as a similar corridor but never finished [37].

It has been suggested that the trench not only physically separated the royal tomb from the rest of the cemetery but that it was a quarry and the source of building material for the Step Pyramid complex [32,36] or a gathering place for the souls of the nobles to serve the dead king [32,34]. It seems perfectly possible that the material extracted from the trench was actually used for the construction of some parts of the complex (all its elements, including the enclosure wall, have the cores built of low-quality local stone and lined with white, hard limestone; the material quarried from the trench soft, brittle, greyish type of limestone was suitable for the cores only). However, the form of the trench suggests that the extraction of stone was not its sole or even primary purpose, as it does not correspond to the ancient Egyptian quarrying methods [41] (p. 6).

On the other hand, the diversity of the additional features, walls with doorways, compartments, stairs, niches (probably intended for statues) and room(s) with ritual objects is striking, and while there are no preserved sources that would elucidate the eschatology in the times of Djoser, it brings to mind the sequence of netherworld regions, populated by hostile and dangerous beings, that a deceased king had to pass through before reaching the eternal afterlife, as (vaguely, however) described in later religious texts [42,43] (pp. 11–16). Moreover, the depth of the Dry Moat in its southern channel (where unlike in the other channels, the bottom has been reached) corresponds roughly to the level of the burial spaces in the twin tomb [43] (pp. 66–67) [33], which suggests a spatial relationship between the places. It may be suggested, therefore, that the Dry Moat was created as a part of the sacred landscape encoded in the temenos [8,31,37].

Thus, it may be supposed that while the trench was probably the source of building material for the Step Pyramid complex, the stone has been quarried as a result of the Dry Moay being created rather than the other way around.

The funerary compound of Netjerykhet does not contain textual or iconographic data that would directly help to identify the meaning and function of its individual structures. However, a corpus of texts is available that comment on the afterlife experience of a deceased king, including locations it was supposed to involve in the Pyramid Texts [44]. The extensive collection of religious texts is not recorded in any preserved written sources before the reign of Unas; however, it may be assumed that concepts expressed in them existed much earlier, and thus the mythical topography they describe (or rather suggest) can be tentatively referred to the Step Pyramid complex. Although the topography described in the Pyramid Texts is difficult to decode [45–48], the characteristics of the locations being subsequent stages in the afterlife journey of the deceased king find parallels in the sequence: sarcophagus–Blue Chambers–model shrines with relief panels–the Dry Moat–the Sky.

3. The Place in the Landscape

The funerary compound has been designed as a self-contained model of the universe for a single person: the deceased king (with additional benefits for the members of his family). However, the location of the monument has also been deliberately chosen, doubtless, with an intention to profoundly impact both the landscape and observers. Established in the central part of the North Saqqara plateau, above Memphis, and between two already

existing burial areas: the non-royal cemetery in the north and the royal one in the south [9], it was intended to dominate and encompass the whole necropolis.

When thinking of how the pyramid complex was visible, perspective matters. From the functional point of view, it is less important how to approach the royal tomb than how to leave it, as this is what the deceased king was supposed to do. On the other hand, due to its scale and distinctiveness, the funerary monument must have had a powerful visual effect on anyone approaching it; this was almost certainly expected and deliberately planned by the architect, as an emphasis put on the visibility of the complex is evident in the subsequent changes of the design that progressed, e.g., from the low and flat initial mastaba, through the four-tiered pyramid to its final form with six steps [7] (pp. 40–41, 53–54).

Situated high above and to the west of the floodplain, when seen from Memphis, the Step Pyramid complex was a prominent sign of the king's eternal presence and the crowning, focal element of the whole necropolis. (To be more precise, it was the Step Pyramid itself, as the low parts of the enclosure, including the wall, were mostly not visible from the residence because of the difference in levels between the plateau and the floodplain.) Clad in polished white limestone, the pyramid shined in the sunlight as the most distinctive element of the western skyline; with the setting sun in the background, its dark silhouette must have been no less impressive, but this was not the only perspective from which the complex was seen.

