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MELODIC SEARCHING
AND THE ANONYMOUS UNICA OF SAN LORENZO 2211

With so much already having been written and discovered about the remarkable palimpsest Firenze, Archivio del Capitolo di San Lorenzo, 2211 (SL), it may come as little surprise that what I have to contribute to the discourse must be brief.¹ In fact, if I were to use this space to present only what was newly found, this paper would nearly be over already. This essay is an example of negative research: that is, of reporting what has not been found and perhaps what cannot be found, rather than what has been discovered for the first time. I offer this paper to the editors of the facsimile edition, Andreas Janke and my mentor John Nádas, hoping that they will take as a compliment to the exhaustive nature of their research my inability to go much beyond what they have done with their magisterial study of the San Lorenzo Palimpsest.

From the moment of Frank D'Accone's discovery of SL up to the publication of the multispectral facsimile and beyond, the race was on to decipher what compositions lay hidden on these treasured pages.² D'Accone's initial study uncovered, by my count, fifty-four compositions known from other sources and, on the other hand, twelve of which were sufficiently identifiable to be reasonably sure that they were new pieces. Nádas's presentation at Certaldo in 1984 (published in 1992),³ brought the number of identifiable pieces

1. I am grateful to Margaret Bent and Elina G. Hamilton for helpful comments on this paper.

2. Frank A. D'Accone, "Una nuova fonte dell'ars nova italiana: il codice di San Lorenzo, 2211", *Studi musicali* 13 (1984): 3-31.

3. John Nádas, "Manuscript San Lorenzo 2211: Some Further Observations", in *L'Ars Nova Italiana del Trecento VI*, Atti del Sesto Congresso Internazionale (Certaldo, Palazzo Pretorio, 19-21 Luglio 1984), ed. Giulio Cattin and Patrizia Dalla Vecchia (Certaldo: Edizioni Polis, 1992), 145-68.

up to ninety-seven, with many more that one could be sure had no concordances. His work, however, also drew attention to a second layer of pieces at the bottoms of pages, many of them apparently French-texted, leaving far more compositions to be identified. Those scholars who were fortunate enough to be at the 1989 conference of the American Musicological Society in Austin, Texas, or those even luckier to be in the possession of a copy of this most rare handout – now included with the talk itself in the volume of Nádas's collected essays⁴ – had access to Nádas's findings in the intervening half decade, and found 111 pieces identified through concordances, including works by Machaut, along with many more unidentifiable works and works by composers, such as Giovanni and Piero Mazzuoli and Ugolino da Orvieto, that we knew did not have other surviving copies. While a few more identifications came out over the following years, made by many of the scholars present in this volume, it was not until the publication of the facsimile edition in 2016 that the present state of knowledge on the extent of the source became apparent.⁵ Janke and Nádas identified 216 separate compositions, of which, by my count, 121 are known from concordances in other sources (or 120 depending on the status of one composition by Zacara⁶ to be discussed below). Forty-eight other pieces, principally the works of the Mazzuolis and Ugolino, anonymous *cacce*, and works with clearly visible text incipits, can be classified with a high degree of certainty as unique and otherwise unknown. The attributed works cast light on an otherwise little-known period of Italian song composition, and the transcriptions of many of these pieces by Janke will yield stylistic insights on early Quattrocento music for a long time to come.⁷

My contribution here concerns the pieces that I have not mentioned: the forty-seven that survive in such illegible or incomplete forms that they have resisted identification over the course of thirty-five years of scholarship on the Palimpsest. Many of these works have only a few legible passages containing

4. John Nádas, "The Lucca Codex and MS San Lorenzo 2211: Native and Foreign Songs in Early Quattrocento Florence", in *Arte psallentes. John Nádas: Studies in Music of the Tre- and Quattrocento*, ed. Andreas Janke and Francesco Zimei (Lucca: LIM, 2017), 105-43.

5. *The San Lorenzo Palimpsest: Florence, Archivio del Capitolo di San Lorenzo Ms. 2211: Introductory Study and Multispectral Images*, ed. Andreas Janke and John Nádas (Lucca: LIM, 2016).

