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## Article

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The Golden Gospel of Ham*

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# Giving Depth to TEI-Based Descriptions of Manuscripts: The Golden Gospel of Ham\*

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## Introduction

‘The era of heroes like A. Dillmann has gone; not because we are so different or lazy, but because of the general conditions of modern life—thus collective work on well organized data bases might well be the melody of the future’, stated Manfred Kropp in 1994,<sup>1</sup> a pioneer of the use of digital methodologies in Ethiopian studies. In the same article Kropp calls for attention to archival notes transmitted in codices or bound to codices.<sup>2</sup> Since 1994 the corpus of known archival notes in Gə‘əz has been increasing, the latest in-depth study of the archival notes and its possible function in Ethiopian society was carried out by Anaïs Wion.<sup>3</sup> Further on in his article, Kropp, himself an editor of many archival notes (at least one of which was annotated in TEI),<sup>4</sup> draws attention to a publication by Carlo Conti Rossini of

an extraordinary file of royal diplomas found in the ‘golden gospel codex’ of a richly endowed monastery in [Eritrea] (Dabra Libānos).<sup>5</sup> No translation and only very short and provisional comments are found in

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<sup>1</sup> Kropp 1994, 118, also quoted in Liuzzo 2019, xxii, providing the point of the state of the art since.

<sup>2</sup> Kropp 1994, 120.

<sup>3</sup> Wion 2019. For the XML encoding of archives, see Wion 2018.

<sup>4</sup> Kropp 2005.

<sup>5</sup> Conti Rossini 1901. An index of names in the text is provided by Bausi 2007.

this publication. In 1975 the French archaeological mission in Ethiopia had the good fortune to find and film the original manuscript to Conti Rossini's work, but again, nothing in detail has been published until now.<sup>6</sup>

It should be noted here that an immediate review by Boris Turaev on Conti Rossini's publication went apparently unnoticed by Western historians. Turaev recognized the importance of the archive, arguing with some of its historical conclusions, but, what is important, translated three notes, number 9, 20, 33, according to Conti Rossini.<sup>7</sup> Although Turaev's translations should be recognized as a first attempt to interpret these archival notes *in extenso*, he disregards all difficulties of the notes by simple omission.<sup>8</sup> Concerning the photographing of the original manuscript on which Conti Rossini worked, this was carried out by the French archaeological mission in Ethiopia: indeed, as Roger Schneider's archive shows,<sup>9</sup> some 20–30 photos of openings and single pages from the estimated 162 folia were taken in 1975. What Kropp ignores is that Alessandro Bausi could visit the monastery and take photos of the original manuscript in 1993 and 1994, amounting to some 32 photos of openings.<sup>10</sup>

The photos taken by Schneider and later by Bausi reproduce almost all the archival notes Conti Rossini edited in 1901, which shows how well the traditional guardians of history, the monks of the monastery of Dabra Libānos, have

<sup>6</sup> Kropp 1994, 130. 'Golden Gospel codex' according to the terminology employed in Ethiopian and Eritrean studies is used to define a manuscript of the four Gospels containing archival notes (often as an added content) of various historical interest.

<sup>7</sup> Conti Rossini 1901, 193, 203–206, 216–218.

<sup>8</sup> Turaev 1901.

<sup>9</sup> Roger Schneider's archive, i.e. his images and notes, was donated to the Walda Masqal Centre (Addis Abāba, Institute of Ethiopian Studies) by the scholar's family after his death. Marie-Laure Derat carried out the first systematization and description of Roger Schneider's archive (Derat 2011), facilitating the continuation of his various projects, such as the project here.

<sup>10</sup> Bausi 1997. Images are available at <https://betamasaheft.eu/manuscripts/DabraLibanos/HamGG1/viewer>. The documentation was acquired by the Missione Italiana in Eritrea (MIE), 1992–1994, funded by Consiglio Nazionale delle Ricerche and Alma Mater Studiorum Università di Bologna, and directed by Irma Taddia. While ignoring the exact conditions in which the French mission was conducted, the scope of the Italian mission was to document monastic places and their libraries. The permission obtained limited them to photos of single, isolated folia. Further to which, there were many practical aspects that impacted the mission's work: limited time, limited amount of film, and, as it was not possible to check the quality of each image in advance, it was crucial to photograph twice to guarantee good quality of at least one of the images. The contribution of this work is invaluable to our current knowledge even given these restrictions.

preserved their historical archive despite the colonization of Eritrea, the liberation war, and all other obstacles. This gives hope that one day someone appropriately trained will have the opportunity to make a holistic documentation of this unique manuscript and the archive it contains. At the moment both points have to be acknowledged: that due to the sets of images available nowadays, our chances of studying Dabra Libānos archive documentation has improved since Conti Rossini's publication, as the research by Marie-Laure Derat clearly shows,<sup>11</sup> and that our understanding of the archive remains partial (and will be always partial). Discussed in this contribution will be how TEI encoding helps organize the existing scattered knowledge and make the most of the available information, by aligning it and contextualizing it in the Beta maṣāḥəft research environment. The advanced encoding methodology enables the production of visualization and analytical tools that can be implemented for other manuscript descriptions and to exploit the encoding for analysis.

### Physical Description of the Archive and its Strata: Identifying Units

The *Golden Gospel of Dabra Libānos za-Ham* is a title assigned to an archive found in the monastery of Dabra Libānos in the village known as Ham, today's Eritrea.

As it was noted above, the core part of the archive is the four Gospels codex. However, there are other by-side folia, whose exact relationship to the four Gospels codex is crucial for our understanding of the archiving process. Before discussing the encoding, it is necessary to provide some details on the archive's physical structure and disposition of the leaves, as provided by the previous scholars, who were able to see the archive *in situ*. These leaves do not constitute a unit of any kind, most not even a quire, and their grouping has been justified basically merely through the typology of contents and the researcher's interests.

As stated above, this archive was introduced to the academic world in 1901 through Italian scholar Carlo Conti Rossini's title *L'evangelo d'oro*.<sup>12</sup> Conti Rossini was able to visit the place and see this archive, which resulted in the publication of the archival documents. In Conti Rossini's Introduction, the archive is described as follows:

Il manoscritto è, come tutti i codici abissini, in pergamena. Della consueta copertina di legno, la tavoletta posteriore è esternamente foderata di metallo giallo tutto a rabeschi e ad ornamenti; la anteriore ha foderati dello stesso metallo soltanto i bordi, su cui è incisa la leggenda

<sup>11</sup> Derat 2018.

<sup>12</sup> Conti Rossini 1901.

**ወአሰ/ኩ ፡** <sup>13</sup> **ዘንተ ፡ ግለ ፡** (*sic*)—**ወንጌል ፡ አነ ፡ ንጉሥ ፡ ሰሎሞን ፡** (*sic*)—**ለቤተ ፡ አባ ፡ ምጣዕ ፡ ዘአሁም ።** Il ms., senza le aggiunte di cui dirò fra poco, ha 128 fogli, alti mm. 260, larghi mm. 195, a due colonne per pagina aventi da 26 righe a 31 ciascuna. [...] Il contenuto è così diviso: f. 1r–36 evangelo di Matteo, f. 38–57 evangelo di Marco, f. 58–95 evangelo di Luca, f. 96–128 evangelo di Giovanni. La scrittura è del secolo XVI; ma qua e là restano notevoli forme arcaiche, certamente riportate dal codice su cui questo fu copiato. [...] A questi evangeli sono stati premessi, posteriormente, altri numerosi fogli. Anzitutto v'è un quinternetto, 4 fogli di mm. 18 × 16, contenenti i due primi la fine di un Gadla Qirqos, [...] e gli altri due aventi preghiere e atti di donazioni alla chiesa. In mezzo a questo quinternetto ne fu inserito un altro di 8 fogli, di scrittura del secolo XVII, a due colonne di 18 righe ciascuna, contenente altri atti di donazioni. Seguono due fogli, di varie mani, delle dimensioni del ms. degli evangeli, e di cui il primo certamente proviene da un codice molto più antico: hanno atti di donazione e sul verso del secondo foglio una grande croce cofta. Dopo altri cinque fogli, con la lettera d'Eusebio a Capriano e con sette qamar, la cui minuta e sottile scrittura è quasi interamente svanita, son 15 nuovi fogli, aventi al recto del primo la figura d'un tempio e in tutto il resto atti di donazioni, copiati da varie mani e in secoli diversi. Sono in tutto 34 fogli aggiunti a mano a mano al manoscritto donato da re Salomone.<sup>14</sup>

‘The manuscript is, as all Abyssinian codices, made of parchment. The backboard of the usual wooden binding is covered in yellow metal decorated and adorned. The front board has only the borders covered in metal and on it a legend is chiselled **ወአሰ[ር]ኩ ፡ ዘንተ ፡ ግ[ላ] ፡** (*sic*) **ወንጌል ፡ አነ ፡ ንጉሥ ፡ ሰሎሞን ፡** (*sic*) **ለቤተ ፡ አባ ፡ ምጣዕ ፡**<sup>15</sup> **ዘአሁም ።**<sup>16</sup> The manuscript, without the additions of which I will say later, has 128 folia, 260 mm high and 195 mm wide, with two columns per page of 26 to 31 lines each. [...] The content is distributed as follows: fols 1r–36 Gospel of Matthew, fols 38–57 Gospel of Mark, fols 58–95 Gospel of Luke, fols 96–128 Gospel of John. The writing can be dated to the

<sup>13</sup> **ወአሰ[ር]ኩ ፡** as emended by Valieva.

