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# Epigraphical Study in the Burial Chamber of Nakhtmin (TT 87): Intermediate 'Models' and Scribal Practices

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# Epigraphical Study in the Burial Chamber of Nakhtmin (TT 87): Intermediate 'Models' and Scribal Practices*

LUCÍA DÍAZ-IGLESIAS LLANOS, DANIEL M. MÉNDEZ-RODRÍGUEZ

**ABSTRACT**

As a sequel to the identification of three scribal hands in the texts copied in the burial chamber of Nakhtmin (Díaz-Iglesias Llanos, Méndez-Rodríguez 2023), the intermediate 'models' written on ostraca that were used by scribes to transcribe the funerary formulae onto the walls are here thoroughly checked against the final product. After a brief introduction to the sources, the interaction of scribes with their *Zwischenvorlage* is explored by paying attention to editorial changes, mistakes, and emendations introduced during the copying process. Combining the data on scribal hands with all these modifications sheds light on different forms of (re)productive transmission, the scribes' literacy levels, their expertise in copying funerary texts, and the influence that material factors and the 'models' exerted on their work.

**Keywords:** Hatshepsut, Thutmose III, Sheikh Abd al-Qurna, scribes, Nakhtmin, ostraca.

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**RÉSUMÉ**

À la suite de l'identification de trois mains de scribes dans les textes copiés dans la chambre funéraire de Nakhtmin (Díaz-Iglesias Llanos, Méndez-Rodríguez 2023), les « modèles » intermédiaires écrits sur ostraca, utilisés par les scribes pour transcrire les formules funéraires sur les murs, sont ici minutieusement analysés par rapport au produit final. Après une brève présentation des sources, l'interaction des scribes avec leur *Zwischenvorlage* est explorée, en prêtant attention aux changements éditoriaux, aux erreurs et aux changements introduits au cours du processus de copie. Le croisement des données relatives aux mains des scribes avec les modifications réalisées met en lumière les différentes formes de transmission dans la (re) production de l'écrit, les niveaux d'alphabétisation des scribes, leur expertise en matière de copie de textes funéraires et l'influence exercée par les facteurs matériels ainsi que par les « modèles » sur leur travail.

**Mots-clés :** Hatchepsout, Thoutmosis III, Cheikh Abd el-Gournah, scribes, Nakhtmin, ostraca.

The study of various aspects of written culture in Egyptology (graphic registers, individual handwriting, authorship, and the *Sitz im Leben* of several genres) has increased significantly in the last fifteen years. However, and as Ilona Regulski highlights, "less attention has been paid to more practical aspects of creating a text and the copying of documents,"[1] with some notable exceptions.[2] She underscores that the "texts surviving from ancient Egypt could not have been written unless the professional scribes were well trained in reproducing texts from master copies (*Vorlagen*)," and that this was not a mechanical process; conscious, subtle changes were introduced, often as a result of corrections or reinterpretations.[3]

Gaps in the archaeological data and some cultural peculiarities are two of the major problems in the analysis of ancient Egyptian textual (re)production processes. On the one hand, in most cases only the final products—e.g., monuments, documents—have come down to us, but not all the links in the chain—primary and secondary templates, sketches, studies,

1 Regulski 2020, p. 357.

2 See, for example, the studies of Donker van Heel, Haring (2003) on the material of Deir el-Medina; Parkinson (2009) and Hagen (2012) for Middle Kingdom literature; Leach, Parkinson (2010) and Ragazzoli (2010) on Books of the Dead; Dieleman (2014) for Demotic Books of Breathing; Alvarez (2022) and Morales (2016) on the monumentalization of Pyramid Texts in Old Kingdom royal tombs; Regulski (2015, 2020) on Middle Kingdom manuscripts bearing Coffin Texts, a Letter to the Dead, an offering list, and a dedication text; Dieleman (2015) and Donnat (2016) on textual amulets; Kikuchi (2022) for the Amduat (or Book of the Hidden Chamber) in the tomb of Amenhotep III. For graphic registers, see Albert, Ragazzoli (eds.) 2025.

3 Regulski 2020, pp. 82, 357.


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guidelines, memory aids, prescriptions, etc.—that lead to them are present.[4] On the other hand, the ancient Egyptians meticulously recorded many of their activities, but they did not detail how they transmitted texts and decorated tombs, or how scribes worked and were trained.

A notable exception to the gap in the archaeological record is the case of the ostraca used to transcribe the texts on the walls of the burial chamber decorated for Nakhtmin (TT 87). These were text carriers used as transfer media and have been here dubbed as intermediate 'models' or copies.[5] A previous article discussed several features of the texts written in this chamber, relating to the layout, specific aspects of signs, and writing habits, and the research resulted in the identification of three scribal hands.[6] The present study is based on a thorough comparison between the intermediate 'models'—portable ostraca—and the final product or actualization—the walls of the burial chamber. By combining the information on three individual copyists, we have been able to further explore the issues of remediating,[7] monumentalizing, and editing texts, starting out with the following questions: did a scribe transcribe the texts from his *Handwerke*-ostraca literally or modify them according to specific circumstances?; what degree of influence did the 'model' exert on the final product?; are the various levels of expertise between copyists reflected in differences in the remediation process?

4 "Monumentalizing an inscription involves a multi-stage production process […] incorporating a range of materials, technologies, and social actors. Nonetheless, this process is often given little attention and is not well understood, in part because of the dearth of surviving blueprints and other materials employed in the construction of monuments, such as drafts or artisans' guidelines" (Alvarez, Grebnev 2022, p. 7). Other actions underlying the production process, such as memorization and different strategies of communication between the agents involved in the making of inscriptions (including instructions transmitted orally), leave few material traces.

5 There is no consensus on which modern labels best define the ostraca studied in this article or similar artefacts. While Laboury describes these artefacts as initial drafts (2023, p. 123, and also as sketched model(s) in 2023, p. 124), Haring (2015) uses the terms designs/drafts of monumental inscriptions. He also refers to the ostraca of Nakhtmin as a 'master copy of a long hieroglyphic tomb inscription' (2015, p. 71). The authors who have previously published the ostraca of Nakhtmin dealt with in this paper have described them as *Vorlage* (Guksch 1995, p. 75) and as "*temporäre Zwischenvorlagen für den ausführenden Handwerker, die ihrerseits auf einer oder mehreren (auf Papyrus oder möglicherweise auch Leder geschriebenen und vor Ort archivierten) Vorlagen(n) basiert*," as *Vorlagen-ostraka*, or as *Handwerke-Vorlage* (Lüscher 2013, pp. 2, 50, 51). Finally, Alvarez (2022, p. 119), in her hypothetical model for explaining the transposition of ritual texts from manuscripts to pyramid walls, coined the term "intermediate model" to refer to "the draft emerging from the selection and compilation of texts for carving in tombs" (similarly, Morales [2016, p. 76] alludes to master copies/documents used by scribes working in Old Kingdom pyramids). The authors of this article would like to thank an anonymous reviewer for suggesting reflection on the ideas underlying the use of the pair of words model-copy. While a debate on these terms and their conceptual and historiographic frameworks is desirable to shed new light on the processes of textual creation and transmission in Ancient Egypt, this issue goes beyond the scope of this paper. This debate would be enriched by consulting publications on monumentalization from other ancient world cultures (e.g., Alvarez, Grebnev 2022). We have opted for the term 'intermediate model' to describe a textual artefact produced as a result of coalescing other source materials. This artefact served as an example for the copyists to work from during an intermediary stage of monumental inscription production. The same reviewer suggested the use of more neutral expressions, such as "*manuscrits de transfert ou de mise en place ou intermédiaires*," which would be also fitting for the ostraca of Nakthmin. To avoid the connotations that the word 'model' could imply—an original or authored text that should be replicated without alteration—quotation marks will be used ('model') throughout the article.

6 Díaz-Iglesias Llanos, Méndez-Rodríguez 2023.

7 For the concept of remediation, see Hussein 2017 and below (section 2).


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## 1. THE INTERMEDIATE 'MODELS' AND THEIR TEXTUAL REPERTOIRE

Eight ostraca used as transfer media for the copy of texts onto the walls of Nakhtmin's burial chamber exist,[8] and they cover c. 62% of the spells written on the walls (see Table 1 and Figs. 1–7). Information on their archaeological context is sparse because of imprecise archaeological reports,[9] or it is unclear, as some ostraca were retrieved in secondary contexts.[10] Only two of the pieces (oTh3 u.a. and oL1) seem to have been found in the underground structures of TT 87, where they might have ended up when the copyists themselves discarded them after finishing their work or when they were used to fill cracks in the walls.[11] No details on how any of the other ostraca stored in the Louvre Museum were discovered are available. Most of them were first mentioned in Théodule Devéria's 1874 catalogue,[12] but they must have entered the collection before then. Two facts should be noted; firstly, the ostraca arrived in France before the excavation of the shaft of Nakhtmin's chamber at the beginning of the 20th century.[13] Secondly, in the courtyard of TT 79, where the shaft leading to Nakhtmin's burial chamber was dug, other ostraca were found that were associated with the decoration of neighbouring tombs. It is therefore possible that the ostraca in the Louvre were also found in this courtyard,[14] where they might have ended up after centuries of looting in the underground structures.[15]

During the 2024 fieldwork season of the NKS project, the material stored in TT 87 in the 1980's by the team lead by Heike Guksch (currently Heike Heye) was checked. Small previously unpublished fragments of several of the already discovered ostraca were found, and they complete broken parts of oTh3 u.a., oP5, and oP1 (see Figs. 2, 3, 6). According to Heye's field notes, these small pieces were found in the corridors leading to the burial chamber and in the chamber itself.[16] Since they form part of the edges, there is a possibility that these fragments

8 Published by Lüscher (2013, 2015). For the sake of simplicity, the ostraca will be cited using the sigla created by Lüscher: oLouvre E 22394 = oP4; oLouvre AF 230 = oP5; oTT 87 + oCambridge E.56.1946 = oTh3 u.a.; oLondon UC 13248 = oL1; oLouvre N 684 = oP3; oLouvre N 684bis = oP1; oLouvre AF 496 = oP2; oLouvre AF 13420 = oP6.

9 Mond's account of his work during 1903–1904 in several Theban tombs is rather imprecise. He summarizes the interventions in the shaft of Nakhtmin ("I cleared out [the pit] and photographed the text") and the findings ("I found in it fragments of a red canopic jar and of a papyrus, and drafts of the text on limestone ostraca"—Mond 1905, p. 76) to such an extent that it is not possible to gain any clear picture of the original archaeological context. According to Lüscher and Hagen, the ostraca found by Mond most likely correspond to oLondon UC 13248 (= oL1, Lüscher 2013, pp. 33–35, pl. 10) and oCambridge E.56.1946 (a fragment belonging to oTh3 u.a., Hagen 2011, pp. 2, 5–6, pls. 1–2 and Lüscher 2013, pp. 32–33, pl. 7–9). An examination of Mond's unpublished documentation kept at the Griffith Institute of the University of Oxford, despite the invaluable assistance of Francisco Bosch-Puche, whom the authors would like to thank, did not produce further information.

10 Guksch (1995, p. 75, fig. 32, pl. 20 c, d) reports having found an ostracon (oTT 87, part of oTh3 u.a.) while dismantling the wall of limestone blocks built by Mond in the winding corridor that leads into Nakhtmin's burial chamber. Mond's wall was intended to allow access into the later space and to contain the debris generated in the excavation.

11 Lüscher 2013, pp. 25–28.

12 Devéria 1874, p. 125. The journey of oP4 from the former Musée Guimet to its current location in the Louvre has been reconstructed by Lüscher (2013, p. 29).

13 Although Virey (1891, pp. 314–321) visited TT 87 in the late 19th century and left a description of the scenes in the chapel, the shaft leading to Nakhtmin's burial chamber went unnoticed and was first reported and excavated by Mond (1905, p. 76). We cannot rule out that modern looters accessed the structures in the 19th century.

14 Lüscher 2013, p. 27.

15 Guksch 1995, p. 76.

16 The authors would like to thank H. Heye for going through her fieldnotes and sending us all the information on the finding contexts of the mentioned ostraca fragments.


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chipped off the larger ostraca that could have been discarded by the scribes on the same spot where they had used them. Therefore, we suggest that some of the Louvre artefacts could have been originally retrieved in the same context as oTh3 u.a. and oL1, and they deteriorated as a result of looting and removal of deposits and debris.

| Inventory Number and Museum | Dimensions | Lüscher's siglum | | Textual content | | Bibliography |
|---|---|---|---|---|---|---|
| | | | | Cols. in TT 87 | Spell | |
| oLouvre E 22394<br>Musée du Louvre, Paris<br>See Fig. 1 | 25 × 15.8cm | oP4 | rto | 4–11 | CT 154 | Lüscher 2013, pp. 28–30, 55–61, 95–98, pls. 1–4 |
| | | | vso | 11–18 | CT 154 and beginning of CT 155 | |
| oLouvre AF 230<br>Musée du Louvre, Paris<br>See Fig. 2[17] | 21 × 20.5cm | oP5 | rto | 18–25 | CT 155 | Lüscher 2013, pp. 31, 61–63, 98–100, pls. 5–6 |
| | | | vso | 25–28 | CT 155 | |
| oTT 87 + oCambridge E.56.1946<br>Magazine of Qurna and Fitzwilliam Museum, University of Cambridge<br>See Fig. 3[18] | 24 × 15cm + 18 × 20cm | oTh3 u.a. | rto | 61–65 | Final part of PT 253, CT 179 | Lüscher 2013, pp. 17–23, 32–33, 67–79, 101–103, pl. 7–9<br>Guksch 1995, pp. 75, fig. 32, pl. 20 c, d<br>Hagen 2011, pp. 2, 5–6, pls. 1–2 |
| | | | vso | 65–69 | CT 434, CT 422 | |
| oLondon UC 13248<br>Petrie Museum of Egyptian Archaeology, University College<br>See Fig. 4 | 14.5 × 11.7cm | oL1 | rto | 77–80 | CT 335 | Lüscher 2013, pp. 33–35, 84–85, 104, pl. 10 |
| | | | vso | 80 | CT 335 | |
| oLouvre N 684<br>Musée du Louvre, Paris<br>See Fig. 5 | 29 × 16cm | oP3 | rto | 80–86 | CT 335 | Lüscher 2013, pp. 35–37, 85–87, 104–106, pls. 11–14 |
| | | | vso | 86–92 | CT 335 | |
| oLouvre N 684bis<br>Musée du Louvre, Paris<br>See Fig. 6[19] | 29 × 20cm | oP1 | rto | 92–100 | CT 335 | Lüscher 2013, pp. 37–38, 87–90, 106–107, pls. 15–16 |
| | | | vso | 100–106 | CT 335 | |

**Table 1.** Overview of the ostraca used as intermediate 'models' or transfer media.

17 The figure includes the ostracon previously published by Lüscher and two fragments thus far unpublished, retrieved by the NKS project while revising the material stored by the German team of Heye in the 1980's in TT 87 with the find spots Nos. 265 and 279. The former fragment, which joins on the verso, was found by H. Heye in the second part of the corridor in a layer where dust, stones, and remains from funerary objects were mixed. The latter fragment, which can be attached to the rto, was found in the NW part of the burial chamber, in a thin layer of debris and some modern objects.

18 The figure includes the ostracon previously published by Heye and, for the first time, a fragment retrieved by the NKS project while revising the material stored in TT 87 (find spot No. 255). The latter was found by the German team in the first part of the corridor, close to the bottom of the shaft in a layer consisting of dust, stones, and fragments from funerary remains (Heye's notes).

19 The figure includes the ostracon previously published by Lüscher and a fragment retrieved by us in 2024 when we checked the material stored by Heye in TT 87 (find spot No. 277). According to Heye's notes, the fragment was found in the S part of the burial chamber, the area closest to the entrance, in a thin layer together with debris and modern materials.


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| Inventory Number and Museum | Dimensions | Lüscher's siglum | | Textual content | | Bibliography |
|---|---|---|---|---|---|---|
| | | | | Cols. in TT 87 | Spell | |
| oLouvre AF 496<br>Musée du Louvre, Paris<br>See Fig. 7 | 21.5×21cm | oP2 | rto | 107–111 | CT 335 | Lüscher 2013, pp. 38–39, 90–92, 107–108, pls. 17–20 |
| | | | vso | 111–115 | CT 335 | |
| oLouvre AF 13420<br>Musée du Louvre, Paris | 34×17cm | oP6 | rto | 116–123(?) | damaged surface[20] | Lüscher 2013, pp. 39, 108, pl. 21–22 |
| | | | vso | | damaged surface | |

**Table 1 (suite).** Overview of the ostraca used as intermediate 'models' or transfer media.

As shown in the table above, most of the ostraca are over 20cm high, with the exception of the one in London. Referring to the size and weight of the piece stored in Cambridge, Frederik Hagen states that the object was "too unwieldy for a hand-held copy to be used by a draughtsman during the decoration of the tomb."[21] However, during the excavation of the passage leading into Nakhtmin's burial chamber in the 2022 fieldwork season, several stones similar in size and shape to the ostraca in Table 1 were discovered.[22] Experiments that involved holding these limestone pieces showed that they could be easily handled by one hand, meaning that the copyist might not have needed a special device stand to hold the ostraca (or helpers) while he transcribed the texts onto the walls.

There is writing on both sides of the ostraca and, in exceptional cases, also on the edges. Columns of cursive hieroglyphic texts executed with red and black inks, interspersed with a few hieratograms, can be seen on them.[23] The columns are separated by thin black lines and are to be read in the normal (prograde) order, with the beginning of the text on the right-hand side of each artefact. The indication of the addressee of the texts on the ostraca is not the same as that on the tomb walls, although both indications refer to the same individual. On the ostraca, *sš-nsw* 'royal scribe' is the title most frequently used to introduce Nakhtmin's name (and, exceptionally, that of *jmy-r šnwt* 'overseer of the granary' in oP4 rto, cols. 2–3), and the expression *mɜʿ-ḫrw* 'justified' is not recorded as a continuation to his name. On the walls, however, extended versions of the tomb owner's positions can be found, his name is usually followed by the sign A52 , and he is qualified as justified of voice (see below under 2.1.e and fig. 20). Another characteristic feature of Nakhtmin's ostraca is the frequent use of the expression *gm-wš*  to indicate missing words because of a *lacuna* in the source material. The high number of these marks "suggests an approach to manuscript that valued its materiality and antiquity more than the message itself"[24] and the use of an already deteriorated template.[25]

20 Lüscher (2013, p. 43) suggests that the damaged text on the ostracon could correspond to the final passage of CT 335, written in cols. 116–123.

21 Hagen 2011, p. 5.

22 The clearing of the underground structures of TT 87 is part of the tasks undertaken by the NKS project and was coordinated by Ángeles Jiménez-Higueras, co-director of the project. See Díaz-Iglesias Llanos et al. 2022, pp. 15–25.

23 For the conversion of these signs into cursive or monumental hieroglyphs, see section 2.1.b below.

24 Alvarez 2022, p. 118. The author contrasts this procedure with its absence in the Pyramid Texts, suggesting that, in the latter case, the integrity of the ritual text for its effectiveness was deemed more important.

