

Ethiopian Manuscript Maywäyni 041 with Added Miniature: Codicological and Technological Analysis

Jacek Tomaszewski, Ewa Balicka-witakowska, Grażyna Zofa Żukowska

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Abstract

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The paper concerns the 18th century manuscript of the Miracles of Mary, belonging to the collection of the monastery Maywayni (Tigray), digitised in 2011 within the frame of the Endangered Archives Programme (EAP 526), supported by Arcadia Foundation. This 18th century manuscript is decorated with a drawing, contemporary with the text, and with an additional, 15th century miniature (both depicting Mary with Child). The manuscript was analysed from the codicological point of view and special attention was paid the binding and its repairs reviling the practices of local binding tradition. Finally, the pigments of the miniature were identified using the non-destructive methods of μ -Raman and (FTIR)-spectroscopy.

Résumé

Cet article est dédié à l'analyse d'un manuscrit de la collection monastique de Maywäyini (Tigray), numérisé dans le cadre du programme Endangered Archives en 2011 (EAP 526). Ce manuscrit datant du XVIII e siècle est orné de deux représentations de la Vierge à l'Enfant : un dessin contemporain de sa fabrication, ainsi qu'une miniature du XV e siècle. Une analyse codicologique de ce manuscrit est réalisée, avec une attention toute particulière sur les techniques de reliure et les restaurations qui y ont été apportées. Les pigments et colorants de la miniature ont été analysées au moyen des techniques physico-chimiques de μ -Raman et (FTIR)-spectroscopie.

Ethiopian Manuscript Maywäyṅi 041 with Added Miniature: Codicological and Technological Analysis

Jacek Tomaszewski, Ewa Balicka-Witakowska
and Grażyna Zofia Żukowska*

In 2011 the entire collection of ninety-one manuscripts gathered at Maywäyṅi¹ site in the province of Təgray was digitised as part of the Endangered Archives programme.² The collection was held in the storage house belonging to a partly ruined church dedicated to St. George,³ both buildings being situated within a monastic enclosure (*gädam*). According to local tradition the monastery was founded by the saintly monk *abba* Qäšäla Giyorgis⁴ who was the companion of *äččäge* Yoḥannəs Kāma, an important Ethiopian monastic figure.⁵ The monastery of Maywäyṅi has been flourishing at the end of 14th and in the early 15th century.

Since a provincial Ethiopian church might generally be expected to own about forty manuscripts, the Maywäyṅi collection may be considered a large one.⁶ It contained the usual set of books required for the holy liturgy and for other services but no single monastic text. Most of the manuscripts were copied in the 18th and the 19th centuries and only a few are decorated with figural and ornamental paintings.⁷

*JT: Polish Institute of World Art Studies (PIWAS), Warszawa, Poland.

EBW: Uppsala University, Department of Linguistics and Philology, Uppsala, Sweden.

GZS: Warsaw University of Technology, Faculty of Chemistry, Warsaw, Poland.

¹ *Wäräda* of Hıntalo Wəgərat, *tabya* of Frəwäyṅi.

² Supported by Arcadia Foundation; cf. EAP526 <<http://eap.bl.uk/database/collections.a4d>> where the collection is accessible online. Last consulted: 07 January 2015.

³ In 2011 a new church dedicated to St. Michael was in an advanced state of construction.

⁴ *Abba* Qäšäla Giyorgis founded six other monasteries near Maywäyṅi: Qəbäšya, Angwa, Daqlaku, Känyat, Ġälwa, Wəgəg. The monastic rules he wrote for the Maywäyṅi community are copied in the 19th century manuscript EMMML 5000, Getatchew Haile, 1993: 383. We are grateful to Dr. Denis Nosnitsin for this information.

⁵ Ancel, 2014: 81f.

⁶ The collection was used as an example for statistical calculation concerning the settings of the book-block and the composition of the quires, cf. Balicka-Witakowska et al., 2014: § 6.3.2.

⁷ Eleven manuscripts have decorative bands (*haräg*) and six have miniatures and/or drawings.

The manuscript analysed here, designated 041 during the digitisation process, was written in the 18th century and contains a collection of one hundred and sixteen miracles of Mary and twenty miracles of Jesus (Fig. 1 & 2). There is no colophon, but in the text the name of the owner - a certain Gäbrä Mädhən - appears several times.⁸ Two miracles are accompanied by an introductory sentence written in the lower margin, which suggest that the reading was addressed to a monastic community: *wā-kaḃ nənāggərākkəmu 'o-'aḥawinā zenaha* - "and again, let us tell you, o! our brothers, her [Mary's] story" (f. 56v) and: *səmyuke 'abāwəyā wā-'aḥawəyā ḥəzbā krəstīyan yəbāyā lā-'əgzə'ətnā* - "Listen then, my fathers and my brothers, the Christian people [about] the greatness of our Lady".

The book has 177 folios, and measures 290 x 335 x 95 mm including the cover. It is written throughout in two columns, with twenty-two equally spaced lines to the page and with use of black and red ink (Fig. 7b-c).⁹ The well proportioned layout¹⁰ displays very generous margins. This is particularly true of the lower margin. The ratio of written to empty space is almost 1:1. The scribal decoration is scarce. The four black dots marking the end of a sentence are sometimes changed into small rosettes by the addition of five red dots. The same motif is applied as line filler. The red dots mark the strokes of the numerals. The tail-pieces composed of two alternating rows of black and red dots are scantily distributed.¹¹ The rubrication, added after the main text was copied,¹² is consequently applied to the beginnings of the chapters, to the name of Mary and that of the manuscript's owner (Fig. 1 to 3).

