

### 3 Selection criteria of sources and graphs

The Book of Kemyt is the core corpus of this study. To date, over 500 manuscripts have been recorded on various writing media (limestone ostraca, papyrus, pottery, walls, and writing tablets),<sup>1</sup> about half of which are still unpublished. Since it is not possible to include all 500 sources in the paleography, a selection has been made based on specific criteria, which are developed on the following sections.

The AKU project generally relies on several criteria to select a source for its database: securely dated, well-preserved, variety of text types, materiality, published and accessible.<sup>2</sup> For the needs of my project, I adopted a similar approach with a few adjustments.

#### 3.1 Dating

The first criterion, *securely dated source*, depends on the mention of a date on the written object or is determined based on textual reasons, ceramologic dating, find context, or prosopography for instance.<sup>3</sup> Even if a few Kemyt manuscripts do have a date, this does not help in dating them. These dates give season, month, and day but no regnal year nor king's name.<sup>4</sup> The Book of Kemyt has a strong reproductive tradition with little textual modification, making the textual reasons mostly irrelevant as well. At most, Ramesside copies, the dating of which is confirmed through the find context, episodically show Late Egyptian influence. For example, a perfective *s<sub>d</sub>m.f* form may replace the Middle Egyptian *s<sub>d</sub>m.n.f*.<sup>5</sup> While the fabric of ceramics may provide useful information to narrow the dating, ceramologic dating has rarely been applied to Kemyt sources.<sup>6</sup> In addition, Kemyt manuscripts do not always have a clear find context. Many museums hold little information in the record cards of ostraca stemming from last-centuries' excavations. For instance, the UCL Petrie ostraca are Ramesside in dating according to paleographic comparisons. Yet, a "10<sup>th</sup> Dynasty–Middle Kingdom" dating is attributed to O. UC 31909

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<sup>1</sup> Cf. Motte (2024, 92–93).

<sup>2</sup> Cf. Moezel (2022, 13), with additional reference to Gülden (2022).

<sup>3</sup> Moezel (2022, 13).

<sup>4</sup> See Motte (2024, 99–101).

<sup>5</sup> See Mathieu and Ritter (2008, 6).

<sup>6</sup> See for instance the Lisht ostrakon, O. MMA 15.3.988, in Motte (2022, 342, fn. 7).

for instance,<sup>7</sup> with no recorded provenance. The peculiarities of the Kemyt script may hinder dating by means of paleography. Most of the time, it is not possible to narrow down a Ramesside dating unless a colophon, a dedication, or an underwriting closes the manuscript, as in O. Cairo JE 56842 A/B from the hand of Panakht, under Ramesses II, or O. DeM 1171 A–B and O. Brussels E 3208 written by the scribe Hay, who lived under Ramesses III.<sup>8</sup> This is the only case in which prosopography helps to secure the dating of a Kemyt source.

## 3.2 Preservation

### 3.2.1 Legibility through image enhancement

The *well-preserved* criterion concerns the legibility of the text.<sup>9</sup> However, Kemyt manuscripts with fully preserved ink are exceedingly rare. The majority exhibit varying degrees of faint or light ink. The legibility may be improved thanks to two enhancing image tools: *Hierax* and *DStretch*.<sup>10</sup> The enhancement methods are different and therefore complementary. In my experience,<sup>11</sup> the software *Hierax* provides good results for the black-inked texts provided that they are not too faded. One selects or combines four processing methods (Adapthisteq, LSV, Retinex, Vividness) and two postprocessing (Negative, Blue Negative) prior to initiating the image enhancement process. Adapthisteq, LSV, and Vividness are usually more conducive than Retinex. The ink becomes darker, increasing the legibility of the sign *ductus*. The blue negative postprocessing image also provides insight into the hieratogram forms. The black ink appears white, making the *ductus* sometimes more intelligible (cf. fig. 3.1).

On the other hand, the *ImageJ* plugin *DStretch* often works miracles with the red ink,<sup>12</sup> which is usually less readable in most of the Kemyt excerpts. O. Turin, ME, CGT 57554 is a telling example (cf. fig. 3.2). It preserves six (maybe seven) vertical lines of the Book of

<sup>7</sup> It also holds true for O. UC 31910 and O. UC 31911. O. UC 31912, O. UC 31913, O. UC 31927, O. UC 31944, O. UC 31945, O. UC 31946, O. UC 31953 have a wider attributed chronological span (Middle Kingdom–New Kingdom), but they are also most likely Ramesside. See for instance <https://collections.ucl.ac.uk/Details/collect/46641> for O. UC 31953 (accessed on 23.01.2025). Its Ramesside dating is certain thanks to its joint piece found (and recorded, O. IFAO OL 6666) during the Deir el-Medina excavations led by Bruyère. See Motte and Ritter (2023).

