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Challenges in Working with Music Palimpsests

Many European medieval parchment manuscripts with musical notation survive only in damaged condition, often fragmented and reused by later bookbinders as pastedowns or flyleaves. Among these sources, there is a relatively small group of manuscripts whose musical contents have been erased and overwritten. This essay aims to draw attention to this specific group of insufficiently-studied manuscripts that warrant greater attention from musicologists and imaging experts. Although individual palimpsests have been studied intensively in the past, there is still no comprehensive palimpsest research within musicology that investigates the fundamental phenomena and circumstances of music palimpsests. Therefore, all available parchment manuscripts containing such palimpsests are included in this article, regardless of the type of notation (from adiastematic neumes to mensural notation), the language (usually Latin, French, or Italian), the genre, and the context of origin and use (liturgical as well as secular compositions).

Due to its generally delicate notation, palimpsested music poses specific challenges that must be considered by researchers, especially when working with different methods of recovering lost writing. A key part of this essay's contribution is the Appendix, a list assembling a group of fifty-seven music palimpsests of various origins, most of which would benefit significantly from state-of-the-art imaging techniques. The Appendix is arranged according to the manuscripts' current locations, and each manuscript has been numbered for ease of reference. I will refer to the manuscripts by these numbers throughout.

I use the term 'music palimpsest' for all instances in which music notation has been erased with the intention of subsequent overwriting. Most manuscript sources contain vocal music and its associated texts (sacred or secular, sometimes both in the same manuscript). The process of writing that text beneath the notes is called text underlay,¹ not to be confused with other possible texts, especially those in the later overwriting. I have not considered minor corrections that were essential parts of the original writing process; such erasures have been discussed in detail by John Haines, who has observed that these are not usually longer than one verse.² Also not discussed here are palimpsests with music written over non-musical content.

Almost nothing is yet known about the palimpsesting techniques that were applied to the parchment manuscripts under discussion here. At first consideration it appears that, in most cases, the original contents were more likely to be scraped than washed off, as the first method is the more economical and does not require restretching of the parchment leaves.³ Some manuscripts show clear evidence of heavy scraping of the complete original writing space (e.g. no. 10), while others show no signs of scraping and therefore may have been washed off before the new text was entered (e.g. no. 26).

The music palimpsests collected in the Appendix contain erased lower scripts originating from the 9th to 15th centuries, and thus include some of the earliest European examples of musical notation. It is possible that the number of palimpsested music manuscripts declined as the use of paper for manuscripts increased in the 15th century. The upper scripts date mainly from the 12th to the 17th centuries. The contexts in which these manuscripts were palimpsested differ considerably. Liturgical manuscripts generally had a much longer life span than collections of secular polyphony, for example. In the former case, manuscripts could be in use for very long periods of time (200 years, for example, would not be unusual); in the latter, however, a manuscript's contents would be considered outdated after only thirty or forty years.⁴ Much time, however, might pass before the

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¹ This does not necessarily imply that the music was written first.

² Haines, *Erasures in Thirteenth-Century Music*.

³ Brown, *Palimpsested Texts in Beneventan Script*, 105 n. 20.

⁴ Wathey, *The Production of Books*, 144–145.

discarded manuscripts finally wound up in the pile of *libri inutiles* from which parchment could be selected for reuse by scribes or bookbinders.⁵ In most cases, only parts of previously extensive manuscripts have been reused in new manuscripts (e.g. nos. 2, 6, 7, 26, 35, 36, 47, and, more extensively, no. 43). Some palimpsests were created using leaves from multiple sources, though not necessarily from music manuscripts. On rare occasions a complete manuscript seems to have been newly created from the material of a single codex (e.g. nos. 10 and 38).

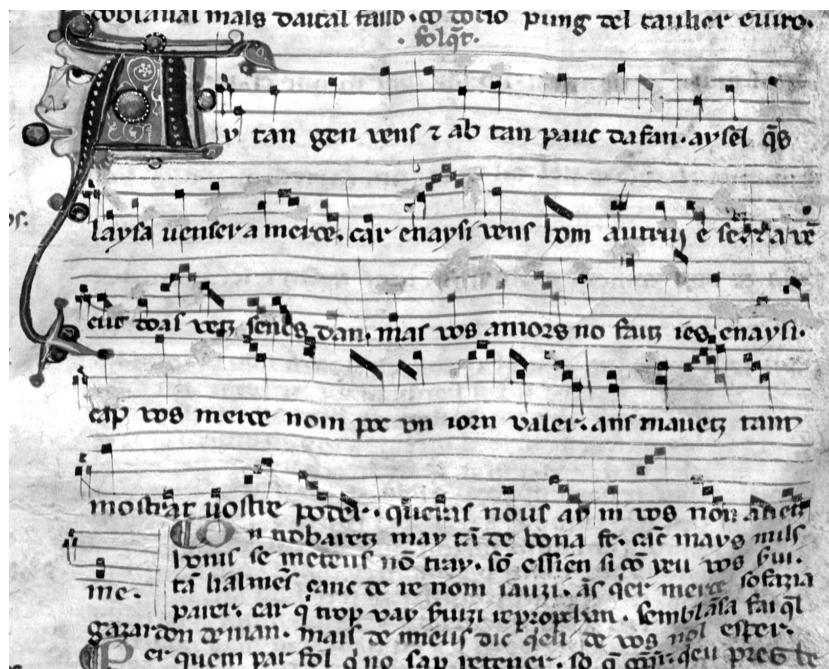


Fig. 1: Paris, Bibliothèque nationale de France, fr. 22543, Chansonnier La Vallière, (no. 32), f. 43r, monophonic song *Ay tan gen vens* (© Paris, Bibliothèque nationale de France)

There are numerous instances of manuscripts with palimpsested music continuing to serve musical functions. The smallest intervention is the replacement of selected parts such as the melody (no. 34), the underlaid text, or a complete voice part, e.g. the contratenor (no. 24). Figure 1 shows the replacement of a melody in a 13th-century chansonnier in which the text was left intact.⁶ Due to changing tastes it is possible that, in song collections, complete compositions—usually occupying a single page or opening—were replaced by more up-to-date pieces. In other manuscripts, more substantial changes can be seen, such as the replacement of all the notation (e.g. no. 13). This means that the same melodies were written over those that had been erased, but using a different notational system. This type of endeavour might sometimes also require readjustment of the text underlay (e.g. no. 29).⁷

In several cases, initials were not erased but, rather, incorporated into the new musical contents.⁸ In the *Nivelle Chansonnier* (no. 39) ten folios were erased but the initials were left intact (Fig. 2). Although none of these folios have been overwritten, there was surely the intention to do so, since those initials not erased permit the assumption that the new musical content had already been planned. Otherwise, if the music had merely been intended for deletion, it would have been easier to simply cross it out or label it with ‘vacat’, as is seen in other manuscripts. In the *Lucca codex* (no. 19) the ballata *Donna liçadra* by Bartolino da Padova (ca. 1365–1405) was overwritten with the more modern French song *Dueil angoisseux*, by Gilles Binchois (ca. 1400–1460), making reuse of the initial ‘D’ for both the cantus and tenor parts. A more systematic approach to reusing initials can be found in manuscript Egerton 274 (no. 17), in which eleven French chansons were replaced with

⁵ See Powitz, *Libri Inutiles*.

