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INDICE

Magdalena Bator, <i>How (im)precise can a cook be? The case of medieval English recipes</i>	5
Giulia Brun, <i>Transmission and Circulation of Written Knowledge on Art in the Middle Ages. The Case of the Compositiones lucenses Tradition and the Connection with Vitruvius' De architectura</i>	17
Nicodemo Cannavò, <i>Per un'edizione dei testi di Guilhem Ademar: problemi attributivi</i>	31
Daniela Fruscione, <i>Gender, social and marital status in the seventh century the legal framework.</i>	55
Gerardo Larghi, <i>Una sezione di poesia d'amore nel canzoniere di Guilhem Olivier d'Arles</i>	67
Carla Riviello, <i>A joyless dwelling: exiles and traitors, pilgrims and sinners in Old English poetry</i>	131



## **Transmission and Circulation of Written Knowledge on Art in the Middle Ages. The Case of the *Compositiones lucenses* Tradition and the Connection with Vitruvius' *De architectura***

**ABSTRACT.** *Compositiones Lucenses* e il nucleo di *Mappae clavicula* sono due libri di ricette sulle procedure artistiche trasmesse al Medioevo dalla tarda antichità. In questa sede si cerca di presentare una nuova analisi della loro circolazione attraverso nuovi testimoni ed una interpretazione diversa del ruolo di Vitruvio come veicolo per la loro trasmissione: *Lucenses Compositiones* e la sua tradizione medievale dovrebbero essere intesi come ricettari di grande diffusione nel Medioevo. Questo studio identifica e discute le principali questioni di una versione ridotta, rinominata *Editio minor*, estratta dalla raccolta principale per essere trascritta esclusivamente dopo il testo di *De architectura* di Vitruvio a partire dal X secolo. In breve, si propone di fornire una nuova analisi dello sviluppo medievale di questa tradizione testuale ampio, considerando contestualmente i rapporti di *Lucenses Compositiones*, *Mappae clavicula*, e Vitruvio nel Medioevo.

**ABSTRACT:** *Compositiones lucenses* and the nucleus of *Mappae clavicula* are two recipe books on artistic procedures transmitted to the early Middle Ages from the late Antiquity. This paper attempts to present a new reading on the circulation of these traditions by means of new pieces of evidence and a different interpretation on the role of Vitruvius as a vehicle for their transmission. It argues that *Compositiones lucenses* and its medieval tradition should be seen as a recipe book with an incredible diffusion in the Middle Ages. This study identifies and discusses the main issues of an abridged version – that I have re-named *Editio minor* – that was excerpted from the main collection to be exclusively transcribed after the text of *De architectura* by Vitruvius since the 10<sup>th</sup> Century. In short, this paper aims to provide a new analysis on the medieval development of this wide textual tradition, considering contextually the relationships of *Compositiones lucenses*, *Mappae clavicula*, and Vitruvius in the Middle Ages.

**PAROLE-CHIAVE:** Vitruvio, Ricettario, Colori, Artes mechanicae.

**KEYWORDS:** Vitruvius, Recipe Book, Colouring, Artes mechanicae.

## 1. Introduction

Medieval recipe books on art and architecture represent a peculiar way of transmitting knowledge that still puzzles scholars in many respects. The origins of how and when these collections were formed, the identity of their authors, and the intended addressees for the procedures described, are all still unresolved questions. The evolution of these collection is another fundamental issue, which involves the history of medieval recipe books. This paper will discuss the earliest Western examples of a broad tradition of recipe books in order to provide new clues as to their medieval development. These are the three recipe books known as *Mappae clavicula*, and the *Compositiones lucenses* with its medieval tradition and an abridgment that I have re-named *Editio minor*<sup>1</sup>.

The issue of the impact of such medieval written knowledge on artistic activities should be reassessed in light of Vitruvius and its appreciation in the Middle Ages. Whereas the Classical world had no concept of technology as it is known today, Vitruvius took the first step in a technological direction by describing “productive” activities in relation to architecture. It was in the midst of the Middle ages that the concept of *artes mechanicae* was born, finding its place in a new environment of ideas. This new notion of the mechanical arts, which first emerged from a comment by John Scotus Eriugena, was subsequently fleshed out by Hugh of St. Victor’s *Didascalion*, in which the seven mechanical arts are listed alongside the seven liberal arts. A century later, Vincent of Beauvais re-read this classification in his enormous encyclopaedia *Speculum Maius*, discussing the notion of *arte mechanicae* in connection with a new appreciation of Vitruvius and the role of architecture among the arts. However, the current debate seems to have underestimated that, in the Middle Ages, the treatise *De architectura* by Vitruvius represented the most important vehicle for the transmission of knowledge on mechanical and artistic activities, which include the above-mentioned recipe books. Indeed, the manuscript tradition of *De architectura*, which started in the Carolingian times, appears contextually relevant also for the history of *Compositiones lucenses*. There are at least two significant arguments in support of this claim. First of all, a preliminary codicological analysis seems to reveal that Vitruvius was bound with authors of mechanical works in a quarter of the medieval codices conveying the entire *De architectura* up to the 15<sup>th</sup> century (i.e. Vegetius, Faventinus, Palladius, Frontinus, Theophilus, *Mappae clavicula*, and *Compositiones lucenses*). Secondly, the short recipe book named *Editio minor* of the *Compositiones lucenses* tradition was transmitted exclusively after the transcription of *De architectura* since its earliest MS London, British Library, Harley 2767, 9<sup>th</sup> century (Brun 2105a).

