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Text-Simulated Paths in the Pyramid of Unas Are Topographically Analogous to the Positions of the Upper and Lower Chamber Shaft Inlets in the Great Pyramid

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Abstract

The original purpose of the four known shafts that uniquely emit from the Upper and Lower Chambers inside the Great Pyramid at Giza, Egypt, remains unknown despite several models that have been proposed to explain it. The principal problem with proving the intent behind their incorporation into only this pyramid's design is that all models thus far rely on circumstantial evidence. No written records of architectural design have been discovered that could unequivocally prove what was intended. Here, I highlight two known Pyramid Texts passages speaking of paths for the soul to rise to the northern and southern sky. They were placed on the north and south walls of the antechamber inside the pyramid of Fifth Dynasty King Unas in such a manner that their distances from the eastern seam of a large lintel stone above the entry into this chamber, and the chamber's east wall, respectively, are analogous to the distances of the shaft openings from the east walls of the Upper and Lower Chambers of the Great Pyramid. This topographically analogous placement of two textual invocations of a ritual path into the afterlife supports the model previously proposed by Alexander Badawy and others before him that the purpose of the small shafts in the Great Pyramid was of a religious nature, arguing against a purely logistical purpose.

Keywords

Great Pyramid, Unas, Pyramid Texts, Shafts, Simulation

1. Introduction

From both known, above-ground chambers built into the masonry of the Great Pyramid at Giza, Egypt, a set of two small shafts about as wide as a woman's shoe box ascends to higher pyramid levels from opposite inlets at the north and south walls (Gantenbrink, 1999; Bergdoll, 2016; Hamilton, 2022). No other Egyptian pyramid is known to have them incorporated. Both their design and construction required significant added resources, indicating that they must have served an important function (Gantenbrink, 1999: Findings). Since their discovery, several explanations have been put forth to explain their purpose; for example: 1) conduits for air flow,¹ 2) communication channels,² 3) chemical reservoirs and electromagnetic wave guides (Dunn, 2024: figure 2.3 and chapter 5), and 4) ritual paths to the sky for the soul of the dead king (Badawy, 1964: p. 193). The latter model by Badawy was later extended by Virginia Trimble and Robert Bauval to identify specific stars targeted by each shaft (Trimble, 1964; Bauval & Gilbert, 1994).³

The Upper Chamber's (a.k.a. "King Chamber") shaft inlets on the north and south walls are located 2.48 and 2.49 meters, respectively, from the east wall (Gantenbrink, 1999: Findings). The Lower Chamber's (a.k.a. "Queen Chamber") shaft inlets, likewise, north and south, are located 2.90 and 2.88 meters, respectively, from the east wall.⁴ Therefore, the two shafts of each chamber are located diametrically opposite each other to within 2 cm. The shafts in the Lower Chamber are circa 40 cm further west than the shafts in the Upper Chamber, reckoning their distance from their respective chamber's east wall.

In the Upper Chamber, the roof of the northern shaft is created by a granite lintel 122.7 inches/3.12 meters wide (Smyth, 1867: p. 109). This lintel makes up the entire distance, and beyond, from the chamber's east wall to the shaft's eastern limit on the second and third courses of the five Upper Chamber granite block courses (Figure 1). Thus, the shaft's eastern limit roughly divides the lintel into two conceptual segments, 4/5 (2.48 m/3.12 m ~4/5) and 1/5 (3.12 m – 2.48 m = 0.64 m; 0.64 m/3.12 m ~1/5).

The pyramid of Unas has two chambers: an antechamber and a burial chamber. The former measures 3.71 m on the north wall and 3.75 m on the south wall (Labrousse, 1996: p. 30). Most of its north wall comprises a trapezoid-shaped lintel that measures between 2.94 m at the top and 3.09 m at the bottom (Brabin, 2010: p. 59; Figure 2). The distances from the east edge of the lintel to the east wall of the chamber are 0.31 m at the top and 0.26 m at the bottom (Labrousse, 1996: p. 30). The missing lengths from the western edge of the lintel to the west wall are therefore 3.71 m – 2.94 m – 0.31 m = 0.46 m and 3.71 m – 3.09 m – 0.26 m = 0.36 m, respectively (Figure 3).

¹Reviewed recently by YouTube channels *History for Granite* at URL:

<https://youtu.be/-Wz1ARwxVGc?si=oR9kq55l0W7dEaiK>, and *Ancient Architects* at URL:

<https://youtu.be/Dr9jjciHqXs?si=LGubuQ2KMaMttSJ9>.

²<https://youtu.be/-z8pX9jX1qI?si=k6i7qZf-z1tPhAX>

³J. J. Hurtak also associated one of the shafts with Orion in Keys 108-111 (Hurtak, 1975).

⁴All distances are from the east wall of the respective chambers to the east wall of each shaft.



Figure 1. The granite lintel of the north wall over the entry into the Upper Chamber inside the Great Pyramid. The northern shaft (left) begins 2.48 meters from the east wall (right). Photo from 2021.

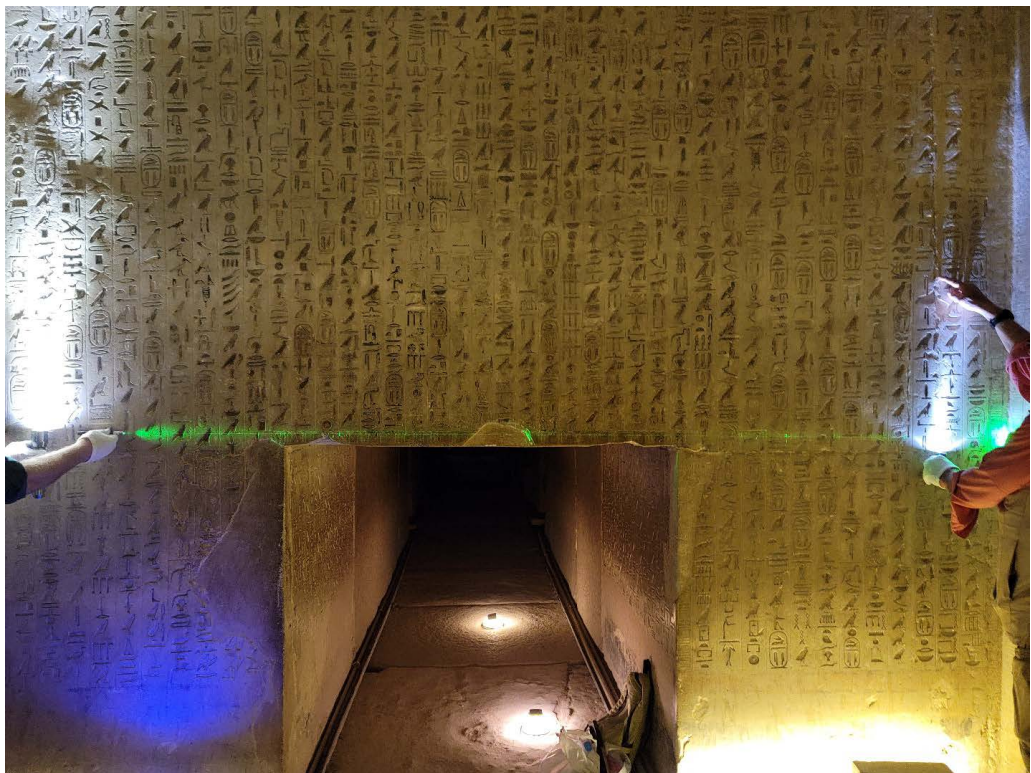


Figure 2. The lintel over the entry to the antechamber of Unas. The white light cones mark its east and west limits, and the green light marks the bottom. Photo courtesy of Erfan Samsamshariat, 2022.

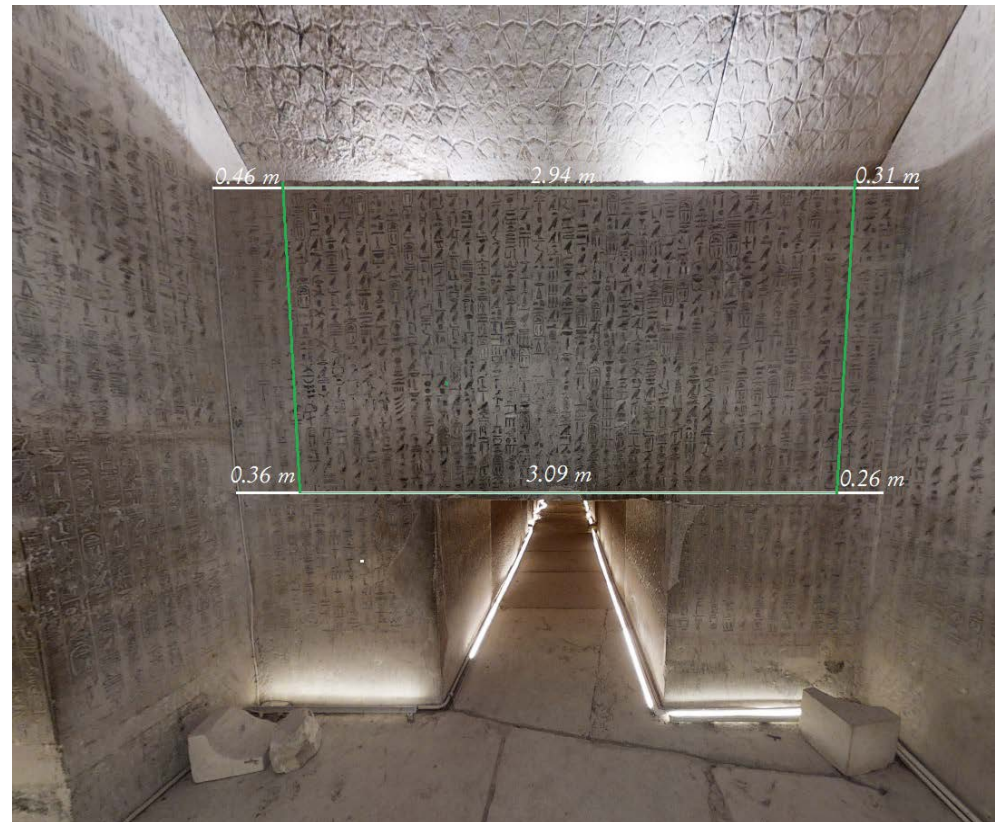


Figure 3. Measurements of the north wall and lintel (marked in green) above the entry into the antechamber of Unas, based on published (Labrousse, 1996: p. 30; Brabin, 2010: p. 59) and computed data. Screenshot of Virtual Unas (<https://www.ees.ac.uk/resource/burial-chamber-of-unas--saqqara.html>), courtesy of the Egypt Exploration Society; modified.

The Pyramid Texts inscribed into the north wall of Unas' antechamber encompass Utterances 302 to 312. The hieroglyphs spelling them out are incised into forty-three text columns, read from west to east (left to right); each column is to be read from top to bottom. Including the two ornamental columns at the extreme east and west, a total of forty-five columns can be observed, thirty-six of which are fully contained by the lintel, seven (3 east + 4 west) fully outside of it, and two, partially and fully split by its east and west seams, respectively. Therefore, the average width of each column is circa $3.71 \text{ m}/45 \times 100 \text{ cm/m} = 8.24 \text{ cm}$, slightly wider than a palm of a royal Egyptian cubit. In this paper, the error in computing distances based on column numbers can be estimated to be within $\pm 5 \text{ cm}$, i.e., about one-half of a text column.

2. Observations

Counting from west to east, the tenth text column—eleventh including the ornamental column on the western edge—of the north wall of the antechamber of Unas contains the following hieroglyphic text from Utterance 304 (paragraph numbers 468a-469b), read from top to bottom (relevant passage in boldface, columns in brackets):

Transliteration (Allen, 2013: p. 95):

[...10] j.nḏ hr.t zḥt jnpw [11] ḥrt ptrw pt ḥnkt ḏḥwtj ḥrt m³wj m³qt j.wn wḥt
wnjs swḥ wnjs j.nḏ hr.k njw ḥrj spt mr-n-ḥḥ [12] j.wn wḥt wnjs swḥ wnjs.