The text is decorated with one drawing and one miniature,¹³ the later originating from another manuscript¹⁴ (Fig. 9 & 10). The drawing, on folio 149v introduces the *Miracles of Jesus* which begin on folio 150r (Fig. 2). The picture represents Mary with Child and is of Santa Maria Maggiore type.¹⁵ She sits on a throne, behind which a curtain is stretched by two angels who hold lilies. A figure wearing ecclesiastical dress and

⁸ The name appears in the invocation added at the beginning and end of each miracle.

⁹ The inks were not analysed. On this subject cf. Nosnitsin et al., 2014: 28-31.

¹⁰ The written space measures 230 x 230 mm.

¹¹ On the folio 7v the exclamation *läykun läykun* - "may it be so" - is inserted into the tailpiece, probably as a prolongation of the standard formula at the end of the foregoing text of a miracle.

¹² Often the space left for rubrications is poorly estimated and the rubricated text lines extend into the margins and / or intercolumnium. Sometimes, the words or the parts of them already written in black ink are repeated in red and in the case of Mary's name the last letter is often dropped for lack of space.

¹³ The miniature was reproduced in Mercier, 2004: 58, but without any reference to the manuscript and with cropped inscriptions.

¹⁴ The custom of transferring miniatures from old, worn manuscripts to new ones was relatively frequent. Several instances of this practice have noted among the manuscripts kept in the churches of Təgray province.

¹⁵ Chojnacki, 1983: 219-289.

holding a rosary, probably the owner of the book grasps the edge of the throne. The drawing is in black ink, with some details in red, and stylistically belongs to the Second Gondarene School. It is possible that the picture was a sketch for a miniature.

The parchment and its preparation for writing

The manuscript is written on goat parchment of such good quality that the repairs to holes and tears, generally very small, have been made only in four places (ff. 21, 78, 110, 148). On several folios, the grainy surface typical of goat skin displays the characteristic pattern of regularly alternating rows of large and fine follicles.¹⁶ Another indicative feature of goat skin is visible in the hairy residues: these were too strong and deeply set in the follicles to be entirely removed by dry shaving with an adze-like tool (Fig. 7a & b).¹⁷ The inner, flesh side surface of the skin is quite tough (Fig. 7c) and on many folios the conspicuous, horizontal and diagonal marks of scraping and cleaning with a curved knife and pumice stone are clearly visible.

As the manuscript is quite large, the scribe cut from one goat skin only four, horizontally oriented bifolios. He cuts the sheets of parchment in such a way that the skin from the animal's back ends up at the bottom of the first pair of bifolios and at the top of the second pair (Fig. 3). Because of this procedure, the weaker parts of most of the folios can be found close to the outer edges of the page. It is here that uneven and gelatinised parts of the skin are sometimes clearly visible. As the scribe used large skins, measuring approximately 0.8 m², some pieces of parchment are cut to the limits, leaving the curved edges of the processed skin visible on the outer margins of the pages (e.g. ff. 50, 82, 117).

All the bifolios were pricked and ruled on the flesh side with use of a dull tool before being folded and gathered into quires. The manuscript consists of twenty-two quires, mostly *in octavo* format that is made up of four bifolia but many of them are made up of two single folios folded at the edges (Fig. 4). In the whole book-block of the manuscript, the parchment leaves were collated according to Gregory's rule.¹⁸ Only the sixth quire is numbered, the numeral written in black ink on the left of the lower margin. It seems that for the scribe reaching this point in the writing was an important event, because in addition to numbering this quire he also wrote on the lower margin of the previous folio (55v) the exclamation: 'əgizi'abəher yabrəh - "God, illuminate!".

¹⁶ Haines, 1999: 7; Liszewska, 2012: 44ff.

¹⁷ A useful, but sometimes imprecise list of Ethiopian terms related to manuscript production and the names of the tools used was published by Mersha Alehegne, 2011: 145-162.

¹⁸ Caspar René Gregory was the first to note this medieval practice (called Gregory's Law or Gregory's Rule). See Avrin, 1991: 213.

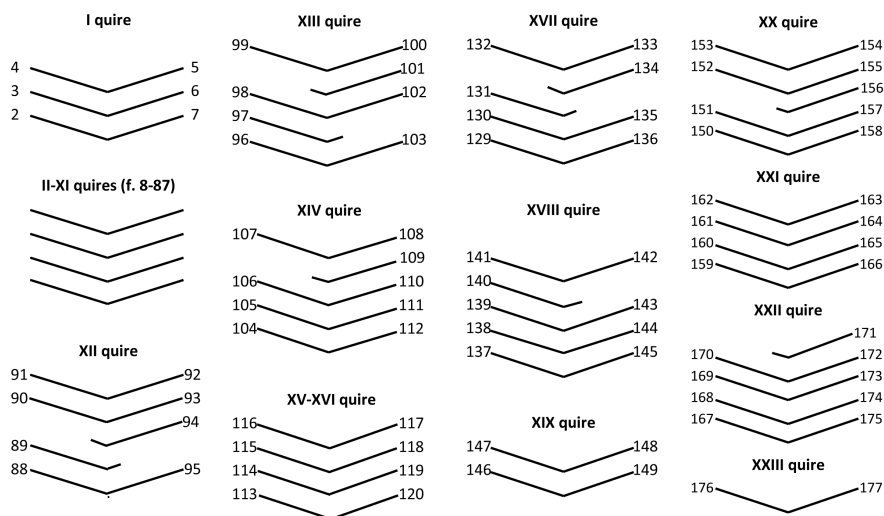


Fig. 4 - Diagram of the composition of the quires

The manuscript has only five book markers and there are no indications suggesting that originally there were more. Made of white and blue threads that have been partly pulled out, they are attached to the pricking holes situated at the level of the first written line or somewhat higher. Irregularly distributed (ff. 43, 52, 54, 57, 69), they were supposedly added by the owner of the book to mark his preferred readings.