6. I am spelling the sobriquet of Antonio da Teramo as "Zacara" here for consistency with other authors in this volume. I have argued elsewhere that "Zachara" is a more appropriate spelling given the surviving sources. See Michael Scott Cuthbert, "Trecento Fragments and Polyphony Beyond the Codex" (PhD diss., Harvard University, 2006), 495.

7. Andreas Janke, *Die Kompositionen von Giovanni Mazzuoli, Piero Mazzuoli und Ugolino da Orvieto im San-Lorenzo-Palimpsest (ASL 2211)*, Musica Mensurabilis, 7 (Hildesheim: Olms, 2016).

only a handful of notes each. Texts are often incomprehensible, and even the normally simple task of identifying where any given voice begins was a gargantuan undertaking for the editors of the facsimile. Some of the most difficult-to-read pieces found at bottoms of folios or on well-scraped pages have been identified recently by Janke and Nádas, such as Machaut's rondeau *Cinc, un, trese* or the anonymous *Marticius qui fu de Rome* (a space-filler whose attribution to Paolo da Firenze in the source may refer only to the space's intended use for more works by the composer).⁸

The question I wish to raise is this: are the forty-seven pieces that remain unidentified merely elusive concordances that will eventually be revealed? Or, after three decades of searching, have Janke and Nádas identified all that is not unique? To put it another way, are these difficult pieces known works with concordances that these scholars have missed due to the difficulty of reading them, or does the San Lorenzo Palimpsest contain a high number of unica at the bottoms of pages?

COMPUTATIONAL INTERVAL SEARCHING

Computer technology allows a way of comprehensively searching a known repertory for connections, similarities, and concordances. Given specialized software that can find exact and inexact matches among various works, along with a complete encoding of the known works of the fourteenth and early fifteenth centuries, it is possible to identify the legible but unidentified fragments from the San Lorenzo codex if they exist in any other source, or at least to say with some certainty that no concordance exists in the known (and published) literature.

My recent work has been devoted to creating such a combination of these tools and encoded repertory. The tools are an outgrowth of my music21 project, which is a Python-language computer library for analyzing and manipulating musical scores.⁹ The repertory comes from the Electronic Medieval Music Score Archive Project (EMMSAP), a project I have been running since

8. Janke and Nádas, *The San Lorenzo Palimpsest*, 23. The case of *Marticius* is different from the other French space-fillers mentioned by Janke and Nádas (26) in that it is one of only two works found at the top of a page (Grimace's *Des que*, *Buisson* being the other) and is the only one with a clear attribution. The position of the piece in Gathering XIV and not in the gap between gatherings also argues that the scribe intended the work to be connected with the attribution.

9. Michael Scott Cuthbert and Christopher T. Ariza, "music21: A Toolkit for Computer-Aided Musicology and Symbolic Music Data", *Proceedings of the International Symposium on Music Information Retrieval* 11 (2010): 637-42.

2011. I have spoken about the project and its results elsewhere,¹⁰ and hope soon to publish the results which include approximately thirty newly identified concordances and quotations that had escaped notice until now.¹¹ I will describe here a mode of using EMMSAP that I have not presented elsewhere, which is particularly useful for searching the contents of palimpsests and other damaged sources.

Searching the EMMSAP database can be done in a number of ways, the most powerful being a comparison of each thirty-note segment of fourteenth- or early fifteenth-century music against every other segment. One of the discoveries made in this way indirectly concerns SL: a new identification of Hubertus de Salinis's motet *Psallat chorus in novo carmine*, previously known from Bologna, Museo Internazionale e Biblioteca della Musica, Q.15 (Q15) and SL, in the fragments, Utrecht, Bibliotheek der Rijksuniversiteit, 6 E 37 (Cat. 1846) (Utrecht37.1), section I, folio V.¹²