Translation (Allen, 2005: p. 57):

[...10] Greetings, Anubis's daughter [11], at the sky's looking, you whom Thoth
endowed, at the ladder's uprights!

Open Unis's path that Unis may pass.

Greetings, ostrich at the Winding Canal's lip! [12] **Open a path for Unis that
Unis may pass.**

The eastern edge of the eleventh column containing the phrase “Open Unis's
path, that Unis may pass” is located at a total distance of 34 (3.5 + 30.5) columns
 $\times 8.24 \text{ cm/column} \times 1 \text{ m/100 cm} = 2.80 \text{ m}$ (error range: 2.75 - 2.85 m) from the
east wall of the antechamber (Figure 4). The same edge is 31 columns $\times 8.24$
 $\text{cm/column} \times 1 \text{ m/100 cm} = 2.55 \text{ m}$ (2.50 - 2.60 m) from the lower eastern edge of
the lintel stone, and 30.5 columns $\times 8.24 \text{ cm} \times 1 \text{ m/100 cm} = 2.51 \text{ m}$ (2.46 - 2.56
m) from the upper eastern edge of the lintel stone.

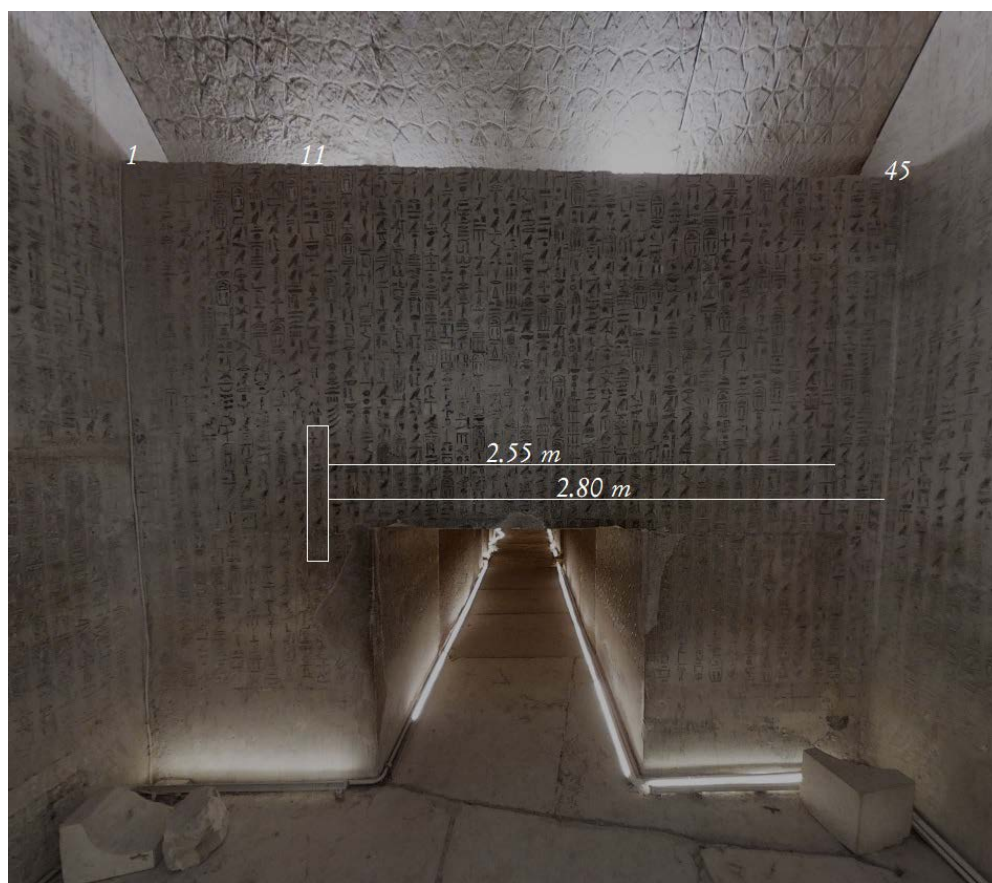


Figure 4. Virtual Unas's antechamber showing the position of the passage on the north wall and its distances from the east wall and lintel edge (right). Column numbers at the top include the ornamental edge columns. There are forty-three text columns in between. Screenshot of Virtual Unas (<https://www.ees.ac.uk/resource/burial-chamber-of-unas--saqqara.html>), courtesy of the Egypt Exploration Society; modified.

This textual invocation of a path to be opened, when there is none physically present, amounts to a textually simulated path that is to issue from the antechamber. This passage's location on the north wall of Unas' antechamber is analogous to that of the northern shafts in the Upper and Lower Chambers of the Great Pyramid at distances that are topographically equivalent to within a column width, i.e., 2.46 - 2.60 m (Unas-lintel edge to column 11) versus 2.48 m (Great Pyramid Upper Chamber), and 2.75 - 2.85 m (Unas-east wall to column 11) versus 2.90 m (Great Pyramid Lower Chamber).

Since there are a total of thirteen instances of the hieroglyphic word *wṯ* for English "path" in the Pyramid Texts of Unas,⁵ it is possible that this placement of a textually simulated path in Utterance 304 is accidental and was not intended to imitate the position, relative to the east wall, of the physically real shafts in the Great Pyramid. Evidence of an intentional placement in this position requires confirmation of a similarly positioned, simulated pathway diametrically opposite the south wall of the antechamber, as is the case in the Great Pyramid, where each of the two northern shafts is directly opposite another on the south walls of the Upper and Lower Chambers.

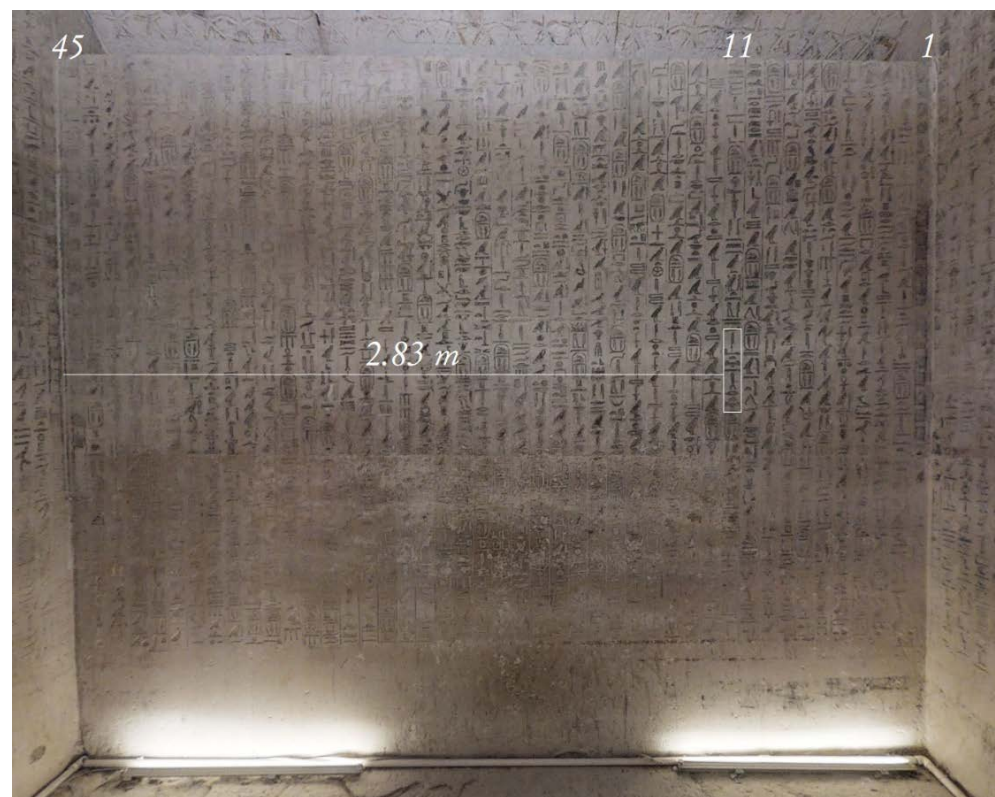


Figure 5. Virtual Unas' antechamber showing the position of the passage on the south wall and its distance from the east wall (left). Column numbers at the top include the ornamental edge columns. There are forty-three text columns in between. Screenshot of Virtual Unas (<https://www.ees.ac.uk/resource/burial-chamber-of-unas--saqqara.html>), courtesy of the Egypt Exploration Society; modified.

⁵Utterances 81, 222, 251, 252, 254, 273/274, 288, 299, 304 (2×), 310, and 313 (2×).

There is no instance of *w3t* on the south wall of the antechamber of Unas. However, in the tenth text column (eleventh total column including the ornamental column at the western edge of the south wall), the hieroglyphic text of Utterance 261 (325b-326d) reads:

Transliteration (Allen, 2013: p. 80):

[...10] jmw wnwjt [11] rmnw.sn ḥ' wnjs hr gs j3btj n mnw-ḥwt jn.n.f j't n ḥrt
wnjs pj jr wpt nšn

Translation (Allen, 2005: p. 47):

[...10] Those in motion will open their arms to him. Unis will stand up on the eastern side of the hail, having used **the ascent to the above**. Unis is the one who does the tempest's mission.

As is the case for the north wall, the eastern edge of the eleventh column of the south wall containing the phrase “the ascent to the above” is located at a total distance of 34 columns from the east wall of the antechamber. The distance here is longer because the south wall is 4 cm longer than the north wall. It is $34 \times 8.33 \text{ cm} \times 1 \text{ m}/100 \text{ cm} = 2.83 \text{ m}$ (2.78 - 2.88 m; **Figure 5**). By comparison, the southern shaft of the Lower Chamber inside the Great Pyramid is located 2.88 m from the east wall.

Therefore, the antechamber of the Pyramid of Unas textually simulates a path and an ascent in diametrically opposed positions (**Figure 6**) at distances from the east wall that are, within the estimated error, equivalent to those of the four small shafts in the Great Pyramid.

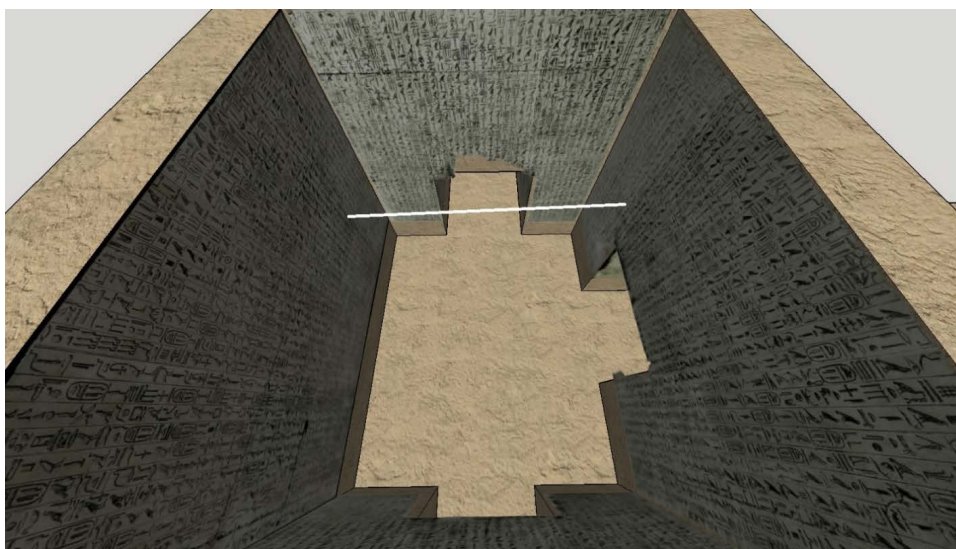


Figure 6. Virtual model of the antechamber of Unas showing the positions of the textually simulated path and ascent on the north (right) and south (left) walls, respectively. The east wall is at the bottom. Isometric model made by Ali Reza Samsami.