As much as the study of medieval codices of Vitruvius in order to better understand how *De architectura* was received is far from trivial and deserves specific research, this paper aims to at least show the results of a study on the segment of the recipe book *Editio minor* copied after the Vitruvian treatise and its relationships to *Mappae clavicula* and the *Compositiones lucenses* tradition.

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<sup>1</sup> This paper will divulge some of the results from PhD research conducted by the author under the supervision of Prof. Alberto Grimoldi, whose expertise and generous guidance enable me to work on a topic that was of great interest to me. I also wish to thank Prof. Saverio Lomartire for his invaluable support, and Dr. Guido Frison for his suggestions and for being a constant source of motivation for me.



## 2. *Mappae clavicula*, *Compositiones lucenses*, and its abridgment

Early medieval written knowledge on artistic activities and productive prescriptions relies on two main nuclei inside a complex textual tradition transmitted to the early Middle Ages from the late Antiquity.

The first nucleus was registered by the MS Phillipps 3175 of the Corning Museum of Glass (12<sup>th</sup> century). It is a work of an alchemical nature known as *Mappae clavicula* (MC), which includes 200 titles for metallic makings, arranged by the seven metals. It is believed to be a 4<sup>th</sup> century translation in Latin from some Greek writings ascribed to the circle of Zosimus of Panopoli (3<sup>rd</sup>-4<sup>th</sup> centuries A.D.) (Halleux, Meyvaert 1987: 7-58; Baroni–Pizzigoni–Travaglio 2014). After the discovery and first transcription of the Corning MS by Sir Thomas Phillipps in 1847 (Phillipps 1847: 183-244) and the English translation in 1974 by Cyrill Smith and John Hawthorne (Smith–Hawthorne 1974: 1-128), the literature recognised the alchemical nucleus of *Mappae clavicula* in the first 95 recipes of the volume (Halleux, Meyvaert 1987: 7-58; Baroni–Pizzigoni–Travaglio 2014). Currently, at least 13 manuscripts and one *descriptus* of the Corning MS have conveyed large or small segments of the text, although each codex contains different arrangements<sup>2</sup>. The original contents of the collection, although it has not survived entirely, may be recognized in the index written in one of its oldest manuscripts - Sélestat, Bibliothèque Humaniste, 17, 10<sup>th</sup> century (Berthelot 1893; Halleux, Meyvaert 1987: 7-58). According to scholars, the comparison between the index in the Sélestat MS and the fragmentary restitutions given by all the manuscripts enables the texts constituting *Mappae clavicula* to be identified<sup>3</sup>.

The second nucleus consists of the recipe books known as *Compositiones lucenses* (CLT) and its later tradition (collectively re-named as the CLT), which is devoted to various handicrafts such as glass colourings, skin dyes, painting pigments, metal inks, parchment dyes, clays and mortars, and so on. Its first specimen is the well-known Lucca, Biblioteca Capitolare, MS 490 (8<sup>th</sup>-9<sup>th</sup> centuries), the first edition of which the recipe book was named after by Ludovico Antonio Muratori in 1739 (Muratori 1739, II: 365-392). Since then, the recipe book has been known to scholars as *Compositiones ad tingenda musiva*, *Compositiones variae*, or *Compositiones lucenses*. Currently, it is the most ancient Western manuscript containing a collection of texts on the operative aspect of art activities.

The entire codex was written in the *scriptorium* of Lucca under the guidance of the archbishop Johannes I between the 796 or 787-816 A.D., based on several chronological clues deducible from the text (Schiaparelli 1924: 4-7, 11). At least 40 different

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<sup>2</sup> The MSS of *Mappae clavicula* identified to this day are the following: GREAT BRITAIN: London, British Library, Add. 41486; Oxford, Bodleian Library, Bodley 679; Oxford, Bodleian Library, Digby 162; Oxford, Magdalen College, 173; Glasgow, University Library, Hunterian 110 (*descriptus* of the Corning MS). FRANCE: Sélestat, Bibliothèque Humaniste, 17; Paris, Bibliothèque National de France, lat. 7418; Paris, Bibliothèque National de France, lat. 6514; Paris, Bibliothèque National de France, lat. 6830F; Paris, Bibliothèque National de France, lat. 11212. SPAIN: Madrid, Biblioteca Nacional, 19. UNITED STATES OF AMERICA: Corning, Museum of Glass, Phillipps 3175. ITALY: Lucca, Biblioteca Capitolare, 490; Firenze, Biblioteca Nazionale Centrale, Pal. 951. Cf: Brun (2014: 201-217).

<sup>3</sup> According to recent studies that reconstructed the original text and created the first critical edition, the tradition of *Mappae clavicula* survived through two philological branches. Cf: Baroni–Pizzigoni–Travaglio (2014).

scribes cooperated to write in the whole codex and four of them were involved in the *Compositiones lucenses* transcription. Most of the literature has addressed the study of this recipe book by focusing mainly on the Lucca MS. Several excellent studies have been published, including critical editions (Hedfors 1932; Svennung 1941), surveys of the sources (Johnson 1935b; Johnson 1939), codicological speculations (Petrucci 1973: 159-175; Unfer Verre 2013: 49-63; Baroni 2013: 7-50), and technical and transmission analysis (Tolaini 2004).

