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The Aksumite Collection or Codex Σ
**(*Sinodos of Qəfrəyā*, MS C₃-IV-71/C₃-IV-73, Ethio-
SPaRe UM-039):**

Codicological and Palaeographical Observations.
With a Note on Material Analysis of Inks

Alessandro Bausi, Antonella Brita, Marco di Bella,
*Denis Nosnitsin, Nikolas Sarris, and Ira Rabin**

The manuscript known as the *Aksumite Collection* (*Sinodos of Qəfrəyā*, MS C₃-IV-71/C₃-IV-73, Ethio-SPaRe UM-039) is one of the most important—if not the most important—Gəʿəz manuscripts which have come to scholarly attention in the last twenty years. While its textual content—primarily the complex canonical-liturgical collection, closely depending on late antique models, which it attests—has already been the subject of several contributions, a description of physical and material features of the manuscript has not yet been published. The present note takes advantage of the work and competence of scholars, conservators, and scientists in order to fill this gap, offering a comprehensive material, codicological, and palaeographical description of the codex.

§ 1. Introduction

The *Aksumite Collection* is a term introduced to define a specific canonical-liturgical collection of the late antique and early medieval Ethiopian Church and the so far *codex unicus* that attests it. The *Aksumite Collection* contains a set of translations from Greek to Gəʿəz (Ethiopic) that on linguistic and philological evidence are datable to the Aksumite period, to a time range between the fifth and the sixth or at the latest the seventh century CE, while the codex is not precisely dated, but datable to the thirteenth century or earlier. Amongst the pearls of this collection are a portion of a *History of the Episcopate of Alexandria*, an archaic version of the *Apostolic Tradition*, a *Baptismal Order*, an *Euchologion*, the *Canons of Chalcedon*, letters of Timotheus Aelurus, and a treatise *Concerning the Only Judge*.¹ Yet, all the texts of the collection, also

* The main author of §§ 1–7 is Alessandro Bausi, in cooperation with Antonella Brita and Denis Nosnitsin (all Universität Hamburg) for the general aspects and the documentation, and with Marco Di Bella (Palermo) and Nikolas Sarris (National Library of Greece) for some points of codicology. § 8 is a note on analysis of inks, by Denis Nosnitsin and Ira Rabin (Universität Hamburg and Bundesanstalt für Materialforschung). For the history of research with details of the acknowledgements, by Alessandro Bausi, see § 9.

1 The first three texts already published, like other texts of the collection, and the latter four in course of publication. The comprehensive overview on the collection

those already known from other manuscripts, which can be now understood in a completely new light, are of the highest interest.

The label *Aksumite Collection* does not generically and simply refer to a collection of texts, but intends to reflect the use in place to indicate canonical-liturgical works, according to the model used for the most ancient collection of this kind, namely, the tripartite *Veronese collection*, but others as well, as established in the field of canon law studies.² Single texts attested in the *Aksumite Collection* have found their way in the later *Sinodos*, and in other kinds of canon-law collections (multiple-text works) as well, but in its specific arrangement, there is so far only one codex that attests the *Aksumite Collection*.³ Therefore, by extension, the term was also used to indicate this *codex unicus*.

The codicological, palaeographic, and linguistic features of the *Aksumite Collection* are of extreme interest, and they were the subject of several papers presented in the course of time. The objectively enormous interest raised by the textual contents of the *Aksumite Collection*—which has substantially contributed to provide a new image of the Aksumite culture, literature, and language, within the broader late antique context—had priority over the study of its physical and material features. As soon as awareness of the importance

and details on the single texts remains Bausi 2006a, to which I refer for all texts for which no other reference is given, with only a few updates; for the single texts published so far see § 4 below; for a list of contributions on the *Aksumite Collection*, see Bausi and Camplani 2016, 255–265; and now also Camplani 2020a, 2020b; for some forthcoming texts, see Bausi 2020a. References are also given to the *Clavis aethiopica* (*CAe*) developed by the *Beta maṣāḥaft* project (where the entire collection has received the no. 1047).

- 2 See *CPG* nos 1731 (*Collectio Veronensis*, from ms Verona, Biblioteca Capitolare, Codex LV (53) (= Lowe 1947, no. 507), composed of the *Didascalia apostolorum*, the *Canones ecclesiastici*, and the *Traditio apostolica*) and 1732 (*Sinodos Alexandrina*); for other collections, see Gaudemet 1985, 181–182, with references to the *Collectio Antiochena*, *Collectio Avellana*, *Collectio Hispana*, *Collectio Teatina*, and others; for important updates see Lizzi Testa 2014 and Marconi and Margutti 2014; see Steimer 1992, 106–148, for the earliest collections; for the later developments, see the essays collected in Hartmann and Pennington 2012, and Kaufhold 2012 in particular for the eastern churches canon law; Orlandi 2016, for an up-to-date fresh overview of Coptic canon law sources; for the collection in ms Verona, Biblioteca Capitolare, Codex LX (58) (= Lowe 1947, no. 510), see Camplani 2020a.
- 3 A fragment in a collection recently studied by Nosnitsin (Archäologisches Landesmuseum Schloss Gottorf, collection Dettenberg) which Bausi identified as belonging to the *Canons of the council of Antioch* (for which see § 4 below) is the only one known so far that could belong to a second manuscript of the entire *Aksumite Collection*.

of the manuscript became widespread, researchers exerted a continuous pressure for at least the most prominent texts to be put at disposal in a reliable edition as soon as possible. The progressive access to a more refined documentation of the manuscript, as it became possible only in the course of several years from its discovery up to the present, with the possibility, finally, of taking effective conservation measures on the manuscript and carrying out reliable scientific analysis, dictated the agenda of the work. The aim of this synthetic note is that of filling this gap and offering essential elements concerning the codicology and palaeography of the *codex unicus* of the *Aksumite Collection*, and the results of the scientific analysis of its inks, while the linguistic features will be the subject of a separate contribution.

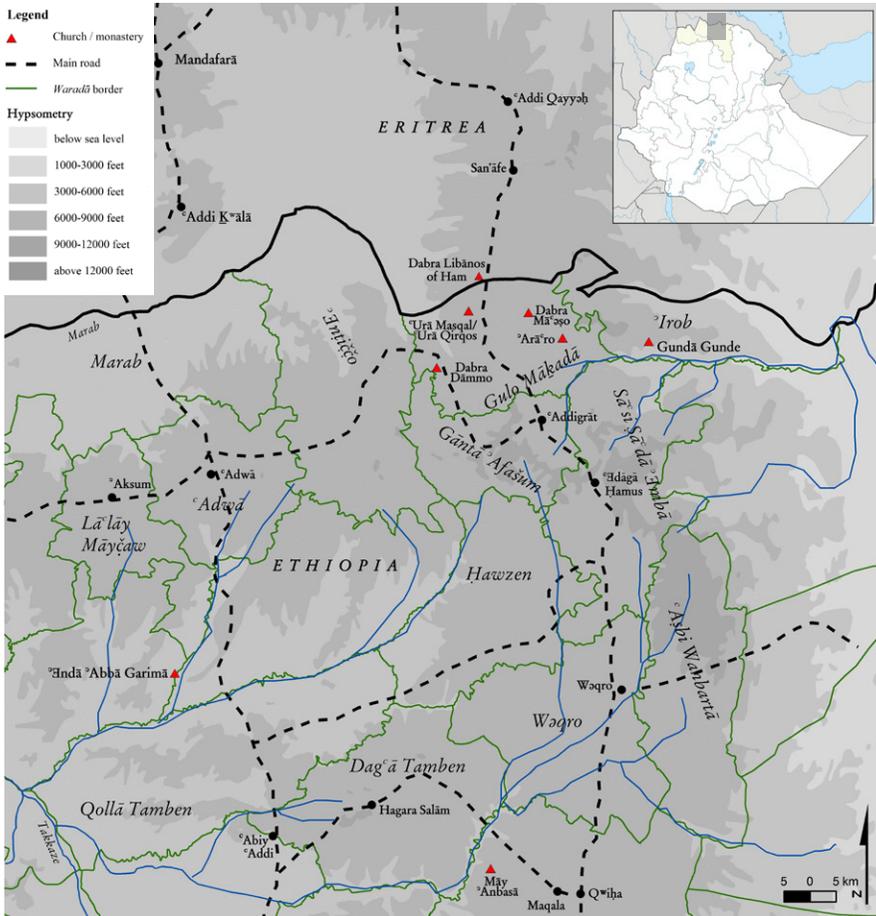


Fig. 01. Map of northern Ethiopia showing the site of 'Urā, with the distinct churches of 'Urā Masqal and 'Urā Qirqos © Luisa Sernicola.

§ 2. *The site of Qəfrəyā*

The manuscript of the *Aksumite Collection* (hereafter, Σ , for both the collection and the manuscript) was preserved until 1999 in the church of 'Urā Masqal, located at the northern border with Eritrea of the north-eastern-Təgrāy district ('East Tigray Zone') of Gulo Maḳadā (Figs. 01–02). From 'Urā Masqal the manuscript, along with the whole manuscript collection of the church, was moved in the course of 1999 to the church of 'Urā Qirqos, where it is still preserved (Fig. 03). Both churches of 'Urā Masqal and 'Urā Qirqos are associated with the place name of Qəfrəyā (also transcribed at times Qəfryā, Qəfəryā, or Qəfəryā), which occurs in several written documents: some of documentary character, particularly those preserved in the church of 'Urā Masqal, and others of literary character. The only note by a recent hand preserved in codex Σ (f. 162va) is a note of *explicit*, the syntax of which is not perfectly clear, but where the place name of Qəfəryā appears. The note follows a previous *explicit* at the end of the whole collection, by the first hand: *tafaṣma* (sic) *sinodos*, 'It is completed the *Sinodos*'; a second hand continues below: *tafaṣsama zabeta masqal zaqəfrəyā wəludu kəfla māryām qasis*, 'It is completed (the book) of Qəfrəyā, his sons, the priest Kəfla Māryām'.⁴ By the way, this note of *explicit* appears after the last text of the collection, that is, *The canonical answers of Peter of Alexandria*, a text which also occurs in a few manuscripts of the *Sinodos*, where it does not hold the final position. We can exclude, however, for precise philological reasons that codex Σ is the archetype of the whole manuscript tradition; the *explicit* note at the end probably reflects the state of a previous ancestor common to all witnesses, including codex Σ .⁵

The site of Qəfrəyā has been described in detail in a book on the manuscript collections from Təgrāy, authored in 2013 by Denis Nosnitsin based on the research of the 'Ethio-SPaRe' project. Here is what Nosnitsin writes on Qəfrəyā:⁶

Situated quite close to the Eritrean border, the site of 'Ura Qirqos / 'Ura Mäsqäl can be reached via the main 'Addigrat – Zäla 'Ambäsa road and a side road, after some forty-fifty minute drive. [...] It accommodates two churches. The first, 'Ura Qirqos, more recent, is built in the traditional Təgrayan style, standing on the edge of the plateau [...]. The second, 'Ura Mäsqäl, is difficult to access. It is located on the top of a rocky outcrop and can be seen from the edge of the plateau [...]. It appears to be of the same type as 'Ura Qirqos, built perhaps in the late nineteenth or early twentieth century at the latest. To reach the church, one has to pass along the crest of a rocky outcrop, with breath-taking drops on both sides. Regular church service had taken place there until the beginning of the Ethiopian-Eritrean border

4 See Bausi 2016a, 240 and 257, Pl. 2.

5 See Bausi 2006b, 56, apparatus ad XIV, 12.

6 See Nosnitsin 2013, 4–8.



Fig. 02. The outcrop with the church of 'Urā Masqal. Photo 2006 Antonella Brita © Project 'Linguistic and cultural traditional chains in the Christian Orient and text-critical philology'.

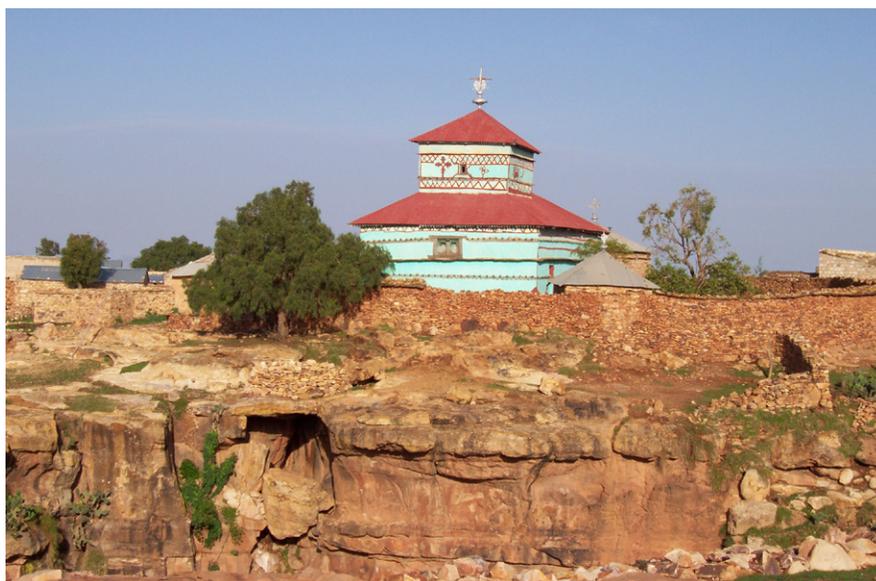


Fig. 03. The church of 'Urā Qirqos. Photo 2006 Antonella Brita © Project 'Linguistic and cultural traditional chains in the Christian Orient and text-critical philology'.

conflict in 1999. Later, because of its proximity to the border, ‘Ura Mäsqäl had to be abandoned, and the entire property of the church was transferred to ‘Ura Qirqos [...] Local tradition does not preserve much information about the history of the site, commonly referring to foundation of ‘Ura Mäsqäl in the time of “*haṣäy Gäbrä Mäsqäl*”, and assigning foundation of ‘Ura Qirqos to the time of King Yoḥannēs IV (r. 1872–89). The churches preserve a number of ancient manuscripts. Most of the old manuscripts belonged to ‘Ura Mäsqäl. Both churches are historically linked, and seem to have had under their administration a few other churches in the surrounding area. There is no clear indication that a monastic community was ever established there; however, a centre of scribal activities has been found not far from ‘Ura, with a few active scribes living in the village called Ləgat. ‘Ura Mäsqäl seems to have existed well prior to the fourteenth century, possibly under the rulers of the dynasty referred to as “Zagwe” [...]. As follows from the marginalia in the manuscripts, the old name of the site is Qəfrəya which indeed appears in a few medieval sources. [...] The ancient collections of ‘Ura Mäsqäl/‘Ura Qirqos survived.

As Nosnitsin states, the name occurs in a series of texts—it also occurs in the *Liber Axumae*⁷—, yet,

Remarkably, local people do not seem to be familiar with the name “Qəfrəya”. Besides, as some other churches in Gulo Mäkäda, Qəfrəya was used as a confinement place for the Stephanites [...]. Today, local people do not use the name “Qəfrəya”.⁸

The most important occurrence of the name, however, is that in a documentary collection known as the ‘Donation of King Ṭantawədäm to the church of Qəfrəyā’. It is a collection of feudal deeds (*gʷəlt*), preserved in a small-size manuscript that is probably later by centuries than the time when the documents were first issued (possibly, the twelfth century), but well characterized by archaic formulas, with some of them hanging in the Golden Gospel of Dabra Libānos, that provide strong clues to its textual authenticity.⁹

7 See Conti Rossini 1909–1910, doc. I.5, p. 11.5–8 (text), መምበርታ፡ ደመት፡ ፲፮፡ ዕፁ፡ ጽሕጽ፡ ቀጢን፡ ሠርዌ፡ ወ፻፡ ሠርዌ፡ ዘአብ፡ ዓቢይ፡ ወያበጽሑ፡ ወሰነ፡ ምድርሙ፡ ወበህየ፡ ይትቁበሎሙ፡ ሰብአ፡ ጎልፍ፤ ዳሞ፤ እገላ፤ ግሎ ማክዳ፤ ቅርፍ፡, and p. 11.17–21 (transl.), ‘Le Mambartā coupera 1,000 cèdres de petite taille et 100 tiges de grosse épaisseur; il les portera jusqu’aux frontières de son pays, où ils seront reçus 20 par les habitants des pays qui se trouvent sur le passage *jusqu’ à Aksoum, Dāmo, l’Eggalā, le Gelo Mākedā, Qeferyā*’.

8 See Nosnitsin 2013, 7, n. 10.

9 See Derat 2018, with discussion of the ‘Donation’ on pp. 30–38, and edition, translation, and commentary on pp. 261–271, ‘Annexe’ (‘Donation du roi Ṭantawedem à l’église de la Croix de Qefereyā (Urā Masqal)’); see also Bausi 2018, 444–446 for a few remarks on this important document. Digital images of the manuscript are freely available on the internet from the *Māzgābā Səəlat*, <<http://ethiopia.deeds.utoronto.ca>>, MG-2005.092:012–023. The manuscript was later digitized also by the ‘Ethio-SPaRe’ project, which assigned to it the shelf mark UM-035 and a date to the eighteenth century, see Nosnitsin 2020, 282, n. 1, and 294, n. 54.

Moreover, the name also occurs in one of the recensions (*GL3*) of the *Gadla Libānos*, the Life of Saint Libānos, also known as Maṭā', who is traditionally credited with preaching the Gospel in Eritrea and in northern Ethiopia in the period of the legendary King Gabra Masqal, where the placename 'Fəṭrəyā'—edited as such from a no more available *codex unicus* by Carlo Conti Rossini—has definitely to be emended to 'Qəfrəyā', as supported by the new manuscript evidence of *Gadla Libānos* collected, again, by the project 'Ethio-SPaRe'.¹⁰

But the place name also occurs in the *Gadla Baṣalota Mikā'el*, the hagiography of a fourteenth-century saint, in a peculiar passage where the saint is eagerly looking for books:

First he arrived at Makāna Dāmmo and remained there reading the books of the New and of the Old (Testament); he also studied their interpretation with intellectual eagerness: so that the skin of his tongue fell off, like the sheath of a knife; but he did not abandon his reading because of this. Then he departed and arrived at the house of 'Abbā Maṭā': he received the benediction of the blessed Libānos and remained a few days being vigilant in the reading of books. Then he left and arrived at Makāna Qəfrəyā, and from there he left to Makāna Q^wa'at, from Makāna Q^wa'at to Makāna Ba'altabeḥat, from Makāna Ba'altabeḥat to Makāna Maqale, from Makāna Maqale to Makāna Gefe by Gabra Nāzrāwi, his beloved. And wherever he arrived, he built a cell for himself and stayed up day and night reading the Scriptures: he supplicated the Lord in fasts and in prayer so that He might reveal the secret of their mystery.¹¹

If we consider that Qəfrəyā is a site located quite opposite to Dabra Libānos of Ham in Eritrea (Fig. 01), one of the most ancient site of Christianity in the region and definitely also a Zāg^we bulwark in the area, as is attested by one

10 See Nonsnitsin 2013, 7, n. 10, who noted this. For the texts, see Conti Rossini 1903, 32, *wawalduni beta masqal zafətrəyā*, 'and his (spiritual) son Beta Masqal of Fəṭrəyā'; Bausi 2003, § 154. See now MS Ethio-SPaRe AKM-004 (Ethiopia, Təgrāy, Gulo Maḳadā, Kidāna Meḥrat 'Ambasat), f. 50rb.12–13, *wawalduni beta masqal zaqəfrəyā*, 'and his (spiritual) son Beta Masqal of Qəfrəyā'; and MS MGM-012 (Ethiopia, Təgrāy, Gāntā 'Afašum, Mikā'el Mə'əsār G^wəḥilā), f. 44ra.6–9, *wawalduni ḥanaḍa beta masqal zaqəfrəyā*, 'and his (spiritual) son built Beta Masqal of Qəfrəyā'. On an important variant reading of these manuscripts, see already Bausi 2014a. As expected, the recent Gə'əz-Amharic edition of the *Gadla Libānos* published by the community of Dabra Libānos of Šawā has the passage, but has completely altered it omitting any reference to the local Təgrāy toponymy, *wawalduni ḥanaḍa 5ta 'adbārāta*, 'and his (spiritual) son built five monasteries', see Yadabra Libānos 'Abuna Taklahaymānot 'Andənnat Gadām 2014–2015, 103a.10.