3. Discussion

The observations presented in this paper provide new evidence that the shafts emanating from the Upper and Lower Chambers inside the Great Pyramid were

meant to be concrete channels for a deceased king to transfer from the confines of his pyramid to the outside and above, rather than purely logistical conduits for air, communication, chemical ingredients, or any other practical objects, such as guides for ropes, for example.

Alexander Badawy argued against Vyse, Maspero, and Petrie that the shafts were meant to ventilate the chambers or, as argued by Gantenbink, to observe the stars (Badawy, 1964: p. 190). But even though direct sky observation through the shafts is impossible due to their several bends, Badawy nevertheless adopted Steindorff's and Capart's idea that they had a religious function related to the sky. Badawy developed this ritual angle by identifying analogous structures in older funerary monuments and those contemporary with the Great Pyramid. He focused on the star-religion aspect of the Pyramid Texts to explain why these structures were headed north and south instead of east towards the Sun. He concluded that the shafts of the Great Pyramid must have likewise been intended to have an ideological function rather than a logistical one and proposed that they were meant to be paths for the royal soul to reach certain stars important to the ancient Egyptians' afterlife beliefs (Badawy, 1964: p. 193).

Therefore, the argument for logistical conduits and against paths to the stars requires a more nuanced rationale than merely observing that the shafts could not be used to directly see the starry sky from the chambers. This rationale must be based on still lacking positive evidence that contradicts the ritual model supported by the direct textual evidence presented in this paper, and it must explain why the lower chamber shafts were closed off with "doors", a feature also not incompatible with paths for the royal soul that required it to utter an opening spell, such found in the Pyramid Texts.

However, while Badawy made a good circumstantial case for paths to the stars, citing various passages from the Pyramid Texts of the Fifth and Sixth Dynasty kings of Egypt, his compilation of evidence leaves room for doubt because, unlike the later pyramid of Unas, the Great Pyramid contains no religious writing, and the elaborate construction needed to make the shafts appears exuberant relative to a ritual purpose. Furthermore, the absence of similar shafts in other pyramids appears to suggest that their function was unique to the logistics of building Egypt's largest pyramid and not part of a religious belief that transcended generations of pyramid-building Egyptian kings.

Some later scholars who have pondered the meaning of the shafts also tend to prefer a symbolic function but have had reservations about Badawy's theory since the lower chamber shafts are closed off (Monnier & Lightbody, 2019: p. 103). They point out that there may not have been a master plan from the beginning and that construction of the Great Pyramid changed several times, implying perhaps that the shafts could have been an *ad hoc* addition after the pyramid's base was in place. But regardless of whether construction adhered to a master plan, the final layout of the interior of the Great Pyramid must have been known to later generations of architects.

The pyramid of Unas has several features that suggest its architect was familiar with the internal architectural design of the Great Pyramid, thus generating the needed context within which text-simulated shafts to replace physical shafts in an architecturally analogous manner make sense. For example, the height of *Perfect are the Places of Unas* reconstructs to 82 royal Egyptian cubits, the height of the floor of the upper chamber (“King’s Chamber”) inside the *Horizon of Khufu* (Lehner, 1997: p. 155). The base of the former is 110 cubits, which is one-quarter the base of the latter. The former features 43 text columns on its antechamber north and south walls, the same number as the granite north-south-oriented ceiling rafters that form the ceilings of the King’s Chamber and four of the five enigmatic spaces above it, the Relieving Chambers (Monnier & Lightbody, 2019: p. 109). Even an imprint of a king in the harpooning pose, captioned with what is likely the Horus name of Khufu, ḥrw mḏdw, was sculptured into the northern alabaster wall of Unas’ pyramid; Unas may have repurposed it from another monument, for example, that of his father Djedkare (Youssef, 2011).

Unas’ pyramid is the first known ancient Egyptian monument to have been inscribed with the Pyramid Texts. The placement of these texts on the walls in that pyramid is, therefore, the original layout known to be considered, against which all Pyramid Texts in other, later pyramids must be compared. Utterances were both added to and taken away from the original version of Unas. For example, while Utterance 304 also appears on the north walls of the antechambers in the pyramids of Teti (column 37), Pepi I (column 50), and Pepi II (column 16; Allen, 2013: PT 304), Utterance 261 on the south wall only appears again in the pyramid of Pepi I, beginning in column 32 on the north wall (Allen, 2013: PT 261). The relevant phrase cited here has not been preserved, however.

The evidence submitted here adds two new dimensions to Badawy’s model for the function of the shafts: First, it highlights the development of textual simulation to supplant concrete representation. For example, the burial chamber of Unas contains dozens of textual entries that simulate grave goods, predominantly food. These provisions are invoked using utterances that phonetically mimic the sounds of the words of these foods, drinks, and other precious goods (Neyland & Seyfzadeh, 2022: pp. 141-143). This invocation obviated the need to place actual grave goods inside the pyramid. This is the needed context from the same pyramid to be able to appreciate the significance of using text to simulate other things, such as architectural structures, instead of building them, especially when meant for the afterlife.

Second, it matters where texts were placed on the walls of Egyptian monuments. Textual topography means that the writing relates meaningfully to the function of the architectural unit where it is found in the monument. For example, in the first column of the entry’s west wall (really the exit based on the sequence of the Pyramid Texts) it reads: “Pull back, Baboon’s penis! Open, [sky’s door! You sealed door, open a path for Unis] on the blast of heat where the gods scoop water. Horus’s glide path—TWICE—will Unis glide on, in this blast of heat where the gods

scoop water, and they will make a path for Unis that Unis may pass on it: Unis is Horus” (Allen, 2005: p. 60).

Such textual topography has also been described, for example, in the fourth and fifth hours of the Amduat in the burial chamber of Thutmose III, where text and placement conspire to create an architectural time-loop during resurrection, again an architectural feature of the afterlife (Richter, 2008: pp. 79-80). Textual topography, as shown here, made it possible to replace a concrete architectural unit by simulating it through invocation. This innovation made the physical construction of such units unnecessary.

Given this added evidence, the replacement of physical shafts with textually simulated paths placed in topographically analogous positions inside a pyramid can be understood to have accomplished two things for the ancient Egyptians of the late Old Kingdom: it expanded the virtual repertoire for marrying physical monuments to imagined places not physically observable, and saved resources no longer needed to build concrete representations of such liminal transits between the physical world and the ethereal realm.

An apparent trend from concrete building to textual simulation, however, does not preclude the possibility that captions were used to enhance the physical structure’s role in the afterlife. Other than quarry marks by the workers in the Relieving Chambers that reveal something about the logistics of construction, no inscriptions related to the belief system have been discovered inside the Great Pyramid. The writing on the exterior walls of the pyramid was just as mundane, according to Herodotus and his Egyptian source.⁶

Here, I would like to report an as yet unrecognized caption that may have been written in black ink onto the limestone slab that terminates the northern shaft of the lower “Queen” chamber (Figure 7). These markings have not yet been recognized as writing, but a message written in hieratic could be paleographically reconstructed as follows:

st³ wj dpt pt - “Pull me, the sky boat...”

What looks like a logogram of a figure holding a rod that extends towards the right copper “handle” of the slab is an imagery supported by the discovery of two of the “Dixon relics” (co-discovered by Waynman Dixon and James A. S. Grant) found in this shaft, the hook and the wooden stick (Dixon, 1872).

The paleographically most convincing match in the phrase, the sign for Gardiner A1/Möller A33 transliterated “j” in the Egyptian first person dependent personal pronoun “wj,” makes an ideological interpretation of these markings, if they are indeed writing, almost a certainty, since no one alive and able to self-identify with “me” would have fit into this shaft.

⁶“On the pyramid it is declared in Egyptian writing how much was spent on radishes and onions and leeks for the workmen, and if I rightly remember that which the interpreter said in reading to me this inscription, a sum of one thousand six hundred talents of silver was spent;” (Herodotus of Halicarnassus in Histories II, *Euterpe*; *AN ACCOUNT OF EGYPT*; translated into English by British classicist George Campbell Macaulay.)

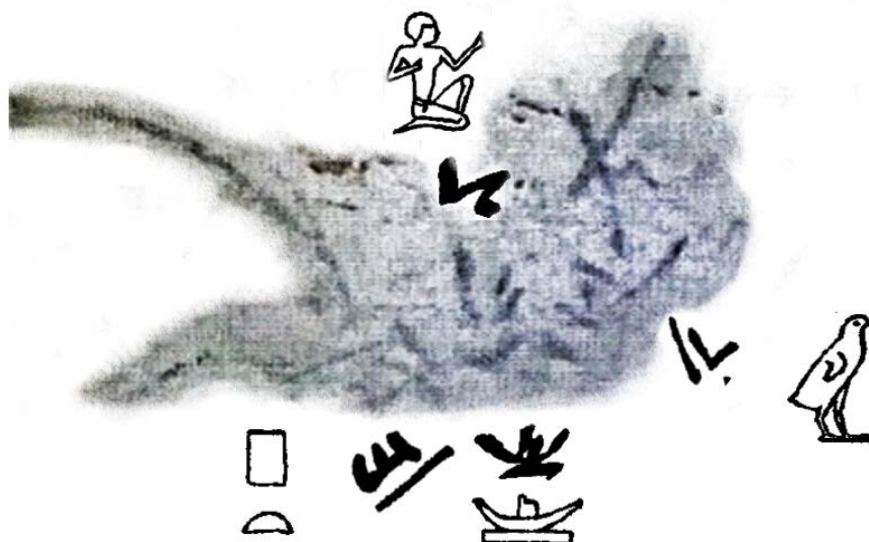


Figure 7. Markings on the limestone slab at the end of the northern shaft that emits from the lower “Queen” chamber inside the Great Pyramid. Reproduction of contrast enhanced images, cropped to the relevant area, originally produced by National Geographic during the 2012 Pyramid Rover robot exploration and released into the public domain in 2021 via Ancient Architects YouTube channel (https://youtu.be/NGK5_2C_ZtM?t=899). The interpretation of these markings as hieratic hieroglyphic writing is that of the author. The interpretation is based on similarities with authentic hieratic hieroglyphs shown here above and below the corresponding markings in thick black strokes along with their hieroglyphic icons as published by Möller (1909).

4. Conclusion

Proving architectural intent in ancient monuments becomes a difficult exercise when conflict arises as to whether a design feature had a logistical or an ideological function. In the case of the four shafts inside the Great Pyramid, this task becomes even more important because their construction cost significant additional expenditures of labor, materials, and time, suggesting their function was important to the overall function of the monument. Mechanistic or ideological biases on the part of modern scholars further complicate the analysis, which ultimately requires weighing of all the evidence, not only a subset thereof. The new textual evidence presented here adds to the considerations needed to distill intent. Text is a powerful indicator of such intent and should caution us against the premature conclusion that these enigmatic conduits had a practical rather than a religious purpose because they do not easily conform to our modern sense of pragmatism and efficiency.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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The “Copulating Couple” at Naj Tunich: A Critical Reexamination

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Abstract

The discovery of a large corpus of Maya inscriptions and paintings in the cave of Naj Tunich in 1980 attracted the attention of scholars because of an explicitly drawn image of a naked couple locked in an embrace. The initial analysis identified it as part of a well-known scene portraying an old male deity with a young female goddess. With the passage of time, it has become increasingly popular to interpret the drawing as depicting a homoerotic ritual involving two men. This article reviews the iconography to show that there is no evidence to suggest that two men are present, especially since male genitalia are drawn on only one figure. Additionally, the homoerotic interpretation is inconsistent with what is known about cave ritual.

