Everyday Communication in Antiquity: Frames and Framings
edited by Klaas Bentein

Medium, Procedures and Conventions
A Framework for Analysing the Materiality of Documents on Papyrus

Serena Causo
Universiteit Gent, België

Abstract This essay aims to expand the understanding of the materiality of ancient documents on papyrus by analysing the impact that medium, procedures, and conventions had on the production of written artifacts. Building upon Bateman's production constraints – canvas, production technology, and consumption milieu – this study offers a dynamic investigation of the material and visual aspects of administrative documents from the Roman period. Relying on systematic data collection, this analysis will show how seemingly insignificant material and layout features can reveal crucial aspects of the dynamics of production and use of ancient documents, enriching our understanding of past societies and their writing technology.

Keywords Materiality. Administrative papyri. Documentary roll. Writing technology. Height.

Edizioni Ca'Foscari

Lexis Supplementi | Supplements 18
Studi di Letteratura Greca e Latina | Lexis Studies in Greek and Latin Literature 11
e-ISSN 2724-0142 | ISSN 2724-377X
ISBN [ebook] 978-88-6969-886-6 | ISBN [print] 978-88-6969-887-3

Peer review | Open access
Submitted 2024-05-21 | Accepted 2024-01-13 | Published 2025-04-24

DOI 10.30687/978-88-6969-886-6/002

1 Introduction

Most readers of this article will be acquainted with Jack Kerouac's *On the Road*, the quintessential literary work of the American Beat Generation movement. Less known, yet quite paradigmatic of the general spirit of Kerouac's work, is the story of the composition of this novel. The author wrote *On the Road* on his typewriter, in a relentless writing streak of no less than twenty days, from April 6th through April 26th in 1951. By then, typewriters were already a common writing tool, both for business and personal use, and Kerouac was especially famous for being a remarkably adept and very fast typist, and could type 100 words per minute.

While writing *On the Road*, however, the necessity to constantly insert clean sheets into the typing machine became too disruptive for his level of creative energy and writing pace. He soon realised that the material he was using came short of his requirements. Instead of using single sheets, he decided that writing on a continuous roll of paper would not only better suit his needs, but also create a format more attuned to his 'beat-generational' stream of consciousness and to the very content of his work. Using several rolls of paper of 3.5 meters each, he taped them together – trimming them on the sides where necessary – and created a custom-made 36.5-meters long roll, which both fit his typewriter and his own particular desire to write without interruptions.

> From Apr. 2 to Apr. 22 I wrote 125,000 [word] full-length novel averaging 6 thous. a day, 12 thous. first day, 15,000. [...] Went fast because road is fast... wrote whole thing on a strip of paper 120-foot-long (tracing paper that belonged to Cannastra) – just rolled it through typewriter and in fact no paragraphs... rolled it out on the floor and it looks like a road.[1]

The scroll was never submitted in this form to any publishers, but Kerouac sent over manuscripts based on the first version of the text as featured on the scroll. The material features of the roll, in fact, were not in the least practical for a publisher to read, edit or format, let alone suitable for publication. When *On the Road* was eventually published in 1957, it had naturally acquired the standard form of a

This article is based on my doctoral dissertation, written as part of a double PhD program between Ghent University and the École Pratique des Hautes Études, and funded by the ERC Project EVWRIT (2019-24). Certain sections of the article are directly drawn from the dissertation, while others have been rewritten for this publication.

1 Kerouac in a letter to his friend Neal Cassady. For an overarching discussion of the production of Kerouac's scroll, see Hunt 2014.

bounded book, as required by the market and reading culture, leaving no trace of its unique original physical form. Not only was the original roll form altered, but also the language of certain passages – which at times was excessively explicit or graphic – was modified to align with the social values of the time.

The original scroll was acquired in 2001 by a private collector for the amount of 2.43 million dollars. The staggering price is matched by the uniqueness of this written artifact, not only because it is a *unicum* within modern literary production but also because it provides a rare insight into the production process of a major literary work, showing how the creative vision of the writer was influenced and shaped by the materials and methods used.

In this sense, it is paradigmatic of the strong interconnection between textuality and materiality: on the one hand, it embodies the struggle between the will and vision of the writer and the technology of the period; on the other hand, it exposes the dichotomy that exists between the spontaneous act of creation of a written artifact and the standards imposed by the social and cultural environment. Overall, it shows how personal, material, technological, and social factors intervene to shape the final form of a written text.

These factors – material, technology, and social environment – are systematically explored by Bateman in his work on the semiotics of multimodal documents. Bateman identifies these elements as "constraints" of production that influence and guide the creation of a document.[2] According to his framework, understanding these constraints is essential to uncovering the interplay of forces that determine the form and function of a written artifact. Bateman categorises these constraints into three distinct yet interconnected types:

1. **Canvas constraint** refers to the physical properties of the medium, such as the size or the properties of the material, which inherently shape what can and cannot be done with it.
2. **Production constraint** pertains to the limitations imposed by the technology and tools available at the time of creation, such as writing implements, machinery, or software.
3. **Consumption constraint** relates to the broader socio-cultural and temporal context in which the document is produced and consumed.

Building on Bateman's concept of constraints, this article introduces a tripartite framework tailored to the study of the materiality of documents on papyrus: material, procedural, and relational. Each of these frames offers a unique lens for exploring the materiality of papyrus documents and the forces that shaped their creation and use.

2 Bateman 2008, 15-19, esp. 17-18.

2 The Frames

The materiality of a document is shaped by three main agents: the writing support, the agency of the writer, and the influence of social and cultural conventions. These three elements operate interdependently.

- **Material frame** investigates the physical properties of the papyrus itself, including its dimensions, quality, and preparation methods. This frame is based on the notion that the features of the medium strongly affect the writer's freedom of conceptualising and producing a written object, hence shaping its materiality. By addressing the question 'What are the characteristics of the writing medium?' this frame aims to examine the properties of the writing support used in order to comprehensively understand the materiality of the written object. In the case of papyri, the material characteristics of the rolls can play a crucial role in shaping the materiality of the documents.
- **Procedural frame** is related to the process of production of a document and the agency of the writer. It answers the question 'How was the document made?'. According to his level of competence, the writer holds the expertise for producing a written document: this involves both the composition of the text and the definition of its physical form. The choices made during the production process – ranging from the selection of materials to stylistic decisions such as format or layout – significantly impact the outcome. This frame relies on the idea that the writer's technical skills, intent, and knowledge directly influence the document's material and textual features, therefore representing a 'subjective' frame.
- **Relational frame** considers the broader social, cultural, and economic context in which the document was created, circulated, and used. It concerns the influence that social and cultural conventions (or writing conventions) exert on the composition of a document, answering the questions 'How does it relate to similar documents?' or, more simply, 'Why was it made in this way?' This frame focuses on the interconnection between the document and the environment in which it is produced and circulated. It explores how specific material features interact to produce meaning in a context, contributing to the overall functioning of the system. The foundation of this frame lies in the notion that interactions among individuals – or between individuals and social institutions – are ruled by conventions and standardisation of practices. This represents the 'intersubjective' frame, wherein the individual writer – producing the document through their expertise – applies socially acquired knowledge, thus creating meaning that is socially constructed.

Table 1 Overview of the frames

Frame	Agency	Type	Question
Material	Writing medium	Objective	What are the characteristics of the writing medium?
Processual	Writer	Subjective	How was the document made?
Relational	Writing conventions	Intersubjective	How does the document relate to other documents?

An overview of these frames is presented above **[tab. 1]**. Together, they provide a comprehensive methodology for addressing a fundamental question: *why does a document present a specific materiality?* By integrating the material, procedural, and relational aspects of papyrus documents, this approach sheds light on the dynamic interplay of factors shaping their creation and final form.

3 The Corpus

The original corpus includes 2.500 administrative and legal documents from Roman and Byzantine Oxyrhynchos – declarations, applications, petitions, receipts, summons, contracts, reports of proceedings, lists, and accounts. Extensive information on the materiality of these documents was collected in the EVWRIT Database.[3] This includes (i) the preservation status of the document (complete or broken) and (ii) the position of breaks; (iii) the size of the document; (iv) the size of the margins; (v) the use of the *recto*/*verso*; (vi) the writing direction; (vii) the format; (viii) the form (i.e. roll, sheet, *rotulus* or codex); (ix) the number of columns; (x) the number of lines; (xi) the position of the *kolleseis*; (xii) the width of the *kollemata*; (xiii) the height of the line and (xiv) the height of the interlinear space. The cross-analysis of this information allowed for a comprehensive understanding of the materiality of these documents, contributing new valuable insights into the technology of writing and administrative practices on papyrus.