When discussing visual aspects of the Step Pyramid complex, its original appearance should be considered. All the above-ground structures were cased with white limestone, but some of them could have been painted with bright colors. It is actually not known whether the enclosure wall was painted too; considering the well-attested polychromy of paneled exteriors of Early Dynastic mastabas [1] (vol. III, p. 8, pl. 6–8), it cannot be excluded. However, because of the possible association with the Memphite White Wall and the properties of the hard, fine-grained limestone of which it was built [49], as well as its sheer size, it seems probable that the enclosure wall had the natural color of the polished limestone (and the same concerns the pyramid). The huge horizontal band of the wall from which the staircase-like bulk of the pyramid seemed to emerge certainly created a striking visual effect. This became even more pronounced in the afternoon, when lit from the south-west. The 10.5 m high wall was intersected with 196 bastions (with 14 double ones with dummy gates), each having two shallow niches on its front and sides; rhythmically alternating lights and shadows emphasized the monumentality of the structure (Figure 5).
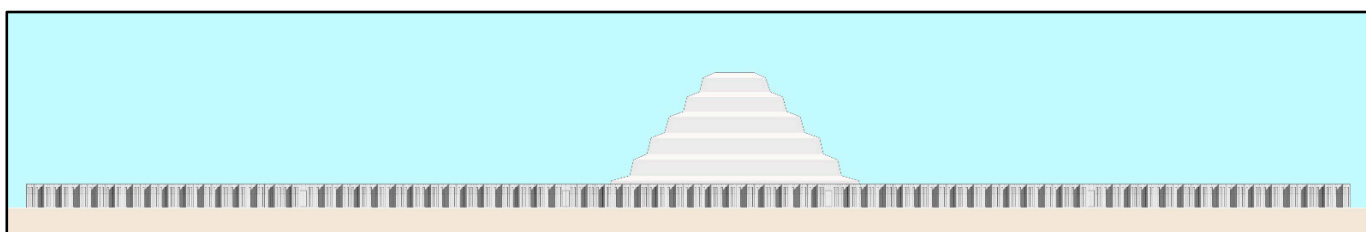
Figure 5. The funerary complex of Netjerykhet (reconstruction) as viewed from the west (drawing: the author).

During the Early Dynastic Period and the Old Kingdom, the main approach to the cemeteries on the Saqqara plateau was from the north, through Wadi Abu Sir; situated to the east of the wadi, the complex was thus viewed not only from the settlement(s) on the floodplain but also from the north and west, forming a commanding and meaningful background for later cemeteries, influencing their layout and design.

The whole area of the Netjerykhet's compound, including the Dry Moat, was intended as a sacred zone, excluded from use for other purposes; at the moment of its construction, non-royal cemeteries were spatially separated from royal tombs. This, however, has changed with a tendency to cluster dignitaries' tombs around royal funerary complexes that were introduced under the 4th Dynasty [50]. Thus, after a slightly earlier, abandoned

attempt [51] (pp. 169–170), non-royal cemeteries started to develop in the proximity of the Step Pyramid complex under the 5th Dynasty. The area to the east of it is still under-researched; only a few tombs have been identified here, and no systematic research was conducted to reveal the structure of the cemetery [52,53]. However, the western side gives a glimpse into the organization of the necropolis. To the west of the complex, a late Old Kingdom non-royal cemetery is situated between the Netjerykhet's enclosure wall on the east and the Dry Moat on the west (Figure 6) [54]. When the cemetery was established, the Dry Moat was partly filled with debris (but still approximately 5.00 m deep, as indicated by the fact that several 6th Dynasty tombs were hewn in both banks of its western section at that depth) [34].

Figure 6. The late Old Kingdom cemetery west of the Step Pyramid complex—view from the west (phot. J. Dąbrowski/PCMA UW).