Description of the binding

The construction of the binding resembles that in other Ethiopian codices. Before the book-block was attached to the boards, the protective, flight-leaves bifolio were added to the beginning, while at the end the two last folios of the last quire served this purpose. The book-block was sewn on to three pairs of sewing stations with solid and evenly braided catgut. The thick boards, made of soft wood,¹⁹ are attached by the same catgut threaded through special holes drilled into the edges of the covers. The boards and spine are covered in goat leather, tinted reddish-brown and decorated with blind tooling, a traditional form of ornamentation for Ethiopian codices (Fig. 5). The front and the back of the binding are similarly decorated, displaying a Latin cross with decorative finials, the form of the cross being duplicated by the straight lines. The cross is placed in the centre, inside four large frames, each filled with different patterns

¹⁹ We were not able to establish the species of tree. Most of the works describing the Ethiopian binding procedure state that the boards were made of the hard wood of *Cordia africana* (*wānza*) but this seems not to be true of Maywāyṅi 041.

composed of small squares and rectangles and with double circles in the corners. The wide turn-ins have an irregular shape and the central space of the inner side of the boards is left uncovered. There is no evidence of the use of any textile to decorate and protect this part of the binding (Fig. 6).

Condition of the manuscript

The manuscript is in relatively good condition, probably thanks to the protection afforded by a portable leather case, with straps made of thick, roughly worked leather. The folios are slightly buckled and several of them are discoloured. On most pages, the surface of the grainy, hair side is clearly darker and more yellowish than the surface of the flesh side. All the margins are dirty and worn. Particularly on the lower and outer margins, a brownish and glassy layer of gelatinised fibbers is apparent. This type of structural changes to the folios in our manuscript is by no means exceptional but is common to all Ethiopian manuscripts held in the conditions prevalent in most church storages.

The front cover is slightly bent, suggesting that the wooden board beneath the leather surface is probably partly broken (Fig. 5). The leather surface on both covers shows significant damage and many bare patches are visible, especially at the corners and along the edges of the boards. The original leather on the spine and covering the inner parts of the boards has been replaced. This type of damage is typical of Ethiopian binding and requires further explanation. The greatest disadvantage of Ethiopian binding is the rapid deterioration of the leather. The damages results from such common issues as the use and abuse of the book, the natural ageing of the materials, and the unfavourable climate, but also from the use of a relatively weak adhesive to attach the leather to the wooden boards. This practice quickly leads traditionally tanned leather to lose its flexibility and strength and to become stiff and fragile. It seems that the binding of most manuscripts goes through similar stages of deterioration, which can be described as follows: the leather covering the edges of the boards and the spine cracks and gradually disappears, because it is very weakly bounded to the covers by the end-band sewing; large losses of leather occur at the corners and along all the edges of the boards; the leather completely falls off the spine and from both covers, remaining only as turn-ins. Finally, even the traces of the adhesives layer on both sides of the boards fade. This process help to explain why so many old Ethiopian manuscripts are devoid of leather covers.

Repairs of the manuscript

The manuscript, especially its binding, has been partly repaired and restored. The craftsman used new, large leather piece that cover the spine and part of the boards. According to our knowledge this form of repair was

seldom employed. Usually, in partly destroyed manuscripts it was necessary to repeat the whole binding process. Old, weakened sewing was replaced with new thread and the ties to the covers were reinforced. In most cases, the original wooden boards were reused, with their cracks repaired with string, thongs, wire or metal leafs. The new leather was pasted down on the covers and decorated with blind tooling. A simplified variation of this procedure was the re-sewing and proper attachment of the quires to the old, bare boards. In the Maywäyni collection, the simple re-sewing variety of repair prevails, and only three cases of new leathering were observed.²⁰ This may suggest the adoption of a common, regional practice by some bookmakers.

In our manuscript, the irregular edges of the original leather were slightly levelled and a wide new piece of wet leather was first pasted to the boards and later stitched with the end-bands to the book-block (Fig. 8). The craftsman repaired only the leather on the spine, leaving the damages on the edges of the boards. However, he reconstructed the original, blind-tooled decorations, again not acting in accordance with common procedures. This proved to be an easy task because the binder had almost the same stamps as were used for the original decoration. Thus, he decorated the outer border of the front and back covers with two vertical bands, one entirely stamped with a criss-cross design and the second only with a group of four double circles placed in the middle. The same creativity is evident in the tooling on the spine. This was divided horizontally into two parts, creating two rows with fourteen rectangular fields, each decorated with a diagonal cross. Moreover, six sewing stations were emphasised with double, horizontal lines.

When a manuscript totally loses the weakened leather along its spine, all the threads tying the wooden boards to the book-block are exposed to damage. Our manuscript is no exception. The book was re-sewn, but we do not know if this was done immediately after the spine was lost or much later. Whatever the case, the present sewing is in satisfactory condition. The well-preserved catgut tying the boards to the quires allows us to suppose that the repairs included strengthening the whole book-block structure. We surmise that on the same occasion also the front flyleaves, both containing the holes made by the insects, were stabilised (Fig. 1).

Sewn together along the upper edges they were also tied by a thin leather strip visible on both sides, in the middle and at the bottom of this thickened folio. The repairs also included sewing a few cracked leafs, e.g., on folio 6.

From the modern conservation point of view, and in light of contemporary documents on the protection of culture and conservation of

²⁰ Other examples from Maywäyni: manuscript n° 02, without decoration on the added piece of leather and manuscript n° 022, displaying tooling similar to the pattern visible on manuscript n° 041.

the intangible heritage,²¹ the repairs described above, respect original materials and practice,²² should be recalled as an example to follow when recommendations for the protection of Ethiopian manuscripts are formulated.