Any method of working that depends on thirty-note contiguous segments cannot, however, suffice for working with SL. For most of the unidentified pieces, only a few notes can be read at a time, and often the exact pitch levels of these notes are impossible to discern; only relative intervals can suffice. In searching for concordances with SL, I generally worked directly with the database and constructed searches based on interval patterns using "regular expressions".¹³ For instance, to match a pattern of an ascending fourth, followed by two descending seconds, the regular expression "4-2-2" is used. Note that only the generic interval and not specific intervals, such as perfect fourth or minor second, is part of the search, since the precise size of intervals cannot be determined in the absence of clear clefs or key signatures. Regular

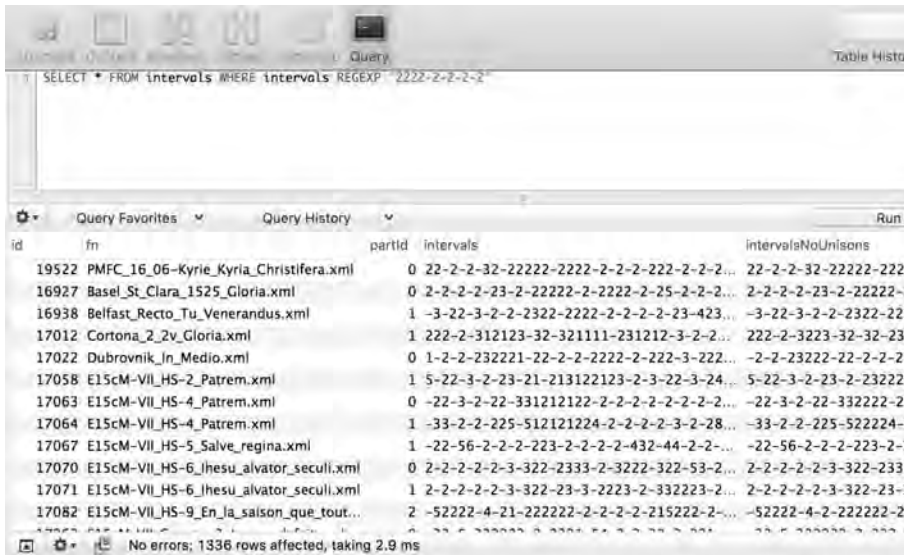
10. Michael Scott Cuthbert, "Hidden in our Publications: New Concordances, Quotations, and Citations in Fourteenth-Century Music" (Paper presented at the 82nd Annual Meeting of the American Musicological Society, Vancouver, November 3-6, 2016).

11. Two of the identifications have already been published: new sources for *Esperance, qui en mon cuer*, in Rome, Santa Maria Maggiore (Museo), Graduale without call number in the Sala dei Papi [Roma, Archivio Liberiano di Santa Maria Maggiore, Manoscritti s.n. "Graduale-Kyriale-Sequenzario"], and *Io son un pelligrin* in Assisi, Biblioteca Comunale, 187 (As), in which the context gives further evidence for an attribution of the piece to Francesco da Firenze. See Michael Scott Cuthbert and Nicola Tangari, "Identificazioni di composizioni vocali italiane e internazionali in alcuni manoscritti liturgici del tardo Trecento", *Rivista Internazionale di Musica Sacra* 37 (2016): 219-27.

12. Eliane Andrea Fankhauser has discussed these fragments in detail, including this new identification, in *Recycling Reversed: Studies in the History of Polyphony in the Northern Low Countries Around 1400* (PhD diss., Utrecht University, 2018), esp. 57-8. Available online at <https://www.ris.uu.nl/ws/files/45638566/Fankhauser.pdf>. Margaret Bent discusses Hubertus de Salinis's connection with SL in her contribution to this volume, "The Motet Collection of San Lorenzo 2211 (SL) and the Composer Hubertus de Salinis".