Administrative and legal documents serve as an ideal foundation for evaluating the potential of these frames. Their abundance in the papyrological record provides ample data for quantitative analysis,[4]

3 For an overview of the Database, see Bentein 2024.

4 See Palme 2009, 375, 377.

while their textual diversity offers a wide range of content to study. At the same time, their standardised nature and tendency to follow consistent patterns make it easier to observe relationships between documents of the same type and to analyse interactions across different types of documents.

This contribution only includes a small selection of examples exerted from my doctoral research on the materiality of administrative documents from Oxyrhynchos. Given the limited scope of this article, I have omitted the lists of documents used for the quantitative analyses discussed herein. It is my aspiration that these materials will be made available in future publications and become accessible for further research.

4 Material Frame

Papyrus is the most attested writing material for the Graeco-Roman and Byzantine periods.[5] Papyrus paper was sold in the form of rolls.[6] A roll could be used in its entirety for literary works, accounts, or other types of registers; however, it was more often cut to produce individual documents of various sizes.

With a history of uninterrupted use spanning over several centuries this writing support certainly underwent a certain degree of changes: the analysis conducted by Krutzsch on material features of the papyrus paper, such as its colour and fibral structure, has shown that the general quality of manufacture gradually changed from the Pharaonic until the Arabic period, and generally declined, becoming thicker and shabbier.[7] Next to different qualities of the paper, papyrus roll must have been available to writers in many formats. It is important to consider that the materiality of the roll directly impacted the materiality of individual documents. Therefore, an investigation of the evolution of the roll is paramount for understanding the materiality of documents. Were rolls produced in different sizes? Did available formats evolve over the centuries? I will consider here one single aspect of the materiality of the roll, namely its height.

To complement Johnson's reconstruction of the literary roll,[8] I will focus on the height of the documentary roll. To begin with, I collected documents that appear to preserve the original height of the roll on which they were written.

5 Bülow-Jacobsen 2009, 3.

6 Plin. *nat*. 13.23.

7 Krutzsch 2020; 2012, 101-8.

8 Johnson 2004.

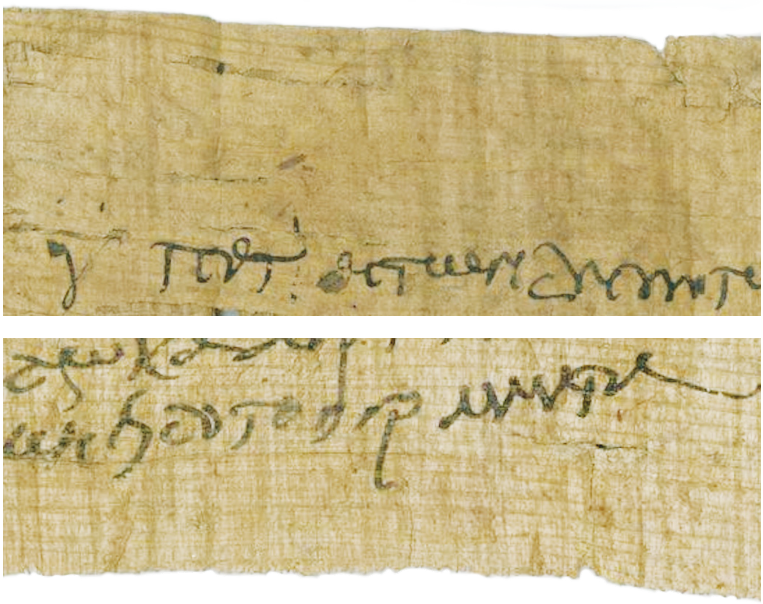

Figure 1 *P.Oxy.* XII 1425 (top edge). Special Collections, Sheridan Libraries, Johns Hopkins University

Figure 2 *P.Oxy.* XII 1425 (bottom edge). Special Collections, Sheridan Libraries, Johns Hopkins University

Out of 2,500 annotated documents, 985 preserve a text that is complete in height, from top to bottom.[9] However, not all of these documents can be used to reconstruct the original roll height, as sheets of papyrus could be cut to match the length of the text. For instance, *P.Oxy.* XII 1425 (318 CE), a nomination of a liturgical worker at Pelusium, with a height of 13.8 cm, presents a complete text, but its height is conceivably shorter than the original height of the roll. The appearance of the edges confirms this possibility: the top edge appears smooth **[fig. 1]**, likely the result of a cut performed by the craftsman

9 Documents are considered 'complete on their height' when the text was complete and both the top and bottom margins were preserved, regardless of damages or fringes of the edges and of the state of preservation of the document's width. The state of preservation of margins is a thorny issue when trying to estimate the original height of a roll. Johnson 2004, 130 and 200, Table 3.3, discusses this problem in connection with literary rolls, describing his criteria to identify a complete original margin: 1) extent of a more or less continuous edge; 2) recurrence of a given depth over more than one column; 3) clean and seemingly original, edge, with the topmost or lowest horizontal fibre unbroken. These criteria hardly apply to documentary papyri, as they are often written in one column and on relatively narrow sheets cut out from the roll, only a small percentage of which shows a clean edge.

during manufacturing when the stripes were still wet and soft; the bottom edge **[fig. 2]**, on the other hand, has a deckled look that suggests a dry cut, performed perhaps with a sharp tool in a later stage – not that dissimilar to the effect caused to paper by a paper knife.[10] Additionally, the height of the document at 13.8 cm corresponds to approximately half of the average roll height during the fourth century.[11]

Nearly all documents featuring a height between 4 and 16 cm are very short texts, orders for delivery or payment, summons,[12] receipts for taxes or receipts for the transfer or measurement of grain. For instance, *P.Oxy.* XLIII 3115 (271 CE), a six-line long order to supply barley, is written on a piece of papyrus 4 cm tall. These types of documents are characterised by texts of limited length, produced by cutting the writing surface according to the needs. As such, they do not contribute usable data to the analysis of the height of documentary rolls and, therefore, they were not used to reconstruct the evolution of the roll height.

The first significant benchmark in the dataset occurs at around 16-18 cm of height, where complete contracts, petitions, and declarations begin to sporadically appear.[13] If this height indeed corresponds to the full height of a roll, it would suggest the existence of a distinctively short roll format. To validate this idea, a broader investigation into roll dimensions across different periods and document genres is needed.

For the Pharaonic period, Černý's analysis of roll sizes revealed that short-format rolls were used – and even preferred – for literary production during the Middle Kingdom.[14] Within the same study, Černý identified a set of administrative documents from the New Kingdom averaging 18 cm in height, but suggested that they must be the result of the halving of rolls of standard height of 36 cm.[15] For the Roman and Ptolemaic period, Johnson's examination of the materiality of literary rolls from Oxyrhynchos showed that rolls under 20 cm in height

10 See also fn. 17.

11 See chart 1, and the discussion on the height of rolls during the fourth century, below.

12 Alternatively – and erroneously – known as 'orders to arrest'. This definition has been employed for a long time in papyrological editions, and it is occasionally still adopted despite having been defined as inaccurate already in Traianos, Sijpesteijn 1996, 77-97. Cf. also *P.Oxy.* LXXIV 5001-12, introd.: "the common term 'order to/for arrest' nowadays appears hardly appropriate, and 'summons' seems to be the one recommended"; Schubert 2018, 253-74.

13 *P.Oxy.* XLII 3053 (registration of sale, 252 CE): H 16.3 cm; *P.Oxy.* III 484 (petition, 138 CE): H 17 cm; *P.Oxy.* XIV 1707 (204 CE): H 18 cm.

14 Černy 1985, 15.

15 Černy 1985, 14-17.

were seldom used for literary texts, with only three cases attested.[16]

Building on this evidence, it seems unlikely that rolls below 20 cm were manufactured specifically for administrative or legal writing. First, the need of writing surface in these contexts was ever-increasing, making small-sized rolls unlikely to meet such requirements. Second, a height of 16 to 18 cm could easily have been achieved by halving or cutting larger rolls measuring approximately 32 to 38 cm.[17] Such tall rolls were commonly used in administrative and legal contexts – particularly during the first two centuries of Roman rule.[18] Interestingly, the decline of rolls above 30 cm during the fourth century corresponds to the disappearance of administrative and legal documents under 20 cm in this period, pointing to a correlation between the two phenomena.[19]

In light of the considerations presented thus far, I have excluded all complete documents measuring less than 20 cm in height from the analysis. The resulting dataset includes 676 documents between the first and the seventh century CE: this group of documents is more likely to be representative of the original height of the roll on which they were written.[20]

The collected data has been organised by century and is presented in a scatter plot graph **[chart 1]**.