The miniature

The miniature depicts Mary nursing Jesus, the so-called *Galactotrophousa* or *Maria lactans* type, popular in Byzantine art, particularly in Coptic Egypt²³ (Fig. 9). The picture, reduced to two figures, represents an unusual iconography of this scene, because in Ethiopian art it customarily includes two angels.²⁴ The figures are highly stylised, their clothing decoratively treated by means of various patterns and colours. These features allow us to connect the miniatures to a group of decorated manuscripts executed in the 15th century.²⁵ Advanced, but not very skilled, stylisation point to provincial origins.

The picture is accompanied by two inscriptions. On the upper margin is an invocation written by a trained hand in red ink that reads: *Sə'ələ Maryam məslä fəqur wälda şälotä wä-bäräkätä yähallu məslenä* 'amen - "Image of Mary with her beloved son; may her prayer and blessing be with us, amen". On the lower margin in an unskilled hand is added: *'ädħəno lä-gäbräkä Gäbrä Həywät* - "Save your servant Gäbrä Həywät". The name is different from that appearing in the invocations preceding and following the text of the miracle, which means that the invocation was most probably written when the miniature still belonged to another manuscript.

The colours applied by the painter include red, yellow, light green, light brown and black (Fig. 10). He also used reserved white (i.e. the natural colour of parchment) for the parts of the body (excluding faces), the circle of Mary's halo and some elements of the pattern decorating the stool (Fig. 7g).

It seems that the placement of the miniature was haphazardly chosen. The folio is fastened to the threads gathering the twenty-second quire and in the middle of the text telling the story of Jesus' miracle performed at the grave of Rachel,²⁶ in which Mary is not mentioned. Thus, the function of the picture is purely iconic. Customarily, such the miniatures were painted at

²¹ *Nara document on authenticity*, 1995; *Yamato Declaration on Integrated Approaches for Safeguarding Tangible and Intangible Cultural Heritage*, 2006.

²² In the West, such procedure is called "creative reconstruction" or "pastiche" and is not limited by restrictive regulations and principles of conservation.

²³ Lazariev, 1936: 27-36; Cutler, 1987: 335-350.

²⁴ Chojnacki, 1983: fig. 206; Chojnacki, 2000: n° 95, 111, 113, 132, 324; Mercier, 2004: 64f, 107, 118.

²⁵ Particularly instructive is the pattern on Jesus' over-dress. The closest parallels that can be recalled are the miniatures in following manuscripts: Psalter from Däbrä Wärq, Life of saints from Däbrä Maryam Şəyon Zəway, Gospels from Gähğäh Giyorgis and Psalter in a private collection in Paris, cf. Balicka-Witakowska, 1984-86: figs VII, 13, 15, 32, 35, 43, 44.

²⁶ Grébaud, 1974: 186-191.

the beginning and sometimes at the end of a book, on the protecting parchment sheets. Also, it was here that miniatures transferred from the other manuscripts were usually inserted. Perhaps the unusual placement of the miniature can be explained by the owner's wish to protect and even hide his highly prized picture.

Condition and technology of the miniature

It is not possible to determine exactly at what point the miniature was attached to the manuscript. We may surmise that it happened after the original sewing of the book-block, because it is loosely fastened in two places by thread made of plant fibre, that is different from the catgut used to connect the quires. Perhaps the addition was made at the time of the re-sewing and as part of the repairs.

The miniature originates in a manuscript that was in a very bad condition or incomplete for a long time. Both side margins of the leaf are very brownish and darkened, indicating that the leather on the spine was lost, leaving the parchment unprotected and exposed to the light and atmospheric factors. The light colour of the upper and lower edges of the leaf, indicate that these margins of the folio had been deeply and unevenly trimmed before inclusion in the new manuscript. The inner and outer margins are very stiff, brittle and largely gelatinised, especially in the areas exposed to humidity and heat. Under a microscope, a glass-like layer can be observed on the whole surface of the leaf, the result of various processes of degradation.

Careful examination of the miniature yields further information about the painting technique. The painter began his work by marking the frames of the miniature with a metal pin: the impressed lines are clearly visible on the empty, verso side of the folio. This practice was usually applied in decorated books: while the folia designated for writing were ruled, those for paintings were not. It was also common to leave the verso side empty in case involving a full-page miniature densely covered with paints (as our example demonstrates) and especially when such miniature served as the opening of the book or of one of its parts. The next step in miniature production was sketching the main figures, elements of composition and frame using a diluted blue paint. Some of these lines are still visible in the spots of reserved white or covered by transparent paints. The halos of both figures were marked out with calipers, as is indicated by the small holes in the centre of the circles, which are clearly visible on the verso side of the folio. The painter accentuated some lines of the drawing by again using blue paint and then filling in the main areas of the composition with the basic colours, namely yellow, red, brown, blue and green. Later, he focused on the details by first using red to paint the pattern on Mary's garment and *maphorion* (Fig. 7e). Then he emphasised, with black lines some of the

details, such as the hands, hair and edges of the clothes. He finished by adding whitish-yellow, orange and green strokes to the dress of both figures (Fig. 7f & h). This technique results in different thicknesses in the paint layer. In many areas, three layers form a fairly dense coating that is weakly bound to the foundation layer and easily exposed to damage. Under a microscope numerous cracks and chips are visible, especially in the outer, thick and opaque layers (Fig. 7e, f, h).