<sup>14</sup> Conti Rossini 1901, 180–182.

<sup>15</sup> Less common variant form of **መጣዕ**/Maṭāʾ, see also Derat 2018, 39, n. 31.

<sup>16</sup> ‘I, King Solomon, have made this Gospel cover bound for the church of ‘Abbā Məṭāʾ of ‘Aham’. Cf. Derat 2018, 39: ‘Moi, le roi Salomon, j’ai fait relier cette couverture de l’Evangile pour l’église d’‘Abbā Maṭāʾ de ‘Aham’.

sixteenth century;<sup>17</sup> there are, here and there, archaic forms, certainly reported from the codex from which this was copied. [...] Numerous leaves have been added at a later date before these Gospels. To begin with four leaves of a quire, 18 × 16 mm, the first two containing the end of a *Gadla Qirqos*, the other with prayers and notes about donations to the church. Within this quire another one was added made of eight leaves, written in the seventeenth century, with two columns of 18 lines each, with some other donation notes. This is followed by two leaves, written by several hands, of the same size as the leaves of the Gospels, of which the first certainly comes from a much older manuscript. They contain donation notes, and on the verso of the second leaf there is a large Coptic cross. After that there are another five leaves containing the letter of Eusebius to Carpianus and seven *qamar* [i.e. arches], written in thin and small hand which has almost entirely faded away. Then there are 15 new leaves, which have on the recto of the first the image of a temple and for the rest donations, copied by various hands and in different centuries. The total number of leaves added from time to time to the manuscript donated by King Solomon is 34.’

This is the starting point for any representation of the manuscript, in the absence of a catalogue description. Before one looks at how it can be complemented with later publications following an autopsy and accompanied by photographic documentation, one must look at what it reports and how this can be encoded into a TEI description based on the Beta maṣāḥəft guidelines.<sup>18</sup>

If the description by Conti Rossini is manually converted into a table and the different units are split according to their type and aligned to the main sequence available for the object, à *La syntaxe du codex*,<sup>19</sup> the following table can be constructed.<sup>20</sup>

<sup>17</sup> This general dating is now untenable: Schneider proposed to date the legend of the front cover to the twelfth–thirteenth century (Schneider 1989), while Siegbert Uhlig further suggested this dating to the writing of the Gospel (Uhlig 1988, 119–121). The authors intentionally leave this discussion open, implying that various units of production require their own dating, which will be discussed in upcoming publications.

<sup>18</sup> <http://betamasaheft.eu/Guidelines/>, accessed on 30 August 2021.

<sup>19</sup> ‘à *La syntaxe du codex*’ is a reference to the methodology of stratigraphic analysis of a codex, of its syntax, that takes into account its observable discontinuities and allows to identify caesurae and, as a result, postulate unities in-between. This methodology is articulated in Andrist et al. 2013.

<sup>20</sup> In Table 1, UniMat = Unit of the support material for writing; UniEcri = Unit of writing; UniDec = Unit of decorative elements; UniMep = Unit of layout; UniCont = unit of content. With a slash before an abbreviation we indicate beginning of the Unit and with a

Table 1 Conti Rossini's description

Sequence of the description	Unimat	Uniecri	Unidec	Unimep	Unicont
<b>4 folia</b>	/UniMat1/	/UniEcri1/			/UniCont1/ /UniCont2/
<b>8 folia (within previous group of 4 folia)</b>	/UniMat2/	/UniEcri2/		/UniMep1/	/UniCont3/
<b>1 folium</b>	/UniMat3/	/UniEcri3/			/UniCont4/
<b>1 folium</b>	/UniMat4/	/UniEcri4/	/UniDec1/		/UniCont5/
<b>5 folia</b>	/UniMat5/	/UniEcri5/		/UniMep2/	/UniCont6/
<b>15 folia</b>			/UniDec2/		/UniCont7/
<b>Fols 1–37</b>	/UniMat6	/UniEcri6		/UniMep3	/UniCont8
<b>Fols 38–57</b>					
<b>Fols 58–95</b>					
<b>Fols 96–128</b>	UniMat6/	UniEcri6/		UniMep3/	UniCont8/

Table 1 shows that Conti Rossini already applied a logic by which the important aspects of the description of a manuscript are its discontinuities and he grouped folia according to the caesurae he could observe. He then identified and edited in chronological order of date of pertinence the text, which he roughly classified as ‘acts and donations’. Aside from some perturbation which will be seen and the omission of one leaf in the count (impossible to know which one), it is still correct and useful in many respects. This is encoded in the TEI by assigning an element `<msPart>` to each of the groups identified by Conti Rossini. It is also the oldest available description and, despite minor mistakes later observed, it attests to the state of preservation of the manuscript. Due to the possibility of nesting elements in a TEI description, in our description of the manuscript hosted in Beta maṣāḥəft it was possible to represent the fact that the second quire is within the first, by nesting two `<msPart>`s.<sup>21</sup> It was also possible to represent the grouping by size of the leaves Conti Rossini had already reported and make a `<msPart>` for the entire group of leaves of that size and,

slash after an abbreviation we indicate its end, in the same way as it is done in Andrist et al. 2013.

<sup>21</sup> <https://betamasaheft.eu/DabraLibanosHamGG1>.

within it, <msPart>s for each of the units identified already at the beginning of the last century.

```

<msPart xml:id="p1" corresp="#quire1">
  <!-- small quire -->
  <msIdentifier> [6 lines]
  <msContents> [6 lines]
  <physDesc> [78 lines]
  <history> [4 lines]
  <msPart xml:id="p2" corresp="#quire2"> [153 lines]
</msPart>
<msPart xml:id="p3" corresp="#sizeofgospel">
  <msIdentifier>
    <repository ref="INS0346DL"/>
  </msIdentifier>
  <!-- size of the gospel-->
  <physDesc> [39 lines]
  <msPart xml:id="p4"> [1301 lines]
  <!-- gospels -->
  <msPart xml:id="p20"> [117 lines]
</msPart>
</msDesc>

```

Fig. 1 Nested <msPart> elements in TEI to represent the description of the manuscript given by Carlo Conti Rossini.

No innovation or specific choice has been made for this manuscript, standard practice has been implemented to add a little depth and semantic to the available description.

In 1975 this archive was also viewed by Schneider, who took some 20–30 pictures, mostly of documents known to some extent already from Conti Rossini’s edition. Schneider left many notes but published only a single one-page article discussing elements for dating the codex,<sup>22</sup> which will be referred to later. Concerning the physical description of the codex’s structure, Schneider says the following:

À l’intérieur il y a d’abord 12 folios d’un format plus petit (18 × 16 cm.) qui n’appartiennent pas au codex proprement dit. [...] Puis viennent 22 folios, du même format que le reste du manuscrit, avec des

<sup>22</sup> Schneider 1989.

actes de donations. [...] Conti Rossini estime que ces feuillets ont été ajoutés postérieurement. Ensuite vient le texte des évangiles, 128 fol., écrit sur deux colonnes.<sup>23</sup>

‘Inside there are to begin with 12 leaves of a smaller format (18 × 16 cm) which do not form part of the codex itself. [...] After these there are 22 leaves, of the same format as the rest of the manuscript, with acts and donations. [...] Conti Rossini thinks that these leaves have been added afterwards. After these we find the text of the Gospels, 128 leaves, written on two columns.’

Converting the description by Schneider into a table à *La syntaxe du codex* forms the following table.

Table 2 Roger Schneider’s description

Sequence of the description	Unimat	Uniecri	Unicont	Unimep
12 folia	/UniMat1/			
22 folia	/UniMat2/		/UniCont1/	
Fols 1–128	/UniMat3/	/UniEcri1/	/UniCont2/	/UniMep1/

Comparing the above description to what Conti Rossini wrote on the codex structure, it is clear that Schneider adds nothing new but introduces some simplification in respect to what Conti Rossini noted.

After Schneider, the monastery of Dabra Libānos was visited by Bausi in 1993 and 1994. Having no access to Schneider’s pictures, Bausi took his own set of images. While the set of images taken in 1993 mostly coincide with the folia Schneider photographed, differing in only a few folia, those taken in 1994 introduce a completely new documentation of ‘a smaller’ archive containing document copies. This documentation enables a better understanding of Conti Rossini’s publication and helps address further questions concerning archiving processes and ‘copying of archival notes’. Bausi writes the following:

In sintesi, Conti Rossini distingueva il testo del Vangelo (128 ff.) da un gruppo di 34 fogli aggiunti in principio, rilegati in due diversi fascicoli, a loro volta analizzabili in gruppi di fogli omogenei. Il primo fascicolo, di dimensioni minori dei fogli dei Vangeli, di 12 ff., divisi in due gruppi di 4 e 8 ff., con gli 8 ff. inseriti dopo i primi 2 ff.; il secondo di 22 ff.

<sup>23</sup> Ibid.

e della stessa dimensione dei Vangeli, formato da 2 ff. più 5 ff. più 15 ff., per un totale complessivo di 34 ff.<sup>24</sup>

‘To summarize, Conti Rossini distinguished the text of the Gospel (128 fols) from a group of 34 leaves added at the beginning and bound in several fascicules, which in turn could be broken down into groups of homogeneous leaves. The first fascicule, smaller than the leaves of the Gospel, made of 12 fols, consists in four and eight leaves, with the eight leaves added after the first two; the second consists of 22 leaves and of the same dimension of the Gospels, consisting of 2 leaves plus 5 leaves plus 15 leaves adding up to a grand total of 34 leaves.’