16 Johnson 2004, 141. He records two cases below 16 cm for the Ptolemaic period, *P.Hib.* I 26 (third century BCE) at 12.8 cm, and *P.Tebt.* III 696 (second century BCE) at 14.2-16.5 cm, and only one example at 17.9 cm during the Roman period, *P.Oxy.* XXII 2335 (MP3 381, late second century); see Table 3.6, pp. 213-15.

17 It is not possible to determine with absolute certainty whether a roll was halved. In some cases, however, physical features such as the edges may help with the identification. See e.g. *UPZ* II 181 (Thebes, 105 BCE), H 16 × W 66 cm, a contract of sale where the top edge is visibly smoother than the bottom edge, which seems the result of an uneven cut. Cf. above **[figs 1-2]**.

18 See chart 1.

19 See chart 1 and discussion on fourth century, below.

20 This corresponds to 27% of the total documents in the dataset. The documents are chronologically distributed as follows: 88 for the first century; 112 for the second century; 153 for the third century; 162 for the fourth century; 55 for the fifth century; 76 for the sixth century; 30 for the seventh century. This distribution reflects the general pattern of document survival in the Oxyrhynchite nome.

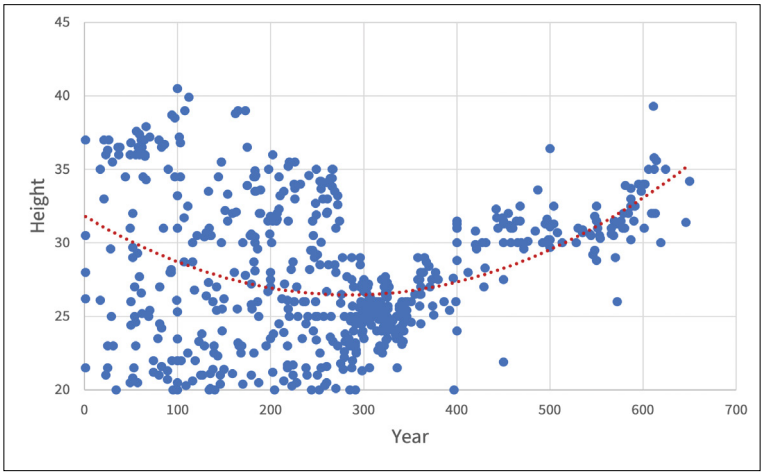

Chart 1 Distribution of Height of Rolls in Oxyrhynchite nome

The chart indicates a chronological evolution, where three distinct phases can be traced:

1. the first phase, from the first until the end of the third century CE, is characterised by a wide distribution of heights, ranging from 20 to 40 cm, with a persistence of documents between 20 and 35 cm throughout the period. A specific cluster of documents between 35 and 40 cm is distinctive of the first and the second century.[21] These tall documents, which disappeared almost completely from the third century onward, [22] seem to bear witness to a type of tall rolls that might have gone progressively out of production. Around the end of the third century, the red trendline indicates a gradual decline in average height, signaling a shift in the standard roll size.

21 The heights of documentary rolls from Oxyrhynchos during the first three centuries can be compared with the height of literary rolls during the same period, thanks to the data collected in Johnson 2004, 141 and 213-15 (Table 3.6). In his investigation, Johnson established that the normative height for literary rolls ranged between 25 and 33 cm, with a few cases below or above this range. Tall-sized rolls above 35 cm, attested with some frequency for legal and administrative documents – especially during the first century – are exceptional among literary texts. Out of 47 examples listed in Johnson, only one case shows a height ranging between 36.2 and 39.2 cm, *P.Oxy.* LVI 3879 (75-150 CE).

22 In the initial phases of the investigation, *P.Oxy.* XLII 3047 (245 CE) appeared as the single case of a 40 cm document from the third century, according to the height reported in the edition. However, further research showed that the reported height was incorrect and the actual height is 31.5 cm. Arguably, rolls of excessive height may not have been favoured for literature.

2. The signs of a general decline in height emerging during the last decades of the third century become clearly evident by the fourth century, marked by a sharp decline in document heights within a narrow range of 23 to 29 cm. The main cluster settles around 25 to 26 cm. The wide variation in document heights recorded in earlier centuries, which suggests the availability of various roll heights, gives way to standardisation. Significantly, documents exceeding 29 cm disappear entirely from the dataset!
3. The same pattern of limited variability in height persists from the fifth through the seventh century, although rolls become progressively taller. During the fifth and sixth centuries, the height ranges between 28 and 32.5 cm. In the seventh century, it further increases, with a distinct cluster between 31 and 36.5 cm. The data suggests that the production of rolls became increasingly standardised in height and that rolls below 30-28 cm were not used after the first half of the fifth century, at least in the Oxyrhynchite nome.[23]

4.1 Analysis

The disappearance of taller rolls around the end of the third century, followed by the standardisation of roll heights between 23 and 29 cm in the fourth century, represents a pivotal shift in roll manufacture and writing practices in the Oxyrhynchite nome. Such changes to the writing support can lead to gradual transformations in the materiality of the documents, influencing their physical aspects over time – including layout, text distribution, and overall format. What specific impact did the standardisation of the roll have on the materiality of individual documents?

23 The majority of documents below this threshold are receipts. Fifth century: *SB* XXIV 16278 (end V CE, *entagion*), H 21.9 cm; *P.Oxy.* VIII 1138 (V-VI CE, tax receipt), H 24 cm; *P.Oxy.* LXIII 4399 (475-525 CE, receipt of delivery), 19.5 cm; sixth century: *PSI* I 81 (595 CE, receipt of payment), H 15 cm; *P.Oxy.* LI 3640 (533 CE, receipt for ropes), written *transversa charta*, it measures 15.5 cm in width, which likely corresponds to half the height of the roll when turned ninety degrees, i.e. ca. 31 cm, a common height in the sixth century. Seventh century: *PSI* I 68 (VII-VIII CE, tax receipt), H 4.6 cm; *PSI* 1.67 (VII-VIII CE, tax receipt), H 6.8 cm; *P.Lond*. V 1749 (642 CE, tax receipt), H 7.9 cm; *PSI* I 69 (VII-VIII CE, tax receipt), H 8.6 cm; *P.Lond*. V 1744 (642 CE, tax receipt), H 14.9 cm; see also *P.Mich*. XV 748 (651 CE, receipt of payment): written *transversa charta*, it measures 17.7 cm in width, which likely corresponds to half the height of the roll when turned ninety degrees, i.e. ca. 35.5 cm, a common height in the seventh century; see *infra*.

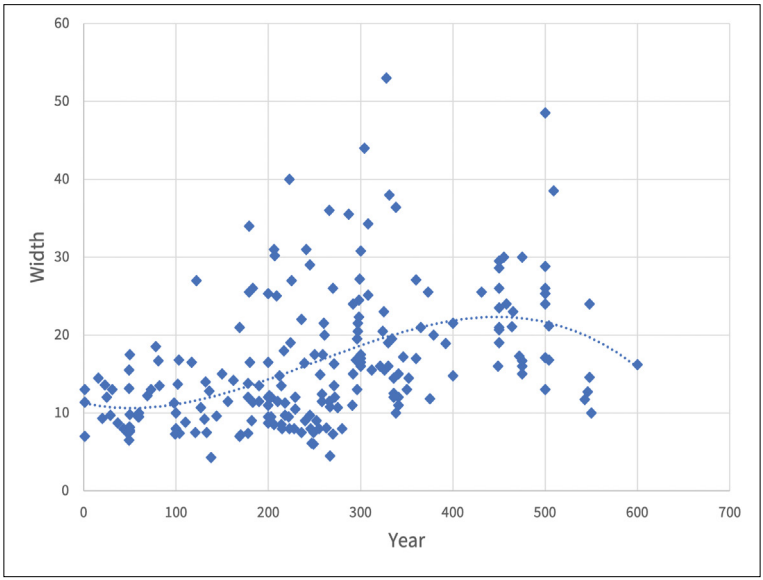

Chart 2 Distribution of the width of Oxyrhynchite petitions

First, as the height of rolls decreased, the resulting documents became inevitably shorter in height as well. Second, as the vertical space was reduced, the distribution of the text in a column had to be adapted, resulting in longer lines. Case in point: the width of Oxyrhynchite petitions shows a notable increase, from a cluster of 7-20 cm in the Roman period[24] to 12-25 cm in the following centuries, as illustrated in chart 2 **[chart 2]**. The slim demotic format, quite common for Oxyrhynchite petitions during the Roman period due to the use of tall rolls and the organisation of the text in narrow columns, gives way to the *pagina* format in the Byzantine period.[25] The shortening

24 Chart 2 shows several documents exceeding 20 cm in width during the second and third centuries. These are multi-level petitions, i.e. petitions with one or more attachments embedded within the main text of the request. The attachment significantly increased the document's length and thus required more writing space. See e.g. *SB* XII 10781*r* (122-3 CE), W [21.5] cm; *P.Oxy.* XXIV 2411 (173-4 CE) W [32] cm; *P.Oxy.* VI 899 (200 CE), W 25.3 cm; *P.Oxy.* LXVII 4593 (206-11 CE), W [25] cm; *P.Oxy.* XLVII 3364 (209 CE), W [24] cm; *SB* XVI 12994 (241 CE), W [23.8] cm; *P.Oxy.* VIII 1119 (253 CE), W [39.6] cm; *Chr.Mitt.* 75 (266 CE), W [27] cm; *SB* XVIII 13932 (287 CE), W [31] cm; *P.Oxy.* IX 1204 (299 CE), W 27.2 cm. Square brackets indicate that the width is incomplete, suggesting that the original width was even greater.