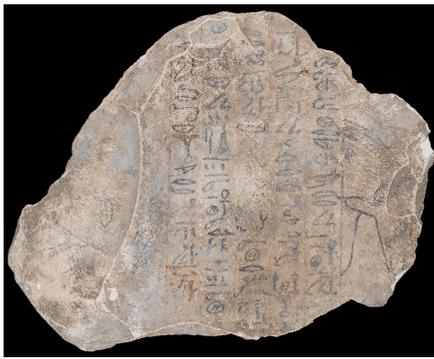
<sup>8</sup> Cf. Motte (2024, 96–99).

<sup>9</sup> Cf. Moezel (2022, 13).

<sup>10</sup> See <https://hierax.ch> and <http://www.dstretch.com> (accessed on 19.09.2024).

<sup>11</sup> For a detailed explanation of the processes, cf. <https://hierax.ch/#USAGE> (accessed on 14.10.2024).

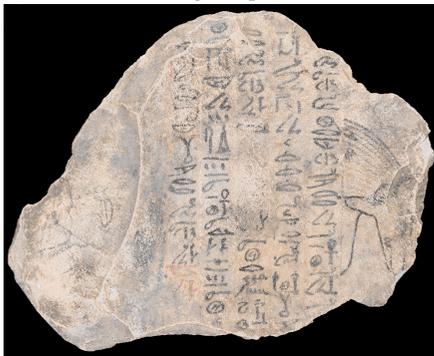
<sup>12</sup> The boundaries are not as clear-cut as one might think. For instance, the YBK filter in *DStretch* also turns out to be useful for faded black ink.



(a) Original picture



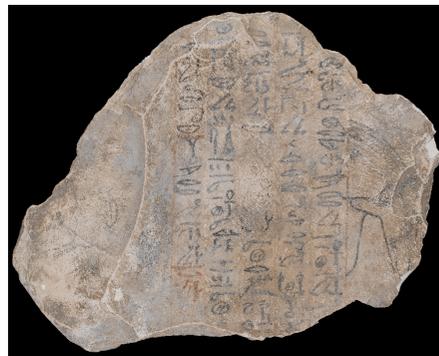
(b) Adapthisteq



(c) LSV



(d) LSV-neg blue



(e) vividness

Figure 3.1: Museum image and *Hierax* enhancement images of O. FM E.GA.4758.1943 (not to scale), courtesy of the Fitzwilliam Museum, Cambridge

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Kemyt (§§13–17) with sections in black and red inks. Line 5 shows the most astonishing result. López drew a few vague black and even fewer red traces in his handmade facsimile, without providing a hieroglyphic transcription for the upper part of the line.<sup>13</sup> This must be linked to the limitations of the naked eye. As soon as one opens a high-resolution digital camera image in *DStretch*<sup>14</sup> and applies one of the eight common filters, red ink appears with more or less intensity. The YYE is less satisfying than the others as the red ink becomes a neon pink hardly legible for an accurate drawing. On the other hand, the YBK filter yields poor results for the red ink but may be useful for the black-inked sections.

O. Turin, ME, CGT 57546 and O. Turin, ME, CGT 57545 are another impressive example. Both belong to the same ceramics, on which the same section of the Book of Kemyt (§§6–7) was written twice, from different hands, one over the other. The first, in red ink, is clumsy and betrays a lack of experience, while the black hand displays more care and mastery in their sign drawing. Without *DStretch*, one could not precisely draw the signs from the first hand without interpreting their forms. The ink overlay obscures the red hieratograms. Yet, when employing *DStretch* filters, the red ink becomes more visible and legible. The LRE, YRD, and YRE filters turn effective (for O. Turin, ME CGT 57546, cf. fig. 3.3).

Image-enhancing tools still have limitations. Sometimes, the ink remains too light, making it impossible to draw, even if the graphemes are recognizable and readable.<sup>15</sup> O. DeM 1639 verso is one of these examples<sup>16</sup> and, accordingly, has been excluded from the paleography. In the case of O. ISACM E25348 (fig. 3.4), the *DStretch* LRE filter unveils two red-inked dates in the upper left corner but their preservation state prevents the drawing of complete hieratograms, except for one of the N5 ◉ signs (see page 382). Incomplete hieratograms like these of O. ISACM E25348 have been included only when the form was informative (cf. section 3.2.2) and if the source also displays (a) perfectly readable sign(s).<sup>17</sup>

For these reasons, I have disregarded the *well-preserved* criterion from time to time, though I have attempted not to interpret the hieratogram forms. As I am (re)publishing

<sup>13</sup> López (1984, pls. 178–178a).