Keywords

Maya, Cave, Homoerotic, Naj Tunich, Iconography

1. Introduction

I was dismayed to read in Stephen Houston, David Stuart, and Karl Taube's (2006: p. 43) interesting book, *A Memory of Bones*, that they seemingly accept as an established fact that Drawing 18 (**Figure 1**) at Naj Tunich depicts two males in a same-sex relationship. The authors do not discuss the drawing's iconography, but simply cite Andrea Stone's (1995: pp. 143-146) badly flawed analysis. Nor were they the first to do this. Pete Sigal (2000: pp. 203, 219-220) also uncritically accepts that both figures are male, and Matthew Looper (2009: p. 217) accepts the possibility. Before this interpretation hardens into accepted fact, a critical reexamination of Stone's argument needs to point out the host of serious shortcomings.

2. Drawing 18 in Maya Iconography

Stone (1985) initially described the two figures in Drawing 18 as a male and a

female, and she identified the female as the moon goddess. She related the drawing to a large genre of Maya images of an ugly old god coupled with a beautiful young goddess. The sexual nature of the scenes is fairly explicit in some vase paintings, in which the old man is reaching for the woman's breast, and also in figurines from Jaina and many other sites, in which the woman is depicted as seated on the man's lap and he is fondling her breast (Sears, 2017: pp. 228-231).

Stone (1995) later reverses her position in *Images from the Underworld* and advances the idea that the drawing depicts two males. With Stone's later interpretation in mind, Gene Ware and I photographed Drawing 18 as part of a larger multi-spectral imaging project at Naj Tunich in 1998 in the hope that the accompanying hieroglyphic text would provide clues as to the identity of the individuals depicted (Ware & Brady, 1999; Ware et al., 2000, 2001). Unfortunately, attempts to produce a more readable image of the glyphic text using spectral classification enhancement were not successful, so this discussion must rely on the same data set used by Stone.



Figure 1. Photograph of Drawing 18 at Naj Tunich.

I agree with Stone on the majority of her points concerning the iconography of Drawing 18. Like Stone, I stress the fact that, physically, the two figures are radically different in all major aspects of bodily form. The sex of the figure on the viewer's left has never been questioned because of his prominently displayed penis and scrotum. His spindly legs, small, pinched buttocks, unmodified skull, and top knot of hair serve to mark him as ugly by Maya standards and probably old (also [Looper, 2009: p. 217](#)). The figure on the right, by contrast, has full thighs, a smooth, flowing line for the buttocks, and a modified skull that reflects the Classic Maya ideal of beauty. [Stone \(1985: p. 28, 1995: p. 145\)](#) also notes that the upswept eye and strand of hair down the back identify the figure on the right as female (also [Looper, 2009: p. 217](#)).

I strongly disagree, however, with Stone on several points. The most obvious flaw in her argument is that only one of the figures has a penis. I am boggled that no one has previously pointed this out and astounded that Stone never addresses why the figure on the right has no penis if, in fact, he is supposed to be male. While it might be argued that the figure on the viewer's right has his penis and scrotum tucked between his legs, those favoring this view must at least acknowledge that this is a huge leap of faith for which no supporting evidence has been mustered. [Stone \(1995: p. 145\)](#) also claims that the figure on the right "has no sign of breasts" and uses this as an indication that the individual is a female impersonator. [Looper \(2009: p. 217\)](#) describes the figure as having a flat chest. In reality, neither of these observations is accurate. The drawing simply does not show the breasts, which are obscured by the arms of the two individuals. This removes another major point in both Stone's and Looper's arguments.

Finally, Stone's assertions about the body of the individual on the viewer's right are naïve and ethnocentric. [Stone \(1995: p. 145\)](#) states, "Her solid physique, though admirable, is not particularly feminine." I disagree. Standards of beauty differ from one culture to another and over time. The slender frame that Stone associates with feminine beauty only came into vogue in the United States at the beginning of the 20th century. The slight pouch in the lower abdomen and the crease giving an impression of a waistline are both features typical of the female body. Mesoamerican standards of femininity are decidedly different from our own. This is clearly illustrated in the story in which Huemac, the last Toltec king, is supposed to have asked the Nonoalco for a woman four hand spans wide at the hips and is disappointed with the first candidate whose hips are just barely four hand spans wide ([Davies, 1977](#)). Mesoamerican figurines [for instance, Tlatilco ([Lesure, 2012: Fig. 18.3](#))] frequently depict women with large hips and thighs. [Houston et al. \(2006: p. 42\)](#) note as well that Maya women are depicted with more rounded forms. The old god/young woman pairing is depicted on a half dozen Maya codex-style vessels with the woman's figure being more corpulent ([Robicsek & Hales, 1981: pp. 32-34](#)). Interestingly, the old god is depicted on these vessels as being wizened and without a deformed skull. This leaves little doubt that Drawing 18 at Naj Tunich is part of this genre.

3. Discussion

So, how has Stone arrived at the conclusion that Drawing 18 depicts a same-sex pairing? She says that Drawing 18 represents a ritual performance rather than a mythological scene. Although she recognizes that “representations of deities” do occur in the cave, Stone (1995: pp. 148-154) never explains why Drawing 18 is treated as a ritual performance rather than as a deity representation. Drawing on Taube’s (1989) work on Classic Maya ritual humor, Stone proposes that Drawing 18 represents a humorous public performance in Naj Tunich. She attempts to buttress this claim by citing an ethnographic case of a public dance between a costumed male representing an old man and another costumed male impersonating a young woman as an analog. She characterizes the ethnographic examples as “amusing and bawdy satires”. “Amusing and bawdy satires” might be the subject of graffiti scratched on walls, but it seems highly unlikely that Drawing 18, produced by an elite scribe, is portraying such a thing. Although the accompanying text is unreadable, its very presence signals the serious nature of the subject.

The ethnographic example used in Stone’s interpretation of Drawing 18 only “fits” by featuring two men involved in behavior of a sexual nature. On even the most cursory inspection, there are major problems with this analogy, not the least of which is that the characters portray a man and a woman, making it clear that the performance is about heterosexual behavior. The antics between the performers are amusing because the performance is public and both actors remain fully dressed as males beneath their costumes. The public nature of the performance, in which the actors actually wear two layers of clothing, precludes any possibility of sexual contact, making the sexual aspect “safe”.

Additionally, Stone’s use of the ethnographic analogy to infer that the right-hand figure in Drawing 18 is a man uses a public farce to reconstruct what would probably have been a serious ritual performance in the cave. Secondly, in the ethnographic example, the primary actors are fully clothed and in public, while the figures depicted in Drawing 18, by contrast, are completely nude and in a more private setting. This would place the sexual aspect in a “dangerous” category. Considering the way that nudity was viewed in ancient Maya society, comparing the scene from Drawing 18 to the farce mentioned by Stone seems preposterous.

The problems with Stone’s use of this analogy do not stop there, as she employs the widespread contemporary prohibition (Brady, 1989: pp. 417-419) against women entering caves to support her argument that both actors were male. She says, “Secreted away in a vast cavern, an all-male audience might exhibit the good-humored camaraderie one would expect in a gender-restricted group... With the absence of public scrutiny in the cave, sexual innuendo gives way to brassy eroticism” (Stone, 1995: p. 145). Stone’s description sounds more like a drunken fraternity house party than any cave ritual that I have witnessed over the last 40 years. This interpretation is totally out of character with what we know of contemporary Maya cave ritual.

J. Eric Thompson (1970: pp. 172-173) notes that sexual abstinence is required

for participation in many rituals. Cave ceremonies throughout the Maya area require a period of sexual abstinence to be observed before entering a cave (Deuss, 2007: p. 142). Thompson (1970: p. 173) says that this can be as long as 40 days for the cave at Pecmo in Alta Verapaz. Sexual abstinence is not restricted simply to cave rituals but appears in other types of rituals as well. Among the Q'eqchi', a two-week period of sexual abstinence is observed before the maize planting ritual (Wilson, 1995: p. 63). Sexual abstinence prior to games also exists as a normative ideal in *ulama*, the Indigenous ballgame played in West Mexico (Garza et al., 2004: p. 31). If a man can offend the gods simply by having sex in his home several days before a ceremony, the idea of having sex as part of a cave ritual is fanciful indeed. Not surprisingly, no ethnographic cases of anything resembling this type of activity have been produced by proponents of the same-sex hypothesis. This evidence, once again, suggests that Drawing 18 does not depict an actual ritual performance.

The issue that neither Stone nor Houston et al. deal with is the point of rituals involving same-sex sexual behavior. There is a general concern with fertility in Maya religion, and fertility is always seen as resulting from the union of male with female. Tarn and Prechtel (1986: p. 173) state that "it would appear that Atiteco thought conceives of male and female as aspects of one original unit and that no unit can be other than both male and female. Certainly, nothing complete, nothing fully fulfilling its function in the world, can be other than this." A same-sex pairing is not fertile and, therefore, would not carry the same meaning.

Not surprisingly, the abundance of depictions of an old man with a young woman in Maya art stands in sharp contrast to the dearth of examples of homoerotic scenes. Houston et al. (2006: p. 212) produce only one badly eroded, inconclusive image, other than Drawing 18, as representing the entire corpus of Maya homoerotic art. Having said that, the obvious conclusion is that, at this moment, there is not a single clear image of homoeroticism in Maya art. If that is the case, it stands as further evidence that the figures in Drawing 18 were intended to represent a man and a woman.

Finally, in a more recent article, *Keeping Abreast of the Maya*, Stone (2011: p. 169) states that mythological scenes are the main context for female nudity. If, therefore, Drawing 18 does not depict a ritual but a mythological scene, the entire issue of the same-sex pairing essentially evaporates. Drawing 18 then becomes one among many depictions in the same vein and falls into a well-established genre of Maya images of an old male fondling a young woman, which appears to be part of a larger myth, but the exact point of the story is not known (Robicsek & Hales, 1981).

4. Conclusion

This analysis of the iconography of Drawing 18 strongly suggests that it depicts a male and a female, and no evidence was found to support the idea that two males are represented. The sex of the figure on the viewer's left is male because his penis is clearly depicted. The individual on the right does not have a penis or visible

genitalia, which Houston et al. (2006: p. 51) associate with female figures. We note that all parts of the bodies of the two figures contrast at every point, which we interpret as identifying them as belonging to different sexes. I have shown that Stone's assertion that the figure on the right lacks breasts simply cannot be sustained, and that her characterization of the figure's form as unfeminine is ethnocentric.

Stone's interpretation of both figures being male is built on the unsupported assertion that the drawing depicts a ritual performance rather than deities. Stone suggests that the ritual was analogous to a modern Maya ceremony in which two fully dressed men perform a bawdy public farce, costumed as an old man and a young woman. I have drawn attention to the poor fit of the analogy in which a public ritual with fully clothed performers is used as a model for a private ritual with nude performers. I have also pointed out that Stone's proposed ritual is totally out of character with modern ritual, where sexual abstinence is practiced in preparation for conducting a cave ceremony.

Finally, both figures conform to physical characteristics exhibited by the old god/young woman pairings depicted on codex-style vessels and in figurines. There is not a similar corpus of homoerotic art, so the evidence overwhelmingly suggests that Drawing 18 at Naj Tunich depicts a male and a female.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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The WWII German Bomb Launching Base at the Place Called Taissiau (Dun-Sur-Auron - Cher - FR)

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Abstract

The search for WWII German bomb launching bases in France is certainly an important subject. The poorly known WWII German bomb launching base at the place called Taissiau near Dun-sur-Auron (Cher department - France) represents an interesting case. Searches for information about this base on the internet, in the DAWA catalogue of WWII German radar bases in France and at the town hall of Dun-sur-Auron were unsuccessful. Therefore, the purpose of this article is to present and to deepen as much as possible the knowledge about this base in order to ensure that its existence and characteristics will be known by a large public of interested people.

Keywords

WWII, German-Base, Bomb-Launching-Base, Taissiau, Dun-Sur-Auron, Cher, Radar, *Wurzburg-Riese*, Conflict Archaeology, Contemporary Archaeology

1. Introduction

The search for WWII German bomb launching bases in France is certainly an important subject. The poorly known WWII German bomb launching base at the place called Taissiau near Dun-sur-Auron (Cher department) represents an interesting case. Searches for information about this base on the internet, and in the DAWA catalogue (Lippmann, 2023) of WWII German radar bases in France were unsuccessful. A request for information on said base addressed to the town hall of Dun-sur-Auron received the reply "... we have no knowledge of this". Therefore, it appears of great importance to present and to deepen as much as possible the knowledge about this base.