13. An explanation of regular expressions with tutorial can be found online at <https://regexone.com/>.

expressions include powerful search tools such as the dot (“.”) operator which represents any number or other character. A regular expression such as “222-.” could be used to model a passage of three ascending seconds ending with a descending ligature of indeterminate size. If we were able to see that the ligature is likely to be a fifth or sixth, then the regular expression “222-[56]” could be used, where the numbers in square brackets represent a choice of one (but not both) of those intervals. The number of matches for a passage is generally determined by the rarity of the interval pattern along with its length. For instance the eight-interval expression “2222-2-2-2-2” (that is, four ascending seconds followed by four descending seconds) appears in at least 1336 voice parts (see Figure 1), while the much shorter but also much rarer pattern “5-68” appears in exactly one piece (the contratenor by Matteo da Perugia to Nicholas Grenon’s *Je ne requier* in Modena, Biblioteca Estense Universitaria, α.M.5.24 [ModA]). Thus, finding legible sections involving large leaps was important to being able to find potential matches.



The screenshot shows a database query interface with a query bar containing the SQL statement: `SELECT * FROM intervals WHERE intervals REGEXP "2222-2-2-2-2"`. Below the query bar is a table with the following columns: `id`, `fn`, `partid`, `intervals`, and `intervalsNoUnisons`. The table displays 10 rows of results, each representing a match for the specified interval pattern in a specific voice part of a musical manuscript.

id	fn	partid	intervals	intervalsNoUnisons
19522	PMFC_16_06-Kyrie_Kyria_Christifera.xml	0	22-2-2-32-22222-2222-2-2-2-222-2-2-2...	22-2-2-32-22222-2222-
16927	Basel_St_Clara_1525_Gloria.xml	0	2-2-2-2-23-2-22222-2-2222-2-25-2-2-2...	2-2-2-2-23-2-22222-
16938	Belfast_Recto_Tu_Venerandus.xml	1	-3-22-3-2-2-2322-2222-2-2-2-23-423...	-3-22-3-2-2-2322-22-
17012	Cortona_2_2v_Gloria.xml	1	222-2-312123-32-321111-231212-3-2-2...	222-2-3223-32-32-23-
17022	Dubrovnik_In_Medio.xml	0	1-2-2-232221-22-2-2-2222-2-222-3-222...	-2-2-23222-22-2-2-2-
17058	E15cM-VII_HS-2_Patrem.xml	1	5-22-3-2-23-21-213122123-2-3-22-3-24...	5-22-3-2-23-2-23222-
17063	E15cM-VII_HS-4_Patrem.xml	0	-22-3-2-22-331212122-2-2-2-2-2-2-2...	-22-3-2-22-332222-2-
17064	E15cM-VII_HS-4_Patrem.xml	1	-33-2-2-225-512121224-2-2-2-3-2-28...	-33-2-2-225-522224-
17067	E15cM-VII_HS-5_Salve_regina.xml	1	-22-56-2-2-2-223-2-2-2-2-432-44-2-2...	-22-56-2-2-2-223-2-
17070	E15cM-VII_HS-6_Ihesu_alvator_seculi.xml	0	2-2-2-2-2-3-322-2333-2-3222-322-53-2...	2-2-2-2-2-3-322-233-
17071	E15cM-VII_HS-6_Ihesu_alvator_seculi.xml	1	2-2-2-2-2-3-322-23-3-2223-2-332223-2...	2-2-2-2-2-3-322-23-
17082	E15cM-VII_HS-9_En_la_saison_que_tout...	2	-52222-4-21-222222-2-2-2-2-215222-2...	-52222-4-2-222222-2-

At the bottom of the window, a status bar indicates: "No errors; 1336 rows affected, taking 2.9 ms".

Figure 1. Example of search results for a common interval pattern

“FRACTIO MODI”: IGNORING UNISONS IN TWO SEARCH RESULTS

Among the most common variants among copies of the same piece is the breaking up or splicing together of notes, which thereby changes the intervallic pattern of the work. Such variants are especially common when the text and/or language of a piece is changed or when one form of notation substitutes for another. For this reason, an index that omits all unisons (called “intervalsNoUnisons” in the database) has been one of the most valuable tools in EMMSAP. In this index, two passages that read “C D D E E F” and “C D E F” would have the same representation as “222” in “intervalsNoUnisons”.