25 In this context of the transmission of a damaged copy, the case of the Amduat is noteworthy. As stated by von Lieven (2016, p. 58) "it is obvious that the New Kingdom versions in the royal tombs up to the Amarna Period (c. 1351–1334 BC) all stem from one single manuscript, which already in the first copy has lacunae and thereupon visibly deteriorates more and more


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Thanks to the research published by Barbara Lüscher in 2013, two further aspects of the ostraca used in Nakhtmin tomb's, which can be connected to the original master copies (probably stored in temple libraries or similar archival contexts) and to scribal practices, have come to light. Firstly, oP4 and oP5 are interconnected and contained two spells (CT 154 and 155) that were often coupled in a sequence in Middle Kingdom sources. Since the verso of the second ostracon has some ruled columns that were left blank (see Fig. 2) and a new ostracon was prepared for the neighbouring text in the burial chamber, Lüscher suggests that the two CT spells were written together in the source material as a separate *Einzelvorlage*.[26] Secondly, the ostraca on which spell CT 335 was written were transcribed onto the walls of the burial chamber in the wrong order, resulting in a garbled version of the text that shifted back and forth.[27]

In the plates showing the tomb walls (Figs. 8–13), the texts that correspond to each ostracon are indicated with a continuous red or blue line under which the inventory number of the artefact is given. Changes in columns on the ostraca are marked with short horizontal red or blue lines and a number written in a black square. In the case of oTh3 u.a., it was not possible to perceive and indicate these internal divisions, as the upper and lower parts of the limestone clasts have not been preserved. A question mark attached to a horizontal line illustrates our hypothesis of where a change from one column to the next might have occurred on a damaged ostracon. By highlighting these divisions, two aspects come to the fore. Firstly, the length of the columns in the intermediate 'model'/copy does not correspond to the length of the columns on the tomb walls.[28] Secondly, the change from one panel to another in the burial chamber could have coincided with the middle of a column on an ostracon (e.g., panel 1 ends close to the bottom of col. 6 in the vso of oP4) and of a spell.

A final comment on the ostraca is that when considering the work of the three scribes identified in Nakhtmin's burial chamber, there seems to be a notable similarity between the morphology of the signs written by scribe A and those on the ostraca (this is conspicuous in the cases of A40 , D4 , F4 , F13 , F20 , G36 , G43 , W17 , and Aa2 ,

over time. After the Amarna Period, another master copy becomes available, but in the 21st Dynasty (c. 1070–970 BC), the old papyrus resurfaced again, which by then had lost two thirds of its length." The expression *gm-wš* in the Amduat is very often found in places where a free space is included in the parallel versions (Altenmüller 1968, p. 32).

26 Lüscher 2013, pp. 31, 42, 100.

27 Lüscher 2013, pp. 23–24, 34–39, 40, 43. The text was even in the wrong order on the ostraca themselves, a circumstance that has been related to a corrupted *Originalvorlage* (Lüscher 2013, p. 36). For example, oP3 rto, cols. 1–3 starts with a section corresponding to CT IV, 214/5b–216/7c [335] = BD 17 (*TbT* 1, 78c–84d, in the edition of Lapp 2006), continues in cols. 3–5 with a passage that should have come before (CT IV, 206/7b–210/1a [335] = *TbT* 1, 66d–74c), and jumps forward in cols. 5–7 and vso to CT IV, 218/9a–232/3b [335] = *TbT* 1, 88b–112c). For different processes of copying leading into garbled layouts in which retrograde exemplars were involved, see Alvarez 2018 and Joubert 2025.

28 An observation already made by Hagen (2011, p. 5) and Hussein (2017, p. 307). The height of the columns on the walls of the burial chamber oscillates between 78 cm (end of panel 1), 97 cm (beginning of panel 2), and 96 cm (beginning of panel 3). See Díaz-Iglesias Llanos, Méndez Rodríguez 2023, fig. 1 for the dimensions of each panel. For changes involved in the process of monumentalizing texts in pre-modern cultures, see Alvarez, Grebnev 2022, pp. 7–9. For the numeration of the columns on the ostraca throughout this article, we start counting from the first column with funerary texts. Marks located on the edges or the margins of these artefacts, for which see Lüscher 2013, pp. 40–42) are taken into account in this numeration.


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see Table 2).[29] However, the larger format of the tomb walls probably favored the use of more elaborate signs, whereas the limited space of the limestone ostraca was suited to more abbreviated forms (see Table 3). Thus, the signs on the walls can display handle-like ears in D2 as opposed to simple dots and also inner marks;[30] elaborate arrow ends in T22; inner marks, teats, or outer dots in N42, F32, U28, V22, and Aa1. Some other differences are the greater variety in the morphology of certain graphemes (D36, V31) in TT 87 for which only the abbreviated or hieratic form is found on the ostraca, the preference for more complex outlines (I9 with a rounded head and exaggerated horns, D46 with indication of wrist and thickness of the palm), and the tendency to fill in of some signs (F44, G28, and, in some cases, N29) in black on the walls. The use of more detailed signs in the tomb could be explained by the greater care or time required to copy texts onto the larger surfaces of the burial chamber walls. On the contrary, due to the temporary nature of the ostraca, which were intermediate manuscripts to be disposed of after use, their texts were probably written with a certain degree of haste.[31]

| Sign | | Ostracon | Nakhtmin's burial chamber |
|---|---|---|---|
| A40 | | oP1 rto, col. 9 | Panel 3, col. 100 |
| D4 | | oP4 rto, col. 7 | Panel 2, col. 2 |
| F4 | | oP2 vso, col. 3 | Panel 3, col. 38 |
| F13 | | oP5 vso, col. 5 | Panel 2, col. 27 |
| F20 | | oP2 rto, col. 1 | Panel 3, col. 58 |

| Sign | | Ostracon | Nakhtmin's burial chamber |
|---|---|---|---|
| G36 | | oP4 vso, col. 4 | Panel 1, col. 13 |
| G43 | | oP5 vso, col. 4 | Panel 2, col. 28 |
| W17 | | oP5 rto, col. 8 | Panel 3, col. 51 |
| Aa2 | | oP5 rto, col. 7 | Panel 2, col. 23 |

**Table 2.** Palaeographic comparison between the signs copied by scribe in the burial chamber and those of the ostraca used as intermediate 'models' or transfer manuscripts.

29 *Contra* Hussein (2017, p. 306), who considers that the ostraca were not written by the scribe (*sic*, a single scribe) of the tomb. It should be noted that several of the ostraca stored at the Louvre Museum have been also attributed to the same scribal hand (Benazeth, in André-Leiknam, Ziegler [com.] 1982, p. 348). To validate the hypothesis that scribe A was the author of the portable intermediate copies a thorough analysis of the ductus of the ostraca stored in museums, and a comparison with the ductus of this scribe (Díaz-Iglesias Llanos, Méndez Rodríguez 2023, pp. 26–33), will be undertaken by the authors in the near future.

30 There is always an exception to every rule and in oP4 vso, col. 7, D2 is more elaborate than in col. 18 on the wall.

31 Drawing on her interpretation of the papyri from the funerary temple of Pepy I (MafS T2147), Alvarez (2022, pp. 121–124) states that the style of writing between the manuscript and the intermediate model would have changed from a neat cursive writing (reflected on the side B of the mentioned papyrus) to a rapidly copied draft (side A).


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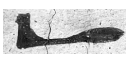
| Description | Ostracon | Nakthmin's burial chamber |
|---|---|---|
| Interior of signs: empty ≠ filled with black (, , ) |  oP4 vso, col. 3 |  Panel 1, col. 10 |
| |  oP4 rto, col. 2 |  Panel 1, col. 5 |
| |  oP5 rto, col. 8 |  Panel 2, col. 23 |
| Interior of signs: simplified ≠ elaborate (, , , , ) |  oP2 rto, col. 4 |  Panel 3, col. 109 |
| |  oP4 vso, col. 1 |  Panel 1, col. 12 |
| |  oP1 rto, col. 9 |  Panel 3, col. 100 |
| |  oP5 rto, col. 7 |  Panel 2, col. 22 |
| |  oP4 rto, col. 12 |  Panel 1, col. 11 |
| Outline: simplified ≠ elaborate (, , , , ) |  oP1 rto, col. 5 |  Panel 3, col. 96 |
| |  oP4 rto, col. 11 |  Panel 1, col. 11 |
| |  oP5 rto, col. 9 |  Panel 2, col. 24 |
| |  oP5 rto col. 6 |  Panel 2, col. 22 |
| |  oP4 rto, col. 12 |  Panel 1, col. 11 |

**Table 3.** Difference in degree of details in TT 87 and ostraca used as intermediate 'models' or transfer manuscripts.


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## 2. HOW SCRIBES INTERACTED WITH THEIR INTERMEDIATE 'MODELS'

The case of Nakhtmin's chamber shows that for the elaborate textual decoration of burial chambers dated to the early and mid-18th Dynasty, disposable 'models' or intermediate manuscripts written on ostraca were used. This system may have existed alongside other options (such as the use of papyrus rolls),[32] and it had certain advantages: the availability of the raw material; less expensive than other media;[33] more resilient to handling than papyrus at construction sites;[34] suitability of the surface to the lighting conditions inside the burial chamber;[35] and ease of handling (a papyrus needed to be unrolled with two hands, whereas an ostracon could be held in one hand, leaving the other free to hold a pen—see above comments to the sizes of the ostraca).

Ramadan Hussein coined the term 'remediation' for the process of transferring textual and pictorial materials from one transcription medium to another. It is a process in which the materials undergo editorial alterations and can adopt different forms in terms of length, content, and written form.[36] All of these editorial choices can be traced in TT 87 in the section of texts for which the *Handwerke-Vorlage* have been preserved via the ostraca described in the previous section. The case of Nakhtmin's chamber is quite exceptional in the sense that it allows us to move from hypothetical assumptions based on the comparison of several witnesses allegedly copied from the same model to actual scribal practice.

As mentioned above, the work of three different scribes was identified in the burial chamber of Nakhtmin, and we have named them A, B, and C. The alternation between these copyists in relation to the ostraca does not follow a consistent pattern. On the one hand, scribe B probably took over from his colleague A in the middle of oTh3 u.a. vso. The change most likely took place towards the end of col. 2 on the transfer medium, but not at its very end, and just before reaching the final words of spell CT 434, which ended with *n=f* at the beginning of col. 67 on the wall.[37] As strange and impractical as this alternation between scribes A and B in the middle of an ostracon may seem, it coincided with a change in the columns on the wall (from col. 66 to 67). On the other hand, part of the section copied by scribe C (cols. 73–80) covered the whole of oLi rto+vso, and scribe A resumed copying in the middle of col. 80 with a new ostracon. These two scribes alternated in the middle of a section of the long CT 335, but, as previously indicated, this spell was already mixed up on the ostraca and copied onto the walls in the wrong order. Other places where the three scribes alternated in TT 87 cannot be determined, as several *Handwerke-Vorlage* have not yet been discovered.

32 This suggestion is also made by Alvarez (2022, p. 121) in her theoretical explanation of the process behind the transposition of texts from a manuscript to the walls of pyramids. See also Haring 2015, pp. 79–80.

33 For calculations of the cost of papyri and the values attached to leather rolls, see Eyre 2013, pp. 26, 31–32.

34 Kahl 2022, p. 91.

35 The latter suggestion was made by Andreas Dorn (personal communication). He considers that papyrus would have been a more translucent medium than ostraca with the existing lighting devices in an underground space (lamps), and that the texts written on the former would have been thus harder for the scribes to see.

36 Hussein 2017.

37 Such an abrupt change before reaching the end of a spell could raise the question of whether the scribes in charge of copying this section were literate. However, the transition from spell CT 434 to CT 422 would have been difficult to notice for a copyist in the absence of its rubricized title and the many textual corruptions that mar the spells.


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In order to contextualize these observations, it should be noted that in several Book of the Dead papyri, where different scribal hands have been identified, the change between copyists could take place in the middle of a spell.[38] Conversely, the change could coincide with a new papyrus roll[39] or with a new spell in the sequence.[40] It is impossible to ascertain the circumstances that led to these changes in the burial chamber of Nakhtmin, nor is it possible to know the length of the pauses that separated the interventions of the different scribes.[41] Nevertheless, the explanation given by Florence Albert and Giuseppina Lenzo for the alternation of scribes working on a Third Intermediate Period Book of the Dead manuscript is also quite fitting for the context of TT 87: "*Ces changements témoignent d'une organisation du travail qui semble relativement spontanée entre les deux scribes. La répartition des tâches ne paraît pas avoir été nécessairement et/ou précisément planifiée à l'avance*."[42]

The process of remediation in the example of Nakthmin's burial chamber can be described as a combination of faithful copying and conscious editing. The first aspect is best illustrated by the fact that many mistakes from the compositions copied on the ostraca were retained, probably because they were part of the received text, which had a cultural value in itself,[43] but they could also have been caused by the copyist's lack of understanding of his 'model'. Even the morphology of some signs on the ostraca was maintained, an issue that will be discussed in section 2.1.c.[44] This tendency toward faithful copying may indicate a respect for the source material that is evident in many colophons in several types of texts.[45]

Conscious editing is evidenced by the fact that scribes took the initiative to modify the compositions that they transcribed from one medium to another in a number of ways: changes to the sign set, changes of script and of the morphology of a grapheme, rearrangement of signs,

38 Thanks to the study of the Saite pKöln Aeg. 10207 of Iahtesnakht, it can be seen that the alternation between scribes A and B took place in the middle of BD 144; however, the alternation from B to C and from C to B coincided with a new spell (Verhoeven, Dils 1993, pp. 340–341). In the Third Intermediate Period pVatican 38566, belonging to Iimut/Nesmut/Imut, the change from scribes 1 to 2 took place in different places: after finishing one spell; after scribe 1 copied the title of the spell in rubrics and the title of the deceased, the name of the owner and the sequel of the formula was penned by 2 (Albert, Lenzo 2022, pp. 77–81). In the short Third Intermediate Period papyrus of Asteamakhbit (pLondon BM EA 10743), the change of scribal hands took place between the second and third pages in the middle of a spell (Lucarelli 2010, p. 282).

39 This is the case of the Saite papyrus of Nespasef (Verhoeven 1999, p. 6), whose fragments are preserved in various collections.

40 This is the case of the Kushite papyrus made for Djedj, with fragments preserved in four countries, in which two scribes were involved (Munro 2011, p. 57) and of the Ptolemaic papyrus of Hor, stored in various museums, where four copyists executed the work (Munro 2006, pp. 6–7). It could also be the case of the papyrus of Khamehor C, inscribed by four scribes, but due to the many lacunae, it is not possible to see exactly where the change took place (Verhoeven 2017, pp. 24–25, 55). See also the example of pKöln Aeg 10207 quoted in n. 38.

41 In the papyrus of Gatseshen, pCairo J.E. 29636, the change of scribal hands coincides with the remark *wš šw* 'be lacking', which probably indicates a change of some sort in the scribal work, most likely an interruption (Lucarelli 2006, p. 19).

42 Albert, Lenzo 2022, p. 80.

43 The evidence of the ostraca confirms a hypothesis put forward by several scholars to explain the existence of illegible texts: that corruptions could be part of the received text and not the result of the copyist's lack of experience or literacy (Hoch 1991–1992, p. 88 and Hagen 2007, pp. 40–41, the latter author stresses that illegible manuscripts could have had a cultural value as symbols of status and education). The presence of mistakes in the model used to transfer texts to the pyramid of Ibi is suggested by Alvarez (2018, p. 112). On the respect for the *textus receptus* in the Coffin Texts, see Regulski 2020, p. 356–357 and Hoffmeier 1996, p. 51.

44 This coincides with a hypothesis made by Haring (2006, p. 18), who discusses the signs in the tomb of Sennedjem and indicates that "[...] The exact shapes of signs may of course be inspired by a *Vorlage*."

45 Luiselli 2003, pp. 348–349; Lenzo Marchese 2004.


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additions, and substitutions (see section 2.1 and Table 4).[46] These changes tended to alter the outward form of the texts rather than their content, probably because the religious meaning of the compositions was not supposed to be modified if their magical effects on the deceased were to be successful.

The way in which the scribes copied their models also resulted in some unconscious modifications in the form of mechanical mistakes (omissions, confusion of signs, additions, and reversals of orientation and order), which were sometimes detected and emended (see section 2.2). All these changes, both the intentional and unintentional ones,[47] will be examined in the following part of the article, in which differences or similarities between the three copyists will be also highlighted.

## 2.1. Editorial changes

### 2.1.a. *Changes to the sign set or substitution of equivalent/related graphemes*

During the remediation process, the scribes had some freedom to choose between phonetically or semantically equivalent or related signs—there are 31 examples of this practice, highlighted in dark blue in Figs. 8–13, see also Table 5. The substitution of equivalent graphemes was a rather marginal or exceptional phenomenon in the case of the signs *m* (G17 turned into Aa15; attested only once at the top of col. 20), *w* (G43 turned into Z7 or vice versa, Fig. 14; witnessed four times in cols. 11, 13, 89, and 99) and *tj* (U33 turned into V13; attested only once in col. 111). However, the alternation between the graphemes O34 and S29 was quite frequently undertaken (17 instances), although not in a systematic way,[48] and it usually led to a change in the arrangement of signs (Fig. 15 and see below, in section 2.1.d).

46 Lüscher (2013, pp. 10–11, 30, 37, 52 and *Anmerkungen* section; 2015, p. 103) summarizes some of the differences between the *Vorlage* (= ostraca) and the copy (= tomb walls) in TT 87, which she argues reflect the competence of the scribes, but she does not fully address the issue of scribal practices. Hussein (2017, pp. 306–307 and Tbl. 1) describes the differences between the ostraca and the walls as 'minor rearrangement and orthographic variations in the form of split orthography and sign conversion from hieratic to cursive hieroglyphs.' Parallels for these editorial activities can be found in other cases where the 'model' has not survived and will be highlighted in the following subsections. In the process of the textual transmission of Pyramid Texts spells into the New Kingdom, Jasper (2017, p. 53) proposes that a "copyist—with good skills in reading and writing—would have made frequent changes in the sign arrangement or in the sign set itself, such as from *z* to *s*… Occasionally, the copyist omitted signs, or made other errors, while delineating the text in hieroglyphs onto the temple or tomb walls."

47 Similar scribal practices in funerary contexts have been discussed by authors in charge of editing manuscripts or monumental versions of texts, most notably: Zeidler 1999, I, pp. 19–26; Gasse 2002; Landgráfová 2015; Werning 2017; Werning 2018.

48 The change from the vertical (S29) to the horizontal (O34) phoneme *s*/*z* was only consistently applied in the name of Seth (cols. 93 and 95), which resulted in a spelling that is not the most common for this theonym (Te Velde 1967, p. 1). The change of *s*/*z* in PT spells written in several Late Period tombs has been explained as the choice of an individual copyist (Landgráfová 2015, p. 36), and this modification is also found in tombs that share some registers, indicating the transmission of scenes between Elkab and Thebes (Merzeban 2014, p. 352). Changes to the sign set, such as from *s* to *z*, from *w*/G43 to *w*/Z7, or from *m*/G17 to *m*/Aa15 have been detected in PT copies from the New Kingdom (Jasper 2017, p. 53).