Thus, viewed from the west, the area was a ca. 10% slope topped with the distinct horizontal band of the temenos wall with the towering silhouette of the Step Pyramid in the center. Longitudinal rows of mastabas (at least some of them with walls paneled in resemblance to the temenos wall—Figure 7) parallel to the steps of the pyramid formed a kind of downslope extension of the pyramid. When seen from the west (that is, from the main approach through Wadi Abu Sir or a new one through Wadi Unas with its extension in the Dry Moat), the tombs were not only situated close to the monument of Netjerykhet but, in a sense formed part of it, which made the tomb owners *jmꜣḫw* (a designation which is often translated as "honored"; this, however, does not express the whole meaning of the word, also covering the idea of being provided with things necessary for the funerary cult) by the king. The builders of the mastabas must have been aware of this not only spectacular but also religiously meaningful visual effect. Thus, despite being surrounded by later cemeteries, the Step Pyramid complex has not been dominated by them; on the contrary, the interplay between the new structures and their royal background contributed to a mutually enhancing effect.
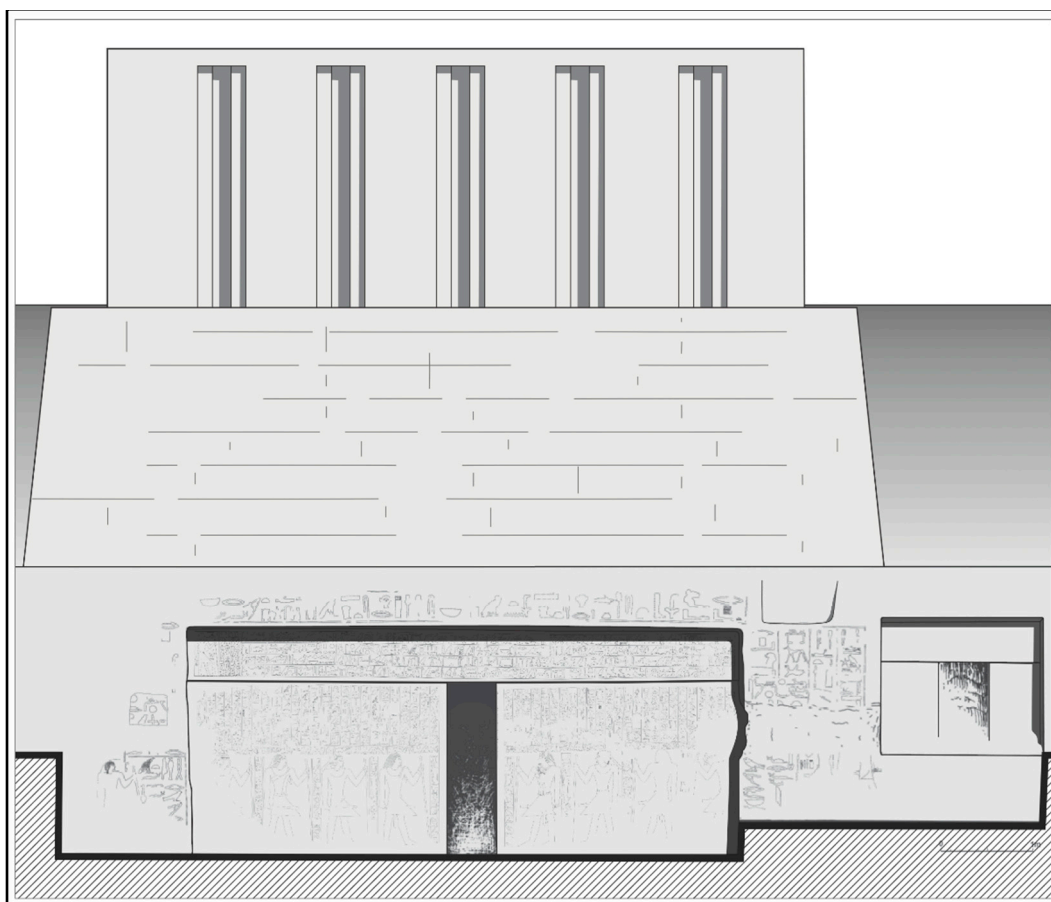
Figure 7. Reconstruction of the tomb of Merefnebef (drawing: the author).

4. Later References

Toward the Old Kingdom, the Step Pyramid complex (or at least some parts of it) was probably adapted to be used for administrative purposes [55] (pp. 135–140), and then it suffered significant damage (architectural elements found in late Old Kingdom layers indicate that the enclosure wall partly collapsed as a result of violent rainfalls at that time, and underground rooms may have been penetrated [40]). Nevertheless, considering the scale of the monument, it must have remained an important landmark, although its impact in later times is less clear. Although there is no known evidence of any purposeful activity related to the compound between the Old and New Kingdom, the concepts and ideas that it represented seem to have continued to influence both royal and non-royal funerary installations (the most striking example being the pyramid complex of Senwosret III at Dahshur, its layout and paneled perimeter wall clearly referring to the Netjerykhet's model [56] (pp. 121–122), [57]).

The New Kingdom saw an increased interest in the Step Pyramid complex, as evidenced by a number of graffiti written by visitors. Several of the graffiti (all of them of mid-18th Dynasty date) contain a phrase referring to the impression that the already ancient monument left on them:

(. . .) *ḥwt-nṯr n ḏsr gm.n=f sj mj pt m ẖnw=s rʿ ḥr wbn jm=s* (. . .)

(. . . he came to see) the temple of Djoser. He found it as if there were heaven in it, Re rising in it (. . .) [58] (pp. 75–76, 81–82, 87–89, 102).