<sup>14</sup> By experience, the image should be 8 bits/layer. 16 and 32 bits/layer cannot be processed with *DStretch*.

<sup>15</sup> See for instance the sign Gardiner F40  in O. BM EA 29548 (cf. page 199 *infra*).

<sup>16</sup> See <https://www.ifao.egnet.net/bases/archives/ostraca/?id=20098> (accessed on 19.09.2024) for images.

<sup>17</sup> O. DeM 1141 has been left aside for this reason, despite the incomplete sign A2 , which might have been useful for comparative purposes provided the ink had been better preserved. Drawing this hieratogram would have required interpreting part of the *ductus*. See <https://www.ifao.egnet.net/bases/archives/ostraca/?id=19591> (accessed on 19.09.2024) for an image.

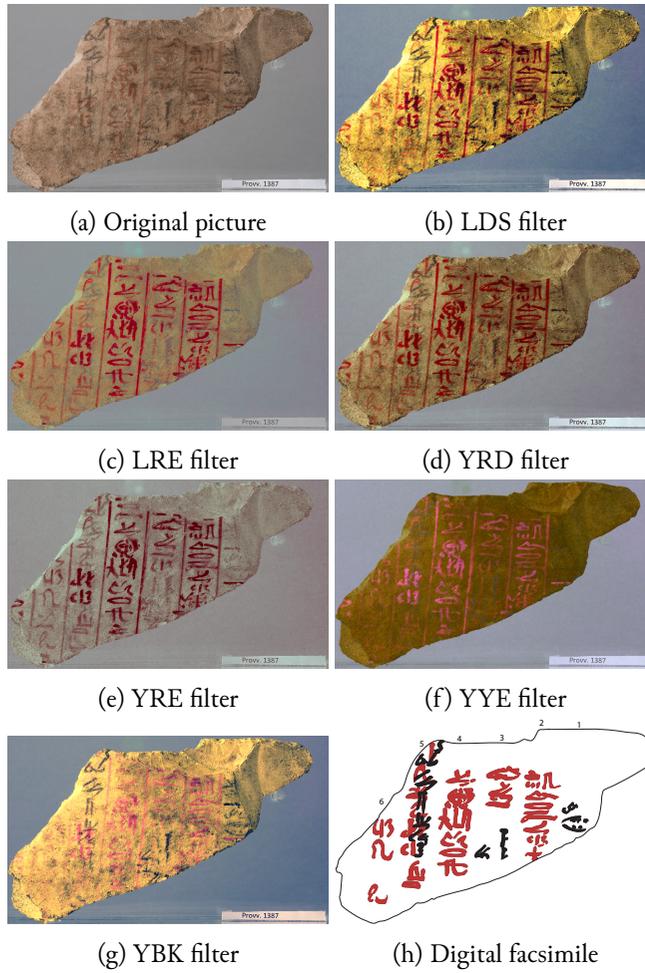


Figure 3.2: Museum image (Museo Egizio, Turin), *DStretch* enhancements, and digital facsimile (drawing by the author) of O. Turin, ME, CGT 57554 (not to scale)

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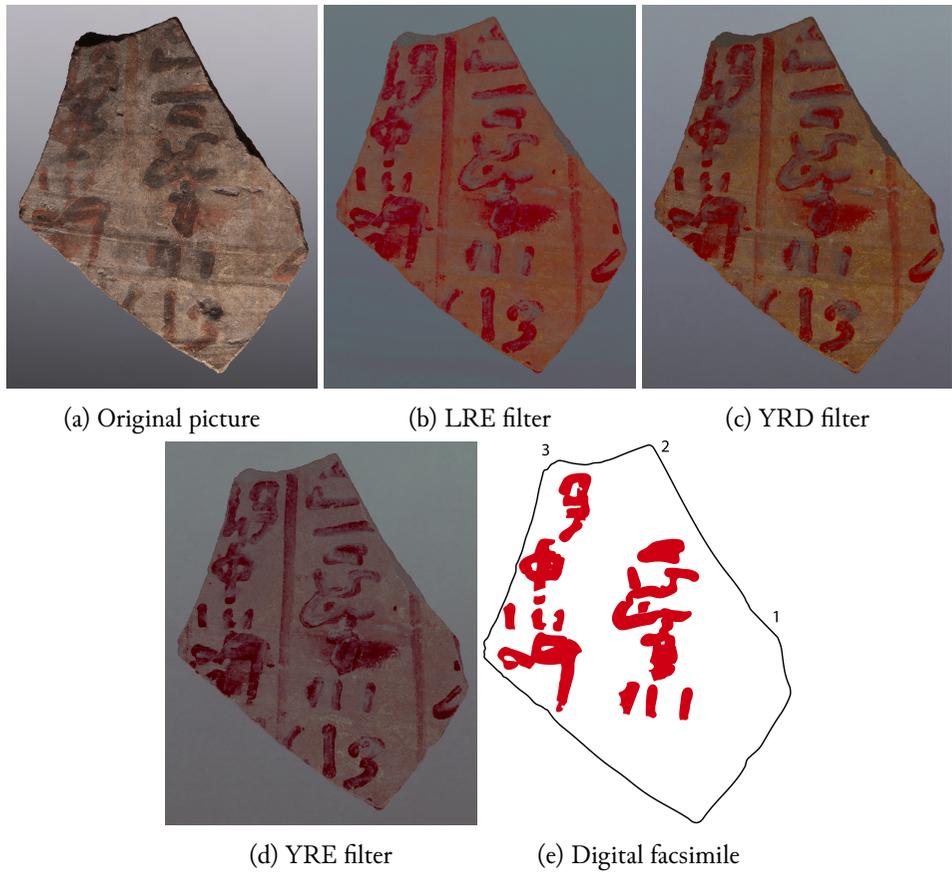