2. Historical Context

From 1936 to 1939, Spain was the place of a severe civil war between republican and nationalist parties. As a consequence of the evolution of the military situation, several migratory flows of Spanish refugees reached France. In the department of Cher, 120 refugees arrived in 1936, 965 in 1937, 162 in 1938 and 3002 in 1939 during the so called “*Retirada*”. In Cher, the majority of the Spanish refugees found employment in agriculture (*Archives Départementales et Patrimoine du Cher*, 2000).

In order to regulate the situation of these Spanish refugees, the French government adopted several decrees. On 12th April 1939, Daladier’s Decree specified the obligations to which foreigners in France were subject. The decree, allowing refugees as forced laborers, legalized the creation of the Foreign Workers Companies (*Compagnies de Travailleurs Étrangers: CTE*) whose statutory framework was established by a decree of 27th May 1939.

The *CTEs* were formed by a number of sections according to the circumstances. In general, each *CTE* comprised five sections of fifty workers, making a total of 250 workers and a unit of permanent employees formed by civilian and military personnel. According to the decree of 9th April 1940, these workers were subject to the provisions of the Army Code of Military Justice. The *CTEs* were employed in different construction projects planned at departmental and municipal levels (*Parello*, 2016).

The mobilization of many French citizens due to France’s entrance into the WWII in September 1939 left many jobs unfilled in practically all economic sectors. In Cher, the army industry and agriculture sectors particularly benefited from the support of the *CTEs*.

At the beginning of the WWII the *CTEs* stationed in Cher were the following:

- the 180th and 196th *CTEs* employed by the Technical Experimental Establishments at Bourges;
- the 114th *CTE* employed by the Air Ministry (designated also as the 163rd *CTE* according to the “War nomenclature” and also 2/114th *CTE* in a document of February 1940) at Dun-sur-Auron (46°53’5.38” N, 2°34’18.6” E, height 174.81 m) (*Archives Départementales et Patrimoine du Cher*, 2000).

After the French defeat, the *Wehrmacht* and the *Einsatzkommandos* captured several thousand of Spanish refugees in the occupied zone. Upon Hitler’s order, from September 1940, they were deprived of their prisoner of war status, handed over by the *Gestapo* and sent to concentration camps in Germany. About 7200 of them were sent to the Mathausen and Gusen concentration camps (*Parello*, 2016).

Disbanded at the Armistice, the French 72nd Artillery Regiment was recreated on 1st September 1940 as part of the Vichy army. It was then stationed in Issoudun, Dun-sur-Auron and L’Isle-Jourdain. It was again disbanded in November 1942 after the German invasion of the French free zone (*Sicard*, 1997).

The 114th *CTE* remained on place until its transformation into a Foreign Workers Groups (*Groupements de Travailleurs Étrangers: GTE*) by the Vichy govern-

ment on 27th September 1940.

The *GTE* should not be confused with the Compulsory Work Service (*Service du Travail Obligatoire: STO*), identifying the requisition of hundreds of thousands French workers, forced to work in Germany to support the German war effort. The *STO* was put in place by the Vichy government between 1942 and 1944.

On 29th August 1942, during a first raid, Jews from Indre, Cher, and Indre-et-Loire departments were captured. They were sent to the Douadic transit camp, inspected for a few days in order to determine those eligible for deportation, then gradually sent to the regional camps of Nexon (Haute-Vienne) or Rivesaltes (Pyrénées-Orientales) where the trains to the Drancy camp were organized, the last stop before the extermination camps.

On 23rd February 1943 during a second raid in the unoccupied zone, organized by the Vichy government, a list of about a hundred foreign Jewish was drawn up. Some of them, warned by the French Gendarmerie, hid themselves and escaped capture. However, convoys brought others to the Gurs camp (Pyrénées-Atlantiques) and then to Drancy camp (AJPN.org, 2018).

It was during this period that a German bomb launching base was constructed at the place called Taissiau (46°54'5.39" N, 2°31'13.2" E, h. 163.38 m) about four km North-West from Dun-sur-Auron.

On 6th June 1944, the “maquis” of the Croix de Maupieux of the Francs-Tireurs et Partisans (*FTP*) installed in the forest of Dun-sur-Auron, participated in the attack against the headquarters of the Vichy Militia in Saint-Amand-Montrond (Cher). From 8th June the town was then attacked by German troops. The *FTP* maquis withdrew to the Creuse department, except for a few “maquisards” who remained in Dun-sur-Auron.

On 20th and 21st June 1944, combats in Dun-sur-Auron involving the Vichy Militia and the 3rd Battalion of the 1st Regiment of France (*RF*) resident in Dun-sur-Auron, caused several killed.

On 20th June, three groups of the 1st *RF*, led by Mr Gadier, a pro-German Frenchman who knew the maquis, went on the attack. Arriving at the maquis hut in the Maulne wood, they shot one maquisard and arrested eight others, who were sent back to the 1st *RF* camp where they were interrogated, beaten and mistreated. The next day, one of them was found hanged in his cell. The others were transferred to the Riom prisoner camp and some of them transferred to the Dachau concentration camp in Germany, where two died.

On 22nd August 1944, the 3rd Battalion of the 1st *RF* joined Colonel Bertrand's French Forces of the Interior (*FFI*) 33rd *Demi-Brigade*.

On 1st September 1944, a unit of the 95th Indian Brigade of the *Wehrmacht* (*Taglichbeck* column) crossed the Cher and along its way sowed terror, killed, raped women, and burned houses. At the entrance to Dun-sur-Auron, arriving from the Levet town, south of the Bourges town, it encountered the resistance of the French 2nd Battalion of the 33rd *Demi-Brigade*. Soldiers and civilians were killed and houses were burned. During the night between 1st and 2nd September and the following day of 2nd September, the staff of the Family Colony (*Colonie familiale*) of

Dun-sur-Auron, which hosted a clandestine surgical unit, collected the bodies of the wounded and the killed to treat or identify them. The victims were buried on 5th September in the Dun-sur-Auron cemetery (Gorand, 2006-2024).

The Cher was liberated on 13th September 1944 (AJPN.org, 2018).

3. The WWII German Base at the Place Called Taissiau

During WWII, Operation Jedburgh was a clandestine Allied initiative in which three specially trained operators teams were parachuted into occupied France and other countries with the mission of conducting sabotage, coordinating guerrilla and leading French resistance forces' actions against German communication lines and troops (Special Forces in World War 2, 2025).

The extract of Jedburgh Hamish—After Action Report declares:

* 1st August 1944: "Do you have any information on a launch pad north of Bourges for the new JPCOE flying bomb? We'll have more information early next week."

* 8th August 1944: "The location of the German flying bomb launch pad is as follows, 4 km northwest of Dun-sur-Auron. The Germans require 250 kilowatts for their operations at this location. There is a radar station here. All the equipment on the ground was dug up in (?) Bernow."

* 18th August 1944: "The ramps for the flying bombs at Dun-sur-Auron are almost ready. The bomb has four separate wings which, when opened, form one wing at the front and one wing at the rear of the fuselage. During a recent test flight, the bomb crashed immediately after take-off because one wing failed to deploy. The bomb is 6 m long and 2 m in diameter. The ramp is vertical and makes two loops after which the projectile takes off. The wings are supposed to deploy when the projectile leaves the ramp. This information is supposed to come from a German officer. I am trying to confirm it."

* Observations: "We also came into possession of information concerning the VI or V2 bomb launch site. We were finally able to confirm the existence of this launch site southeast of Bourges, information which was passed on to London."

Mr Francis Guillou acting for the Purple Network of the Central Bureau of Intelligence and Action (Bureau Central de Renseignements et d'Action: BCRA), remembered, "... due to the presence in Dun of a *Luftwaffe* company stationed there to ensure the security of the work undertaken for the installation—at a place called Taissiau—of a VI or V2 launch ramp to "flood" Normandy where Allies were contained by the German defenses." (Henoff, 2024)

4. The Visit

The visit took place in September 2006.

The base identified components were the following (Figures 1-6).

A 10 × 10 m concrete emplacement (1) (46°54'3.29" N, 2°31'49.07" E, h. 160.56 m) comprising a main surface partly covered by stones, terrain and tall grass and a partly uncovered peripheral surface with a concrete bord. On one corner of this

surface was a concrete square block with four small rectangular holes. On one side was a shallow rectangular well which, according to its grooved bord shape, had to receive a cover. The interior of the surface and the well were partially filled with terrain which did not allow further exploration.

A 26×10 m concrete emplacement (2) ($46^{\circ}54'3.31''$ N, $2^{\circ}31'46.25''$ E, h. 160.52 m) is no longer visible, probably covered by terrain.

A 45×15 m concrete emplacement (3) ($46^{\circ}54'2.2''$ N, $2^{\circ}31'41.79''$ E, h. 161.61 m) is no longer visible, probably covered by terrain.

A 20×10 m concrete emplacement (4) ($46^{\circ}54'3.56''$ N, $2^{\circ}31'37.81''$ E, h. 160.37 m) is no longer visible, probably covered by terrain.

A 6×7 m power plant emplacement (5) ($46^{\circ}54'5.08''$ N, $2^{\circ}31'35.2''$ E, h. 161.65 m) was formed by a thick slab with grooves, partly covered by stones and rubble. One U-shaped groove bordered three sides of the slab, in its slab middle was a Y-shaped groove with arms protruding towards the base of the U-shaped groove, without communicating with it. Around the slab, there was no remains of other constructions, therefore, it seems that this slab supported a wood house or a wood cabin in the U-shaped groove.

A V229 emplacement (6) ($46^{\circ}54'7.54''$ N, $2^{\circ}31'24.35''$ E, h. 164.04 m) for radar *FuMo 214—Würzburg Riese* was quite deteriorated. On the top surface, six 10×15 cm fixation holes for the radar base were clearly visible. The lateral inclined surfaces preserved the square inspection opening and the original concrete coverage. Some disappeared coverage portions showed the internal mix of concrete and local stones but no trace of an internal metal armor. At its interior was undulated metallic sheets. Around the emplacement, there were no remains suggesting a protection wall.

The cultivation works on the fields were always carried out around the two emplacements (1) and (6).

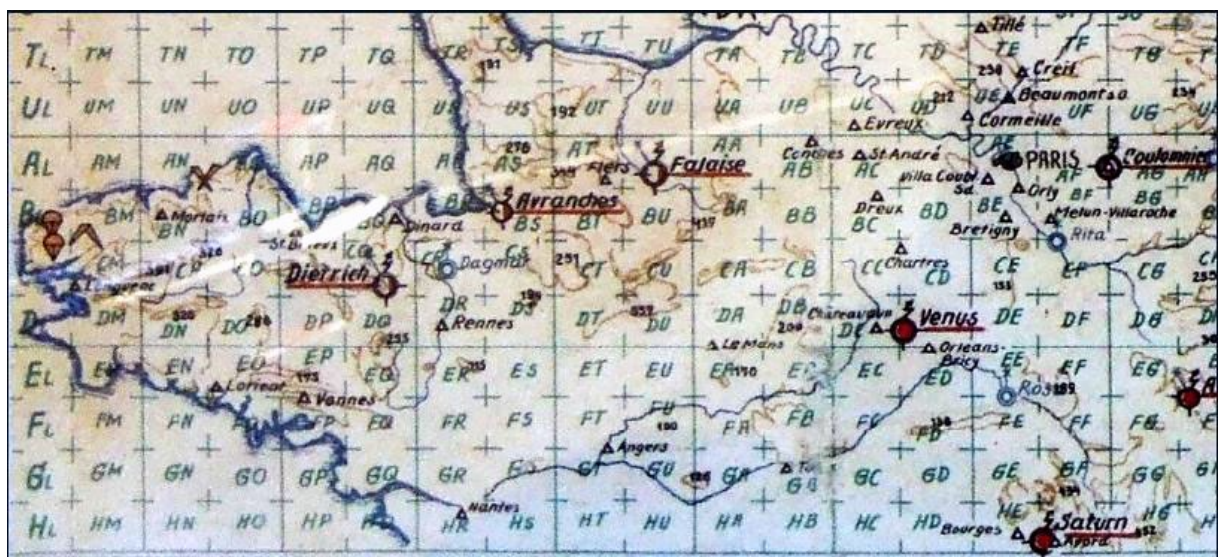


Figure 1. Luftwaffe navigation map, on the bottom right the Bourges—Avord sector (Henoff, 2024).