Another securely dated period of activity related to the Step Pyramid complex is associated with prince Khaemwaset, son of Ramesses II and high priest of Ptah at Memphis [59]. His deep interest in the Memphite necropolis is well attested and emphasized by the fact that he built his *ka*-chapel to the north-west of the central Saqqara plateau, on a high outcrop containing a 3rd Dynasty structure and providing a wide panorama of the

whole necropolis (Khaemwaset Hill) [60], Figure 1. Thus, it comes as no surprise that his undertakings also included the monument of Netjerykhet. In the South Court, fragments of an inscription (almost certainly originally carved on the southern face of the Step Pyramid) were found that attests to Khaemwaset's restoration works conducted also here, as in several other Old Kingdom royal funerary complexes [25] (p. 52), [59] (pp. 77, 103). Moreover, inscriptions on a granite offering basin founded by the prince quote Imhotep and his works, also mentioning *stpt-nṯr rsw jmntj*–"south-western temenos", an otherwise unidentified sanctuary that, as suggested by J.P. Allen, might have been located within the Step Pyramid complex [61] (pp. 8–9). This would mean that under the 19th Dynasty, the complex was more than an abandoned ancient monument.

The fact that the complex was visited during the New Kingdom is not surprising, especially considering the proximity of the 18–20th Dynasty cemetery to the south of it. However, there is intriguing evidence of another activity at that time, doubtless directly related to the Step Pyramid complex. An extensive mud-brick platform was built abutting the enclosure wall (and closely following its bastions and recesses) [62,63] (pp. 156–157). Only its northern limit has been identified, marked with a low (and preserved in its full height) wall; the preliminary research indicates that the platform extended at least 50 m N-S and ca. 30 m westwards from the wall (Figure 8). The surface of the platform (and of the wall) was plastered and whitewashed. No other structures have been identified that would hint at the function of the platform, which thus remains unknown. The platform does not seem to have a parallel in any of the nearby New Kingdom temple tombs [64,65]. Situated on a slope and consisting of a single layer of mud brick set on a thick layer of wind-blown sand, its construction is not suited to an intensive or long-term use but rather to a one-time or periodic ritual performance for which the context of the Step Pyramid enclosure was of importance; the Memphite festival of Sokar, which apparently involved a procession through the necropolis, might have been such an event [64] (pp. 209–213).

Figure 8. Remains of the New Kingdom platform abutting the Netjerykhet's enclosure wall (phot. M. Jawornicki/PCMA UW).

From the Late Period onwards, it seems that it was rather Imhotep than Djoser who was more prominent in the Egyptian consciousness [6] (pp. 5–197). However, there is clear evidence that the Step Pyramid complex was being intensely visited and explored at that time [66] (pp. 32–34), and, moreover, that it was a source of inspiration for architects, especially in the Saite Period when it served as a model for a completely new type of funerary structures [67].

In later times, the impact of the Step Pyramid complex being a monument of the pagan past was certainly less noticeable but not non-existent. Writing in 13/14th century CE, Arab scholar Al-Nuwayri briefly described the ancient monument (although, apparently, partly confusing it with the neighboring pyramid of Unas, as he mentions an east–west orientation of the tomb as well as a stela made of a black stone) and he seems to have visited the Blue Chambers (in the South Tomb or which is less probable, considering their unfinished state under the pyramid), as he recounts a „lapis lazuli decorated vault". In this context, Al-Nuwairi also mentions a Coptic festival honoring an ancient king named Disara, which seems to be a remembrance of Djoser [68]. Moreover, in 2010 a Coptic hermitage was discovered, arranged in the pyramid masonry [69] (p. 5). It is, therefore, evident that both Netjerykhet (under the name of Djoser) and his funerary monument still functioned in the memory of Egyptians over four millennia after his death.

5. Conclusions

This short overview was intended to illustrate the long-lasting impact of a single decision to build an unprecedented funerary monument. Designed early in the 3rd millennium BCE as an expression of religious and political concepts, it formed not only an afterlife environment for the king who was buried in it but also deeply influenced future developments.

The funerary complex built for the first king of the Old Kingdom was designed as a model of the universe, encompassing both the real and mythical dimensions, to ensure the deceased king the resurrection, ascension to the sky and eternal kingship, thus creating a self-contained ritual landscape. At the same time, it was set within the physical landscape of the necropolis and of the residence–Memphis. In this aspect, it was a visible symbol of a specific person (the king) and an idea (the kingship), but also a reference point for creators of later structures, who referred to it by taking advantage of its physical proximity or of its striking visibility to enhance their significance. Due to its monumental visibility, the Step Pyramid has remained a meaningful element of the physical landscape ever since, also when its ideological and religious meaning was no longer valid.

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