Figure 3.3: Museum image (Museo Egizio, Turin), *DStretch* enhancements, and digital facsimile (drawing by the author) of O. Turin, ME, CGT 57546 (not to scale)



Figure 3.4: Original and enhanced images (*DStretch*) of O. ISACM E25348, Courtesy of the University of Chicago Institute for the Study of Ancient Cultures West Asia and North Africa (not to scale)

the Kemyt sources, I have also occasionally deviated from the *published* criterion<sup>18</sup> and included unpublished material, whenever I held permission for its inclusion in this volume.<sup>19</sup>

### 3.2.2 Incomplete graphs

At first, I prioritized complete, well-inked graphs, but then reconsidered this in light of the source paucity. The peculiarity of the Kemyt script makes them useful for further comparisons, despite their incompleteness, but, for obvious reasons, it was impossible to draw (and include) every single incomplete or damaged hieratogram. The selected incomplete hieratograms mostly depend on their uniqueness and their usefulness for comparison. This uniqueness may be due to an unusual dating or provenance, to the grapheme, or even to the sign *ductus*. For instance, O. MMA 15.3.988 is the only known copy of Kemyt from Lisht. In the same vein, the last section of the Book of Kemyt, though not frequently copied, unveiled a new grapheme (*JSesh* US22A143VARA ) . Elaborate signs are rarely well-preserved and yet they display a variety of *ductus* (cf. also for instance *JSesh* A73  together with C11 , F40 , G30 , or G21  in the paleographic tables

<sup>18</sup> This is mainly due to time constraints. See Glden (2022) for more details.

<sup>19</sup> The remaining unpublished sources for which I hold permission, such as the IFAO material, will be first published as a catalog.

further below (chapter 5)). It holds for the owl sign (Gardiner G17 ) as well. In a few rare cases of group writing the owl proves to be a more cursive graph, closer to the contemporaneous hieratic script.<sup>20</sup> There is also an element of subjectivity. Sometimes hieratograms with slight damages were included too, as long as no interpretation of the *ductus* was required. This is the case for instance for Gardiner D21  and M17  in O. DeM 1119 or G5  in O. DeM 1127.

### 3.3 Materiality

This paleography aims at showcasing the materiality behind the text. In the process, it sheds light on the array of handwritings, from poor to well-trained, from clumsy to neat.<sup>21</sup> The Book of Kemyt has been mostly written down in excerpts,<sup>22</sup> on various writing materials,<sup>23</sup> from limestone flakes, to ceramics, to writing tablets, to walls, and to papyrus.<sup>24</sup> The sources were accordingly selected to reflect this diversity, as far as possible.<sup>25</sup> Copies of the Kemyt on papyrus are rare. I know of only one Late Middle Kingdom papyrus fragment (P. UCL 32271 A), which poorly preserves part of the first sections of the Kemyt.<sup>26</sup> In ascending order come next dipinti, on royal or private monuments, and writing boards. In Egyptological literature, the broad ostraca umbrella may encompass ceramics, limestone flakes, and limestone tablets.<sup>27</sup>

Ancient Egyptian scribes used these three writing supports for their Kemyt excerpts, with a prevalence of limestone flakes from West-Thebes during the Ramesside period. In this book, limestone tablets are recorded with an initial “T” in the catalogue of sources (cf. section 4.1) to align with the wooden writing boards, whereas ceramics and limestone flakes are both catalogued as “O. xxxx.” In total, the paleographic tables (chapter 5) incorporate 5667 hieratograms from 204 ostraca (164 limestone chips – 40 ceramics),

<sup>20</sup> Cf. Motte (2022, 361–364).