⁶ On this see Aubrey, *The Music of the Troubadours*, 47.

⁷ See Stinson, *The Rimini Antiphonal*, 70.

⁸ This phenomenon is also known from other, non-musical, instances of reuse. See Powitz, *Libri Inutiles*, 298.

Latin responsories, reusing the original golden or blue initials (in most cases, both text underlay and music were replaced, in some only the text underlay). A huge parchment leaf housed in New Haven (no. 28), presents a different case: a historiated initial 'S' was left intact after erasure of the chant *Sacerdos et pontifex* in the 16th century. The newly inserted chant *Intret in conspectu tuo* does not match with the lavish initial—it seems to have been more important to keep the illumination within the initial than to erase it to fit the new chant.

All music palimpsests bear witness to various transformations that include changes in musical tastes and writing systems, as well as more significant influences, such as church reforms with their impact on music in the liturgy. The regional Beneventan chant and its notation, for example, was suppressed by Pope Stephen IX in 1058, which led to replacement of many liturgical manuscripts—or their contents (e.g. no. 3).⁹ Other palimpsests (e.g. no. 29) can be connected to the Council of Trent (1545–1563).

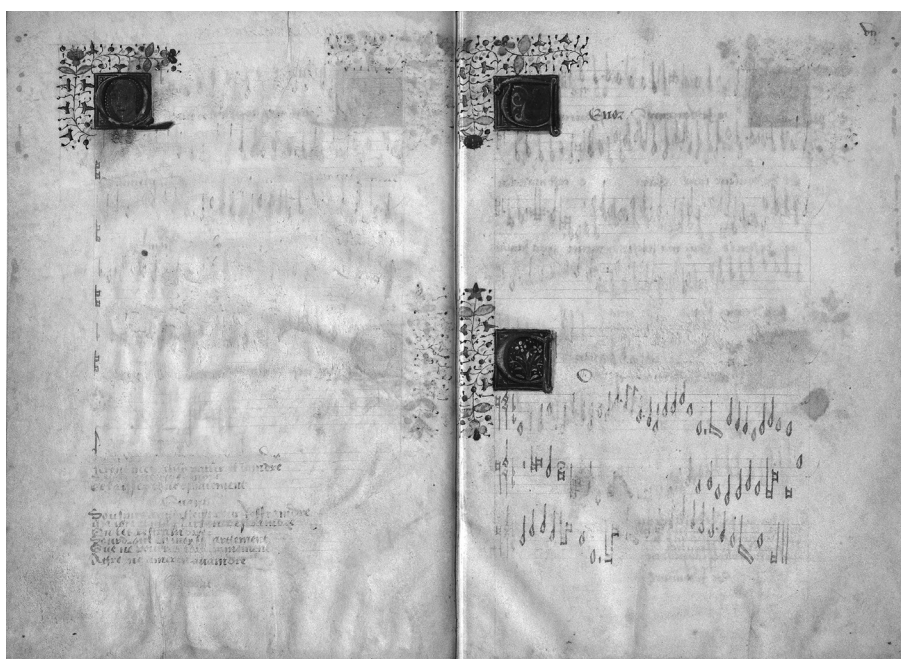


Fig. 2: Paris, Bibliothèque nationale de France, Rés. Mus. Vmc. 57, *Nivelle Chansonnier* (no. 39), ff. 6v–7r. Cantus and tenor parts have been scraped, the contratenor part only partially. All initials have been left intact
(© Paris, Bibliothèque nationale de France)

TECHNIQUES FOR REVEALING ERASED MUSIC

When 19th-century scholars made use of various chemicals to recover lost writing, they did not omit music palimpsests. This is attested to, for example, in a manuscript from Turin (no. 43), which was subjected to such treatment.¹⁰ In the early 20th century, the Benedictine monk Raphael Kögel, recognizing the danger of such practices, began photographing palimpsests with ultraviolet (UV) light.¹¹ This technical advance was also applied to music palimpsests, primarily liturgical books with musical notation. This is the case, for example, with a manuscript in Darmstadt (no. 7), of which the first UV photographs were taken in 1920 at the Institut für Palimpsestphotographie at Beuron in Bavaria, by the director, Alban Dold.¹² Another early example is a manuscript from Karlsruhe (no. 13), in which only the notation was erased, and then rewritten using a more up-to-date notational system. In this instance, Kögel provided the scholar Karl Hain with images, and Hain

⁹ See Kelly, *Beneventan Chant*. For additional examples of Beneventan palimpsests see Brown, *Palimpsested Texts in Beneventan Script*.

¹⁰ Scappaticci, *Codici Musicali Palimpsesti*, 134.

¹¹ Easton and Kelbe, *Statistical Processing of Spectral Imagery*, 36.

¹² Dold, *Palimpsest-Studien*, vol. 1, 73ff.

published two of Kögel's images in 1925.¹³ Since then fluorescence generated under UV illumination has been the primary tool used to enhance readability of the underwriting in music palimpsests, incorporating ongoing improvements in cameras, lenses, and light sources.¹⁴

In 2006 the Digital Image Archive of Medieval Music (DIAMM) created a practical *Digital Restoration Workbook*¹⁵ that instructs scholars in digitally manipulating images taken under visible light using software such as Adobe Photoshop. As a result, scholars today may manipulate digital restorations on their own when investigating manuscripts that are difficult to read.¹⁶ Fig. 3 shows one of my own attempts at applying digital restoration to an important palimpsest that contains ten folios from a late 9th- or early 10th-century notated chant book, probably of French origin: Munich, Bayerische Staatsbibliothek, clm 14735, ff. 9–28.¹⁷ Each of the ten folios was turned 90 degrees and reused as a bifolio when it was overwritten in the 13th century with a Latin text. The basis for creating the enhanced image in Fig. 3 was a standard 300 DPI colour image provided by the Bayerische Staatsbibliothek in Munich. The resulting image allows us to recognise the lower script written perpendicular to the upper script. It also provides a sense of the neumatic notation and the text underlay. Since this manuscript is one of the earliest surviving witnesses to this kind of notation, it is my hope that, in the near future, images with much higher resolution will be available, or that multispectral images of the ten leaves can be created.