11 See Conti Rossini 1905, 19.22–20.3 (text), 17.26–18.5 (Latin transl.), with English translation by Bausi here; for the passage and the *tópos* see also Bausi 2014b, 44–45. For a possible connection between the *Aksumite Collection*, the library of Baṣalota Mikā'el at Gasəçça, and Giyorgis of Saglā, who definitely knew at least some texts of the *Aksumite Collection*, see Bausi 2020a, 240–250.

of the most important collections of Ethiopic documentary texts preserved to us in the Golden Gospel of Dabra Libānos, everything seems to indicate that Qəfrəyā, despite being not a place of general relevance, must have played an important cultural role until and during the so-called Zāg^we period.¹²

The site of Qəfrəyā where codex Σ has been preserved presents the typical case, well known in historical linguistics as well as in philology, of a lateral or isolated area that, being detached from metropolitan areas or areas more exposed to cultural changes, tends to preserve archaic features which have gone lost in other areas that are more exposed to cultural movements, institutional control, and new influences.¹³ The manuscript of the *Aksumite Collection* has probably remained for several centuries in the same place, thus escaping the attention of the metropolitan Ethiopian clergy and of foreign visitors as well. Nonetheless, as is proved by philological evidence for the texts attested by multiple witnesses, codex Σ is not the archetype of the extant tradition and other witnesses of the same collection must have existed.¹⁴

§ 3. *The material and quire structure of codex Σ*

We remind here that the leaves of the manuscript, when it was first documented, were totally disarrayed and that the sequence of the microfilmed and digitised sets vary from the earliest set taken in 1999 to the latest digitisation in 2012, being however impossible in this synthetic note to provide all details of the various sets. The sequence followed in this description reflects the present sequence, which is based on the reconstruction advanced on philological basis that was confirmed by the codicological evidence collected during the conservation of the manuscript carried out in 2012.¹⁵ Each folium of the codex

12 See Derat 2018, 46–59, with further references.

13 For this well-known principle, see Pasquali 1952, xvii–xviii, 7–8, 159–160, 175–178, 181, 224; Cavallo 1995; Trovato 2020, 120. For the application to the *Aksumite Collection*, see Bausi 2015a.

14 One should stress that the chronological phase represented by codex Σ precedes that of the emergence of archaic homiliaries dating to the thirteenth/fourteenth centuries, some of which are extant and distributed in a vast area of the Christian Ethiopian kingdom, from ʿUrā Masqal to Lake Tānā. On this essential point see Bausi 2020b.

15 As already said, see § 9 for the details of the research on the manuscript. For the conservation, see Di Bella and Sarris 2014; rich photographic documentation on the conservation of codex Σ is available in Nosnitsin 2019, 39–58. For the conservation of another manuscript from ʿUrā, see Brita 2015. The manuscript had no binding at the time of its microfilming and digitisation. Two wooden fragments, albeit found with the book and now preserved in the archival box where the manuscript was placed after conservation, have never been associated with the manuscript, at least in the form of a proper binding, since there is no correspondence between the sewing holes on the quires and the lacing holes on the boards. They might have been

thus bears a twofold pagination, going back to the two digitisation campaigns undertaken by the ‘Ethio-SPaRe’ project, the first in 2010, and the second one after conservation, which is followed here, in 2012.

The manuscript consists of twenty-one quires in 162 parchment folia plus a bifolium serving as endleaves at the end, for a total of 164 folia. The codicological and textual analysis suggests that the material loss in the manuscript is minimal: for sure there is one up to three missing folia at the beginning, before f. 1; one folium is certainly missing between ff. 5 and 6; and one folium is also missing between ff. 114 and 115. Substantial material losses due to damage in the preserved folia occur (f. 1 has lost part of the outer column and of the bottom margin and text), more often with loss of one or a few lines, and minor losses in the margins are frequent as well (for example, on ff. 2–4 part of the bottom margin and text; on ff. 5–13 part of the upper inner margin and text; ff. 22–27 part of the outer top margin and text; ff. 38 and 70 the inner bottom margin and text; ff. 71–73 the inner top margin and text; f. 114 the inner margin and text). There are several repairs on the parchment executed by careful and precise hand stitching, all belonging in the time of the production (smaller and larger repairs are visible on ff. 52, 58, 65, 67, 68, 73 (the hole is smaller, but remains), 143, 157, 161); a few holes in the parchment remain (ff. 45, 48, 54, 56 (two holes), 67, 73 (partially sewn), 103, 116, 121, 152 (twice)).

The codicological and textual sequence allows a relatively precise reconstruction of distinct codicological blocks, here indicated with alphabetic letters from A to C plus the final bifolium, which are distinguished by material and textual caesurae, for which the first hypothesis is that they all belong to one and the same production unit written by one and the same hand. In consideration of the arrangement of comparable collections, where the *Ecclesiastical canons* hold the first position, and due to the ideological importance of the texts contained in block A (like the *History of the Episcopate of Alexandria*, which immediately follows the *Ecclesiastical canons*), it is likely that block A holds the first position.¹⁶ Block B ends with a partially empty column, which

placed with the manuscript at a later date, maybe because of the matching size, but were never bound to it. The 2010 and 2012 digitisation sets also include two final single folia, here indicated as A and B, which belong to different codicological production units and came to be included in the bundles of codex Σ : f. A is a fragment from the *Acts of Theodore the Oriental*, corresponding to Pereira 1907, 132.3–33 (text); and f. B is a fragment from the biblical 2 Kings 22:10–23:2; this fragment belongs to MS UM-058; it was discovered by chance and photographed within the last hours of the last day of the field trip.

16 See the references in Bausi 2006a, 54–55 for the corresponding canon-law collections (Coptic, Arabic, Ethiopic, and Latin) where the *Ecclesiastical canons* hold the

clearly marks a caesura and an average of 30 written lines, against 29 written lines of blocks A and C. Block C ends with a column tapering in the shape of an inverted trapezoid, followed by a framed note of *explicit*, and in all likelihood is the final one. Block A has quires originally beginning with the flesh side; block B is characterised by quires beginning with hair side; and block C has nine quires beginning with the hair side and four beginning with the flesh side.

The quires are four ternions (II, IV, IX, XVII), eleven quaternions (VI–VIII, XI–XV, XIX–XXI), three quinions (I, III, V), one irregular quire of seven folia (X), two irregular quires of nine folia (XVI, XVIII), plus one bifolium as endleaves (XXII).¹⁷ All in all, the hypothesis of irregular quires (X, XVI, XVIII) designed as such is the most economic, but there is obviously a degree of uncertainty in this reconstruction. There are no quire marks. The prevalence of quaternions, as is well known, is typical of the early phase of Ethiopic manuscript culture.¹⁸ Gregory’s rule (‘hair on hair and flesh on flesh’) is observed in the majority of the quires, but not consistently: it is perfectly observed in twelve quires (I–IV, VI, VIII, XI, XIII, XV, XVI, XIX, XXI).¹⁹

§ 4. Codicological blocks and textual content

Block A

The textual content

Ff. 1–38 (Figs. 04–05): this block is acephalous and one folium is missing between ff. 5 and 6. It contains the following texts:

- (1) the *Ecclesiastical canons*, acephalous (ff. 1r–5r);²⁰
- (2) the *History of the Episcopate of Alexandria*, with one folium lost between ff. 5 and 6 (ff. 5r–13v);²¹
- (3) the *Epistle 70 of Cyprian of Carthage* (ff. 13v–16v);²²

first position; they correspond to CPG no. 1739; see also CPG no. 1732.

17 For a more precise description, see the formular description in § 4 below.

18 See for this as well as for other codicological features Balicka-Witakowska et al. 2015; and now Nosnitsin 2020, with further abundant references.

19 Gregory’s rule is not observed in six quires, in one bifolium each, meaning that if one bifolium were reversed the rule would be observed (V, IX, X, XII, XVII, XX), and in three quires in two bifolia each (VII, XIV, XVIII). Nine quires start with flesh side (I–V, IX, X, XVII, XX) and twelve quires start with hair side (VI–VIII, XI–XVI, XVIII, XIX, XXI); the final bifolium (XXII) starts with the flesh side.

20 See Bausi 2006a, 54–55; CPG no. 1739; CAe no. 6239,

21 See Bausi and Camplani 2016; Camplani 2020a; CAe no. 5064.

22 See Bausi 1998, still from manuscripts of the *Sinodos*, whereas the *Aksumite Collection* provides also the preface to the letter; see also Bausi 2006a, 56; and now Camplani 2021; CAe no. 1348.



Fig 04. MS 'Urā Qirqos, C₃-IV-71/C₃-IV-73, Ethio-SPaRe UM-039 (Codex Σ), f. 1r. Photo 2012 Denis Nosnitsin © Project 'Ethio-SPaRe'.

- (4) the *Apostolic Tradition* (ff. 16v–29v);²³
- (5) the *Parallel section to Apostolic Constitutions VIII* (ff. 29v–35r);²⁴
- (6) the treatise *On the charisms* (ff. 35r–38v).²⁵

The quire structure

There are five quires, four or probably all of which originally beginning with the flesh side:

I¹⁰⁽⁻⁴⁾: extant ff. 1–6 (i^vH001F, ^vF002H, ^{vi}H003F, ^{vii}F004H, ^{viii}H005F, ^xH006F = G = Gregory law respected; all folia are disjoined except the bifolium ^vF002H–^{vi}H003F): this first quire is difficult to reconstruct, because at least one initial folium is lost, but probably two or even three folia are missing; moreover, one folium is lost between ff. 5 and 6. A possible reconstruction would be: I^{10(-4: i, ii, iii, ix)}, that is a quinion with loss of folia in the first, second, third, and ninth positions. It is clear that extant ff. 2–3 are the central bifolium of the quire and ff. 1–4 are also one bifolium.

23 See Bausi 2011; Meßner 2016–2017; CPG no. 1737; CAe no. 6240.

24 See Bausi 2006a, 56; on the interesting occurrence in this text of the term *gabgāb* corresponding to Greek *πάρεργον* see Bausi et al. 2020, 43–44; CPG no. 1730; CAe no. 1355.

25 See Bausi 2006a, 59; Bausi 2009; CPG no. 1730; CAe no. 2114.



Fig 05. Codex Σ, ff. 38v-39r. Photo 2012 Denis Nosnitsin © Project ‘Ethio-SPaRe’

The missing portion of the first text, the *Ecclesiastical canons*, would probably need only one folium, which means that the first two folia were occupied by a further text that is lost. One could surmise that an introductory text or a table of content of the collection occupied this place.

- II⁶: ff. 7–12 (i¹F007H, ii¹H008F, iii¹F009H, iv¹H010F, v¹F011H, vi¹H012F = G; folia i¹F007H and vi¹H012F are disjoined).
- III¹⁰: ff. 13–22 (i¹F013H, ii¹H014F, iii¹F015H, iv¹H016F, v¹F017H, vi¹H018F, vii¹F019H, viii¹H020F, ix¹F021H, x¹H022F = G; folia i¹F013H and x¹H022F, and ii¹H014F and ix¹F021H are disjoined).
- IV⁶: ff. 23–28 (i¹F023H, ii¹H024F, iii¹F025H, iv¹H026F, v¹F027H, vi¹H028F = G).
- V¹⁰: ff. 29–38 (i¹F029H, ii¹H030F, iii¹F031H, iv¹F032H, v¹F033H, vi¹H034F, vii¹H035F, viii¹H036F, ix¹F037H, x¹H038F = no G; folia i¹F029H and x¹H038F, and ii¹H030F and ix¹F037H are disjoined).

Block B

The textual content

Ff. 39–62 (Figs. 05–06): this block does not exhibit any material loss. It contains the following texts:

(7) a *List of Apostles and disciples* (ff. 39r–40v);²⁶

26 See Bausi 2012; CAe no. 6241.



Fig 06. Codex Σ, ff. 62v-63r. Photo 2012 Denis Nosnitsin © Project 'Ethio-SPaRe'

- (8) the names of the months (f. 40v);²⁷
 (9) a *Baptismal ritual* (ff. 41r–46r);²⁸
 (10) a *Euchologion* (ff. 46r–62v).²⁹

The quire structure

There are three quires, all beginning with the hair side:

- VI⁸: ff. 39–46 (i⁸H039F, ii⁸F040H, iii⁸H041F, iv⁸F042H, v⁸H043F, vi⁸F044H, vii⁸H045F, viii⁸F046H = G; folia i⁸H039F and viii⁸F046H are disjoined).
 VII⁸: ff. 47–54 (i⁸H047F, ii⁸H048F, iii⁸F049H, iv⁸F050H, v⁸H051F, vi⁸H052F, vii⁸F053H, viii⁸F054H = no G).
 VIII⁸: ff. 55–62 (i⁸H055F, ii⁸F056H, iii⁸H057F, iv⁸F058H, v⁸H059F, vi⁸F060H, vii⁸H061F, viii⁸F062H = G).

Block C

The textual content

Ff. 63–162 (Figs. 06–07): this block is the longest. It contains the following texts:

- 27 See Bausi 2006a, 60; *CAe* no. 6251.
 28 See Bausi 2020c; Brakmann 2020, 104–114; *CAe* no. 6254.
 29 See Bausi 2006a, 60–61; Bausi 2020c, 40–48; Fritsch and Habtemichael Kidane 2020, 165–169; *CAe* no. 6255.

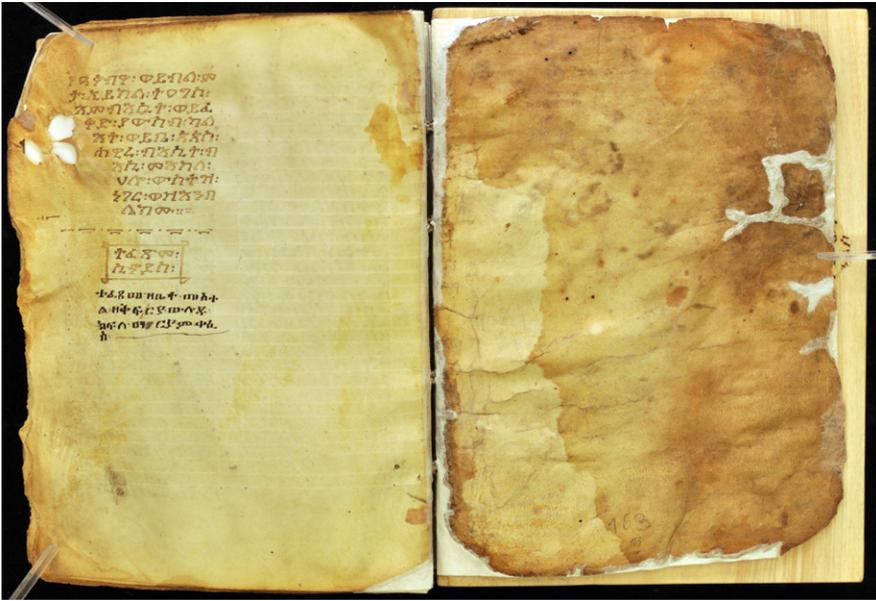


Fig 07. Codex Σ, ff. 162v-163r. Photo 2012 Denis Nosnitsin © Project ‘Ethio-SPaRe’

- (11) the *81 Apostolic canons* (ff. 63r–69v);³⁰
- (12) the *Council and the names of the fathers of Nicaea* (ff. 69v–73v);³¹
- (13) the *Canons of the council of Nicaea* (ff. 73v–78v);³²
- (14) the *Epistle of Constantine to the Alexandrinians* (ff. 78v–79v);³³
- (15) the *Epistle of Constantine on Arius* (ff. 79v–80r);³⁴

30 See Bausi 2006a, 61–62; *CPG* no. 1740; Bausi 1995, 148–179 (text), 62–72 (transl.), still from manuscripts of the *Sinodos*; for the biblical canon, see Bausi 2019; *CAe* no. 2675.

31 See Bausi 2013 and the valuable commentary by Voicu 2015; *CPG* no. 8516; *CAe* no. 6256.

32 See Bausi 2006a, 62; cf. *CPG* no. 8524; *CAe* no. 6257. One missing folium (now f. 74) was discovered in 2010, see the Acknowledgements. This set of canons does not appear to strictly correspond to other sets of the *Canons of Nicaea* known so far; a comparison with Alberigo 2006, 20–30 provides the following correspondence: Greek and Latin canons 1–10 = Σ 1–10; 11–13 = 11; 12–19 = 12–17; 20 = absent in Σ; at the end, Σ has a short additional text concerning the date of Easter (*CPG* no. 8514, for which see Benešević 1937, 156), followed by the titles of the 17 canons.

33 See Bausi 2016b, 310–313; *CPG* no. 8517; *CAe* no. 6258.

34 See Bausi 2016b, 314–317; *CPG* no. 2041 = 8519; *CAe* no. 6259.

- (16) the *Epistle of Athanasius to Epictetus* (ff. 80ra–88r);³⁵
 (17) the treatise *On the Only Judge* (ff. 88r–100r);³⁶
 (18) the *Council and the names of the fathers of Serdica* (ff. 100r–102v);³⁷
 (19) the *Canons of the council of Serdica* (ff. 102v–109v);³⁸
 (20–27) the *Antiochean collection of the canons of the councils*, composed of:³⁹
 (20) the *Canons of the council of Neocaesarea* (15 canons, numbered 1–15) (ff. 109v–111r);⁴⁰
 (21) the *Canons of the council of Ancyra* (25 canons, numbered 21–45) (ff. 111r–114v);⁴¹
 (22) the *Canons of the council of Neocaesarea*, mutilous (3 canons preserved, numbered 46–48) (f. 114v);⁴²
 (23) the *Council of Gangra*, acephalous (ff. 115r–116r);⁴³
 (24) the *Canons of the council of Gangra* (20 canons, numbered 60–79) (ff. 116r–118r);⁴⁴
 (25) the *Council of Antioch* (f. 118r–v);⁴⁵
 (26) the *Canons of the council of Antioch* (25 canons, numbered 80–104) (ff. 118v–124r);⁴⁶
 (27) the *Council and canons of Laodicea* (59 canons, numbered 105–163) (ff. 124r–128v);⁴⁷
 (28) the *Canons of the council of Chalcedon* (ff. 128v–133v);⁴⁸

35 See Savvidis 2016, 634–635, 703–735, with considerations of the Gə‘əz version in the *Aksumite Collection*; *CPG* no. 2095; *CAe* no. 1780.

36 See Bausi 2006a, 63; Bausi 2020a, 240–250; *CAe* no. 6260.

37 See Bausi 2006a, 63; *CPG* no. 8571; *CAe* no. 6249.

38 See Bausi 2006a, 63; *CPG* no. 8570; *CAe* no. 6250.

39 See Bausi 2006a, 64; *CAe* no. 6238.

40 See Bausi 2006a, 63–64; *CPG* no. 8504; *CAe* no. 6242.

41 See Bausi 2006a, 64–65; *CPG* no. 8501; *CAe* no. 6243.

42 See Bausi 2006a, 63–64; *CPG* no. 8504; *CAe* no. 6242.

43 See Bausi 2006a, 65–66; *CPG* no. 8553; *CAe* no. 6244.

44 See Bausi 2006a, 66; *CPG* no. 8554; *CAe* no. 6245.

45 See Bausi 2006a, 66; *CPG* no. 8535; *CAe* no. 6246.

46 See Bausi 2006a, 66; *CPG* no. 8536; *CAe* no. 6247. A fragment from a collection under study (Archäologisches Landesmuseum Schloss Gottorf, collection Dettenberg) contains canons 91–93 (that is, 12–14) of the 25 canons of the council (numbered 80–104). The fragment has some palaeographical and linguistic archaic features, but it is certainly later than codex Σ.

47 See Bausi 2006a, 66 (but correct ‘in 25 canoni numerati 105–163’ to ‘in 59 canoni numerati 105–163’); *CPG* no. 8536; *CAe* no. 6248.