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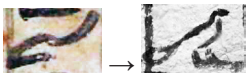
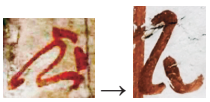
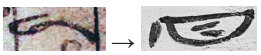
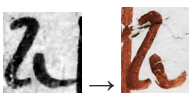
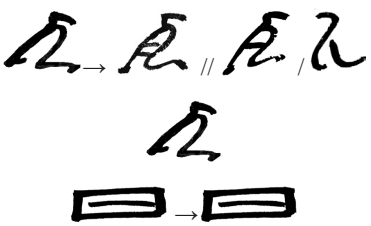
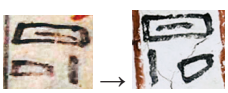
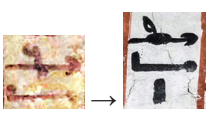
| Editorial change | Type | Examples ostracon → burial chamber | Nr. Attestations | | | |
|---|---|---|---|---|---|---|
| | | | Total | | Scribe A | Scribe B | Scribe C |
| Changes of the sign set (Tbl. 5) | Substitution of equivalent graphemes |  | 31 | | 30 | 0 | 1 |
| Changes of script (Tbl. 6) | Hieratic → cursive hier. |  | 122 | 188 | 112 | 5 | 5 |
| | Cursive hier. → hieratic |  | 4 | | 4 | 0 | 0 |
| | Cursive hier. → full hier. |  | 4 | | 4 | 0 | 0 |
| | Hieratic → hieratic |  | 58 | | 57 | 0 | 1 |
| Change of sign morphology (Tbl. 7) | Angular vs. rectangular signs |  | | | | | |
| Changes of spatial organization of signs (Tbl. 8) | 3 categories, with subcategories |  | 165 | | 159 | 5 | 1 |
| Meaningful additions and substitutions (Tbl. 9) | Graphical or spelling changes |  | 12 | 23 | 12 | 0 | 0 |
| | Intentional additions |  | 11 | | 8 | 0 | 3 |

**Table 4.** Summary of editorial changes, sorted by type and number of attestations.


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| Ostracon | Nakhtmin's burial chamber | Observations | Nr. attesta-tions |
|---|---|---|---|
| **Phonetic substitution** | | | |
|  oP5 rto, col. 2 |  Panel 2, col. 20 | Change of G17 for Aa15 | 1 |
|  oP4 vso, col. 1 |  Panel 1, col. 11 | Change of G43 for Z7<br>The red line marks the end of the column | 2 |
|  oP4 vso, col. 3 |  Panel 1, col. 13 | Change of Z7 for G43 | 2 |
|  oP2 rto, col. 7 |  Panel 3, col. 111 | Change of U33 for V13 | 1 |
|  oP4 rto, col. 5 |  Panel 1, col. 7 | Change of O34 for S29 | 9 |
|  oP5 rto, col. 7 |  Panel 2, col. 22 | Change of S29 for O34 | 8 |
| **Semantic or morphological substitution** | | | |
|  oP3 vso, col. 2 |  Panel 3, col. 87 | Change of three R8-signs for Z2 | 1 |
|  oP5 vso, col. 1 |  Panel 2, col. 25 | Change of Z1 for A40 | 1 |
|  oP5 vso, col. 1 |  Panel 2, col. 25 | Change of U40 for Q1 | 1 |
|  oP5 rto, col. 2 |  Panel 2, col. 19 | Change of Q1 for U40 | 2 |
|  oP4 rto, col. 7 |  Panel 1, col. 8 | Change of D52 for D53 | 2 |
|  oP3 vso, col. 4 |  Panel 3, col. 89 | Change of D53 for D52 | 1 |

**Table 5.** Substitution of equivalent graphemes (ordered by typology).


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Various reasons can be given for some of these types of substitutions, although no systematic pattern has been found,[49] and the possibility of introducing changes for the sake of variation[50] or randomly, without apparent reason, should be kept in mind. The search for space-saving solutions at the bottom of the columns in the burial chamber could be behind the change from G43 to Z7 in cols. 11 (see Fig. 14) and 89. Spatial concerns might also be at stake in corrections, when opting for a different form of the same sign allowed for the secondary addition of an overlooked grapheme that was later squeezed in a section already written (cf. the case of S29 in col. 27 and oP5 vso, col. 5). In col. 87, the substitution of the three R8 signs as an archaic form of indicating the plural written in oP3 vso, col. 2 by the single sign R8 accompanied by a horizontal stroke and the mark of plural on the wall probably evidences a desire for orthographic modernization to later writing standards. Scribe A showed his mastery of the (cursive) hieroglyphic writing system,[51] and perhaps a desire to update spellings, by transforming the sign Z1 into the more elaborate equivalent A40 , using it as a classifier in the name of the god Osiris in col. 25,[52] and he transformed the sign U40 into Q1 in the theonym of the same deity in col. 25 (cf. for both oP5 vso, col. 1).[53] Finally, the interchangeability of the signs D52 and D53 in the words *ḫ3y* in col. 8 and *jmyw-b3ḥ* in col. 89 (cf. oP4 rto, col. 7 and oP3 vso, col. 4) is attested in other sources until the end of the Amarna Period.[54] This practice can be related to the phenomenon of the substitution of one sign for another of the same general class, but of a different form, mentioned by Joshua A. Roberson.[55]

49 Hussein (2017, pp. 306–307) indicates that most cases of split orthography and sign conversion in TT 87 were caused by spatial limitations, since they appear at the end of the columns. However, the cases highlighted in Table 5 indicate a wider set of circumstances.

50 See Paksi 2025, pp. 68–69. We would like to thank the author for sharing with us her article while it was still in press.

51 Scribe B might have done the same in the anthroponym of the tomb owner, which he wrote either with the more elaborate sign R22 or the more simple O34 , the latter being the form preferred by his colleagues, but no ostraca corresponding to that sections are preserved to prove that he decided to disregard the 'model'. For examples of how both graphemes were used in the name of the god Min since the Old Kingdom, see Fischer 1991, pp. 296–297.

52 He also added this same sign to the word *wr* 'great one' in col. 14 (see under 2.1.e for this addition). In TT 87, the use of animal, divine or human figures as classifiers, phonograms, or personal pronouns was avoided. The classical study that tackles the avoidance of anthropomorphic signs in the PT and CT or their substitution by the sign Z1 is Lacau 1913. See, more recently, Iannarilli 2016.

53 The opposite phenomenon is attested in cols. 19 (= oP5 rto, col. 2) and 108 (= oP2 rto, col. 3). The signs U40 (understood as a semi-hieratic alternative to the balance stand) and Q1 were used interchangeably in the spelling of the name of Osiris in PT copies dated to the Middle Kingdom, see Guerra Méndez, Gracia Zamacona 2024, p. 139. The sign U40 is similar to Möller No. 588 (Möller II, p. 53, n. 1, highlighted the use of this hieratic sign in the name of Osiris).

54 For *ḫ3y* in CT 154, see CT II, 274/5b [154]; for *jmyw-b3ḥ* in CT 335/BD 17, see CT IV, 226/7b [335] = BD 17 (Lapp 2006, *TbT* 1, 104/5b, notice that New Kingdom spellings tend to use of the sign D53 ). According to Judit Garzón Rodríguez (personal communication related to her doctoral dissertation, published in 2024), the signs D52 and D53 are interchangeable in their use as classifiers in several words since the Middle Kingdom, especially in the term *b3ḥ*, with no apparent change in meaning. The sign D52 has been attested phonetically with the value *b3ḥ* since at least the 4th Dynasty, whereas since the Middle Kingdom the sign D53 can be used in the same way. The authors would like to thank this researcher for sharing her conclusions with us before the publication of her dissertation.

55 Roberson 2012, pp. 88–91.


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If the number of attestations of each editorial modification are considered, changes to the sign set are a minor and random phenomenon and do not shed any light on the spelling habits of the scribes. We therefore agree with the conclusion of Stéphane Polis after examining a different group of texts (the various witnesses of the Teaching of Amennakhte): "We may quite safely infer that the scribes who copied such texts paid a great deal of attention to the formal side of their undertaking."[56]

A phenomenon that is similar to the scarcity of changes to the sign set is the absence of abbreviations in the form of logographic writing or the elimination of classifiers,[57] which is remarkable given the flexibility of the ancient Egyptian writing system, resulting from its poliorthographic nature. The lack of abbreviated writings may be related with the spelling peculiarities of the formulae decorating Nakhtmin's burial chamber, which were deliberately archaizing (use of monoconsonantal signs that resulted in alphabetic spellings and the archaic plural; suppression of human, animal and divine figures as phonograms, classifiers or personal pronouns or their substitution by the vertical stroke).[58] These conventions may not have been familiar to New Kingdom scribes, who may have chosen to limit their orthographic intervention in texts that were already corrupted on the ostraca and probably on the master copy as well. In contrast, other forms of negotiating the spaces were introduced by the copyists such as the reduction in size and kerning of signs, the distribution of signs in the squares (generating compact or extended arrangements; see section 2.1.d), and the inclusion of new columns of text at the end of panel 3.

### 2.1.b. *Changes of scripts*

Script conversion is the most often attested type of modification, closely followed by changes in the arrangement of signs (see section 2.1.d), of which 188 examples have been found. The most frequent type of script change is the phenomenon that we have termed 'cursivization', which involved the transformation of a hieratogram in the 'model' into a cursive hieroglyph on the walls of the burial chamber—highlighted in light green in Figs. 8–13; see Table 6; 188 examples). It was systematically and correctly applied to most of the signs belonging to the bird category (*ꜣ*/Möller No. 192 = Gardiner G1  (Fig. 16, at the end);[59] *tjw*/Möller No. 190 = G4 ;[60] *bꜣ*/Möller No. 208 = G29 ; *nḫ*/Möller No. 229 = G21 ; *sꜣ*/Möller No. 217 = G38 ; *gm*/Möller No. 205 = G28 ) and for *f*/Möller No. 263 = I9 , *ḫn*/Möller No. 268 = M2 , *wʿ*/Möller No. 461 = T21 , and—in most cases—also for *k*/Möller No. 511 = V31 .

56 Polis 2017, pp. 102–103.

57 This phenomenon is attested in captions to scenes transferred from ostraca to the walls (see conclusions) and in other burial chambers (see TT 353 of Senenmut, Dorman 1991, p. 98).

58 On the artificial archaization of spellings as a device to mark the use of old sources, see Díaz-Iglesias Llanos in press.

59 Lüscher (2013, pp. 98 (n. 61, 8), 99 (n. 62, 4)) highlights that the form with two inner horizontal lines across the chest, normally used in other manuscripts to write the *tjw*-bird , was used for the *ꜣ*-vulture  in TT 87, and that the scribes made no distinction between these two birds in hieratic or cursive hieroglyphs. This happens in other text corpora, such as in Middle Kingdom papyri (Kraus 2022, p. 30).

60 See previous note.


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The ease with which the scribes moved between the two scripts, hieratic and cursive hieroglyphs, is demonstrated by the fact that in all the cases in which the sign *ꜣ*/G1 was transformed from hieratic to cursive hieroglyphs there is a single mistake in col. 9, where *w*/G43 erroneously appears in the place of *ꜣ* (cf. oP4 rto, col. 9). The change between script type was also used for Möller No. 33 = A1[61] and for signs that look similar in hieratic but correspond to different cursive hieroglyphs (Möller No. 303 = N5; the same void circle is used in hieratic for the sign O50).[62] For other graphemes (*ḫ*/Möller No. 169 = F32; Möller No. 197 = G37; *ḏ*/Möller No. 250 = I10; *nn*/Möller No. 288 = M22+M22; *pt*/Möller No. 300 = N1; *ṯ*/Möller No. 318 = N16; *ʿḥʿ*/Möller No. 380 = P6; *šš*/Möller No. 538 = Y4) in most cases 'cursivization' was not consistently applied, for unknown reasons.[63] In several cases (*ʿ*/Möller No. 99 = D36; *d*/Möller No. 115 = D46; *f*/Möller No. 263 = I9), the boundary between an elaborate hieratic sign and a simplified cursive hieroglyphic sign is fuzzy. We have established the limit in the use of angular vs rounded forms, straight vs curved lines, in the addition of downward ticks that resemble the connecting strokes in hieratic ligatures, in elongated diagonal strokes that cross the delimitation of columns, and in the indication of distinct elements (wrist in D46, head and sinuous body in I9).

The opposite of 'cursivization' could be termed 'hieratization', and this practice is only attested in four cases. With this procedure, a sign written in cursive hieroglyphs on the ostraca was simplified to its hieratic version on the tomb walls—indicated by a light green square surrounded by a dark green line in Figs. 8–13. 'Hieratization' was a marginal practice, attested only for: I9 = Möller No. 263 in col. 14; M22 = Möller No. 288 in col. 90; V31 = Möller No. 511 in col. 107; and G1 = Möller No. 192 in col. 102, which also involved a sign rearrangement to pair the hieratogram with a vertical sign (see under section 2.1.d).

Finally, very few cursive hieroglyphs written on the ostraca were converted into detailed hieroglyphs, a phenomenon that we call 'monumentalization'—highlighted as a green square with a black dotted line in Figs. 8–13. *k*/V31 (with the correct reversal of the sign) was used only four times as a full hieroglyph in cols. 14, 19, 21 (×2), all written by scribe A (Fig. 16, below). This choice to raise the iconic potential of a sign did not depend on the location of the sign within the column or on the word context.

Together with the cases of script change, another practice should be highlighted, consisting in keeping the hieratograms of the ostraca in this script in the final version in Nakhtmin's funerary monument—58 examples shown in dark green in Figs. 8–13. For some signs (*ḫt*/M3 = Möller No. 269; G37 = Möller No. 197; *nn*/M22+M22 = Möller No. 288; *pt*/N1 = Möller No. 300; N23 = Möller No. 324; *šš*/Y4 = Möller No. 538; *mj*/W19 = Möller No. 509) this phenomenon can be frequently seen.[64] For others it is sporadically

61 A single instance in col. 90, corresponding to oP3 vso, col. 5. In col. 17, the filiation of Nakhtmin was added to the abbreviated personal data recorded in oP4 vso, col. 6 (see under section 2.1.e and fig. 20). The name of his father, Sen-Djehuty, includes the sign A1 as a cursive hieroglyph (Lüscher 2013, p. 10, 61b).

62 The simple circles written in oP3 vso, col. 6 and oP1 rto, col. 6 were turned into N5 in cols. 91 and 97 on the walls.

63 The transformation of G37 at the bottom of col. 82 could be the result of a desire to fill in the large space available with a larger sign.

64 Scribe B wrote several signs (M22+M22, Y4 and W19) in cursive hieroglyphs, whereas his colleagues usually copied these in hieratic. However, we cannot determine to what extent he modified the 'model', since the passages where these signs are written correspond to sections with no preserved ostraca.


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attested (*ꜣ*/G1 𓄿 = Möller No. 192, in which case the hieratic sign on the wall shares a square with a tall vertical sign, following the arrangement found in the 'model'; *f*/I9 𓆑 = Möller No. 263; *ǧb*/F34 𓋴 = Möller No. 179; *ḫ*/F32 𓐍 = Möller No. 197; *k*/V31 𓎛 = Möller No. 511; some instances of *d*/D46 𓂧 = Möller No. 115). In these sporadic cases, the decision to transcribe the hieratogram in this way does not seem to depend on its position within the column or on the word context,[65] although in the example of the sign *ꜣ*, it is never written as a hieratogram when it is the first sign of a word.[66]

All the above-mentioned changes between the three scripts, and the ability to disambiguate hieratic signs written in the same way but corresponding to different cursive hieroglyphs (Möller No. 303 = N5 ⊙),[67] indicate that the scribes had a certain level of literacy and expertise in copying funerary texts. They were able to correctly identify all but one hieratic sign on their master sources when making the conversion to another script type.

| Sign | | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|---|
| 'Cursivization' = hieratogram ⟶ cursive hieroglyph | | | | |
| G1<br>Möller Nr. 192 | 𓄿 | <br>oP5 vso, col. 6 | <br>Panel 2, col. 28 | There is a single mistake is all cases of cursivization of the sign G1 |
| G4<br>Möller Nr. 190 | 𓅱 | <br>oP1 vso, col. 4 | <br>Panel 3, col. 102 | Scribes made no distinction between the G1 and G4 birds in hieratic or cursive hieroglyphs |
| G29<br>Möller Nr. 208 | 𓅭 | <br>oP4 vso, col. 6 | <br>Panel 1, col. 16 | |
| G21<br>Möller Nr. 229 | 𓅪 | <br>oP2 rto, col. 6 | <br>Panel 3, col. 110 | |
| G38<br>Möller Nr. 217 | 𓅬 | <br>oP5 vso, col. 2 | <br>Panel 2, col. 26 | |
| G28<br>Möller Nr. 205 | 𓅨 | <br>oTh3 u.a. vso, col. 1 | <br>Panel 3, col. 65 | |

**Table 6.** Changes of script (ordered by typology).

65 For example, the sign G1 𓄿 in the word *bꜣ*/*bꜣw* was sometimes left in hieratic (cols. 15 and 16) or turned into cursive hieroglyphs (col. 28). The same is true of this same grapheme in the verb *ḏꜣ* (cf. cols. 85 and 88).

66 No clear conclusions can be reached in this respect, given that many words on the ostraca and on the walls are truncated or misspelt and many passages have been omitted (Lüscher 2013, pp. 10, 12–13, 17–18, 36–37, 49, 51, 95, 97, n. 6).

67 For this phenomenon, see Haring 2015, p. 77; Gülden, van der Moezel 2016, pp. 10–11 (the authors label these hieratic signs as multifunctional).