Fig. 3: Munich, Bayerische Staatsbibliothek, clm 14735 (no. 24), f. 19r, (A) before and (B) after digital restoration; and (C) detail, turned 90 degrees clockwise (© Munich, Bayerische Staatsbibliothek and Andreas Janke)

¹³ Hain, *Ein Musikalischer Palimpsest*, plate XXXIII.

¹⁴ See, for example, the UV images in Nádas and Ziino, *The Lucca Codex*.

¹⁵ Craig-McFeely and Lock, *Digital Restoration Workbook*.

¹⁶ Published examples of enhancements of music palimpsests can be found in Memelsdorff, *New Music in the Codex Faenza*; Memelsdorff, *The Codex Faenza 117*; and Catalunya and Gutiérrez, *Mozarabic Preces*.

¹⁷ I thank Susan Rankin for bringing this manuscript to my attention. She is interested in this manuscript within the scope of her research on early medieval music books and notation: see Rankin, *Writing Sounds*.

For almost two decades, multispectral imaging (MSI) and the creation of pseudocolour images have been used in different disciplines to recover palimpsests.¹⁸ The first successful application of such techniques to a music palimpsest, however, was attempted only recently, in 2013, by scholars and scientists at the University of Hamburg.¹⁹ The manuscript in question is the San Lorenzo Palimpsest (no. 10), an important early-15th-century Florentine collection of secular polyphonic music that includes, in its present state, 216 compositions, written on 111 palimpsested folios.²⁰ Since the discovery of its musical underwriting in the early 1980s,²¹ repeated attempts had been made to recover some of the underwriting, using UV light.²²

This manuscript, now entitled ‘Campione de’ Beni del 1504’, served the administration of the church of San Lorenzo in Florence from the 16th century. A document from the church, dated 22 November 1482, attests to the decision to create this ‘Campione de’ Beni’. Unfortunately, exactly when the music was erased from the parchment cannot be deduced from this document. At some point, the folios were added to a pile of *libri inutili*; at this institution erased parchment folios were also used for other, similar, administrative books. While some of these manuscripts consist of parchment taken from assorted manuscripts, the ‘Campione de’ Beni del 1504’ was created using exclusively parchment from the 15th-century music collection. Some of the original gatherings of five bifolios each remained intact and, except for one folio that was turned upside down, the writing direction of the lower script and the overwriting is the same.

Unfortunately for us, the parchment was extremely well scraped, to such an extent that it is today quite thin, with many holes. It seems that the person who erased the music began with the very first page, which is the most heavily scraped and difficult to read, even as a pseudocolour image. Early on, the person scraping the parchment seemed to perform the task assiduously, but fortunately his enthusiasm waned as the work went on.

After imaging the full manuscript on-site in Florence in 2013 with a portable MSI system, different workflows were tested for recovery of the lost writing. To address the difficulties of the frequent heavy scraping and other problems, such as the similarity of the inks in both layers of writing, it turned out that the best results could be achieved by applying Principal Component Analysis or Independent Component Analysis. Even then, in many cases only one of the resulting output bands was suitable for creating pseudocolour images. Therefore, the band with the best representation of the underwriting was used twice in the creation of the pseudocolour images (red and green channels). To achieve a significant contrast between the two writing layers the 455 nm

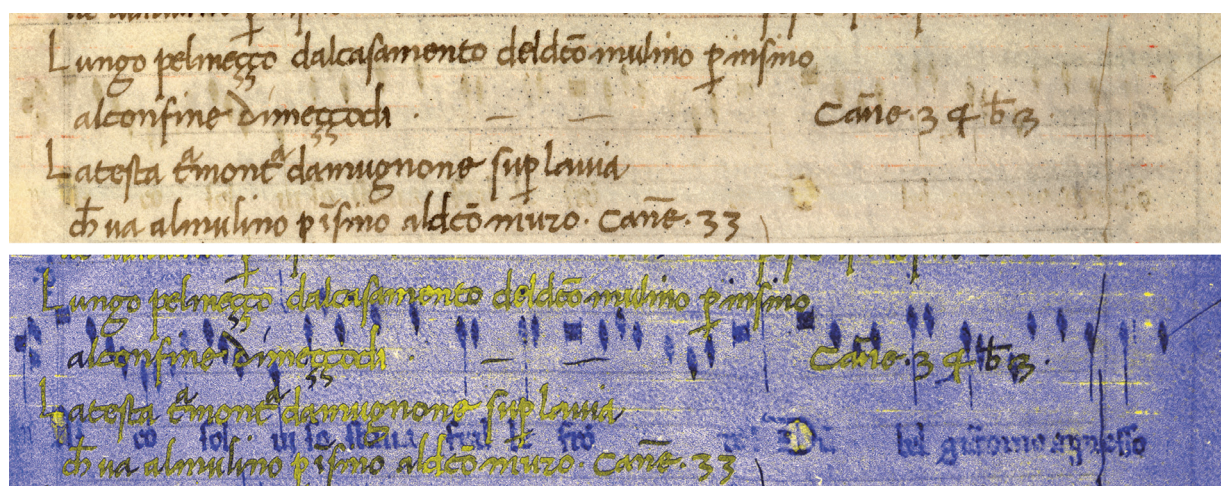


Fig. 4: Florence, Archivio del Capitolo di San Lorenzo, 2211, San Lorenzo Palimpsest (no. 10), detail of f. 20r as the manuscript appears today, and below a pseudocolour image from the same page that reveals the tenor part of Giovanni da Cascia's madrigal *Nascoso el viso* (© Florence, Archivio del Capitolo di San Lorenzo and Hamburg, Centre for the Study of Manuscript Cultures)

¹⁸ See for example Christens-Barry *et al.*, *Imaging and Image-Processing Techniques*.

¹⁹ The workflow has been described in Janke and MacDonald, *Multispectral Imaging*. Multispectral imaging could also be applied to other damaged music manuscripts; see, for example, Janke *et al.*, *The Atri Fragment*.

²⁰ There are seventy-nine folios missing from the original music manuscript. See Janke and Nádas, *The San Lorenzo Palimpsest*, vol. 1, 7.

²¹ D'Accone, *Una Nuova Fonte*; Nádas, *Manuscript San Lorenzo 2211*.