What seems distinctive, however, is the fact that all of the 14 manuscripts of *Mappae clavicula* also convey segments of the *CL*, which leads some scholars to perceive the latter as an alternative version of the *Mappae clavicula* (Berthelot 1893a: 27-28; Johnson 1935c: 224; Svennung 1941: 10; Smith–Hawthorne 1974: 7-9; Clarke 2001; Clarke 2013). However, part of the literature shows the philological and historical autonomy of *Compositiones lucenses* from the alchemical nucleus (Halleux, Meyvaert 1987: 7-58; Tolaini 2004: 195-214; Baroni–Pizzigoni–Travaglio 2014). Moreover, recent studies stressed that the *Compositiones lucenses* in the Lucca MS is incomplete, fragmentary and disorderedly (Baroni 2013: 7-50; Brun 2015b: 51-55). Thus the editions by Hjalmar Hedfors, Rozelle Parker Johnson, and Josef Svennung should be revised as they mainly coped with the textual features of the Lucca MS as an example of corrupted Latin. By contrast, the study of *Compositiones lucenses* invites us to consider a greater number of MSS provided by the later medieval tradition of copies.

Indeed, at least until the 17<sup>th</sup> century, the *CLT* is attested to 23 manuscripts and two *descripti* of a Vatican MS<sup>4</sup>. Unlike *Mappae clavicula* – whose original text, or *Urtext* can be seen at least in the Sélestat index – the features of the *Compositiones lucenses* tradition have been subject to major reformulations in the consistency and ordering of each single text-unit. None of the manuscripts identified so far can give us the precise number of recipes that make up the recipe book. On the contrary, it can be argued that since ancient times the entire collection has been formed through additions and subtractions. To the best of our knowledge, the tradition combines the 164 text unities of the Lucca MS and many others given by each codex (probably up to 250 text unities). Thus, there would seem to be more than one compelling reason to argue that the manuscripts of the *CLT* have intercepted different arrangements of the same circulating literary records, with additions or subtractions of texts made by each scribe during the copying process.

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<sup>4</sup> The MSS of *CLT* identified so far are the following: GREAT BRITAIN: London, British Library, Harley 2767; London, British Library, Add. 41486; Oxford, Bodleian Library, Bodley 679; Oxford, Bodleian Library, Rawlinson D893; Oxford, Bodleian Library, Digby 162; Oxford, Magdalen College, 173; Glasgow, University Library, Hunterian 110 (*descriptus* of the Corning MS). FRANCE: Sélestat, Bibliothèque Humaniste, 17; Paris, Bibliothèque National de France, lat. 7418; Paris, Bibliothèque National de France, lat. 6514; Paris, Bibliothèque National de France, lat. 6830F; Paris, Bibliothèque National de France, lat. 11212. AUSTRIA: Klosterneuburg, Stiftsbibliothek, frag. s.n. VATICAN CITY: Città del Vaticano, Biblioteca Apostolica Vaticana, Reg. lat. 2079; Città del Vaticano, Biblioteca Apostolica Vaticana, Pal. lat. 1449. NETHERLANDS: Leiden, Rijksuniversiteit Bibliothek, VFL 88; Leiden, Rijksuniversiteit Bibliothek, VFC 33 (*descriptus* of the Vatican MS). SPAIN: Madrid, Real Biblioteca de Escorial, III.F.19; Madrid, Biblioteca Nacional, 19. UNITED STATES OF AMERICA: Corning, Museum of Glass, Phillipps 3175; New York, Metropolitan Museum of Art, Dept. of Prints, Pl.1. ITALY: Lucca, Biblioteca Capitolare, 490; Firenze, Biblioteca Medicea Laurenziana, Pl. XXX.10; Firenze, Biblioteca Nazionale Centrale, Pal. 951; Siena, Biblioteca degli Intronati, C.V.24 (*descriptus* of the Vatican MS). Cf Brun 2015a: 257-279.



The only stable arrangement of the *Compositiones lucenses* tradition is an abridgement that the undersigned named *Editio minor* (Brun 2015a). It forms a segment of 26 short texts mostly also copied in the MSS of the *CLT*. Nevertheless, this version was only circulated in six manuscripts and systematically copied after the transcription of the ten books of *De architectura* by the Roman author Vitruvius (see Table 1).

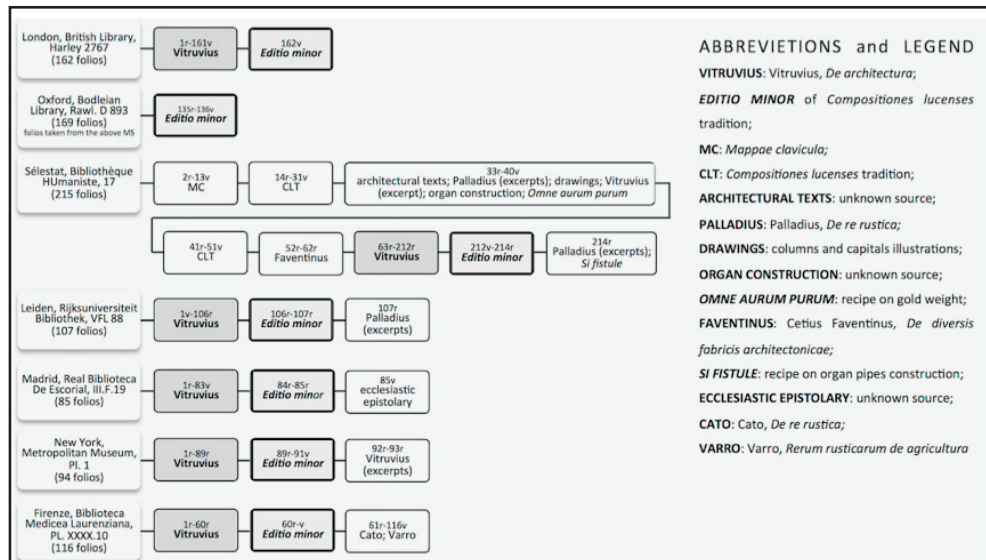


TABLE 1. Contents and structure of Vitruvian manuscripts with *Editio minor* (EM)