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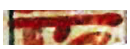
| Sign | | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|---|
| M2<br>Möller Nr. 268 | | <br>oP3 vso, col. 1 | <br>Panel 3, col. 86 | |
| T21<br>Möller Nr. 461 | | <br>oP1 rto, col. 7 | <br>Panel 3, col. 98 | |
| V31<br>Möller Nr. 511 | | <br>oP4 vso, col. 4 | <br>Panel 1, col. 15 | |
| A1<br>Möller Nr. 33 | | <br>oP3 vso, col. 5 | <br>Panel 3, col. 90 | |
| N5<br>Möller Nr. 303 | | <br>oP3 vso, col. 6 | <br>Panel 3, col. 91 | The change of script is correctly applied to signs that look similar in hieratic but correspond to different cursive hieroglyphs |
| F32<br>Möller Nr. 169 | | <br>oP5 rto, col. 6 | <br>Panel 2, col. 22 | In all these examples, the cursivization is not consistently applied to all the signs of the same category |
| G37<br>Möller Nr. 197 | | <br>oP3 rto, col. 3 | <br>Panel 3, col. 82 | |
| I10<br>Möller Nr. 250 | | <br>oP3 vso, col. 2 | <br>Panel 3, col. 87 | |
| M22+M22<br>Möller Nr. 288 | | <br>oP1 rto, col. 3 | <br>Panel 3, col. 95 | |
| N1<br>Möller Nr. 300 | | <br>oP3 rto, col. 4 | <br>Panel 3, col. 83 | |
| N16<br>Möller Nr. 318 | | <br>oP3 rto, col. 4 | <br>Panel 3, col. 83 | |
| P6<br>Möller Nr. 380 | | <br>oP4 rto, col. 11 | <br>Panel 1, col. 11 | |
| Y4<br>Möller Nr. 538 | | <br>oP4 rto, col. 1 | <br>Panel 1, col. 4 | |

**Table 6 (continued).** Changes of script (ordered by typology).


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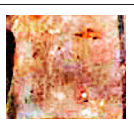
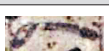
| Sign | | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|---|
| D36<br>Möller Nr. 99 | | <br>oP4 rto, col. 11 | <br>Panel 1, col. 11 | It is not always possible to distinguish between hieratic and simplified cursive hieroglyphs. Clues for the former script: rounded forms, curved lines, downward ticks that resemble connecting strokes in ligatures, elongated diagonal strokes that cross the column lines. Clues for the latter: angular forms, indication of distinct elements (head, wrist) |
| D46<br>Möller Nr. 115 | | <br>oP4 rto, col. 11 | <br>Panel 1, col. 11 | |
| I9 | | <br>oP4 vso, col. 1 | <br>Panel 1, col. 12 | |
| Möller Nr. 263 | | <br>oP1 rto, col. 5 | <br>Panel 3, col. 96 | |
| **'Hieratization' = cursive hieroglyph ⟶ hieratogram** | | | | |
| I9<br>Möller Nr. 263 | | <br>oP4 vso, col. 4 | <br>Panel 1, col. 14 | |
| M22+M22<br>Möller Nr. 288 | | <br>oP3 vso, col. 5 | <br>Panel 3, col. 90 | |
| V31<br>Möller Nr. 511 | | <br>oP2 rto, col. 1 | <br>Panel 3, col. 107 | |
| G1<br>Möller Nr. 192 | | <br>oP1 vso, col. 3 | <br>Panel 3, col. 102 | |
| 'Monumentalization' = cursive hieroglyph ⟶ detailed/full hieroglyph | | | | |
| V31 | | <br>oP5 rto, col. 5 | <br>Panel 2, col. 21 | |

**Table 6 (continued and end).** Changes of script (ordered by typology).


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### 2.1.c. *Changes in the morphology of the signs*

Expanding on ideas recently published by Marina Sartori in her analysis of the graphic registers in the Ramesside tomb of Amenimet (TT 277)[68] and by Kyra van der Moezel in her study of Ramesside administrative ostraca,[69] in TT 87 we can see that some signs were more susceptible to change or visual manipulation than others. The 'model' itself had little effect on the morphology of frequently attested graphemes (ꜥ, ꜣ , *f* , *ḥ* , *k* , *ḫr* ), which show a wide range of variants both on the ostraca and on the walls. This issue is best illustrated by the case of the vulture (G1 , see Table 7), which is indistinguishable in its hieratic and linear hieroglyphic variants from the sign *tjw* (G4 ) in TT 87.[70] This bird, which was often written in hieratic on the ostraca, was transcribed in different linear hieroglyphic forms on the walls or was sometimes left as a hieratogram. There are as many variations in the morphology of this grapheme on the ostraca as there are on the tomb walls, but there are only a few cases in which the forms of the signs of the 'model' and the copy correspond. In contrast to this flexibility exercised by the scribes, the template greatly influenced the final version of rectangular signs, where the absence or presence of internal fillings can be noticed. For example, the lakes (N37 ) on the walls tend to show or omit internal details when these are present or absent in the 'model'. This seems to be also the case for door leaves (O31 ), paths (N31 ), and game boards (Y5 ), although the evidence is not as strong for these examples. What these rectangular graphemes have in common is that they are less frequently attested than the signs that were subjected to greater variation, and they have geometric and straight elements that were more faithfully or easily reproduced.[71]

The assessment of the influence that the 'models' exerted on the signs at a morphological level enriches the debate on a burning issue in handwriting analysis, i.e., the wide variability of the forms of signs within a single scribal hand in a single document, or the different degrees of iconicity or abstraction involved in their rendering. Several reasons could explain this variability: a lack of space or time, irregularities on the writing surface, the position of signs in the imaginary square, different functions of signs (as logograms, phonograms, or classifiers), and incidental or natural variations (caused by a scribe's attention levels). The ostraca used for Nakhtmin's chamber allow us to add the role played by the template to these explanations. From the discussion in this section it can be concluded that not all the graphic features of the 'model' were reproduced, but the ostraca had a major influence on the sign morphology of the copy.[72]

68 Sartori 2022.

69 Van der Moezel 2022.

70 See n. 59.

71 A parallelism can be found in the hieratic script. Van der Moezel (2022, p. 104) notices that some multiconsonantal signs in administrative documents written in hieratic in the 20th Dynasty were liable to more changes than others, especially those with round and complex forms in contrast to those bearing straight and geometric elements.

72 Already highlighted by Hagen (2012, p. 178) at a theoretical level. See also Haring 2006, p. 18.


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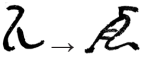
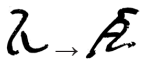
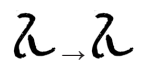
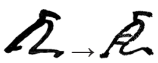
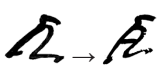
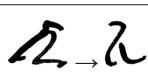
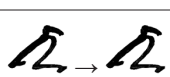
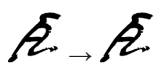
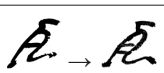
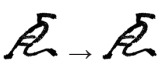
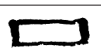
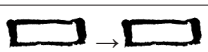
| Intermediate 'model' | | | Remediation process | | |
|---|---|---|---|---|---|
| Sign | | Nr. attestations | Ostraca → burial chamber | Nr. attestations | Damaged/lost |
| G1 |  | 40 |  | 21 | 3 |
| | | |  | 11 | |
| | | |  | 5 | |
| |  | 15/16 |  | 7 / 8 | 0 |
| | | |  | 6 | |
| | | |  | 1 | |
| | | |  | 1 | |
| |  | 4 |  | 3 | 0 |
| | | |  | 1 | |
| |  | 1 |  | 1 | 0 |
| N37 |  | 18 |  | 14 | 3 |
| | | |  | 1 | 0 |
| |  | 2 |  | 2 | 0 |

**Table 7.** Changes in morphology of signs (selected case studies).

### 2.1.d. *Changes in the spatial organization of signs*

The graphic signs in monumental and linear hieroglyphs were usually arranged in ideal spatial units called quadrats.[73] A common practice in the remediation process was to change the arrangement of signs in the imaginary squares. In TT 87 this practice is attested 165 times, making this modification the second most frequent editorial change, and the data are highlighted in yellow in figs. 8–13; see also Table 8.[74] Although we have not been able to discover the reasons for all the changes of this sort, the following tendencies in the (un)grouping of signs can be identified:[75]

73 Vernus 1982, pp. 106–107; Polis 2018, pp. 294–295.

74 Cases where a sign forming part of a quadrat has been substituted by another sign of the same category without altering the group are not considered as re-arrangement, but as cases of hypercorrection (contrast the position of G1 and G43 in *ḏ3w* 'ferry, cross' in oP3 rto, col. 7 and wall, col. 86 and oP3 vso, col. 4 and wall, col. 88, see fig. 16, at the end). These cases are discussed under 2.1.e.

75 We have followed the categories established by Polis 2018, pp. 314–327.


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- Creation of groups by tabulation: horizontal grouping of a tall and vertical sign (on the right side of the square) with a bird;[76] horizontal grouping of two low and narrow signs or of a low and narrow sign and a low and broad sign, in the latter case there is a reduction in the size of the broad grapheme (e.g., Aa1+*t* , Aa1+*p* , Aa1+ *pr* , *p*+*t* , *t*+Aa2 );[77] horizontal grouping of a low and broad sign and the stroke Z1  (see fig. 14);[78] other forms of tabulation involving two, three, or more signs, sometimes enriching or rearranging existing groupings (Fig. 17);[79] the introduction of the vertical stroke Z1  into existing squares, thus increasing the number of graphemes involved in, and the complexity of, the groupings.[80]
- Creation of groups by inserting one or more signs into the virtual bounding box surrounding another sign (usually, but not necessarily, a bird).[81] The group resulting from this insertion could be used as a building unit to compose a tabulated quadrat or to enrich an already existing one.[82]
- Separation of existing groups: formed by *p*+*w* ,[83] bird+plural mark,[84] vertical sign+bird (*j*+bird; *sw*+bird, *ḏ*+bird, *b*+bird),[85] or other combinations of two[86] or more[87] signs.
- Rearrangement of existing groups: change of position of an internal element in simple tabulated or inserted groups composed of two[88] or more elements[89] (the virtual boundaries of the group are not affected); change of several elements in more complex groups, resulting in the separation of existing combinations and the creation of new quadrats with tabulation and/or insertion that can involve the signs above and below the existing combinations.[90]
- Cannot be determined because of a lacuna in the 'model' or on the wall.[91]

76 Cols. 7 (enriching an existing group), 21, 22 (with the addition of a third element), 24, 101.
77 Cols. 12, 14 (×2), 19, 22 (×2), 23, 80, 83, 84, 102.
78 Cols. 11, 13, 14.
79 Cols. 5, 6, 7, 10 (enriching an existing group), 10 (rearranging an existing group), 14 (×2, one of which enriches an existing group), 20 (rearranging an existing group), 23, 24, 25 (enriching an existing group), 82 (enriching an existing group), 84, (enriching an existing group), 92, 97, 111 (enriching an existing group), 112 (enriching an existing group).
80 Cols. 9, 20, 26 (×2).
81 Cols. 14, 17, 24, 27 (×2), 28, 63.
82 Cols. 23, 81.
83 Cols. 8, 83–84, 85, 87, 91, 96, 98, 105, 111, 112, 115.
84 Cols. 87, 88, 89, 90, 104, 105, 106, 109. See also cols. 63, 113 for the untying of other groups composed with plural strokes.
85 Cols. 86, 89, 90, 93 (×2), 95, 96, 102, 108.
86 Cols. 15, 20, 21, 63, 66, 67 (×3), 68, 80 (with a change in the sequence of sign), 81, 84 (2), 85, 87, 88, 89, 94 (×2), 97, 98, 101, 107, 109, 111 (×2), 114, 115.
87 Three signs: cols. 62 (×2), 65, 68, 89, 91, 108, 113. In cols. 63, 83, 87, 88, 91, 101 (×2), 107, 108, 109, 110, 112, the dismantling of the group is partial, since only one element was taken out from the grouping and this affected the spatial organization of the remaining elements. Four signs: cols. 63 (partial dismantling), 95 (×2, in one case the dismantling is partial).
88 Cols. 11, 13 (×2), 24, 63, 81 (×2), 110, 111, 113 (×2), 114 (×2).
89 Three signs: col. 84; four signs: cols. 83, 87, and 113 (here there is a change in grouping from tabulating + inserting to stacking + inserting). Stacking as a method for creating groups is only attested once in TT 87.
90 Cols. 13–14, 23, 81, 82 (×2), 83, 84, 102, 106, 111.
91 Cols. 7, 10, 18, 63, 66 (×2), 114.


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These combinations were not applied systematically and there do not seem to be clear patterns in the new configuration of the quadrats. Material and human factors could have sometimes underlied the new distribution of signs. For example, physical aspects, such as the narrowness of some columns (cols. 86, 89, 90, 93, 94, 95, 96, 105, 108, 109), were probably behind the dismantling of groups of the manuscripts from which the scribes were copying. Similarly, a search for space saving solutions at the bottom of a column could have led to the pairing of signs (cols. 6, 21, 27, 89,[92] 111). The opposite case, i.e., the separation of groups, could have occurred when there was plenty of space left at the end of the column (cols. 65, 84, 90)[93] or at the point when the column change was reached (cols. 83–84). A remarkable tendency is that when a sign written in hieratic on the ostraca was copied in the same script on the wall (see under 2.1.b), the hieratogram was usually paired with another sign, since it occupies only half of the column width (cols. 15, 16, 61, 66, 85, 87, 102).[94] The same is true when a horizontal sign was replaced by its vertical counterpart (change of *z*<*s*) and the latter was used to create a new grouping (cols. 5, 7, 10, 22, 24, 83, 92).[95] However, the opposite replacement (change of *s*<*z*) did not always lead to a reconfiguration of the square (attested in 5 out of 8 cases of this type of substitution in cols. 62 [×2], 95 [see fig. 17], 101, 113).

In some cases, the new spatial configuration probably resulted from a desire to correct the 'model' (cols. 81, 114, 115).[96] Another reason for the rearrangement of signs was the marked preference for the horizontal layout of the plural mark (cols. 63, 87, 88, 90, 104, 105, 106, 109) and the papyrus roll Y2 𓏏 (col. 84 [×2]).[97] All of these examples belong to texts written by scribe A, but when comparing the sections attributed to all three scribes, an interesting pattern emerges that shows different attitudes towards the 'model'. While A tended to prefer compact writings and often created new groupings, B often dissolved existing groupings in the 'model', and C hardly changed the arrangement of signs that he found in the *Vorlage*.[98]

As a result of the new distribution of signs into ideal squares, a number of anomalous orthographies that entailed the mixing of characters of two subsequent words came about (see Fig. 18). Some of these coincide with the change in columns (cols. 13–14, *wr mꜣ(w)*), and could be explained by a lack of space, while others are distributed at all heights of the columns on the walls. More frequently, the last sign of the first term was combined with the first sign

92 The lack of space also explains the substitution of the equivalent graphemes G43 𓅱 by Z7 𓏲 (see above, under 2.1.a).

93 The impact of spatial factors in the distribution of signs and the use of extended and abbreviated spellings were already advocated a century ago by Sethe (1922, §§ 6–7) in his study of the Pyramid Texts.

94 In col. 102, the transformation of a cursive hieroglyphic ɔ 𓇋 into its hieratic equivalent led to the modification of the signs' arrangement to pair it with a tall vertical sign. Kraus (2022, p. 27, n. 68) has noticed that full forms in hieratic in the Middle Kingdom pBerlin P. 3022–5 tend to fill the quadrat, while abbreviated ones share quadrat with another sign if they appear in the middle of a word.

95 Some other substitutions of equivalent graphemes bring about the reconfiguration of the groupings: changes from tabulation to insertion (Z7 𓏲< G43 𓅱, col. 13) or vice versa (G43 𓅱 < Z7 𓏲, col. 11, see fig. 14, 89).

96 For hypercorrections see further under 2.1.e.

97 A preference for the horizontal disposition of signs is also noticed by Haring (2006, pp. 9–10) in the texts of the tomb of Sennedjem, TT 1.

98 Tendencies in the arrangement of signs should be therefore added to the list of criteria devised by the authors to distinguish between scribal hands (Díaz-Iglesias Llanos, Méndez-Rodríguez 2023).


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of the following word into a square: e.g., *<t>mmt bs wr-mɜ(w)* 'the great of the seers has not been initiated' in cols. 6–7;[99] *r rɜ-pr pn* 'over this temple' in col. 13; *bɜw p<sḏ>ntyw ʿbas* of the new moon' in col. 28 (see below); *ptr r=f* 'what/which' in cols. 80 and 83;[100] *ʿḳ ḥr b<ɜ>w pn* 'who enters upon his bas' in col. 18; *ḥḳst, wn <n=j>* 'the ailing eye, open <to me>' in col. 22; *mʿɜt wɜḏ-wr ʿmaat* and *wadj-wr* (two names of lakes)' in col. 82.[101]

This scribal practice of combining signs of two subsequent words, although sometimes observed in other sources, and especially with single sign words (such as prepositions, suffix pronouns, *n* of the perfect,[102] or the verb *dj*), was not the usual orthographic tendency. It could have been caused by spatial concerns or a desire to compose a visually harmonious text.[103] The new spatial configuration of the squares, which mixed signs of different words, could also have been a result of scribal confusion over two terms (cf. in the expression *bɜw p<sḏ>ntyw* in col. 28 how the last sign of the first word—*w*—and the first one of the following word—*p*—were arranged as if forming the pronoun *pw* in Fig. 18, below). In any case, the new organization of the signs may have prioritized aesthetics over semantics and compromised the readability of some words.

It is interesting to highlight that in the rearrangement of signs, the single stroke (Z1 I) could often be placed in any position within the ideal square (Fig. 19). The scribe could have confused its original use as a substitute for a personal pronoun or anthropomorphic classifier with its use as a simple filler or an indication of logographic use (examples in *wr* 'great' in cols. 7 and 14; *mdw* 'discuss' in col. 9; *Rʿ* 'Ra' in col. 11 (see Fig. 14); *r rɜ-pr pn* 'over this temple' in col. 13 (see Fig. 18, at the end); *bs* 'initiated' in col. 26; *Ptḥ* 'Ptah' in col. 63).[104] This type of confusion was already present in the manuscripts from which the scribes were copying and it was faithfully reproduced on the walls: e.g., *wr<-n>=j m sf* 'I became great yesterday' (oP4 rto, col. 2 = col. 5 on the wall); *jnk* 'I' (oP4 rto, col. 4 = col. 6); *mɜ* 'seers' (oP4 rto, col. 5 = col. 7); *sɜ* 'son' (oP4 vso, col. 4 = col. 14).[105]

99 The 'model' already had an anomalous arrangement of signs (oP4 rto, col. 5), which the copyist further complicated.

100 Cf. the arrangement of signs in these columns with that found in col. 73. The anomalous arrangement of signs in *ptr r=f* was already attested in the 'model' of TT 87 (and copied verbatim, see cols. 85 and 87) and in a few Middle Kingdom witnesses of CT 335 (CT IV, 200b/Sq1C; 201b and 209a/BH1Br; 205a/M57C; 208a and 214b/B1P) and New Kingdom sources of BD 17 (Lapp 2006, *TbT* 1, 32a/lC1 u.a).

101 The 'models' already bore examples of anomalous spellings that were copied verbatim onto the walls: oP4 vso, col. 7 = wall col. 18: *ʿḳ ḥr bɜw* 'who enters upon the bas'; oP5 rto, col. 1 = wall col. 19: *jnk tr s{ɜ}<m>j* 'I am truly one who comes to inform' (Lüscher [2013, p. 98, n. 61, 8] suggests that *sɜj* is a corrupted version of *smj*, following the original in CT II, 292/3e [155]). See also previous note.

102 See col. 82, cf. oP3 rto, col. 3.

103 The authors would like to thank Dimitri Labouri and Richard Parkinson for discussions on the importance of visuality in the layout of a text. See also Polis 2018, pp. 295, 296–297 and, already for the Pyramid Texts, Sethe 1922, §§ 135–149.

