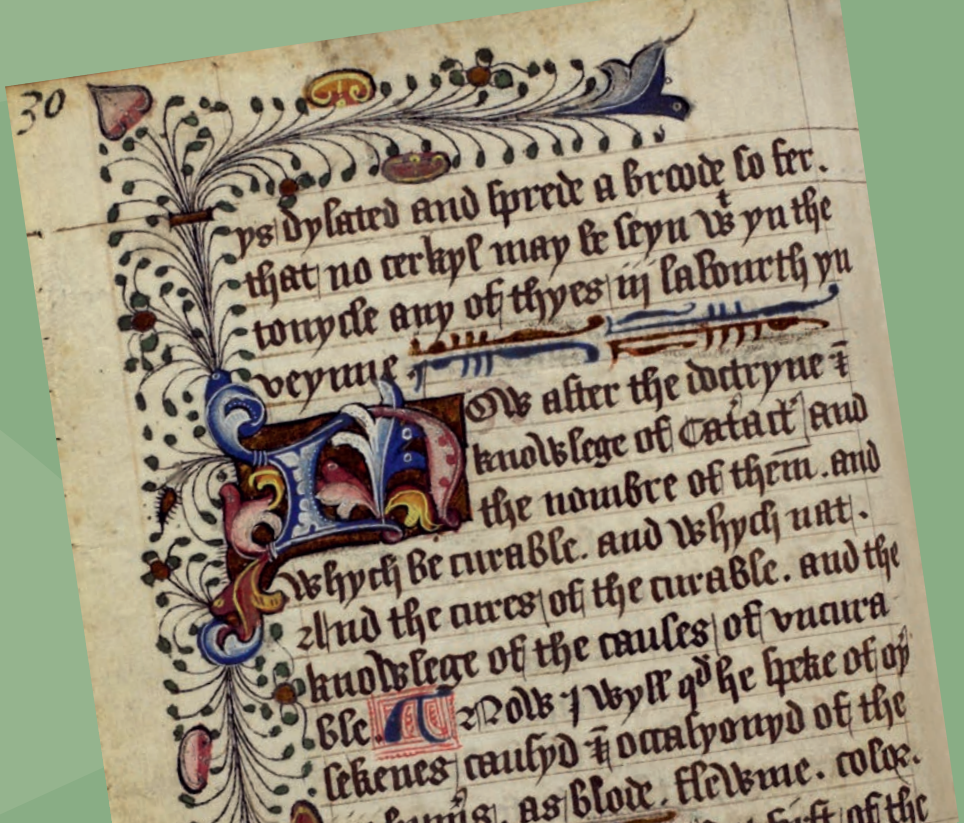
Late Middle English Texts

Antonio Miranda-García
Santiago González Fernández-Corugedo

Benvenutus Grassus' On the well-proven art of the eye

Practica oculorum &
De probatissima arte oculorum

Synoptic Edition and Philological Studies



Peter Lang

This book contains the extant tradition of Benvenutus Grassus' *Treatise on the eye* and six philological related studies. The tradition in Latin (Metz, Bibliothèques-Médiatèques, MS 176) is displayed with the four known versions in Middle English (Glasgow, Glasgow University Library, Hunter MSS 503 and 513); London, British Library, Sloane MS 661, and Oxford, Bodleian Library, Ashmole MS 1468) along with one in Provençal (Basel, Öffentliche Bibliothek der Universität, MS D.II.11). The diplomatic transcriptions of the manuscripts are synoptically arranged to ease the researchers' consultation and comparison. The philological studies deal with the versions of the Latin tradition and with the common and diverging features of the English vernacular tradition, mainly in the Hunter MSS. Both the synoptic edition and the philological studies are the result of a collaborative edition and joint research on Hunter MSS providing a state-of-the-art approach to the treatises.

Antonio Miranda-García is Reader of English Philology at the University of Málaga. He is the leading researcher of a project for the electronic edition and compilation of an annotated corpus of late Middle English scientific prose, and is currently developing an automatic POS-tagger of Middle English texts. He has also a research interest in Authorship Attribution.