This index has recently allowed me to identify two new concordances. The Gloria “*Splendor Patris*” found in the Barcelona Mass cycle, has long been known to have once had its cantus in the burnt Strasbourg codex (Bibliothèque Municipale [*olim* Bibliothèque de la Ville], 222 C.22 [Strasbourg]), but it was not known that a prior copy of the piece, written in stroke notation, once appeared on f. 11v as Coussemaker’s no. 14 (see Table 1). Coussemaker writes that “cette pièce est notée par des semibreves seulment”, and he also notes that two such semibreves are equal to a breve of two tempora and three equal a breve of three tempora.¹⁴ He also records that only a single voice of the piece was copied (the only amount that could fit on a single folio, unless the subsequent chansons were in fact only bottom-of-folio space fillers and the Gloria continued on the following pages).¹⁵

Table 1: Sources of the Gloria “*Splendor Patris*”

Apt, ff. 22r-23v

BarcC, ff. 1v-4r

Barc2, ff. 1v-3r

Strasbourg, f. 11v

Strasbourg, ff. 52v-54r

Apt = Apt, Basilique Sainte-Anne, Trésor, 16bis; BarcC = Barcelona, Biblioteca de Catalunya (*olim* Biblioteca Central de la Diputación Provincial de Barcelona), 971 (*olim* 946) (ff. 1-12); Barc2 = Barcelona, Biblioteca i Arxiu de l’Orfeó Català, 2.

14. Edmond de Coussemaker in Bruxelles, Bibliothèque du Conservatoire Royal de Musique, ms 56286, 5. Reprinted in Charles Van den Borren, *Le manuscrit musical M. 222 C. 22 de la Bibliothèque de Strasbourg (XVe siècle) brûlé en 1870, et reconstitué d’après une copie partielle d’Edmond de Coussemaker* (Antwerp: Imprimerie E. Secelle, 1924).

15. A second possible identification in the same Strasbourg manuscript is no. 153 on f. 88r, *Byen plorer doi*, which may be a variant version of the tenor of *Bonté de corps*, with a few rhythmic changes. That ballade, also found with the contrafact text “Beata es virgo”, is found as no. 121 on f. 74r.



Figure 2. Gloria "*Splendor Patris*": (a) Coussemaker's index entry and (b) modern transcription from other sources

A second identification that was aided by removing unisons brought together two previously unconnected pieces from long-known Veneto manuscripts written just after the end of the Ars Nova. In the secular song manuscript, Oxford, Bodleian Library, Canon. misc. 213 (Ox213), at the bottom of ff. 114v-115r is a unique rondeau, *Pour deleissier tristesse et joye avoir*.¹⁶ Unknown until now, the unedited, three-voice Magnificat antiphon for the first Vespers of the feast of Corpus Christi, *O quam suavis*, in Bologna, Biblioteca Universitaria, 2216 (*olim* S. Salvatore 727) (BU2216), ff. 25v-26r, is the same piece with a different text.¹⁷ Although it would be a mistake to always assume that the Latin, sacred version of a piece is a contrafact of a vernacular, secular original, in this case, the assumption seems confirmed by the better syllabic placement of words after minim rests in *Pour deleissier* as well as the somewhat superfluous "Alleluia" of *O quam suavis*. Although the cantus parts of the two pieces are nearly identical except for their texts and the contrast of black and void notation, the identification of the pieces was done through their tenors. The tenors' intervals differ greatly due to the presence of many unisons in *O quam suavis*, which are necessary to accommodate a 3³ text setting. (As noted above, in general voices with more leaps are better for making identifications through interval searches, making lower voices more suitable than upper voices. Variability in contratenors, including their presence, absence, and substitution, however, compels me to search tenors first. This focus on the tenor has also allowed for the identification of connections with both instrumental and chant repertoires. In the case of *O quam* / *Pour*

16. Images via DIAMM at <https://www.diamm.ac.uk/sources/716/#/images?p=115>. See also facsimile and commentary, *Oxford, Bodleian Library, MS. Canon. Misc. 213*, ed. David Fallows (Chicago: University of Chicago Press, 1995).