48 See Bausi 2006a, 66; *CPG* no. 9008; *CAe* no. 6261.

- (29) the *Canons of the council of Constantinople* (ff. 133v–134v);⁴⁹
 (30) the *Council of Ephesus* (ff. 134v–135v);⁵⁰
 (31–35) *Sylloge of Timotheus Aelurus* (ff. 135v–160v),⁵¹ composed of:
 (31) the *Epistle to the Alexandrinians* (ff. 135v–145v);⁵²
 (32) the *Epistle to the Constantinopolitans* (ff. 145v–150v);⁵³
 (33) the *Twelve chapters of Cyril of Alexandria* (ff. 150v–152r);⁵⁴
 (34) the *Refutation of the council of Chalcedon* (ff. 152r–157v);⁵⁵
 (35) the *Treatises of Gregory of Nazianzus* (ff. 157v–160v);⁵⁶
 (36) the *Canonical answers of Peter of Alexandria* (ff. 160v–162v).⁵⁷

The quire structure

There are thirteen quires, nine beginning with the hair side and four beginning with the flesh side:

- IX⁶: ff. 63–68 (i¹F063H, ii¹F064H, iii¹F065H, iv¹H066F, v¹H067F, vi¹H068F = no G).
- XI⁷: ff. 69–75 (i¹F069H, ii¹H070F, iii¹H071F, iv¹F072H, v¹H073F, vi¹F074H, vii¹F075H = no G; all folia are disjoined except the bifolium iv¹F072H–v¹H073F): this quire appears to be composed of a singleton in position I (f. 69) plus a ternion in positions II–VII (ff. 70–75). Since there is neither textual loss nor lacuna or caesura, it appears that the quire was designed with this structure.
- XI⁸: ff. 76–83 (i¹H076F, ii¹F077H, iii¹H078F, iv¹F079H, v¹H080F, vi¹F081H, vii¹H082F, viii¹F083H = G).
- XII⁸: ff. 84–91 (i¹H084F, ii¹F085H, iii¹F086H, iv¹F087H, v¹H088F, vi¹H089F, vii¹H090F, viii¹F091H = no G).
- XIII⁸: ff. 92–99 (i¹H092F, ii¹F093H, iii¹H094F, iv¹F095H, v¹H096F, vi¹F097H, vii¹H098F, viii¹F099H = G).
- XIV⁸: ff. 100–107 (i¹H100F, ii¹H101F, iii¹F102H, iv¹F103H, v¹H104F, vi¹H105F, vii¹F106H, viii¹F107H = no G).
- XV⁸⁽⁻¹⁾: ff. 108–114 (i¹H108F, ii¹F109H, iii¹H110F, iv¹F111H, v¹H112F, vi¹F113H, vii¹H114F = G; all folia are disjoined except the bifolia iii¹H110F–vi¹F113H and iv¹F111H–v¹H112F): this quire has lost the last folium, between ff. 114 and 115, as appears from the textual analysis: on f. 114v

49 See Bausi 2006a, 66; *CPG* no. 8600; *CAe* no. 6262.

50 See Bausi 2006a, 67; *CPG* no. 8744; *CAe* no. 6263.

51 See Bausi 2006a, 67–68; *CAe* no. 2372.

52 See Bausi 2006a, 68; *CAe* no. 1785.

53 See Bausi 2006a, 68–69; *CPG* no. 5476; *CAe* no. 1786.

54 See Bausi 2006a, 69; cf. *CPG* nos 5221, 5222, 5223; *CAe* no. 6252.

55 See Bausi 2006a, 69; *CPG* no. 5482; *CAe* no. 2220.

56 See Bausi 2006a, 69; *CAe* no. 6253.

57 See Bausi 2006b, 70; *CPG* no. 2520; *CAe* no. 2693.

only three of the *Canons of the council of Neocaesarea* are present (numbered 46–48 in the continuous series of the conciliar canons), of the 15 that there should be; on f. 115r the list of names at the beginning of the *Council of Gangra* contains only eight of the fifteen names counted in the text. It must be reconstructed as: XV^{8(-1: viii)}, that is a quaternion with loss of a folium in the eighth position.

- XVI⁹: ff. 115–123 (i^H115F, ii^F116H, iii^H117F, iv^H118F, v^F119H, vi^F120H, vii^H121F, viii^F122H, ix^F123H = G): this quire appears to be composed of a singleton in the first position (f. 115) plus a quaternion in the second to ninth positions (ff. 116–123). Since there is neither textual loss nor lacuna nor caesura, it appears that the quire was designed with this structure.
- XVII⁶: ff. 124–129 (i^F124H, ii^F125H, iii^F126H, iv^H127F, v^H128F, vi^H129F = no G).
- XVIII⁹: ff. 130–138 (i^H130F, ii^F131H, iii^F132H, iv^F133H, v^F134H, vi^H135F, vii^H136F, viii^H137F, ix^H138F = no G): this quire appears to be composed of a singleton in the first position (f. 130) plus a quaternion in the second to ninth positions (ff. 131–138). Since there is neither textual loss nor lacuna nor caesura, it appears that the quire was designed with this structure.
- XIX⁸: ff. 139–146 (i^H139F, ii^F140H, iii^H141F, iv^F142H, v^H143F, vi^F144H, vii^H145F, viii^F146H = G);
- XX⁸: ff. 147–154 (i^F147H, ii^F148H, iii^H149F, iv^F150H, v^H151F, vi^F152H, vii^H153F, viii^H154F = no G);
- XXI⁸: ff. 155–162 (i^H155F, ii^H156F, iii^F157H, iv^H158F, v^F159H, vi^H160F, vii^F161H, viii^F162H = G);
- XXII²: ff. 163–164 (i^F163H, ii^H164F): one bifolium serving as endleaves.

§ 5. *The layout of codex Σ*

The dimensions of the text block are: *c.*310/330 × *c.*210/245 × *c.*75 mm (height × width × thickness); the text is arranged in two columns. Sample folios: f. 8r (327 × 237 mm): vertical (from the top) 25:245:57 mm; horizontal (from the inner edge): 21:86:13:86:31 mm; f. 72r (328 × 243 mm): vertical: 30:240:58 mm; horizontal: 22:86:16:86:33 mm; f. 40v (314 × 232 mm): vertical (from the top) 30:236:48 mm; horizontal (from the inner edge): 16:84:14:82:36 mm; f. 56v (310 × 210 mm, with margins probably damaged): vertical (from the top) 28:236:46 mm; horizontal (from the inner edge): 16:86:12:80:16 mm; f. 80r (328 × 235 mm): vertical: 31:241:56 mm; horizontal: 17:85:15:84:34 mm. The resulting average interlinear space has a height of *c.*8.35 mm; each written line of each column has an average width

of *c.* 85.50 mm. Since each line of each column allocates from eight to eleven syllabographs (hereafter ‘letters’, for the sake of simplicity, whereas the word dividers are not counted), in a few cases up to twelve (f. 155va.13 due to correction), the average width of each letter is *c.* 7.77 to *c.* 10.68 mm.

All 162 folia which are written are ruled with a hard point (the final bifolium is blank and not ruled), even though on a few of them ruling is not well visible.⁵⁸ As usual, the codex exhibits vertical pricks, for bounding lines (placed on the top and bottom margins, at *c.* 20/30 mm from the inner edge and *c.* 30/35 from the outer edge); and text pricks, for horizontal text lines. The same top and bottom vertical pricks are used to guide the bounding lines as well as the top and bottom text lines, while all the other text pricks are located on the outer vertical bounding lines, suggesting that the scribe first carried out the vertical pricks and impressed the vertical bounding lines, then executed the text pricks on them, and finally ruled the horizontal text lines. The inter-column and inner margins are ruled, as usual, whereas top, bottom, and outer margins are not. The ruled lines are invariably impressed on the flesh side, even though it is difficult to say if the lines were impressed on each bifolium or on more bifolia at once or even on an entire quire. The different degree of markedness of the lines points to the possibility that pricking was carried out also on more superimposed bifolia.⁵⁹

Most of the 162 folia are ruled with 30 lines with an average of 29 or 30 written lines. The predominant pattern is below top line, that is, top written line 1 is written under ruled line 1, that is, on ruled line 2, and in not a few cases, written line 30 is written under ruled line 30. There is no case of above top line (that is, top line 1 written on ruled line 1). The writing is always placed upon the base line (*scrittura appoggiata*), not hanging on the line (*scrittura appesa*). The ruling is carefully observed in writing and deviation are generally motivated with justification, that is, when the remaining letters of a paragraph are accommodated in the same column in one or more extra-lines, or, more rarely, when a new paragraph starts on a new column and not in the last line, or due to interlinear correction, with addition of one or more interlinear lines. The final bifolium serving as endleaves is not ruled.

58 It is important to remind that this description is mainly based on the digital evidence. The conservators had to dedicate all the time available to verify the data for a correct execution of their work; the conditions to carry out an ideally perfect codicological study were not in place.

59 On the issues, still particularly understudied in Ethiopic manuscripts, see Balicka-Witakowska et al. 2015, 160–162; Nosnitsin 2015, 99, 101–103, and 107, who proposed a nomenclature according to which codex Σ corresponds to ‘pattern IV’, which is probably the earliest attested; see also Nosnitsin 2020, 305–306.

Ff. 1–38 (block A) have 30 ruled lines with 29 written lines. Exceptions: 30 written lines (due to justification, ff. 23ra and 38vb; due to correction, f. 30va).

Ff. 39–62 (block B) has 30 ruled lines with 30 written lines. Exceptions: 31 written lines (due to correction, with written line 31 under ruled line 30, f. 48vb; due to justification, ff. 53rb, 55va); 30 ruled lines with 29 written lines (ff. 39va, 40va, 50rb, 54vb); 30 ruled lines with 28 written lines (f. 40vb); 30 ruled lines with 18 written lines (due to justification, f. 62vb); ruled lines are not visible (f. 49r); 34 written lines (f. 49ra); 31 written lines (f. 49rb). It has to be noted that this section is clearly marked by a prevailing different pattern (30 ruled lines with 30 written lines; written line 1 on ruled line 2 and written line 30 under line 30), which appears at the end of the previous block (f. 38vb). One should not exclude that the last column of block A was taken as a model in writing for the following text in block B. The end of the block is also clearly marked by a peculiar layout, with only 18 written lines on f. 62vb and no continuation of text, whereas continuation of the text in the same column is the rule in all other cases of textual boundaries within the manuscript. This results in 11 empty lines on f. 62vb.

Ff. 63–162 (block C) have 30 ruled lines with 29 written lines. Exceptions: 30 ruled lines with 32 written lines (due to justification, f. 70rb); 30 ruled lines with 30 written lines (ff. 70va, 109r, 110v, 111rv, 112v, 114vb, 148ra, 161rv, 162r; due to justification, 100rb, 109va; due to correction, f. 106va, 115ra, 134va); 30 ruled lines with 28 written lines (f. 71rv; due to justification, ff. 73va, 78rb, 118vb, 123ra); 29 ruled lines with 28 written lines (ff. 123v, 130rv, 160r); 29 ruled lines with 29 written lines (f. 160v). F. 78v has 30 ruled lines with 30 written lines, but ruled lines 1–15 are written full page in one column and ruled lines 16–30 are written in two columns, with one empty line due to the layout required for hosting a list of canons: this is the only case in the manuscript of a single-column layout. On f. 145va lines 11–14 were erased, probably due to correction. F. 162va has 30 ruled lines with 12 written lines plus 4 lines by a second hand, due to a note of explicit. F. 162vb is blank.

§ 6. *The punctuation and navigating system of codex Σ*

Codex Σ has a relatively simple, but consistent system of punctuation and graphic marks for structuring the text. There is a limited set of punctuation marks, which is again a sign of archaism: the four dots (#) and the four dots followed by two strokes with serifs (#=) are the most frequently used; double four dots (##, f. 23ra, if not a two four-dot sign followed by two less marked strokes) or even two vertical dots (:=) followed by two strokes (f. 40vb) also occur; two vertical dots with short strokes above and below (⌘) are very rare

(ff. 39va and 136va); three vertical dots (⋮) are exceptional (f. 95ra). Also used is the dotted line, composed of a sequence of simple dots only (ff. 29va, 39ra, 41ra (at the beginning of a column), 73vb, 79vb, 102va, 102vb, 109va) and a double line composed of two rows of chevrons (f. 16vb). Peculiar is a double line composed of couples of strokes with serifs, with the larger stroke of each pair placed above the smaller one (f. 78rb on a single column and f. 78va on the width of two columns, since f. 78v has a single-column layout until line 15, then the double line on line 17, and the double-column layout starting from line 17). Dotted lines composed of alternating dots and strokes, similar to a sequence of paragraph marks, also occur (ff. 5ra and 118vb). The note of *explicit* (on f. 162va) mentioned above is framed in a sort of small elegant looped rectangular cartouche; above the frame there is a column-wide double line composed of couples of strokes with serifs, with the larger stroke of each pair placed above the smaller one; the strokes of the upper lines are separated by dots (Fig. 07).

Titles are written in the column and are rubricated. There is only one case of alternated rubricated lines at the beginning of a text, with three rubricated lines of title, followed by three non-rubricated lines, followed again by three rubricated lines (see f. 69vb.7–10 in red, 11–13 in black, 14–16 in red).

The left margins, to the left of the bounding vertical lines of each column, are regularly used to host several elements, namely, numbers, paragraph marks, and other signs.

Numbers frequently occur in the margins, in a collection of normative and liturgical texts arranged in canons and sections. These numbers are predominantly, but not always, written in red, in correspondence, when occurring, of rubricated titles; the numbers are apparently accompanied below, but not always, by horizontal strokes with serifs; the strokes are more regularly present on ff. 1–62 (corresponding to quire blocks A and B) and less regularly present on ff. 63–162 (quire block C).

Paragraph marks are extremely frequent and very carefully applied in the margins. They are composed of three elements, from the left to the right: a larger dot, followed by a colon (composed by two smaller vertical dots), and a horizontal stroke with serifs at the ends, all justified to the right.⁶⁰ They are invariably placed at the end or at the beginning of the paragraph, in the interlinear space after its end or in the interlinear space before its beginning, usually in correspondence with the presence of punctuation marks within the text written in the column or other signs marking the beginning of a new paragraph. In not a few cases, the change of paragraph within the column is

60 This is the sign which is called ‘Obelos’ by Uhlig 1988, 92 and *passim*, and ‘paragraphus’ by Zuurmond 1989, I part, 33.

simply marked by the beginning of a new line, to which normally corresponds a marginal paragraph mark as well. The paragraph mark can also occur at the beginning of the column, above the top written line (f. 49ra). In the very frequent case of marginal numbers occurring after a title, the marginal paragraph mark at the end of the title can be substituted by a simple stroke with serifs placed above the number, so that the number results to have strokes above and below, even if the above one should be better interpreted as a paragraph mark. This confirms the observance of the archaic palaeographic feature that numbers, which are frequently but not always rubricated (see for example f. 40v), when written within the column without any navigating function have no stroke, either above or below.

Among the other marginal signs, the most complex is the *crux ansata*, which occurs a few times in correspondence of the beginning of texts (ff. 5ra, 13va, 41ra, and 46rb) or sections within texts (ff. 14ra and 61va). Its occurrence is therefore limited to the blocks A and B. Of even rarer occurrence is a sign in the shape of a small St Andrew Cross, red with four dots between each arm (f. 76va) or black without any dot (ff. 114va, 137ra and 137va). Of rare occurrence is also the *zaya* (ዝያ ፤) sign, literally, ‘here’, used as a reference sign (ff. 96vb, 130ra, 144ra; 131v in the intercolumnar space; and 132r in the upper margin); and the *kómma* sign, *qʷəm* (ቀጥ ፤, on f. 8ra, possibly by a later hand, with *qʷəm* linked to *m* by a vertical stroke).⁶¹

There are a few scribbles, that could be interpreted as short *probationes calami* (ff. 38ra, upper margin; f. 112va, outer margin; f. 114v, upper margin; f. 117v, upper margin; f. 136r, lower margin; f. 137r, outer margin; f. 138r, outer margin; f. 143r, in the intercolumnar space; f. 144rb, outer margin; f. 144va, outer margin; f. 146r, outer margin; f. 147r, in the intercolumnar space; f. 156r, inner margin; f. 157v, inner margin).

§ 7. The palaeography of codex Σ

After the appearance of contributions to palaeography and manuscript studies from the 1980s which remain reference works, particularly the last decade has seen a flourishing of new studies which have increased our knowledge and set new benchmarks for the study of palaeography and scribal tradition of the earliest Ethiopic manuscripts.⁶² Although we know that there is not one set

61 For this particular sign, see Zuurmond 1989, I part, 32–36, who considers it a relic of the Greek word κόμμα.

62 See at least Uhlig 1988; Zuurmond 1989, II part, 44–47, 48–50, 56–58 (description of mss 'Ēndā 'Abbā Garimā I and III, and Città del Vaticano, Biblioteca Apostolica Vaticana, etiop. 25, which share most of the features listed here); Uhlig 1990; and for the more recent studies on the palaeography of archaic manuscripts see Nosnitsin and Bulakh 2014, 557–561; Nosnitsin and Rabin 2014, 65–74; Bausi and

only of archaic palaeographic features and that graphic systems must be considered in their entirety and structural functionality and that different systems can have coexisted, it is apparent that codex Σ has a marked archaic palaeographic profile, as emerges by comparison with the oldest dated and datable Ethiopic manuscripts. Some observations on punctuation are also relevant to the palaeography of the manuscript and are not repeated here.

The palaeographic features listed below are consistent throughout the manuscript: if they obviously witness to the scribal tradition of the copyist who wrote them, the result must be viewed as the compromise that always takes place in the manuscript and textual tradition of copied texts—particularly in texts like those of the *Aksumite Collection*, which have a centuries-long transmission—between the palaeographic, orthographic and linguistic features of the model (the antigraph) and the system in use at the time when the copyist worked. One can anticipate here that linguistic and orthographic phenomena—which due to their scope are not the subject of this note and which will be discussed in a separate contribution—are not all consistent: for example, the well-known occurrence of archaic *-e* endings instead of usual *-a* endings in prepositions and conjunctions in the absolute state (*sobe* for *soba*, *habe* for *haba*, and so on), and in the plural relative pronoun as well (*'alle* instead of *'alla*), are not a scribal feature of the copyist. In one single text (the mystagogical treatise *On the Only Judge*, ff. 88r–100r) they never occur and there is no reason to attribute their presence or not to the copyist, who is one and the same and must have written what he found in his exemplar(s).⁶³

Here follow some concise observations on the palaeography of the numerals and letters.

All the numerals and letters have a marked angular appearance. Well-known distinctive oppositions are present in the numerals: as mentioned

Nosnitsin 2015; Maximous el-Antony et al. 2016, 37–45; Nosnitsin 2016, 89–92; Nosnitsin 2018, 290–292; Villa 2019, 187–208 (implicitly); Erho and Henry 2019, 178–180; Erho 2020, 246–248; Nosnitsin 2020, 286–290; Nosnitsin 2021. A note of its own would deserve the developing research on palimpsests, for which see the unpublished papers by Erho 2017 and Delamarter and Getatchew Haile 2018. All of Bausi's contributions with publications of texts of the *Aksumite Collections* also contain, either in a preface or in the apparatus or in both, synthetic palaeographic and linguistic remarks on codex Σ . Among the unpublished papers which approach issues of palaeography and language, see Bausi 2004, also dealing with the Octateuch of Qəfrəyā (MS C₃-IV-69, later MS UM-040).

63 For the discussion of the phenomenon, see Bausi 2005a; Bausi 2005b; Bulakh 2009, 402, n. 19; a short summary of previous research in Villa 2019, 204–206; Bausi 2016c, 76–77, n. 92, with further data. For some hints at this fundamental question of the relationship between apograph and antigraph(s) at the example of a new witness of the *Shepherd of Hermas*, see Erho 2020, 246–247.

above, numerals within the text have no stroke, either above or below; the numeral 1 (**Ḫ**) has the typical archaic shape opposed to 4 (**Ḫ**); and 6 (**Ḫ**) has no ring and is opposed to 7 (**Ḫ**) by larger width and lower height; numeral 10 (**Ḫ**) has a ring on the right side of the leg, like that used to mark the fifth order (ff. 7ra, 40vb, 76rb, 130va).⁶⁴ To the difference of the first order of *h* (*ha*, **Ḫ**), the sixth order (*hə*, **Ḫ**) has the external legs shorter than the central one, which is slightly bent leftward making the distinction between first and sixth order at times difficult (f. 64ra). The first and sixth orders of *s* (*sa* and *sə*, **Ḫ** and **Ḫ**) seem to have different shapes, with *sə* (**Ḫ**) more pronouncedly bent leftward and/or with an oriented serif on the stroke on top of the letter; yet, this distinction has no consistent application and first and sixth order are used for first and sixth order regardless of orthography (for which this phenomenon is also significant) and grammar. The first and sixth orders of *q* (*qa* and *qə*, **Ḫ** and **Ḫ**) and *t* (*ta* and *tə*, **Ḫ** and **Ḫ**) are also absolutely indistinguishable; in these and in the other orders as well the head of the leg is slightly bent leftward. To the difference of the first order of *l* (*la*, **Ḫ**), the sixth order (*tə*, **Ḫ**) has the lateral legs as long as the central one, and differs from the first order only by the break in the central leg.