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PETER LANG
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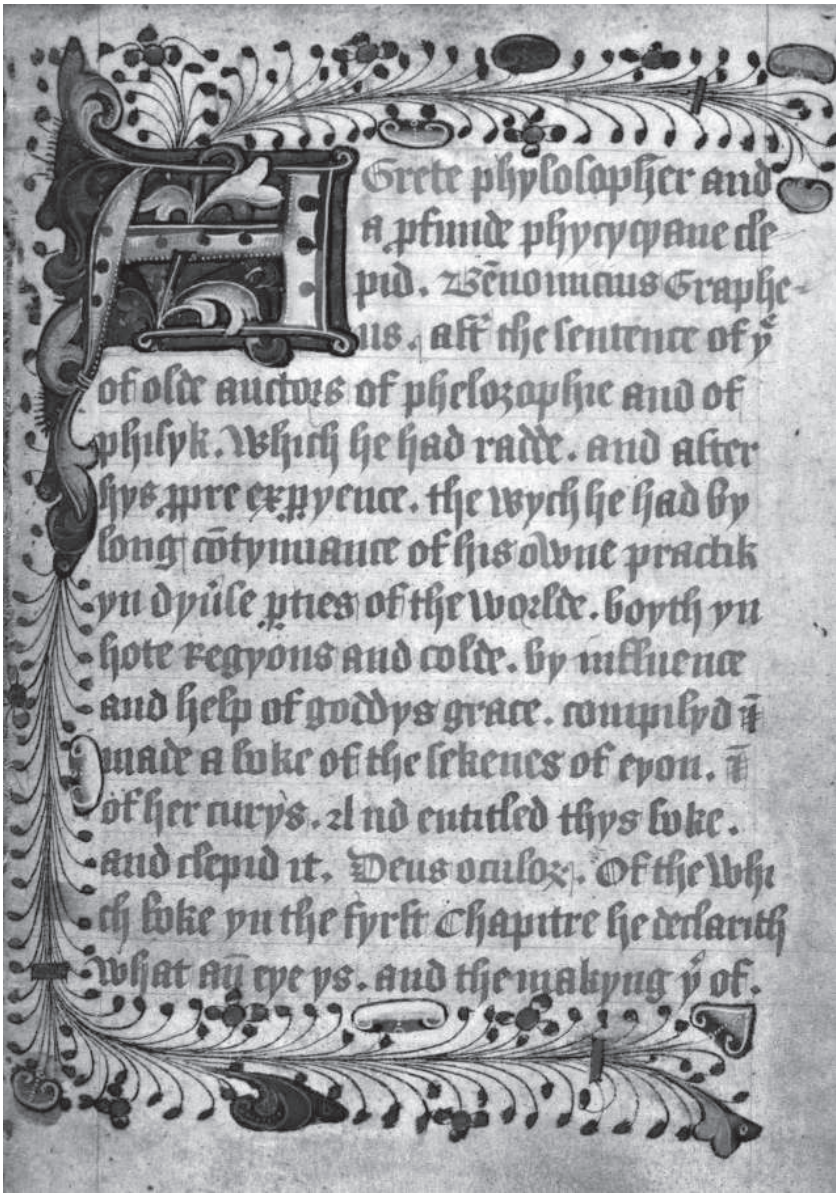

Glasgow, Glasgow University Library, Hunter MS 503 (V.8.6), p. 1

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Santiago González

Prologue

The inaugural book in this series, *Benvenutus Grassus' On the well-proven art of the eye (*Practica oculorum & De probatissima arte oculorum*)*, is a comprehensive study and edition of a Late Middle English medical treatise on Ophthalmology whose Latin or Provençal origins are attributed to Benvenutus Grassus (a "composite author" who may be placed in the late 13th century), and whose catalogue titles have a certain variation (Marqués/Miranda/González 2008).

That is why we have decided, after long discussions (not necessarily fruitful most of the times), to settle with a comprehensive (and long) title such as *On the well-proven art of the eye*, rendering the Latin *Practica oculorum* and *De probatissima arte oculorum* into the modern English vernacular. The importance of the Late Middle English Grassus's works for the history of medicine is well known, as it was one of the most widely used scientific texts in the period between the 14th and the 16th centuries. It is also a significant group of texts for the study of Late Middle English scientific prose (Taavitsainen/Pahta 2004).

We have indeed chosen the Hunterian collection manuscripts numbered 503 and 513 (as David Moreno explains in his Foreword to the synoptic edition) because Laurence Eldredge has documented in his thorough review and study of the Grassus MSS sources, together with the University of Glasgow's accesibility to its library collections and remarkable digitizing facilities, which already resulted in the previous edition of MS Hunter 513 (Marqués/Miranda/González 2008). We truly acknowledge the spirit of the University of Glasgow's staff and curators as, in quite a different mood and mode from other rather narrow-minded Anglo-Saxon examples, but much in line with the opinion of other Scottish institutions, wish to preserve the legacy of their cultural

artifacts by facilitating access to their singular collections without overcharge and with a free spirit.