17. Images via DIAMM at <https://www.diamm.ac.uk/sources/119/#/images?p=25v>. See also the facsimile, commentary, and partial edition, *Il codice musicale 2216 della biblioteca universitaria di Bologna*, ed. F. Alberto Gallo, 2 vols. (Bologna: Forni, 1968-1970).

deleissier, however, a search on the cantus voice would have yielded a match even using the index that includes unisons).

Ralph Corrigan, who has written the most recent study of BU2216, suggests, on the basis of similarity of musical style and of a parallel of scribal practice with a previous *Ave verum corpus*, that *O quam suavis* should be attributed to Arnold de Lantins.¹⁸ Gilbert Reaney, however, in his edition of *Pour deleissier* and other anonymous songs in Ox213, declines to make an attribution.¹⁹ A search using EMMSAP's similarity measure finds the most similar work to be by Carmen (*Pontifici decori*). The complete works of all of the people named Lantins, however, have not yet been encoded in EMMSAP, so the attribution must remain an open question, perhaps aided by this new source.²⁰

THE NON-IDENTIFICATION OF SAN LORENZO CONCORDANCES

More-sophisticated queries allowed me to specify the position of rests, to narrow the repertory (excluding Mass Ordinary movements, for instance), or to specify rhythmic patterns. When I built the EMMSAP system in 2014, I was able to identify five pieces in SL that at the time had not been noted in any published inventory (for instance, *Marticius qui fu de Rome* and Machaut's *Cinc, un, tresp* cited above). All five, however, were independently (and presumably already) identified by Janke and Nádas and appear in the inventory. Focused searches I have performed over the intervening four years have found no other new concordances.

None. Nada. Zip.

My system is not foolproof – it is possible that a few pieces are in readings too varied from potential concordances to find matches, or that I made errors in transcription (though the system allows me to skip notes or passages about which I am uncertain), so there may yet be a piece or two that can be identified. Nonetheless, the computer model suggests that all – or nearly all – of

18. Ralph Patrick Corrigan, "The Music Manuscript 2216 in the Bologna University Library: The Copying and Context of a Fifteenth-Century Choirbook" (PhD diss., University of Manchester, 2011), 100. Available online at <https://www.diamm.ac.uk/documents/28/Corrigan-thesis.pdf>.

19. Gilbert Reaney, ed., *Early Fifteenth-Century Music*, Vol. 4, *Anonymous Chansons from the Ms. Oxford, Bodleian Library, Canonici Misc. 213*, *Corpus Mensurabilis Musicae*, 11 ([Rome]: American Institute of Musicology, 1969), Rondeau 15, XXI and 16-7. Composer identifications are on XVII-XVIII.

20. On a computer-aided basis for attributing ambiguously identified works to one or the other of the Lantins, see Michael W. Beauvois, "A Statistical Analysis of the Chansons of Arnold and Hugo de Lantins", *Early Music* 45 (2017): 527-43.

the remaining pieces, primarily works found at the bottoms of folios, are unique and not merely unidentified because of their poor states of preservation. It is a testimony to the intelligence and hard work of both the editors of the facsimile that no other pieces can be found.

The added works at the bottom of San Lorenzo leaves can take their place as a repertory, such as that of the Mazzuolis and Ugolino and the cacce, that testifies to an otherwise unknown and – prior to the discovery of the Palimpsest – largely unhinted-at flurry of compositional activity in Italy at the end of the long *Ars Nova*. With a concordance rate of only about fifty-six percent overall, the late repertory of San Lorenzo stands apart from the conclusions of statistical analysis on the repertory from 1370-1410 that I conducted in my *Tipping the Iceberg* article, which suggested that a good proportion of the secular music of the classic Italian Trecento survived.²¹ For this repertory the numbers suggest that many further new works await discovery if they are fortunate enough to survive somewhere in some other manuscript that is still hidden from view.

For what does survive, a new task awaits us: the transcription and stylistic analysis of the remains of the works at the bottoms of pages. Based on my computational work, I believe that we cannot wait for concordances to appear to unravel the mysteries of these works, but instead each must be taken as its own testimony to musical creativity and be studied, perhaps even reconstructed and performed.