Next to the above-quoted description, Bausi noted 35 leaves and not 34 as previously reported.<sup>25</sup> Converting Bausi’s description into a table *à La syntaxe du codex*, a table identical to that of Conti Rossini’s appears with one extra leaf. Bausi also identified several texts that do not appear in Conti Rossini’s edition and located as many as possible of those known to their exact relative location (signature of picture and number of folia, according to his own foliation). This work complemented Conti Rossini’s efforts adding a precise location of the texts, that had previously been absent.

Bausi briefly repeats what Conti Rossini wrote regarding the archive arrangement introducing, however, the notion of a group of thirty-five folia, added at the beginning, bound in two different quires. The identification and location of the documents and their copies have been a major addition to our knowledge of the object enabling an encoding of this information, adding information of relative location to `<msItem>`s in each relevant `<msPart>`. Creating a Textual Unit record, with the associated Clavis Aethiopica identifier,<sup>26</sup> into Beta maṣāḥəft for each edited document in Conti Rossini enabled an indication of those documents, which in several cases appeared in more than one location within the group of added leaves.

Schneider and Bausi took photos that were eventually made available to scholars, thus providing further grounds for the encoding. Firstly the attribution

<sup>24</sup> Bausi 1997, 47.

<sup>25</sup> See Bausi 1997, 47, where he corrects 22 leaves to 23.

<sup>26</sup> The Clavis Aethiopica is an ongoing repertory of all known Ethiopic Textual Units (literary works and identifiable documentary texts). See <https://betamasahft.eu/Guidelines/?id=definitionWorks>. The identifiers assigned in the Clavis are used to refer univocally to a specific text in a publication. Please note that this shares only the numeric part with the Textual Unit Record Identifier in Beta maṣāḥəft. See <https://betamasahft.eu/Guidelines/?id=entities-id-structure>.

of each set was noted in the main manuscript record, then a <facsimile><sup>27</sup> was linked to each set of photos taken, which contained the sequence for that image set. It goes without saying that all three image sets, Schneider’s of 1975 and Bausi’s pair of 1993 and 1994, were only partially overlapping. To anchor description, images, and manuscript text to create a solid basis for a precise relative location of the texts, the Transkribus tool was used on selected sequences of the images and from there an encoded segmentation of the images was exported.<sup>28</sup>

In so doing, it is now possible to retrieve fragments of the images and reuse them in their precise referencing. Though not carried out in this contribution, it is demonstrated in the web view of the XML edition.

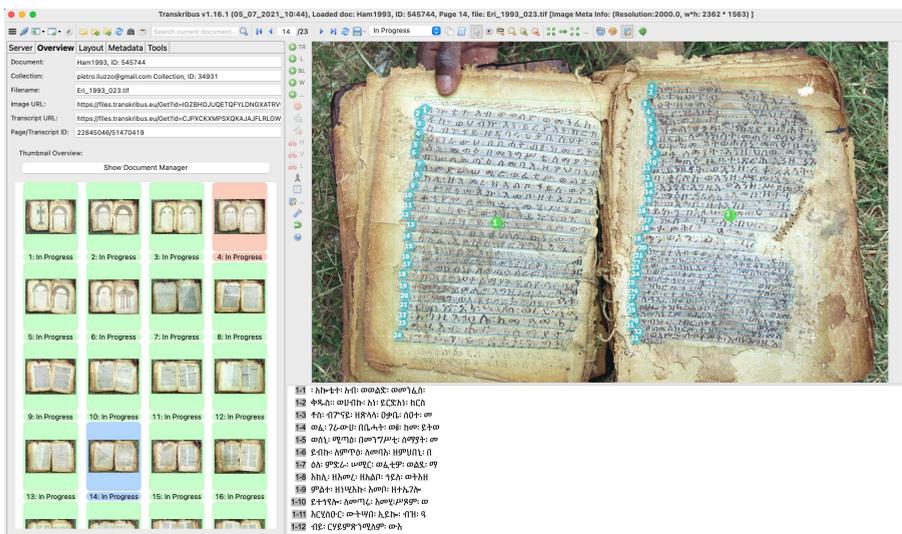


Fig. 2 The images taken by Alessandro Bausi in 1993 (© MIE) into Transkribus with the transcription not yet corrected.

This made it possible not only to obtain encoded and referenceable elements with an identifier for each region on each page photographed, but also to generate an automated transcription, using the model elaborated at the Hiob Ludolf Centre for Ethiopian and Eritrean Studies and make it available to any user of Transkribus. Now one could refer to each line precisely on each available photo

<sup>27</sup> On TEI facsimiles: <https://www.tei-c.org/release/doc/tei-p5-doc/de/html/PH.html#PHFAX>.

<sup>28</sup> Transkribus is an expert tool provided by the Read Coop, see <https://readcoop.eu/transkribus>. It performs layout analysis and supports Handwritten Text Recognition (HTR).

of the manuscript, and count on an incorrect (but better than nothing) transcription of the text at that line, linked with the exact portion of the image carrying it.

This, however, did not solve the issue of having three different sets, only partially overlapping. A fourth <facsimile> was added copying over the best images for each folium in the sequence, aligning that to the transcription instead. The new facsimile is actually a digital reconstruction matching the existing available images and the transcribed text, performing the same function digitally as a paper model, which both authors constructed separately for this effort at different stages. Needless to say, a digital surrogate will never be as flexible and useful an heuristic tool as a material surrogate, especially one handcrafted.

In this <facsimile> we used <surfaceGrp>, to gather surfaces of folia rather than surfaces of images as dealt with by Transkribus, with groupings of leaves and their digital surrogates thus described. Transkribus exports a <pb> and related <facsimile> for each image of an opening. Here there is one <surfaceGrp> for each folium containing a zone that is the left side of the opening of an image (the recto of the folium) and the right side of the following (the verso of the folium). No photographic documentation is available of folia 1, 2r, and 35v, as well as the entirety of the Gospel (some images of the texts within it were made by Schneider).

The descriptions determined to some extent the selection of photos to be taken, together with the availability of time. Furthermore, the organization of the photos and their archiving and description was affected. The observation of the images and the descriptions enabled proposing the reconstruction of some of the transformation which happened in time. The photos determine a reconstructed hypothetical sequence which is encoded and upon which the contents have been reanchored alongside their transcription. This has been done by means of milestone elements linked to the images. These should clearly connect all aspects and information available.

As Bausi introduced a foliation taking into consideration two units defined by him as 'Fascicolo I' and 'Fascicolo II' and there are no systems of reference in Conti Rossini and Schneider, it is useful to provide an extraction from the TEI encoded alignment of the systems to reference the manuscript, which includes the new one.

**Table 3 Selection of images for the reconstruction, i.e. all images by Bausi taken during the missions in 1993 and 1994 and one image by Schneider taken in 1975 of the verso of 12 and recto of 13, with reference to Bausi placement references**

<b>Our foliation</b>	<b>Schneider's pagination</b>	<b>Bausi references</b>	<b>Selected reference image</b>	<b>Alternative images for a given folium, recto or verso with reference to previous image's numbers</b>
<b>2v</b>		I 2v	Eri_1994_001.tif	Eri_1994_001.tif: 4.18   Eri_1994_002.tif: 4.19
<b>3r</b>		I 3r	Eri_1994_001.tif	Eri_1994_001.tif: 4.18   Eri_1994_002.tif: 4.19
<b>3v</b>		I 3v	Eri_1994_003.tif	Eri_1994_003.tif: 4.20   Eri_1994_004.tif: 4.21
<b>4r</b>		I 4r	Eri_1994_003.tif	Eri_1994_003.tif: 4.20   Eri_1994_004.tif: 4.21
<b>4v</b>		I 4v	Eri_1994_005.tif	Eri_1994_005.tif: 4.22   Eri_1994_006.tif: 4.23
<b>5r</b>		I 5r	Eri_1994_005.tif	Eri_1994_005.tif: 4.22   Eri_1994_006.tif: 4.23
<b>5v</b>		I 5v	Eri_1994_007.tif	Eri_1994_007.tif: 4.24   Eri_1994_008.tif: 4.25
<b>6r</b>		I 6r	Eri_1994_007.tif	Eri_1994_007.tif: 4.24   Eri_1994_008.tif: 4.25
<b>6v</b>		I 6v	Eri_1994_009.tif	Eri_1994_009.tif: 4.26   Eri_1994_010.tif: 4.27
<b>7r</b>		I 7r	Eri_1994_009.tif	Eri_1994_009.tif: 4.26   Eri_1994_010.tif: 4.27
<b>7v</b>		I 7v	Eri_1994_011.tif	Eri_1994_011.tif: 4.28   Eri_1994_012.tif: 4.29
<b>8r</b>		I 8r	Eri_1994_011.tif	Eri_1994_011.tif: 4.28   Eri_1994_012.tif: 4.29
<b>8v</b>		I 8v	Eri_1994_013.tif	Eri_1994_013.tif: 4.30   Eri_1994_014.tif: 4.31
<b>9r</b>		I 9r	Eri_1994_013.tif	Eri_1994_013.tif: 4.30   Eri_1994_014.tif: 4.31
<b>9v</b>		I 9v	Eri_1994_015.tif	Eri_1994_015.tif: 4.32   Eri_1994_016.tif: 4.33
<b>10r</b>		I 10r	Eri_1994_015.tif	Eri_1994_015.tif: 4.32   Eri_1994_016.tif: 4.33
<b>10v</b>		I 10v	Eri_1994_017.tif	Eri_1994_017.tif: 4.34   Eri_1994_018.tif: 4.35