²² See Janke and Nádas, *The San Lorenzo Palimpsest*, vol. 1, 1–2.

blue reflectance image was inserted into the blue channel (see Fig. 4).²³ All images were published in 2016,²⁴ together with transcriptions of several previously unknown compositions.²⁵

In addition to the techniques detailed here, there are others available that may be relevant to future work with music palimpsests: a) tracing, using high-resolution digital images²⁶ and b) hyperspectral imaging (although multispectral imaging seems to be more suitable for music palimpsests).²⁷

CHALLENGES

Scholars working with music palimpsests face particular difficulties, three of which are: lacunae, the recovery of red ink, and a phenomenon that could be called ‘artificial dittography’. Such complications are among the reasons why a recovered palimpsest cannot be treated as a facsimile.

The various types of music notations in use from the 9th through 15th centuries have in common a large number of significant elements, such as dots and thin lines, that disappear easily during the scraping process and are therefore difficult to recover. Such delicate elements can also be hidden below the overwriting, because, typically, it is not possible to recover elements that are obscured directly by overwriting, especially when the inks of both layers respond in similar ways when exposed to different light sources.²⁸ This is particularly problematic, for example, when dealing with polyphony from the 14th and 15th centuries. In such cases, the exact rhythm can be transcribed only when all notational signs are recognizable, as they work contextually with one another. Therefore, if one sign—or even parts of that sign—is obscured, the rhythmic values of the surrounding notes are difficult to determine.

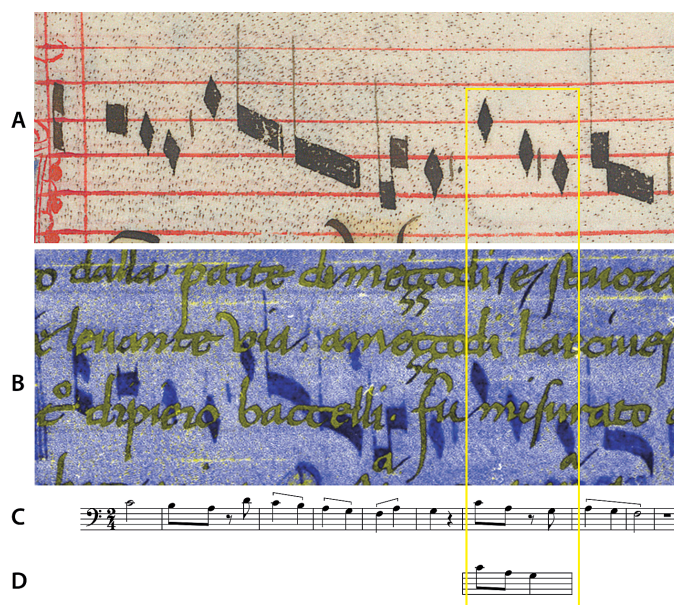


Fig. 5: *Oselletto selvagio*, caccia by Jacopo da Bologna (fl. 1340–1360). (A) *Squarcialupi Codex*, f. 13v [reproduced by permission of the Ministero della cultura, any further reproduction by any means whatsoever is prohibited]; (B) San Lorenzo Palimpsest, f. 26r (orig. Roman foliation), pseudocolour image; (C) and (D), transcriptions in modern notation (© Florence, Biblioteca Medicea Laurenziana, Florence, Archivio del Capitolo di San Lorenzo, and Hamburg, Centre for the Study of Manuscript Cultures).

²³ Janke and MacDonald, *Multispectral Imaging*, 117–119.

²⁴ Janke and Nádas 2016, *The San Lorenzo Palimpsest*; all pseudocolour images are reproduced in the original manuscript order in vol. 2. This publication is available in open access: <http://doi.org/10.25592/uhhfdm.8637> (accessed 01.07.2023).

²⁵ Janke, *Die Kompositionen*, 187–225.

²⁶ Rafiyenko, *Tracing*.

²⁷ A study by Alexander J. Zawacki, Kyle Ann Huskin, Helen Davis, Tania Kleynhans, David Messinger, and Gregory Heyworth, which is currently being prepared, will compare both techniques using a music palimpsest not yet listed here. I thank the authors for sharing a draft of their text with me. The title of the forthcoming article is *Fragments Under the Lens: A Case Study of Multispectral Versus Hyperspectral Imaging for Manuscript Recovery*.

²⁸ In the San Lorenzo Palimpsest, for example, both script layers presumably contain iron gall ink.

The subparts of Figure 5 serve to demonstrate this: Figure 5(A) is the beginning of the tenor from the caccia *Oselletto selvagio* by Jacopo da Bologna (fl. 1340–1360), taken from the early-15th-century Florentine manuscript known as the *Squarcialupi Codex* (Florence, Biblioteca Medicea Laurenziana, Med. Pal. 87, f. 13v). Figure 5(B) gives the same melody, this time taken from the San Lorenzo Palimpsest (f. 26r, original foliation), here as a pseudocolour image. The yellow frame highlights a grouping that, in the *Squarcialupi Codex*, consists clearly of three rhombus-shaped notes (semibreves) and a vertical line representing a rest. This rest is obscured in the palimpsest behind the letter ‘s’ of the overwritten word ‘misurato’. Being able to relate the overwriting to the underwriting helps an editor to understand contextually if a sign might be obscured or not.²⁹ Therefore it would not make sense, in such cases, to try and camouflage the overwriting by digitally manipulating its colour to match that of the parchment background, for example.³⁰ The transcription from the *Squarcialupi Codex* (Fig. 5[A]) can be seen in Figure 5(C). If the *lacuna* in the palimpsest is not made obvious by separating under- and overwriting, one might transcribe this passage differently, as in Figure 5(D). In this example the concordant reading in the *Squarcialupi Codex* helps the editor to better understand what might be concealed in the palimpsest. In other cases, however, in which a palimpsest is the only source of a composition, separating the different layers of writing from one another is necessary so that the editor can weigh the possibilities. There are limits, however, to how much the different layers can be separated, particularly when similar inks were used in all layers. In the pseudocolour images of the San Lorenzo Palimpsest, the underwriting usually appears dark blue and the primary overwriting in yellow (see Fig. 4 and 5).

Red ink plays a significant role in most music manuscripts. In the case of the San Lorenzo Palimpsest, the following elements were written in red: composer attributions in the top margin, foliation numbers, notational signs for expressing specific rhythmic values, and stave lines. Unfortunately red inks, such as cinnabar and red lead, are difficult to recover with MSI because organic fluorescence blockers—such as tannins that would block the fluorescence of the parchment—are missing; see, for example, the stave lines in the pseudocolour images in Figures 4 and 5, which appear yellow in the MSI, though large sections are barely visible.³¹ For this reason, when MSI is applied to palimpsests, the focus is usually on recovering iron gall inks. Portions of the underwriting that appear to be in red ink should always be compared with the original manuscript or images taken under visible light, as the red ink might be displayed differently in different pseudocolour images.³²

So far, my focus has been on difficulties caused by the palimpsest nature of the manuscripts. There are, however, cases in which particularly good pseudocolour images might lead to confusion during the editing process. Since erasure is a fundamental part of writing down music³³ it is possible that, through MSI, a note is revealed that the original scribe had already erased. One such possible example may exist in the San Lorenzo Palimpsest, in which a note had most likely been misplaced, erased, and then rewritten on the same stave line, but a bit further to the right and hence in its correct position.³⁴ When both notes are recovered, one must recognize that this is not the repetition of a specific pitch but, rather, the result of image processing, an example of what I have dubbed ‘artificial dittography’.