104 The opposite phenomenon is also attested, with the original erroneous position of Z1 I in oP3 vso, col. 6, correctly modified on the wall (panel 3, col. 91) in the name of the god Hu and also in the name of Re (cf. oP4 vso, col. 5 with col. 15 in TT 87). The same is true of verbal forms entailing the use of Z1 I as a substitute for the first person suffix pronoun: *rḫt=j* (cf. oP3 rto, cols. 5–6 and panel 3, col. 84) and *pr=j* (cf. oP3 vso, col. 2 and panel 3, col. 87). These cases will be dealt with in section 2.1.e.

105 In the latter case, and also in the example of *wr* in col. 13 (see Fig. 19), the location of Z1 I may owe to a confusion between its use to signal the logographic function of a sign and its use as a substitute for a classifier.


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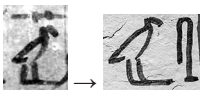
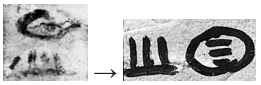
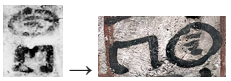
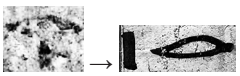
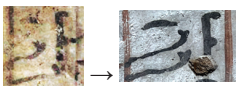
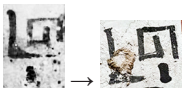
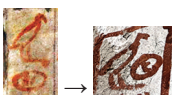
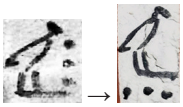
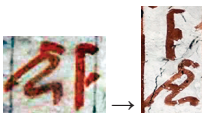
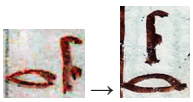
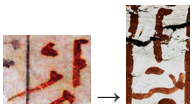
| Forms of spatial organization of signs | | Examples<br>Ostracon → burial chamber | Nr. attestations | Total |
|---|---|---|---|---|
| Creation of groups (entirely new groups or enrichment of existing groups) by tabulation or insertion | **Tabulation** | | | |
| | Horizontal grouping of a tall vertical sign with a bird | <br>oP5 rto, col. 9 = Panel 1, col. 24 | 5 | 48 = 29.5% |
| | Horizontal grouping of two low and narrow signs or of a low and narrow + low and broad sign | <br>oP4 vso, col. 1 = Panel 1, col. 12 | 11 | |
| | | <br>oP4 vso, col. 3 = Panel 1, col. 14 | | |
| | Horizontal grouping of a low and broad sign and the stroke Z1 | <br>oP4 vso, col. 4 = Panel 1, col. 14 | 3 | |
| | Tabulation involving two, three, or more signs | <br>oP4 vso, col. 14 = Panel 1, col. 4 | 16 | |
| | Introduction of the vertical stroke Z1 into existing quadrats | <br>oP5 rto, col. 4 = Panel 2, col. 20<br>(enriching an existing group) | 4 | |
| | **Insertion** | | | |
| | Insertion of one or more signs in the virtual bounding box surrounding another sign (usually a bird) | <br>oP4 vso, col. 6 = Panel 1, col. 17 | 9 | |
| Separation of groups | Separation of groups formed by *p* + *w* | <br>oP3 rto, col. 8 = Panel 3, col. 85 | 11 | 81 = 49.7% |
| | Separation of groups formed by bird (less frequently other signs) + plural mark | <br>oP3 vso, col. 4 = Panel 3, col. 89 | 10 | |
| | Separation of groups formed by vertical sign + bird | <br>oP3 vso, col. 1 = Panel 3, col. 86 | 9 | |
| | Separation of other groups formed by two signs | <br>oP3 vso, col. 3 = Panel 3, col. 88 | 28 | |
| | Separation of other groups formed by three or four signs (the separation can be partial) | <br>oP3 vso, col. 2 = Panel 3, col. 87<br>(partial dismantling) | 23 | |

**Table 8.** Re-arrangement of spatial organization of signs (ordered by typology).


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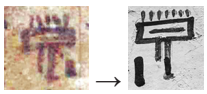
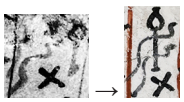
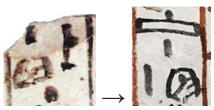
| Forms of spatial organization of signs | | Examples<br>Ostracon → burial chamber | Nr. attestations | Total |
|---|---|---|---|---|
| Reconfiguration of existing groups | Change of position of element(s) in simple tabulated or inserted groups | <br>oP5 rto, col. 24 = Panel 1, col. 9 | 17 | 27 = 16.6% |
| | Once the rearrangement entails the stacking of elements | <br>oP2 vso, col. 4 = Panel 3, col. 113 | | |
| | Dissolving and arranging of existing groups | <br>oP3 rto, col. 6 = Panel 3, col. 84 | 10 | |
| Cannot be determined | Lacunae/damage | | 7 | 7 = 4.3% |

**Table 8 (continued and end).** Re-arrangement of spatial organization of signs (ordered by typology).

### 2.1.e. *Meaningful additions and substitutions*

The last variation introduced in the remediation process was that of deliberate additions and substitutions. They took two forms: cases of hypercorrection or lexical and graphical change (highlighted by a square with a dashed purple line in Figs. 8–13; see also Table 9); extensions of the titles and filiation of Nakhtmin (highlighted in orange in Figs. 8–13).

In the first of these forms, some modifications were intended to correct words misspelt in the 'model' by reversing the order of the signs (phonograms or classifiers): *š* 'lake' (cf. classifiers N23 𓈙 + Z1 𓏏 in oP3 rto, col. 2 and on the wall, col. 81); *ḏȝw* 'ferry, cross' (cf. oP3 rto, col. 7 and wall, col. 86 and oP3 vso, col. 4 and wall, col. 88, see Fig. 16, at the end);[106] *ȝwt-jb* 'joy' (cf. oP2 vso, col. 6 and wall, col. 114); *smȝ-tȝ* 'to unite/bury' (cf. oP2 vso, col. 7 and wall, col. 115). As mentioned at the end of the previous section, the sign Z1 (𓏏) was frequently randomly placed on the ostraca and the walls, as if it had lost its primeval function. In some instances, the rearrangement of signs within the quadrat resulted in a more correct orthography for certain words (the names of the gods Ra and Hu in cols. 15 and 91) and verbal constructions with a suffix pronoun (in cols. 84 and 87). Although it is difficult to say if the intention behind these five modifications was the will to amend the text of the 'model', the ending product was orthographically speaking more correct.

Hypercorrection was sometimes limited to the graphic side of a sign, as in col. 83, where the incomplete form of N31 𓈖 in oP3 rto, col. 4 was amended. This practice could also take

106 Most parallels of CT 335 and BD 17 opt for the synonymous verbs *wḏȝ* or *šm* 'go, proceed' (CT IV, 218/9a–226/7a = *TbT* 1, 88b–102c). We cannot discard that the former was the intended option in TT 87, with a graphic transposition that situates the *w*-bird after a tall sign as attested elsewhere (Allen 2017, p. 2, see also subsection 2.1.d above). However, some Coffin Texts traditions already show the verb *ḏȝj* 'ferry' and the word is spelled correctly twice in the same passage (cf. oP3 rto, cols. 5 and 6 and wall, cols. 84 and 85). By introducing the modification in cols. 86 and 88, the scribe might have wanted to keep a lexical consistency in this part of the spell.


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place with the substitution of a classifier, as in col. 101, where the scribe turned the sign D45 into D43 in the name of the goddess *ḥtp=s-ḥw* <=*s*> 'she who appeases the one whom she leads/she who is happy when she protects' (cf. oP1 vso, col. 2).[107] Another form in which this phenomenon occurred was the addition of meaningful classifiers (A40 to *wr* 'great one' in col. 14;[108] Y1 to *jmyw-bȝḥ* 'those who are in the presence' in col. 89; Z1 to *wʿ* 'one/unique' in col. 90; Z2 to *ḏwt* 'evil' in col. 103) or of phonetic complements (*p* to *šsp* 'to take' in col. 62). In the two latter examples, the additions led to the omission of certain elements of the 'model': a phonogram (*t* in *ḏwt*) and a classifier (D40 in *šsp*, see also Table 10). Despite these calligraphic and orthographic modifications, attempts to correct mistakes in the 'model' were limited and unsystematic, and many textual errors in the template were retained along the transmission chain, perhaps because the scribes wanted to limit the scope of their intervention in a sacred text or because they could not understand it.

Secondly, the titles, filiations and various formulae accompanying the name of the tomb owner (*mȝʿ-ḫrw, mȝʿ-ḫrw pn*) were used by scribes A and C in a flexible manner to fill in the available space (Fig. 20). At the end of panel 1 (col. 17), the simple *jmȝḫy, sš-nsw, Nḫt-Mnw* of oP4 vso, col. 6 was turned into the more elaborate *jmȝḫy, sš-nsw, jmy-r šnwty n Jmn mʿ mḥty, Nḫt-Mnw, mȝʿ-ḫrw, jr-n Sn-Ḏḥwty, mȝʿ-ḫrw*, 'the revered, king's scribe, overseer of the double granary of Amun in the Northern area, Nakhtmin, justified of voice, born of Sen-Djehuty, justified of voice'. In the middle of panel 3 (col. 77), *jmȝḫy, sš-nsw, Nḫt-Mnw* of oL1 rto, col. 1 was enlarged to *jmȝḫy, sš-nsw, jmy-r šnwty nw rsw šmȝy, Nḫt-Mnw, mȝʿ-ḫrw pn*, 'the revered, king's scribe, overseer of the double granary of Lower and Upper Egypt, Nakhtmin, this justified of voice'. Such a flexible use of the personal data of the tomb owner was intended to adjust and 'justify' the length of the columns and to create a visually balanced composition, especially in the case of panel 1, where the titles and filiation form the last column (see Fig. 8). This practice is attested elsewhere, for example on another ostracon found in the courtyard of the tomb of Menkheperraseneb (TT 79).[109]

These additions and substitutions, although limited in scope, indicate that the scribe understood—at least that part of—the text that he was transcribing, that he was mentally engaged in the copying process (rather than simply mechanically reproducing it), and had sufficient initiative and linguistic knowledge to modify it.

107 The theonym was correctly spelled some words below on the ostracon and on the wall, and the scribe might have sought some spelling homogeneity by substituting the classifier in col. 101 (see previous note for a similar case). Although in *Wb* III, 244–5 the use of several types of arms (grasping different objects or not) are given as classifiers of the word *ḫwj*, D45 was not frequently used.

108 The sign was not introduced in its correct position at the end of the word and this generated a garbled orthography of the title *wr-mȝw* 'great of seers'.

109 Guksch 1995, pp. 125–126, fig. 60, pl. 47a–b. The ostracon was used as *Vorlage* for the text 10,2 in the tomb of Nakhtmin's son (Guksch 1995, p. 165, pl. 41) and will be resumed at the end of the present article.


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| Words/signs affected by changes | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|
| **Modifications** | | | |
| *š* 'lake' |  oP3 rto, col. 2 |  Panel 3, col. 81 | Reversal of order of classifiers |
| *ḏȝw* 'ferry, cross' |  oP3 rto, col. 7 |  Panel 3, col. 86 | Reversal of order of phonograms |
| *ḏȝw* 'ferry, cross' |  oP3 vso, col. 4 |  Panel 3, col. 88 | Reversal of order of phonograms |
| *ꜣwt-jb* 'joy' |  oP2 vso, col. 6 |  Panel 3, col. 114 | In oP2 vso, col. 6 the initial sign Z1 was amended into X1<br>Reversal of order of phonograms |
| *smȝ-ṯ* 'to unite/bury' |  oP2 vso, col. 7 |  Panel 3, col. 115 | Reordering of phonograms |
| Incomplete form of N31  |  oP3 rto, col. 4 |  Panel 3, col. 83 | Graphical amendment of sign |
| Sign D45  changed for D43  |  oP1 vso, col. 2 |  Panel 3, col. 101 | Substitution of classifier |

**Table 9.** Hypercorrections or lexical and graphical changes (ordered by typology).


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| Words/signs affected by changes | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|
| **Meaningful additions** | | | |
| A40  |  oP4 vso, col. 4 |  Panel 1, col. 14 | Addition of classifier (in an incorrect position) in *wr* 'great one' |
| Y2  |  oP3 vso, col. 4 |  Panel 3, col. 89 | Addition of classifier in *jmyw-bȝḥ* 'those who are in the presence' |
| Z1  |  oP3 vso, col. 5 |  Panel 3, col. 90 | Addition of classifier in *wʿ* 'one/unique' |
| Z2  |  oP1 vso, col. 5 |  Panel 3, col. 103 | The first sign of the word on the model was written in the previous column, on an edge that broke off in antiquity and is currently lost. Addition of plural determinative (for an abstract noun) in *ḏwt* 'evil' |
| *p*  |  oTh3 u.a. rto, col. 2 |  Panel 3, col. 62 | Addition of phonetic complement in *šsp* 'to take' |

**Table 9 (continued and end).** Hypercorrections or lexical and graphical changes (ordered by typology).


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## 2.2. Mistakes and emendations

### 2.2.a. *Mechanical mistakes*

In every manuscript culture, the process of remediating a text produced mechanical mistakes in the form of omissions, additions, substitutions of graphemes or words, changes in the order of signs, and reversed orientations. In TT 87 there are 59 examples of such mistakes,[110] highlighted in red in Figs. 8–13, see also Table 10.[111] The reasons usually given for this type of error are:[112] visual (morphological) or phonetic (auditory) similarity between signs; memory associations with other known compositions or sections of a text; confusion between concepts; loss of concentration on the part of the copyist when changing columns (in the 'model' or on the walls); haplography and *aberratio oculi* (words/signs are omitted because they are not seen when the eye moves from one passage in the 'model' to a similar one, either vertically—in the same column—or horizontally—between signs located at the same height but in different columns); repetition of statements; and unknown reasons. We consider that examples of all of these types of errors can be attested in Nakhtmin's burial chamber, and that in some instances it is difficult to determine the different underlying factors, since an error may be related to various visual, aural, mnemonic, or psychological causes:

– Graphic/morphological similarity between the signs: *ꜣ*/G1  (in hieratic in oP4 rto, col. 9) transformed into the cursive hieroglyph *w*/G43  (col. 9 on the wall) in the word *jꜣṯ* 'injured';[113] N9  / X6  (in oP4 vso, col. 6) turned into Aa1  in col. 17 in the word *ps<ḏ>n<ty>w* 'the new moon';[114] *s*/O34  (in oP3 rto, col. 7 and oP3 vso, col. 1) twice transcribed as *n*/N35  in cols. 85 (in *s* 'it/path') and 86 (in *sḫ{r}t* 'field');[115] D45  as classifier of *ḏsr* 'sacred' (written in oP3 vso, cols. 2 and 3, with its characteristic wand) rendered as D43  in col. 87[116] and D40  in col. 88; *g*/W11  (in oP1 rto, col. 6)

110 The erroneous reversal only affects the sign Aa11  in the expression *mꜣʿ-ḫrw* 'justified, vindicated': see cols. 3, 17, 33 (×2), 34, 35, 38 (×2), 39, 41, 42 (×2), 43, 46, 48, 49, 50 (×2), 53 (×2), 54 (×2), 55 (×2), 56, 57, 58 (×2), 59 (×2), 60 (×2), 61, 77, 124. Since the expression was never recorded on the ostraca used as intermediate manuscripts, this might have caused the writing in the wrong direction. However, J. Paksi—personal communication—has observed the same feature on the walls and ceiling of TT 84 and TT 95A and on the ceiling of TT C.3. Note that in TT 87, the same sign used in a different combination (Aa11+U4 ) was correctly written (e.g., cols. 31 and 85).

111 Different types of mistakes are distinguished in red using various conventions: a horizontal line of large dots for omissions; a square filled with red colour for substitutions of signs (note that in col. 9 there is an interaction of phenomenon—of a sign changed from hieratic on the model-ostraca into cursive hieroglyphs on the wall and a mistake of the type substitution of signs—, hence the combination of a green square with a red continuous outline); a red continuous outline for additions; a red dashed outline for reversed orientations; a dot-and-dash line for reversed order.

112 Many scholars include in their publications a typology of such mistakes, often accompanied by an explanation of their possible reasons, in the study of a single manuscript or a group thereof: Sledzianowski 1975; Rössler-Köhler 1979, pp. 27–35; Sadek 1985, pp. 311–313;Verhoeven, Dils 1993, pp. 349–364; Mathieu 1996; Gasse 2002, pp. 36–51; Morales 2017, pp. 112–114 (with many bibliographical references); Ragazzoli 2017, pp. 101–102; Ragazzoli 2019, pp. 77–81. Our study is limited to a comparison between the intermediate 'model' and the final product. Mistakes introduced in the previous steps of transmission, analyzed through the method of collation with parallel witnesses, are not considered here.

113 Lüscher 2013, p. 96, n. 55, 15.

114 The presence of the sign Aa1  in the immediate co-text of *psḏntyw* (note that the words *rḫ* and *jmꜣḫy* were written above and below) might have also influenced the scribe and triggered the confusion.

115 Lüscher 2013, p. 105, n. 86, 9.

116 The same change is attested between oP1 vso, col. 2 and col. 101 on the wall, but it is considered here as a case of hypercorrection (see under section 2.1.e and n. 107).


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transcribed as *ḥr*/T28 𓅓 in col. 97 in the word *grt* 'moreover';[117] N18 𓈖 (in oP1 rto, col. 9) changed to X4 𓏏 or similar in col. 100 in the word *ḏꜣḏꜣt* 'tribunal'.