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<b>Our foliation</b>	<b>Schneider's pagination</b>	<b>Bausi references</b>	<b>Selected reference image</b>	<b>Alternative images for a given folium, recto or verso with reference to previous image's numbers</b>
<b>11r</b>		I 11r	Eri_1994_017.tif	Eri_1994_017.tif: 4.34   Eri_1994_018.tif: 4.35
<b>11v</b>		I 11v	Eri_1994_019.tif	Eri_1994_019.tif: 4.36
<b>12r</b>		I 12 r	Eri_1994_019.tif	Eri_1994_019.tif: 4.36
<b>12v</b>		I 12v	001.tiff	001.tiff: Schneider
<b>13r</b>	1	II 1r	001.tiff	001.tiff: Schneider 1
<b>13v</b>	Photo-graphed but not enumerated	II 1v	Eri_1993_001.tif	Eri_1993_001.tif: 4.18   Eri_1993_002.tif: 4.19
<b>14r</b>	idem	II 2r	Eri_1993_001.tif	Eri_1993_001.tif: 4.18   Eri_1993_002.tif: 4.19
<b>14v</b>	idem	II 2v	Eri_1993_003.tif	Eri_1993_003.tif: 4.20   Eri_1993_004.tif: 4.21
<b>15r</b>	idem	II 3r	Eri_1993_003.tif	Eri_1993_003.tif: 4.20   Eri_1993_004.tif: 4.21
<b>15v</b>	idem	II 3v	Eri_1993_005.tif	Eri_1993_005.tif: 4.22
<b>16r</b>	idem	II 4r	Eri_1993_005.tif	Eri_1993_005.tif: 4.22
<b>16v</b>	idem	II 4v	Eri_1993_006.tif	Eri_1993_006.tif: 4.23
<b>17r</b>	idem	II 5r	Eri_1993_006.tif	Eri_1993_006.tif: 4.23
<b>17v</b>	idem	II 5v	Eri_1993_007.tif	Eri_1993_007.tif: 4.24
<b>18r</b>	idem	II 6r	Eri_1993_007.tif	Eri_1993_007.tif: 4.24
<b>18v</b>	idem	II 6v	Eri_1993_008.tif	Eri_1993_008.tif: 4.25
<b>19r</b>	idem	II 7r	Eri_1993_008.tif	Eri_1993_008.tif: 4.25
<b>19v</b>	2	II 7v	Eri_1993_009.tif	Eri_1993_009.tif: 5.00   Eri_1993_010.tif: 5.01
<b>20r</b>	5	II 8r	Eri_1993_009.tif	Eri_1993_009.tif: 5.00   Eri_1993_010.tif: 5.01
<b>20v</b>	6	II 8v	Eri_1993_011.tif	Eri_1993_011.tif: 5.02   Eri_1993_012.tif: 5.03   010.tiff: 10
<b>21r</b>	11	II 9r	Eri_1993_011.tif	Eri_1993_011.tif: 5.02   Eri_1993_012.tif: 5.03   010.tiff: 10
<b>21v</b>	12	II 9v	Eri_1993_013.tif	Eri_1993_013.tif: 5.04   Eri_1993_014.tif: 5.05   011.tiff: 12   011.tiff: 13

<b>Our foliation</b>	<b>Schneider's pagination</b>	<b>Bausi references</b>	<b>Selected reference image</b>	<b>Alternative images for a given folium, recto or verso with reference to previous image's numbers</b>
<b>22r</b>	13	II 10r	Eri_1993_013.tif	Eri_1993_013.tif: 5.04   Eri_1993_014.tif: 5.05   011.tif: 12   011.tif: 13
<b>22v</b>	14	II 10v	Eri_1993_015.tif	Eri_1993_015.tif: 5.06   Eri_1993_016.tif: 5.07   012.tif: 14   012.tif: 15
<b>23r</b>	15	II 11r	Eri_1993_015.tif	Eri_1993_015.tif: 5.06   Eri_1993_016.tif: 5.07   012.tif: 14   012.tif: 15
<b>23v</b>	16	II 11v	Eri_1993_017.tif	Eri_1993_017.tif: 5.08   Eri_1993_018.tif: 5.09   013.tif: 16
<b>24r</b>	7	II 12r	Eri_1993_017.tif	Eri_1993_017.tif: 5.08   Eri_1993_018.tif: 5.09   013.tif: 16
<b>24v</b>	8	II 12v	Eri_1993_019.tif	Eri_1993_019.tif: 5.10   Eri_1993_020.tif: 5.11   009.tif: 8   4_5.tif: 4 5   009.tif: 9
<b>25r</b>	9	II 13r	Eri_1993_019.tif	Eri_1993_019.tif: 5.10   Eri_1993_020.tif: 5.11   009.tif: 8   4_5.tif: 4 5   009.tif: 9
<b>25v</b>	10	II 13v	Eri_1993_021.tif	Eri_1993_021.tif: 5.12   Eri_1993_022.tif: 5.13   010.tif: 11
<b>26r</b>	3	II 14r	Eri_1993_021.tif	Eri_1993_021.tif: 5.12   Eri_1993_022.tif: 5.13   010.tif: 11
<b>26v</b>	4	II 14v	Eri_1993_023.tif	Eri_1993_023.tif: 5.14   Eri_1993_024.tif: 5.15   4_5.tif: 4 5   013.tif: 17
<b>27r</b>	17	II 15r	Eri_1993_023.tif	Eri_1993_023.tif: 5.14   Eri_1993_024.tif: 5.15   4_5.tif: 4 5   013.tif: 17
<b>27v</b>	18	II 15v	Eri_1993_025.tif	Eri_1993_025.tif: 5.16   Eri_1993_026.tif: 5.17   014.tif: 18   014.tif: 19

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<b>Our foliation</b>	<b>Schneider's pagination</b>	<b>Bausi references</b>	<b>Selected reference image</b>	<b>Alternative images for a given folium, recto or verso with reference to previous image's numbers</b>
<b>28r</b>	19	II 16r	Eri_1993_025.tif	Eri_1993_025.tif: 5.16   Eri_1993_026.tif: 5.17   014.tiff: 18   014.tiff: 19
<b>28v</b>	20	II 16v	Eri_1993_027.tif	Eri_1993_027.tif: 5.18   Eri_1993_028.tif: 5.19   015.tiff: 20   015.tiff: 21
<b>29r</b>	21	II 17r	Eri_1993_027.tif	Eri_1993_027.tif: 5.18   Eri_1993_028.tif: 5.19   015.tiff: 20   015.tiff: 21
<b>29v</b>	22	II 17v	Eri_1993_029.tif	Eri_1993_029.tif: 5.20   Eri_1993_030.tif: 5.21   016.tiff: 22   016.tiff: 23
<b>30r</b>	23	II 18r	Eri_1993_029.tif	Eri_1993_029.tif: 5.20   Eri_1993_030.tif: 5.21   016.tiff: 22   016.tiff: 23
<b>30v</b>	24	II 18v	Eri_1993_031.tif	Eri_1993_031.tif: 5.22   017.tiff: 24   017.tiff: 25
<b>31r</b>	25	II 19r	Eri_1993_031.tif	Eri_1993_031.tif: 5.22   017.tiff: 24   017.tiff: 25
<b>31v</b>	26	II 19v	Eri_1993_032.tif	Eri_1993_032.tif: 5.23   018.tiff: 26   018.tiff: 27
<b>32r</b>	27	II 20r	Eri_1993_032.tif	Eri_1993_032.tif: 5.23   018.tiff: 26   018.tiff: 27
<b>32v</b>	28	II 20v	Eri_1993_033.tif	Eri_1993_033.tif: 5.24   019.tiff: 28   019.tiff: 29
<b>33r</b>	29	II 21r	Eri_1993_033.tif	Eri_1993_033.tif: 5.24   019.tiff: 28   019.tiff: 29
<b>33v</b>	30	II 21v	Eri_1993_035.tif	021.tiff: 32   021.tiff: 33 Eri_1993_034.tif: 5.25   Eri_1993_035.tif: 6.00
<b>34r</b>	31	II 22r	Eri_1993_035.tif	021.tiff: 32   021.tiff: 33 Eri_1993_034.tif: 5.25   Eri_1993_035.tif: 6.00
<b>34v</b>	32	II 22v	Eri_1993_036.tif	Eri_1993_036.tif: 6.01
<b>35r</b>	33	II 23r	Eri_1993_036.tif	Eri_1993_036.tif: 6.01

The updated encoding and alignment of information, and the unification of the system of reference in a single foliation sequence, makes it possible to also update the correspondences already provided by Bausi in the following table, where line references are also provided, as they became available due to the segmentation in Transkribus.