<sup>21</sup> Compare for instance O. DeM 1111 (= O. Cairo, IFAO, 2543), most probably one student’s exercise versus O. Florence 7138, with an elegant hieratic hand. The first is a limestone flake for someone belonging or connected to the Deir el-Medina workforce to practice their skills, whereas the second is a fragment of a ceramic jar displaying the owner’s literacy and writing skills.

<sup>22</sup> O. Cairo JE 56842 A/B may have been a copy in extenso of the Book of Kemyt. In its current state of preservation, the manuscript has §§IVc–XVII.

<sup>23</sup> For the impact of the writing support on the facsimile type, cf. section 3.5.1.

<sup>24</sup> Cf. Motte (2024, 92–93).

<sup>25</sup> The sources not included in this paleography are either ostraca or ceramics. Cf. section 3.4 for the selection criteria, among which stands out the accessibility and the permission to publish.

<sup>26</sup> See <https://collections.ucl.ac.uk/Details/collect/40704> (accessed on 23.01.2025).

<sup>27</sup> See for instance the Kemyt manuscripts housed in the IFAO and published in the *Catalogue des ostraca littéraires de Deir el-Médina*, Gasse (2005).

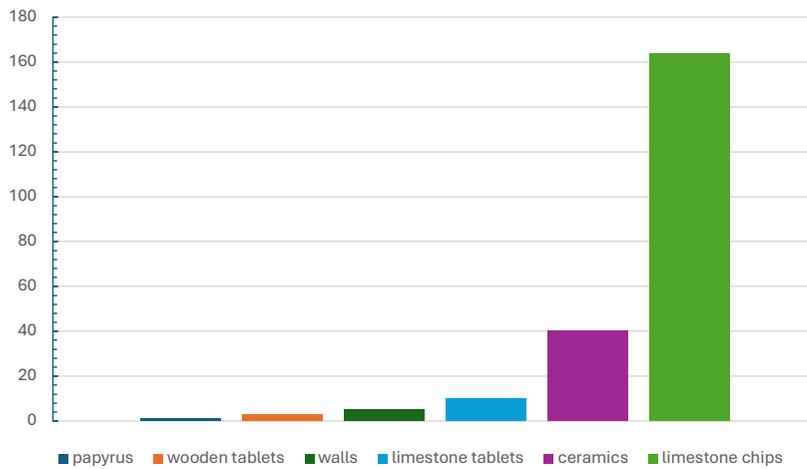


Figure 3.5: Distribution of the selected sources based on the writing medium

13 writing tablets (10 limestone tablets – 3 wooden tablets), 5 dipinti, and 1 papyrus (cf. fig. 3.5).

### 3.4 Accessibility

While some sources remain *in situ*, the vast majority are now housed in museums and research institutions worldwide (cf. fig. 3.7 and section 4.1 for the selected sources only). The *accessible* criterion requires securing high-resolution images with minimal delay. The duration of my termed postdoctoral fellowships imposed practical limits on delays to achieving the paleography and is one of the reasons why some sources, such as the Merenptah ostraca,<sup>28</sup> have been excluded from this book (fig. 3.6).<sup>29</sup> Figure 3.7 breaks down the 223 selected sources according to their current location, either on-site or in museums or research institutes.

<sup>28</sup> The ostraca, which are pottery fragments, are housed in the currently closed Merenptah Museum. Matthias Müller accordingly published the five Kemyt ostraca relying on black-and-white paper slips (9 × 13 cm) (Matthias Müller, pers. comm.). See the ostraca chapter in Dominicus and Jaritz (2023, 54–56).

<sup>29</sup> It should also be noted that the pandemic hindered museum visits and slowed down HR-image acquisition.

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Figure 3.6: O. Merenptah Kat. Nr. 12 (K<sub>5</sub>) © Dominicus and Jaritz (2023)