Despite these challenges, there are many benefits to be gained from paying greater attention to music palimpsests in the future. Recovering a palimpsest is, in a way, finding a new music manuscript. Not only new concordances and variant readings, but even previously unknown music can be investigated, transcribed, and, finally, performed again.³⁵

²⁹ In Fig. 5(A) there is a dot of division immediately in front of the yellow frame that was not entered in (B); no overwriting obscures the expected position.

³⁰ This problem has been discussed in Christens-Barry *et al.*, *Imaging and Image-Processing Techniques*, in the context of the Archimedes Palimpsest, 180. On this topic regarding the San Lorenzo Palimpsest, see Janke and MacDonald, *Multispectral Imaging*, 117; and Janke and Nádas, *The San Lorenzo Palimpsest*, vol. 1, 11.

³¹ I thank my colleague Ivan Shevchuk for more detailed information on this topic.

³² See Janke and MacDonald, *Multispectral Imaging*, 121; Janke and Nádas, *The San Lorenzo Palimpsest*, vol. 1, 11–12.

³³ See Haines, *Erasures in Thirteenth-Century Music*, 66.

³⁴ Janke, *Die Kompositionen*, 50. In this case the folio was not overwritten.

³⁵ Previously unknown music from the San Lorenzo Palimpsest has recently been recorded by the Ensemble La Morra: *Splendor da ciel* (Ramée, 2018).

APPENDIX

The following list presents a summary of select manuscripts with palimpsested music. It should not, however, be considered ‘complete’, as many palimpsests are not recognised as such in catalogues and it is probable that others still await discovery. The accompanying information has been kept to a minimum and is intended to summarize the general relationship between the under- and overwriting. The sizes of the manuscripts have been given whenever possible; this is important information when planning future imaging campaigns. In the process of compiling the list I made use of the following repositories and databases:

- Census-Catalogue of Manuscript Sources of Polyphonic Music 1400–1550;³⁶
- Digital Image Archive of Medieval Music;³⁷
- Medieval Music Manuscripts Online Database;³⁸ and
- Répertoire International des Sources Musicales.³⁹

Byzantine and Greek music palimpsests are not included; they have already been catalogued by Neil Moran.⁴⁰ For Beneventan liturgical manuscripts with palimpsested music see the work done by Virginia Brown.⁴¹ I have not repeated her nos. 5, 7–8, 11, 24, 27, 31, 36, 38, 40, 47, 52, 57, 65, 69–71, 73, 75, 79, 81, 83, 85, 92–94, or 104.

* * *

1. APT, Cathédrale Ste Anne, Trésor 16 bis (*Apt Codex*), 45 ff. (270 × 193, and 290 × 210 mm)
14th–15th-cent. collection of polyphonic settings for the Mass.
Lower script: f. 11v, Sanctus ‘Mediolano’.
2. ASSISI, Biblioteca del Sacro Convento, 574, 90 ff. (220 × 145 mm)
12th cent., collection of different texts beginning with *De septem gradibus animae*.
Lower script: appears on many folios (musical notation at least on ff. 60r–61r, 66r, 72v, 79r–v, and 83r–90v) from an 11th-cent. Gradual with adiastematic neumes from Northeastern Italy. Some of the reused ff. have been turned upside down.
3. BARI, Archivio del Duomo, Exultet roll 2⁴²
13th cent., Vulgate text of the Exultet and the Roman melody in square notation.
Lower script: dates from the 11th cent. and includes Beneventan text and notation.
4. BUDAPEST, Egyetemi Könyvtar, A. 107, 69 ff. (542 × 360 mm)
15th and 16th cents., liturgical manuscript with square notation, copied in Hungary.
Lower script: contains polyphonic Lessons on ff. 42r–62v and f. 68r–v.
5. BURGOS, Monasterio de las Huelgas (Codex Las Huelgas), 170 ff. (260 × 180 mm)
ca. 1325, music manuscript containing polyphony.
Lower script: on f. 20v, not identified.⁴³
6. COLOGNY, Fondation Martin Bodmer, Cod. Bodmer 177, 109 ff. (237 × 164 mm)
12th cent. (early), Northern Italy, containing a medical handbook by Gariopontus of Salerno.
Lower script: from two manuscripts, one of them an 11th-cent. Antiphony from Nonantola with neumes (f. 42v).

³⁶ *Census-Catalogue of Manuscript Sources of Polyphonic Music 1400–1550*.

³⁷ <https://www.diamm.ac.uk/> (accessed 01.07.2023).

³⁸ <http://musmed.eu> (accessed 01.07.2023).

³⁹ *Répertoire International des Sources Musicales*, B/IV.

⁴⁰ Moran, A List of Greek Music Palimpsests. See also Alexandru, The Palaeography of Byzantine Music.

⁴¹ Brown, Palimpsested Texts in Beneventan Script.

⁴² Kelly, *The Beneventan Chant*, 299.

⁴³ Lütolf, *Die Mehrstimmigen Ordinarium Missae-Sätze*, vol. 2, 230.