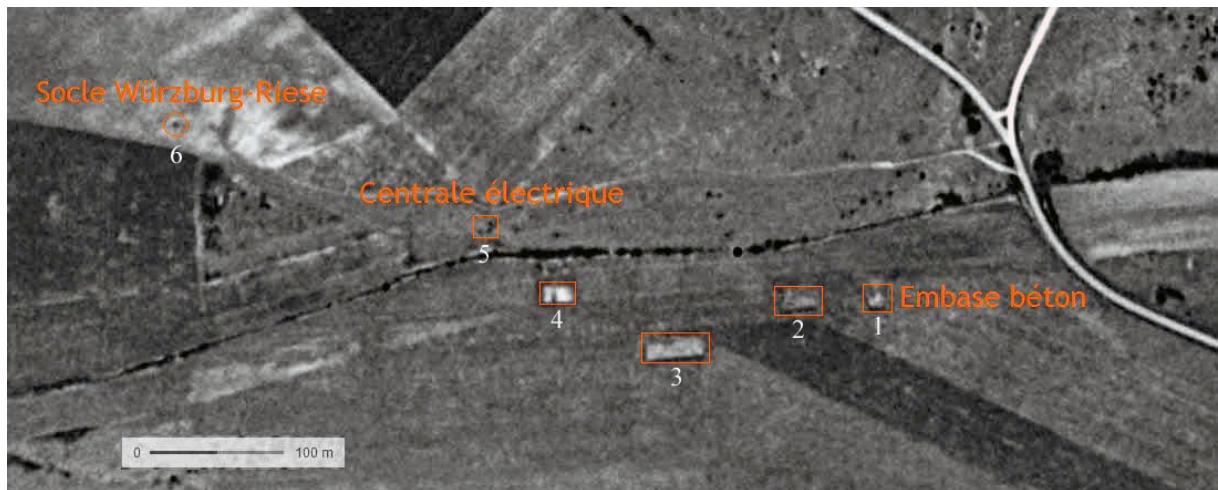


Figure 2. German base general view—1 - 4 concrete emplacements (Embase béton); 5 power plant emplacement (Centrale électrique), 6 Würzburg Riese emplacement (Socle Würzburg Riese) (Henoff, 2024).

IGNF_PVA_1-0__1950-06-29__C2225-0031_1950_F2225-2425_0089



Figure 3. German base detailed view.

IGNF_PVA_1-0__1950-06-29__C2225-0031_1950_F2225-2425_0089

5. Discussion

It is possible that workers of the 114th GTE under the control of the *Organisation Todt* (O.T.) contributed to the construction of the Taissiau base.

Figure 1 indicates a WWII German base coded *Saturn* between Bourges and Avord. Its identification with the Taissiau base, due to the due the schematic representation of the map, is possible but not completely certain because Taissiau is located about 17 km south of Avord and about 22 km south of Bourges.

A farmer, met during the visit, stated that the place was used as a launch base for rockets without indicating from where he obtained this information.

The purpose of the concrete emplacements can tentatively be so interpreted:

* Emplacement (1): a launching site, the four small rectangular holes on the partly uncovered peripheral surface could indicate the presence of a missing wire

mesh mast for supporting, preparing and launching the flying bombs.

* Emplacement (2): a possible barracks place for flying bombs final preparation or fuel depots, although close to the Emplacement (1) ~ 40 m, where the flying bombs were launched.

* Emplacement (3): a possible barrack place for flying bombs and/or fuel depots, although close to the Emplacement (1) ~ 120 m, where the flying bombs were launched.

* Emplacement (4): possible barrack place for personnel lodgment or second launch site, sufficiently displaced form Emplacement (1) ~ 250 m.

* Emplacement (5): a power plant, sufficiently displaced form Emplacement (1), ~ 280 m, the Y-shaped groove was probably intended for receiving electrical cables.

* Emplacement (6): *V229* emplacement (6), sufficiently displaced form Emplacement (1), ~ 530 m, for radar *FuMo 214—Würzburg Riese*.

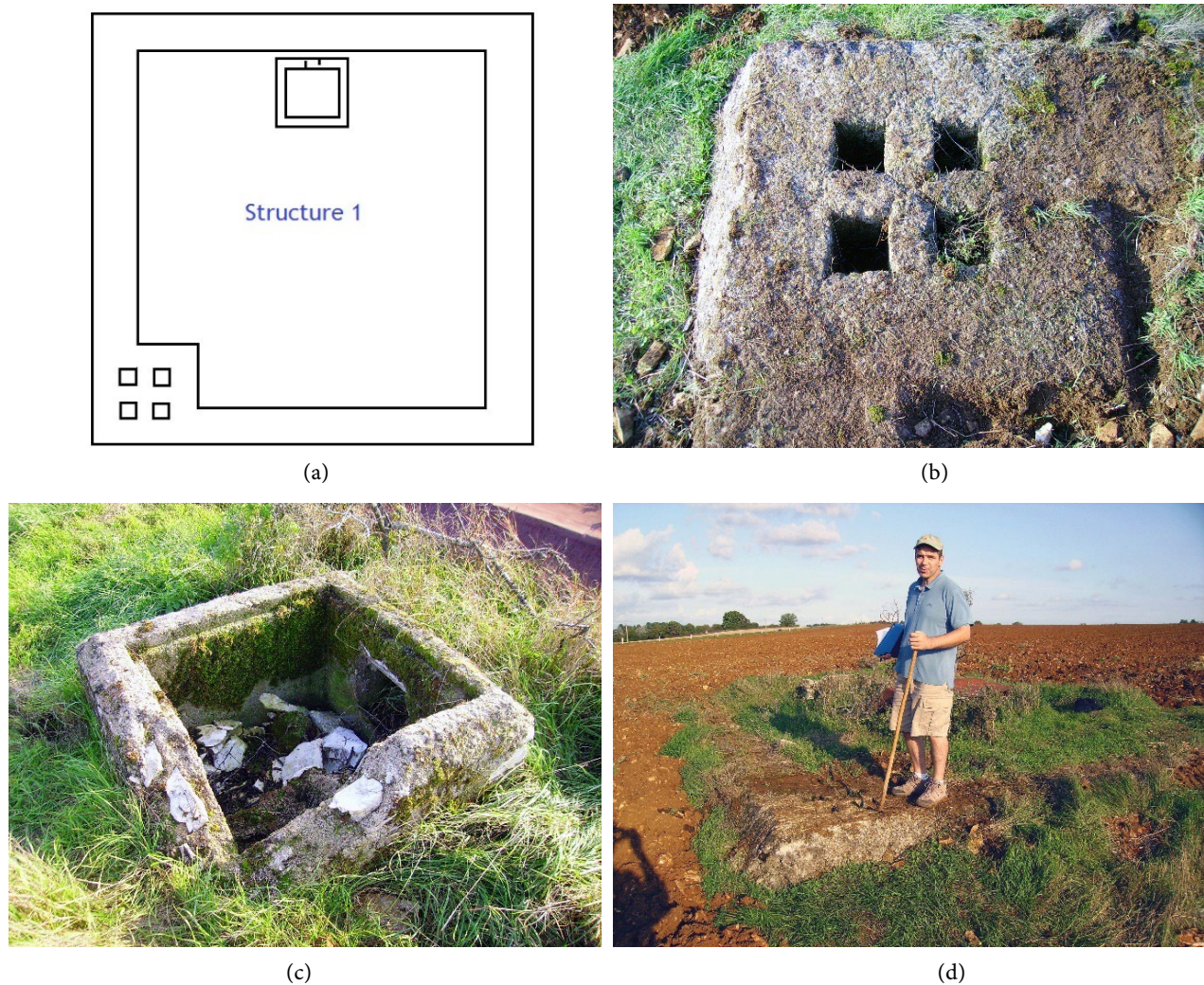


Figure 4. Emplacement (1)—(a) peripheral surface plan; (b) concrete square block with four small rectangular holes; (c) shallow rectangular well; (d) peripheral surface general view.

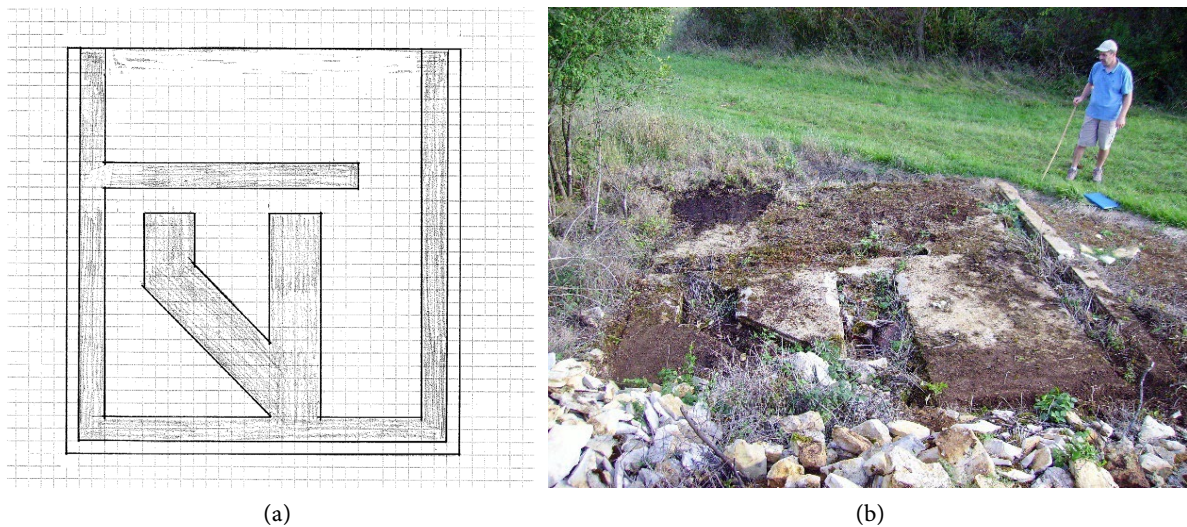


Figure 5. Emplacement (5)—(a) concrete platform plan, transformer—power plant. (b) thick slab with U- and Y-shaped grooves.



Figure 6. V229 emplacement (6)—(a) North vision with fixation holes for the radar base and square inspection opening; (b) South vision.

The purpose of a single radar *Würzburg Riese* instead of two, as normal in the WWII German radar bases such as those coded *Mandrill* (Dupont et al., 2007) at Chânes-Froids near Monterfil (Ille et Vilaine), *Made* (Tomezzoli & Pottier, 2007) near Les Mees (Sarthe), *Re 500 Pinguin* (Tomezzoli & Colliou, 2017) at Le Bous near Saint-Pabu (Finistère), *Stp. QU 500 Renntier* (Tomezzoli, 2021) at Roz-Be-strée at the Pointe du Raz (Finistère), was to control and probably to correct the trajectories of the flying bombs by means of electromagnetic signals.