Figure 3.7: Current locations of the 223 selected Kemyt sources

## 3.5 Processing status

### 3.5.1 Facsimiles made by the author

The paleographic tables in chapter 5 display mostly (but not only) my drawings (cf. section 3.5.2). I have favored digital drawings with *Adobe Illustrator* and a creative pen tablet (*Wacom Intuos Pro*), after the AKU method, for which I was trained during my Humboldt fellowship.<sup>30</sup> Digital facsimiles proved to be more advantageous than other methods for many reasons. For instance, it enables the conversion of facsimiles into vector graphics, in contrast to software such as *Adobe Photoshop*, without any loss of quality during the digital processing.<sup>31</sup> For this reason, I have decided to make digital drawings of the published IFAO material (ostraca and limestone writing tablets<sup>32</sup>), even if some of them had been previously drawn by Annie Gasse.<sup>33</sup> We indeed realized that our techniques were different (but complementary).<sup>34</sup> However, digital facsimiles also have their limitations. Facsimiles with tracing paper are sometimes more conducive. For instance, when the limestone is uneven or not flat enough to provide satisfying digital facsimiles, I opted for tracing paper and inks to secure a 1/1 scale for every hieratogram. I thus drew the signs of O. DeM 1112, O. DeM 1113, O. DeM 1116, O. DeM 1122 ro, O. DeM 1125, O. DeM 1131, O. DeM 1132, O. DeM 1135, O. DeM 1138 A-B, O. DeM 1142, O. DeM 1143, O. DeM 1144, O. DeM 1145 A-B, O. DeM 1151, O. DeM 1154, O. DeM 1163, O. DeM 1164, O. DeM 1165, O. DeM 1167, O. DeM 1171A, O. DeM 1782, O. DeM 1826, O. DeM 1865, O. DeM 1866, O. DeM 1870 + 1872<sup>35</sup>, and O. DeM 1873 in the same way as the digital facsimiles, i.e. with dark black or red ink but without lighter nuances to copy the current state of ink preservation on the artefacts. Nuancing the ink color hinders the process and makes comparisons with other hieratograms less easy for the machines. I proceeded

<sup>30</sup> Svenja A. Gülden trained me during the first months of my Humboldt fellowship. The description of the method is part of her dissertation “Hieratisch der 18. Dynastie. Untersuchungen zur Schrift von Dipinti und Briefen auf Papyrus” (in preparation). Step-by-step instructions are in preparation. They will be published in due course in the project blog Hieratisch AKUell (<https://aku.hypotheses.org>). Cf. Moezel (2022, 19, fn. 31).

<sup>31</sup> Cf. Moezel (2022, 19–24) for a more detailed explanation, including references to Berg and Donker van Heel (2000, 39–42), and Gülden (2018, 83–109).

<sup>32</sup> Limestone writing tablets are usually assimilated with the ostraca.

<sup>33</sup> See Gasse (2005).

<sup>34</sup> Pers. comm. with Annie Gasse during my scientific mission at the IFAO in October 2024.

<sup>35</sup> In Gasse (2005, 157–159), the limestone tablets O. DeM 1870 and O. DeM 1872 are presented as two different artefacts. However, they are joint pieces. O. DeM 1870 is the upper and O. DeM 1872 the lower part. I connected both parts during my scientific mission at the IFAO in October 2021 and made a new facsimile, in which four signs from both parts were merged.

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in the same way with the ceramic sherds, i.e. O. DeM 1109, O. DeM 1115 A-B, O. DeM 1129, O. DeM 1137, O. DeM 1173, O. DeM 1828, O. DeM 1835, O. DeM 1844, O. DeM 1850, O. DeM 1852, and O. DeM 1854. These drawings have then been scanned in high resolution, imported as TIFF files, and digitized to ensure vector graphics<sup>36</sup> in the same vein as the *Adobe Illustrator* drawings (cf. section 3.5.2).

Conversely, the pottery fragments from the Petrie Museum (London) and Museo Egizio (Turin) have exceptionally been drawn digitally, for it was not possible to visit museums in person during the COVID-19 pandemic. As a result, O. UC 31909, O. UC 31910, O. UC 31911, O. UC 31912, O. UC 31913, O. UC 31944, O. UC 31945, O. UC 31946, O. Turin, ME CGT 57054, O. Turin, ME, CGT 57286, as well as O. Turin, ME, CGT 57546 and its joint piece O. Turin, ME, CGT 57545 have been drawn digitally despite the fact that they are ceramic sherds. Another exception is the almost fully preserved ceramic O. DAN hierat. 5, the drawing of which was done based on the published black-and-white pictures.<sup>37</sup>

Lastly, it should be noted here that the digital drawings of O. MMA Field No. 35144, O. MMA Field No. 36112, and T. Carnarvon III have been made based on black-and-white pictures from previous publications.<sup>38</sup>

#### 3.5.2 Facsimiles made by others

In sum, of the 223 sources, 30 drawings come from previously published material, while the other 193 (86%) are by my hand (cf. the pie chart in fig. 3.8). It means that 739 of 5698 hieratograms and sign groups in this paleography have been drawn by someone else than myself. I indeed intend to valorize recent works on the Book of Kemyt, whenever possible, and the next list (table 3.1) presents the dipinti, ostraca, and writing board drawn by colleagues who consented to share their data for the benefit of this paleography and the AKU database.