25 On the demotic format vs pagina format see Sarri 2017, 91-107; Schubert 2022, § 13. Roman petitions from Oxyrhynchos that show a markedly demotic format are: *P.Fouad* 27 (43 CE), H × W: 36 × 8 cm = 0.22; *P.Oxy.* XLI 2997 (214 CE), H × W:

Figure 3 *P.Oxy.* XIX 2235. Courtesy of The Egypt Exploration Society and the Faculty of Classics, University of Oxford

of the roll can be accounted as one of the main factors leading to this shift, as it compelled writers to lengthen the lines to accommodate the content within the space of one column. Occasionally, documents from the fourth century also show the writer's struggle to manage the available vertical space. This is evident, for instance, in *P.Oxy.* XIX 2235 (345 CE) **[fig. 3]**, a petition addressed to the *riparius*, where the writer ran out of space and was forced to reduce both handwriting size and line spacing toward the end of the document to fit the content within the space of a column.[26]

However, the shortening of the rolls is not the only factor contributing to the widening of the documents. The evolution of the Greek script towards the so-called Byzantine cursive[27] affected the shape of individual letters, with over-elongated ascenders and descenders that tend to occupy considerable space between the lines. This extension of letters led to a fundamental transformation in the structure of the script, from being predominantly bilinear to quadrilinear.[28] This transformation affected the overall dimensions of the writing system. The height of letters increased from an average of 0.35-0.40 cm during the Roman period, to 0.40-0.50 cm in the fourth century, reaching 0.70 cm during the fifth.[29] More noticeable is the expansion of the interlinear space, which moves from a height of 0.40 cm during the Roman period, to reaching between 0.70 and 1.2 cm in the following centuries.[30] The general increase of the script is a significant factor in the widening of petitions – and other types of documents alike – from the fourth century onwards.

33.5 × 8.5 cm = 0.25; *P.Oxy.* XXXIV 2709 (206 CE), H × W: 31.5 × 8.5 cm = 0.26; *P.Fouad* 30 (121 CE), H × W: 26.5 × 7.5 cm = 0.28; *P.Oxy.* III 475 (182 CE), H × W: 28.7 × 9 cm = 0.3; *P.Oxy.* XLIX 3468 (I CE), H × W: 37 × 13 cm = 0.35; *P.Oxy.* XXVII 2473 (229 CE) *P.Oxy.* III 484 (138 CE), H × W: 34 × 12 cm = 0.35; *P.Oxy.* I 38 (49-50 CE), H × W: 36 × 13 cm = 0.36; *P.Oxy.* VII 1032 (162 CE), H × W: 38.8 × 14.2 cm = 0.36; *P.Oxy.* XXII 2342 (102), H × W: 37.2 × 13.7 cm = 0.36. For early Byzantine petitions with a pagina format, see e.g. *P.Oxy.* XLVI 3302 (300-301 CE), H × W 27 × 17 cm = 0.6; *P.Oxy.* VI 900 (321 CE), H × W 24.3 × 16 cm = 0.65; *P.Oxy.* XIX 2235 (346 CE), H × W 25.4 × 17.2 cm = 0.67; *P.Oxy.* VII 1033 (392 CE), H × W 28.3 × 18.9 = 0.66; *SB* IV 7449 (450-499 CE), H × W 27.5 × 20.7 = 0.75. For a discussion on the format of Byzantine petitions, see notably Fournet 2004 and 2019.

26 See also *P.Oxy.* XLIX 3480 (360-390 CE) and *P.Oxy.* XXXIII 2673 **[fig. 8]**.

27 The social and political context shaping the emergence of this phenomenon known as the "Graeco-Latin graphic koine" are thoroughly discussed in Cavallo 1970. See also Cavallo 2008, 121-30; Messeri, Pintaudi 2000.

28 Cavallo 2008, 135-6.

29 Causo 2024, 276-8.

30 Causo 2024, 276-80.

5 Processual Frame

As mentioned above, the processual frame refers to the process of production of a document and the agency of the writer. By examining the process in which the document was crafted, we gain greater insight into the writer's logic in approaching a blank slate.

The production process of administrative documents is intricately intertwined with administrative procedures. One important, yet underestimated, aspect common to all requests submitted by individuals to the authorities, is the fact that they had to be submitted in multiple copies. I will henceforth refer to multiple copies as duplicates. The submission of duplicates was necessary to support a very capillary system of administration, in which information travelled from the smallest hamlet to provincial offices to be reviewed and archived. Duplicates were required because (i) several copies were submitted to one single official, who would use them to send them up in the administrative chain or simply to file them in the registers, and (ii) in some cases, the same document had to be sent to various officials. As a result, a considerable part of administrative and legal documents which survived as single copies was originally written in duplicates, often more than two.[31] Despite the practice of writing duplicates was a bearing column of the administrative writing practice, the literature on the topic is scarce. Besides the list of duplicates collected by Nielsen,[32] the only other relevant analysis on the topic is an article by Yuen-Collingridge and Choat,[33] which focuses on the work of the copyist and the orthographic and graphic aspects of texts copied in multiple copies. Yet, this practice has important consequences on the materiality of the documents and deserves further investigation. What are the consequences of this practice on the process of production of the single documents?

5.1 Writing the Document: Pre-Cut Sheet or Continuous Piece of Roll?

From a material point of view, one fundamental question arises: how were the duplicates produced? Did scribes draft each document on individual sheets of papyrus that had been previously cut out of a roll, or did they copy the same texts in successive columns on a continuous piece of roll, just to cut them later into separate documents?

31 See e.g. *P.Oxy.* XIV 1624 (222 CE), l. 1: ἀντίγραφον] τρισσ[ῆ]ς ἐνγράφης ἀσφαλ[ε]ίας 'copy of a deed of security written in triplicate'; *P.Oxy.* LXI 4124 (318), where the duplicates are still uncut. For a list of duplicates, see Nielsen 2000.

32 A list of duplicates was collated by Nielsen 2000, 187-214.

33 Yuen-Collingridge, Choat 2012, 827-34.

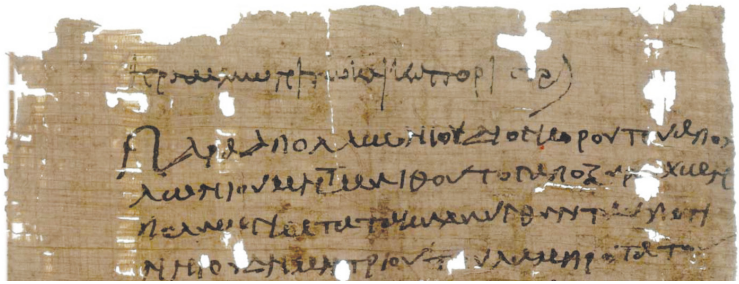

Figure 4 *P.Oxy.* XXXVI 2762 (detail). Courtesy of The Egypt Exploration Society and the Faculty of Classics, University of Oxford

Several examples of documents have survived where duplicates are written on successive columns of a continuous piece of roll, remaining uncut.[34] One example is *P.Oxy.* LXI 4124 (318 CE) **[fig. 7]**, a loan of money preserved in two uncut duplicates. Even centuries later, this practice is still attested. For instance, during the sixth century, *P.Petra* V 55 (Petra, 573 CE?) shows a *donatio mortis causa* preserved in eight uncut duplicates.