Table 4 List of the documents and their placement in the *Golden Gospel of Dabra Libānos za-Ham* extracted from the TEI encoded version in Beta maṣāḥaft (generated with `textualunits.xml`, available at <https://github.com/PietroLiuzzo/Ham>)<sup>29</sup>

Ord.	From	To	xml:id	CAe	BMid	CCR	Title	Type
1	1	2	p1_i1	CAe 1488	LIT1488GadlaQ	not in CCR		main
2	11va1	11vb6	a24	CAe 6306	LIT6306CCR1	CCR 1	Gabra Mas- qal's grant of Sarā'e, etc.	add.
3	12va9	12vb20	a25	CAe 6307	LIT6307CCR2	CCR 2	Gabra Mas- qal's <i>g'əlt</i> of Galabā, etc.	add.
4	3ra1	4vb14	p2_i1	CAe 6329	LIT6329CCR22	CCR 22	Restoration of <i>g'əlt</i> by 'Amda Şəyon/Gabra Masqal	main
6	4vb15	6vb15	p2_i2	CAe 6327	LIT6327CCR20	CCR 20	<i>G'əlt</i> by Bəlen Sābā	main
7	6vb16	7vb3	p2_i3	CAe 6326	LIT6326CCR19	CCR 19	'Amda Şəyon's donations	main
10	7vb4	9ra3	p2_i4	CAe 6305	LIT6305CCR7	CCR 7	Lālibalā's <i>g'əlt</i> to Ham	main
11	9ra3	9rb14	p2_i5	CAe 6325	LIT6325CCR18	CCR 18	Return of lands by Krəstos 'Abuhu	main

<sup>29</sup> Scripts which are reusable for other manuscripts like this one have been provided as additions to this paper with comments on their use embedded. In Column 7 of the table, 'CCR' is an abbreviated form of reference to Carlo Conti Rossini's publication, the number corresponds to the numeration of the documents he introduced in this publication. This system of abbreviated reference was used in Bausi 1997. In Column 8, the titles presented here were newly introduced in the course of this project by the authors. In Column 9, the differentiation between the content's type, 'main' and 'addition', reflects a presumed sequence of elements appearing gradually: what comes first is classified as 'main', that after as 'addition' (to the existed content).

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Ord.	From	To	xml:id	CAe	BMid	CCR	Title	Type
13	9rb14	10rb18	p2_i6	CAe 6340	LIT6340CCR33	CCR 33	A note on women's ban at the monastery	main
14	10va1	10vb18	p2_i7	CAe 6341	LIT6341CCR34	CCR 34	Monks genealogy	main
15	14r	19r	p5_i1	CAe 4877	LIT4877LetterCanons	not in CCR	<i>Epistle of Eusebius to Carpianus</i> and Eusebian Canons: 3 pages of letter + 7 pages of canons	main
16	14r	15r	p5_i1.1	CAe 1349	LIT1349EpistleEusebius	not in CCR	<i>Epistle of Eusebius to Carpianus</i>	main
17	15v	18v	p5_i1.2	CAe 1224	LIT1224Canons	not in CCR	Eusebian Canons	main
20	19v1	19v24	a3	CAe 6305	LIT6305CCR7	CCR 7	Lālibalā's <i>gʷəlt</i> to Ham	add. <sup>30</sup>
21	19v24	19v30	a4	CAe 6309	LIT6309CCR4	CCR 4	Gabra Masqal's donation of eight fields	add.
22	20r1	20v12	p7_i3	CAe 6326	LIT6326CCR19	CCR 19	'Amda Şəyon's donations	main
26	20v13	22v8	p7_i6	CAe 6327	LIT6327CCR20	CCR 20	<i>Gʷəlt</i> by Bəlen Sābā	main
29	22v9	23r1	p7_i9	CAe 6328	LIT6328CCR21	CCR 21	Grant to Māryām za-Sa'agā by 'Amda Şəyon	main
30	23v2	23v18	p7_i11	CAe 6325	LIT6325CCR18	CCR 18	Return of lands by Krastos 'Abuhu	main
32	23r2	23r11	a5	CAe 6325	LIT6325CCR24	not in CCR	'Amda Şəyon's <i>gʷəlt</i> of Şədā', etc.	add.

<sup>30</sup> The authors decided to consider CCR 7 as an added element regarding the sequence of elements that gradually appeared on the respective folium.

Ord.	From	To	xml:lid	CAe	BMid	CCR	Title	Type
33	23r12	23v1	a6	CAe 6325	LIT6325CCR25	not in CCR	Restoration of <i>g<sup>w</sup>əlt</i> to Gunāgunā by 'Amda Şəyon	add.
34	23v19	23v24	a7	CAe 6308	LIT6308CCR3	CCR 3	Gabra Mas- qal's <i>g<sup>w</sup>əlt</i> of Tedrar, etc.	add.
35	24ra1	24rb7	p8_i1			not in CCR	On the devo- tion to the robes of Libānos	main
36	24vb6	24vb25	a10	CAe 6344	LIT6344CCR26	CCR 26	Donation by Tasfā 'Iyasus	add.
37	25ra1	25rb26	p9_i1	CAe 6336	LIT6336CCR29	CCR 29	Restoration of Tarkā by Tanšə'a Krəstos	main
38	25vb1	25vb25	p9_i2	CAe 6335	LIT6335CCR28	CCR	Grant by Yəsməka 'Əgzi'	main
39	26r3	26r29	p10_i1	CAe 6312	LIT6312CCR7b	CCR 7	A note by ' <i>āqqābe</i> <i>sa'āt</i> of Ma- tā' Yərdə'an- na Krəstos	main
40	26v1	26v15	p10_i2	CAe 6313	LIT6313CCR8	CCR 8	Land grant by Yərdə'an- na Krəstos	main
41	26r1	26r2	a11	CAe 6306	LIT6306CCR1	CCR	Gabra Mas- qal's grant of Sarā'e, etc.	add.
42	27r1	27r19	p11_i1	CAe 6316	LIT6316CCR11	CCR 11	Land grant by Takašta Bərhān	main
43	27v1	27v33	p11_i2	CAe 6315	LIT6315CCR10	CCR 10	Restoration of <i>g<sup>w</sup>əlt</i> by 'Əngodā 'Əgzi'	main
44	28ra1	29vb24	p12_i1	CAe 6329	LIT6329CCR22	CCR 22	Restoration of <i>g<sup>w</sup>əlt</i> by 'Amda Şəyon/Gabra Masqal	main
46	30r1	30r31	p13_i1	CAe 6324	LIT6324CCR17	CCR 17	<i>G<sup>w</sup>əlt</i> by Yā'bika 'Əgzi'	main
47	30v1	30v23	p13_i2	CAe 6334	LIT6334CCR27	CCR 27	Land grant by 'Əqbā 'Əgzi'	main

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Ord.	From	To	xml:id	CAe	BMid	CCR	Title	Type
48	31r1	31r7	p14_i1	CAe 6317	LIT6317CCR12	CCR 12	Gospel donation by Takasta Bərḥān	main
49	31r8	31r16	p14_i2	CAe 6319	LIT6319CCR13	CCR 13	Note by 'Āq- qābe sa 'āt 'Asfāḥā	main
50	31r17	31r20	a14			not in CCR		add.
51	31va1	32va15	p14_i3	CAe 6322	LIT6322CCR15	CCR 17	Restoration of <i>g<sup>w</sup>əlt</i> by Tasfāna 'Īgzi'	main
52	32va1 6	32vb1	a15	CAe 6339	LIT6339CCR32	CCR 32	Land grant by Māryām Ḥaylā	add.
53	32vb1	32vb14	a16	CAe 6323	LIT6323CCR16	CCR 16	Land grant by Zawāba 'Īgzi'	add.
54	32vb1 5	32vb26	a17	CAe 6310	LIT6310CCR5	CCR 32	Gabra Mas- qal's note on G <sup>w</sup> ənāg <sup>w</sup> ənā monastery	add.
55	33ra1	33va8	p15_i1	CAe 6330	LIT6330CCR23	CCR 23	Land grant by Gabra Kraṣtos	main
56	33va9	34rb	p15_i2	CAe 6340	LIT6340CCR33	CCR 33	A note on women's ban at the monastery	main
57	34va1	34va22	a18			not in CCR	List of goods of the church of Maṭā'	add.
58	35ra1	35rb27	p16_i1	CAe 6311	LIT6311CCR6	CCR 6	Lālibalā's <i>g<sup>w</sup>əlt</i> to the church of Masqal and to the church of Māryām	main
59	36r	163	p20_i1	CAe 1560	LIT1560Gospel	not in CCR	Four Gos- pels	main
60	36r	72	p20_i1. 1	CAe 1558	LIT1558Matthew	not in CCR	Gospel of Matthew	main
61	73	92	p20_i1. 2	CAe 1882	LIT1882MarkGo	not in CCR	Gospel of Mark	main
62	93	130	p20_i1. 3	CAe 1812	LIT1812GospelL uke	not in CCR	Gospel of Luke	main
63	131	163	p20_i1. 4	CAe 1693	LIT1693John	not in CCR	Gospel of John	main

Ord.	From	To	xml:id	CAe	BMid	CCR	Title	Type
64	va1	vb26	a19	CAe 6321	LIT6321CCR14	CCR 14	Return of fields in Biḥat by Sanbat Maḥara	add.
65	vb1	vb19	a21	CAe 6338	LIT6338CCR31	CCR 31	Donation of 'Ad Burāha	add.
66	rb	rb	a22	CAe 6314	LIT6314CCR9	CCR 9	Note by <i>Māslena</i> 'Ḥgzi', <i>šayyūm</i> of Dabra Mā'šo	add.

The above table shows an additional improvement providing a good contribution while producing an encoded version of this manuscript's description, which is the classification as main content or addition. At this stage, the work allows a far more precise analysis of the units available in the portion of the codex under scrutiny. The final goal of this analysis is to reconstruct an archiving process.

Having now in our TEI encoded version identified parts, contents (distinguishing main contents and additions), each available image and system of reference, and each text region and line, it was possible to move on to encode decorations, hands, layout, as well as the ruling, where possible, assigning a `@xml:id` to each, a `<locus>` with relative location correct to the line when possible and `@corresp` to link elements to one another.