The reasons why we have centred on these Late Middle English versions of Grassus's treatises are justified and expounded in the Foreword, and then by the very nature of the specific studies on the palaeography of both manuscripts by Javier Calle and punctuation by Teresa Marqués, Antonio Miranda's quantitative scrutiny of the morphology and lexicon, Alejandro Alcaraz's textual analyses, and then further by Laura Esteban's panorama of the MSS's relatives and negation.

The book as a whole is a tentative answer to a still ongoing problem posed (among others) by A. Houseman back in 1921:

> There is no science in which it is more necessary to take precautions against error arising from internal causes. Those who follow the physical sciences enjoy the great advantage that they can constantly bring their opinions to the test of fact, and verify or falsify their theories by experiment. Our conclusions regarding the truth or falsehood of a manuscript reading can never be confirmed or corrected by an equally decisive test, for the only equally decisive test would be the production of the author's autograph. It is therefore a matter of common prudence and common decency that we should neglect no safeguard lying within our reach; that we should look sharp after ourselves; that we should narrowly scrutinise our own proceedings and rigorously analyse our springs of action.

Since the advenement of the personal computer in the 1980's, the possibility of accessing networks via hypertextual interfaces in the 1990's and the extensive and almost universal access to the Internet in the first decade of the 21st century – all in less than 30 years – the changes in Textual Criticism, Textual Analysis, Ecdotics and what one is still tempted to call Philology, have also been revolutionary inasmuch as technological approaches are concerned. But I dare say not that much in what Houseman called "common prudence and common decency". What we have acquired is the possibility of reproducing (virtually) with extreme accuracy, comfort, and economy all the artifacts of times past, because, among other machines, digital photography today is only hindered (in the case of manuscripts and similar items) by their curators' zeal and the protectionist (even mercantile) regulations of

many traditionally-minded repositories, libraries, archives and other seats of learning. The expensive and elitist late 19th century facsimiles, either photographic or otherwise, have been completely superseded by today's electronic editions in their various filing formats, although their former price is comparatively similar to fees charged today by different institutions, which also turn access to such items a comparatively expensive luxury for the select minority of acquisition officers of University and Reseach Institutions Libraries.

As to the nature and contents of digital and electronic editions in 2010, one wonders what the Modern Languages Association Committee for Scholarly editions would say today of the previous Committee's recommendations of 1976:

> Whatever additional materials are included, however, the CSE considers the following essential for a scholarly edition:
> 1. A textual essay, which sets forth the history of the text and its physical forms, describes or reports the authoritative or significant texts, explains how the text of the edition has been constructed or represented, gives the rationale for all decisions affecting its construction or representation, and discusses the verbal composition of the text as well as its punctuation, capitalization, and spelling.
> 2. An appropriate textual apparatus or notes or both, which (1) records alterations and emendations in the basic text(s), (2) discusses problematical readings (if not treated in the textual essay), (3) reports variant substantive readings from all versions of the text that might carry authority, and (4) indicates how the new edition treats ambiguously divided compounds (if any) in the basic text as well as which end-of-line hyphens in the new edition should be retained in quoting from the text. These four kinds of information need not be presented in any specific arrangement, and not all obtain in every situation, but the CSE requires that, when applicable, they should be either in each volume bearing the "Approved Edition" emblem or otherwise available at the time of publication.
> 3. A proofreading plan that provides for meticulous proofreading at every stage of production so that the accuracy of the text, the textual essay, arid the textual apparatus is not compromised.[1]

Because several remarkable authors such as for instance Richard Finneran were already adapted to the changing paradigm twenty years later (1996):

1 <http://www.iupui.edu/~peirce/writings/cse.htm>.

> The development of digital technology and its widespread availability on the personal computer are bringing about a fundamental paradigm shift in the ways that literary texts are created, preserved, disseminated, and studied – a revolution that many scholars have argued is as profound as that created by Gutenberg's invention of movable type. At the same time, a major shift in textual theory – away from the notion of a "Definitive Edition" and toward a recognition of the integrity of discrete versions – has highlighted the fundamental limitations of the printed book. The Literary Text in the Digital Age addresses these developments from a wide range of perspectives. The essays discuss topics from the history of electronic editions to problems in encoding to the relationship between contemporary literary theory and the capabilities of digital technology… Individually and together the contributions show how these projects will go beyond the "electronic book" and exploit the full potential of the new medium.