Assuming the extract of the Jedburgh Hamish—After Action Report sufficiently precise, the JPCOE flying bombs were not V2 which, although launched vertically, were 14 m long and had no wings at the front of the bomb fuselage. The presence of said wings let to think that they were a kind of gliding flying bombs like the V1 which actually were about 7 - 8 m long and about 1.5 m in diameter, “had four

separate wings which, when opened, formed one wing at the front and one wing at the rear of the fuselage”, but were launched from inclined (48°), not from vertical ramps. The souvenir of Mr Guillou about a *V1* or *V2* launch ramp is rather vague about the possible flying bombs launched from the base of Taissiau, however, the ranges of the *V1* (about 200 - 250 km) and of *V2* (about 320 km) were sufficient for “flooding” the invaded Normandy.

The Taissiau base was about 243 km South-East from the German *V2* bomb launching base (47°42'17.54" N, 0°21'03.15" E, h. 82.94 m) near Vaas (Sarthe) and the *V2* depot of the place called Les Pilliers (47°41'50.29" N, 0°06'41.69" E, h. 42.91 m) near Luché-Pringé (Sarthe) (Tomezzoli, 2007). In this case, the trajectories of the *V2* towards the ports of Great Britain's South coast, about 350 km away, were controlled by the *Made* radar base of the *Kammhuber* defence line.

6. Conclusion

The visit to the WWII German bomb launching base at the place called Taissiau permitted the determination that some vestiges of its components were still preserved and others probably covered by terrain and vegetation and consequently unrecognizable. As usual in archaeological research, further issues concerning the base remain to be solved: the possible Saturn identification of the base, its possible operative status, the kind of flying bombs intended to be launched, the missions actually accomplished. For the moment, the forgotten position of the base in the countryside and the coverage by terrain and vegetation of many of its components contribute to their preservation, but a more certain legal status and cultural recovery of the base would be desirable. However, it is hoped that this article can form the basis for further studies on the base.

Acknowledgements

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Conflicts of Interest

The authors declare no conflict of interests regarding the publication of this article.

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The WWII German Base Y8 Near La Feuillée (Finistère—FR)

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Abstract

The map *Flughafenbereich Morlaix-Flugplätze und Ln Anlagen*, among some WWII German military bases in Finistère (FR) studied in past publications and others not yet studied, discloses the German base *Friedrich* near Mont Saint-Michel de Braspart. The base is also identified as *FuSan 357 Y8*, hosting a 1 x *Wotan II (Y-Zweistrahlbake)* system. The Rhubarb Operations—Appendix V of 20.9.41 permitted the determination of its precise position, and the study of post-WWII French air-reconnaissance images permitted the identification of many of its components. Therefore, the purpose of this article is to present the preservation state of its components and to deepen as much as possible the knowledge about this base in order to ensure that its existence and features will be known by a large public of interested people. It is hoped that this article can form the basis for further studies on *Y8* and that it could promote a more certain legal status and cultural recovery of its site.

Keywords

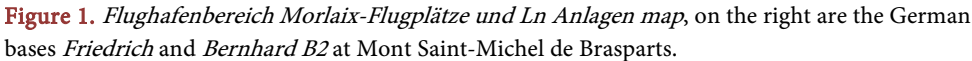
WWII, Finistère, *Y8*, *Friedrich*, La Feuillée, Roc'h Tredudon, *Wotan II*, Rhubarb, Conflict Archaeology, Contemporary Archaeology

1. Introduction

The map *Flughafenbereich Morlaix-Flugplätze und Ln Anlagen* (**Figure 1**) (Hen-off, 2023) of 14.8.43, among some WWII German military bases in South Finistère (FR) studied in past publications and others not yet studied, discloses the presence during WWII of the German base *Friedrich* near Mont Saint-Michel de Brasparts, this last, during WWII, hosting the German base *Bernhardt B2* (Tomezzoli & Dupont, 2007; Tomezzoli, 2019).

Information about *Friedrich* is also provided by other different sources:

Y8 FuSan 357, Friedrich, La Feuillée (Finistère department), 1 x *Wotan II (Y-*



Target V/2 on the same ridge as the COMMANA station (Target V/1) (**Rhubarb Operations, 1941**);

Ruffian (X) station, Schirach 1, La Feuillée, Morlaix—Schirach 2 (possibly a Y-station) Commana ([The National Archives, 1941](#)).

La Feuillée, although today a minor municipality in Finistère (Bretagne, France), boasts a glorious past. Founded, probably in the first half of the 12th century, by the Ducs of Brittany in favor of the Hospitaller Knights of Saint John of Jerusalem, it was originally a hospice. The Charter of Conan, Duke of Brittany, dated 1160, mentions this establishment, under the name of “An Folléd” (the madmen), among the possessions of the Order of Saint John of Jerusalem. At the end of the 16th century, eight commanderies, originally independent of each other, were grouped into a single commandery named La Feuillée, and it persisted until the French Revolution (de Corson, 1902).

After the defeat of France, from 26th to 28th July 1940, the 3rd Battery of the Ger-

man *Schwere Artillerie Abteilung 102* under the orders of the Hauptmann Kempken and two other officers, including a *Stabwachtmeister*, was stationed at La Feuillée.

The Unity L21 080 (*Luftnachrichten—LN*) of the 251. *Infanteriedivision*, belonging to the *Flughafenbereich* Morlaix, was quartered from 25th August to 31st October 1940. The personnel were lodged at the Hôtel Martin. A detachment of this unit was stationed at Roc Trévél, the second highest mountain (about 380 m) in the Monts d'Arrée.

The 3rd Section of the *Leichte Reserve Flak-Batterie 16/XII* (Unity 31 824) was quartered in September 1940. The personnel were lodged at the Hôtel Martin and at the owner's house. It secured the Roc Trévél.

The 2nd *Kompanie* (Unity 07 522C) of the *Ausbildunglehrgang 251* of the 251st *Infanteriedivision* was briefly quartered from 22nd October 1940.

The 3rd *Kompanie* of the *LN-Versorgung-Regiment* (Unity L03 732) of the 251st *Infanteriedivision* was present during the fourth trimester of 1941.

Four German soldiers were killed in La Feuillée on 29th July 1942.

The 113th Battery (Unity 40 515B) was quartered here provisionally from 23rd March to 14th April 1943 before being transferred to Telgruc (Floch, 2012).

On 17th May 1943, at around 1 p.m., an air battle took place over the towns of Plonévez-du-Faou, Scrignac, and Berrien. A British plane in flames crashed east of the town of Plonévez-du-Faou, and fires, caused by falling tanks or projectiles, broke out in the territories of the municipalities of La Feuillée, Plonévez-du-Faou, and Scrignac (Rondel, 2011).

The headquarters of the 371st *Panzer-Jäger-Abteilung* (Unity 40 841A) of the 371st *Infanterie Division* was present from June 1943, under the orders of Major Herbst (Floch, 2012).

Marcel Clédic, a La Feuillée inhabitant, at the end of 1943, created and led several actions of the *Franco-tireurs et partisans français (FTPF)* “Bir-Hakeim” company. He was wounded during the combats for the liberation of the Crozon peninsula (Le Télégramme, 2019).

On 26th December 1943, François Thos, a La Feuillée inhabitant, accused of being a Germans' collaborator, was killed by a revolver bullet shot by an unknown person (Archives départementales du Finistère, 1943).

The headquarters of the IInd *Bataillon* of the 8th *Fallschirm-Jäger-Regiment* of the 3rd *Fallschirm Division* were quartered in La Feuillée from March to June 1944 with a *Bataillon Kompanie*.

One *Kompanie* of the Ist *Bataillon* of the 7th *Fallschirm-Jäger-Regiment* of the 2nd *Fallschirm Division* was quartered from June to August 1944. In August 1944, the *Division* withdrew to the defensive sector of Brest.

On 5th August 1944, the 6th U.S. Armored Division, in several groups, arrived at Huelgoat, where combats took place to the east of the town. The Combat Command A (CCA) group, grouping six battalions, settled for the night in La Feuillée: the Command grouped at Kerbran, the troops grouped at Kerberou. The groups

suffered fighting the next day to the northwest of the town, which immobilized it until 7 p.m. (Sixth Armored Division, 1945; Gruber, 1945).

Two German soldiers were killed in La Feuillée in August 1944.

La Feuillée, Locmaria-Berrien, and Scignac were freed on 6th August 1944 (Floch, 2012).

On 16th August 1944, La Feuillée FTPF company took part in the Irillac combat to prevent the retreat of a German convoy to Brest after the liberation of German prisoners held by resistants in Brasparts. During the combat, seventeen resistants were killed, deceived by the camouflage of the convoy as an American convoy (Crenn & Kerdoncuff, 2000).

3. The Wotan II system and the Baedeker Blitz

The deployment of the *Wotan II* system emerged from a deciphered *Enigma* message of 6th October 1941 directed to a newly deployed *Wotan II* ground station located northwest from Cherbourg on the Hague peninsula. The Y system was coded *Wotan II* as the successor of the X system coded *Wotan I* and, probably, because it operated only one beam in analogy with the German monocular god *Wotan*. The British called it Benito because Mussolini was reckoned as the one-eyed end of the Axis.

To drive a bomber to a desired target, a *Wotan II* ground station determined the bearing and range of the target. Then, it drove the bomber along a beam directed to the target until it reached the range for releasing its bombs. In addition, the station radiated to the bomber a sinusoidally modulated signal. The modulated signal, received by the bomber, was transferred to an onboard transmitter which radiated it back to the station on a slightly different frequency. The ground station then calculated the distance of the bomber by the delay of the returned signal with respect to the radiated signal. The frequencies of the Y beam and the ranging system of each Y ground station were comprised between 40 - 50 MHz. The turntable of the beam transmitting device was the same for both *Wotan I* and *Wotan II* systems. The beam transmitting device was formed by an instrumentation cabin with a superimposed horizontal antenna mast carrying dipoles with or without reflectors.

In spring 1942, the *Luftwaffe* launched the *Baedeker Blitz*, a series of air raids against historic towns and cities in Great Britain in reply to the R.A.F. bombardments of Lübeck and other historic towns in Germany. The name “*Baedeker*” was assigned to the *Blitz* after the famous *Baedeker* German travel guides.

Bombers *He111* of the 3/*KG* 26, under the orders of *Major* von Lossberg, were equipped with the onboard components of the Y system (Jones, 2009). They were based in Rennes (Ille et Vilaine) and carried the unit mark 1*H*. A short aerial mast behind the cockpit, identified the *Y-Gerät He111*. Other participants in the Blitz were: the *Kampfgeschwader* 2 codename *Holzhammer* (Wooden Hammer), based at Soesterberg (The Netherlands), equipped with *Do217*; the *Kampfgruppe* 106 based in Dinard, equipped with *Ju88*, one of its squadrons was temporarily trans-

ferred to Leeuwarden (The Netherlands) for attacking York; the *Erprobungs-und Lehrkommando* 100 (Trials and Evaluation Command), equipped with *He111*, as pathfinder and target marker, dropped incendiary and small high explosive bombs; the 3. *Fernaufklärungsgruppe* 123 based in Lannion (Côtes-d'Armor), equipped with *Ju88*, it led many attacks marking targets by delivering flares, but not on York; the *Kampgeschwader* 30 equipped with *Ju88*, it led many attacks marking targets by delivering flares (Brooke, 2025).

Exeter (23rd-25th April 1942, 4th May 1942), Bath (25th-26th April 1942), Norwich (27th April 1942 and end of June), York (28th-29th April 1942), Canterbury (31st May-1st June 1942) were severely damaged during the *Blitz* (IWM, 2025).

The B.B.C. television transmitter at Alexandra Palace was used as a Domino countermeasure for jamming the Y system. Domino radiated back to a bomber its own reflected signal at the same frequency used by its ground station. This signal interfered with the sinusoidally modulated signal coming from the ground station, and the interfered signal was sent back by the bomber onboard transmitter to the ground station, causing false bomber positioning and inappropriate orders for the bombing run. As a consequence, the Y system was withdrawn (Jones, 2009).

4. The WWII German Base Y8 Near La Feuillée

The *Rhubarb Operations* (1941) describe Y8 (Figure 2, Figure 3) as follows:

“1.ii) Pin Point 48° 24' 55"N. 3° 53' 22"W. Grid ref: 395984.