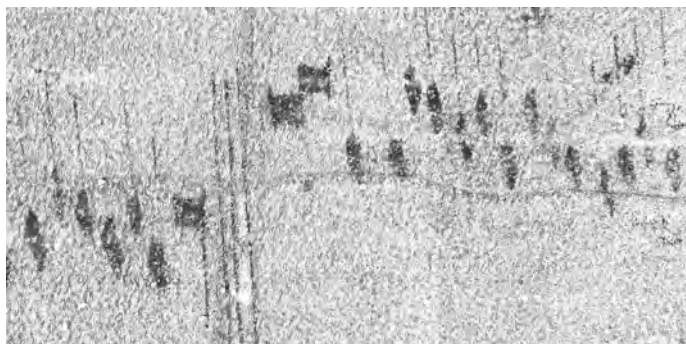
Having said all this, I do have one piece of positive research to report – one small kernel of musical citation that EMMSAP discovered and which has not yet made its way into print. In their 2015 article on the Florentine tradition of Zacara's songs in the San Lorenzo Palimpsest, Nádas and Janke discovered an oddity – even in the context of Zacara's very odd output. They noted that the ballata with the incipit *Benché lontan mi trovi* in the San Lorenzo Palimpsest is *not* the same work as the piece with the same name in Squarcialupi.²² Perhaps this was something Zacara did with his songs: reused their texts in the creation of other works. If that were indeed the case, then a similar form of reuse may have occurred with the text *Ad ogne vento*, and a lost, reused

21. Michael Scott Cuthbert, "Tipping the Iceberg: Missing Italian Polyphony from the Age of Schism", in *Musica Disciplina* 54 (2009): 39-74. The article has often been misquoted as arguing that only a small percentage of Medieval (or even Renaissance) music from all repertories has been lost. I want to emphasize that in the paper I argue primarily for a method of estimating this number and that this method requires careful inventorying of all the surviving sources of that repertory. The conclusions from one repertory cannot be applied to another without this necessary step.

22. Andreas Janke and John Nádas, "New Insights into the Florentine Transmission of the Songs of Antonio Zacara da Teramo", *Studi musicali*, n.s. 6, 2 (2015): 197-214, at 211-2.

version, rather than a careless scribe, could explain the bizarre title Gloria “*Ad ogne vento*” in Q15, despite the Mass movement having no connection to the surviving secular piece.

There is also another form of reuse in the version of *Benché lontan* in SL. At the transition between the A and B sections, Zacara quotes another of his works, *Rosetta che non cambi mai colore*, the ballata he reused in another form to make his Gloria “*Rosetta*” (see Figure 3).



(a)



(b)

Figure 3. (a) *Benché lontan* in SL²³ compared with (b) *Rosetta che non cambi*

This quotation cannot be attributed to coincidence: no other work by Zacara or anyone else has the same interval pattern as this section, to say nothing of the same rhythm or pitch level. When we look carefully at the close relationship of this passage to the original, we see that Zacara’s little rose was indeed one that could change its color. And I believe that, as we are able to look more carefully at the San Lorenzo Palimpsest, thanks to the many changes of color applied to the recent facsimile, we will continue to find much that is hidden and that will amaze.

23. Reproduced with permission from Janke and Nádas, *The San Lorenzo Palimpsest*, Vol. II, no. 137.

ABSTRACT

Will continued searching ever find concordances for the unidentified works in the San Lorenzo Palimpsest? Computer-assisted melodic searching suggests the answer is no, and that the remaining works in SL are unica. This article describes methods for writing queries of fragmentary pieces using the author's EMMSAP database. These methods find new identifications of works (including Salinis's motet *Psallat chorus*, the Gloria "Splendor Patris", and the rondeau *Pour deleissier tristresse*) in other manuscripts. However, except for a Zacara self-quotation, these techniques find no further identifications in SL beyond those already published. The repertory of works at the bottoms of folios is thus largely one of unica that awaits further study and reconstruction.

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