### 3. The evolution of textual accumulations from codicological evidence

The agglutinating tendency of these three examples is evident when we consider their development from the standpoint of the survived MSS. The results from the analysis of the MSS's contents combined with the historical data given by the codices enable us to summarise the evolution of the connection and circulation of these recipe books into eight main landmarks. The number of text-unities likely to be able to be assigned to the *CLT* is provided to show the wide consistency in the 25 MSS of the recipe book (see Table 2). Thus, the evolution of this wide textual tradition, which combines *Mappae clavicula*, *Compositiones lucenses* tradition, and *Editio minor*, may be detailed as follows:

- (1) 8<sup>th</sup>-9<sup>th</sup> century: the earliest testimony of *Compositiones lucenses* was written in Lucca, covering a wide range of operations [Lu: Lucca, Biblioteca Capitolare, 490];
- (2) 9<sup>th</sup> century: the collection gained its first additions, which are more clearly represented in some successive copies [K: Klosterneuburg, Stiftsbibliothek, Fragm. s.n.]. A recipe from *CLT* was annotated in the front flyleaf of a computation codex written in Lorsch [Vp: Città del Vaticano, Biblioteca Apostolica Vaticana, Pal. lat. 1449];
- (3) a. 10<sup>th</sup> century: the abridged version *Editio minor* of the *Compositiones lucenses* tradition began to be copied together with Vitruvius' *De architectura* [H: London, British Library, Harley 2767; Or: Oxford, Bodleian Library, Rawlinson D893; S: Sélestat, Bibliothèque Humaniste, 17; Ll: Leiden, Rijksuniversiteit Bibliotheek, VFL 88; E: Madrid, Real Biblioteca de Escorial, III.F.19];
- (3) b. 10<sup>th</sup> century: the *Compositiones lucenses* tradition was connected to *Mappae clavicula*. New recipes and even excerpts from Palladius' *De re rustica* were added [S: Sélestat, Bibliothèque Humaniste, 17];
- (4) 12<sup>th</sup> century: further recipes were inserted into the *Compositiones lucenses* tradition [V: Città del Vaticano, Biblioteca Apostolica Vaticana, Reg. lat. 2079]. A short recipe book called *De coloribus*

*et mixtionibus*<sup>5</sup> was transcribed just before the nucleus *Mappae clavicula*–*Compositiones lucenses* tradition [C: Corning, Museum of Glass, Phillipps 3175]. At the same time, the collection was circulated within a *florilegium* [M: Madrid, Biblioteca Nacional, 19];

- (5) 13<sup>th</sup> century: the *Compositiones lucenses* tradition showed a series of new magmatic propositions as scribes seemed to start to fragmentarily draw textual material from both recipe books into new arrangements [L: London, British Library, Add. 41486; Ob: Oxford, Bodleian Library, Bodley 679; Od: Oxford, Bodleian Library, Digby 162; Pb: Paris, Bibliothèque National de France, lat. 6830F; Pc: Paris, Bibliothèque National de France, lat. 11212]. A new MS of the above-mentioned *florilegium* was copied [P: Paris, Bibliothèque National de France, lat. 7418];
- (6) 14<sup>th</sup> century: the tradition still included few additions, even though the general number of recipes copied consistently decreased [Om: Oxford, Magdalen College, 173; Pa: Paris, Bibliothèque National de France, lat. 6514; Fp: Firenze, Biblioteca Nazionale Centrale, Pal. 951]. A direct copy was made from the Corning MS [G: Glasgow, University Library, Hunterian 110].
- (7) 14<sup>th</sup>-15<sup>th</sup> century: the tradition of *Editio minor* led to two more Vitruvian MSS [N: New York, Metropolitan Museum of Art, Dept. of Prints, Pl.1; F: Firenze, Biblioteca Medicea Laurenziana, Pl. XXX.10];
- (8) 17<sup>th</sup> century: two *descripti* were copied from the Vatican MS [Lc: Leiden, Rijksuniversiteit Bibliothek, VFC 33; Si: Siena, Biblioteca degli Intronati, C.V.24].

8th c.	Lu: 164 items
9th c.	K: 30 items Vp: 1 item
10th c.	<b>H: 1 item Or: 20 items</b> <b>S: 21 items E: 21 items</b> S: 219 items <b>Li: 21 items</b>
12th c.	V: 208 items C: 249 items M: 16 items
13th c.	L: 176 items Ob: 123 items Od: 126 items P: 81 items Pb: 8 items Pc: 8 items
14th c.	Om: 14 items Pa: 4 items Fp: 73 items <i>G: 174 items</i>
14th-15th c.	<b>N: 21 items</b> <b>F: 21 items</b>
17th c.	<i>Lc: 182 items</i> <i>Si: 23 items</i>

TABLE 2. Items of the *CLT* within the 25 MSS divided per century [*Editio minor*'s MSS in bold; *descripti* in italics]

As a consequence of these developments, it may be convincingly argued that, although constituted separately and differently, *Mappae clavicula* and the *Compositiones lucenses* tradition can be used as good examples of the capacity of medieval recipe books to attract a consistent number of further recipes, within their *consecutio* and between or after the transcription of the two collections. Moreover, the *Compositiones lucenses* tradition itself is a key example of how these texts have been formed throughout the stratifications of textual material over the course of time. However, the present analysis can only highlight a few preliminary considerations about the mechanisms that occurred during the copying process. The evolution of this recipe book and the variability in its contents can

<sup>5</sup> *De coloribus et mixtionibus* is a short recipe book for illuminators that began to be circulated in the 12<sup>th</sup> century with the *Compositiones lucenses* tradition in the Corning MS, within which it constitutes the first twelve texts (ff. 1r-4r). This recipe book was thoroughly studied by Andreas Petzold, who definitively resolves the issue on its autonomy, which was once raised by Daniel V. Thompson. Cf. Phillipps (1847: 7-9); Thompson (1933: 66, n. 14); Petzold (1995: 59-65).

only be explored from a macro-level as the number of recipes that ought to be compared in these collections is too large (about 2000 text-unities considering in all of the 25 MSS of the *Compositiones lucenses* tradition).