7. DARMSTADT, Universitäts- und Landesbibliothek, 749⁴⁴
12th cent. (second half), multiple-text manuscript.
Lower script: written perpendicular to the upper script, 28 ff. of an Antiphoner (9th cent.) with neumes.
8. DORCHESTER, Dorset Record Office, Bridport 2069, 40 ff., now lost
14th cent., list of names connected to the church of St. Andrew of Brudeport.
Lower script: as reported, a two-part composition on f. 7 of the manuscript (which is now lost) was overwritten probably by the end of the 14th cent.
9. FAENZA, Biblioteca Comunale Manfrediana, 117 (*Faenza Codex*), 96 ff. (245 × 175 mm)⁴⁵
ca. 1410–1420, Northern Italy, keyboard intabulations (first layer) and polyphonic settings and treatises on music theory added by the Carmelite friar Johannes Bonadies, ca. 1473–1474.
Lower script: Bonadies erased the keyboard intabulations on ff. 26r–v and 62r–v to make room for treatises. Pedro Memelsdorff provided digital restorations for all folios except f. 26r.
10. FLORENCE, Archivio del Capitolo di San Lorenzo, 2211 (San Lorenzo Palimpsest), 111 ff. (285 × 200 mm)⁴⁶
1504, *Campione dei Beni* of the Church of San Lorenzo in Florence; work on this volume began at the end of the 15th cent.
Lower script: appears on all 111 ff. from a collection of at least 216 secular two- and three-part polyphonic pieces compiled around 1410–1420. Multispectral images of all folios were taken in 2013, processed, and published as pseudocolour images in 2016 (<http://doi.org/10.25592/uhhfdm.8637>).
11. FLORENCE, Archivio del Capitolo di San Lorenzo, ASLii15, 278 ff.⁴⁷
Late 14th cent. to early 18th cent., liturgical manuscript (Sanctoral Gradual) with square notation.
There is a considerable amount of palimpsestation in this manuscript, intended to expand on its original repertory and create a compilation of post-Tridentine Mass Ordinaries and Propers.⁴⁸
12. FLORENCE, Archivio del Capitolo di San Lorenzo, ASLiii16⁴⁹
Liturgical manuscript (Invitatorium and Hymnal) with square and mensural notation.
Lower script: hymns on ff. 37–80, the original texts for the hymns on ff. 37–81 were removed and new texts copied to adhere to the changes mandated by Pope Urban VIII in his 1632 reform of the Roman Breviary.⁵⁰
13. KARLSRUHE, Badische Landesbibliothek, Augiensis perg. 60, 276 ff. (334 × 229 mm)⁵¹
ca. 1165–1175, Antiphonary.
In the 13th/14th cents. the notation (diastematic neumes) was erased and overwritten with gothic notation; the 12th-cent. text underlay has been left intact.⁵²
14. LONDON, British Library, Add. 29987, 88 ff. (260 × 195 mm)⁵³
15th cent., collection of mostly secular polyphony. However, it is likely that this manuscript also contained sacred music in its first part, which is now missing.
Lower script: today's f. 1r contained a polyphonic Credo that was overpainted with a Medici family coat of arms. Opinions differ as to whether the overpainting dates to the 15th cent. or much later.

⁴⁴ Rankin, *On the Treatment of Pitch*, 173, 175.

⁴⁵ Memelsdorff, *New Music in the Codex Faenza; The Codex Faenza 117*, 82.

⁴⁶ Janke and Nádas, *The San Lorenzo Palimpsest*.

⁴⁷ Stinson, *The Early Liturgical Books*, esp. 142. and 145–146.

⁴⁸ *Ibid.*

⁴⁹ *Ibid.*, esp. 138f.

⁵⁰ *Ibid.*

⁵¹ Hain, *Ein musikalischer Palimpsest*.

⁵² Early enhancements using UV light by Raphael Kögel were published in Hain, *Ein musikalischer Palimpsest*.

⁵³ Di Bacco, *Alcune nuove osservazioni*; Gozzi, *Alcune Postille*.

15. LONDON, British Library, Add. 57,950 (*Old Hall Manuscript*), 112 ff. (416 × 276 mm)⁵⁴
14th–15th cents., collection of polyphonic Mass settings
Erasure of text underlay on f. 69v, and complete erasure of the Agnus Dei on ff. 101v–102 (leaving one initial intact on f. 101v), probably for the insertion of another Agnus Dei.⁵⁵
16. LONDON, British Library, Harley 2945, 171 ff. (187 × 130 mm)⁵⁶
15th cent., Sarum processional.
In the 16th cent. some melodies were replaced with void notation on ff. 65–70.
17. LONDON, British Museum, Egerton 274, 160 ff. (150 × 107 mm)
13th cent., Trouvère chansonnier.
Lower script: partially over-written in the 15th cent., especially on ff. 98r–118v: for eleven of eighteen French chansons the first strophes have been erased and overwritten with Latin responsories. In most cases music and text underlay were replaced; in some, text underlay only. The initials remain intact.
18. LONDON, Lambeth Palace, 457, 254 ff., paper and parchment (195 × 133 mm)⁵⁷
Mid-13th cent., composite manuscript.
Polyphonic music only on f. 192, of which the verso side has been erased (continuation of Agnus Dei trope from f. 192r and an unidentified piece) and overwritten in the later 13th cent. with notes on the seven deadly sins.
19. LUCCA, Archivio di Stato, 184 and Perugia, Biblioteca Comunale 'Augusta', 3065, twenty-five bifolios from a dismembered codex (220 × 160 mm)⁵⁸
15th cent. (first decades), collection of Italian and French songs.
Lower script: ff. 20v–21r, French song (*Dueil angoisseux* by Gilles Binchois) was written over an erased Italian song (*Donna liçadra* by Bartolino da Padova).⁵⁹
20. MANTUA, Biblioteca Comunale R. Ardigò, 32 (A. II. 1), 123 ff. (205 × 130 mm)⁶⁰
12th cent., collection of assorted texts, e.g. Ivo Charnotensis, *Epistolae LXXV*.
Lower script: a 12th-cent. Antiphonary with diastematic neumes on ff. 105–123.
21. MANTUA, Biblioteca Comunale R. Ardigò, 287 (C. I. 25), 130 ff. (167 × 109 mm)⁶¹
12th cent., Hieronymus, *Hebraicae quaestiones. Liber de nominibus hebraicis*.
Lower script: 11th-cent. Antiphonary.
22. MANTUA, Biblioteca Comunale R. Ardigò, 295, 136 ff. (175 × 117 mm)⁶²
12th or 13th cent., *Sermones praedicabiles* and other texts.
Lower script: 11th-cent. Antiphonary on ff. 97–104.
23. MANTUA, Biblioteca Comunale R. Ardigò, 331, 92 ff. (260 × 170 mm)⁶³
11th cent., *Expositio missae* and other texts, the front flyleaf stems from a 13th-cent. notated Breviary.
Lower script: on the flyleaf, from a contemporary Antiphonary.

⁵⁴ Bent, *The Old Hall Manuscript*.

⁵⁵ See *ibid.*, for a detailed discussion on the many different types of erasures in this manuscript.

⁵⁶ Rankin, Shrewsbury School, Manuscript VI.

⁵⁷ Summers and Lefferts, *English Thirteenth-Century Polyphony*, 23

⁵⁸ Nádas and Ziino *The Lucca Codex*, 118–119.

⁵⁹ Ultraviolet images have been published: *ibid.*, 210–211.

⁶⁰ Varelli, *Liturgia e Musica a Polirone*, 179.

⁶¹ *Ibid.*, 183.

⁶² *Ibid.*, 183–184.

⁶³ *Ibid.*, 185.