– Graphic similarity between signs or confusion between partially homograph and homophone words. The natron balls used as the classifier of *ḫsmn* in oP3 rto, col. 2, were transcribed as three *nw*-bowls 𓏺𓏺𓏺 in col. 81. The rounded signs N33 𓇋 and W24 𓏺 look similar, but the scribe could also have confused the words *ḫsmn* 'natron' and *mnw* 'monument', which share some phonemes.[118]
– Forward and backward movements of the eyes when the scribe was looking at the ostracon and the wall (*aberratio oculi* or *saute du même au même*). A scribe's eyes moved between two signs situated at the same height in the continuous columns of the 'model' (oP1 vso, cols. 2 and 3),[119] meaning that he copied V28 𓌙 and Z1 𓏤 instead of Aa1 𓐍 in col. 101. He would have omitted a whole column if he had continued to copy, but he spotted the mistake in time to erase these two signs and write the correct Aa1 𓐍 on top.[120] The omission of the phonogram *p* in the word *pw* in col. 99 (cf. oP1 rto, col. 7) took place in a context in which a single *w* in the previous column, both in the intermediate copy—oP1 rto, col. 6—and on the wall, is at approximately the same height, which probably acted as a visual trigger for the mistake.
– Change from one column to the other in the 'model'. As the eyes of the scribe moved between columns in the *Vorlage*, haplographies could occur, bringing about the omission of the sign *s* 𓊃 in col. 28 (cf. oP5 vso, cols. 6–7). Other types of omissions and erroneous additions could also take place in these circumstances, as with the words *fꜣk*{*ꜣ*} 'bald' and *ḏwt* 'evil' in cols. 13 and 103[121] (see below for further explanations).
– Repetition of a previously copied sign: *r* 𓂋 in col. 115. In this case, there is an interaction of phenomena, since the erroneous addition coincides with the omission of the sign *w* 𓅱 in *ḳrs=tw* (cf. oP2 vso, col. 7).
– Repetitive structures. The repetition of the same grammatical construction with slight differences in content could have caused waning concentration on the part of the scribe and could have led to the omission of some elements.[122] This might be the case of *ḥr-jb* in col. 67 in *jnk ḥry-jb ḥwt bnbn* 'I am in the middle of/abide in the temple of the Benben', in a context full of sentences headed by *jnk* that also contain the word *ḥwt* (cf. oTh3 u.a. vso, cols. 3–4). Perhaps the concentration of graphemes belonging to the bird category in oP4 rto, col. 2 caused the omission of an *m* 𓅓 in col. 5 in the preposition *m*<-*m*> 'among'.
– Rearrangement of signs into new groups. As mentioned in a previous section (2.1.d), changing the spatial configuration of a grouping could lead to anomalous or incorrect spellings. In addition to the cases mentioned above, cf. the reorganization of the graphemes in

117 The signs W11 𓅭 and T28 𓅓 are often confused according to Haring (2006, §§ 220, 261).
118 The latter explanation was suggested by Lüscher (2013, p. 105, n. 85, 4).
119 This explanation was offered by Lüscher (2013, p. 40).
120 See also section 2.2.b and Table 11.
121 As will be mentioned on a few more occasions, two issues must be considered here: an addition and an omission. The addition of the plural marks (indicating the abstract nature of the word *ḏwt*), probably distracted the scribe who forgot to add the last *t* 𓐍 (see under 2.1.e).
122 A parallel is found in TT 11: Díaz-Iglesias Llanos 2019, pp. 158–159.


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the word *t*  'bread' in col. 63, in which the usual order was reversed (cf. oTh3 u.a. rto, col. 4).

– Unknown reasons: omission of phonetic complements (*n*  in the negation *nn* in col. 6; *n*  in the word *nmwt* 'slaughterhouses' in col. 114), classifiers (D40  in col. 62 in the word *šsp* 'receive'),[123] and phonograms (*ɔ*  in *d*{*ɔ*}*š*<*rw*> 'blood/redness' in col. 114;[124] the preposition *m*  in col. 98). Substitution of *p*  (oP4 rto, col. 10) for *pr*  (col. 10 on the wall) and of *r*/D21  (in oP1 rto, col. 5) for *n*/N35  in col. 97 in the name of the god Ra.[125]

In general, the change from one column to the other on the inscribed ostraca used as transfer manuscripts did not have a major impact on the process of copying the texts onto the walls. There are only three cases where the change coincides with a mistake. First, when the scribe moved from the end of col. 2 to the beginning of col. 3 in oP4 vso, where the word *fɔk*{*ɔ*} 'bald' is split in two, he added a vertical stroke beside the last *ɔ*/G1  in col. 13 on the wall. We suggest that the copyist mistook this phonogram for a logogram and therefore erroneously added the sign Z1 . Secondly, the word *ps*<*ḏ*>*ntyw* 'new moon' was split between cols. 6–7 of oP5 vso: col. 6 ended with the sign *s*/O34  and was followed in the last column of the ostracon by *n*/N35 , two graphemes of a similar shape. The scribe had correctly written the first sign in col. 28 on the wall, but when he interrupted the copying process to change columns in his *Handwerke-Vorlage*, he forgot that the sequence of horizontal graphemes was composed of two similar signs and erased the central part of *s*  to turn it into an *n*  (see fig. 18, below). Thirdly, the word *ḏwt* 'evil', split between cols. 4–5 of oP1 vso, was erroneously transcribed in col. 103, and its final sign was omitted.[126]

An interesting observation comes to the fore when the data of the three scribal hands identified in Nakhtmin's burial chamber are cross-referenced with the location of mistakes. The texts copied by scribe C, who we have considered to be the junior or apprentice's hand, are free from errors. This is striking, as the presence of mistakes has often been used as a criterion to detect the work of apprentices.[127] On the contrary, we believe that scribe C wrote down the text slowly (hence his low line quality)[128] and conscientiously, trying to reproduce the 'model' in all its minute detail, including the grouping of signs (see section 2.1.d). More experienced copyists, such as A and B, were less bound by the *Vorlage*, and when they displayed their creativity and worked faster, they were more likely to make mistakes.

123 There is an interaction of phenomena, given that the omission coincides with the addition of a correct phonetic complement to the word *šsp* (see under 2.1.e).

124 Probably *ɔ*/G1  is a misspelling for the bird G27 . The mistake could have been in the archival manuscript or introduced by the scribe(s) who composed the intermediate 'model' on the ostraca.

125 Lüscher 2013, p. 106, n. 88, 5.

126 See further n. 121 and 123 for the coincidence of mechanical mistakes with intentional additions in the same word.

127 We would like to thank Niv Allon for drawing our attention to this issue.

128 Díaz-Iglesias Llanos, Méndez-Rodríguez 2023, p. 35, n. 74.


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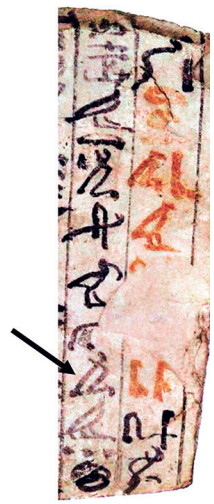
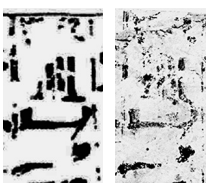
| Sign(s) involved in mistake | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|
| **Omissions** | | | |
| G17 |  oP4 rto, cols. 2–3 |  Panel 1, cols. 4–5 | Possible reason for omission: concentration of graphemes belonging to the bird category in the co-text |
| N35 |  oP4 rto, col. 3 |  Panel 1, col. 6 | Omission of phonetic complement in *nn* for unknown reasons |
| O34 |  oP5 vso, cols. 6–7 |  Panel 2, col. 28 | The word *ps<ḏ>ntyw* is split between two columns on the ostracon. Possible reasons for omission (or amendment of *s* into *n*, see Tbl. 11): graphic similarity between O34 and N35; loss of scribe's concentration due to change of columns in the 'model' |
| D40 |  oTh3 u.a. rto, col. 3[a] |  Panel 3, col. 62 | Omission of classifier in *šsp* coincides with addition of a phonetic complement (see also Tbl. 9) |

**Table 10.** Mechanical mistakes (ordered by typology and order of appearance on the walls).

a An image of the ostracon and a drawing thereof are provided due to the bad state of preservation of the former.


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| Sign(s) involved in mistake | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|
| D2 +F34 |  oTh3 u.a. vso, col. 4 |  Panel 3, col. 67 | Possible reason for omission of *ḥry-jb*: repetitive grammatical structures in the co-text, (cf. oTh3 u.a. vso, cols. 3–4)[b] |
| G17 |  oP1 rto, cols. 6–7 |  Panel 3, cols. 98–99 | Omission of preposition *m* for unknown reasons |
| Q3 |  oP1 rto, cols. 6 |  Panel 3, cols. 98–99 | Possible reason for the omission of *p* in *pw* (col. 99): forward and backward movements of the eyes in the 'model' and the copy; confusion with the *w* written in the previous column on the ostracon and on the tomb walls |
| X1 |  oP1 vso, col. 5 |  Panel 3, col. 103 | Part of the word *dwt* is missing from the ostracon since the bottom of col. 4 is damaged. Possible reasons for omission: loss of scribe's concentration due to change of columns in the 'model' |

**Table 10 (continued).** Mechanical mistakes (ordered by typology and order of appearance on the walls).

b Since the ostracon is badly damaged, the reader is referred to col. 67 on the wall for the co-text.


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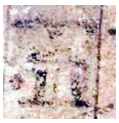
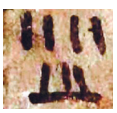
| Sign(s) involved in mistake | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|
| G1 |  oP2 vso, col. 5 |  Panel 3, col. 114 | Omission of phonogram for unknown reasons in *d{ɔ}š<rw>* |
| N35 |  oP2 vso, col. 5 |  Panel 3, col. 114 | Omission of phonetic complement in *nmwt* for unknown reasons |
| G43 |  oP2 vso, col. 7 |  Panel 3, col. 115 | The omission coincides with the repetition of an already copied sign (*r*, see below under addition) in *ḳrs=tw* |
| **Confusion of signs** | | | |
| G1 turned into G43 |  oP4 rto, col. 9 |  Panel 1, col. 9 | Possible reason for confusion in the word *jɔṯ*: graphic/morphological similarity between signs |
| Q3 confused with O1 |  oP4 rto, col. 10 |  Panel 1, col. 10 | Signs confused for unknown reasons |
| N9 /X6 turned into Aa1 |  oP4 vso, col. 6 |   Panel 1, cols. 16–17 | The word is split in two columns on the wall. Possible reason for confusion in the word *ps<ḏ>n<ty>w*: graphic/morphological similarity between signs |
| O34 confused with N35 |  oP3 rto, col. 7 |  Panel 3, col. 85 | Possible reason for confusion in the word *s*: graphic/morphological similarity between signs |

**Table 10 (continued).** Mechanical mistakes (ordered by typology and order of appearance on the walls).


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| Sign(s) involved in mistake | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|
| O34 confused with N35 |  oP3 vso, col. 1 |  Panel 3, col. 86 | Possible reason for confusion in the word *sḫ{r}t*: graphic/morphological similarity between signs |
| D45 confused with D43 (var.) |  oP3 vso, col. 2 |  Panel 3, col. 87 | Possible reason for confusion in the word *ḏsr*: graphic/morphological similarity between signs |
| D45 confused with D45 (var.) |  oP3 vso, col. 3 |  Panel 3, col. 88 | Possible reason for confusion in the word *ḏsr*: graphic/morphological similarity between signs |
| W11 confused with T28 |  oP1 rto, col. 6 |  Panel 3, col. 97 | Possible reason for confusion in the word *grt*: graphic/morphological similarity between signs |
| N18 confused with X4 or similar |  oP1 rto, col. 9 |  Panel 3, col. 100 | Possible reason for confusion in the word *ḏ3ḏ3t*: graphic/morphological similarity between signs |
| N33 confused with W24 |  oP3 rto, col. 2 |  Panel 3, col. 81 | Possible reason for confusion: graphic similarity between signs or confusion between partially homophone and homograph words (*ḫsmn* and *mnw*) |
| D21 confused with N35 |  oP1 rto, col. 5 |  Panel 3, col. 97 | Confusion of signs for unknown reasons in the name of Ra |

**Table 10 (continued).** Mechanical mistakes (ordered by typology and order of appearance on the walls).


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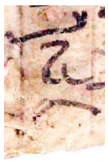
| Sign(s) involved in mistake | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|
| **Additions** | | | |
| Z1 I |   oP4 vso, cols. 2–3 |  Panel 1, col. 13 | The word *ḫ3k{3}* 'bald' is split in two on the ostracon. Possible reason for addition: confusion between a phonogram and a logogram at the change of columns in the 'model' |
| D21 <> |  oP2 vso, col. 7 |  Panel 3, col. 115 | Possible reason for addition in *krs=tw*: repetition of an already copied sign. The addition coincides with an omission, see above |
| **Reversed order** | | | |
| |  oTh3 u.a. rto, col. 3 |  Panel 3, col. 63 | Possible reason: rearrangement of signs within the quadrat |

**Table 10 (continued and end).** Mechanical mistakes (ordered by typology and order of appearance on the walls).

### 2.2.b. *Correction of mistakes*

A few of the mistakes described in the previous section, and many others throughout the copying process, were detected in time by the scribes, who made corrections either by erasing the previous sign and copying the new one (a procedure highlighted in pink in Figs. 8–13), or by directly leaving the previous grapheme half in place and writing the new sign over the top of it (indicated in purple in Figs. 8–13).[131] The first method tended to leave a smudge or a pale imprint of the previous sign on the final whitish layer prepared as the writing surface.[132] A third form of amending texts was the secondary addition of forgotten signs (marked in bright blue in Figs. 8–13).[133] This practice is evidenced by graphemes that were deliberately

131 Note that in col. 83 there is an interaction of phenomenon—of a sign changed from hieratic on the ostracon into cursive hieroglyphs on the wall and an emendation by overwriting—, hence the combination of a green square with a purple continuous outline

132 For the preparation of the surface in the burial chamber of TT 87, see Díaz-Iglesias Llanos, Méndez-Rodríguez 2023, pp. 5–12. Differences in the form of erasing signs could be spotted between the work of the copyists in TT 87 and are thus a valid criterion to distinguish between scribal hands (Díaz-Iglesias Llanos, Méndez-Rodríguez 2023, pp. 36–37). The initial signs written by A prior to emendation could thus be generally identified (except in cols. 11, 88, and 113), whereas those of B were reduced to a grey patch (col. 54 [×2]).

133 Different forms of amending texts have been described by: Gasse 2002, pp. 31–34; Verhoeven 2020, pp. 97–102; Jurjens 2021a; Gasse 2025.


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reduced in size (V4 in col. 44), and/or placed off-centre in the columns (S29 in col. 27, D58 in col. 45, and V28 in col. 63), or squeezed in between the already written texts (Z2 in col. 38).[134]

The corrections (50 in total) are useful for analyzing the types of mistakes that were most frequently made and for exploring their underlying reasons (Table 11), thus enriching the explanations discussed in the previous section 2.2.a. In col. 18, *pr* appears under the sign *ḳ*. We suggest that the scribe could have mentally associated both signs owing to their morphological similarity in hieratic (cf. Möller Nos. 319 and 340).[135] An analogous case arises from the closeness in shape of some cursive hieroglyphs, especially those belonging to the category of birds, and could explain the atypical combination of G1 and G43 in the sign copied in col. 44. The anomalous initial form of a grapheme could be erased in order to correct its shape, as might have happened with the sign V4 in col. 85, or rewritten, as could have been the case with S42 in col. 58, so that calligraphic concerns could have been at play here.[136] The mental association between two closely related words (*jmɜḫ* and *jmɜḫy*) could explain the addition of the sign Z1 after F39 in col. 46, which normally appears in the orthography of *jmɜḫ*. The overwriting of the two diagonal strokes (Z4) on top of a half-traced sign in col. 81 could be evidence of scribe A's linguistic knowledge. We suggest that he might have started to add the sign ʿ/D36 as a phonetic complement to O29 in the word *ʿɜwy*, but changed his mind for unknown reasons.

A large number of cases illustrate the influence exerted on the scribe by the signs that he had just copied or that he was about to copy in the same column, which could have led to mechanical mistakes that can be classified as 'error by repetition' (8 instances) or 'error by anticipation' (6 cases).[137] The first type includes:

- The confusion between *n*/N35 (erased) and *r*/D21 in col. 24 was probably caused by the mechanical repetition of the former sign, which appears three times immediately before, and is therefore a case of dittography.
- The co-text surrounding the amendment by overwriting in col. 44, with the repetition of large rectangular signs and flat horizontal ones, could explain the confusion between the signs N38 and N4.
- Scribe A repeated the sequence D21 +Aa1 under the influence of the word *rḫ* with which col. 107 began, and then erased it.
- The sign N35 was copied twice (= dittography) in col. 109 and then one of the graphemes was erased and changed into two X1.
- The sign M17 with which col. 116 started was written again below, in the middle of the word *sšm*, and then amended via erasure into the correct T32.

134 In this case, the plural mark seems to have been written in place correctly at the outset. The dots were then hidden under the horizontal stroke of the sign *n*/N35, traced with fresh ink, and the scribe added secondarily the plural in the space left between the classifiers and the *n*.

135 According to Lüscher (2013, p. 98, n. 4), the error could have been a result of *aberratio oculi* between two split columns.

136 This type of calligraphic correction is attested elsewhere: Jurjens 2021a, pp. 197, 200, n. 32; Jurjens 2021b, pp. 177–184. See also Ragazzoli 2019, pp. 57–62, 103.

137 This is a phenomenon attested elsewhere: Díaz-Iglesias Llanos 2018b, p. 25. For forward and backward movements of the eyes when working with both the 'model' and the copy, see section 2.2.a.


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– After writing D21  in the word *jr*, scribe B started to write this sign again in col. 105, but soon realized his mistake and added two M22  on top without erasing the previous stroke.
– The same sign (O34 ) was repeated twice (= dittography) in col. 109, and the last *s*  was modified into N35  with a new dip of the brush and the drawing of a horizontal stroke on top.
– The sign N35  was converted into X1  in col. 121 in a context where several *n* signs were written.

Errors caused by the anticipation of signs that come immediately after the wrongly placed grapheme are present in the following cases:
– D21  was written over Aa1  –left incomplete– in the word *rḫt* in col. 19;
– the beginning of M17  was written below G1  in col. 19;
– the eyebrows of the converging eyes in col. 34 are visible below the previous *r*, despite having been erased;
– the body of the horned viper I9  was written on top of a horizontal stroke in col. 60. We suspect that the scribe started to pen the sign O34 , which comes immediately below, but realized his mistake and decided to correct it, turning the grapheme into a snake.
– the half-drawn left diagonal stroke of the sign X8  shows the anticipation of the verb *rdj* in col. 62;
– the scribe had started to trace the viper I9  with the stroke corresponding to the left horn in col. 107 in the place where the sign X1  should have been written first and left the sign incomplete as he realized his mistake.

Finally, not only could signs written in the same column on the wall and in the 'model' distract the attention of the scribe, but those copied in the previous column at roughly the same height could have a similar effect. Thus, in col. 83, the sign N37  —written next to the same grapheme in col. 82—was corrected by turning it into N1  by using the overwriting method. In a similar way, slips of the eyes between signs at the same level in adjacent columns of the 'model' caused errors. This case is best illustrated by the inclusion of Aa1  + Z1  in col. 101 in *lieu* of the word *ḫwj*, two terms that stand horizontally beside each other in oP1 vso, cols. 2–3.[138]

138 The explanation was first suggested by Lüscher (2013, p. 40, fig. 19), who did not notice that the scribe had erroneously continued copying the sign Z1  under D43 . See also under 2.2.a.