#### 4. The *Editio minor* of *Compositiones lucenses* tradition and its relationship with Vitruvius

The *Editio minor* started to circulate as an addition to *De architectura* from the 10<sup>th</sup> Century up to the 15<sup>th</sup> century<sup>6</sup>. Despite the first publication of the sequence in 1899 by Valentin Rose, who recognised this *Appendicula codicum Vitruvii Harleiani Leidensis (Escoralensis) Scletstatensis* as a sequence of texts from other sources transcribed after Vitruvius<sup>7</sup>, a connection with the texts of *Compositiones lucenses* tradition was not established until 1941, when Svennung discovered a correspondence with some texts of the Lucca MS (Svennung 1941: 9).

Each manuscript of the *Editio minor* contains almost the same number of texts, evenly ordered. The *Editio minor* is a compound of twenty-six recipes related to measurements, glass, pigments, alloys, and glues (see Table 3). Four manuscripts have a double *explicit* formula (*Specierum et ponderum...; Compo voti factus sum...*), while only two have a single formula (*Specierum et ponderum...*). Three manuscripts include an additional text about a medical treatment (*Confectio dialtea calisticum. Receipt haec*). The series is often concluded by some excerpts from Palladius' *De re rustica*.

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<sup>6</sup> All the Vitruvian MSS with *Editio minor* come from the *α* branch, as shown by the *stemma codicum* of *De architectura*. According to scholars, Leiden and El Escorial come directly from the Harleianus, although not *descripti*. Unlike Harley, Sélestat takes its text from a precedent archetype, although at least three recognised manuscripts intercepted the tradition. With regards to the text of *Editio minor* the entire tradition may be divided into two families – each of those formed by three manuscripts – and a contamination occurred with a lost branch of the tradition that left visible traces in a testimony. For the *stemma codicum* of Vitruvius, *De architectura*: cf. Chausserie-Lapree (1969: 347-377). For the *stemma codicum* of *Editio minor*, see Brun (2015a: 113-156).

<sup>7</sup> For instance, Rose (1899: xx-xxv) identified the first rubric as an «excerptum est ex initio fragmenti notissimi *De mensura caerae et metalli in operibus fusilibus* (quod extat etiam in cod. Scletst, f. 38)», the segment on the weight and measurement of liquids as related to other similar texts, and the medical recipe as a prescription that might be attributed to the circle of *Antidotarius Salernitanus*.

<b><i>Editio minor of Compositiones lucenses</i></b>	<b>Subject</b>
De fusuris	Metal castings
De ponderibus	Measurements of weights
De liquidis	Measurements of liquids
Confectio dialtea calisticum recipit haec	Medical recipe
Tinctio vitri prasini	Glass colouring
Alia tinctio	Glass colouring
Alia lactis coloris	Glass colouring
Tinctio sanguinea	Glass colouring
Tinctio robea	Glass colouring
Tinctio alithini absque igne tinctum	Glass colouring
Crisocolon	Gold alloy
Aliud crisocolon	Gold alloy
Crisocolon	Silver alloy
Argenti gluten	Silver alloy
Alia argenti gluten	Silver alloy
Heramenti gluten	Copper alloy
Stagni gluten	Tin alloy
Petre gluten	Glue for stone
Petre gluten	Glue for stone
Ligna autem glutat	Glue for woods
Compositio brondisino	Bronze making
Compositio cinnabarin	Cinnabar making
Lulax id est indico compositio	Azure making
Confectio eius hec est	Azure making
Specierum et ponderum [...]	Explicit
<b>θεου Δοξιας Compos voti [...]</b>	Explicit

TABLE 3. Contents of the *Editio minor* of the *CLT*

The earliest manuscript of Vitruvius (H: London, British Library, Harley 2767), dated by scholars at between 779 A.D. to the second half of the 9<sup>th</sup> century, contains only one recipe from the *Editio minor* on folio 162v at the end of *De architectura*'s transcription (Schuler 1999: 347). The *Editio minor* text – *Uncia caerae* (or *De fusuris*) – was not written in the context of the *De architectura*; another *scriptor* wrote this passage using a Caroline minuscule, most likely around the 10<sup>th</sup> century. The last gathering containing the excerpt from the *Editio minor* is incomplete. The segment that originally concluded the H manuscript has been recognised by Bernard Bischoff in two folios of a composite manuscript – or: Oxford, Bodleian Library, Rawlinson D893 (Bischoff 1942: 50). The codex is made up of heterogeneous works dated between the 8<sup>th</sup> and 17<sup>th</sup> centuries and collected by P. Le Neve and T. Rawlinson. It contains at ff. 135-136 a «collection of recipes connected with making of colours and spices, of about the end of the tenth century» (Macray 1898: 75-87).