Futher developments in the concept of the new types of electronic editions have taken place since Peter Robinson, one of the first scholars who revolutionised the core concepts of the apparatus of textual studies with his 1990 thesis on Icelandic texts by writing *Collate*, said in 2005:

> § 30 Throughout this article, I have expressed what I think should be our aim: that some time quite soon scholars wishing to make scholarly editions will naturally choose the electronic form. It follows then that all major series of scholarly editions, including those now published by the major academic presses, also will become digital. There will be exceptions: there always will be a place for a printed "reader's edition" or similar. But we should expect that for most of the purposes for which we now use editions, the editions we use will be electronic. We should do this not just to keep up with the rest of the world, but because indeed electronic editions make possible kinds of reading and research never before available and offer valuable insights into and approaches to the texts they cover.
>
> § 31 But this will not happen simply because we will it, or because this conclusion is obvious. We need some things we do not yet have: software that does not exist and established online publication systems that have yet to be created. Let us not wait too long.

Martin Foys, in a quite interesting summary of the evolution of computing and technologies applied to the Humanities and in our case, to Textual Criticism, while emphasizing the uneven changes in the concepts of progress, referring to the seminal concept of Robinson's general extension of the electronic edition, told us in 2008:

> §5. Until very recently, this technological illiteracy has been excusable: humanities researchers and students, quite properly, concerned themselves primarily with their disciplinary work. The early Humanities Computing experts were working on topics, such as statistical analysis, the production of concordances, and building the back-ends for dictionaries, that were of no real interest to those who intended simply to access the final results of this work. Even after the personal computer replaced the typewriter, there was no real need for humanities scholars to understand technical details beyond such basics as turning a computer on and off and starting up their word-processor. The principal format for exchange and storage of scholarly information remained paper and the few areas where paper was superseded – such as in the use of email to replace the memo – the technology involved was so widely used, so robust, and above all so useful and so well supported that there was no need to learn anything about it: if your email and word-processor weren't set up at the store when you bought a computer, you could expect this work to be done for you by the technicians at your place of employment or over the phone by the Help Desk at your Internet Service Provider: nothing about humanities scholars' use of the technology required special treatment or distinguished them from the University President, a lawyer in a one-person law office... or their grandparents.
>
> §6. In the last half-decade, this situation has changed dramatically. The principal exchange format for humanities research is no longer paper but the digital byte – albeit admittedly as represented in PDF and word-processor formats (which are intended ultimately for printing or uses similar to that for which we print documents). State agencies are beginning to require open digital access to publicly-funded research. At humanities conferences, an increasing number of sessions focus on digital project reports and the application. And as Peter Robinson has recently argued, it is rare to discover a new major humanities project that does not include a significant digital component as part of its plans (Robinson 2005). Indeed some of the most interesting and exciting work in many fields is taking advantage of technology such as GIS, digit.[2]

One may not fully agree with all the nuances that Robinson and Foys mention (although my presentation is biased and partial by the very nature of what a scholarly edition should be, and by my basic adscription to what they state), but there are sound reasons for that. When, back in 1990, and after several years of the typical training in the use of

2 Stuart D. Lee was one of the pioneers of the PDF format for scholarly editions. His 1999 online edition of *Ælfric's Homilies on Judith, Esther, and the Maccabees* was among the very first to help establish a trend that has become extended only 10 years later.

xerocopies, facsimilar editions (of different kinds and nature), microfilms and photographs, apart from the traditional printed editions and texts, the only feasible way of consulting the manuscript and most incunabula sources that researchers and academics in the fields of textual studies needed for their work had, was to physically travel to the library or other sort of repository where the actual volumes or codices were kept, obtain (preferably well in advance to avoid expensive disappointments) the adequate permissions, eventually pay the establised fees, and at long last sit down usually on a wooden chair or bench (not rarely if not as old as the manuscripts themselves, at least well soiled by decades – or a couple of centuries, sometimes – of previous scholar's bottoms sitting on them, carrying a convenient amount of notebooks and pencils to scribble one's notes, having an eraser at hand, to read. And read, and read and handwrite very much under the same conditions (one may count electricity as one of the true amenities of the modern times for light and heating) of the scribes who had produced the copies of the texts that the 1990's textual editor was interested in.