Moreover, there are other features that do not imply any neutralization of opposition, which are remarkable in themselves: the fifth order of *h* (*he*, **Ḫ**) typically resembles a V-shaped letter with a ring at the lower vertex and with arms of the same length (for example on f. 139ra); the seventh order of *l* (*lo*, **Ḫ**) has sometimes the ring immediately tied to the right leg, but much more often linked by a short stroke (for example on f. 4va); in the sixth order of *h* (*hə*, **Ḫ**) the left end of the letter drops under the lower half of the height of the letter; the sixth order of *ʿ* (*ə*, **Ḫ**) has the typical head extending all along its width parallel to the ruled line; the first order of *w* (*wa*, **Ḫ**) consists of two identical halves, separated by a vertical stroke; the second order of *w* (*wu*, **Ḫ**) has the lateral stroke at the side in the middle (not in the lower end, as in later

64 This feature was already noted in Dillmann 1907, 33, n. 1. Uhlig 1988, 212 interprets it as an imitation of the Arabic spelling for 10 (١٠), following an observation of Leroy et al. 1961, 24, and refers to Wright 1877, 186–187 (no. 232), MS London, British Library, Or. 706, a *Gadla Fāsīladas* and *Gadla Nob*, where several examples of the numeral are given in print; Uhlig, probably wrongly in my opinion, believes that this feature is typical of the second palaeographic period (end of the fourteenth-half of the fifteenth century); other attestations which should be interpreted as evidence for the late survival of this feature are MS London, British Library, Or. 551 (Wright 1877, 97–98, no. 144), f. 27va, version B of the *Laṣāfa ṣādq*, see Budge 1929, pl. of f. 27v; see also MS Berlin, Staatsbibliothek Preußischer Kulturbesitz, Orientabteilung, Peterm. II Nachtr. 28 (Dillmann 1878, 64–65, no. 71), ff. 15v, 40r, 62v, 64v, 65r–v, 66v.

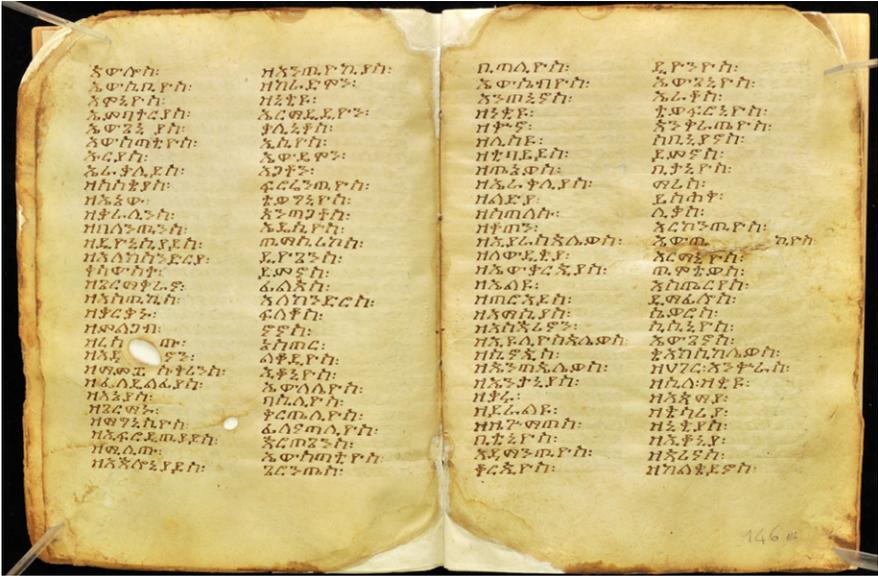


Fig 08. Codex Σ, ff. 101v-102r. Photo 2012 Denis Nossnitsin © Project ‘Ethio-SPaRe’

manuscripts), while the sixth order (*wə*, **ⲱ**) has the stroke at the top (not in the middle).

The letter *p*(^we) (**Ⲫ**, but written with an open ring to the right and with the left bottom stroke usually marking the labial appendix placed almost horizontally across the ruled line) appears in personal names in correspondence with the Greek sequences Φ– followed by consonant, or Ψ–, when followed by *s* (ff. 6va, 6vb, 7va, 71va (twice), 72rb, 72va, 73ra, 101va): see *p*(^we)*səton*, **Ⲫⲏⲉⲛⲧ**ⲟ, probably Psote; *p*(^we)*tenəto*, **Ⲫⲉⲛⲧⲟ**, and *p*(^w)*təneṭu*, **Ⲫⲉⲛⲧⲟ**, probably Φθενέτου;⁶⁵ *p*(^we)*laq(q)os*, **Ⲫⲏⲗⲟⲥ**, and *p*(^we)*lāq(q)os*, **Ⲫⲏⲗⲟⲥ**, Φλάκκος; *p*(^we)*labiyādos*, **Ⲫⲏⲗⲟⲥ**, Φλαβιάδος; *awp*(^we)*suki-yos*, **ⲗⲱⲪⲏⲗⲟⲥ**, and *ewp*(^we)*səkiyos*, **ⲗⲱⲪⲏⲗⲟⲥ**, Εὐψύχιος; *māmp*(^we)-*suqrinās*, **ⲙⲁⲙⲡⲪⲏⲗⲟⲥ**, certainly Μάμψου κρήνης⁶⁶ (Fig. 08). Aside from the phonetic questions related to the rendering in Gə‘əz script of Greek labials, the sign poses the palaeographic question of the invariability of the shape of the letter and of its interpretation, namely, which order this sign represents and

65 The identifications of *P*(^we)*səton*, *P*(^we)*tenəto*, and *P*(^w)*təneṭu*, are suggested by Alberto Camplani in his forthcoming commentary to the *History of the Episcopate of Alexandria*.

66 See Ruge 1933a; and for the passage from *Mops-* to *Mamps-*, which is attested from the first half of the third century to John Malalas (c.491–578), see Ruge 1993b.

which is the relationship of this sign with the letter p (τ), the regular sixth order of which $p\partial$ (τ) is never attested in the manuscript; in fact, the letter p occurs only twice (f. 40va) in a short text on the Greek-Egyptian names of months: in both cases it is in the fourth order, in the words $p\bar{a}wof\bar{i}$ ($\tau\text{P}\bar{\omega}$) and $p\bar{a}rmoti$ ($\tau\text{C}\text{P}\bar{\tau}$).⁶⁷ The evidence would be in favour of interpreting the sign p (ve) as an archaic form of the sixth order, with the value $p\partial/p$ (phonetically corresponding to the standard τ), and with no labial appendix.

More to orthography than to palaeography belong the consistent and exclusive spellings $'\text{agzi}'a\ b\bar{a}h\bar{e}r$ ($\lambda\text{G}\text{H}\lambda\text{:}\ \text{A}\text{H}\text{C}\text{:}$), 'Lord, God', instead of the later $'\text{agzi}'ab\bar{a}h\bar{e}r$ ($\lambda\text{G}\text{H}\lambda\text{A}\text{H}\text{C}\text{:}$), and $'\text{epi}sq\bar{o}p\bar{o}s$ ($\text{h}\lambda\lambda.\text{h}\text{:}\ \text{P}\lambda\text{h}\text{:}$), 'bishop', instead of the later $'\text{epi}sq\bar{o}p\bar{o}s$ ($\text{h}\lambda\lambda.\text{h}\text{:}\ \text{P}\lambda\text{h}\text{:}$).

On this basis codex Σ can be dated at the latest to the thirteenth century with a concrete possibility of an earlier dating. It is one, probably the largest, of the most ancient (pre-fourteenth century) Gə'əz non-biblical manuscripts known so far.

§ 8. Inks of codex Σ (Denis Nosnitsin and Ira Rabin)

As part of the manifold study of the unique manuscript, in 2012, 2014 and 2015 several modern non-destructive techniques of material studies were applied to codex Σ in attempts to clarify the chemical composition of its inks.⁶⁸

In the course of the 2012 digitization of the manuscript and on some other occasions, the team of 'Ethio-SPaRe' conducted a quick NIR (near-infrared) reflectography of the inks by means of digital USB-microscope Dinolite Pro2 AD413T-I2V.⁶⁹ Exposed to NIR-light, the black ink of codex Σ largely

67 See Bausi 2013, 38–39, with figures, for a detailed discussion of the phenomenon; see also Villa 2019, 210–212.

68 Carbon and iron-gall inks are commonly considered the most important ink types for various manuscript traditions. Plant inks (also known as 'Theophilus ink') represent still another major type. Mixed inks also existed, composed of the mixture of the main ink types or their ingredients (cf. Déroche 2006, 111–119; Agati 2009, 267–271; Rabin 2015; Centre for the Study of Manuscript Cultures 2015). Recent studies showed that in some cultural contexts mixed inks were very wide-spread, for instance in the situations when scribes were not directly involved in the process of ink production but only wished to obtain ready black inks (as it appears to be the case with some of the inks encountered in the documents of the Cairo Genizah, see Cohen 2020; cf. also Colini et al. 2018; Ghigo et al. 2020). In the Ethiopian Christian manuscript culture, the dominance of the carbon inks starting from c. fourteenth century over the entire classical medieval ('Solomonic') period seems to be proven and hardly disputable, even though many details require further study (cf. Balicka-Witakowska et al. 2015, 156–157; Nosnitsin 2020, 292–294).

69 The team followed professional advice of Ira Rabin and the method developed in BAM ('Bundesamt für Materialforschung'). The results of the application of this



Fig. 09a-b. Codex Σ , character *se*, black ink in LED (a) and NIR (b), images taken with Dinolite Pro2 AD413T-I2V.



Fig. 10a-b. Codex Σ , character *qo*, black ink in LED (a) and NIR (b), images taken with Dinolite Pro2 AD413T-I2V.



Fig. 11a-b. Codex Σ , character *ro*, black ink in LED (a) and NIR (b), images taken with Dinolite Pro2 AD413T-I2V.

loses its opacity showing, however, some small carbon particles which retain the deep black colour (Figs. 09–11). This result indicates the presence of carbon that does not constitute the major component of the ink. Therefore, using reflectography alone it was possible to conclude that we deal with mixed ink here whose major component might belong to the iron-gall type. As to the red

method aimed at preliminary classification of the inks into carbon or non-carbon types are summarized in a report, see Nosnitsin 2014.

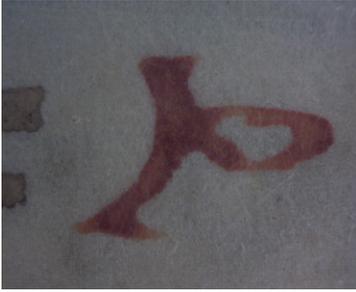


Fig. 12a-b. Codex Σ , character 10, red ink in LED (a) and NIR (b), images taken with Dinolite Pro2 AD413T-I2V.



Fig. 13a-b. Codex Σ , character *wa*, red ink in LED (a) and NIR (b), images taken with Dinolite Pro2 AD413T-I2V.

ink of the manuscript, when exposed to NIR-light it partly preserves its opacity (Figs. 12–13), indicating that it probably contains some carbon.

More advanced and complex methods were applied in 2014 and later in 2015, in the aftermath of the treatment by the specialists in manuscript conservation, as a part of the Ethio-SPaRe manuscript conservation programme.⁷⁰ At the concluding stage of the work⁷¹ the aim was to study the chemical composition of the inks of codex Σ and some other valuable manuscripts, and to gather as much information about their materiality as possible.

Ira Rabin conducted X-ray spectrometric study of codex Σ on 7–9 June 2014, *in situ* (the church of 'Urā Qirqos), using XRF portable spectrometer TRACER III-SD (Bruker). Measurements were gathered from the ink of the text, f. 23ra.29, and f. 23va.4, and from the blank parchment in the bottom margin of f. 23v (see Fig. 14a–b). The results showed that the non-carbon ink contains the enhanced amount of Fe accompanied by Mn (Chart 1), that possibly indicates the presence of the iron-gall ink. The elevated amounts of K that was also found could point to gum arabic as binder.

70 Nosnitsin 2019.

71 Conducted by the joint mission of the 'Ethio-SPaRe' project and specialists from the Center of the Studies of Manuscript Cultures group, 21 May–9 June 2014.

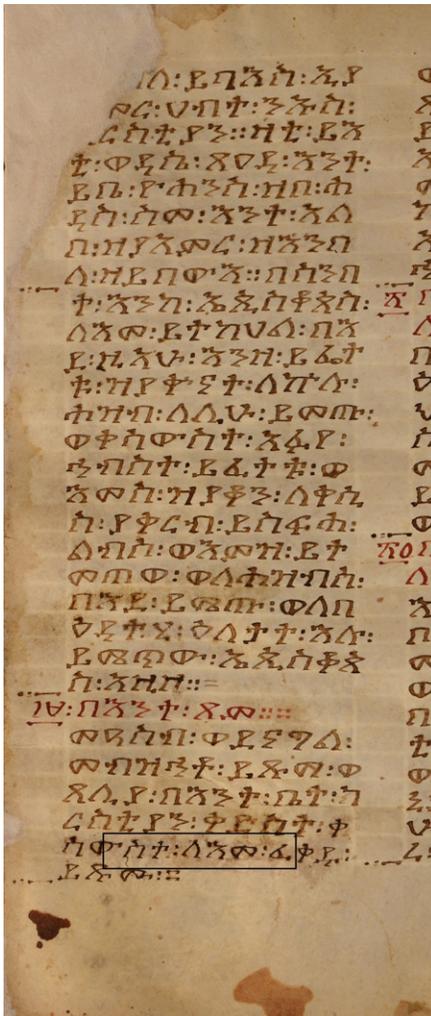


Fig. 14a-b. Codex Σ, ff. 23ra (a, left) and 23va (b, right), spot of X-ray spectrometric study with TRACER III-SD (Bruker).

Later, there was an occasion to check these results with μ -X-ray fluorescence spectrometer ARTAX (Bruker). The line scan made across the writing on f. 22ra showed that elements Fe, K and Mn have enhanced intensity in the ink spots (Chart 2). The intensity of the elements Mn and K correlates with that of Fe (Chart 3) indicating that these three elements are contained in the ink. Therefore, the ink of codex Σ could be classified as a mixed one since it is based on iron in addition to the soot component detected by NIR reflectography. As above, K might be taken as an indication of the presence of gum ara-

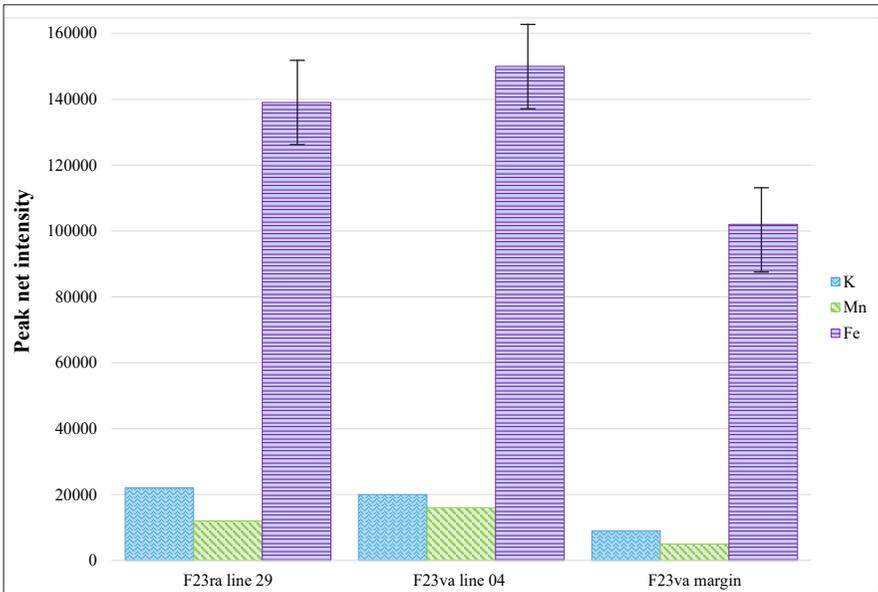


Chart 1. X-ray spectrometric study of Codex Σ with TRACER III-SD (Bruker), ff. 23ra (black ink), 23va (black ink), 23va (parchment).

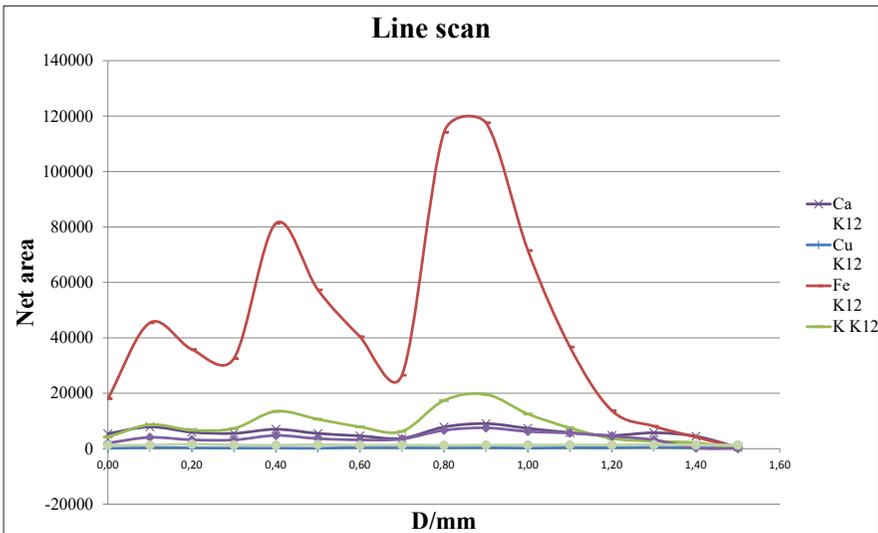


Chart 2. μ -X-ray fluorescence spectrometric study of codex Σ , with ARTAX (Bruker), a written line on f. 22ra.

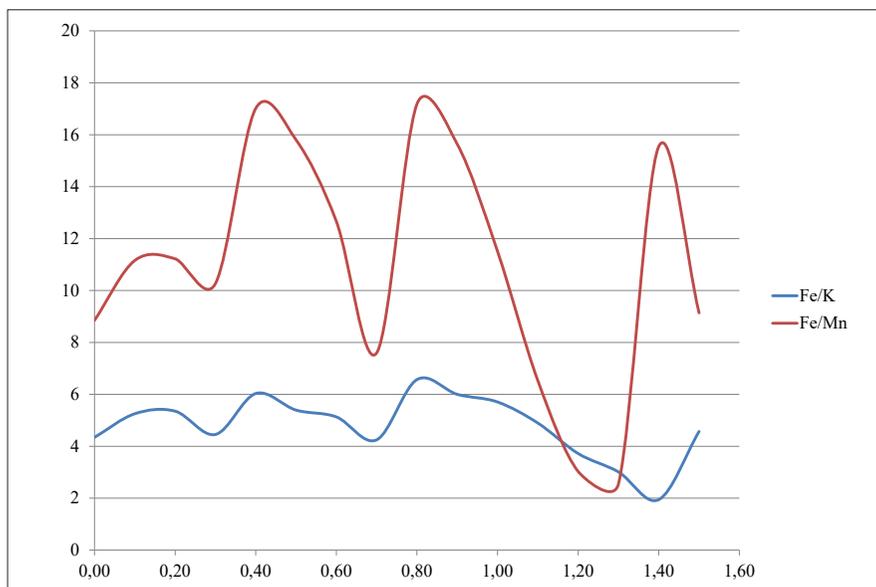


Chart 3. μ -X-ray fluorescence spectrometric study of codex Σ , with ARTAX (Bruker), f. 22ra, correlation of Mn and K with Fe.