If this is not enough proof, the distribution of the text on the page offers additional confirmation. Occasionally, in fact, it is possible to notice that the final letters on the right edge of the sheet are truncated or partly cut off, as shown in line 2 of *P.Oxy.* XXXVI 2762 **[fig. 4]**. One might attribute this to a fast or careless writer who did not pay particular attention to the available space and let the pen slip beyond the end of the sheet. However, if a writer did use a pre-cut sheet of papyrus, one would rather expect the final letters to be squeezed as much as possible when approaching the end of the space. The fact that final letters are truncated suggests that copies of the same texts were indeed written on successive columns and later cut out into single documents.[35]

This hypothesis is also supported by a group of six house-by-house *apographai* from Soknopaiou Nesos dated to 159-160 CE, all duplicates of the same declaration found on individual sheets. The documents have the same height and approximately the same width and are written by the same hand, differing from each other only by the addressee on the first line and some minor variations within the text:

34 Nielsen 2000 lists 47 cases of uncut duplicates. Two cases – *P.Oxy.* XXIV 2410 (120 CE) and *P.Sakaon* 45/45a (Theadelphia, 334 CE) – are erroneously reported as uncut, as they are glued together in the form of a *tomos synkollesimos*.

35 This hypothesis that duplicates were first written and then cut is already advanced briefly by Whitehorne 1990, 139.

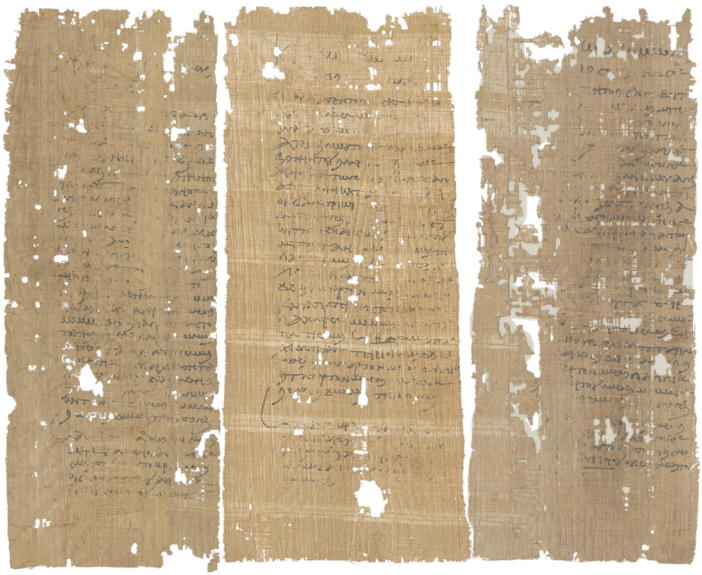

Figure 5 From left to right – BGU I 224, BGU I 90, BGU II 537. Courtesy of the Ägyptisches Museum und Papyrussammlung, Staatliche Museen zu Berlin, Berliner Papyrusdatenbank, inv. P. 7291, P. 7024, P. 7158

- *BGU* II 224 and *BGU* II 410 are addressed to the *strategos*;
- *BGU* I 90 and *BGU* II 537 are addressed to the *komogrammateus*;
- *BGU* I 225 is addressed to the *laographoi*;
- *P.Grenf.* II 55 is addressed to the *basilikogrammateus*.

In this group of duplicates, the sequence of production of the documents is marked in the grain of the paper: [36] seven peculiar horizontal bands of discoloured fibres are visible on the entire surface of *BGU* I 90. The same bands can be recognised on the right side of *BGU* I 224 and the left side of *BGU* II 537 **[fig. 5]**. The colour and disposition of the papyrus filaments reveal the order of composition of the documents but also offer a clue that the text was written on a portion of the roll before cutting them. However, they do not offer definitive proof, as one might still argue that blank strips of papyrus could be pre-cut from a continuous section of a roll to be written afterward.

36 Calderini 1922, 341-5 offers an analysis of the writing sequence of these duplicates, based on the analysis of textual variations and by comparing the distribution of the text in the lines between the different exemplars.

A conclusive example is *SB* XX 14666-14668 (161 CE), a set of four duplicates of a house-by-house *apographè* from Alabanthis in the Arsinoite nome, all written by the same hand. *SB* XX 14666 preserves one nearly complete duplicate and remnants of another column on the left containing the final ten lines of a second duplicate of the same declaration.[37] Notably, these two duplicates remain uncut. *SB* XX 14667 preserves a third, self-standing duplicate, intact in width but breaking off at the bottom after the final date. The fourth duplicate, *SB* XX 14668, is a fragment, preserving only the endings of its first nineteen lines.[38]

A closer examination of *SB* XX 14667 reveals a few small horizontal ink traces along the document's left edge. Though seemingly minor at first glance, these traces may be a sign that a column originally preceded the text. Since this is one of the rare instances where more than two duplicates of the same text survive, one is almost compelled to consider whether one of these duplicates was, in fact, the preceding column. This possibility is confirmed when *SB* XX 14667 is placed to the right of its duplicate, *SB* XX 14668 **[fig. 6]**. The elongated strokes of sigma in line 3 and the abbreviation mark of κατ' οἰκ(ίαν) in line 4 of *SB* XX 14668 align precisely with the ink traces on the edge of *SB* XX 14667 **[fig. 6a]**. A similar correspondence is visible between the abbreviation mark of Κίνν(ας) in line 8 of *SB* XX 14668 and the traces on *SB* XX 14667 **[fig. 6b]**. These traces show how those letters that extended slightly beyond the right justification of a column were inadvertently severed during the cutting process, leaving residual traces on the left edge of the following column.

The uncut duplicates in *SB* XX 14666, along with the reconstructed sequence of *SB* XX 14668 and *SB* XX 14667, provide strong evidence that these duplicates were originally formatted into multiple columns and on a continuous portion of the roll, and only later cut apart into individual documents.

37 Whitehorne 1990, 139-40.

38 While *SB* XX 14666 and 14667 are housed in the papyrus collection of the University of Michigan, 14668 is part of the Oslo collection; see Whitehorne 1990, 139.

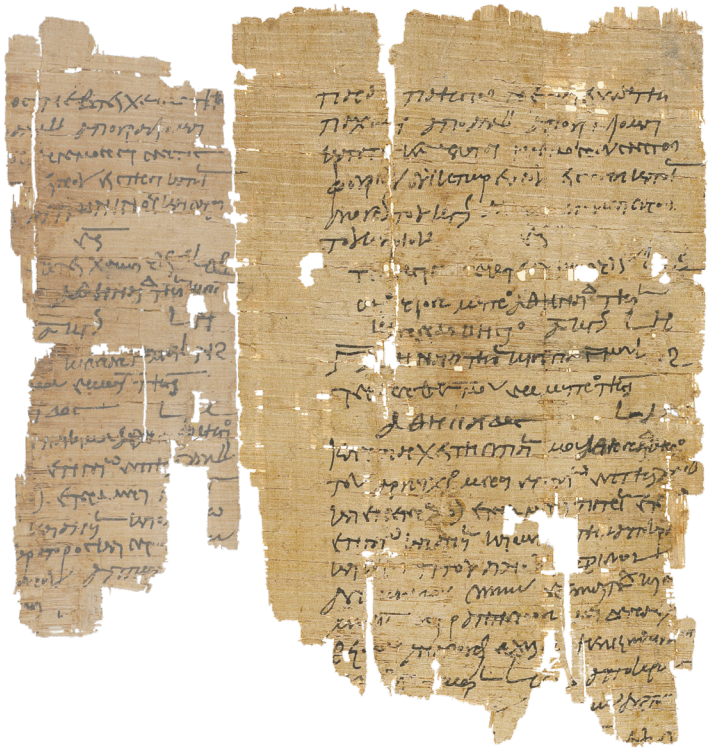

Figure 6
On the left, *SB* XX 14668 (Courtesy of the University of Oslo Library Papyrus Collection); on the right *SB* XX 14667 (University of Michigan Library Digital Collections)

Figure 6a
On the left *SB* XX 14668 (detail); on the right *SB* XX 14667 (detail)

Figure 6b
On the left *SB* XX 14668 (detail); on the right *SB* XX 14667 (detail)

5.2 Laying Out the Writing Area

The fact that the writer did not have a predefined space – such as a pre-cut sheet – means that he had to be quite skilled at organising the content in the writing area, managing the width of the lines and the height of the roll without facing the risk of running out of space. The fact that administrative documents of the same type consistently show similar sizes and formats is proof of the great expertise of the writers.

One would wonder how an ancient writer would define the writing space to achieve a neat layout, especially on the right side of the writing column, where the line came to an end. Very recent research conducted by a team of researchers with the use of Macro X-Ray Fluorescence Imaging Spectroscopy has provided evidence of the use of lead-drawn ruling lines to lay out the writing area in literary papyri from Herculaneum.[39]

A similar system for laying out the writing space has not been yet observed on Graeco-Egyptian papyri.[40] Can we infer that the writers used some sort of procedure that aided them in defining the writing area? I believe such a procedure can be still observed in administrative documents, specifically when duplicates of the same texts are preserved still uncut on a continuous piece of roll.