Three other manuscripts were compiled in the 10<sup>th</sup> century. One manuscript is now held at the El Escorial Library, but was probably drafted down in Soissons in the Benedictine Monastery of S. Sebastian and St. Medard – E: Madrid, Real Biblioteca De Escorial, III.F.19 (Schuler 1999: 350). Another manuscript is a German volume, compiled according to scholars between 1044 and 1098 A.D. at the Hildesheim *scriptorium*, and now in Leiden University Library – Ll: Leiden, Rijksuniversiteit Bibliothek, VFL 88 (Schuler 1999: 351). The third manuscript is the Sélestat MS, which the literature suggests was probably compiled at the *scriptorium* of St. Gallen – S: Sélestat, Bibliothèque Humaniste, 17 (Schuler 1999: 354).



The latest manuscripts of the *Editio minor* are dated to the 14<sup>th</sup> and to the 15<sup>th</sup> century: a French manuscript in the Biblioteca Mediceo Laurenziana in Florence, the former property of Francesco Sassetti and the Medici family – F: Firenze, Biblioteca Medicea Laurenziana, PL. XXX.10 (Krinsky 1967: 54), and an Italian codex now held in the Metropolitan Museum of New York – N: New York, Metropolitan Museum Of Art, Dept. of Prints, Pl.1 (Schuler 1999: 375).

## 5. The *Editio minor* as an ancient abridgment from CLT

It seems difficult to determine whether *Editio minor* constitutes an excerpt borrowed from the overall tradition of the *Compositiones lucenses* or represents an antecedent phase that will later develop into a wider collection through further additions. In fact, almost every recipe from the *Editio minor* features in the contents of the *Compositiones lucenses* (see Table 4). Nevertheless, excerpts appear to be the most plausible option, as corroborated by at least three examples, analysed below<sup>8</sup>.

<i>Editio minor</i> of <i>Compositiones lucenses</i>	Copied text in the 6 MSS of EM	CLT MSS	Other MSS
De fusuris	H/Or; S. U. E. N. F	S. f. 40r	P1: ff. 1r-1v   M1: ff. 138r-139v   A: ff. 47v, 76v   M2: f. 96v
De ponderibus	H/Or; S. U. E. N. F		P2: f. 108r   O: f. 2vb   V1: ff. 174vc-175ra
De liquidis	H/Or; S. U. E. N. F		P2: f. 108r   O: 17, f. 2vb
Confectio dialteea calisticum recipit haec	H/Or; U. E		
Tinctio vitri prasinii	H/Or; S. U. E. N. F	L: f. 93v   S: f. 45v   P: f. 276vb   V: f. 76r   C: f. 34v   Lu: f. 217r   Fp: f. 13r	
Alia tinctio	H/Or; S. U. E. N. F	L: f. 93v   S: f. 45v   P: f. 277ra   V: f. 76r   C: f. 34v   Lu: f. 217r   Fp: f. 13r	
Alia lactis colonis	H/Or; S. U. E. N. F	L: f. 93v   S: f. 45v   P: f. 277ra   V: f. 76r   C: f. 34v   Lu: f. 217r   Fp: f. 13r	
Tinctio sanguinea	H/Or; S. U. E. N. F	L: f. 93v   S: f. 45v   P: f. 277ra   V: f. 76r   C: f. 34v   Lu: f. 217r   Fp: f. 13r	
Tinctio robea	H/Or; S. U. E. N. F	L: f. 93v   S: f. 45v   P: f. 277ra   V: f. 76r   C: f. 34v   Lu: f. 217r   Fp: f. 13r	
Tinctio althini absque igne tinctum	H/Or; S. U. E. N. F	L: f. 94r   S: f. 45v   V: f. 76r   C: f. 34v   Lu: f. 217r   Fp: f. 13r	
Crisocolon	H/Or; S. U. E. N. F	L: f. 77v   Od: f. 20vb   S: f. 17v   P: f. 275rb   V: f. 79v   C: f. 27v   Lu: f. 226v   Fp: f. 15v	
Aliud crisocolon	H/Or; S. U. E. N. F	L: f. 77v   S: f. 17v   P: f. 275rb   V: f. 79v   C: f. 27v   Lu: f. 226v   Fp: f. 15v	
Crisocolon	H/Or; S. U. E. N. F	L: f. 77v   S: f. 17v   P: f. 275rb   V: f. 79v   C: f. 27v   Lu: f. 226v	
Argentii gluten	H/Or; S. U. E. N. F	S: f. 17v   V: f. 79v   C: f. 28r   Lu: f. 226v	
Alia argenti gluten	H/Or; S. U. E. N. F	L: f. 77v   S: f. 17v   V: f. 80r   C: f. 28r   Lu: f. 226v	
Herementi gluten	H/Or; S. U. E. N. F	L: f. 77v   Od: f. 20vb   S: f. 17v   V: f. 80r   C: f. 28r   Lu: f. 227r	
Stagni gluten	H/Or; S. U. E. N. F	S: f. 17v   V: f. 80r   Lu: f. 227r	
Petre gluten	H/Or; S. U. E. N. F	S: f. 18r   P: f. 275rb   V: f. 80r   Lu: f. 227r   Fp: f. 14v	
Petre gluten	H/Or; S. U. E. N. F	S: f. 18r   P: f. 275rb   V: f. 80r   Lu: f. 227r   Fp: f. 14v	
Ligna autem glutat	H/Or; S. U. E. N. F	S: f. 18r   P: f. 275rb   V: f. 80r   C: f. 28r   Lu: f. 227r   Fp: f. 15r	
Compositio brondisino	H/Or; S. U. E. N. F	L: f. 81v   S: f. 24r   K: f. 2v   V: f. 82v   C: f. 48r   Lu: f. 229r	
Compositio cinnabarin	H/Or; S. U. E. N. F	S: f. 24r   P: f. 277ra   K: f. 2v   V: f. 82v   Lu: f. 229r   Fp: f. 13r	
Lulax id est indico compositio	H/Or; S. U. E. N. F	L: f. 81v   S: f. 24v   P: f. 277ra   K: f. 2v   V: f. 82v   C: f. 48r   Lu: f. 229v   Fp: f. 13v	
Confectio eius hec est	H/Or; S. U. E. N. F	S: f. 24v   P: f. 277rb   K: f. 2v   V: f. 83r   C: f. 48r   Lu: f. 229v	
Specierum et ponderum [...]	H/Or; S. U. E. N. F		
θεου Δοξιας Compos voti [...]	H/Or; S. N. F		