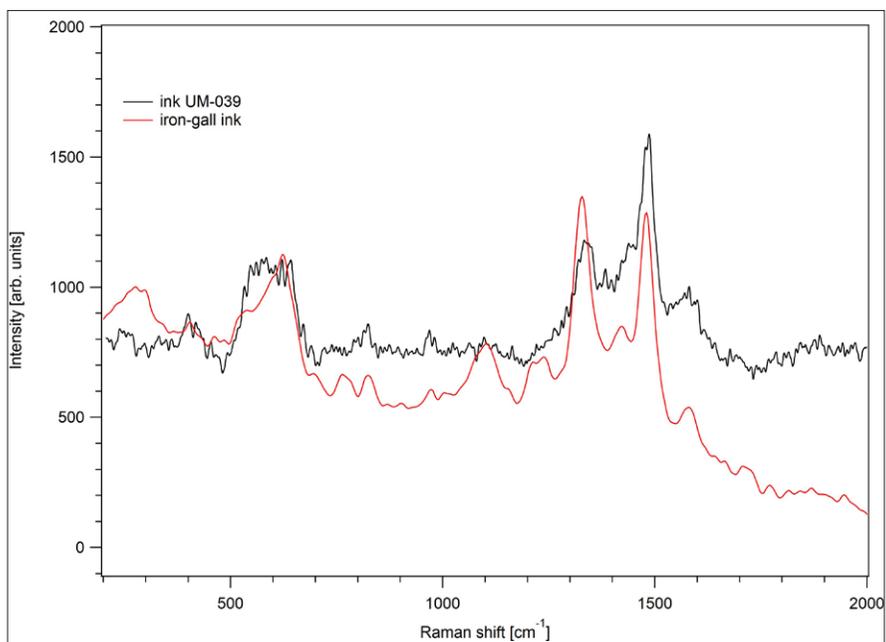


Chart 4. μ -Raman spectroscopy with InVia (Renishaw): codex Σ , f. 22r, black ink, and a fresh iron-gall ink.

bic as a binding agent. The ratio Fe/Mn is constant for the ink that could point to unusually clean vitriol as a source of iron. It seems probable that nails or filings that commonly contain manganese in addition to iron were used here in good accord with extant Arabic recipes.⁷² Moreover, the use of metallic iron for production of black pigment seems to belong to the traditional methods in Africa.⁷³ Recently, inks with a similar composition discovered in medieval Coptic and Hebrew manuscripts from Cairo Genizah have been ascribed to a non-vitriolic variety of iron-gall inks.⁷⁴

The final proof of the presence of the iron-gall ink has been delivered by Raman spectroscopy. Rabin measured a spot from f. 22r by means of the spectrometer InVia (Renishaw). The spectrum of the black ink of codex Σ and that of a fresh iron-gall ink are comparable (Chart 4). Raman spectrography cannot detect small amounts of soot, and the presence of a soot component could therefore not be proved. But it has unequivocally proved that at least one component is a kind of iron-gall ink. The overall conclusion is that the black ink of codex Σ is of the iron-gall type, with a very small admixture of soot.

The final conclusion provides another piece of information indicating that in the pre-fourteenth-century period the carbon ink was not the only and possibly not the first option of the Ethiopian manuscript-makers, even though soot could have been used. It is also another indirect indication that the carbon dominated the professional field of the Ethiopian manuscript making starting only from *c.* the late thirteenth/beginning of the fourteenth century.⁷⁵ However, the general picture is more complicated as the use of plant inks before and after the fourteenth century appears possible, as preliminary studies have

72 See e.g. Schopen 2006, 98, 124; Fani 2014, 111.

73 See Biddle 2011, 14, 19.

74 See Ghigo et al. 2020; Cohen 2020.

75 For the moment, it is not possible to learn how exactly the iron-gall ink was prepared in that remote time in Ethiopia, and what kind of raw materials were in use. The technology is very flexible and actually less time-consuming than the preparation of the carbon inks. The durability and persistence of the iron-gall inks is well known. It works its way into the writing support and produces intensive black colour (as a result of the reaction of oxidation) and retains the colour over a long time. Unlike the carbon ink, the iron-gall ink cannot be washed away. However, it can change its colour (since it deteriorates). Under certain conditions, it can damage the writing support (ink corrosion). In the last time it was seen by the scholars and conservators, the ink of codex Σ was for the most part of light brown colour. When discovered, the binding of the manuscript was destroyed and the quires were misplaced, nevertheless the parchment leaves survived many centuries without significant damage, the ink was in good condition and the text was overall well readable.

shown,⁷⁶ but more testing is necessary. In the end, the ink analysis does not bring forth a very precise dating for codex Σ , yet it contributes to elucidating the cultural and technological context of late antique/early-medieval Ethiopia (see the proposed dating above) where the manuscript was produced.⁷⁷

The discovery of the iron-gall ink remains bound to one single manuscript, codex Σ , with no other cases positively attested so far. It cannot be excluded that codex Σ will remain unique, but there may be also some other reasons. First, the manuscript material from the pre-fourteenth-century period is scanty, and identification and evaluation of the pre-fourteenth-century manuscripts is a problem in itself. Second, it is still not easy to surmount technical challenges that accompany the material study. The analysis of the inks can be conducted only in several steps, with the use of expensive and in part hardly transportable devices. The third problem concerns the physical accessibility of the manuscripts and the official permission for material studies. Some other ancient manuscripts and fragments could come in question for the analysis of inks and would provide, with great probability, important information, but in many cases the hope to get a chance even for a simple reflectography is small, especially in traditional Ethiopian repositories,⁷⁸ and can be realized in exceptional cases only. Without doubt, the analysis of the inks in the 'Ēndā 'Abbā Garimā Gospels would clarify a number of questions, and it remains the main *desideratum*.⁷⁹

76 See the following footnote.

77 Cf. the results of the material study of the ancient fragments in mss Dabri Dabra Zakāryos Giyorgis, Ethio-SPaRe DGD-002, 'Urā Qirqos, Ethio-SPaRe UM-033 that indicated the admixture of non-carbon inks, i.e. iron-gall or plant (see Nosnitsin 2014), and the same for the fragment of Mə'əsār Gʷəḥilā (Nosnitsin and Rabin 2014, 75–76), all dated to the pre-fourteenth-century period also on the basis of various other evidence. We can only speculate as to why the transition to the carbon ink was necessary in Ethiopia and how it took place. During this period, the scribes could have been using mixed inks, experimenting with ingredients of different ink types and trying to achieve better results. Later they finally preferred the carbon inks (adherence to the soot-based inks has been observed in other African manuscript cultures, see Biddle 2011, 22–24, 27).

78 A number of ancient items are listed in Nosnitsin 2020. There is still a small hope to check the ancient ms MY-002 (Nosnitsin and Bulakh 2014) at least with the Dinolite, but hardly any chance to reach the ancient 'Comboni fragment' that may be comparable in age with codex Σ (Nosnitsin 2021). The ink of the recently identified ancient (probably pre-fourteenth century) fragment ms Archäologisches Landesmuseum Schloss Gottorf, collection Dettenberg, D845, is not purely carbon, as the preliminary reflectography with Dinolite has demonstrated.

79 This most important facet of the manuscripts' materiality has not been attended yet, cf. the recent study McKenzie et al. 2016 .

§ 9. *History of research and acknowledgements* (Alessandro Bausi)

The Ethiopic codex (here indicated as codex Σ) which is the subject of this contribution was first brought to scholarly attention from its original site of ‘Urā Masqal, in north-eastern Təgrāy (in the ‘East Tigray Zone’) by Jacques Mercier in 1999.⁸⁰ Mercier, in his capacity of director of the project ‘Safeguarding Religious Treasures of the Ethiopian Orthodox Church’, entrusted me, as a specialist in canon law literature whom he had known since 1990, and who was at the time in Addis Ababa for a research trip, with the description and study, besides other material, of the microfilmed documentation of Σ .⁸¹ I started my research on Σ in 1999, when I was still based at the Università degli Studi di Napoli ‘L’Orientale’. At this stage, the leaves of the manuscript were totally disarrayed and some of them appeared to be missing, but I proposed nonetheless a virtual reconstruction of the sequence of texts that was later confirmed. Eventually, two years later, a new set of images was made available, which was necessary due to the loss of the fifth, and last, microfilm of the first set; the new set confirmed that a few portions of the codex were lost. This still happened during the outbreak of the armed conflict between Eritrea and Ethiopia in 1998–2000, which put at risk the site of ‘Urā Masqal, very near to the border, so that Mercier’s project moved the manuscript collection from ‘Urā Masqal to ‘Urā Qirqos, where it is still found. In 2006 Antonella Brita—at the time a PhD student of mine—was able to locate exactly the co-

80 For a similar summary of research, see also Bausi and Camplani 2016, 254–255, with a full list of papers and publications related to Σ to 2016 on pages 255–265.

81 ‘Safeguarding Religious Treasures of the Ethiopian Orthodox Church’ was a European Union-funded research project, carried out in cooperation with the Ethiopian Orthodox Tawaḥədo Church and the Regional Government of Təgrāy. See Mercier 2000, 36, n. 6; and for the project, Mercier and Daniel Seifemichael 2009. There were three meetings in Addis Ababa, on 6, 7, and 8 July 1999; Mercier was personally not particularly interested in the manuscript, but he had immediately realized its potential importance; the manuscript was on this occasion confidentially named ‘*Sinodos* of Qəfrəyā’. Among other materials, I described also an ancient Octateuch from the same site; the draft description integrated the description carried out by Abreham Adugna for the ‘Ethio-SPaRe’ project, which attributed the shelf mark UM-040 to the manuscript; also this manuscript was digitised for the first time by Brita in 2006. To the research visits to the site of ‘Urā Masqal and ‘Urā Qirqos mentioned here, others are certainly to be added. For example, Yaḳob Beyene of the University of Naples ‘L’Orientale’, visited the site in 2005 and 2006, and researchers of the ‘Centre Français d’Études Éthiopiennes’ also documented the site of ‘Urā Masqal (for these latter, see the picture of the interior of the church of Beta Masqal by Marie-Laure Derat, in Fritsch 2010, 104 fig. 3). Partial documentation was acquired by Ewa Balicka-Witakowska and Michael Gervers for the ‘Mäzḡäbä-Səəlat – Treasury of Ethiopian Images’ project.

dex in the church of 'Urā Qirqos and to document it digitally for the first time during a series of trips funded by the Ministry of University and Scientific Research of Italy.⁸² This independent documentation allowed the publication of some texts attested exclusively by codex Σ. The manuscript had received in the meanwhile two shelf marks: the shelf mark 'Sinodos C₃-IV-71' ('ሲ.ፍ.ጸ.ሰ C₃-IV-71'), written on a paper sheet inserted in the bundles of dismembered leaves of the manuscript, and a smaller paper label with the shelf mark 'C₃-IV-73' pasted down on the bottom margin of present f. 4r. The attribution of these shelf marks dates to the time period elapsed between the second micro-filming carried out by Mercier and the digital recording carried out by Brita in 2006, when Brita first noted and documented the two shelf marks.

The study and the eventual publication of texts took place within the framework of university projects I directed from 1999 to 2008 on the language and literature of the kingdom of Aksum and its survival in medieval and modern Ethiopia and Eritrea at the Università degli Studi di Napoli 'L'Orientale'.⁸³ In the summer of 1999 I carried out the transcription of the whole manuscript in about one month of day-and-night work and was able to identify almost all the texts, most of which were unknown in the Ethiopic version, while a couple of them remain apparently unknown also in other languages. I also drafted a preliminary essay on the codex doomed to appear in a catalogue of Təgrāy antiquities prepared by Mercier, which was never published. This also implied that researches related to the manuscript, and particularly its contents, should not be published. I circulated the unpublished draft among some colleagues, among whom I would like to mention Alberto Camplani for his genuine and profound interest and the extraordinarily intense, fruitful, loyal, and fraternal cooperation he has put in his numerous contributions touching on the *History of the Episcopate of Alexandria*, being thus involved almost since the beginning in this study, and remaining the main associate in the researches carried out on codex Σ.⁸⁴

82 'Linguistic and cultural traditional chains in the Christian Orient and text-critical philology. Problems of the Ethiopic texts: Aksumite texts, texts on the Aksumite age, translated hagiographical texts', project funded by the Ministry of University and Scientific Research of Italy, Year 2005 (2005–2007, PI Bausi as National scientific director and director of the Naples unit, Università degli Studi di Napoli 'L'Orientale').

83 'Tradizioni letterarie dell'Etiopia antica e medievale. Alla ricerca delle sopravvivenze aksumite (IV–VII secolo d.C.)' (1999); 'La lingua e la letteratura del regno di Aksum e la sua tradizione nell'Etiopia premoderna' (2000–2002); 'Testi e tradizione della più antica lingua e letteratura ge'ez (etiopico antico): analisi filologica e linguistica' (2003–2008).

84 Along with him, I would like to mention here, among those who joined earlier or later, at least Gianfranco Agosti, Heinzgerd Brakmann, Benedetto Bravo, Paola

The research on the manuscript continued since 2009 at the Universität Hamburg, at the Hiob Ludolf Centre for Ethiopian and Eritrean Studies (HLCEES) and since 2011 also at the Centre for the Study of Manuscript Cultures (CSMC). The manuscript was already listed and scheduled to be further studied and documented in the proposed sub-project ‘Cross-Section Views of Evolving Knowledge: Canonico-Liturgical and Hagiographic Ethiopic Christian Manuscripts as Corpus-Organizers’ (2011–2015).⁸⁵ In the meanwhile the project ‘Ethio-SPaRe: Cultural Heritage of Christian Ethiopia: Salvation, Preservation, Research’ (2009–2015), during the first field trip led by Denis Nosnitsin with the participation of Stéphane Ancel and Vitagrazia Pisani, digitized again the manuscript.⁸⁶ This project documented digitally the codex for the second time with high professional quality pictures, attributed it the shelf mark UM-039, and prepared the manuscript for the subsequent conservation according to the philological description and hypotheses I had advanced. Moreover, the ‘Ethio-SPaRe’ expedition was also able to discover two additional dismembered leaves belonging to Σ that were not included in the previous sets of pictures and filled two gaps in the sequence of folia and texts (ff. 13 and 74).⁸⁷ The conservation and a codicological analysis were successfully carried out in May-June 2012 by Marco Di Bella and Nikolas Sarris, with the scientific assistance of Brita and Nosnitsin.⁸⁸

Buzi, Emmanuel Fritsch, Michael Kohlbacher, Annick Martin, Reinhard Meßner, Ágnes T. Mihálykó, Tito Orlandi, Ugo Zanetti, and Ewa Wipszycka.

- 85 ‘Cross-Section Views of Evolving Knowledge: Canonico-Liturgical and Hagiographic Ethiopic Christian Manuscripts as Corpus-Organizers’ (2011–2015) of the Sonderforschungsbereich (SFB) 950, ‘Manuskriptkulturen in Asien, Afrika und Europa’ (2011–2020, CSMC, TP C05, PI Bausi, with Brita as researcher), funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation).
- 86 ‘Ethio-SPaRe: Cultural Heritage of Christian Ethiopia: Salvation, Preservation, Research’ (2009–2015, HLCEES, PI Nosnitsin), funded by the European Research Council, European Union Seventh Framework Programme IDEAS (FP7/2007–2013) / ERC Advanced Grant agreement no. 240720.
- 87 On this discovery see Bausi 2015b.
- 88 Sponsored by the project ‘Ethio-SPaRe’, with the participation of Brita as fellow of the SFB 950 sub-project. The conservators, as recorded by pictures documenting their work, removed from the parchment, as required, the label containing the shelf mark ‘C₃-IV-73’ present on f. 4r, and pasted down the paper sheet reporting the shelf mark ‘ሲ.፻፳ሳ C₃-IV-71’ on the inner side of the cover of the archival box where the codex was accommodated. This twofold shelf mark has left traces in some publications, which mention either the first or the latter shelf mark; in fact, both shelf marks correspond to ephemeral circulation units (to be dated to the years 2000–2012) of the only production unit of codex Σ .

The scientific analyses which are the subject of the note on inks base on a third joint field-trip of the projects ‘Ethio-SPaRe’ and ‘Cross-Section Views of Evolving Knowledge’ carried out in June 2014. Laboratory scientific analyses were carried out within the framework of Ira Rabin’s work at the CSMC and at the Bundesamt für Materialforschung und -prüfung (BAM).

Codex Σ , for its exceptional textual contents, was also an important component in the project ‘TraCES: From Translation to Creation: Changes in Ethiopic Style and Lexicon from Late Antiquity to the Middle Ages’ (2014–2019): its evidence contributed to develop ideas and concepts which shaped the ‘GeTa’ tool developed for linguistic annotation.⁸⁹ At present codex Σ is being studied for the long-term project ‘Beta maṣāḥəft: Die Schriftkultur des christlichen Äthiopiens und Eritreas: Eine multimediale Forschungsumgebung’, where this description will eventually be made available;⁹⁰ it will be furtherly studied within the project ‘Understanding Written Artefacts: Material, Interaction and Transmission in Manuscript Cultures’.⁹¹

Abbreviations

Cae = *Clavis aethiopica*, see <<https://betamasaheft.eu/works/list>>.

CPG = M. Geerard, *Clavis patrum Graecorum*, I: *Patres antenicaeni, schedulis usi quibus rem paravit F. Winkelmann*; Id., II: *Ab Athanasio ad Chrysostomum*; Id., III: *A Cyrillo Alexandrino ad Iohannem Damascenum*; Id., IV: *Concilia. Cate-nae*; Id. and Jacques Noret, *Clavis patrum Graecorum, Supplementum, Corpus Christianorum* (Turnhout: Brepols, 1983, 1974, 1979, 1980, 1998).

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90 ‘Beta maṣāḥəft: Die Schriftkultur des christlichen Äthiopiens und Eritreas: Eine multimediale Forschungsumgebung’ (2016–2040, HLCEES, PI Bausi), funded within the Academies’ Programme, coordinated by the Union of the German Academies of Sciences and Humanities, under survey of the Akademie der Wissenschaften in Hamburg. The online description of codex Σ by Eugenia Sokolinski on the basis of this note is available at <<http://betamasaheft.eu/ESum039>>.

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Date, Materiality and Historical Significance of P.Köln Inv. 5941

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The paper presents the results of the radiocarbon dating and ink analysis of a leather fragment bearing an important liturgical text in Hebrew from the early centuries of the common era. The work initiated by the scholarly interest in the text stresses the importance of the date and materiality of the manuscripts and closes with an appeal to the curators of manuscript collections.

Introduction

MS Cologne, Kölner Papyrussammlung, P. Köln inv. 5941¹ is a Hebrew leather fragment that became first known in 1983. Several dating hypotheses, from the very first centuries of the Common Era to the Early Islamic period, have been proposed on the basis of textual and palaeographic research.

Methods from natural sciences, mainly radiocarbon and ink analyses, have now for the first time been applied to the fragment, in order to try to narrow down the possible dating range.

In the following, after a short introduction on the historical background of P. Köln inv. 5941 (§ 1, by Hillel Newman) and a brief description of the codicological aspects (§ 2, by Sophie Breternitz), we present the details on the ink examination (§ 3, by Ira Rabin and Ivan Shevchuk) and radiocarbon dating (§ 4, by Elisabetta Boaretto), followed by the concluding remarks (§ 5).²

§ 1. P.Köln Inv. 5941 (Hillel I. Newman)

In 1983, Felix Klein-Franke published a leather fragment,³ reported to have originated in Oxyrhynchus, bearing a Hebrew text of nine lines. Klein-Franke dated it on palaeographical grounds ‘roughly to the period prior to the fifth century CE’ and interpreted it as a Hebrew lamentation bemoaning the fate the Jews in Egypt in the wake of their failed revolt under Trajan in 115–117 CE.⁴ A closer reading of the text, however, reveals this interpretation to be un-

4 Klein-Franke’s transcription is generally reliable but must be corrected at several points. I would like to extend my thanks to Charikleia Armoni for providing me with high-reso-



Fig. 1. P.Köln Inv. 5941, photo courtesy of the Institut für Altertumskunde at the Universität zu Köln.

tenable.⁵ I have proposed elsewhere that it must be read, on the contrary, as a thanksgiving prayer of a type familiar from the statutory Jewish liturgy of the first centuries of the Common Era.⁶ The text is rich in significant liturgical and palaeographical details (including the singular use of Hebrew *nomina sacra*) and is all the more important considering the rarity of liturgical texts among the already limited number of extant Jewish manuscripts from the period in question.

In order to base my own analysis on sound chronological foundations, it was imperative to establish a reliable date for the manuscript. The most thorough palaeographical study of its script remains that of Edna Engel, who dated it in the range of the second to the fifth centuries CE.⁷ On the other hand, Judith Olszowy-Schlanger has argued for a date in the early Islamic period.⁸

Given the uncertainty surrounding the chronology based solely on palaeography, I felt that material analysis could provide further valuable points of reference. With the kind cooperation of Charikleia Armoni, curator of the papyrus collection of the Institut für Altertumskunde at the Universität zu

lution photographs of the manuscript, taken in both visible and infrared light. I have also made use of tracings of the text made by the late Ada Yardeni.

- 5 Compare the reservations concerning the characterization of the text as a lament in Harding 1998, who nevertheless follows Klein-Franke's premise in taking it to refer specifically to the travails of Egyptian Jewry.
- 6 I first presented my analysis of the manuscript on 30 April 2015, at a symposium at the Hebrew University of Jerusalem in honor of Prof. Moshe David Herr. For a revised and expanded study: Newman forthcoming.
- 7 Engel 1990, I, 278–279; III, Table 14. Prior to the completion of the laboratory analysis of the manuscript, Dr Engel informed me in a personal communication of her inclination towards a date preceding the fifth century.
- 8 Olszowy-Schlanger 2017, 55, n. 21.