When starting a text, the writer sets the length of one of the first line. This line limited the width of the writing area[41] and constituted a proper 'guideline' for the length of the following ones. This was usually the first or the second line in a document.[42] The length of such guideline was roughly maintained throughout the entire document thanks to another interesting writing device: the line-fillers or, more often, the elongated last stroke of the final letters reaching further to the edge. These extended final traits are often interpreted as methods employed by the writer to close off extra space to prevent any later addition to the text. A closer look of uncut duplicates clearly shows that line fillers and elongated tails tend to always reach for the length set by the guideline **[fig. 7]**, to achieve some justification on the right end. In this way, the writer was defining his writing space while writing and creating a regular column.

39 Romano et al. 2023, 6582.

40 Romano et al. 2023, 6582.

41 Fournet 2022, 21.

42 The guideline does not always coincide with the first line simply because the first line of administrative documents often contained the addressee, which could be too short for the purpose or, in certain cases, was added afterwards. On the posthumous addition of the addressee, see Whitehorne 1990, 139; Bagnall 1994, 115. See e.g. *P.Fam. Tebt.* 38 (Tebtynis, 168 CE).

Figure 7 *P.Oxy.* LXI 4124. Courtesy of The Egypt Exploration Society and the Faculty of Classics, University of Oxford

This guideline-based system also explains the compression of the last letters of a line, which is sometimes observed in correspondence to the right edge and has been often interpreted as a proof that the sheet was cut prior writing.[43] However, the observation of uncut duplicates shows that a compression of the letters frequently occurred when the scribe was critically approaching the maximum length set by the guideline – even if writing on a continuous piece of roll.

An example of this practice is offered by *P.Oxy.* LXI 4124 (318) **[fig. 7]**. Here, the first line, which contains part of the dating formula, functions as a guideline. In line 2 and line 12, it is possible to observe how the letters are purposefully compressed to fit the length dictated by the guideline, and how in lines 4, 5, 7 and 10, the elongated strokes almost exactly meet the guiding length.

43 Cf. Mirizio 2021, 353-4, esp. ft. 710. See also *P.Tor.Choach.* 5b, introd.: "A destra scrive sino all'orlo oppure allunga l'ultima lettera per riempire la riga; qualche volta traccia persino l'ultima hasta sull'orlo stesso del papiro [questo dimostra che lo scriba aveva tagliato il foglio dal rotolo prima di scriverlo]". In my opinion, and after the observation of the image of the papyrus, these elements prove the exact opposite.

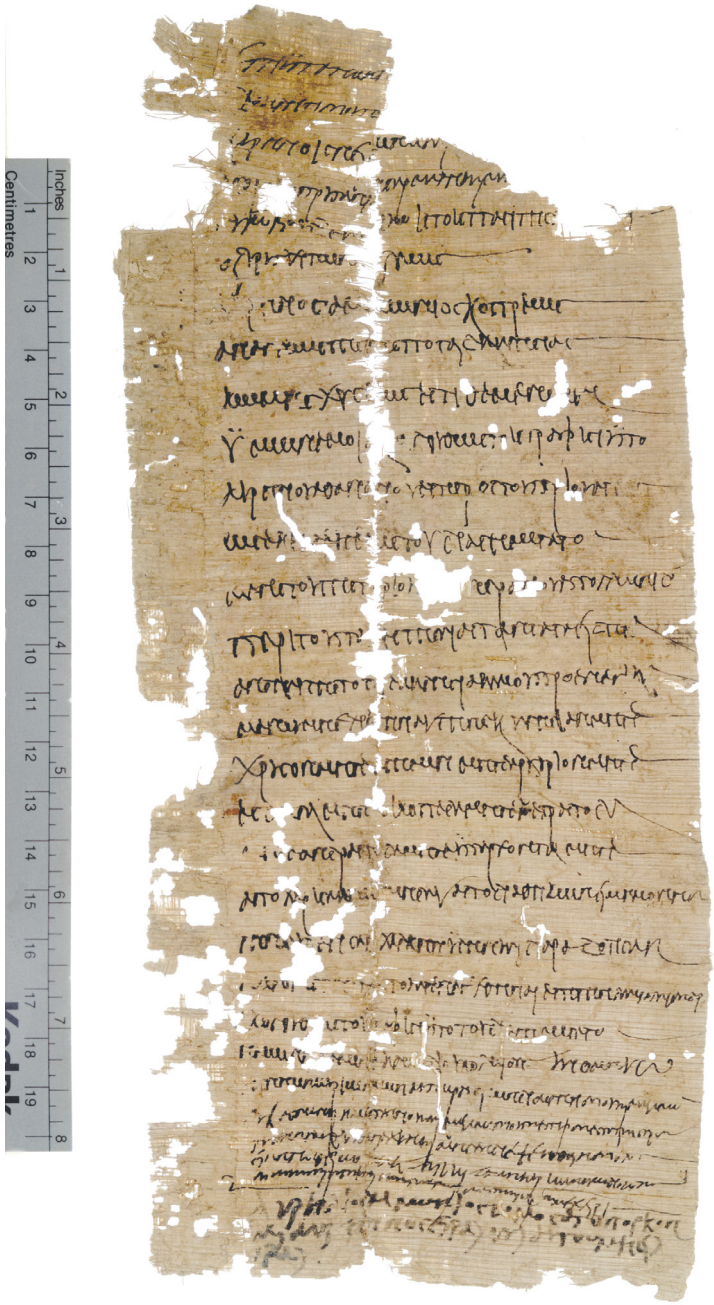

Figure 8 *P.Oxy* XXXIII 2673 (b). Courtesy of The Egypt Exploration Society and the Faculty of Classics, University of Oxford

5.3 Cutting Out the Document

I argue that the use of line-fillers and elongated strokes served a dual purpose: it enabled the writer to craft a regular column, but it also established an imaginary cutting line for separating the documents. Let us think about how, particularly in administrative documents from the Roman period, it is very common to observe the presence of an inconsequential right margin – if any. Most likely, this was a result of the application of the cut in correspondence with the end of the lines. As already discussed, this could accidentally cause cutting off part of the final letters or the elongated strokes.

In certain cases, the effort to align the cut with the cutting line created by the final extended strokes is especially evident because it resulted in an irregular cut of the sheet. Such is the case of *P.Oxy.* XXXIII 2673(b) (302 CE), where the right edge was cut following the length of the lines between line 19 and 20 **[fig. 8]**.[44]

The process reconstructed so far specifically refers to the administrative context of writing duplicates during the Roman period, when the standardisation of practices was key. It is possible that the same *modus operandi* was not used during other periods or for the production of private documents, such as letter writing.[45] In the context of this analysis, it is important to reflect as to whether the idea of pre-cut sheets might be rather anachronistic, as it applies a contemporary concept onto ancient practices. In our current perception the sheet is *the* writing unit. However, the same cannot be said for the Graeco-Roman period, when the roll-form was the norm. In addition, from a practical standpoint, composing documents before cutting them could have been the most efficient method, allowing for greater flexibility in organising space rather than being confined to a predetermined size.

6 Relational Frame

The Relational Frame aims to emphasise the relational nature of writing phenomena, focusing on the pivotal role played by materiality in creating or reinforcing shared meaning within a communicative context.

This frame relies on the idea that the meaning of a given text does not arise in isolation, but by its interaction with other texts. Whenever

44 See also *P.Oxy.* LXXIV 4992 (223-224 CE), a declaration of death, where the cut appears to have been adjusted between lines 7 and 9 to follow the delineation created by these final strokes.

45 Depauw 2006, 71-2 on Demotic letters and Depauw 2012, § 5 on Demotic contracts, supports the idea that these documents were written on sheets pre-cut from a roll.

a connection is drawn between two or more originally independent documents, the meaning of each of them is enhanced, expanded or elucidated. The inexhaustible array of relations that can be established between texts – not only between two texts but also within a body of texts – is what contributes to creating shared meaning. The relational character of documents emerges more prominently from the analysis of the administrative documents.

In official communication, in fact, a standardised system of communication is key for the functioning of the administrative machine. The use of formulas and repetitive structures help define and reproduce the genre or the type of documents. This phenomenon is well known and thoroughly studied from a textual point of view.[46] However, material and paratextual features were equally used to establish and reinforce the association between documents. Not only, the material features contribute to visually define the genre or the type of document,[47] but they also serve a much more practical purpose:

- they allow the writer to draw from well-known schemes and to develop specific techniques to expedite the process of production;
- they allow the receiver to easily classify the type of information and quickly retrieve the essential information;
- they allow the clerks to carry out routine procedures more swiftly, such as passing the documents on in the communicative chain or archiving similar documents together.