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| Sign(s) involved in emendation | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|
| **Erasing and rewriting** | | | |
| Unidentified sign erased and Aa1 𓄿 written on top | oP4 rto, col. 12 |  Panel 1, col. 11 | Initial sign thoroughly erased |
| O1 𓉔 erased and N29 𓈙 written on top | oP4 vso, col. 7 |  Panel 2, col. 18 | Possible reason for confusion: mental association between signs due to their similarity in hieratic (Möller No. 319 and 340)? |
| N35 𓈖 erased and D21 𓂝 written on top | oP5 rto, col. 10 |  Panel 2, col. 24 | Error by repetition of a sign copied immediately before (appearing three times) |
| O34 𓊃 erased and N35 𓈖 written after on top wards |   oP5 vso, cols. 6–7 |  Panel 2, col. 28 | Possible reasons for turning *s* into *n*: graphic similarity between signs O34 and N35; loss of scribe's concentration due to change of columns in the model (see also Tbl. 10) |
| Part of D140 𓁹 erased and D21 𓂝 written on top | – (no preserved ostracon) |  Panel 3, col. 34 | Error by anticipation of a sign (eyebrows) that comes immediately afterwards |
| Unidentified sign erased and O35 𓉐 written on top | – |  Panel 3, col. 46 | Initial sign thoroughly erased |
| Unidentified sign erased and D36 𓂧 and N35 𓈖 written on top | – |  Panel 3, col. 54 | Initial sign thoroughly erased |
| Unidentified sign erased and N26 𓈗 written on top | – |  Panel 3, col. 54 | Initial sign thoroughly erased |
| Sign erased and V4 𓍿 written on top | oL1 vso, col. 6 |  Panel 3, col. 85 | The initial strokes of the sign V4 might have looked unpleasant to the scribe, who opted for rewriting the sign a bit to the left |
| Unidentified sign erased and O1 𓉔 written on top | oP3 vso, col. 3 |  Panel 3, col. 88 | Initial sign thoroughly erased |

**Table 11.** Emendations (ordered by typology and order of appearance on the walls).


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| Sign(s) involved in emendation | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|
| V28 and Z1 erased and Aa1 and D43 written on top |  oP1 vso, cols. 2–3 |  Panel 3, col. 101 | Error by anticipation of signs that comes at the same height in the next columns of the ostracon |
| D21 and beginning of Aa1 erased and G43 written on top | oP2 rto, col. 1 |  Panel 3, col. 107 | Error by repetition of an already copied word (*rḫ* appears at the beginning of the column) |
| N35 erased and X1 +X1 written on top | oP2 rto, col. 4 |  Panel 3, col. 109 | Error by repetition of a sign copied immediately before |
| Unidentified sign erased and D21 written on top | oP2 vso, col. 4 |  Panel 3, col. 113 | Initial sign thoroughly erased |
| M17 erased and T32 written on top | – |  Panel 3, col. 116 | Error by repetition of a previously copied sign (the column starts with the sign M17)? |
| **Overwriting without erasing** | | | |
| D21 written over part of Aa1 | oP5 rto, col. 1 |  Panel 2, col. 19 | Error by anticipation of a sign that comes immediately afterwards |
| G1 written over part of M17 | oP5 rto, col. 1 |  Panel 2, col. 19 | Error by anticipation of a sign that comes immediately afterwards |
| N35 written over Z2 | – |  Panel 3, col. 38 | By turning the plural into an *n*, the sign Z2 had to be inserted in the space between A1+B1 and N35. See also below, under secondary addition |

**Table 11 (continued).** Emendations (ordered by typology and order of appearance on the walls).


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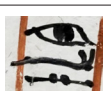
| Sign(s) involved in emendation | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|
| G1 written over G43 | – |  Panel 3, col. 44 | The strange shape of the bird-sign derives from a mixture of G1 and G43 (confused due to their morphological similarity?) |
| N4 written over N38 | – |  Panel 3, col. 44 | Error by repetition of an already copied sign |
| Aa1 written over Z1 | – |  Panel 3, col. 46 | The initial writing of the stroke Z1 may betray a mental confusion between two closely related words (*jmɜḫ* and *jmɜḫy*) |
| S29 written over an unidentified sign | – |  Panel 3, col. 50 | |
| S42 written over a previous version of the sign | – |  Panel 3, col. 58 | The initial strokes of the sign S42 might have looked unpleasant to the scribe |
| I9 written over O34 | – |  Panel 3, col. 60 | Error by anticipation of a sign that comes immediately afterwards |
| G43 written over part of X8 | oTh3 u.a. rto, col 3 |  Panel 3, col. 62 | Error by anticipation of a sign that comes immediately afterwards |
| Z4 // written over part of D36 ? | oP3 rto, col. 1 |  Panel 3, col. 81 | The scribe might have started to write the sign D36 as a phonetic complement in *ʿɜwy* |
| N1 written over N37 | oP3 rto, cols. 3–4 |  Panel 3, cols. 82–83 | Error by confusion with a sign copied on the wall in the previous column (N37) at roughly the same height |

**Table 11 (continued).** Emendations (ordered by typology and order of appearance on the walls).


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| Sign(s) involved in emendation | Ostracon | Nakhtmin's burial chamber | Observations |
|---|---|---|---|
| M22 written over D21 | oP1 vso, col. 7 |  Panel 3, col. 105 | Error by repetition of a sign copied immediately before |
| X1 written close to part of I9 | oP2 rto, col. 2 |  Panel 3, col. 107 | Error by anticipation of a sign that comes immediately afterwards |
| N35 written over O34 | oP2 rto, col. 4 |  Panel 3, col. 109 | Error by repetition of a sign copied immediately before |
| X1 written over N35 | – |  Panel 3, col. 121 | Error by repetition or anticipation of a sign that appears several times in the co-text |
| **Secondary addition** | | | |
| S29 |  oP5 vso, col. 5 |  Panel 2, col. 27 | |
| Z2 | – |  Panel 3, col. 38 | See also above, under overwriting without erasing |
| V4 | – |  Panel 3, col. 44 | |
| D58 | – |  Panel 3, col. 45 | |
| V28 | – |  Panel 3, col. 63 | |

**TABLE 11 (continued and end).** Emendations (ordered by typology and order of appearance on the walls).


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## CONCLUSIONS

Copying was a fundamental activity in ancient Egypt, serving various purposes such as training, accounting, preservation, and monumentalization.[139] In general, when analyzing how a copy was made from a 'model', several factors need to be taken into account: the 'model' itself (generally executed on ostraca, papyri, or leather rolls); the scribal repertoire (or the range of graphical forms available to a scribe, which in turn depended on his education and experience in reading and copying); material factors derived from the characteristics of the writing medium (lack or abundance of space, irregular surfaces, etc.) and the working conditions (humidity, temperature, lighting system, and body posture).[140]

Since most of the templates, drafts, and intermediate copies have not survived, the case study of TT 87 can shed new light on the processes of copying and textual transmission, especially on the phase of monumentalization. It should be borne in mind that the link with the initial template bearing funerary texts—probably kept in a temple library—has been lost, and that the number of intermediate copies that separated this manuscript from the *Handwerke-Vorlage* that were used in Nakhtmin's burial chamber[141] is unknown. Despite these issues, the comparison between the ostraca and the walls in TT 87 has allowed us to explore how scribes interacted with their 'model' by analyzing editorial changes (substitution of equivalent/related graphemes, changes of script, in the morphology of signs and in their spatial organization, and meaningful additions and substitutions), mechanical mistakes, and emendations. The data obtained offer us valuable clues to explore different forms of (re)productive transmission, the level of literacy of the scribes, their expertise in copying funerary texts, and the influence that the 'models' (or text carriers used as transfer media) and material factors exerted on their work.

In terms of forms of transmission, it is well known that the copying of 'models' in manuscript cultures was not a mechanical act.[142] In the case of Nakhtmin's burial chamber, the process involved a combination of faithful reproduction and deliberate alteration, although the latter changes were limited to the outward form of the texts and did not affect their content. These alterations further indicate the work of scribes with a certain degree of literacy, since the copyists in TT 87 were highly trained in hieratic, cursive, and full hieroglyphs.

Scribal hierarchy, expertise in copying funerary texts, and training or graphic culture are factors that come to the fore when comparing the sections copied by the three scribes whose ostraca have been preserved (see Table 4).[143] Although we only have the 'model' for half of the columns penned by scribe C (cols. 77–80 = oL1 rto + vso), some tendencies clearly distinguish him from his colleagues. For example, he rarely substituted signs for their equivalent graphemes or changed their arrangement. In the only case where he attempted a spatial redistribution of graphemes, he produced an archaic spelling for the name of Osiris (cf. oL1 vso, col. 1 and col. 80

139 See, most recently, Allon, Navratilova 2023, pp. 40–48.

140 Díaz-Iglesias Llanos 2019, p. 153 (building upon Stenroos 2018, p. 26 and Hagen 2012, p. 248).

141 See n. 5.

142 For ancient Egypt, see, most recently: Hagen 2012, p. 216; Ragazzoli 2019, pp. 81–84; Regulski 2020, p. 82; Allon, Navratilova 2023, p. 41.

143 It should be stressed that the information available for the three scribes is not balanced, since most of the data correspond to scribe A, who copied 85% of the texts in the chamber and in sections for which ostraca are available.


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on the wall).[144] Scribe C faithfully copied his 'model', without erroneously omitting, adding, or substituting any signs, and there are no traces of corrections in his passages. His colleagues A and B, on the other hand, copied their sections with a relatively free hand, introducing plenty of editorial modifications. All these characteristics create an image of scribe C as an apprentice who meticulously transcribed his 'model', and who was not experienced enough to develop his own personal initiative in editing or modifying the texts.[145] The only elements he used in a flexible way were the titles of the tomb owner, expanding on the information recorded in the 'models'.

Similarly, very few columns written by scribe B can be compared with the 'model' (cols. 67–60 = oTh3 u.a. vso, cols. 3–6) as no more ostraca have been retrieved. No hieratograms appear in this section, and he turned several signs (G28  and V31 ) written in hieratic on the ostracon into cursive hieroglyphs. In the other columns that he copied, it is interesting to observe that he wrote some signs in their cursive hieroglyphic version (E34 , M23 , W23 , Y3 ), whereas his colleagues opted for less detailed and more abbreviated forms of the same signs. Lacking the 'models' for these parts, it is difficult to say if he added his 'personal touch' to the texts by drawing elaborate signs. Given that his handwriting is very neat, and the text is well organized within the columns (even leaving blank margins on the sides of the signs before the dividing vertical lines), it can be surmised that he would have paid great attention to the formal or graphical side of the signs as well.

The influence that the 'models' exerted on the work of the scribes can be analyzed from an orthographic point of view. According to several authors, the genre and content of a text, especially in the case of religious compositions as opposed to administrative or literary ones, may have encouraged more conservative handwriting in which the orthographic conventions of the 'model' were generally respected.[146] In TT 87, the 'model' even exerted a certain influence on the morphology of certain signs (especially on rectangular-shaped ones). There are very few instances of orthographic modernization, no cases of deliberate elimination of classifiers, and no changes from phonetic to logographic spelling. The two latter issues contrast with other cases where the model and the copy have been preserved (see below) or where two manuscripts were allegedly copied from the same (lost) source.[147] Whether the deliberately archaic spelling peculiarities of the formulae decorating Nakhtmin's burial chamber prevented the scribes from attempting orthographic changes can be speculated on. These conventions may not have been familiar to the New Kingdom scribes in charge of executing the decorative program in TT 87. They could have chosen to limit their orthographic intervention on a text that was also already corrupted on the ostraca and probably in the master copy as well.

144 The name is similarly spelled in col. 73, in a section also attributed to scribe C but for which the model-ostracon is lacking. The same is true for *pr-Wsjr* in col. 19, penned by scribe A (for which the 'model' gave the same irregular spelling: oP5 rto, col. 2). According to Guerra and Zamacona (2024, p. 135) the correct order of the signs in this theonym appears in the Pyramid Texts and is composed of Q1  + D4 .

145 The palaeographic analysis of the scribal hands in the burial chamber of TT 87 showed that scribe C was also less skilled than his colleagues A and B, with signs that display less confidence in tracing strokes, less detailed or elaborate forms, and a lower line quality (Díaz-Iglesias Llanos, Méndez-Rodríguez 2023, p. 37).

146 Hoffmeier 1996, p. 51; Roberson 2012, pp. 66–67; Regulski 2015, pp. 316, 323; Regulski 2020, pp. 356–357. According to Stenroos (2018, p. 27) "the actual selection of forms may, then, depend on several variables: apart from the basic copying strategy, it might reflect the status of the text, the intended audience, as well as the expectations of what is appropriate for a particular type of text".

147 Díaz-Iglesias Llanos 2018a, pp. 35, 37.


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The influence of material factors in the copying process is visible in TT 87. Their effect on the introduction of editorial changes has been discussed in the case of changes in the spatial organization of signs and is probably also behind some mistakes. It is interesting to note that while the change of columns in the 'model' produced a few errors, the scribes did not lose concentration when changing columns on the walls, since no mistakes are found at the beginning of these columns. This is all the more surprising given that they had to change their body posture considerably when moving from the bottom of one column to the top of the next.[148]

A peculiar phenomenon attested in TT 87 is the irregular arrangement of signs, resulting in anomalous spellings in which the end of one word combines with the beginning of the next. Although this trend was already present in the 'model', changes in the sequence of the signs as the copyists transcribed the texts generated more unconventional orthographic forms. These differences may reflect the contrasting mindsets and concerns of the scribes at each stage of the transmission chain.[149] When writing on the walls, the scribe had a large "canvas" in front of him and would have been more concerned with layout than semantics. A major issue for the copyists in TT 87 would have been how to fill the space and distribute the signs in an aesthetically pleasing manner (assuming that the person(s) preparing the ostraca could make sense of what might have already been mixed up and corrupted source materials). The question of how literate the copyists in TT 87 were will be explored in future studies of the Pyramid Texts written on the walls of the burial chamber.

Finally, another example of the remediation of texts from an ostracon onto the walls of a tomb can be used as material for comparison in the quest for editorial activities in TT 87. One of these artefacts written in cursive hieroglyphs was used as a model or draft for the hieroglyphic caption that accompanied a scene in the tomb of Menkheperraseneb (TT 79), son of Nakhtmin.[150] In the process of remediation, editorial changes entailed the reordering of elements inside quadrats and the modifying of the spelling of some words either by the substitution of equivalent graphemes (change of Aa15  into G17 )[151] or of phonetic spellings with a logogram. While the latter phenomenon is not attested in the case of the burial chamber of Nakhtmin, in both examples of the ostraca used to decorate the tombs of father and son, the titles of the owners were used as flexible and extendable elements. Though they were abbreviated on the ostraca, they were rendered in an extended form on the walls of the tomb. Therefore, we can witness similar practices at play, which might indicate that the people in charge of the monumentalization process shared a common background (training) and had some experience in transcribing texts from portable objects to durable surfaces.

148 Alvarez (2018, pp. 110–111) highlights the differences in copying from similar media (papyrus or the like), where bodily movements were limited to the eyes and hands, and in copying between an archival model and the wall, where the inscriptions entailed greater physical movements (in the case of a section in the pyramid of Wedjebteni, the walls cover approximately three metres and the copyist would have needed to use a ladder or scaffolding to move from the lower to the upper part of columns).

149 The authors would like to thank Richard Parkinson for fruitful discussions on this issue.

150 See ostracon quoted in n. 109 (Guksch 1995, pp. 125–126, pl. 47 a–b; Laboury 2022, pp. 43–47 and Laboury 2023, pp. 123–124). Dimitri Laboury is preparing a new publication of the ostraca used to transfer texts from TT 100 to TT 29, together with Stéphane Polis, Andréas Stauder, and Laurent Bavay, which will tackle all editorial modifications performed on the spot.

151 This practice was identified in two pillar inscriptions of TT 95A and TT 76 (the latter probably inspired by, or directly copied from, by former). It was probably introduced as a space saving solution (see Paksi 2025, § 4.1, n.a).


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**Fig. 1.** Photograph of recto and verso of oP4 (=oLouvre E 22394).
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**Fig. 2.** Photograph of recto and verso of oP5 (=oLouvre AF 230.
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BIFAO 126 (2026), p. 101-168
Epigraphical Study in the Burial Chamber of Nakhtmin (TT 87): Intermediate 'Models' and Scribal Practices
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**Fig. 3.** Photograph of recto and verso of oTh3 u.a. (=oTT 87 – Guksch 1995, pl. 20 c, d – + oCambridge E.56.1946 – © The Fitzwilliam Museum, Cambridge), completed with the unpublished fragment find spot No. 255 found by the DAI excavations. Photographic montage by D.M. Méndez-Rodríguez.


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**Fig. 4.** Photograph of recto and verso of oL1 (=oLondon UC 13248).
Courtesy of the Petrie Museum of Egyptian and Sudanese Archaeology, UCL.


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**Fig. 5.** Photograph of recto and verso of oP3 (=oLouvre N 684).
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**Fig. 6.** Photograph of recto and verso of oP1 (=oLouvre N 684bis © Musée du Louvre, dist. RMN – Grand Palais/Georges Poncet.), completed with the unpublished fragment find spot No. 277 found by DAI excavations. Photographic montage by D.M. Méndez-Rodríguez.


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**Fig. 7.** Photograph of recto and verso of oP2 (=oLouvre AF 496).
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FIG. 8. Ortophotograph of Panel 1 in the burial chamber of Nakhtmin with indication of: ostraca employed as intermediate 'models' (and internal distribution of columns therein) using red and blue lines and numbers; forms of scribal intervention in the texts (for the code of colours used to mark different editorial activities, mistakes, and emendations see sections 2.1 and 2.2). The whole panel was copied by scribe A. NKS Project/S. Pou Hernández and D.M. Méndez-Rodríguez.


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**Fig. 9.** Ortophotograph of Panel 2 in the burial chamber of Nakhtmin with indication of: ostraca employed as intermediate 'models' using red and blue lines and numbers; forms of scribal intervention in the texts (for the code of colours used, see sections 2.1 and 2.2). The whole panel was copied by scribe A. NKS Project/C. Ruiz Sánchez de León and D.M. Méndez-Rodríguez.