An `<msPart>` was declared for almost each folium of the so-called 'fascicolo II', to respond to the current state in which the loose leaves have become such independent units. These units are already the result of an analysis of the discontinuities, carried out before the encoding. The presence of so many convergent discontinuities to make for so many units provides further confirmation of the present structural description,<sup>31</sup> and serves as a basis by describing the current status (current UniCirc = circulation unit) and furnishing enough identification to carry out the description.

The table that can be extracted from the encoded description, taking into account all the previous documentation, is as follows (convergent discontinuities have been marked by a thicker line).

<sup>31</sup> See Andrist et al. 2013, 8–9; Liuzzo 2021, §18. In other words, based on *La syntaxe du codex*, whenever we find two (or more) discontinuities that coincide, for example a textual unit (UniContMain) and a layout unit (UniMeP) or a material unit (UniMat) and a decoration unit (UniDec), etc., they are considered here as convergent discontinuities and can be used as a basis for postulating a Unit of Production.

Table 5 **Convergent Discontinuities in the *Golden Gospel of Dabra Libānos za-Ham* extracted from the available information in the TEI encoded version in Beta maṣāḥəft (generated with `discontinuities.xml`, available at <https://github.com/PietroLiuZZo/Ham>)**

Bound.	UniMat	UniContMain	UniContAdd	UniDec	UniHand	UniMeP	UniRegl
1	START of p1	START of p1_i1			START of h8 (#p1_i1)	START of layout1	START of ruling   START of ruling
2		END of p1_i1			END of h8 (#p1_i1)	END of layout1	END of ruling   END of ruling
3	START of p2					START of layout2	START of ruling   START of ruling
3ra1		START of p2_i1   START of p2_i1.1			START of h9 (#p2)		
4vb14		END of p2_i1   END of p2_i1.1					
4vb15		START of p2_i2					
6rb11					START of h10 (#p2_i2)		
6rb26					END of h10 (#p2_i2)		
6vb15		END of p2_i2					
6vb16		START of p2_i3   START of p2_i3.1					
7va		START of p2_i3.2					
7vb3		END of p2_i3   END of p2_i3.1					
7vb4		START of p2_i4					
7vb		END of p2_i3.2					
9ra3		END of p2_i4   START of p2_i5					
9rb14		END of p2_i5   START of p2_i6					

<b>Bound.</b>	<b>UniMat</b>	<b>UniContMain</b>	<b>UniContAdd</b>	<b>UniDec</b>	<b>UniHand</b>	<b>UniMeP</b>	<b>UniRegl</b>
<b>10rb18</b>		END of p2_i6					
<b>10va1</b>		START of p2_i7 					
<b>10vb18</b>		END of p2_i7			END of h9 (#p2)		
<b>10</b>	END of p2					END of layout2	END of ruling   END of ruling
<b>11r</b>			START of a26				
<b>11ra1</b>			START of a23		START of h11 (#a23)		
<b>11rb17</b>			END of a23		END of h11 (#a23)		
<b>11va1</b>			START of a24		START of h12 (#a24)		
<b>11vb6</b>			END of a24		END of h12 (#a24)		
<b>12va1</b>			START of a27				
<b>12va8</b>			END of a27				
<b>12va9</b>			START of a25				
<b>12va</b>					START of h13 (#a25)		
<b>12vb20</b>			END of a25				
<b>12vb</b>					END of h13 (#a25)		
<b>12</b>	END of p1						
<b>13</b>	START of p3   START of p4   START of p5				START of h1 (#p5)		
<b>13ra1</b>			START of a1				
<b>13rb3</b>			END of a1				
<b>13rb4</b>			START of a2		START of h5 (#a2)		
<b>13rb21</b>			END of a2		END of h5 (#a2)		
<b>13v</b>				START of d1			
<b>14</b>						START of layout4	
<b>14r</b>		START of p5_i1   START of p5_i1.1		START of d2	START of h14 (#p5_i1)		
<b>14v</b>					START of h47 (#p5_i1)		

## Giving Depth to TEI-Based Descriptions of Manuscripts

<b>Bound.</b>	<b>UniMat</b>	<b>UniContMain</b>	<b>UniContAdd</b>	<b>UniDec</b>	<b>UniHand</b>	<b>UniMeP</b>	<b>UniRegl</b>
<b>15r</b>		END of p5_i1.1		END of d2	END of h14 (#p5_i1)		
<b>15v</b>		START of p5_i1.2		START of d3			
<b>18r</b>						END of layout4	
<b>18v</b>		END of p5_i1.2		END of d3	END of h47 (#p5_i1)		
<b>19</b>	START of p6						
<b>19r</b>		END of p5_i1		START of d4			
<b>19v2</b>			START of a3		START of h2 (#a3)		
<b>19v25</b>			END of a3   START of a4		START of h3 (#a4 #a5 #6 #a11)   END of h2 (#a3)		
<b>19v31</b>			END of a4				
<b>19</b>	END of p5				END of h1 (#p5)		
<b>20</b>	START of p7				START of h15 (#p7)	START of layout5	
<b>20r2</b>		START of p7_i3     START of p7_i4   START of p7_i5					
<b>20v12</b>		END of p7_i3   END of p7_i4   END of p7_i5					
<b>20v13</b>		START of p7_i6					
<b>22r8</b>		END of p7_i6					
<b>22r9</b>		START of p7_i7					
<b>22v4</b>		END of p7_i7					
<b>22v5</b>		START of p7_i8					
<b>22v9</b>		END of p7_i8					
<b>22v10</b>		START of p7_i9					
<b>23r1</b>		END of p7_i9					
<b>23r2</b>			START of a5		START of h16 (#a5)		

<b>Bound.</b>	<b>UniMat</b>	<b>UniContMain</b>	<b>UniContAdd</b>	<b>UniDec</b>	<b>UniHand</b>	<b>UniMeP</b>	<b>UniRegl</b>
<b>23r11</b>			END of a5		END of h16 (#a5)		
<b>23r12</b>			START of a6		START of h17 (#a6)		
<b>23v1</b>			END of a6		END of h17 (#a6)		
<b>23v2</b>		START of p7_i11					
<b>23v18</b>		END of p7_i11					
<b>23v19</b>			START of a7		START of h18 (#a7)		
<b>23v24</b>			END of a7		END of h18 (#a7)		
<b>23</b>	END of p7				END of h15 (#p7)	END of layout5	
<b>24</b>	START of p8					START of layout6	
<b>24ra1</b>		START of p8_i1			START of h19 (#p8_i1)		
<b>24rb7</b>		END of p8_i1			END of h19 (#p8_i1)		
<b>24rb8</b>			START of a8		START of h20 (#a8)		
<b>24rb24</b>			END of a8		END of h20 (#a8)		
<b>24vb1</b>			START of a9		START of h21 (#a9)		
<b>24vb5</b>			END of a9		END of h21 (#a9)		
<b>24vb6</b>			START of a10		START of h22 (#a10)		
<b>24vb25</b>			END of a10		END of h22 (#a10)		
<b>24</b>	END of p8					END of layout6	
<b>25</b>	START of p9					START of layout7	
<b>25ra1</b>		START of p9_i1			START of h23 (#p9_i1)		
<b>25rb26</b>		END of p9_i1			END of h23 (#p9_i1)		
<b>25vb1</b>		START of p9_i2			START of h24 (#p9_i2)		

Giving Depth to TEI-Based Descriptions of Manuscripts

<b>Bound.</b>	<b>UniMat</b>	<b>UniContMain</b>	<b>UniContAdd</b>	<b>UniDec</b>	<b>UniHand</b>	<b>UniMeP</b>	<b>UniRegl</b>
<b>25vb25</b>		END of p9_i2			END of h24 (#p9_i2)		
<b>25</b>	END of p9					END of layout7	
<b>26</b>	START of p10					START of layout8	
<b>26r1</b>			START of a11		START of h27 (#a1)		
<b>26r2</b>			END of a11		END of h3 (#a4 #a5 #6 #a11)   END of h27 (#a1)		
<b>26r3</b>		START of p10_i1			START of h25 (#p10_i1)		
<b>26r29</b>		END of p10_i1			END of h25 (#p10_i1)		
<b>26v1</b>		START of p10_i2			START of h26 (#p10_i2)		
<b>26v15</b>		END of p10_i2			END of h26 (#p10_i2)		
<b>26v16</b>							
<b>26v</b>				START of d5			
<b>26</b>	END of p10					END of layout8	
<b>27</b>	START of p11					START of layout9	
<b>27r1</b>		START of p11_i1			START of h29 (#p11_i1)		
<b>27r19</b>		END of p11_i1	START of a12		END of h29 (#p11_i1)   START of h31 (#a12)		
<b>27r33</b>			END of a12		END of h31 (#a12)		
<b>27v1</b>		START of p11_i2			START of h30 (#p11_i2)		
<b>27v33</b>		END of p11_i2			END of h30 (#p11_i2)		