Köln, and under the supervision of Sophie Breternitz, it became possible to subject the fragment to radiocarbon dating and material analysis that are described in detail below. The manuscript was first conveyed to Ira Rabin for the multispectral analysis of its ink. Subsequently a small sample of leather was removed and sent to Elisabetta Boaretto for the purpose of ^{14}C dating.⁹

§ 2. *P.Köln Inv. 5941: physical description* (Sophie Breternitz)

MS Cologne, Kölner Papyrussammlung, P. Köln inv. 5941 has been greatly disfigured by heat, and the resulting carbonization (see Fig. 1). The surviving fragment is a leather sheet, which is c. 230 mm wide and 85 mm high at the widest points. The thickness of the leather sheet is c.0.4 mm. The text is written on the hair side.

The writing area measures c.120 mm × 60 mm (width × height). The upper margin is of c.25 mm, the right margin is c.60 mm, and the surviving left margin c.50 mm (the left margin is significantly damaged and deformed). The layout may suggest that the fragment once constituted the upper part of a scroll sheet.

The main text is written in a single column of 9 lines. Ruling is visible at some points: four horizontal blind-point ruled lines are visible in the upper margin; three unevenly spaced vertical blind-point ruling lines are visible in the left margin. In addition, occasional remains of ruling of the writing area, produced in ink, are discernible between some of the lines. The text lines are spaced at c.5 mm, with the evenly written letters being 3 mm tall.

There are also seemingly random letters in both the right and the left margins (all of them are written upside down in the right margin, and most of them in the left margin). These scribbles were probably added later, as they use an ink different from the one of the main text (see the analysis below), yet possibly by the same hand as the main text. Only two letters (?) remain visible in the left margin to the naked eye, yet iron and copper map reveals several upside-down letters in the damaged part (see Fig. 2b). The upper left corner, containing a part of a letter (not clearly identifiable) has detached itself (see Fig. 2a).

The flesh side is uninscribed, which supports the suggestion that we are dealing here with the upper part of a scroll.

9 I gratefully acknowledge the support of the Halpern Center for the Study of Jewish Self-Perception, Bar-Ilan University, under the direction of Prof. Adiel Schremer, for funding the ^{14}C test at the Weizmann Institute.

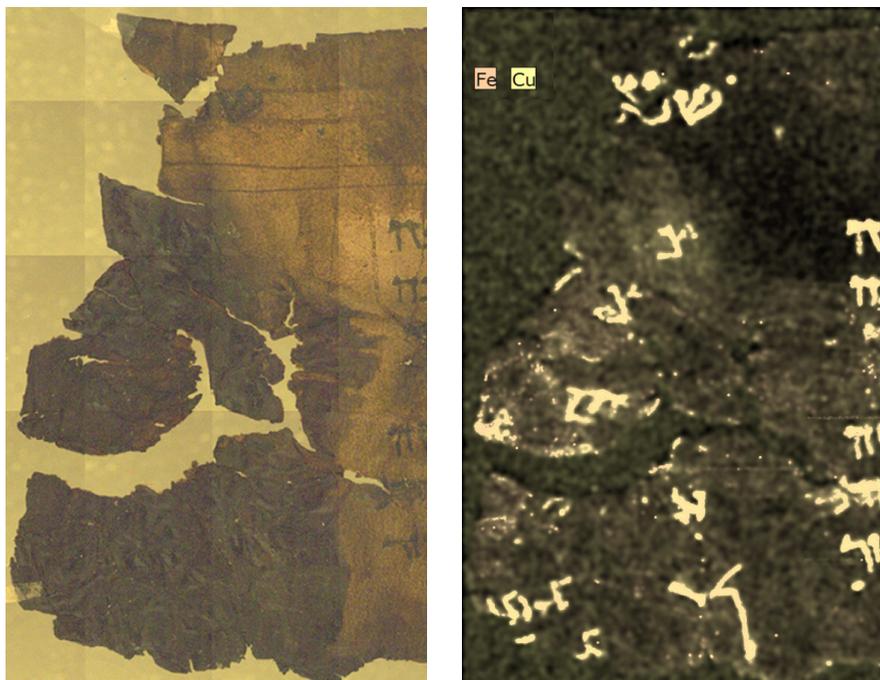


Fig. 2. The damaged left margin, with the carbonized part and the detached upper left corner; (a) white light and (b) XRF imaging with the scribbles revealed.

§ 3. *P.Köln Inv. 5941: material analysis* (Ira Rabin and Ivan Shevchuk)¹⁰

Research dedicated to the use of different inks in historical Hebrew manuscripts has been conducted in the Bundesanstalt für Materialforschung und -prüfung (BAM) for more than a decade.¹¹ Currently, we are focusing on the time scale of the transition from the carbon inks of Antiquity to the iron-gall inks of the Middle Ages. The first indications of the metal-containing inks appear in the early Hellenistic times but become more and more pronounced towards the Common era.¹² Initially, these new inks contain both carbon and metals and, most probably, represent a transition phase. Their importance though is reflected in the high number of the extant recipes as well as Talmudic and rab-

10 We gratefully acknowledge the funding support provided by the German Research Foundation (DFG) for the SFB 950 ‘Manuskriptkulturen in Asien, Afrika und Europa’ / Centre for the Study of Manuscript Cultures (CSMC), Universität Hamburg.

11 Rabin 2017.

12 Garlan 1974, 324; Zerdoun 1983, 91–92; Delange et al. 1990; Nir-El and Broshi 1996; Rabin et al. 2019; Bonnerot et al. 2020.

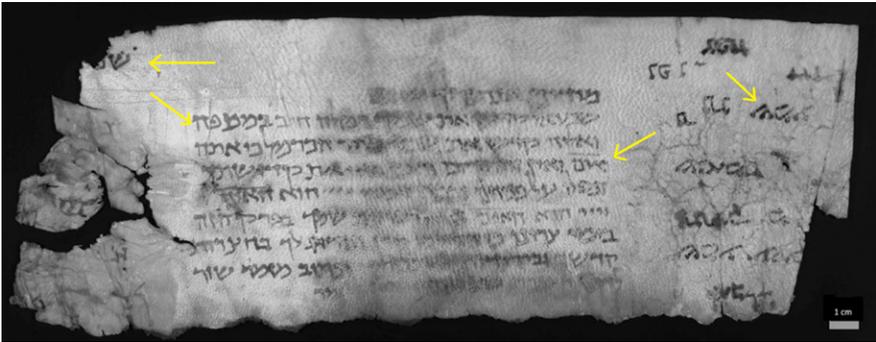


Fig.3. P. Koeln Inv. 5941 photographed at 940 nm and the protocol of the XRF measurements.

binic medieval discussions of the permissible ingredients.¹³ In this respect, the Köln manuscript presents a milestone in the material studies since it has been carbon-dated to the fourth century CE, i.e. the ‘intermediate’ period of the Hebrew manuscripts. To study the ink composition, we have used reflectography in the short-wave infrared range (SWIR, 1510–1800 nm) of electromagnetic radiation necessary for the interference-free recognition of carbon and μ -X ray fluorescence (XRF) imaging described in detail elsewhere.¹⁴

The protocol of the ink analysis used in this work consists of the initial screening in the near infrared region to determine the ink type. When ink becomes invisible at the wavelengths around 1000 nm or partially loses its opacity, one speaks of the plant and iron-gall inks, respectively. When the change of the opacity is not very pronounced or not observed, the ink under study could be made of carbon or carbon mixed with other ingredients. Our leather fragment presents such a case. We can see that the ink of the main text is well visible at 940 nm (Fig. 3). At the same time, the marginal scribbles appear much darker, tentatively suggesting that different inks might have been in use in the margins. Generally, opacity of the iron-gall ink depends strongly on the degree of its chemical degradation, which is usually quite heterogeneous. Therefore, the difference in opacity cannot be used as a valid factor for differentiating between the inks. To establish whether the inks contain carbon that would be responsible for the dark colour of the ink, we have used near-infrared photography (Fig. 4) in the wavelength range 1510–1800 nm, performed with Apollo Infrared Imaging System.¹⁵ At wavelengths longer than 1500 nm

13 Rabin 2017, Colini et al. 2018; Cohen 2020, 69–71.

14 Rabin 2015. The measurements were conducted with the M6 (Bruker nano) instrument at 50 kV Rh tube, 50 μ m X-ray spot, 100ms dwell time and 50 μ m pixel size.

15 The regular SWIR sensing range (900–1800 nm) of the 128 \times 128 pixel scanning InGaS sensor of the Apollo IR imaging system was reduced by a LWP1510 long

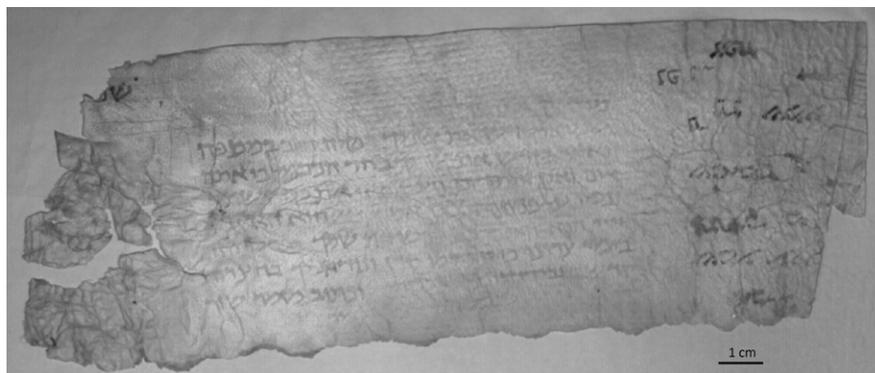


Fig. 4. NIR photograph of the P. Koeln Inv. 5941 at 1510-1800 nm.

carbon still absorbs light, while iron-gall ink is transparent. In Fig. 4 the main text and the text in the margins are still visible indicating the presence of carbon in all the inks. Yet, it is clear from the change of opacity between 940 and 1500 nm that the ink is not of pure carbon and must contain other ingredients, that is, mixed inks were used in this manuscript. Note that the upside-down words in the margins remained without a change, which most probably reflects a higher concentration of carbon in the ink composition.

Fig. 5 visualizes different element distributions from four areas indicated with arrows in the fragment image of the top row. The elemental distributions of iron (Fe), copper (Cu) and potassium (K) in the first, second and fourth columns of the Fig. 3, respectively, demonstrate the presence of these elements in the inks. In the case of the element chlorine (third column), the opposite is true: this element is present only in the leather; the ink layer absorbs the X-rays of chlorine, and therefore, the letter traced by the chlorine distribution appears as a negative image.

It is certain that the inks tested, i.e. both of the main text and of the margins, contain iron gall ink as a second ingredient. Moreover, we can say with a great certainty that vitriol¹⁶ was used as a raw material for iron (Fe) because the ink contains also large amounts of copper (Cu) and smaller amounts of manganese (Mn) and zinc (Zn) as inorganic contaminants (see Fig. 6). Their

wave pass filter that blocks wavelengths shorter than 1510nm, limiting the operation range to 1510–1800nm. Two halogen lamps provided broad band illumination. We used the following settings: sensor to object distance of 80cm, the aperture of the lens was set to f11 and the acquisition time of 50ms per tile.

16 Vitriol is a mixture of hydrated metal sulphates; Karpenko & Norris 2002.

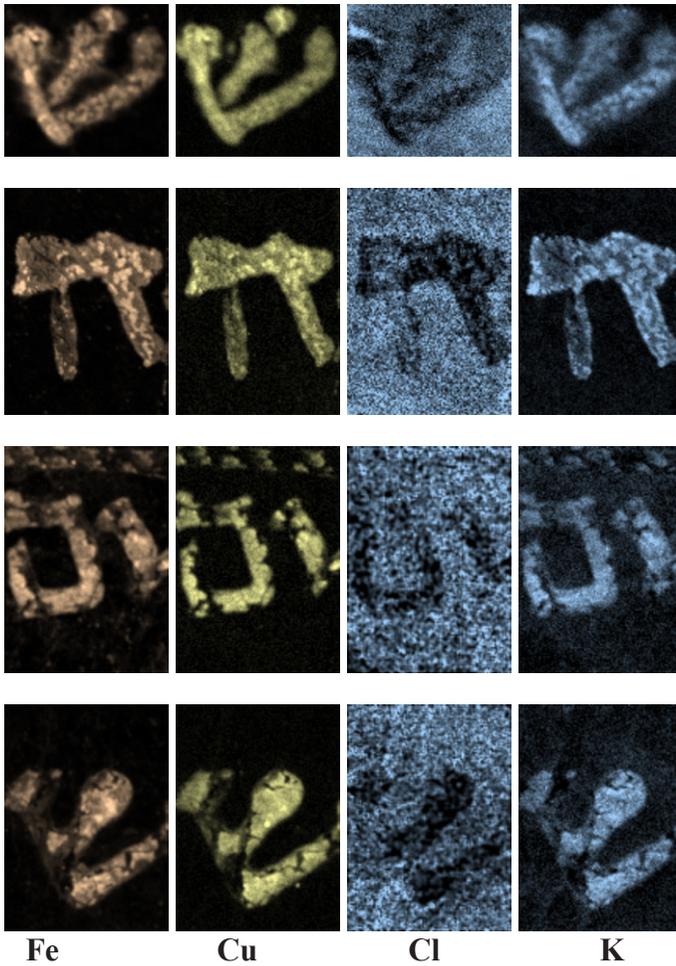


Fig. 5. Iron (Fe), copper (Cu), chlorine (Cl) and potassium (K) distributions corresponding to the four areas indicated in Fig. 3. From top to bottom: 'sin' from the left corner; 'het' from the second row; 'yod samek' from the fourth row; 'sin' from the right margin. Colour intensity correlates with the intensity of the signal.

presence is usually associated with vitriol, a common ingredient of the inks in the Middle Ages.¹⁷

To compare the composition of the iron-gall ink contribution to the main text with that of the left and right margins, we calculated the relative intensities of the inorganic contaminants in the inked areas (Fig. 6). For a better

¹⁷ Zerdoun 1983.

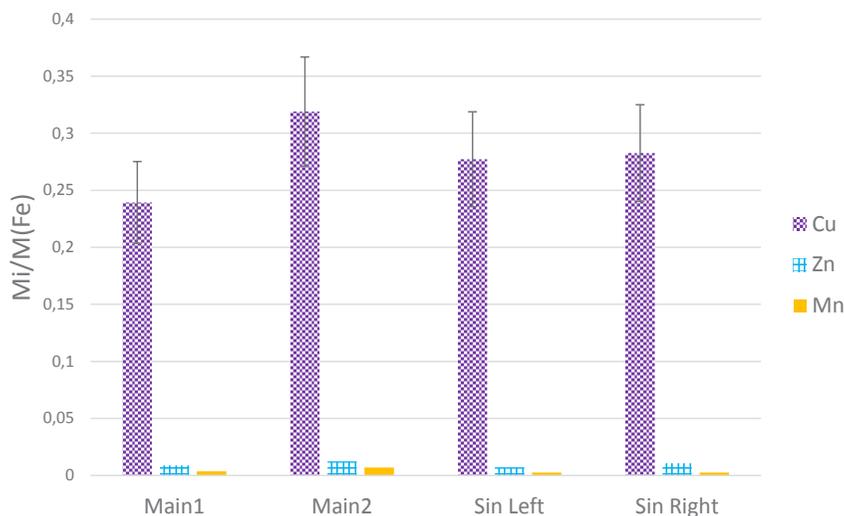


Fig. 6. Relative composition of the inks corresponding to the four areas shown in Fig. 1. Main1 and Main2 correspond to the ‘het’ and ‘yod samek’, respectively. Sin Left and Right correspond to the letter ‘sin’ in the left and right margins, respectively. Relative intensities of the inorganic contaminants manganese (Mn), copper (Cu), and zinc (Zn) were obtained by normalization to the intensity of iron (Fe).

comparison, one must consider the signal background due to the fact that all the elements detected in the inks were also found in varying quantities in the leather. This is in no way surprising, because iron is one of the most widely spread contaminants of the archeological items. In this specific case, the ink loss due to abrasion produced a smear that contaminated leather surface with the ink. In our evaluation of the relative ink composition, we took the elemental composition of the leather into account. Comparison of the inks in Fig. 6 demonstrates that we deal here either with the same iron-gall ink or at least, with an iron-gall ink based on the same vitriol.¹⁸

§ 4. P.Köln Inv. 5941: radiocarbon dating (Elisabetta Boaretto)

A sample extracted from the upper left corner of P.Köln inv. 5941 was submitted to the pre-screening procedures at the D-REAMS radiocarbon laboratory (Weizmann Institute) following the preparation procedure published elsewhere.¹⁹ In short, the integrity of the leather was first controlled by comparing

18 Relative intensities of the inorganic contaminants manganese (Mn), copper (Cu), and zinc (Zn) were obtained by normalization to the intensity of iron (Fe). See Rabin et al 2012.

19 Boaretto et al. 2009.

its Fourier Transform Infrared (FTIR) spectrum with that of the pure fresh collagen.²⁰ The sample was then purified using standard Acid-Base-Acid procedure that consists of three steps.²¹ First, the sample was treated with 0.5 N HCl until any sign of mineral dissolution disappeared. Then it was washed with ultra-pure water to remove acidity (pH= 7). In the next step, the sample was cleaned with 0.1 N NaOH for 30 minutes and washed with ultra-pure water again to remove the base (pH= 7). A final acid treatment of 0.5 N HCl for 5 minutes was followed by washing to obtain pH=3. The integrity of the extracted collagen was then again examined using FTIR spectroscopy.

Purified sample was lyophilized for 24 hours, combusted with ~200 mg copper oxide (CuO) in vacuum sealed quartz tubes. Reduction to graphite of the produce CO₂ was obtained on iron (Fe) as a catalyst in the presence of hydrogen gas at 560 °C for 10 hours.²² The resulting sample was analyzed by accelerator mass spectrometry (AMS) at the D-REAMS radiocarbon laboratory.²³ The calibrated ranges were determined using the OxCal 4.2.4 (2013) software²⁴ and the calibration tables.²⁵

Table 1 summarizes the results of the radiocarbon analysis. Though only 45.3% of the initial sample weight survived the ABA pretreatment procedure, the resulting amount of carbon was sufficient for the dating. Radiocarbon date determined with the D-REAMS accelerator was 1690 ± 23 BP. When calibrated, the year of production of the leather ranges between 335–395 CE at 68.2% probability (corresponding to ±1σ standard deviation) and between 320–410 CE at 85% probability. As a conclusion, although there is a small probability that the leather was created between 255–285 CE (9.8% of the total distribution of the calibrated range), the most probable period associated with the leather manufacture is in the fourth century CE.

Table 1: sample information, recovery data and radiocarbon date of the sample.

20 FTIR was applied following the conventional KBr method and analyzed between 400 and 4000 cm⁻¹ at 4 cm⁻¹ resolution using a Thermo Scientific Nicolet iS5 spectrometer with Omnic 9.3 software. The reference libraries of the Kimmel Center for Archaeological Science (Weizmann Institute of Science) Spectra were used as control.