Since the times of the Egyptian scribes (inkhorn and stylus in hand), and for almost four thousand years very little (apart from the technical implements such as computers, digital cameras and the like) had changed substantially. In 1990 for most people 'books' were still 'printed books' and very much similar to those first handwritten texts that were bound in the fourth or fifth centuries in a codex format, once the parchment rolls were superseeded by the codices in most of Europe. As for printed texts, since the late 15th century, nothing substantial had changed. Ten years later *all* was changing fast. It basically begun in 1984 when the first really desktop personal computers were massively sold, but it took another decade at least to catch, and another decade more to become really pervasive. It might not completely out of place here to remind the reader that most word-processing programs' interface still work today under the papyrus/parchment paradigm, while some of the fanciest and fashionable electronic book reading devices (in 2010) seem to prefer the "turning pages" mode (the bookish paradigm), unless we deal with the PDF page-under-page/unfolding method. In any case, there are not technical computing reasons to prefer one form to the other.

As usual, most things tend to follow what has been long established in the eye of the beholder (the mind of the reader this time) as customary, and changing one paradigm for another seems to have similar problems in most fields of science. It is certainly difficult to do so in the field of Litterae Humaniores, for instance.

To mention one of my favourite examples, one may refer to the fact that George Hickes, the Jacobite supporter and finally suffragan bishop of Thetford, some years after his return to England in 1694, published the texts in his *Linguarum vetterum septentrionalium thesaurus grammatico-criticus et archæologicus* (1705) in a format that we can label as "printed palaeographical edition", which, by the way, were much more accurate than most of the so-called "great philological editions" of the English 19th century scholars. Hickes' printers reproduced – after Hickes' instructions – all the Old and Middle English graphemes that were blended into thorn and eth (or modernised to ⟨th⟩), or used the yogh and the several Old English types of yogh and ⟨g⟩, just to mention a more "archaeological" systematicity than the one we may have found in, say, the Early English Society's editions, Henry Sweet's Primers and Readers, or even in later 20th century early electronic corpora strongly influenced by the textual reductionist tradition. In that sense, electronic editions that digitally reproduce the original are more than welcome. And that is why this book is really a complement and an expansion to the online digital electronic edition of manuscripts *Hunter 503* and *513*,[3] a collaborative project started at the Universities of Málaga, Glasgow and Oviedo, to which colleagues from Murcia, Jaén and Oxford have been added for this publication.

Although the time of the individual scholar has not ended completely (yet?), as much sound and worth-reading scholarship is produced in that form, electronic editions are likely to become a much more collaborative job than they had been twenty years ago. Again, the mid 1990's saw the first attractive and truly replicable electronic projects. In the field of English texts, the best early example that comes to my memory dates from 1994: the Windows-3 based 3.5" disks of *The Dream of the Rood* produced by Ann Squires and Nicola Timbrell.

3 <http://hunter.uma.es>.

It may be too soon to write (or compile) a history of the origins and development of electronic and digital editions, but it may be worth trying before many of the early cases slip into oblivion. Also, the term "digital humanist" may be too recent for an evaluation of its nature and true meaning.[4] However, online editions and their derived work are here to stay and to supersede the traditional printed ones because they are much more attractive to the specialist and allow us a range of critical approaches that the physical book does not. But I must emphasize the point again: they are for the specialist. For the apprentice and for those who still need help with either the former stages of a language or with languages no longer having an extensive community of speakers, for those who need training in the letterform and handwriting of other ages, and for those who wish to pursue their search of an elitist and arcane group of disciplines and who have still a way (or wish) to read, something in between the pure printed text and the handwritten witnesses of older times is what we offer, both here and in the virtual interface of the online readership.

4 Martin Foys (2008) summarises the dilemma of such scholars in this way: "§15. Not all humanists need to become Digital Humanists. Indeed, in attending conferences in the last few years and observing the increasingly diverging interests and research questions pursued by those who identify themselves as "Digital Humanists" and those who define themselves primarily as traditional domain specialists, I am beginning to wonder if we are not seeing the beginnings of a split between "experimentalists" and "theorists" similar to that which exists today in some of the natural sciences. But just as theoretical and experimental scientists need to maintain some awareness of what each branch of their common larger discipline is doing if the field as a whole is to progress, so too must there remain an interaction between the traditional humanistic and digital humanistic domains if our larger fields are also going to continue to make the best use of the new tools and technologies available to us. As humanists, we are, unavoidably, making increasing use of digital media in our research and dissemination. If this work is to take the best advantage of these new tools and rhetorics – and not inadvertently harm our work by naively adopting techniques that are already known to represent poor practice – we need to start treating a basic knowledge of relevant digital technology and rhetorics as a core research skill in much the same way we currently treat bibliography and research methods."