In essence, the relational character of material and visual features in administrative documents serves two primary functions: 1) it helps define a communicative genre by establishing material and visual patterns, and 2) it facilitates the smooth functioning of the administrative system by streamlining procedures, from production to archiving.

In this section, I will focus on the second type of relational interaction of the official document, where materiality is used as an instrument to support and expedite administrative procedure. In order to do that, I will explore the link between the materiality of administrative documents and their inherent potential to become archiving material.

46 See e.g. Mascellari 2021, on the language of petitions; Avogadro 1935, 166-84 on the formulaic language of ἀπογραφαί.

47 See the recent contribution by Fournet 2022, 17-28.

6.1 The Materiality of Archival Practices: *Tomoi Synkollesimoi*

Material and layout features of a document are designed to facilitate the organisation and retrieval of information. By reinforcing specific material features of similar documents, it is possible to establish routine administrative procedures, such as filing documents together. A fascinating example comes from the fifteenth-century bureaucratic office of the Crown of Aragon in Sicily. The clerks produced the so-called *libri* for record-keeping, and relied on a new page layout to improve the organisation of information: each page was provided with a hole, used to pile the pages onto a peg to keep them together.[48] From the observation of the layout of the text, it is clear that the content was carefully written around the holes, and that the pages were punctured beforehand. The holes are crucial technique for organising and archiving information.

If we consider the archival practice on papyrus, there are no material aspects as conspicuous as the holes in the *libri* that point to a specific filing purpose. However, there might be a layout feature – less conspicuous and often overlooked – whose systematic observation can prove to be significant and may play the exact same role as the holes seen in the Aragonese *libri*: the left margin of administrative documents.

During the Roman period, the width of the left margin appears to be especially remarkable in documents such as declarations, applications, and petitions but also quite prominent in official letters, notifications, or contracts. A certain consistency can be observed in the width of the space left blank on the left side of the text, which ranges approximately between 1.5 and 2.5 cm – often depending on the overall width of the document. Especially in declarations, which usually are very narrow, such a large margin occupies on average between 15% and 35% of the entire width. A relevant example is *P.Oxy.* LXXIV 4991 (216-217).[49] Despite the very limited width of the document, which measures a mere 4.6 cm, the writer has reserved 1.26 cm for the left margin, corresponding to almost one third of the whole width **[fig. 9]**.

It is conceivable that the remarkable size of the left margin was functional to the filing process, which these documents had to undergo after being submitted to the authorities. In fact, the large amount of paperwork produced during the Roman period required

48 Gialdini, Silvestri 2019; the use of pegs for archival purposes is also attested in Mamlūk Egypt. See Livingston 2018, 144-5.

49 The document has a similar handwriting as *P.Oxy.* L 3565, where a similar proportion between the written column (5.6 cm) and the left margin (1.4 cm) is also maintained.

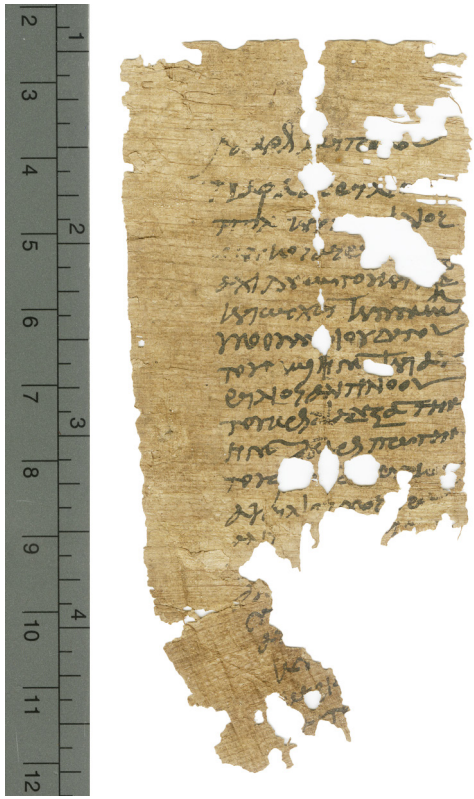

Figure 9
P.Oxy LXXIV 4991. Courtesy of The Egypt Exploration Society and the Faculty of Classics, University of Oxford

an efficient record-keeping system. This was achieved by introducing a powerful instrument that allowed the organisation, archiving, and consultation of copies of all public documents: the *tomos synkollesimos*.[50] Each document entering a *tomos* was glued to other files of the same – or related – type, and it was assigned a number corresponding to the position of the sheet within the *tomos*. When two documents were pasted together to make a *tomos*, the right edge of the first document was always glued over the left margin of the second one **[fig. 10]**. Clearly, a sufficient left margin was deemed necessary for the writing not to be covered by the preceding document. From a small analysed sample of various types of documents pasted into *tomoi synkollesimoi*, the width of the overlap seems to range

50 See *P.Mich*. 2, p. 2; Clarysse 2003, 346-7. See also Cockle 1984, 106-22; Burkhalter 1990, 191-216.

from approximately 0.5 to 2 cm.[51] These proportions are matched by the average width of the left margins of the *apographai*, applications and petitions alike.

As investigated by Ferretti, the practice of leaving a prominent left margin was already common during the first century BCE,[52] hence predating the introduction of the *tomos synkollesimos* by the Romans. However, the repurposing, or even the reinforcement, of an existing layout element to create a relationship between documents highlights the dynamic interplay between layout, materiality, and function of a document. The systematic collection of data and the contextual study of these features allows us to deepen our understanding of how ancient writing practices have developed and evolved according to the needs of the users.

7 Conclusions

This overview goes to the roots of the materiality of a document. The main scope is to expand the analysis to the technological, procedural, and conventional practices that shaped the materiality and layout of the documents. The three main constraints identified by Bateman as determining factors in the form of an artifact – canvas, production technology, and consumption *milieu* – are the foundation for the three frames I propose for a more dynamic investigation of the materiality of the ancient document, which focuses on the writing medium, the writing procedures, and the writing conventions.

As Bateman fittingly remarked "constraints can make themselves felt in the smallest details of a document". In this analysis, I have demonstrated how several aspects of a written artifact – from one as conspicuous as the evolution in the size of a document type to others apparently more neglectable, such as the use of final elongated strokes or the adoption of a just-too-wide left margin – are better explained when viewed through the lens of the production and use of a document within a specific context. While this contribution only presents a small selection of examples exerted from my doctoral research on the materiality of administrative documents from Oxyrhynchos, its overarching aim is to establish a comprehensive framework applicable to the analysis of all document types.

51 Here follows a small list of documents with their respective overlaps: *P.Oxy.* IV 794 (85 CE) = ca. 2 cm; *P.Oxy.* XLVI 3276 (148-149 CE) = 0.7 cm; *P.Oxy.* XLVI 3278 (148-149 CE) = 1.2 cm; *P.Oxy.* XLVI 3282 (148-149 CE) = 1.5 cm; *P.Oxy.* XLVI 3279 (148-149 CE) = 1.5 cm; *P.Oxy.* I 87 (342 CE), two overlaps = 2 and 1.7 cm.

52 Ferretti 2024, 240.

Overall, understanding the materiality of ancient documents presents a great challenge, due to the diverse contexts, scopes, and use of the written object, requiring insights into different procedures, and social environments. The present research shows that a fundamental step towards advancing our understanding of the practice of writing on papyrus is the systematic collection of quantitative data concerning both the material and visual characteristics of documents. Such effort opens up boundless possibilities for future research on the writing culture on papyrus. For instance, a comparative analysis of the materiality of rolls used for different types of documents can help shed new light on the classification of genres and typology for ancient writers. Similarly, comparing the size of the rolls used in various parts of the province holds the potential to enhance our limited understanding of manufacturing practices.

Figure 10 *P.Brux.* 1-18. ImageStudio. © Royal Museums of Art and History, Brussels. MRAH/KMKG

By understanding the writing support, analysing the process of production, and understanding writing conventions, we can deepen our understanding of how these documents were created, how they shaped communication and how they conveyed shared meanings. This approach offers valuable insights into the historical, cultural, and social significance of administrative documents, enriching our understanding of past societies and their writing technology.