Our knowledge about the techniques of Ethiopian miniature painting is almost nonexistent, being limited to a single publication analysing a set of miniatures dating to the 17th century and blue colorant from miniatures of the 18th century.²⁷ In our case, the micro- and macro views of the miniature incorporated into manuscript Maywäyñi 041 allow us to determine the details of some painting practices, the exact condition of the paint layer and in some degree the composition of the applied pigments. The painting layer is generally well consolidated. The cracks visible on the surface were partly caused by the coarse character of the ground pigments and exposure to unfavourable environmental conditions. They also caused the impression of paints on the protective piece of textile.²⁸

For identification of the pigments, the non-destructive methods of μ -Raman and Fourier Transform Infrared (FTIR)-spectroscopy were used.²⁹ The microscope view of the micro-samples showed that the most of the paints used in the miniature are a mixture of pigments.

The spectrum of black particles from the dark background of the miniature, with two broad bands at 1386 and 1595 cm^{-1} , is typical of amorphous carbon, probably soot (Fig. 11).³⁰ Several weaker and narrower bands were also detected. The stronger of them, at 1086 cm^{-1} , is characteristic of the symmetrical stretching vibrations of carbonate anion. The presence of carbonate, most probably CaCO_3 (chalk), is confirmed by three weaker bands at 474, 274 and 147 cm^{-1} .³¹

The spectra recorded in the areas of Jesus' garment and on the pattern decorating the stool, both dark blue, with the most prominent bands at 1574, 545, 276, 265, 252 cm^{-1} , are typical of indigo (Fig. 12). As an

²⁷ Wion, 2004. Much more analysis were undertaken in the case of painting on wood. See Mirabaud et al., 2011 <<http://halshs.archives-ouvertes.fr/halshs-00694339>>.

²⁸ The microsamples for chemical analysis were taken from this imprint. They were collected with help of a dissecting needle in microscope view.

²⁹ The analysis were executed in the Raman Laboratory of the Faculty of Chemistry, Warsaw University of Technology. The Raman analysis was performed using the Nicolet Almega Raman Dispersive Spectrometer equipped with a confocal microscope and a motorised stage. The Raman spectra were recorded with a 780 nm excitation line. The laser power was reduced to 13-50 % in order to avoid overheating the samples. The exposure time was typically 30 s. FTIR spectra were obtained on the Perkin Elmer System 2000 FTIR spectrometer equipped with ATR accessory with a diamond crystal. The resolution was 2 cm^{-1} .

³⁰ Burgio & Clark, 2001: 1491-1521; Bell et al., 1997: 2159-2179. The same references concern the analysis of dark blue, red and green presented below.

³¹ Degen & Newman, 1993: 859-887.

additional pigment in the blue, the particles of chalk were added, which is confirmed by the presence of bands at 1086, 275 and 147 cm^{-1} .³² Probably that additional element functioned as a mordant of the dyeing agent or perhaps a filler.

The red pigment in the frame of the miniature giving the distinct bands at 253, 284, 345 cm^{-1} was identified as vermilion (Fig. 13).

The green colour found on the borders of Jesus' and Mary's garments is composed of two pigments: blue (perceived as dark blue) is indigo while yellow, yielding strong bands at 355, 310, 293 cm^{-1} , was detected in the background and identified as orpiment, As_2S_3 (Fig. 14).

Brown, the natural earth pigment used to paint the faces of both figures, was modified by the addition of a small amount of vermilion (Fig. 15).

Probably an organic yellow was applied to paint Mary's *maphorion* and halo. Unfortunately, the low quality of the spectrum does not allow us to identify this pigment, but the presence of bands at 1600 and 1168 cm^{-1} points to an aromatic compound, most probably an organic dye.

Because the micro-samples were very small, it was not possible to establish for certain the components of the binding agent. However, FTIR showed the presence of strong bands at $\sim 1050 \text{ cm}^{-1}$, characteristic of C-O stretching vibrations of polysaccharide, probably a gum (Fig. 7d).

To summarise, we can say that of the pigments revealed in the miniature, none was unexpected. However, to establish whether such a set can be considered typical in Ethiopian miniature painting, much more instrumental analysis is required.

The multifaceted analysis of the manuscript and the miniature allowed us to discover several, often unnoticed details, which yield a deeper insight into Ethiopian book-making practices. Such approach was possible because the research team comprised a conservator, an art historian and an analytical chemist. Moreover, it was possible to record traditional methods of manuscript repairs based on local, still extant knowledge and skill, which should be encouraged and supported in the context of the preservation of the Ethiopian cultural heritage.

³² Degen & Newman, 1993: 859-887; Burgio & Clark, 2001: 1491-1521; Bell et al., 1997: 2159-2179.