24. MODENA, Biblioteca Estense Universitaria α.M.5.24, 52 ff. (278 × 200 mm)⁶⁴
ca. 1420–1430, collection of sacred and secular polyphony.
Lower script: on f. 16r is a motet that is also copied on f. 50v. On f. 23r, the textless contratenor of Matteo da Perugia's *Gloria* has been replaced but the initial 'C' and the designation of the voice have been left intact.
25. MONTSERRAT, Biblioteca del Monestir, 1519 (Mundó 17), fragment, (151 × 55 mm)⁶⁵
14th cent. (first half), Ars Nova notation on the hair side.
Lower script: on the hair side contains plainchant.⁶⁶
26. MUNICH, Bayerische Staatsbibliothek, clm 14735, 51 ff.⁶⁷
13th cent., composite manuscript.
Lower script: on ff. 9r–28v—written perpendicular to the upper script—from a late 9th- or early 10th-century chant book with adiastematic neumes. Single folios from the chant book have been folded and reused as bifolios for the present manuscript. A digital restoration of f. 19r appears in Fig. 3 of this essay.
27. NEW HAVEN, Yale University, Beinecke Rare Book and Manuscript Library, Marston 8, 76 ff. (195 × 135 mm)
ca. 1450, *Rhetorica ad Herennium* (Ps.-Cicero).
Lower script: parchment reused from various manuscripts including a large liturgical book with musical notation.
28. NEW HAVEN, Yale University, Beinecke Rare Book and Manuscript Library, 794, Fragment, 1 f. (923 × 625 mm)⁶⁸
Leaf from a 16th-cent. Gradual with the chant *Intret in conspectu tuo*.
Lower script: *Sacerdos et pontifex*, from a 15th-cent. Antiphony. The original historiated initial, the letter 'S', has not been altered.
29. NEW SOUTH WALES, State Library, Richardson 273 (*Rimini Antiphonal*), 155 ff.⁶⁹
1328, Franciscan Common of the saints.
Forty folios were overwritten with texts and altered melodies after 1582 (in accordance with post-Tridentine practice).
30. NUREMBERG, Stadtbibliothek, Fragm. lat. 9a, flyleaves, 2 ff. (305 × 407 and 27 × 403 mm)⁷⁰
14th cent. (second half), remnants of a collection of polyphonic music, Mass settings, and secular pieces.
Lower script: f. Dv contains Antonio Zacara da Teramo's *Credo* 'Cursor', written over another Credo.
31. OXFORD, Bodleian Library, Lat. Liturgy. d. 20, fragments⁷¹
13th cent., sacred Polyphony.
Lower script: polyphonic music on at least 23r; 24v; 25r; 26v; 28v, 34r, 34v, and 35r–v.
32. OXFORD, Bodleian Library, Bodl. 384, 358 ff. (275 × 182 mm)
13th-cent. manuscript with a collection of sermons, and late 14th-cent. polyphony (settings for the Mass Ordinary) on the flyleaves, ff. i–iii, which were added in the 15th cent. as part of a new binding.
Lower script: The music on ff. iiv–iiiv was erased and overwritten with text in the 15th cent.

⁶⁴ Stone, *The Manuscript Modena*, 116–119.

⁶⁵ Catalunya and Gutiérrez, Mozarabic *Preces*.

⁶⁶ A digital restoration has been published: *ibid*, 159.

⁶⁷ Rankin, On the Treatment of Pitch, 173ff.; Rankin, *Writing Sounds*, 111 and 152.

⁶⁸ Candelaria, Tropes for the Ordinary, 604.

⁶⁹ Stinson, *The Rimini Antiphonal*.

⁷⁰ Cuthbert, *The Nuremberg and Melk Fragments*, 19–22.

⁷¹ Lefferts and Summers, *English Thirteenth-Century Polyphony*, 37–38.

33. OXFORD, Corpus Christi College, 144, XX ff. (252 × 175 mm)
15th cent., composite manuscript, includes *Liber metricus de nova poetria* by Geoffrey of Vinsauf (on ff. 19r–43v).
Lower script on ff. 22r–29v, 14th-cent. (late) music with Ars Nova notation.⁷²
34. PARIS, Bibliothèque nationale de France, fr. 22543, 148 ff. (430 × 305 mm)⁷³
14th cent., Chansonnier provençal (Chansonnier La Vallière).
Lower script: on f. 43r, as discussed by Aubrey, the original melody of *Ay tan gens vens* was erased and replaced by a new melody (see Fig. 1).
35. PARIS, Bibliothèque nationale de France, gr. 2631 (*Palimpseste de Turin*), 195 ff. (250 × 170 mm)⁷⁴
13th cent. (beginning), *Lexicon Etymologicum*.
Lower script: adiastematic neumes, ff. 136r–183v, 10th/11th cents., parts of a Gradual-Responsorial and an Antiphony.
36. PARIS, Bibliothèque nationale de France, lat. 196, 153 ff. (195 × 135 mm)
Composite manuscript, primarily 12th-cent. texts.
Lower script: 11th-cent. Aquitanian notation, at least on ff. 40v and 42r.
37. PARIS, Bibliothèque nationale de France, lat. 1085, 112 ff. (225 × 95 mm)⁷⁵
10th cent. (last quarter), Antiphony with adiastematic Aquitanian neumes.
Lower script: on ff. 105–110, written perpendicular to the upper script, Processional with diastematic neumes.
38. PARIS, Bibliothèque nationale de France, lat. 7102, 219 ff. (180 × 120 mm)⁷⁶
12th cent., medical treatises.
Lower script: 11th-cent. Gradual with adiastematic neumes, written perpendicular to the upper script.
39. PARIS, Bibliothèque nationale de France, Rés. Mus. Vmc. 57 (*Nivelle de la Chaussée Chansonnier*), 77 ff. (180 × 125 mm)⁷⁷
15th cent., chansonnier.
Erasures with the intention of rewriting music on ff. 2v–3v, 6v–7r, and 49v–5.⁷⁸
40. PRINCETON, Princeton University Library, Garrett 119, ff. 35r–36r (Fragment D)⁷⁹
14th cent., Walter of Lille's *Alexandreis*.
Lower script: three unidentified settings in Franconian and Ars Nova notation.
41. ROCHESTER, University of Rochester, Eastman School of Music, Sibley Music Library, Vault ML96. M2942, 8 ff. (250 × 170 mm)⁸⁰
16th cent., sacred music (plainchant and polyphony).
Lower script: 15th-cent. chansonnier, overwritten music on ff. 1v, 3v, 4r, and 8r–v.

⁷² A digital restoration of f. 25v has been published in Craig-McFeely and Lock, *Digital Restoration Workbook*.

⁷³ Aubrey, *The Music of the Troubadours*, 47; Nagy, *Scratched-Out Notes*, 18.