<b>Bound.</b>	<b>UniMat</b>	<b>UniContMain</b>	<b>UniContAdd</b>	<b>UniDec</b>	<b>UniHand</b>	<b>UniMeP</b>	<b>UniRegl</b>
<b>27</b>	END of p11					END of layout9	
<b>28</b>	START of p12					START of layout10	
<b>28ra1</b>		START of p12_i1					
<b>28ra</b>					START of h32 (#p12_i1)		
<b>29va17</b>		START of p12_i1.1					
<b>29vb24</b>		END of p12_i1   END of p12_i1.1 					
<b>29vb</b>					END of h32 (#p12_i1)		
<b>29</b>	END of p12					END of layout10	
<b>30</b>	START of p13					START of layout11	
<b>30r1</b>		START of p13_i1			START of h33 (#p13_i1)		
<b>30r31</b>		END of p13_i1			END of h33 (#p13_i1)		
<b>30v1</b>		START of p13_i2			START of h34 (#p13_i2)		
<b>30v23</b>		END of p13_i2			END of h34 (#p13_i2)		
<b>30v24</b>			START of a13		START of h35 (#a13)		
<b>30v28</b>			END of a13		END of h35 (#a13)		
<b>30</b>	END of p13					END of layout11	
<b>31</b>	START of p14						
<b>31r1</b>		START of p14_i1			START of h36 (#p14_i1 #p14_i2)		
<b>31r7</b>		END of p14_i1					
<b>31r8</b>		START of p14_i2					

Giving Depth to TEI-Based Descriptions of Manuscripts

<b>Bound.</b>	<b>UniMat</b>	<b>UniContMain</b>	<b>UniContAdd</b>	<b>UniDec</b>	<b>UniHand</b>	<b>UniMeP</b>	<b>UniRegl</b>
<b>31r16</b>		END of p14_i2			END of h36 (#p14_i1 #p14_i2)		
<b>31r17</b>			START of a14		START of h39 (#a14)		
<b>31r20</b>			END of a14		END of h39 (#a14)		
<b>31r</b>						START of layout13	
<b>31va1</b>		START of p14_i3			START of h38 (#p14_i3)		
<b>31va</b>						START of layout12	
<b>32va15</b>		END of p14_i3			END of h38 (#p14_i3)		
<b>32va16</b>			START of a15		START of h40 (#a15 #a16)		
<b>32vb1</b>			END of a15   START of a16				
<b>32vb14</b>			END of a16		END of h40 (#a15 #a16)		
<b>32vb15</b>			START of a17		START of h42 (#a17)		
<b>32vb26</b>			END of a17		END of h42 (#a17)		
<b>32vb</b>						END of layout12	
<b>32</b>	END of p14						
<b>33</b>	START of p15						
<b>33ra1</b>		START of p15_i1			START of h43 (#p15_i1)	START of layout14	
<b>33va8</b>		END of p15_i1			END of h43 (#p15_i1)	END of layout14	
<b>33va9</b>		START of p15_i2			START of h44 (#p15_i2)		
<b>34rb</b>		END of p15_i2			END of h44 (#p15_i2)		

<b>Bound.</b>	<b>UniMat</b>	<b>UniContMain</b>	<b>UniContAdd</b>	<b>UniDec</b>	<b>UniHand</b>	<b>UniMeP</b>	<b>UniRegl</b>
<b>34va1</b>			START of a18		START of h45 (#a18)		
<b>34va22</b>			END of a18		END of h45 (#a18)		
<b>34</b>	END of p15						
<b>35</b>	START of p16						
<b>35ra1</b>		START of p16_i1			START of h4 (#p16_i1 #a19 #a20)		
<b>35rb27</b>		END of p16_i1			END of h4 (#p16_i1 #a19 #a20)		
<b>35</b>	END of p4   END of p6   END of p16						
<b>36</b>	START of p20				START of h6 (#p20)	START of layout3	
<b>36r</b>		START of p20_i1   START of p20_i1.1				START of layout15	
<b>72</b>		END of p20_i1.1					
<b>73</b>		START of p20_i1.2					
<b>92</b>		END of p20_i1.2					
<b>93</b>		START of p20_i1.3					
<b>130</b>		END of p20_i1.3					
<b>131</b>		START of p20_i1.4					
<b>163</b>							

The identifiers in this table reproduce the ones assigned in the XML file thus ensuring consistency. The description in the script linked at the top of Table 5 explains also how more precise boundaries than folia may be extracted from the encoding.

The information employed for drawing Table 5 is limited in three aspects: (1) three sets of images do not cover the entire archive; (2) the present analysis has

been done without direct contact with the archive; (3) the real historical formation of the archive will remain an enigma as much information remains unavailable.

When one has to rely on fragments of knowledge, the TEI is of a great help in structuring the knowledge and making it transparent. One can work at the level of fragments (photographed fragments), describe everything that may be described, align each piece of content with a precise fragment, thus forming a solid basis for various hypotheses, without fearing that new evidence will destroy the work. As a result, up to this point entirely verifiable and available information has been provided that is editable by anyone else with an interest in so doing.

### **Using the Units for a Reconstruction of the (Trans)formation of the Archive**

We can exploit the extracted information and its organization to add further observations. These observations can then be encoded in the XML file as `<relation>` elements following a Web Ontology referring to the specific meaning this has in the Semantic Web based on *La syntaxe du codex*.<sup>32</sup> What follows is a lightly edited reproduction of the content of the XML file edited by the authors as text, further enriched by encoding. It is an attempt at a structural description which takes into account the analysis carried out doing the encoding. It is offered in this instance also to demonstrate how the encoding of a structural description may be done entirely in a machine-readable way and, of course, as an enrichment of running descriptions of the observations, hypotheses, and conjectures researchers have made. The proposed reconstruction is entirely hypothetical, of course. The identifiers of production and circulation units can be found in the XML file.

First one proceeds with the observation of two transformations that are clear to all scholars: the ‘addition’ of the small quire and of the other leaves ‘of the same size as of the manuscript’ to the material containing the Gospels. The marked discontinuity here is one of content rather than a discontinuity related to the material but, upon closer examination, it is not possible to group these into a single unit.

Due to the different size of its leaves, compared to those of the rest of the manuscript, the small quire, bound together at the beginning of the text block, is a material unit. The eight leaves within the small quire are of a different parchment and are thus a separate material unit. Nothing indicates that these four bifolia were once separated, thus there is no sign that this was a quire or a production unit separate from the rest of the small quire. It is merely part of it, or

<sup>32</sup> Liuzzo 2021.

rather the two outer bifolia were, in the same act of production, used to surround the inner leaves, which share the same layout, ruling, and writing. The small quire constitutes one production unit bound into a single quire. All other leaves are of the same size as those containing the text of the Gospel, constitute a material unit with the leaves containing the Gospels, and are homogeneous in content among themselves. The small quire was added to the manuscript. This is an A1 transformation, that is, ‘addition of material support and content’, according to the typology introduced in *La syntaxe du codex*, which was also used in the discussion above. There is therefore a UniCirc before the transformation and one after. The manuscript as we know it corresponds in terms of material to the produced circulation unit. The manuscript prior to that addition is another circulation unit of which one may be certain. For the latest additions, presumably not seen by Conti Rossini, it may be assumed they were made to the circulation unit which already had the small quire. This is, however, hypothetical, as there may have been additional or other reasons for Conti Rossini not listing these texts in his edition. This abstract event which affected the manuscript is an A2 transformation, ‘addition of material support and content’. Each of these additions is a production unit, involved into one multiple transformation which groups different acts which cannot be distinguished further at the moment. The units before and after the transformation are UniCirc, but, as it is not possible to order them one by one, it is only possible to group distinct additions and consider them as they took place in one single transformation, even though each single transformation with its own UniCirc can be distinguished. The issue is to work out to which UniCirc the additions were made, and this too can only be done for some additions, if at all. What is left now, having been subject to additions as a whole, is a unit that has been subject to an UA1 transformation, that is, a ‘union followed by additions’.

A further quite obvious observation is that, although lightly tightened together with strings, the leaves from 13 to 35 are basically all detached from one another. The leaves of the same size as the Gospel placed after the small quire have been detached from one another and it is not possible to determine their actual initial order and placement. This occurred probably before the small quire was added. If this occurred by dint of a copy being made from the contents of some of these leaves (see below), then the subject of the transformation is the circulation unit before the transformation which added the small quire. The transformation is a simple division (D3). The detachment however did not produce different units of circulation, as the leaves continued to circulate together.



Fig. 3 Bausi's photo 4.34, 1994 (© MIE).

Another observation regarding the two bifolia containing the quire is the appearance of a brownish colour in the photos (Fig. 3).

The two leaves featuring the end of the *Gadla Qirqos* are distinct from the rest due to the ruling pattern and material (Fig. 3), which were probably taken (at some point in time but it is impossible to estimate when) from another, unknown, manuscript to produce the small quire. It is necessary to define this as a production unit separate from that of the small quire, which is now inside it. Furthermore, the small quire's sequence of content tells of a single production intention and, however independent, is a production unit. The unit from the other manuscript was then subject to a transformation. This transformation is a simple division (D2), followed by the addition to another unit. Therefore it has to be said that the unit with the other ruling pattern, now inside this one, was also part of the same transformation. This transformation is an addition of support and contents (A1). Here too it is possible to group the transformation into a single, complex one. This is probably a MA1 transformation—'mutilation of one codex in order to add to it another one', where a codex has been somehow deprived of two bifolia to make our quire, which contains the homogeneous one.

The additions on folia 11 and 12 use the existing ruling in some way, but provide no indication of having already been present or not. If a table had been

organized by quire, which is not suitable here as the quires are not as relevant as the leaves, a convergent discontinuity would be revealed. In Table 5 two convergent discontinuities show themselves. The outcome of this transformation is the observable production unit which also results in a new circulation unit. Whether the texts (UniCont) on p1 fols 11v and 12v were already present when the leaves were used to produce the ‘small quire’ is not known. Conti Rossini dates them later than the *Gadla Qirqos* text, which however is of no help in this instance. They were added to that material in any case. This is an A2 transformation, an addition of content. Not much can be added with this, if there is no precision in terms of reference to units which actually existed at some point.