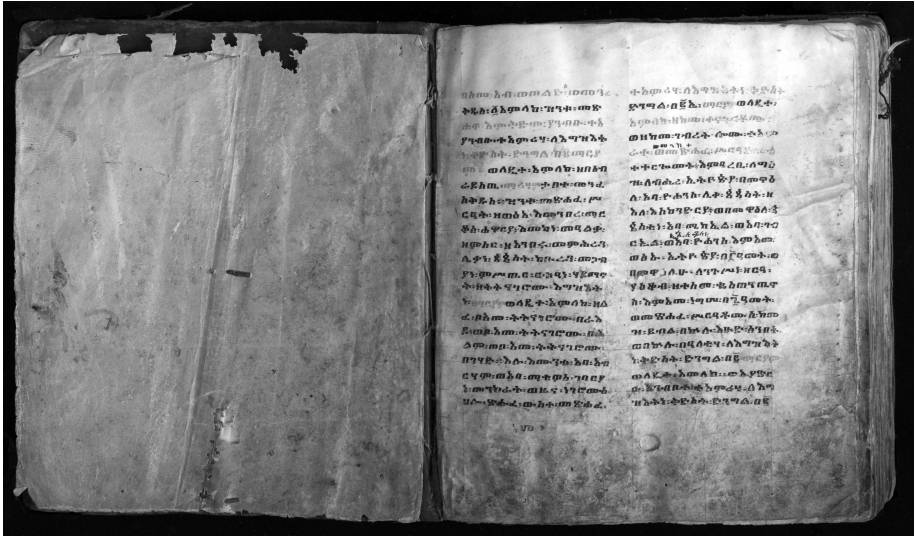


Fig. 1 - Front flyleaves and folio 2r

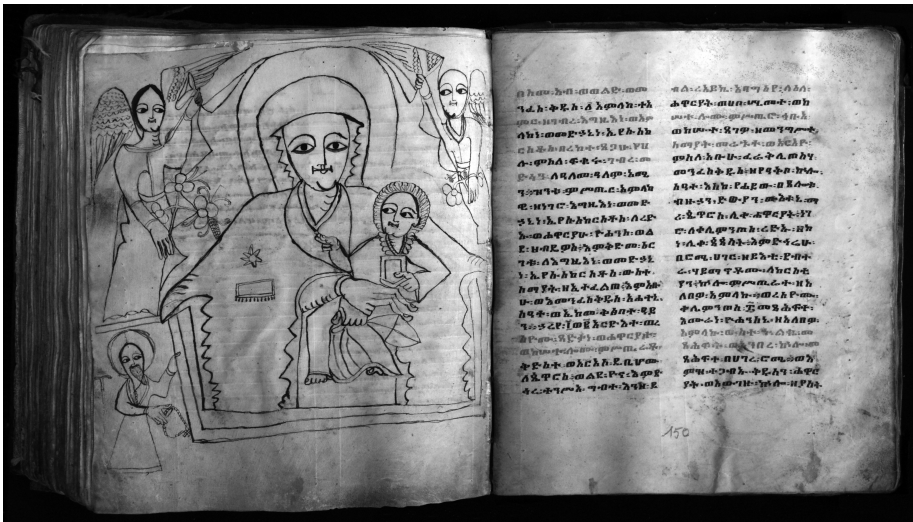


Fig. 2 - Drawing depiction Mary with Child, folio 149v

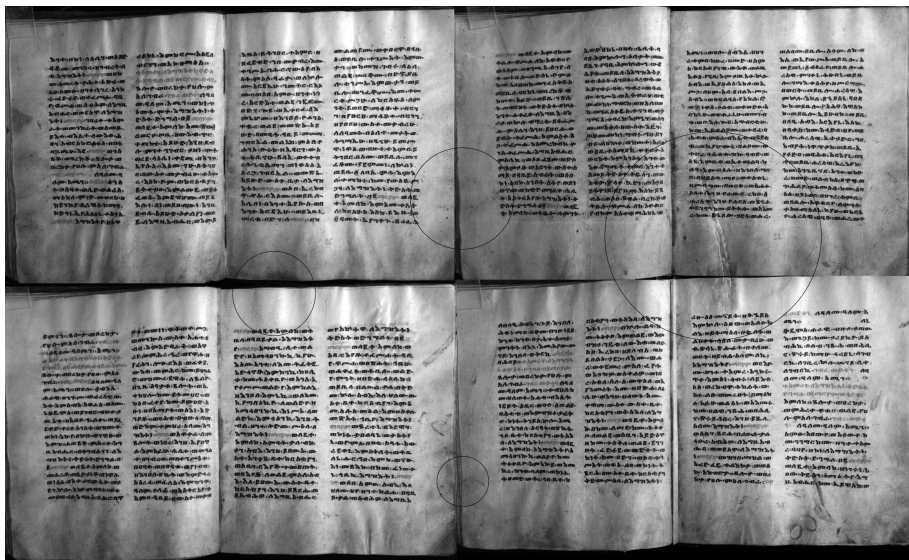


Fig. 3 - Digital reconstruction of the piece of parchment from which the 5th quire was cut



Fig. 5 - Binding: front cover, spine and back cover



Fig. 6 - Folio 177v and the inner side of the back cover



Fig. 8 - Detail of the front cover: left upper corner

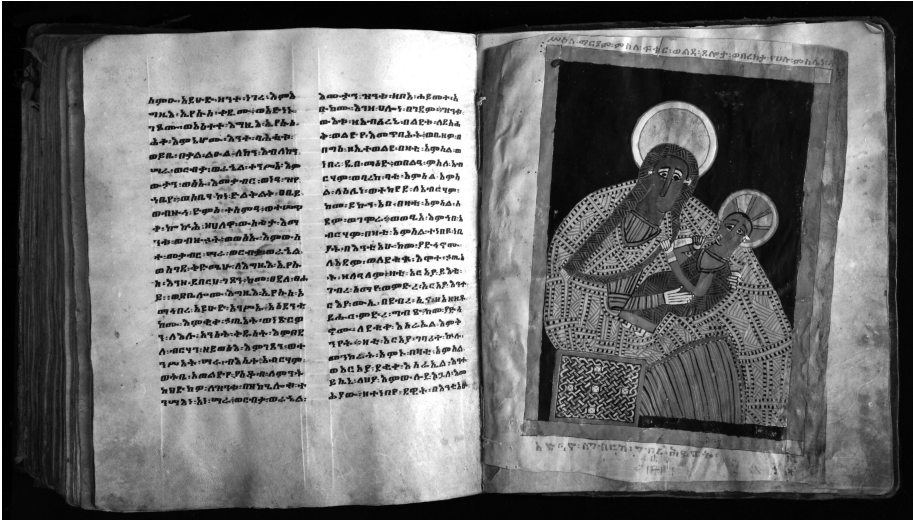


Fig. 9 - Miniature depiction Mary with Child, folio 170v



Fig. 7 - Microscopic view of the details: a) surface of the parchment; b) surface of the parchment and letters in black; c) surface of the parchment and letters in red; d) layer of the binding agent; e) cracked surface; detail of Mary's cloak; f) red strokes on blue ground: detail of Jesus' garment; g) blue, red and yellow on the reserved white: pattern of the stool; h) thick layers of pigments: detail of Mary's garments