⁷⁴ Cazaux-Kowalski, *Le Graduel-Responsorial-Antiphonaire Palimpseste de Turin*.

⁷⁵ See description by Lila Collamore: <http://cantus.uwaterloo.ca/source/123663> (accessed 01.07.2023).

⁷⁶ Huglo, *Le Graduel Palimpseste de Plaisance*.

⁷⁷ Nagy, *Scratched-Out Notes*.

⁷⁸ UV images have been published: Higgins, *Chansonnier Nivelle de La Chaussée*.

⁷⁹ Summers and Lefferts, *English Thirteenth-Century Polyphony*, 42.

⁸⁰ Meconi, *Shedding New Light*.

42. SEVILLE, Biblioteca Capítular y Colombina, 5-2-25, 138 ff., paper and parchment (220 × 150 mm)⁸¹
Composite manuscript with material from Italian manuscripts principally from the 14th and 15th cents., for the most part containing treatises on music and notation.
Lower script: one bifolio (ff. 23/39) derives from a music manuscript, further study is required to identify any additional details. The overwriting on f. 23v is the table of incipits for a collection of polyphonic music.⁸²
43. TURIN, Biblioteca Nazionale Universitaria, O.IV.20, 152 ff. (241 × 203 mm)⁸³
15th cent., Domenico Cavalca's *L'Esposizione sopra il Credo*.
Lower script: contains the remnants of a 12th-cent. Gradual with diastematic neumes on ff. 18–19, 21, 23, 37, 41–42, 49, 56, 60–69, 75–76, 78–81, 86, 93–103, 105–135, 137–138, 141–142, 144, and 152.
44. TOURS (France), Bibliothèque Municipale, 925, 164 ff.⁸⁴
15th cent., paper manuscript containing works by Terence.
Lower script: parchment folio 165r–v (flyleaf); motets, 13th/14th cents.
45. TRENT, Fondazione Biblioteca S. Bernardino, Incunabolo 60, flyleaf, 1 f.⁸⁵
Early 15th cent., secular polyphonic music.
Lower script: earlier notated liturgical manuscript.
46. URBANA, University of Illinois at Urbana-Champaign, Rare Book and Manuscript Library, Pre-1650 MS 0118, 64 ff. (228 × 167 mm)
14th cent. (second half), *Doctrinale puerorum* by Alexander de Villedieu.
Lower script: liturgical manuscript with diastematic neumes.
47. VATICAN, Biblioteca Apostolica Vaticana, Pal. lat. 862, 108 ff.⁸⁶
12th–15th cents., composite manuscript.
Lower script: 9th/10th-cent. Gradual with Nonantolan notation on ff. 68, 69, 71–2, 74–5, 77, 83, 91, and 102.
48. VATICAN, Biblioteca Apostolica Vaticana, Urb. lat. 602, 108 ff. (159 × 94 mm)⁸⁷
11th/12th cents., Troper-Processional with Beneventan notation.
Lower script: in the 13th cent., many of the folios were erased and rewritten with Beneventan chant, e.g. ff. 13v–23v.
49. VATICAN, Biblioteca Apostolica Vaticana, Urb. lat. 677, 125 ff.
14th cent., texts by Boethius, Prosper Aquitanus, and Gualterus Anglicus.
Lower script: Beneventan notation, probably 12th cent., on at least ff. 93–97.
50. VATICAN, Biblioteca Apostolica Vaticana, Vat. lat. 4749, 112 ff. (327 × 239 mm)⁸⁸
14th-cent. Antiphonary.
Lower script: on f. 15v, the *Benedicamus Domino*, *Flos filius* has been written down four times in different sizes and notations, partially covering each other.⁸⁹

⁸¹ Cuthbert, Palimpsests, Sketches, and Extracts.

⁸² This table was discussed by Michael Cuthbert in his unpublished paper 'Trecento Theory in Italian and Italian Theorists as Composers', presented at the Medieval and Renaissance Music Conference in Prague, 5 July 2017, and in Zimei 2018.

⁸³ Scappaticci, *Codici Musicali Palimpsesti*.

⁸⁴ Summers and Lefferts, *English Thirteenth-Century Polyphony*, 41.

⁸⁵ Cuthbert, *Trecento Fragments and Polyphony*, 214 fn. 163.

⁸⁶ Rankin, *Writing Sounds*, 123, 152.

⁸⁷ Boe, The 'Lost' Palimpsest Kyries; Kelly, *The Beneventan Chant*, 315.

⁸⁸ Cuthbert, *Trecento Fragments and Polyphony*, 404–405.

⁸⁹ For UV image and description, see *ibid.*

51. VATICAN, Biblioteca Apostolica Vaticana, Vat. lat. 9820⁹⁰
12th cent., Exultet roll with Vulgate text and Beneventan notation.
Lower script: 10th cent. (late), Beneventan text and notation.
52. VATICAN, Biblioteca Apostolica Vaticana, Ott. lat. 576, 377 ff. (270 × 175 mm)⁹¹
12th/13th cents., Missal with Beneventan script and diastematic neumes.
Lower script: parts of two Missals on ff. 1 and 341–377.
53. VERONA, Biblioteca Capitolare, Cod. CIV (97), 32 ff.)⁹²
12th/13th cent., Evangelistarium Collectarium.
Lower script: 11th-cent. Antiphonary, Nonantolan notation.
54. VIENNA, Österreichische Nationalbibliothek, Cod. slav. 141, fragment, 8 ff. (214 × 143 mm)
14th cent., Psalter.
Lower script: 12th cent., Sacramentarium, Antiphonary with Beneventan notation.
55. WIENHAUSEN, Klosterarchiv, MS 34a/34b⁹³
15th cent., notated liturgical manuscript.
Lower script: on two bifolios designated as manuscript 34b: notated liturgical manuscript.
56. WORCESTER, Cathedral Library, Additional 68, Frag. xii, 1 f. (350 × 230 mm)⁹⁴
13th/14th cents., four incomplete polyphonic settings.
Lower script: underwriting is (unidentified) music.
57. WORCESTER, Cathedral Library, Additional 68, Frag. xxix, 2 bifolios (215 × 142 and 220 × 150 mm)⁹⁵
13th cent., polyphonic and monophonic music.
Lower script: on ff. b1r (only text underlay, no notation was entered) and b1v.

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⁹⁰ Kelly, *The Beneventan Chant*, 56 and 316.

⁹¹ *Ibid.*, 314–315.

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⁹³ Hascher-Burger, *Korrektur – Rasur – Palimpsest*.

⁹⁴ Summers and Lefferts, *English Thirteenth-Century Polyphony*, 32.

⁹⁵ *Ibid.*, 33.

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