21 Brock et al. 2010; Yizhaq et al. 2005.

22 Goldenberg et al 2017.

23 Regev et al. 2017.

24 Ramsey and Lee 2013.

25 Reimer et al 2013.

Sample ID	Sample type	Efficiency %	Carbon %	¹⁴ C Date year BP	Calendar Date CE	
					±1σ (68.2%)	±2σ (95.4%)
RTD 9269 (Inv. 5941)	Leather fragment 1 × 0.5 cm ²	45.3	43.7	1690 ± 23	335 – 395	255 (9.8%) 285 320 (85.6%) 410

§ 5. Conclusion (Hillel I. Newman and Ira Rabin)

As we have shown, the earlier palaeographically based hypothesis for the dating of MS Cologne, Kölner Papyrussammlung, P. Köln inv. 5941 is strongly

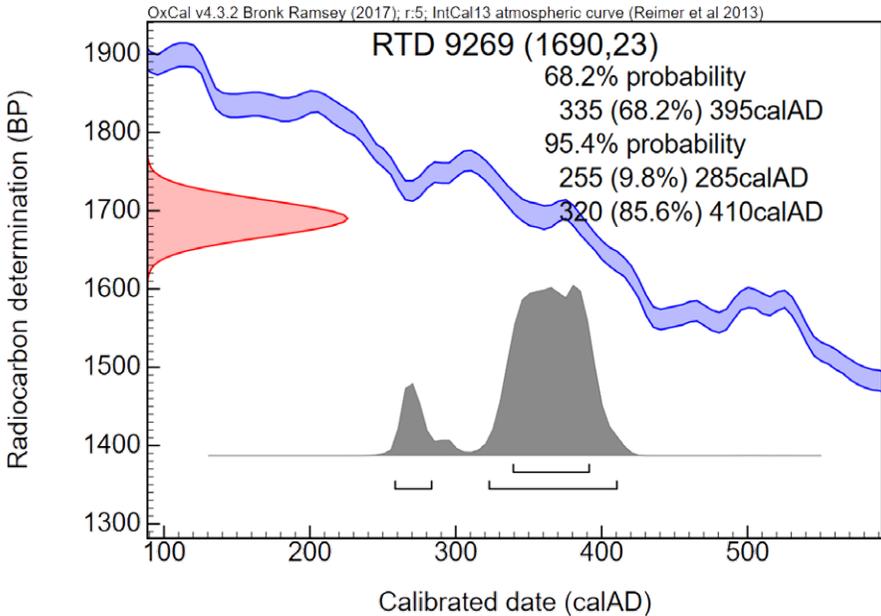


Fig. 7. Illustration of the effect of radiocarbon calibration on the distribution of uncertainty in the calibrated ages of P. Köln inv. 5941. The uncalibrated radiocarbon age and uncertainty are shown as the red distribution, and the marine09 calibration curve representing the apparent radiocarbon age variability caused by changes in the marine $\Delta 14C$ through time is shown in blue. The resultant calibrated age distribution is shown in gray, with the 95.4% and 68.2% probability bounds shown as bars below.

corroborated and refined by the physical evidence. These results enable us to resolve the chronological uncertainty and place the manuscript confidently in a precise context in Roman-Byzantine Egypt, contemporary with the proliferation of Rabbinic Judaism in Palestine, during a formative period of Jewish liturgy. The date yielded by the physical evidence is fully consistent with the contents of the text itself.

Radiocarbon analysis dates the writing support of P. Koeln Inv. 5941 between 255 CE and 405 CE, heavily weighted to the fourth century. Since in this case there are no visible erasures or other traces of secondary use, we can surmise that we are not dealing with reuse of the support material and that the date of the inscription of the text must be close to the date of the production of the leather.

Ink analysis of the fragment reveals that the inks are of the mixed type, i.e. they contain both vitriol and carbon. Though remarkable, such inks are consistent with the permissible ink ingredients mentioned in rabbinic literature for use in biblical scrolls. Such well-formed iron-gall inks (with a high proportion of iron in the mix) in a manuscript of Late Antiquity is quite remarkable in itself, and in particular in a Jewish manuscript. Currently, we know of only four other manuscripts from roughly the same period where the presence of iron-gall ink was determined by material analysis: MS Berlin, Staatsbibliothek, Ms.or.fol. 987, containing the biblical Proverbs in Akhmimic Coptic,²⁶ Magic Handbook Berlin P. 5026 in Greek,²⁷ the literary part of the Montserrat Codex Miscellaneus in Greek and Latin,²⁸ and MS Vercelli, Biblioteca capitolare, Codice A (Codex Vercellensis Evangeliorum), containing the Four Gospels in Latin.²⁹

The significance of these results extends beyond the lone case of the Cologne manuscript. The challenge of dating that manuscript on the basis of its script alone is a function of a much broader problem. As is well known, we possess relatively few Jewish manuscripts in Hebrew and Aramaic from the period following the end of the Bar Kokhba revolt in 135 CE till roughly the tenth century CE.³⁰ Furthermore, hardly any of the extant items are documents containing explicit dates.³¹ Many of the manuscripts have indeed been catalogued by Colette Sirat, but the majority of those have yet to be properly deciphered and published.³² Yet even if all were readily available for study, palaeographers would continue to be relatively handicapped due to the dearth of material.

32 Sirat 1985. This lacuna should be remedied, at least in part, by the projected fourth volume of the *Corpus Papyrorum Judaicarum*, now in preparation under the supervision of Tal Ilan and Noah Hacham.

It is here that historians and palaeographers stand to benefit by more frequent engagement of chemists and physicists in joint ventures in order to establish more reliable palaeographical benchmarks and material indicators for the purpose of determining the date and provenance of Jewish manuscripts from the lengthy ‘intermediate’ period, still poorly mapped. ¹⁴C dating of Jewish manuscripts from this period is, unfortunately, not a common practice, due to both the challenge of financing and an understandable reluctance to incinerate pieces of ancient manuscripts. The only exception of which we are aware is the charred Leviticus scroll from the ancient synagogue of Ein Gedi, concerning which there is some doubt whether the tested sample in fact originated in the scroll itself or in surrounding material.³³

The Cologne manuscript now joins this short list. Many of the known Jewish manuscripts in Hebrew and Aramaic await thorough examination, and it is safe to assume that Egypt will yield more such finds over time. We may hope that improving our tools will lead in turn to a deeper understanding of the people who produced these literary and documentary artefacts.

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Intellectuals at Work: Preliminary Considerations on Medieval Scholars' Autograph Scripts (From the Second Half of the Twelfth to the Thirteenth Century)*

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It is not unusual that, in the course of their intellectual work, medieval scholars wrote on their own, without the help of a secretary or a scribe. A large quantity of material evidence kept in our libraries shows this important (and almost completely unknown) phenomenon of autography within European universities in their earliest phase. The aim of this paper is to lay the groundwork for a new and original research project, which will be carried out mainly through the analysis of 'unofficial places' of writing, like handwritten marginal notes, comments, drafts, or *reportationes* produced by the students themselves. These sources are to be investigated with a multidisciplinary approach aimed at combining the palaeographical examination of scripts used by non-professional but cultured writers and a comprehensive study of those kinds of texts which directly represent the work and thought of learned academicians. The focus is on both the history of text writing (understood as the authors' work in progress) and the use of university books, which can be chronicled through the study of the *marginalia* and material features of the preserved manuscripts.

Anyone who is familiar with medieval philosophical manuscripts certainly has in mind at least one image of Thomas Aquinas' autograph handwriting.¹ Aquinas' script is so difficult to read that as early as the Middle Ages it had earned the name of *illegibilis*, a word still commonly used today to define his hand.² This handwriting has been repeatedly described as highly personal and considered a script without equal, as unequalled as the man who drafted it.³ Yet, if

* This essay concerns a very specific issue in the field of Latin palaeography, and therefore it exclusively focuses on Latin-based Medieval Europe. Since it is highly probable that similar or comparable phenomena also occur in oriental manuscript traditions, I decided to present my research in *Comparative Oriental Manuscript Studies Bulletin*, with the aim of opening a future dialogue and a comparative investigation in different areas of manuscript studies.

1 See for example the digitized images of MSS Città del Vaticano, Biblioteca Apostolica Vaticana, Vat. lat. 9850 (<https://digi.vatlib.it/view/MSS_Vat.lat.9850/>) and Vat. lat. 9851 (<https://digi.vatlib.it/view/MSS_Vat.lat.9851/>).

2 The reading *illegibilis* is preferable to *inintellegibilis*: this interpretation, which we can find in more dated studies, was due to an inaccuracy in the expansion of the abbreviation. See Dondaine and Shooner 1967, 7, n. 3; Torrell 2006, 55, n. 42 and Hamesse 1994.

3 In recent times, Cristina Mantegna, while studying medieval jurists' handwriting, also claimed that 'la sola, forse, a poter essere definita 'scrittura di un dotto' sia quella di Tommaso d'Aquino': see Mantegna 2010.

one has a chance to consult manuscripts and booklets belonging to masters and students who lived at the turn of the twelfth and thirteenth centuries—texts now kept in archives and libraries throughout Europe—it is easy to see that similar handwriting was more widespread than we usually imagine.⁴ In the absence of a more appropriate definition, sometimes the expression *littera illegibilis* that used to designate Thomas Aquinas' handwriting has been more generally applied to the graphic typology used by medieval academic scholars for the autograph drafting of their own texts.

The aim of these few pages is to provide a very preliminary overview of the important but still completely unknown topic of the entirely or partially autograph manuscripts owned by scholars of European universities in their earliest phase. Many aspects of university manuscripts,⁵ their features and the system through which they were produced and spread are now well known, thanks to the many studies that have investigated them from a variety of different perspectives.⁶ Nobody, however, has so far dealt specifically with the issue of the 'everyday writing' (*scrittura usuale*, according to Cencetti's nomenclature), which was widespread in the universities.⁷ Although such scripts, used by scholars to fix their thoughts in writing, have not yet gained great historiographical interest, it is indisputable that a thorough examination of such evidence in its materiality would allow us to shed light on various themes: from the more specific and technical ones, such as the development of the phenom-

- 4 See what has been argued by Destrez 1933, 183–184: 'la tentation est grand, quand on se trouve devant un texte écrit en *littera inintelligibilis*, d'en attribuer la paternité à quelqu'auteur célèbre dont on possède déjà des œuvres autographes ainsī écrites, comme Albert le Grand, Thomas d'Aquin, Matthieu d'Aquasparta. En réalité la *littera inintelligibilis* était plus fréquente à l'époque qu'on ne paraît le croire aujourd'hui: c'est dans cette écriture que les maîtres et les étudiants prenaient leurs notes courantes, et il suffit pour s'en convaincre de voir à la Bibliothèque nationale de Paris le grand nombre de folios de garde qu'on trouve au commencement où à la fin de manuscrits, recouvertes de cette écriture indéchiffrable'. Fink-Errera 1962 also spoke of the *littera illegibilis* as a graphic typology widespread within medieval universities.
- 5 In this paper, I will use the expression 'official manuscript' or 'university manuscript' to mean a specific material object that had common features and was widespread within Medieval Universities. Such books had to follow some standard rules in terms of format, parchment, script, ink, binding and mise-en-page.
- 6 The existing literature on gothic manuscripts is so well known and rich that there is no need to list it here. I will just mention the classic studies that closely concern the themes treated herein: Orlandelli 1987; Battelli 1989; Fink-Errera 1988; Marichal 1990; Derolez 2003.
- 7 The concept of 'everyday writing' has been postulated and highlighted by Giorgio Cencetti to explain the development of the writing system: see Cencetti 1956–1957.

ena of cursivity in a very early period, up to more general issues, including the cultural and social features of the authors (both as individuals and as a group), the nature of the transmitted texts, the writing practices and the material features of the handwritten personal copies within an academic context. All of these are of course important and complex research topics; each one deserves to be investigated in its own right, beyond the boundaries of this short essay, the purpose of which is to merely pose a palaeographic question for the time being.

As the issue is really multifaceted and deserves some preliminary clarifications and reflections, it is worthwhile to approach the problem gradually. It is difficult to define the research *a priori* without ambiguities and without falling into a circular reasoning, in which one risks assuming as a starting hypothesis precisely what one intends to demonstrate. We can simply begin, therefore, with the observation that many university manuscripts from the end of the twelfth and thirteenth centuries bear handwritten texts, in the form of full-page text, as well as more or less complex annotations in the margins, added by people who, in fact, read, studied, or used those *codices*. Such texts show in a tangible way the scholar's thought and constitute a snapshot of his way of working, whether he wrote texts for private use, or addressed them to a restricted class of university students or to a limited number of disciples, or in some cases to a wider circle of learned academic individuals, ecclesiastics and believers.

The concomitant presence of different clues unequivocally suggests that the writers—and, in most cases, the authors—were masters or students, lay or religious, associated with the university or the *Studia* of religious orders. Depending on the kind of autograph text (annotations, full-page text, etc.), clues about the reader's / writer's identity mainly include: (1) the content of the 'host' manuscript, which reflects the interests and the cultural profile of the learned reader; (2) the subject of the autograph text, which shows the sort of reflections and work developed about a topic or a pre-existing text; (3) the material *facies* of these texts, which do not appear as the final work of a professional scribe, but as the tangible outcome of the flow of thoughts, which might have been recorded in a hurry, as it contains corrections and revisions; and finally, (4) the palaeographical features of the writing, on which I will now focus briefly.

Learned academicians used scripts that are neither book scripts nor cursive scripts, properly speaking. Their handwriting is generally well recognizable from its common features, which are to some extent describable; and, although they are elusive to any attempt at classification, this kind of script is known and familiar to palaeographers. It mostly presents the same formal features observable in Thomas Aquinas' hand, by which this research has been inspired.⁸ This

8 Rossi 2012. The most detailed considerations have been offered as an appendix to one of the volumes of the *Editio Leonina*: Gils 1992. See also Théry 1930; Destrez

formal identity is, in my opinion, a confirmation of the fact that the issue can be thematised, and this is the first fundamental step towards an in-depth analysis of the question.

The object of the study

Speaking, even in palaeography, of masters' autographs in the Middle Ages is nothing new.⁹ However, previous studies have focused mostly on individual cases and up to now there has been no overarching synthesis, although many scholars sometimes refer to 'scholars' hand' as if this were a rather homogeneous category.¹⁰

Since these scripts, as it has been said, present common morphological features, a specific, broad and comparative investigation may tell us something, on a more general level, about the common forms of writing between the twelfth and thirteenth centuries, in particular about the progressive modification of these scripts—traced with great mastery—into a cursive style.

It is known that in many cases autograph writings, recording the primitive version of a text, usually (though not always) conceived in order to be disseminated orally or in writing, were disposed of over time, due to the provisional nature of their content, their outward appearance of neglect, and the difficulties that they presented to the readers, in favour of final, fair-copied texts. Such kind of texts was generally consigned to materials that were meant to be eliminated, such as waxed tablets, or destroyed, as in the case of parchment cuttings and scraps. The fact that in many cases such authorial texts were written as annotations or otherwise on the blank pages of manuscripts, or in *quaderni* subsequently bound together in codices, explains why they were not eliminated, but have exceptionally been handed down to us. Such medieval autographs survive in a quantity that allows a detailed comparative study, aimed at shedding light on different aspects of the written production in medieval academic environ-

1933; Dondaine 1956; Gils 1961, 1962, 1965; Boyle 1991; Pelzer 1920, 1955; Gauthier 1993, see particularly pp. 7–23. On the *expositio super Isaiam*, see Gils 1958 and Oliva 2006, 213–225. Finally, on the commentary on *De Trinitate*, see Gils 1956; cf. also Burger 2009.

- 9 The panorama of autographical studies has been notably enriched in recent decades. Considering only the field of research dedicated to medieval masters' autographs, important progress has been made by wide and more generalised studies, such as, for instance: Bataillon 1987; Hamesse 1994; Garand 1981, 1996. In 2010, the Comité international de paléographie latine devoted one of its International Colloquia to the issue of autographs (Golob 2013).
- 10 On Matteo d'Acquasparta, see the works of Hamesse 2013 and Postec 2013. On Goffredo di Fontaines: Aiello and Wielockx 2008. On Pierre de Limoges: Mabile 1970, 1976.

ments. The problem is rather to work out the best and most correct method for investigating such complex evidence, once it has been identified.

Schematically, the primary preserved examples of autograph writings may consist of different types of texts, whose provisional nature is also reflected in their outward appearance, which is inaccurate and characterized by cursive or flowing writing, namely:

- Notes, glosses and annotations written by scholars in the margins of the manuscripts;
- Texts written on pages left blank within ‘official’ manuscripts;
- Whole booklets of notes initially unbound and then bound together with others.

From the viewpoint of their content, we can find:

- Every kind of notes that a scholar wrote himself in the manuscripts he consulted to facilitate his daily intellectual work—that is to say, personal comments, collations with other texts, interpretations, references to *auctoritates*, etc.;
- Entire preparatory texts for lectures, comments, books written directly by a scholar;
- *Reportationes* by students, preserved in the original state in which they were put in writing;
- In rare but documented cases, texts of other scholars copied by some intellectual for his private use.

Even though each case is different, as we stated all such texts were written in free spaces of the manuscripts, which they were not originally intended for. In any case, such texts concern the content of the main text and represent the snapshot of an original moment, in which the intellectual can be ‘observed’ as he performs his work, without recourse to a secretary or a professional scribe.

The methodological issue

It is undeniable that the study of this class of texts, as well as the graphic typologies used to write them, poses important questions on a methodological level. The first question concerns the notion of autography itself and the suitable research method to judge the autograph nature of such texts. The concept of autograph is used here in a broad sense, to designate authorial texts as well as texts written or copied by scholars who were not necessarily the authors.¹¹

11 The same problem is raised by the autographs of the Italian literati. See Giovè Marchioli 2015. It should also be kept in mind that even the concept of authorship in this kind of text should be somewhat reconsidered, insofar as individual authorship had a different value in the Middle Ages than it would come to have in the modern age.

Of course, while it is simpler, though not exceedingly easy, to distinguish the hands of scholars, masters or students from the regular script of professional scribes, the greatest difficulty arises if one wishes not only to identify the author of a text as more than just a master or student, but also to make an exact attribution. This is, however, a subsequent step, one that is not always possible or even necessary so long as the work remains on a mainly palaeographical and codicological level, in which the object (as in this investigation) are not only individuals in their uniqueness, but a specific class of writers.

In any case, no judgment can be passed on autography, even in this broader sense, without a complex analysis, which takes several factors into account, in particular:

- (a) palaeographical clues: such texts are generally written in informal cursive scripts. The texts, intended to be provisional, are traced quickly and might present numerous mistakes and corrections;
- (b) codicological evidence: the texts may appear very messy, with deleted and rewritten parts. It is often clear that this is a 'work in progress', so the texts may seem to have been deeply modified and sometimes left unfinished. Such manuscripts and booklets are usually set up in a rough, careless way;
- (c) textual clues: corrections, additions, displacements of portions of text occur, which by their very nature can only be attributed to the author himself. Indeed, the features of the text are suggestive of a freedom that cannot be associated with a secretary, not even a devoted one. In most cases, it is clear that the author himself must have written such texts for his strictly personal use or to circulate his ideas within a narrow circle.

The palaeographical perspective

The phenomenon of authorial manuscripts, booklets and marginal annotations is not restricted in time or space. Within the period (from the end of the twelfth to the thirteenth century) and the framework (the university context) herein addressed, however, such phenomenon exhibits specific features, from a palaeographical perspective. Following preliminary, and yet extensive and reliable, surveys, it seems to me that a 'scholarly hand' with consistent features can actually be identified within such a well-defined chronological span, that is from the end of the twelfth century to the 80s of the following century. Before such period, each written expression was substantially associated with the Caroline minuscule; but, after such period, all types of writing, included those examined here, underwent a process of homologation, and distinctive wide variety of written expressions of the previous age merged into the typical, well-known *koinè* of the fourteenth century.¹² Therefore, while the phenomena that con-

12 Smith 2008, 279.

stitute the object of this investigation have a limited diffusion in time, they do not seem to be susceptible of geographical distinctions, presenting as they do almost uniform features throughout Europe.

In order to enter into the specific palaeographical field, with reference to the existing palaeographical terminology—not very clear or greatly helpful with the phenomena of the so-called Gothic age—the handwriting used by medieval masters is what Lieftinck calls *scriptura notularis*, i.e. that ‘Écriture notulaire, sans style, parce qu’elle n’est ni livresque, ni cursive’ which ‘se trouve également çà et là dans des livres que les juristes, les médecins, les savants copiaient or faisaient copier pour leur propre usage’ and which, according to Petrucci, would be nothing else but the *internazionale gotichetta usuale dei dotti*.¹³ It is a neglected script, by no means comparable with the numerous examples of handwriting in the marginal notes of coeval manuscripts, which was the prerogative of professional scribes and was only used in a secondary phase (if there was any), so as to set up the scribe’s ‘final’ manuscript.

As suggested by Lieftinck, such phenomenon concerns the entire category of university scholars of that age and, of course, it goes far beyond the philosophical environment, occurring in quite similar forms within juridical, medical and scientific manuscripts. Indeed, the choice to restrict the survey to the sphere of philosophy and theology here is due to the need to identify a coherent and circumscribed corpus, and for consistency with the writer’s ongoing studies.

Therefore, even if the field of research is *lato sensu* that of the university manuscript, the writers who are directly involved are not professionals of writing; they are not scribes, but learned people, scholars at various levels of the academic curriculum, who use writing as a means of study, to annotate, comment, write their own books, the preparatory texts of their university lectures, and in some cases their sermons. Their writing does not respond to a need for clarity and readability, nor is it the serial copy of texts to be issued; it aims instead at recording their thoughts as quickly and effectively as possible. Therefore, they are men who write a lot, without having the technical expertise of a professional. One should not think of them as of inexperienced writers, far from it. However, in evaluating their writing and their graphic choices, one cannot, in my opinion, imagine the conscious reflection on writing that would perfectly pertain, instead, to other writing contexts. In any case, thanks to the assiduous use of the pen, they seem to have played an important role in the process of progressive modification of late medieval writing forms.