Fig. 10 - Upper part of the miniature, Mary with Child, folio 170v

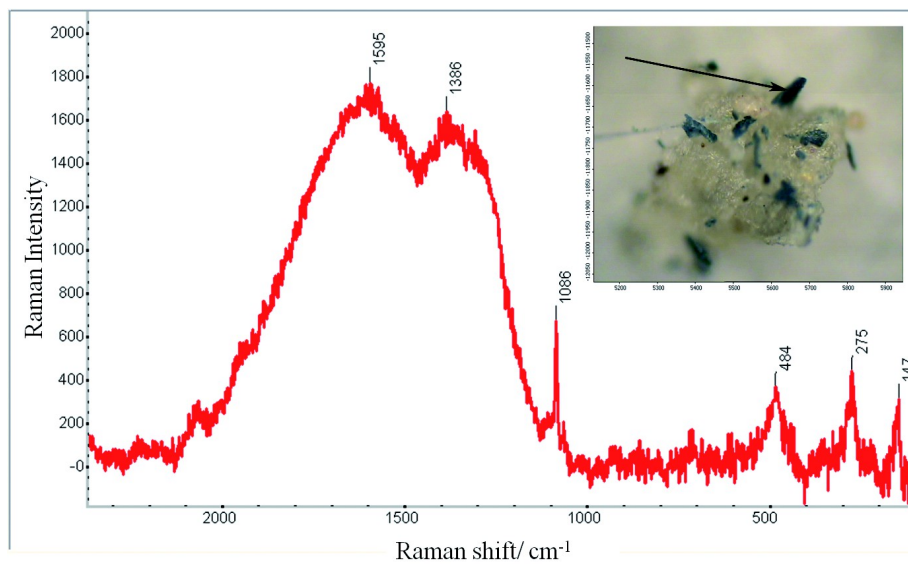


Fig. 11 - μ -Raman spectrum of the black area. The numbers indicate the position of bands characteristic of amorphous carbon

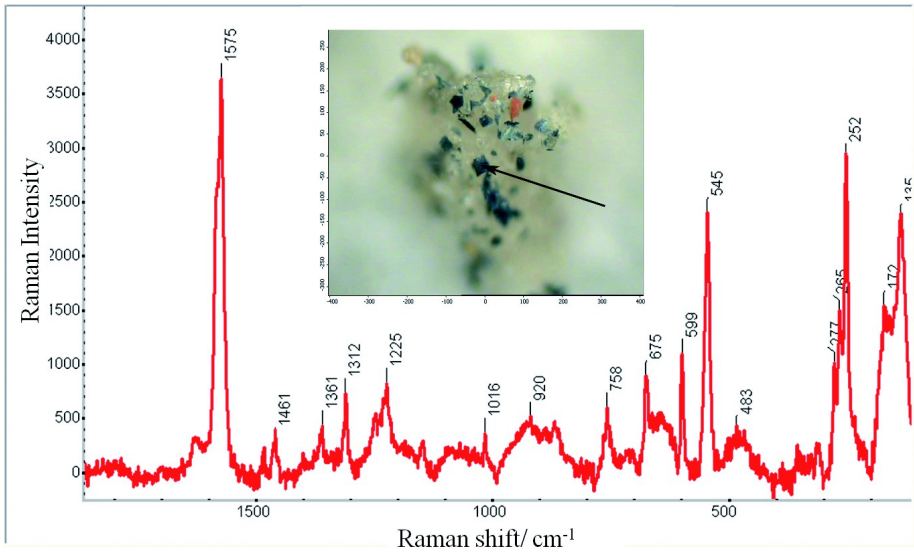


Fig. 12 - μ -Raman spectrum of the blue area; bands' position characteristic of indigo

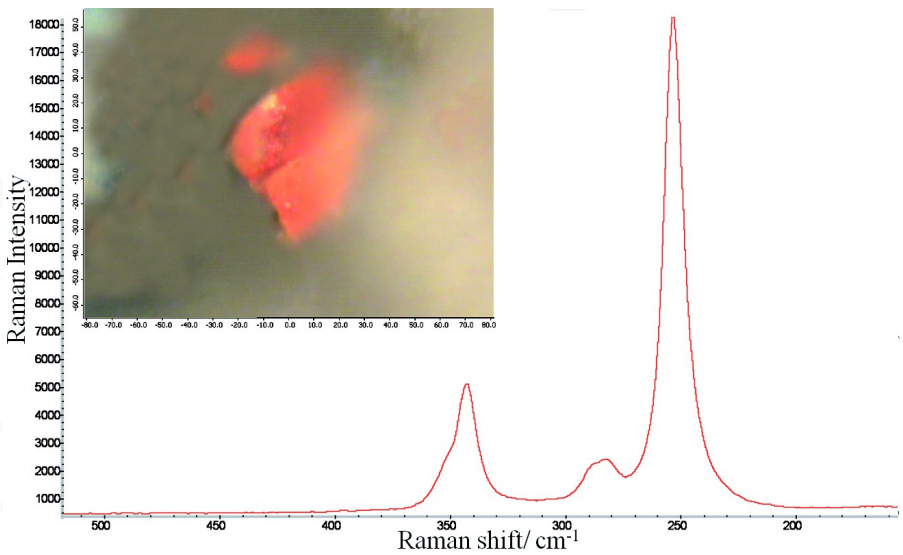


Fig. 13 - μ -Raman spectrum of the red area; bands' position characteristic of vermilion