**Key** Lu: Lucca, Biblioteca Capitolare, 490 (9th c.) || V1: Vatican City, BAV, Reg. lat. 1260 (9th c.) || K: Klosterneuburg, Stiftsbibliothek, Fragm. s.n. (9th c.) || P2: Paris, Bibliothèque Nationale de France, lat. 2772 (9th c.) || S: Sélestat, Bibliothèque humaniste, 17 (10th c.) || P1: Paris, Bibliothèque Nationale de France, lat. 11292 (10th c.) || M1: Munich, Bayerische Staatsbibliothek, Cim 14836 (11th c.) || M2: Malibu, Getty Museum, Ludwig XII.5 (12th c.) || A: Avranches, Bibliothèque Municipale, 235 (12<sup>th</sup> c.) || C: Corning, Museum of glass, Phillips 3175 (12<sup>th</sup> c.) || V: Città del Vaticano, Biblioteca Apostolica Vaticana, Reg. lat. 2079 (12th c.) || OJ: Oxford, St. John's College, 17 (12th c.) || L: London, British library, Add. 41486 (13th c.) || Od: Oxford, Bodleian library, Digby 162 (13th c.) || P: Paris, Bibliothèque nationale de France, lat. 7418 (13th-14th c.) || Fp: Firenze, Biblioteca Nazionale Centrale, Pal. 951 (14th-15th c.).

TABLE 4. Comparison of the texts of the *Editio minor* and other MSS

In the first case, the recipe *De fusuris* was also copied into some manuscripts from the *CLT* and other codices unrelated to the recipe book. The comparison below reveals that the arrangement in the *Editio minor* is just a small section exclusively on copper, whereas other traditions show a more extensive procedure involving several metal castings (see Table 5)<sup>9</sup>.

<sup>8</sup> Text from *Editio minor* are taken from the critical edition proposed by the author, who also transcribed directly from Lucca and Sélestat MSS. For the critical edition of *Editio minor*: Brun (2015a: 129-139).

<sup>9</sup> A similar text to the Sélestat MS is provided also by two copies of the Vitruvian abridgment *De diversis fabricis architectonicae* written by Cetius Faventinus. These two MSS (Avranches, Bibliothèque

<p>Editio minor</p> <p>De fusuris. Uncia cerae colligit in fusura <u>aeris uncias VIII et denarios XVI</u> aeris cypri <u>uncias VIII et denarium I</u>. Stagni <u>uncias VII et denarios XVII</u>. <u>Argenti uncias X et denarios XII</u>. <u>Plumbi libram I et denarios VI</u>. <u>Auri libram et uncias VII et denarios VIII</u>.</p>	<p>Sélestat MS, f. 40r</p> <p>[C]aerae pondus respondere debet. <u>Ad caerae unciam unam stagni ÷ VII et denarios XVII</u>. <u>Aeris albi ÷ VIII et denarios XVI</u>. <u>Eris cypri ÷ VIII et denarios III</u>. <u>Argenti ÷ X et denarios XII</u>. <u>Plumbi ÷ I et denarios VI</u>. <u>Auri ÷ XVIII et denarios VIII</u>. Item si caerae fuerit libra Stagni VII libras et ÷ X et denarios IIII mittendis sunt quia sot ÷ caera habuerit tot VII uncias et X et VIII denarios. Stagni pondus habere debet. Et ideo si caerae fuerit libra idem XII uncias duodecies VII ÷. Stagni quae faciunt VII libras et duo decies XVIII denarios mittendis sunt qui faciunt CC IIII denarios idem ÷ X et denarios IIII. Si fuerit caerae libra eris albi libras VIII sumendae sunt et quo decies XVI denarii quod sunt C XC II denarios qui faciunt ÷ VIII et denarios XII. In libram caerae eris cypri libras VIII et denarios XII mittendis sunt. Sic in libram caerae auricalci libras VIII et duo decies III denarii qui faciunt ÷ I et denarios XVI. Contra libram caerae argenti libras X et duodecies XII denarii. Simili modo in libram caerae plumbi libras XII et duodecies VI denarii mittendi sunt. In auri fusione contra libram caerae auri lib. XVIII et duo decies VIII denarii qui faciunt ÷ III et denarii XIII.</p>
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TABLE 5: *De fusuris*

The second case concerns a sequence of glass colourings that can be seen in many manuscripts from the *CLT*. The *Editio minor* lists six items with different colours – two greens, one whitish, and three reds. On the other hand, the transcription in the *CLT* also includes a yellow colour and another red that seem to complete the overall series (see Table 6). Indeed, accumulations of recipes were common in texts such recipe books, which were subjected to those forms of agglomerations on the basis of thematic affinity. However, the fact that these recipes include other hues should alert us to the possibility that the compiler of the *Editio minor* may simply have not copied them.