<sup>36</sup> Cf. Gülden (2018, 99–102) and Gerhards and Konrad (2022, 199–202) for a detailed explanation.

<sup>37</sup> Burkard (2018, pl. 4–5).

<sup>38</sup> See Hayes (1948) and Carnarvon and Carter (1912, pl. 76). O. MMA Field No. 35144 and O. MMA Field No. 36112 are now in the Egyptian Museum Cairo. Their temporary registration numbers are TR 25/3/52/1\_(8), TR 25/3/52/1\_(15+19), respectively, as O. MMA Field No. 36112 has been inscribed on both sides. They are part of Box SR 7/18951. Similarly, T. Carnarvon III, previously housed in the same museum (Cairo JE 43217), has been moved to the Grand Egyptian Museum (GEM) in Giza. Its new inventory number is GEM 1523.

Table 3.1: List of previously published facsimiles and drawings

Document	Drawn by
Assiut dipinti in tomb N13.1: TN6, TN8, TS10	Svenja A. Glden and Ursula Verhoeven with <i>Abode Illustrator</i> (Verhoeven 2020)
Dahshur dipinto (Reg. no. 03.467)	Hana Navratilova with <i>Adobe Illustrator</i> (Motte and Navratilova 2022)
Saqqara dipinto in the tomb of Pthahemwia: graffito 14	W. Paul van Pelt and Nico Staring with <i>Adobe Illustrator</i> (Pelt and Staring 2020)
O. Amheida 11050	Olaf Kaper with tracing paper (Kaper 2010)
O. Amarna EA 329, O. Amarna EA 330	J. D. S. Pendlebury with tracing paper? (Pendlebury 1951)
O. Nprstek P 2034, O. Nprstek P 3824, O. Nprstek P 3826, O. Nprstek P 3830	Hana Navratilova and Vlastimil Vrtal with <i>Adobe Illustrator</i> (Navratilova and Fischer-Elfert 2018)
O. T3.L11, O. T3.L12, O. T3.L13, O. T3.L14, O. T3.L15, O. T3.L16	Fredrik Hagen with <i>Adobe Fresco</i> (Hagen 2021)
O. Ramesseum 2005-STO-003, O. Ramesseum 2008-APS-036	Christophe Barbotin with tracing paper (Barbotin and Leblanc 2023)
O. UC 31953 + O. IFAO OL 6666	Vanessa Ritter with <i>Adobe Photoshop</i> (Motte and Ritter 2023)
T. Luxor J 1001	Jos M. Galn with <i>Adobe Photoshop</i> (Galn 2007)
O. DeM 2018_M25_038, O. DeM 2018_M25_176 + 2019_M25_096, O. DeM 2019_M25_073, O. DeM 2019_M25_122, O. DeM 2019_M25_125, O. DeM 2019_M25_140, O. DeM 2019_M25_167, O. DeM 2019_M25_197, O. DeM 2020_M25_524, O. DeM 2020_M25_634	Julian Posch with <i>Adobe Illustrator</i> (Posch 2022)

The facsimiles drawn with *Adobe Illustrator* enabled their import as SVG files in the internal AKU project database. O. T3.L11, O. T3.L12, O. T3.L13, O. T3.L14, O. T3.L15, O. T3.L16 were drawn on an *iPad Pro* with an *Apple Pencil*, using *Adobe Fresco* (previously *Adobe Photoshop Sketch*) based on digital photographs.<sup>39</sup>

<sup>39</sup> Fredrik Hagen, pers. comm. 15.10.2024.