Bibliography

Avogadro, S. (1935). "Le ΑΠΟΓΡΑΦΑΙ di proprietà nell'Egitto Greco-Romano". *Vita e Pensiero*, 15, 166-84.
https://www.jstor.org/stable/41214471

Bagnall, R.S. (1994). "Census Declarations from the British Library". *ChrEg*, 69, 109-26.
https://doi.org/10.1484/j.cde.2.308951

Bateman, J.A. (2008). *Multimodality and Genre. A Foundation for the Systematic Analysis of Multimodal Documents*. New York: Springer.
https://doi.org/10.1075/idj.17.1.14wri

Bentein, K. (2024). "Socio-Semiotic, Multimodal Annotation of Documentary Sources Digital Infrastructure in the Everyday Writing Project". Reggiani, N. (ed.), *Digital Papyrology III. The Digital Critical Edition of Greek Papyri: Issues, Projects, and Perspectives*. Berlin; Boston: De Gruyter, 221-56.
https://doi.org/10.1515/9783111070162-014

Bülow-Jacobsen, A. (2009). "Writing Materials in the Ancient World". Bagnall, R. (ed.), *The Oxford Handbook of Papyrology*. Oxford: Oxford University Press, 3-29.
https://doi.org/10.1093/oxfordhb/9780199843695.013.0001

Burkhalter F. (1990). "Archives locales et archives centrales en Égypte romaine". *Chiron*, 20, 191-216.
https://doi.org/10.34780/2264-2j9d

Calderini, A. (1922). "Sei esemplari di un'unica scheda di censimento romano". *Aegyptus*, 3, 341-5.
https://www.jstor.org/stable/41213684

Causo, S. (2024). "Enhancing Data Collection on the Materiality of Papyri: The Measurement Tool". Reggiani, N. (ed.), *Digital Papyrology III. The Digital Critical Edition of Greek Papyri: Issues, Projects, and Perspectives*. Berlin; Boston: De Gruyter, 257-84.
https://doi.org/10.1515/9783111070162-015

Cavallo, G. (1970). "La κοινή scrittoria greco-romana nella prassi documentale di età bizantina". *Jahrbuch der Österreichischen Byzantinistik*, 19, 1-31.

Cavallo, G. (2008). *La scrittura greca e latina dei papiri. Un'introduzione*. Pisa; Roma: Fabrizio Serra Editore.

Černy, J. (1985). *Paper and Books in Ancient Egypt*. Chicago: Ares Publishers.

Clarysse, W. (2003). "Tomoi Synkollesimoi". Brosius, M. (ed.), *Ancient Archives and Archival Traditions: Concepts of Record-Keeping in the Ancient World*. Oxford: Oxford University Press, 344-59.
https://doi.org/10.1093/oso/9780199252459.003.0016

Cockle, W.E.H. (1984). "State Archives in Graeco-Roman Egypt from 30 B.C. to Septimius Severus". *JEA*, 70, 106-22.
https://doi.org/10.2307/3821580

Depauw, M. (2006). *The Demotic Letter: A Study of Epistolographic Scribal Traditions Against their Intra-and Intercultural Background*. Sommehausen: Gisela Zauzich Verlag.
https://hdl.handle.net/2066/68443

Depauw, M. (2012). "Cultural Transfer and the Evolution of Formal Aspects of Demotic Papyrus Contracts in Hellenistic Egypt". Legras, B. (éd.), *Transferts culturels et droits dans le monde Grec et Hellénistique*. Paris: Éditions de la Sorbonne.
https://doi.org/10.4000/books.psorbonne.9626

Ferretti, L. (2024). *τῷ δεῖνι παρὰ τοῦ δεῖνος. A History of the Hypomnema in Greek Papyri from Egypt (300 BCE-100 CE)* [PhD dissertation]. Université de Genève.
https://doi.org/10.13097/archive-ouverte/unige:174820

Fournet, J.-L. (2004). "Entre document et littérature: la pétition dans l'Antiquité tardive". Feissel, D.; Gascou, J. (éds), *La pétition à Byzance = Table ronde XX° Congrès*

international des Études byzantines (Paris, 19-25 août 2001). Paris: Association des Amis du Centre d'Histoire et Civilisation de Byzance, 61-74.
https://hal.science/hal-01685346v1

Fournet, J.-L. (2019). "Anatomie d'un genre en mutation. La pétition de l'Antiquité tardive". Nodar, A.; Torallas Tovar, S. (eds), *Proceedings of the 28th Congress of Papyrology* (Barcelona, 1-6 August 2016). Barcelona: Publicacions de l'Abadia de Montserrat, Universitat Pompeu Fabra, 571-90.
https://hal.science/hal-02383968

Fournet, J.-L. (2022). "Beyond the Text or the Contribution of 'Palaeographie Signifiante' in Documentary Papyrology: The Example of Formats in Late Antiquity". Bentein, K.; Amory, Y. (eds), *Novel Perspectives on Communication Practices in Antiquity*. Leiden: Brill, 17-28.
https://doi.org/10.1163/9789004526525_003

Gialdini, A.; Silvestri, A. (2019). "Administrative Knowledge and Material Practices in the Archive". *Mélanges de l'École française de Rome - Moyen Âge*, 131(1).
https://doi.org/10.4000/mefrm.4922

Hunt, T. (2014). *The Textuality of Soulwork: Jack Kerouac's Quest for Spontaneous Prose*. Ann Arbor: University of Michigan Press.
https://doi.org/10.5860/choice.185294

Johnson, W.A. (2004). *Bookrolls and Scribes in Oxyrhynchos*. Oxford: Oxford University Press.
https://doi.org/10.3138/9781442671515

Krutzsch, M. (2012). "Das Papyrusmaterial im Wandel der antiken Welt". *AfP*, 58, 101-8.
https://doi.org/10.1515/apf.2012.58.1.101

Krutzsch, M. (2020). "Papyrusmaterial aus Elephantine und seine signifikanten Merkmale". *ZÄS*, 147, 47-56.
https://doi.org/10.1515/zaes-2020-0026

Livingston, D. (2018). *Managing Paperwork in Mamluk Egypt (c. 1250-1517): A Documentary Approach to Archival Practices* [PhD dissertation]. SOAS University of London.
http://eprints.soas.ac.uk/30899

Mascellari, R. (2021). *La lingua delle petizioni nell'Egitto romano. Evoluzione di lessico, formule e procedure dal 30 a.C. al 300 d.C*. Firenze: Firenze University Press.
https://doi.org/10.36253/978-88-5518-446-5

Messeri, G.; Pintaudi, R. (2000). "I papiri greci d'Egitto e la minuscola libraria". Prato, G. (a cura di), *Atti del V Colloquio Internazionale di Paleografia Greca* (Cremona, 4-10 ottobre 1998). Firenze: Edizioni Gonnelli, 67-82.
https://hdl.handle.net/11570/2232422

Mirizio, G. (2021). *Amministrare e comunicare nell'Egitto Tolemaico. La funzione delle copie (antigrapha) nella documentazione papirologica*. Wiesbaden: Harrassowitz Verlag. Philippika 149.
https://doi.org/10.13173/9783447116152

Nielsen, B.E. (2000). "A Catalog of Duplicate Papyri". *ZPE*, 129, 187-214.
https://www.jstor.org/stable/20190572

Palme, B. (2009). "The Range of Documentary Texts: Types and Categories". Bagnall,R.S. (ed.), The Oxford Handbook of Papyrology. Oxford:Oxford Academic Press.
https://doi.org/10.1093/oxfordhb/9780199843695.013.0016

Romano, E.P. et al. (2023). "Layout of Ancient Greek Papyri Through Lead-drawn Ruling Lines Revealed by Macro X-ray Fluorescence Imaging". *SciRep.*, 13(1), 6582.
https://doi.org/10.1038/s41598-023-33242-8

Sarri, A. (2017). *Material Aspects of Letter Writing Material Aspects of Letter Writing in the Graeco-Roman World: c. 500 BC-c. AD 300*. Berlin: De Gruyter.
https://doi.org/10.1515/9783110426953

Schubert, P. (2018). "Warrants: Some Further Considerations on Their Typology". *BASP*, 55, 253-74.
https://www.jstor.org/stable/44972246

Schubert, P. (2022). "The Format, Layout and Provenance of Documents Pertaining to Liturgy". *Pylon*, 1.
https://doi.org/10.48631/pylon.2022.1.89327

Traianos, G.; Sijpesteijn, P.J. (1996). "Towards an Explanation of the Typology of the So-Called 'Orders to Arrest'". *BASP*, 33, 77-97.
https://www.jstor.org/stable/24519285

Whitehorne, J. (1990). "Two Michigan Duplicates (P.Mich.inv.158 A and B) of P.Oslo III 99". *SymbOsl*, 65, 139-45.
https://doi.org/10.1080/00397679008590839

Yuen-Collingridge, R.; Choat, M. (2012). "The Copyist at Work: Scribal Practice in Duplicate Documents". Schubert, P (éd.), *Actes du 26e Congrès international de papyrologie* (Genève, 16-21 août 2010). Genève: Droz, 827-34.