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Municipale, 235; Malibu, Getty Museum, Ludwig XII.5) pertain to an interpolated version of Faventinus' abridgment circulated between the 12th and the 13th century. Cf. Cam–Jacquemard (2002: 167).



<p><i>Editio minor</i></p> <p>Tinctio vitri prasini. Tere vitrum bene, limas aeramen mundum et mittes in libra de vitro aeramen ÷ iii et coques per dies tres.</p> <p>Alia tinctio. Teres vitrum bene, mittes per libram aeramen uncias ii, alumen aegyptia ÷ i et decoques per dies tres.</p> <p>Alia lactis coloris. In libra mittes stagnum ÷ iii et decoques per dies ii.</p> <p>Tinctio sanguinea. In libra mittes cinnabarin ÷ iii et decoques dies duo.</p> <p>Tinctio robea. In libra vitri triti psimithin ÷ ii et coques dies sex.</p> <p>Tinctio alithini absque igne tinctum. Ungues subtiles vitria et ungues dracontea anamemigmenis et fiet sicut robea</p>	<p>Lucca MS (f. 217r)</p> <p>XX De tinctio vitri prasini. Tinctio vitri prasini. Tere vitrum bene. Limas heramen mundum et mittes in libras de bitrum heramen ÷ III et coques per dies III.</p> <p>Alia tinctio. Teres bitrum bene. Mitte per lib. heramen ÷ I, alumen hegiptiu ÷ I et quoques per dies III.</p> <p>XXI De alia lactis colris. Alia lactis coloris. In lib. mittes stagnum ÷ III et quoques per dies II.</p> <p>De tinctio sanguinea. Tinctio sanguinea. In lib. mittis cinnabarin ÷ III et quoques per dies II.</p> <p>De tinctio rubea. Tinctio rubea. In lib. vitris trita psimitin ÷ II et quoques per dies II.</p> <p>De tinctio alithini. Tinctio alithini absque ignem. Tinctum ungues subtiles vitria et ungues dracontea aname migeum et fiet sicut rubea.</p> <p>De minus tincta melini color. Minus tincta melini coloris. In lib. theapsis tere ÷ II et quoques dies III. Rubeum. In lib. calcu cecaumenum ÷ II.</p>
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TABLE 6: The section of glass colouring

The last example concerns recipes for pigments. The *Editio minor* has three text unities: *Compositio cinnabarin*, *Lulax id est indico compositio*, and *Confectio eius hec est*. Most testimonies of the *Compositiones lucenses* tradition provide a different arrangement with a very similar sequence: *De compositio cinabarim*; *De iarim, quomodo debeat facere*; *De lulax*; *Confectio eius hec est*; *De confectio ficarim*<sup>10</sup>. The texts visibly match but on first glance reveal some discrepancies. Firstly, there are no instructions in the *Editio minor* to make verdigris (*iarin*), a fundamental ingredient for making azure that only the *Compositiones lucenses* tradition lists just before the recipe that would have used it (*Lulax id est indico compositio*)<sup>11</sup>. Secondly, there is no mention in the *Editio minor* of a kermes preparation, although it could have conceptually completed the sequence, even though this would have been the only pigment within mineral preparations made with an animal ingredient.

<sup>10</sup> Titles here are from the Lucca MS.

<sup>11</sup> «De iarim quomodo debeat facere. Quomodo debeat iarim facere tolles lamnas eramenti et derade bene et suspende super acetum et collectionem quam facit rades et collige». From the Lucca MS, f. 229v.

<i>Editio minor</i>	Lucca MS (f. 229v)
Confectio eius hec est. Tolles urina munda libram I et ipso dispumatam et commixtum cum ipsas species.	<u>Confectio eius hec est. Hurinam mundam lib. I requiescere et ipsum dispumata et commisce cum ipsas species</u> et teres diutius et si est caccabus ferres si non in testeo mittis et decoques. Signum coctionis donec veniat ad III partem et tolle gypsum coctum bene pisatu mittis dimid. ÷ et tolle coctionem. Commisce gypsum et defrica diutius et mittis in vaso et ponis ad solem et dum extrinxerit frangi spetia et ponis illa siccare.

TABLE 7: *Confectio eius hec est*

The third divergence concerns the recipe *Confectio eius hec est*, which in the *Editio minor* seems unfinished, that is it has not been entirely copied (see Table 7). The shortness and incompleteness of the procedure therefore makes it difficult to interpret. These features seem to substantiate the claim that the *Editio minor* may have been a sequence of excerpts borrowed from the wider tradition. There would not be any other reason to compile such a clearly incomplete short note, which makes it impossible both to produce a pigment and to understand the purpose of the text.

## 6. Conclusions

This study attempted to determine how *Mappae clavicula*, the *Compositiones lucenses* tradition, and the *Editio minor* might contribute in a critical way to understandings about the transmission over the centuries of knowledge of handicrafts. There is overwhelming evidence corroborating the wide diffusion of written traditions, enriched by cultural products from the society that produced and copied them. On the one hand, new evidence enables us to convincingly argue that Vitruvius represented one of the most important vehicles for the transmission of such written knowledge on artistic activities in the Middle Ages. On the other hand, the *Compositiones lucenses* tradition itself emerged as the earliest Western example of a recipe book on the arts and the first case of writings of a pre-technological nature after Vitruvius. The extensiveness of its subjects, the length of the recipes transcribed and the complex mechanisms for textual transmissions make this recipe book the largest literary source of the history of ancient and medieval artistic production. Its study, together with a new assessment of the medieval reception of Vitruvius, offers a different reading on the role of large segments of written knowledge on art in *scriptoria*, workshops and among artists.

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