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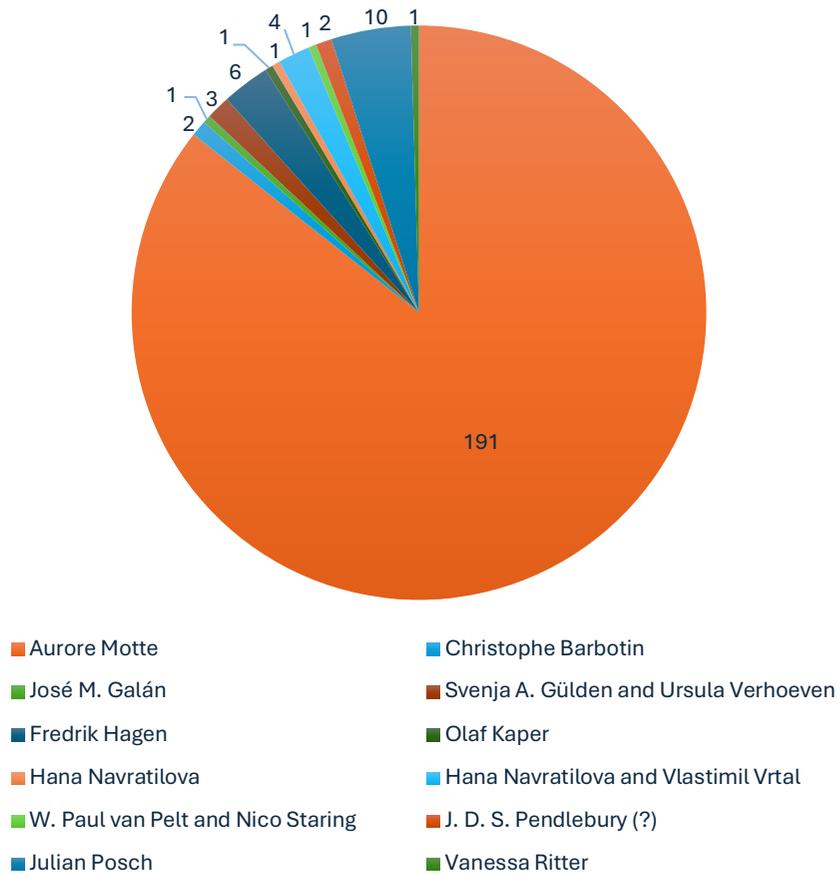


Figure 3.8: Proportion of facsimiles made by the author and by others

The joint pieces O. UC 31953 + O. IFAO OL 6666 were drawn with *Adobe Photoshop*, while tracing papers were used for the ceramics (O. Amheida 11050, O. Ramesseum 2005-STO-003, and O. Ramesseum 2008-APS-036). As such, the hieratograms have been saved as TIFF and then converted to SVG files (cf. also section 3.5.1, fn. 36).

The O. Amarna EA 329 and 330 are also part of this section inasmuch as their current location is unknown (cf. fig. 3.9 for a black-and-white picture). The Pendlebury (?) drawings remain the only way to compare the hieratograms of these two Amarna manuscripts with the other sources.

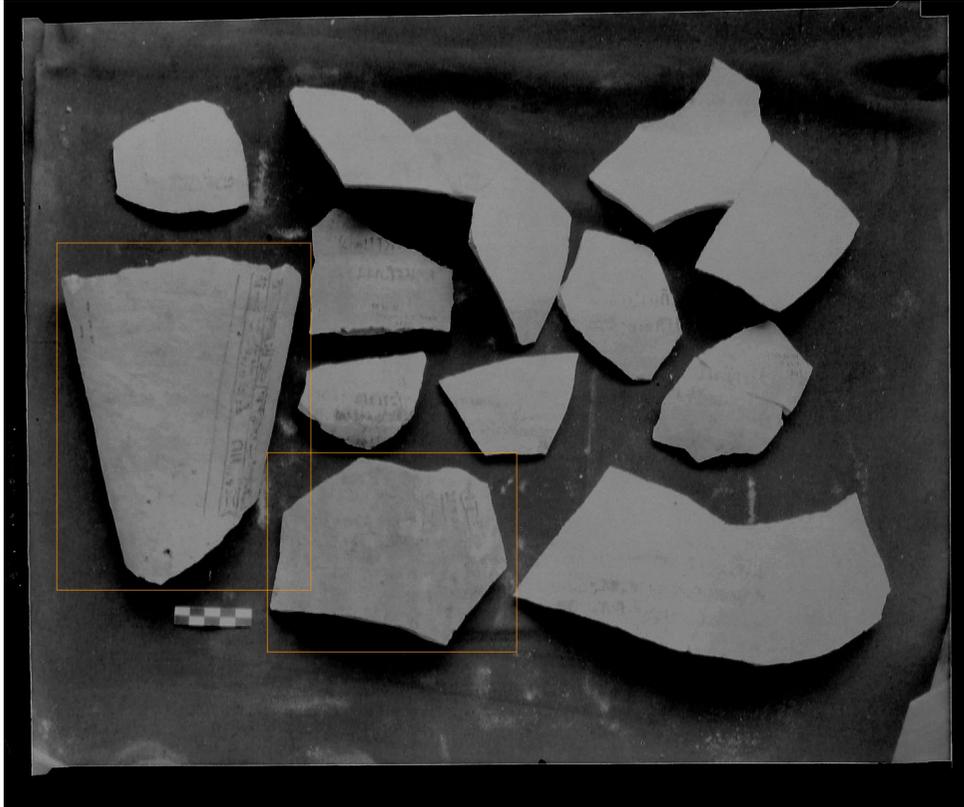


Figure 3.9: A black-and-white picture of O. Amarna EA 329 and 330 (left lower corner, orange frames) after their discovery at Amarna, The Egypt Exploration Society