Scholarly handwriting, which often appears abnormal and deformed, shows characteristics both of the book script (in its basic morphology) and

13 Lieftinck 1954, 18 and Petrucci 1967, 34.

of the documentary script (usually featuring the most truly cursive forms). A comparison with the canonized scripts of university books suggests that such scholarly handwriting must have been an anomaly. However, the whole range of *textuales* used for 'official' manuscripts cannot be the only yardstick. To understand and study the problem in depth, such written pieces of evidence must be set within a broader framework, then analysed and accurately compared with other coeval scripts that were widespread outside the university environment as well, in order to contextualize their production and understand their origin. Manuscripts, in this case, are only the medium through which these written traces are preserved, but the scripts herein mentioned would be more properly comparable to private or everyday writings than to 'official' book writing. However, we cannot underestimate the fact that the *textualis* was the script to which the reader/writer's eye was accustomed, and this must necessarily have played a decisive role even in the final appearance of the texts that were written by the scholars themselves.

Many questions arise from the in-depth investigation outlined herein. From a strictly palaeographical perspective, we should first try to understand, through a detailed analysis focussed on formal, technical and executive aspects, whether 'scientific' foundations can be given to that early evaluation based on a general impression of similarity among all such scripts.

In recent decades, palaeographers have specified and extended the descriptive categories that define and frame complex phenomena, such as those investigated here. Among these, the notion of 'everyday writing' is particularly suitable to define the class of scripts investigated herein, in three respects: (1) the degree of social diffusion, (2) their purpose, mainly oriented toward communication, and (3) the component of naturalness, spontaneity and freedom of use which allows the writer's hand to make changes (more or less consciously). At first glance, scholarly handwriting seems to have its roots in the book tradition; but it takes shape, in most cases, as a 'personal' script, that is to say a writing inspired by a general model that is subsequently personalized.

In such scripts, the features of book hand and the features of documentary hand are blended together into a script that I am tempted to define 'modern'. They reproduce the broken execution of the book hand, which is a combination of simple repetitive elements juxtaposed with one another; they preserve the cursive appearance of documentary hand, one that tends to join strokes in a *currenti calamo* execution. The relationship with the more formalized gothic of the books is expressed precisely in the execution through a large number of detached strokes, round shapes, and a disconnected appearance. One finds, on the other hand, ligatures and some letter forms, such as the uncial *d* with a sloping hook-ending shaft, and other attitudes, such as the extension of the limb of the

h, m, n below the baseline, or the extension of the *f* and *s* below the baseline, as in the documentary hand.

On a more general level, a brisk execution misshapes the writing, revealing some common features, such as: a horizontal, rather than vertical, development; a tendency to slope to the right; the occasional presence of loops; a simplified and disarticulated *ductus*; occasionally, two, three or more successive letters or parts of letters traced in one stroke, often misshaping some letters. The descriptions that may be made of such scripts may sound ambiguous and contradictory; yet, we must admit that conflicting tendencies can coexist within one and the same phenomenon.

Even within this context, the aforementioned concept of common writing is closely connected to a second, equally important and complex, concept: that is to say, the concept of cursivity.¹⁴ The adjective ‘cursive’ is usually employed with two different primary meanings: in a very general way, it refers to a fast style of writing, one that is unconcerned with following a model, or it may refer to a script that is rich in ligatures between the letters and is therefore intended in a structural sense.

The scholarly hand provides a concrete opportunity to add several elements of research to the reflection on early cursivity in the Middle Ages. Since it is not a highly formalized script, the palaeographic examination cannot be based on such elements as the proportions, the writing angle, the inclination, the relations between the letters, etc., as proposed by Léon Gilissen.¹⁵ Such examination should be based, instead, on more general descriptions and observations, which can still shed light on the modes of execution that have been insufficiently investigated so far.

István Hajnal and Emmanuel Poulle, while studying scripts of a different nature and scope, had already described medieval cursives in terms of scripts with a broken *ductus*. Even in this case, as for the documentary scripts that were widespread between the thirteenth and the fourteenth centuries, the execution comes in disjointed strokes, even in the fastest expressions.

Poulle in particular, while analysing some phenomena of cursivity, noticed the emergence of an *usus scribendi* based on a system of ligatures, aimed at reducing the number of times the pen had to be lifted from the page; such ligatures made in circular motions did not appear until the fifteenth century. Particularly pertinent are his reflections on potential types of ligatures, *de*

14 The most complete and pertinent reflections on the concept of cursivity are provided by Mastruzzo 1995. On the theme of cursivity, see also Mastruzzo 2005 and again Smith 2004, 438–440, who speaks of a permanent genetic relationship between common scripts and cursivity.

15 Gilissen 1973.

séquence or *de tête en pied*, which are still an important benchmark for anyone who wants to investigate cursive handwriting.¹⁶

Even Hajnal's work on the practice of teaching writing in medieval universities, although guided by a hypothesis that was then widely questioned, is still full of ideas and useful descriptions. In particular, Hajnal showed that scripts that combined cursive execution and disjointed strokes were particularly widespread in the academic environments. Such rapidly-executed writing sees the elimination of long curved strokes, replaced by small elementary strokes, which form the letters. Until the end of the thirteenth century, according to Hajnal, such writing was still the script commonly used in books by learned men, and it would have its paragon in the documentary hand.¹⁷

One cannot fail to emphasize that the descriptions provided by Hajnal, which find solid and ample confirmation in the first steps of this research, naturally recall a disjointed and simplified execution of a writing that is typical of waxed tablets, which were commonly used in the universities in that period. Deformed letters, curved lines that tend to straighten, broken straight strokes that end in slight curves: such features, which are visible in the writings we are discussing, can also be found in texts written on waxed tablets and, generally, in scratched writing.¹⁸ Incidentally, it is not inappropriate to highlight here that, in many cases, the texts that are the object of this short essay are not drawn in ink, but by means of different techniques that have not been precisely identified yet, though they were most likely drawn with a pointed and hard writing tool that left a slight groove on the parchment and sometimes even a slight trace of colour. Such texts are almost invisible today and in any case illegible, unless techniques are employed to make the imperceptible traces reappear.

The conditions in which intellectuals worked (specifically their need for speed and the use of particular writing tools) are crucial and expose the writing to changes, which generated scripts that are easily recognizable but barely legible.¹⁹ Palaeographers generally deal with definitive and fully formed texts, whether they are books or documents; but here we are speaking of provisional texts, texts in progress, products for personal use, sketched out to follow the speed of thought, and intended to be revised, in a variety of ways, in one or more successive steps. The comparison must therefore be drawn, not with definitive and finished writings, but with extemporaneous and provisional texts. It is no coincidence that Armando Petrucci, while studying author's drafts, intro-

16 Poulle 1982, 1990.

17 Hajnal 1959.

18 For an overview of the use of waxed tablets in the Medieval Period, a useful reference is provided by: Smith 2003; Lalou 1989, 1994 and Petrucci 1965.

19 The most recent and in-depth contributions on these (or similar) techniques are: Glaser and Nievergelt 2009 and Nievergelt 2009.

duced a comparison with the registers of notarial *imbreviature*, from which fair copies were acquired only subsequently, if ever. There is in fact a close analogy between the practices of autographical writing in the academic/‘literary’ world and those of the documentary world, which comes to the fore in a very similar *mise en page* both in temporary authorial autographs and in notarial *imbreviature*, which were then copied into registers.²⁰

To conclude these first summary reflections on the issue, the key issue is still how such kind of scripts could be defined, apart from the necessary initial palaeographical description. Marc Smith’s considerations on the criteria through which we define a script perfectly fit: Where does this script come from? How to distinguish the essential from the accessory? The rule from its interpretations?²¹ Under the pressure of the need to speed up the writing process in order to keep up with the flow of thought, the writing forms, as we said, come out so deformed as to push these scripts to the very limits of readability. What is the normal model? What is the relationship between this category of writing and the better-known *textualis*, *notula*, and the documentary scripts?

Behind these technical questions, which are only seemingly ends-in-themselves, many questions of great importance arise. In multigraphic situations, such as that of the society considered herein, what is the relationship between the various writing typologies? Who used this hybrid writing, which is not used for books nor for documents, but merges characteristics of both? And what was it used for? And where was this writing learned?

And, on a more general level, considering palaeography as a comprehensive ‘study of written culture’, what do these scripts tell us about those who used them, their education and the environment in which they were produced? We inevitably return to the crucial question posed by Hajnal on the emergence of a common writing throughout Europe. Far from believing that the progressive normalization of written forms can derive directly from university teaching, the everyday writings that were widespread in the universities deserve to be thoroughly investigated, as they are a treasure trove of ‘everyday writing’ with homogeneous characteristics throughout Europe.²²

Of course, the university is not the only context in which the abovementioned facts took place within graphic forms. The university and its writings, however, are certainly a privileged observation post, wherein to follow the evolution of writing and in particular to observe, thanks to the first early attempts at cursivisation, the initial steps of that progressive evolution toward cursivity that would lead to the formation of cursive scripts in the strict sense, which became

20 Petrucci 1992, 362–363 and 1984.

21 Smith 2008, 280.

22 Parkes (1989, 161) seems to be of the same opinion.

widespread in the following age. Further developments of these phenomena are well known, but through an in-depth analysis of the material herein identified the focus can be placed on the phase of transition and training.

Conclusions

The perspective of palaeography, with its peculiar method of investigation, allows us to investigate in detail some exquisitely technical issues, such as the processes of cursivisation in the late Middle Ages; furthermore, on the broader level of the history of writing, we can better understand the role and training of intellectuals within the lively framework that was the birth of the university. Many other interesting and broader paths of research are open to the more general level of cultural history. First, by analysing individual, specific cases in detail we can investigate the working method of medieval scholars. Then, by shifting the survey from form to content, many and new possible paths open up to us. From a philological perspective, we can deal with the issue of the relationship between the text of the autographs and the text conveyed by ‘official’ manuscripts; but it should not be forgotten that, in many cases, such texts underwent multiple re-workings by the authors themselves, in the course of time, sometimes even many years later; they look, therefore, variously stratified. Last but not least, authorial manuscripts are often examples of ‘unique manuscripts’, i.e. texts that were written in a single copy and not disseminated by the manuscript tradition. The commentaries on Peter Lombard’s *Sentences*, which every aspiring professor was required to compose in order to qualify as master or doctor in theology, are a case in point.²³ If studied thoroughly and from different perspectives, such texts, which for various reasons have not always been so widespread, can give an idea of the cultural climate of a given university at a given time.

There is no need to remind ourselves of the reasons why university played an absolutely new role in the Western world that saw its birth. Investigating in detail the rich autograph pieces of evidence written by those who gave life to and shaped such new institution is one of the possible paths of research that might be pursued, so as to shed new light on this class of intellectuals, by thoroughly examining their cultural profile from a very new perspective.

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23 Livesey 1996 and Murano 2009.

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Conference reports

Ancient Manuscripts and Virtual Research Environments

Lausanne, 10–11 September 2020

In the framework of the five-year Swiss National Science Foundation project MARK16, an online conference was organized by Claire Clivaz, the Principal Investigator of the project, in collaboration with Mina Monier (post-doctoral researcher) and Sara Schulthess (DH Scientist), both members of the MARK16 team (DH+, SIB, Lausanne, CH), and Garrick Allen (now University of Glasgow).

One of the main methodological challenges of the MARK16 project is to build a Virtual Research Environment (VRE) focused on the last chapter of the Gospel according to Mark (<<https://mark16.sib.swiss>>). Consequently, the topic chosen for this first MARK16 conference was to understand what changes when research on ancient manuscripts occurs in a VRE, especially in early Jewish and Christian literature, New Testament, and Classical studies. Because VREs offer access to diverse information regardless of geographical location, they continue to define the research landscape of the humanities in more complex ways. They serve as the new ‘covers’ of scientific objects, replacing the paper covers of printed books as signs of knowledge territories. As some have suggested, VREs are likely to become the default location for critical research and other cultural activities in the very near future.¹

The organizers invited researchers to think about how VREs enlighten particular manuscripts or manuscript cultures, how they differ from or supplement traditional research models, and what critical benefits or difficulties arise from using VREs. As a baseline, we defined VREs by using the 2013 definition by Leonardo Candela et al.:²

Virtual Research Environment (VRE) is used with a comprehensive scope, i.e., it represents a concept overarching all the environments cited above and identifies a system with the following distinguishing features: (i) it is a web-based working environment; (ii) it is tailored to serve the needs of a community of practice (Lave & Wenger, 1991); (iii) it is expected to provide a community of practice with the whole

- 1 For the theoretical framework of the conference, see C. Clivaz, ‘The Impact of Digital Research: Thinking about the MARK16 Project’, *Open Theology*, 5/1 (2019), 1–12, <<https://doi.org/10.1515/opth-2019-0035>>; G. V. Allen, ‘Digital Tools for Working with New Testament Manuscripts’, *ibidem*, 13–28, <<https://doi.org/10.1515/opth-2019-0002>>.
- 2 L. Candela, D. Castelli, and P. Pagano, ‘Virtual Research Environments: An Overview and a Research Agenda’, *Data Science Journal*, 12 (2013), 75–81, here 75.

array of commodities needed to accomplish the community's goal(s); (iv) it is open and flexible with respect to the overall service offering and lifetime; and (v) it promotes fine-grained controlled sharing of both intermediate and final research results by guaranteeing ownership, provenance and attribution.

The call for papers and subsequent conference proved successful, gathering around 80 contributors and participants in an online event based in Lausanne (CH) on 10–11 September 2020. The meeting was initially planned to take place on the Dorigny campus, but was transformed in an online conference whose benefits were obvious for all participants. In all likelihood, the online meeting greatly increased participation. MARK16 has consequently decided to organize its second conference as an online meeting in June 2022, regardless of the status of the global COVID-19 health crisis.

The conference included thirteen invited long papers, three selected short papers, and ten selected posters with lightning talks. Classics and New Testament (NT) were particularly highlighted in the invited papers. Thus, Greg Paulson (Institut für Neutestamentliche Textforschung, Münster, DE) opened the conference with a paper entitled 'The Nestle-Aland as Open Digital Edition', drawing the main lines of what a new model of digital edited Greek New Testament could be. Four NT digital projects were also presented as invited papers. Garrick Allen offered an overview of the digital tools related to his ERC Starting Grant (*TiNT: Examining Interpretations of the New Testament*) with a paper entitled 'The New Testament in Virtual Research Environments: Titles, Greek Manuscripts, Data Querying', in collaboration with his colleagues from Dublin City University and the ADAPT Centre Owen Conlan, Declan O'Sullivan, and Clare Conran. H. A. G. Houghton and Catherine J. Smith (Institute for Textual Scholarship and Electronic Editing, University of Birmingham, UK) presented '*Codex Zacynthius*: Editing a Virtual Manuscript in the Digital Research Environment'. Martin Wallraff (University of München, DE) presented 'Paratexts to the Four Gospels: How to Impose Order in a Disorderly Field'. Andrew Smith (Shepherds Theological Seminary, USA) presented on 'Mining Manuscript Data in the New Testament Virtual Manuscript Room'. Finally, Claire Clivaz, Mina Monier, and Jonathan Barda (DH+ & Core-IT, SIB, Lausanne, CH) spoke on 'MARK16 as a VRE: Challenges and Opportunities in New Testament Studies'.

A number of invited papers focused on classical traditions beyond NT. Greek tradition was the main topic in the presentations by Ariane Jambé (University of Lausanne, CH), 'Digital Tools to Read an Homeric Manuscript'; Patrick Andrist (University of Munich, DE), 'Goals and Strategies for Developing a Manuscript Database with a Focus on Comparative Codicology'; Isabelle Marthot-Santaniello (University of Basel, CH), '*D-scribes* Project and Beyond—Building a VRE for Digital Paleography of Ancient Greek and Cop-

tic'. Greek literature was also the starting point for developing VREs and related methodologies presented in papers such as those by Thomas Köntges (University of Leipzig, DE), 'Livin' on the Hyperedge: Using Brucheion to Produce Digital Scholarly Editions as Hypergraphs'; Anna Foka, Kyriaki Konstantinidou, and Elton Barker (Uppsala University, Sweden), 'A Digital Periegesis—Annotating, Mapping and Linking Pausanias's *Description of Greece*'; Elpida Perdiki and Maria Konstantinidou (Democritus University of Thrace), 'Handling Big Manuscript Data'; Sara Schulthess (SIB, Lausanne, CH), 'The VRE of the Research Project HumaReC, some Lessons Learned'.

Latin literature in the context of VREs was also examined by multiple presenters: Francesca Galli and Elena Nieddu (Università della Svizzera italiana & Roma 3, IT), '*In Codice Ratio*: Using VREs in the Study of the Medieval Vatican Registers'; Marie-Agnès Lucas-Avenel and Marie Bisson (University of Caen, France), 'Why Do the Digital Critical Edition of a Latin Source? The Example of the *De Rebus Gestis Rogerii comitis* by Gaufredus Malaterra' and Riccardo Macchioro (Radboud Universiteit Nijmegen, NL), '*Patristic Sermons in the Middle Ages* (PASSIM Radboud University): towards a Virtual Research Environment for the Study of Patristic Homiliaries'.

Antonio Loprieno, Kathrin Gabler, Elena Hertel, und Stephan Unter (University of Basel, CH) presented on 'Crossing Boundaries between Humanities and Informatics: the Case of Egyptian papyri'.

Four papers focused explicitly on the Digital Humanities from European and Swiss points of view. The emergent European Research Infrastructure OPERAS was represented by Suzanne Dumouchel (Huma-Num & OPERAS) and Yoann Moranville (DARIAH-EU & OPERAS) with a talk on 'Increasing impact of SSH research: Use cases of OPERAS services in the EOSC'. Erzsébet Tóth-Czifra (DARIAH-EU) also presented a contribution along these lines, entitled 'Rethinking Text, Techné and Tenure—VREs as an Evaluation and Peer-review Challenge in Humanities'. The Swiss Research Infrastructures in Humanities were represented by Ann Harding (Switch, University of Zurich, CH), 'Safe and Easy Storage for All Kinds of Data Artifacts', and by Lukas Rosenthaler, Vera Chiquet, Olga Serbaeva Saraogi, and Jan Clemens Stoffregen (DaSCH, University of Basel, CH), 'The DaSCH, a Swiss Research Infrastructure in Humanities and a Study Case: Ineri as Potential VRE for Manuscripts-Related Academic Projects'.

Some of the short papers and posters turned their attention to Hebrew literature in the context of VREs. Bronson Brown-deVost (Georg-August-Universität, DE) presented 'Editing Dead Sea Scrolls in the Scripta Qumranica Electronica VRE' and Moshe Lavee (University of Haifa, IL) presented 'Digital Research

Library for Multi-hierarchical Interrelated Texts: From ‘Tikkoun Sofrim’ Text Production to Text Modeling’.

Finally, three short poster presentations presented larger overarching perspectives on VREs and ancient manuscripts: Peter A. Stokes, Daniel Stökl Ben Ezra, Benjamin Kiessling, Robin Tissot, and El Hassane Gargem (EPHE/PSL, FR), ‘The *eScriptorium* VRE for Manuscript Cultures’; Elisa Nury (University of Geneva, CH) and Elena Spadini (University of Lausanne, CH), ‘Manuscripts and Digital Tools: the Long History of Machine-assisted *Collatio*’; and Simone Zenzaro (University of Lausanne, CH) ‘Towards Better VREs: Key Concepts and Basic Challenges’.

Overall, the conference provided a broad overview of the various methodological and content areas relevant for VREs and ancient manuscript. It is clear that VREs will continue to develop for the study of ancient manuscripts in their many cultures, languages, and materials, leading to a greater need for cross-disciplinary discussion between philologists of all stripes, computer scientists, and holding institutions. The place of VREs in critical scholarships remains nascent; ongoing discussion is a requirement.

Because all paper abstracts will remain available on the conference website,³ we chose not to record presentations to facilitate an open discussion space. As of early December 2020, several long and short articles from this conference have been submitted to Harvard’s Center of Hellenic Studies online journal *Classics@*.⁴ A special issue will be open for publication until spring 2021.

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3 <<https://claireclivaz.hypotheses.org/930>>.

4 <<https://chs.harvard.edu/CHS/article/display/1167.classics-introduction-to-journal>>.