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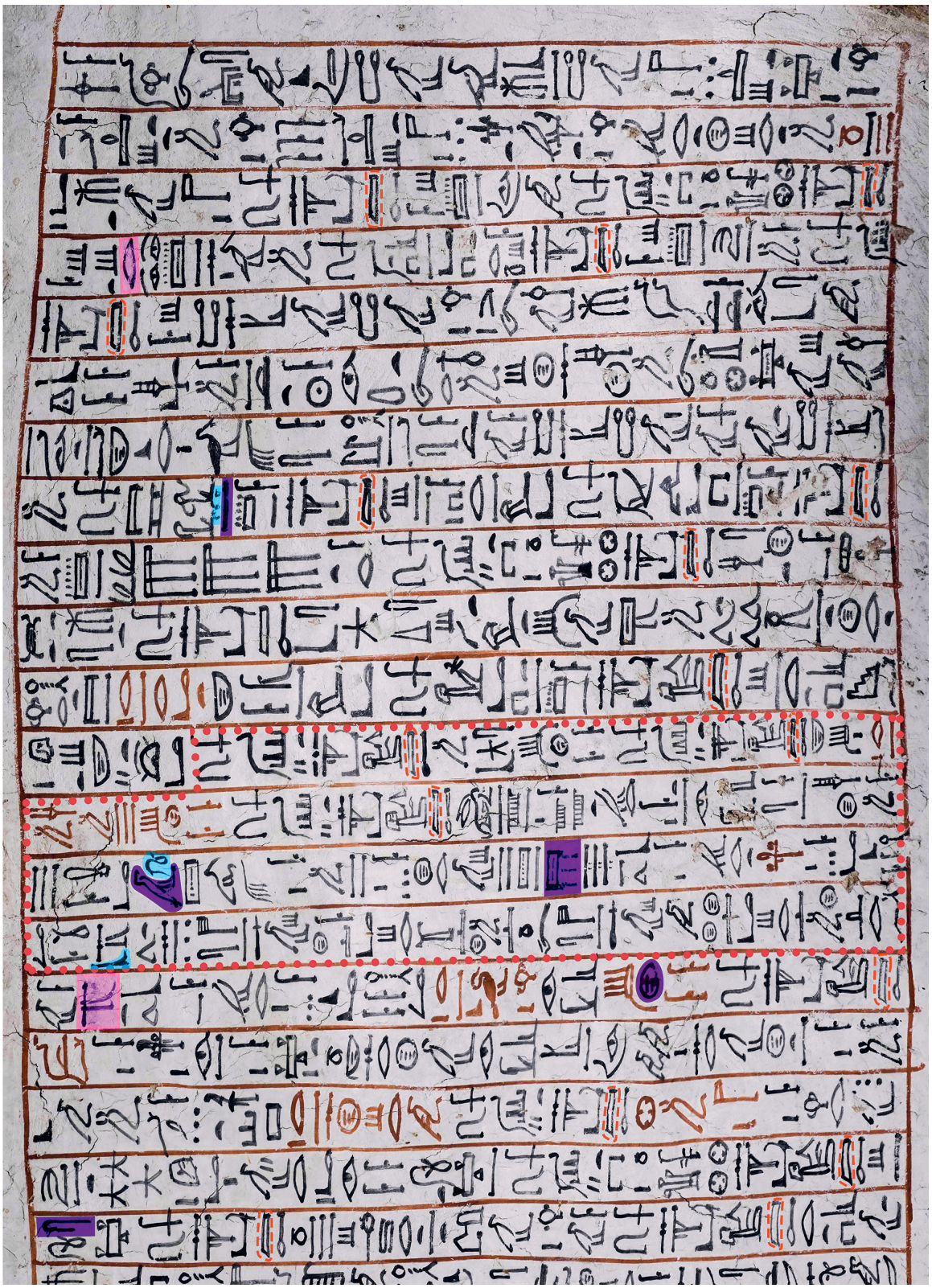



Fig. 10. Ortophotograph of Panel 3A in the burial chamber of Nakhtmin with indication of mistakes and emendations in the texts (for the code of colours used, see section 2.2). The panel was copied by scribes A and B (the latter's working area is demarcated by means of a red dotted line). NKS Project/ C. Ruiz Sánchez de León and D.M. Méndez-Rodríguez.


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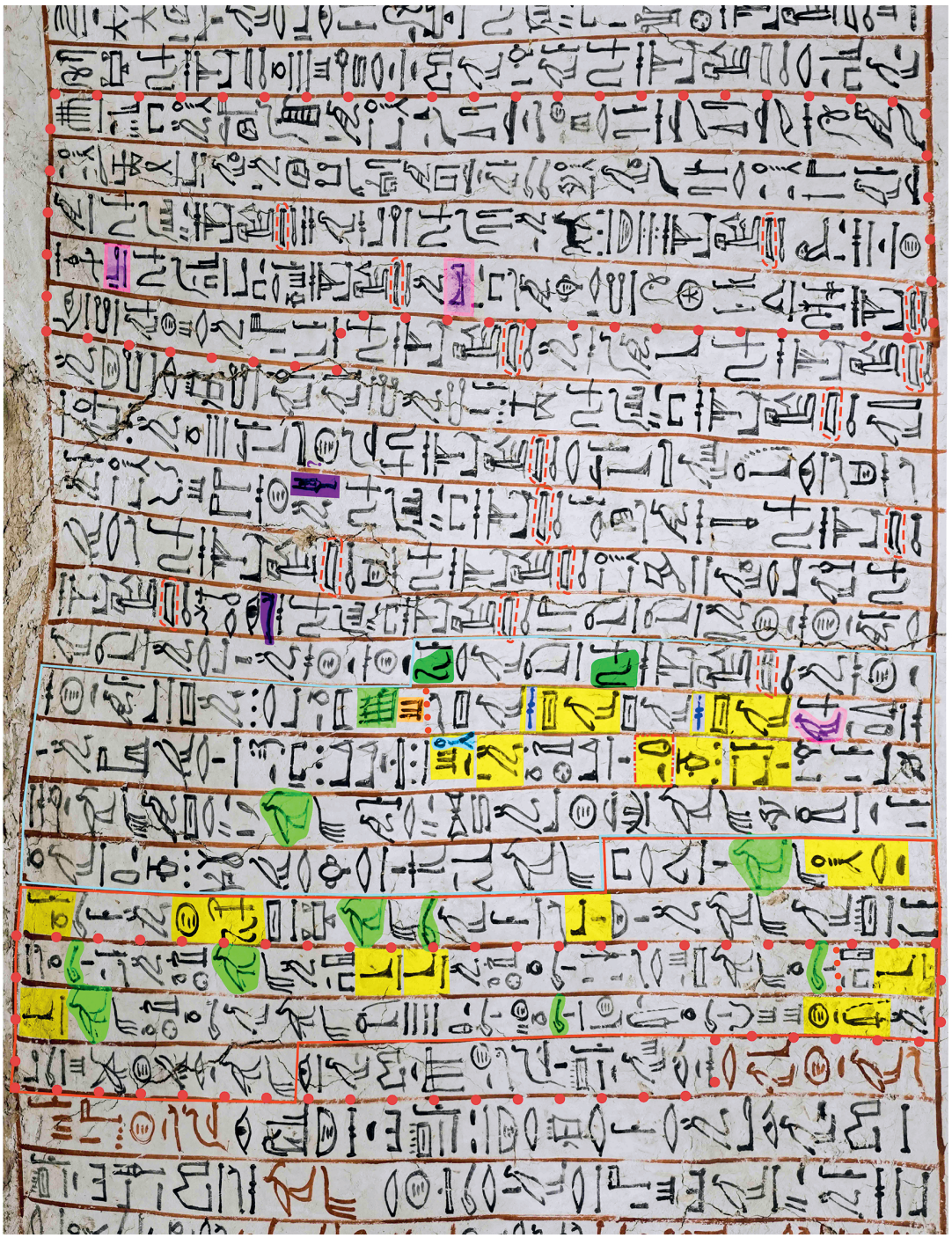



Fig. 11. Ortophotograph of Panel 3B in the burial chamber of Nakhtmin with indication of: ostraca employed as intermediate 'models' using red and blue lines and numbers; forms of scribal intervention in the texts (for the code of colours used, see sections 2.1 and 2.2). The panel was copied by scribes A and B (the latter's working areas are demarcated by means of a red dotted line). NKS Project/C. Ruiz Sánchez de León and D.M. Méndez-Rodríguez.


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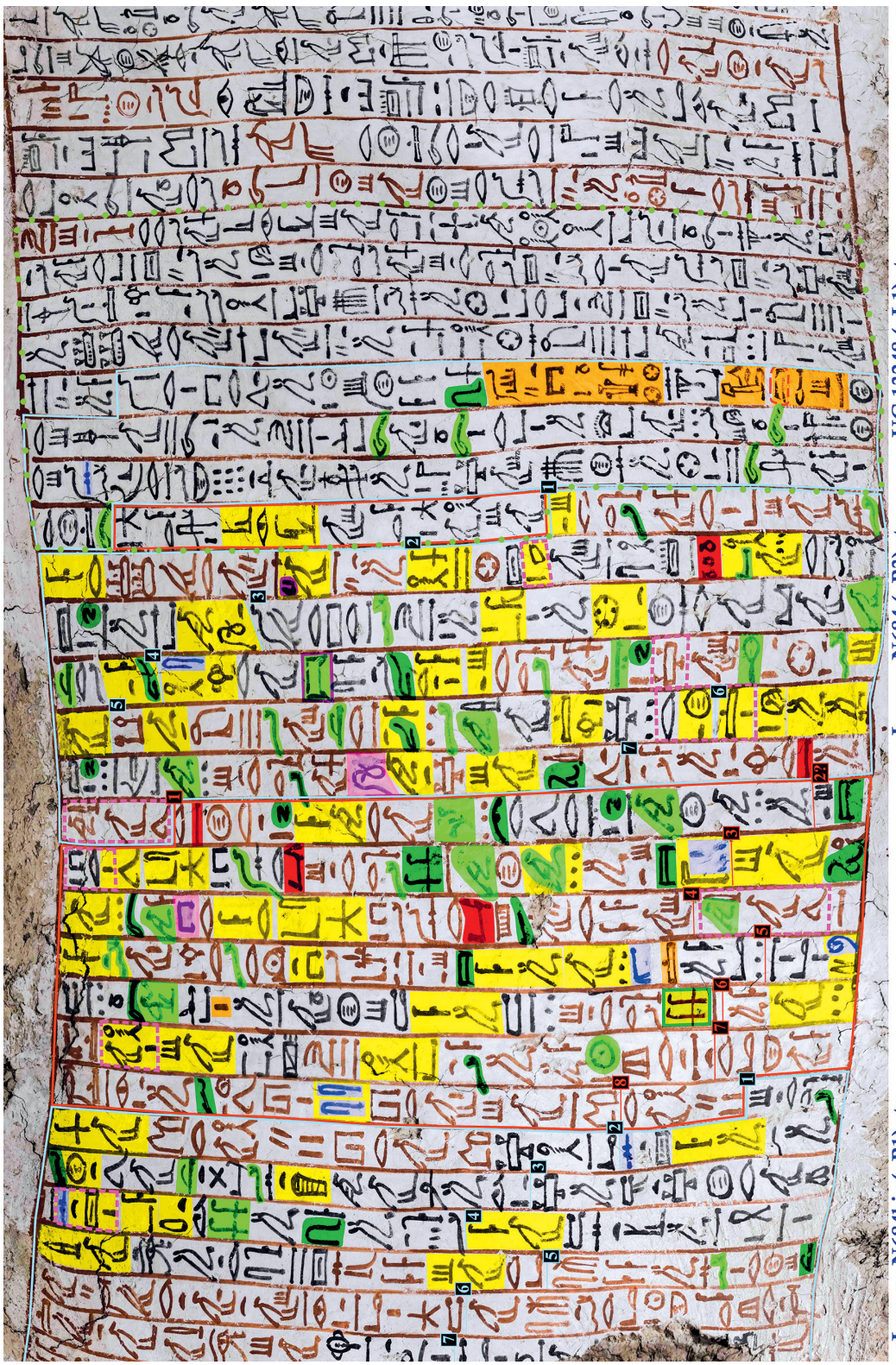



FIG. 12. Orthophotograph of Panel 3C in the burial chamber of Nakhtmin with indication of: ostraca employed as intermediate 'models' using red and blue lines and numbers; forms of scribal intervention in the texts (for the code of colours used, see sections 2.1 and 2.2). The panel was copied by scribes A and C (the latter's working area is demarcated by means of a green dotted line). NKS Project/C. Ruiz Sánchez de León and D.M. Méndez-Rodríguez.


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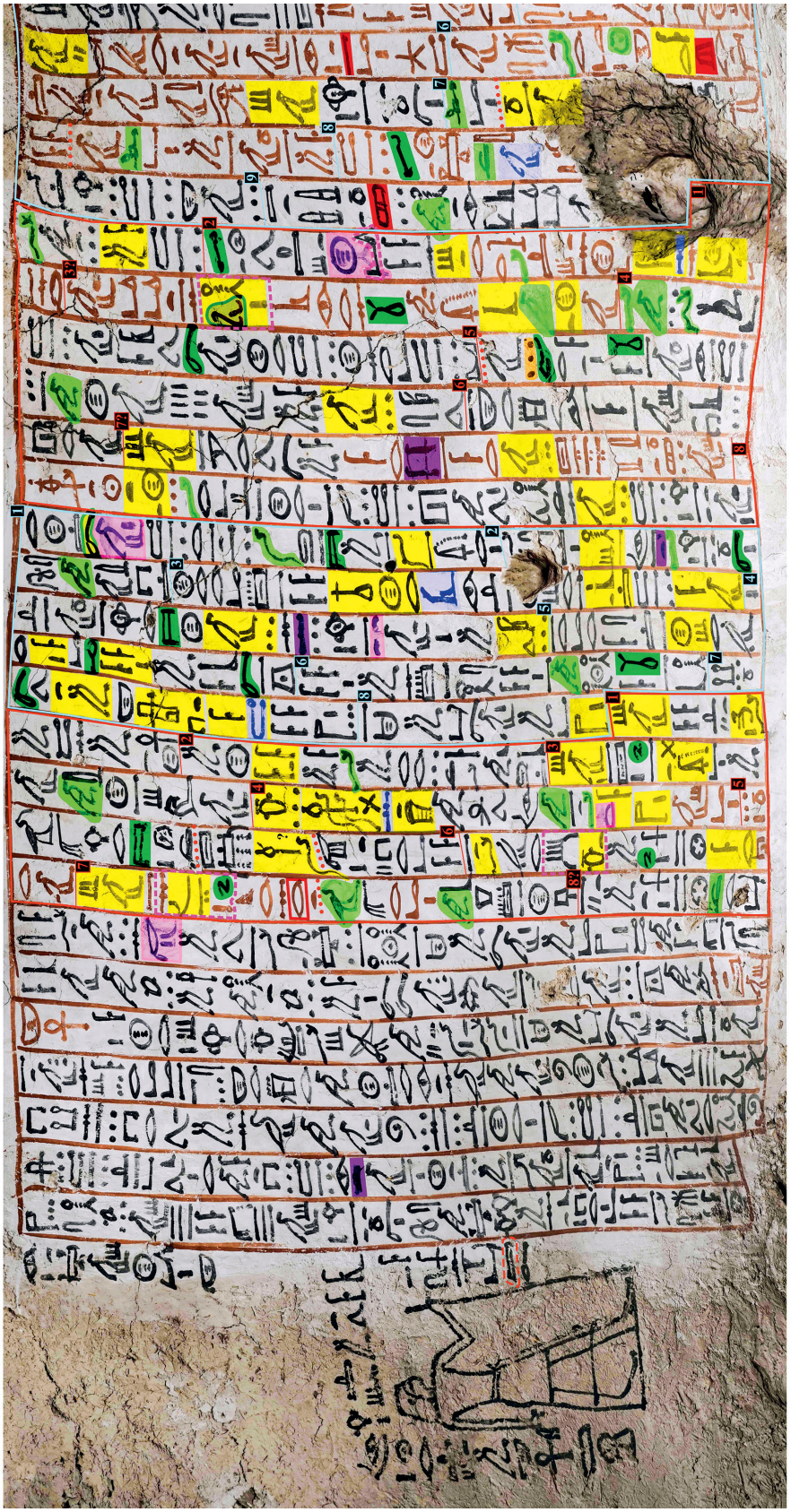



**Fig. 13.** Orthophotograph of Panel 3D in the burial chamber of Nakhtmin with indication of: ostraca employed as intermediate 'models' using red and blue lines and numbers; forms of scribal intervention in the texts (for the code of colours used, see sections 2.1 and 2.2). The whole panel was copied by scribe A. NKS Project/C. Ruiz Sánchez de León and D.M. Méndez-Rodríguez.


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14.



15.



16.



17.

**Fig. 14.** Substitution of the sign G43 on the ostracon (left: oP4 vso, col. 1) for Z7 at the bottom of a column on the wall (right: panel 1, col. 11) in the sentence *Rʿ pw* 'it is Ra'. Notice also a rearrangement of signs in the case of *Rʿ*, with the horizontal grouping of a low and broad sign and the stroke Z1 I on the wall.
**Fig. 15.** Rearrangement of an existing grouping in the intermediate 'model' (left: oP4 rto, col. 10) by the tabulation of the *n* (right: panel 1, col. 10).
**Fig. 16.** Two cases of changes of script. Above: cursivization or transformation of G1 from a hieratogram (left: oP3 vso, col. 4) into a cursive hieroglyph (right: panel 3, col. 88) in the word *ḏ3w* 'ferry, cross'. Below: monumentalization or transformation of V31 from a cursive hieroglyph (left: oP5 rto, col. 1) into a detailed hieroglyph (right: panel 2, col. 19) in the word *jnk*.
**Fig. 17.** Substitution of the sign O34 on the ostracon (left: oP1 rto, col. 3) for S29 on the wall (right: panel 3, col. 95) in the name of the god Seth. The change entailed the rearrangement of signs.

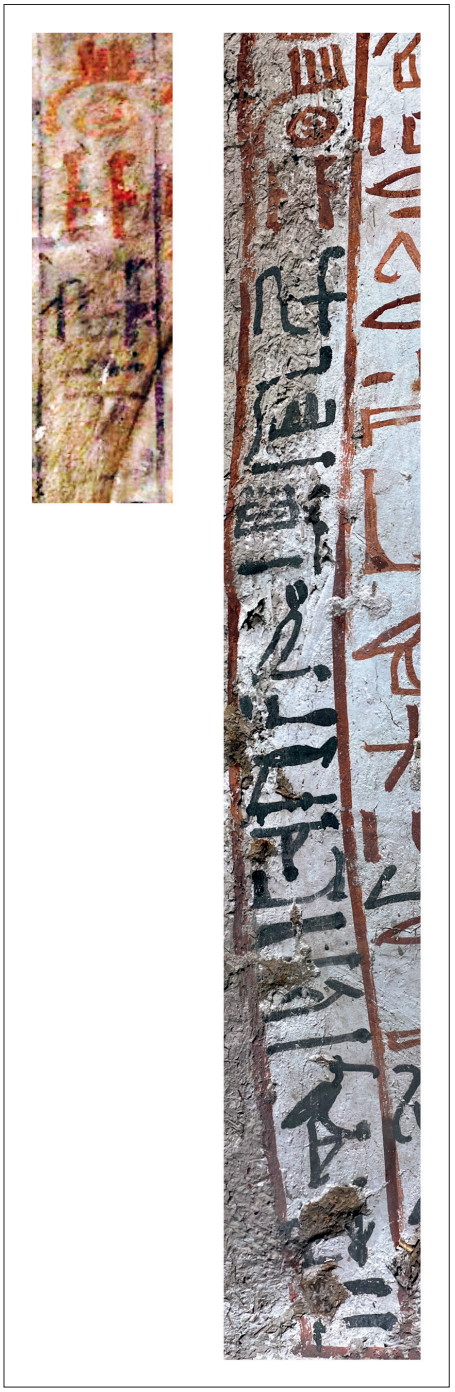

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18.



19.



20.

**Fig. 18.** Examples of anomalous orthographies derived from the re-arrangement of signs in quadrats. Comparison between ostraca and wall: above –left: oP4 vso, col. 2; right: panel 1, col. 13; below –left: oP5 vso, cols. 6–7; right: panel 2, col. 28.
**Fig. 19.** Rearrangement of signs in the word *wr*, involving the change of position of Z1. Left: oP4 vso, col. 3; right: panel 1, col. 13.
**Fig. 20.** Flexible use of the titles and filiation of Nakhtmin. Left: oP4 vso, col. 6; right: panel 1, col. 17.


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