3.i) Target is approximately 24 miles from the coast South by Last from ST. POL DE LEON, on the top of the MONTAGNE D'ARREE ridge, about 1207 feet above sea level. It lies 500 yards N.E. of the point of intersection of two roads and a railway.

This target is on the same ridge as COMMANA station (Target V/1) and about 1 miles [sic] E.N.E.

4.i) Target consists of a hut supporting an aerial array similar in appearance to the attached diagram No. 1.

4.ii) Layout and immediate surroundings are shown on the C.I.U. Plan No. 1055.”

The examination of early post WWII French air reconnaissance images (Figure 4) permitted the identification of many of its components.

5. The Visit

The visit of Y8 site took place on 6th September 2025. The site was located near the fenced area of the TV Relay Emitter of Roc'h Trédudon (Figure 4 A). The site was uniformly covered by fern vegetation which covers practically all the Y8 components; therefore, their positions are not very precise. The identified components were the following (Figure 4).

A railway line 1 (48° 24' 42.51" N, 3° 53' 36.24" W, h. 347.79 m) disappeared, only its path parallel to the department road D764 remains visible;



Figure 2. Y8—9/43 20 - 9 - 41 N°655 Neg N°4216 (Rhubarb Operations, 1941), point of intersection of two roads and a railway.

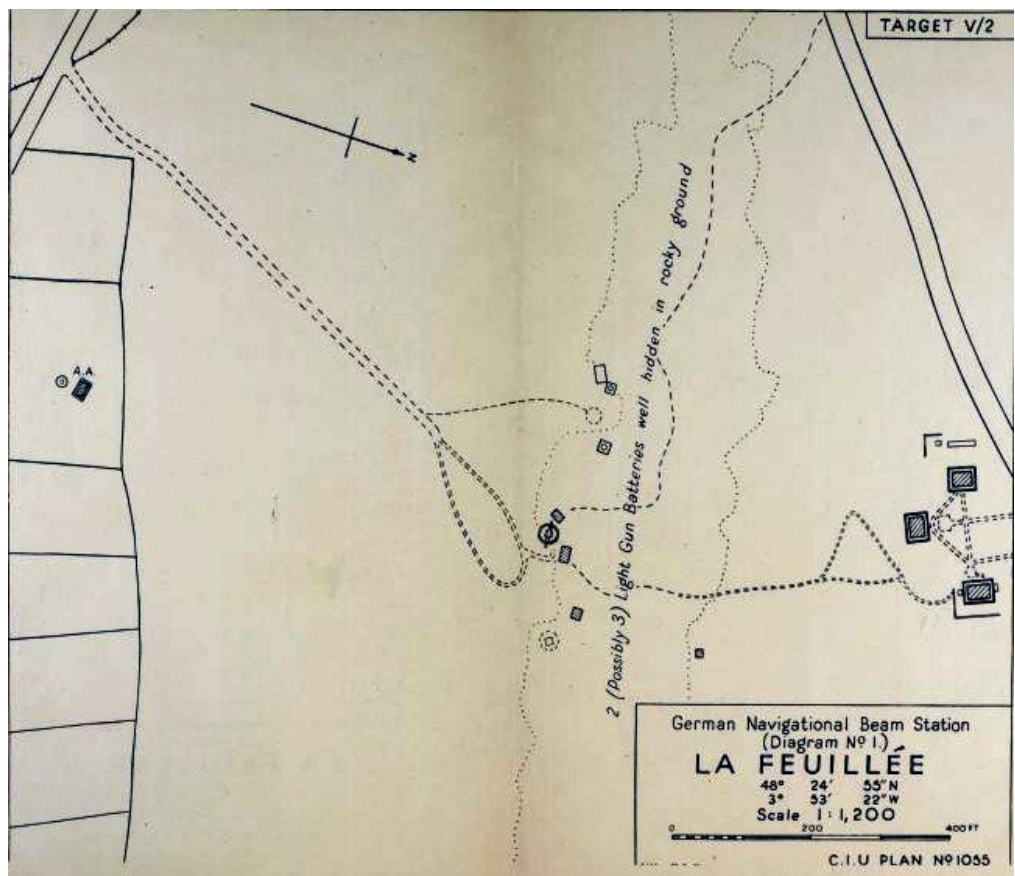


Figure 3. Y8—Diagram N°1, C.I.U. Plan N. 1055 (Rhubarb Operations, 1941).



Figure 4. Y8—detailed view: 1 railway line, 2 access road, 3 road loop, 4 - 6 emplacements, 7 *Wotan II* turntable, 8 - 9 emplacements, 10 emplacement, 11 - 12 emplacements, 13 - 16 emplacements, 17 - 19 emplacements, A fenced area of the TV Relay Emitter of Roc'h Trédudon.

IGNF_PVA_1-0_1952-05-23_C0816-0031_1952_F0216-0816_0043

An access road 2 (48°24'49.93" N, 3°53'07.69" W, h. 365.65 m) was covered by vegetation; therefore, it was not possible to determine its preservation state;

A road loop 3 (48°24'53.6" N, 3°53'07.39" W, h. 364.52 m) was covered by vegetation; therefore, it was not possible to determine its preservation state;

An emplacement 4 (48°24'53.02" N, 3°53'16.76" W, h. 362.83 m) was covered by vegetation; therefore, it was not possible to determine its preservation state;

An emplacement 5 (48°24'53.38" N, 3°53'16.13" W, h. 360.87 m) was covered by vegetation; therefore, it was not possible to determine its preservation state;

An emplacement 6 (48°24'53.51" N, 3°53'15.59" W, h. 360.61 m) was covered by vegetation; therefore, it was not possible to determine its preservation state;

A 4 × 4 × 2 m *Wotan II* turntable concrete basement 7 (48°24'54.4" N, 3°53'06.63" W, h. 365.03 m) located on the top of a protruding rock (**Figure 5**), covered by moss and lichen, appeared to be in a good state of preservation without damages due to combats or bombardments. Its concrete surface preserved traces of the construction formwork;

An emplacement 8 (48°24'54.94" N, 3°53'05.75" W, h. 362.99 m) was covered by vegetation, therefore, it was not possible to determine its preservation state;

An emplacement 9 (48°24'55.22" N, 3°53'05.31" W, h. 362.91 m) was covered by vegetation; therefore, it was not possible to determine its preservation state;

An emplacement 10 (48°24'59.03" N, 3°53'01.04" W, h. 350.1 m) was partially covered by vegetation; therefore, it was not possible to determine its preservation state;

An emplacement 11 (48°24'41.58" N, 3°53'03.66" W, h. 348.76 m) (**Figure 3**, AA) was covered by vegetation; therefore, it was not possible to determine its

preservation state;

An emplacement 12 ($48^{\circ}24'43.02''$ N, $3^{\circ}53'03.69''$ W, h. 356.77 m) (**Figure 3**, AA) was covered by vegetation; therefore, it was not possible to determine its preservation state;

An emplacement 13 ($48^{\circ}24'51.22''$ N, $3^{\circ}53'53.67''$ W, h. 372.67 m) was covered by vegetation; therefore, it was not possible to determine its preservation state;

An emplacement 14 ($48^{\circ}24'52.96''$ N, $3^{\circ}52'51.28''$ W, h. 373.77 m) was covered by vegetation; therefore, it was not possible to determine its preservation state;

An emplacement 15 ($48^{\circ}24'53.1''$ N, $3^{\circ}52'51.76''$ W, h. 373.67 m) was covered by vegetation; therefore, it was not possible to determine its preservation state;

An emplacement 16 ($48^{\circ}24'52.59''$ N, $3^{\circ}52'52.73''$ W, h. 372.85 m) was covered by vegetation; therefore, it was not possible to determine its preservation state;

An emplacement 17 ($48^{\circ}24'59.58''$ N, $3^{\circ}53'24.26''$ W, h. 320.3 m) was covered by vegetation;

Therefore, it was not possible to determine its preservation state;

An emplacement 18 ($48^{\circ}24'58.3''$ N, $3^{\circ}53'26.35''$ W, h. 322.25 m) covered by vegetation; therefore, it was not possible to determine its preservation state;

An emplacement 19 ($48^{\circ}24'58.14''$ N, $3^{\circ}53'24.34''$ W, h. 325.81 m) was covered by vegetation; therefore, it was not possible to determine its preservation state;

A circular emplacement 20 ($48^{\circ}24'55.18''$ N, $3^{\circ}53'57.94''$ W, h. 370.94 m) was covered by vegetation; therefore, it was not possible to determine its preservation state;



Figure 5. Y8—*Wotan II* turntable concrete basement 7—(a) view towards the north; (b) view towards the north-west; (c) view towards the west, in the background, antenna of the TV Relay Emitter of Roc'h Trédudon; (d) turntable concrete basement, detailed view.

The fenced area of the TV Relay Emitter of Roc'h Trédudon A ($48^{\circ}24'48.25''$ N, $3^{\circ}53'22.25''$ W, h. 359.9 m). Commissioned in 1961, the TV Relay Emitter, on 14th February 1974, was the target of an attack claimed by the Front de Libération de la Bretagne (FLB), which destroyed the antenna, depriving part of Brittany of radio and TV emissions for several weeks. According to another version, the antenna was destroyed by the French army, which conducted military exercises on the Crozon peninsula. Commissioned in 1975, the new antenna is 225 m high. (Bretania.bzh, 2020).

6. Discussion

The Y8 construction period is unknown, but, because Y8 appears in the *Rhubarb Operations* (1941) of 20.9.41, it was anterior to that date. Therefore, because the turntable of the beam transmitting device was the same for both the *Wotan I* and *Wotan II* systems (Jones, 2009), it could be possible that Y8 was initially a *Wotan I* ground station (X system) upgraded successively to a *Wotan II* ground station (Y system) to participate in the *Baedeker Blitz*. In this case, it could be possible that Y8, as X system station, could have participated in the Battle of Britain at the end of 1940. Having regard to its western position in the Finistère, it is possible that Y8 was involved, during the *Baedeker Blitz*, in the bombardments of Exeter, Bath, and Canterbury in the south of Great Britain. Its possible function as a decoy station (Salles, 1995) is not clear.

The *Unterstellungsverhältnis* (Subordination relationship) (Figure 1) shows that on 14.08.1943 Y8 was subordinate to the *Flugs. Regt. West*.



Figure 6. Y8, Wotan II turntable—hypothetical reconstruction.

Tentatively, the purpose of some Y8 components can be described as follows:

* It is not certain if the narrow-gauge railway line, inactive since 1932 (Fleitour, 2001), but passing close to the Y8 site (Figure 4), was reactivated for routing materials and workers for the construction of Y8. It is possible that French workers and companies under the control of the *Organisation Todt* (O.T.) contributed to the construction of Y8.

* The road loop 3 was constructed to facilitate the return of vehicles arriving at Y8 through the access path 2, as those of the train station area of Vezot (Sarthe) (Tomezzoli & Pottier, 2015, **Figure 2**, n. 9) and of the *Stützpunkt* on the Menez Hom (Finistère) (Tomezzoli, 2017, **Figure 1**, n. 34).

* The components 17 - 19 were probably wood or concrete barracks, comprising kitchen, canteen, and hygienic services, for lodging the Y8 personnel.

* The circular emplacement 20 probably hosted an antenna for radio communications.

The above information allows to proceed to a hypothetical reconstruction of the Y8 *Wotan II* component (**Figure 6**).

7. Conclusion

The visit to the Y8 site permitted the determination that practically all its components are actually covered by vegetation, abandoned, and forgotten. Therefore, for the moment, their preservation is assured. As usual in this kind of archaeological search, further issues remain to be investigated: the construction phases and their upgrades, the Y8 missions accomplished both as *Wotan II* ground station or as a decoy station, the electrical power and water supply, the units and commanders in service during WWII.

It is hoped that this article can stimulate further studies by interested people and form the basis for a more certain legal status and cultural recovery of the Y8 site.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this article.

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