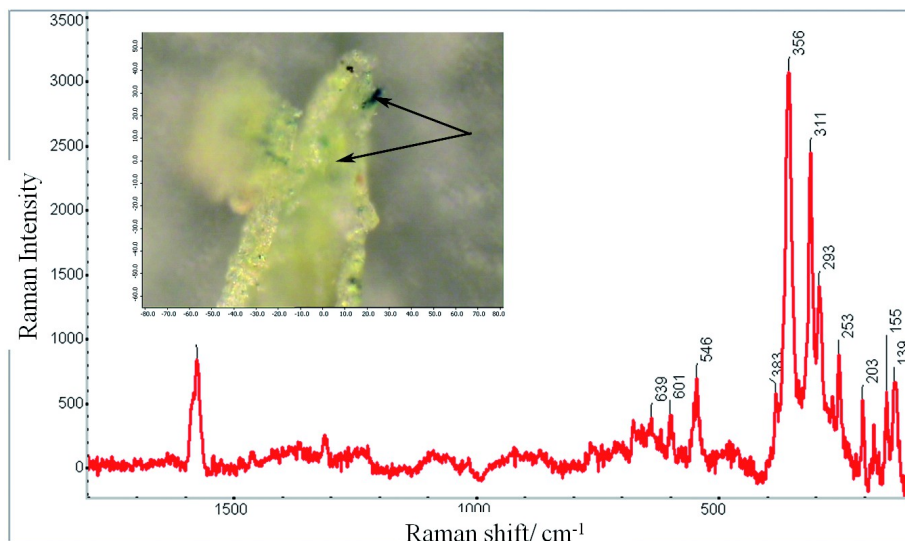


Fig. 14 - μ -Raman spectrum of the green area; bands' position characteristic of indigo (blue parts) and orpiment (yellow parts)

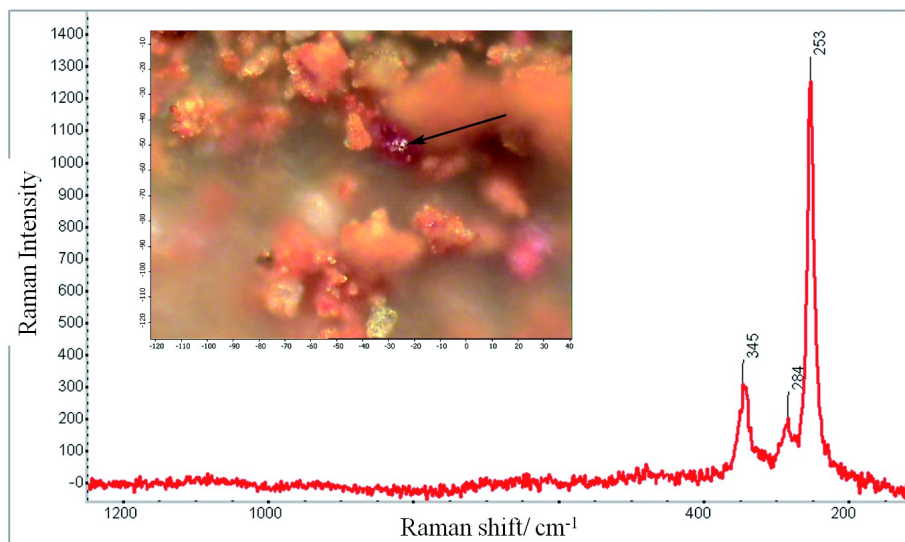


Fig. 15 - μ -Raman spectrum of the brown area; bands' position characteristic of vermilion (red parts)

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Résumé / Abstract

Tomaszewski, J., E. Balicka-Witakowska, G.Z. Żukowska, 2014, Ethiopian Manuscript Maywäyñi 041 with Added Miniature: Codicological and Technological Analysis, *Annales d'Éthiopie*, 29, 97-117.

Cet article est dédié à l'analyse d'un manuscrit de la collection monastique de Maywäyñi (Tigray), numérisé dans le cadre du programme Endangered Archives en 2011 (EAP 526). Ce manuscrit datant du XVIII^e siècle est orné de deux représentations de la Vierge à l'Enfant : un dessin contemporain de sa fabrication, ainsi qu'une miniature du XV^e siècle. Une analyse codicologique de ce manuscrit est réalisée, avec une attention toute particulière sur les techniques de reliure et les restaurations qui y ont été apportées. Les pigments et colorants de la miniature ont été analysés au moyen des techniques physico-chimiques de μ -Raman et (FTIR)-spectroscopie.

Mots-clefs : Manuscrits éthiopiens, codicologie, reliure, enluminure, analyse de pigments

Ethiopian Manuscript Maywäyñi 041 with Added Miniature: Codicological and Technological Analysis – The paper concerns the 18th century manuscript of the *Miracles of Mary*, belonging to the collection of the monastery Maywayni (Tigray), digitised in 2011 within the frame of the Endangered Archives Programme (EAP 526), supported by Arcadia Foundation. This 18th century manuscript is decorated with a drawing, contemporary with the text, and with an additional, 15th century miniature (both depicting Mary with Child). The manuscript was analysed from the codicological point of view and special attention was paid the binding and its repairs reviling the practices of local binding tradition. Finally, the pigments of the miniature were identified using the non-destructive methods of μ -Raman and (FTIR)-spectroscopy.

Keywords: Ethiopian manuscripts, codicology, binding, miniature, pigment analysis.