Fig. 4 Schneider’s photo 001, 1975 Walda Masqal Centre (Institute of Ethiopian Studies, Addis Abāba).

The following, instead, are permutations of type P1, changes in the order of the folia, which produced new UniCirc, but not new UniProd (= production unit). Upon cross checking convergent discontinuities in the table view, it can safely be said that the folium numbered by Schneider 17/18 (the same as Bausi II 15) is the leaf Carlo Conti Rossini had prior to the one with the cross in his description, that is, the ‘ancient leaf’, which cannot be seen in any of the available photo sets but upon which Conti Rossini reports. Following Conti Rossini’s

description of the two leaves after the small quire of his grouping, only the one with the cross on the verso can be observed. In fact, photo 001 by Schneider (Fig. 4)<sup>33</sup> shows that the sequence displays the end of the small quire and then the folium with the Coptic cross on the verso. Of all folia available, the one that carries the texts which Conti Rossini dates the earliest is the one now numbered 27, which is delimited by convergent discontinuities.

Therefore it may be said that there was at least one permutation of the order of the leaves, before they were photographed in 1975, and the one that was at the top of the pile of leaves of the same size of the manuscript was ‘moved’ to the position in the photo sets as folium 27. This is a permutation of folia. For the `<msPart>` containing the Eusebian letter and the canons, identified by decoration and content unity, the sequence at Carlo Conti Rossini’s time was (with reference to the current pagination) the following: 27 (the leaf with old texts), 13 (cross on verso), 14, 15, 16, 17, 18, 19 (*tempio* on recto). The permutation results in a unit of circulation only.

The continuity between leaves 19 and 26 may be based on the convergence of discontinuities of content (CCR 7), material, decoration, layout (one column), and on the two-lines text at the top of 19r and 26r, which is apparently of the same hand.

It can be seen that another permutation occurred regarding the most recent photos. This is easily confirmed and dated after 1975, for, in the Schneider photos, the current folium 26 follows directly onto 19 and is paginated with 3 for the recto and 4 for the verso. This is another permutation of folia, resulting in a further unit of circulation only. It is assumed, however, that this came about due to Schneider’s photographing practice. In all likelihood, he moved the folium himself indicating the displacement by means of a sheet of paper.

There is another observable permutation affecting the same-sized group of leaves as the one containing the Gospel. The leaves Schneider paginated as 7/8 and 9/10 had been moved to their current placement at 24 and 25 by the time Bausi took his photographs of the folia in 1993 (Bausi II 12 and II 13). It may have appeared obvious to someone that, in their position at that time, they interrupted the continuity of a content unit (CCR 20). This is another permutation of folia. The further permutation results in a further unit of circulation only. This unit, which contains what was last seen, corresponds to the described object.

It is now possible to define a reconstructed production unit which represents the state of the leaves surrounding the decorated leaves and possibly closer to

<sup>33</sup> The reference to Schneider’s images was introduced by the article’s authors, as Schneider, unlike Bausi, did not assign signatures to his images himself and enumerated only some of his images, as evidenced above in the table of correspondence.

what was observed by Conti Rossini. Other texts which are discontinuous with the rest may have been added to this unit, such as CCR 8.

A unit, corresponding roughly to a fascicule, circulated until Schneider took photos as 20, 24, 25, 21, 22, 23. It is impossible to say more on this unit, whose unity at some point may be attested by a univocal deletion intervention visible on the photos. However, the layout of 24 and 25 stands out as a separate unit, characterized by the two-columns layout and the blank first column on the verso of both leaves. This allows one to define a further unit of the remaining leaves sharing the one-column layout and the dotted line separators.

What remains an important, albeit hard to evaluate, aspect is the relation between the texts present in the small quire and those in the leaves of the same size of the main content, namely the Gospels. In the following table, we have extracted these contents side by side.

**Table 6 Comparison of the contents in the small quire with the content of the leaves of the same size as the manuscript extracted from the TEI encoded version in Beta maṣāḥaft (generated with fasciculesComp.xml, available at <https://github.com/PietroLiuzzo/Ham>)**

<b>BM ID</b>	<b>Leaves of the same size of the MS</b>	<b>Small quire</b>
<b>LIT6329CCR22</b>	28ra1–29vb24 main	3ra1–4vb14 main
<b>LIT6327CCR20</b>	20v13–22r8 main	4vb15–6vb15 main
<b>LIT6326CCR19</b>	20r2–20v12 main	6vb16–7vb3 main
<b>LIT6305CCR7</b>	19v1–19v25 add. 26r3–26r29 main	7vb4–9ra3 main
<b>LIT6325CCR18</b>	23v2–23v18 main	9ra3–9rb14 main
<b>LIT6340CCR33</b>	33va9–34rb main	9rb14–10rb18 main
<b>LIT6341CCR34</b>		10va1–10vb18 main

There is little one can say without the support of proper palaeographic dating and knowledge on the rest of the manuscript and its structure, on which one copy was copied from the other. It appears sensible to think instinctively that the damaged or physically deteriorating one would be replaced by the neater-looking one. The addition of content and material involving CCR 7 tells of a separate production intent to that of the Eusebian Canons following the existence of this, therefore, ignoring the palaeography, the possibility of it being a copy from the so called ‘small quire’, originally written here, or being copied from another source, into the leaves of the same size of the Gospel, remains open. Yet, from the data available, the choice that was made (in terms of an act of copy from the bigger leaves to the smaller ones) does not appear to cover

mostly ‘endangered’ documents. Even if that were the case, some ordering would have to be sought, but in that regard also not enough elements are present to reach a conclusion. If copying into the small quire from the larger leaves and skipping the independent unit made of 28 and 29, then copying CCR 20 before CCR 19 would appear to have been a kind of reverse working. However, the leaves may have been already separated and in no particular order. Nor is there any possible matching with the hypothetical grouping of leaves by their layout, but the same grouping as identified by the discontinuities occurs if we look at the sequence of leaves hypothetically copied. At some point, there may have been a sequence, attested by the hypothetical copy in the small quire, with 28, 29 followed by the group formed by 20, 21, and 22; then 19 and 26; then 23, on the recto of which CCR 24, CCR 25, or CCR 3 were not yet present, but were all added later, seemingly by the same hand that also included some additions in the small quire. Following this logic, the question arises as to why CCR 21, which is written in the same hand as CCR 19 and CCR 20 (or a hand very similar to it), is not presented among the copied documents in the small quire? At this stage, one should consider the content and its interest for the monastic community of Ham. While CCR 18, 19, 20, 22, and 33 are directly concerned with the rights and rules of the community, CCR 21 is dedicated to the church of Māryām za-Sa‘agā with an interest ‘so that they may celebrate the commemoration of Maṭā’.<sup>34</sup> Although the authors of this contribution were not yet able to locate the church of Māryām za-Sa‘agā, everything suggests that the CCR 21 benefactor is not that of CCR 18, 19, 20, 22, and 33. Thus it is concluded that the small quire is a collection of documents concerned with the monastic community of Ham itself.

Following the reverse process of copy encountered for CCR 20 and CCR 19, however, on the basis of the above-postulated unit of circulation, CCR 23 is to be expected here, but it is absent. Here another logical approach may stand. CCR 23, ‘Land grant by Gabra Krəstos’, is attributed to Gabra Krəstos, ‘*āqqābe sa ‘āt*’ of Maṭā’,<sup>35</sup> and thus directly related to the community. Here two observations are worthy. The first is that the title ‘*āqqābe sa ‘āt*’ was deliberately erased (see fol. 33rb, l. 5), an action one may not discount as insignificant. Conti Rossini’s publication supplied it on the basis of its occurrence at the end of the document, where it was not erased. The second observation is that the copied notes were attributed to royal figures, while that of CCR 23 is not. Where the sequen-

<sup>34</sup> Conti Rossini 1901, 206, l. 3.

<sup>35</sup> ‘*Āqqābe sa ‘āt*, lit. ‘keeper of the hour’, title given to the abbot of Dabra Libānos of Ham, and, at the end of the thirteenth century, also to the abbot of Dabra Ḥayq (Derat 2018, 273).

tial expectation is CCR 23 there is, instead, CCR 34, that is not a royal donation, nor is it attested elsewhere and may well have been added from another source or newly composed, perhaps in consideration of space left in the quaternion.

## Conclusions

Following the work of organizing existing knowledge, we provided a collaboratively edited, and editable, standardized description of the leaves of the codex, the texts of which were first edited by Conti Rossini. Having included in that XML edition all available materials with some added value, it is believed that the community of interested scholars has, if not additional information, an optimized collection of available data on this important collection of texts, that may be expanded and referenced further in or out of the research environment from which this work has been based.

## List of References

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### Summary

The work on the *Golden Gospel of Dabra Libānos za-Ham* in Eritrea, one of the main archives of the medieval history of Ethiopia and Eritrea, was initiated within the frame of the Ethiopian Manuscript Archives project, ANR EthioChristProcess, and Beta maṣāḥəft. The work aims to describe the codicological disposition of the archival notes (i.e. arrangement of texts within the codex and its by-side folia), to provide their transcription, translation, and indexation. This article will discuss the encoding method for this work in progress, supported by TEI.