Laurence M. Eldredge

The Latin Manuscripts of Benvenutus Grassus' Treatise on Diseases and Injuries to the Eye

1. Introduction

In the following essay I should like to do three things: first, give a brief description of the contents of Benvenutus' *De Probatissima Arte Oculorum*; second, discuss the Latin manuscripts of the work and their relation to one another; and third present a brief description of Benvenutus' implied theory of vision and his pharmacology. The reference numbers used in the essay are those numbering the paragraphs of the text of Bibliothèques-Médiathèques de Metz/Département Patrimoine, MS 176, ff. 1r–16r, edited in this same volume.

2. Contents

The text begins with what seems more like a mountebank's spiel[1] than the introduction to a serious medical document (§§1, 2), addressed as it is not to prospective medical students but rather to a group of bystanders. There are, as with all mountebanks, certain constants: the author names himself, boasts of both his knowledge of ancient philosophers and his own experience, boasts of his observations in several countries, and warns his listeners against quacks and mountebanks. But Benve-

1 See Pormann (2005), Porter (2001), Katritzki (2006) and Nicoud (2004). See also Alcock/Wilmot ([1687] 1961).

nutus also notes, contrary to most mountebanks, that he has written it all down, has given it a title, and claims that it fills a gap in medical knowledge. From there he moves easily to a presentation of the anatomy of the eye (§§3–14) and, within limits, the function of some of the anatomical parts. At this point the intended audience shifts from the bystanders to a group of prospective ophthalmologists, whom he treats with respect, addressing them as "karissimi," throughout the rest of the text. The anatomy begins with a description of the tunics and humours of the eye (these humours are not the same as the four Galenic humours described below), the colours of the eye and their relation to vision, and the composition of the eye in the head.

Benvenutus next describes the seven cataracts (§§15–25), four curable (§§15–23) and three incurable (§§24, 25), and he describes the operation necessary to cure the curable ones. This is essentially the same operation as that in use up to the introduction of lens implants. During the Middle Ages, it was called *acuare*, that is "needling," but more recently it was known less descriptively as "couching." In brief, the procedure requires the physician to insert a needle into the eye and push the cataract out of place into the lower part of the eye. Benvenutus' description of the incurable cataracts would help his students to recognise diseases that were beyond their abilities.

Apart from cataracts the treatise takes up some 19 other eye diseases, and these are grouped according to the humour that Benvenutus assigns to each. These humours are the sanguine, related to blood; the phlegmatic, related to phlegm in the stomach; the choleric, related to yellow bile; and the melancholic, related to black bile. Where a physician like Galen might diagnose a disease and find several humour-related causes for it, each requiring a different treatment, Benvenutus uses the humours as a simple cataloguing device and treats each ailment according to its symptoms. The six diseases attributed to the sanguine humour, most of which seem to be characterised by a mark on the outer surface of the eye, are dealt with in §§26–38. The four attributed to the phlegmatic humour, with tears as the consistent symptom, in §§39–46. The two attributed to choler (§§47–49) are characterised by a clouded

vision, and the melancholic in §§50–55, a sort of catch-all for the seven remaining diseases that Benvenutus has identified.

At §56 there is an admonition to all prospective ophthalmologists always to have a supply of an ointment that Benvenutus called *Unguentum Alabastrum*, for, in his opinion, it bolsters whatever medicines have already been applied. This admonition marks the end of the shorter recension of the text, of which more is said below in the section on the manuscripts.

The longer version of the treatise continues at §57 with the addition of two more melancholic diseases, which Benvenutus describes from §57 to §60. Paragraphs 61–71 deal with typical injuries that may happen to the eyes, from various blows that damage the eye, bits and pieces that can become lodged in the eye, and the bites in the eye of various insects. At §72 the text moves away from injuries and back to diseases, and from §72 through §79 offers remedies for a condition called a *Nebula*. And from §80 to §82, the final paragraph of the treatise, Benvenutus discusses diseases that may afflict the eyelid. Paragraphs 72 to the end may seem like additions made by someone else, after Benvenutus has finished discussing injuries. But the manuscripts consistently reproduce these paragraphs, and I conclude that the author himself added them.

3. Manuscripts

The twenty five Latin manuscripts, along with one incunable edition, of Benvenutus' treatise divide into two recensions, a longer and a shorter.[2] The longer contains all the parts of the shorter, that is §§1–56, plus an addtional section dealing with injuries to the eye and remedies for

2 Eighteen of the manuscripts are described in Lindberg (1975: 102–105). Eldredge (1993) lists these eighteen plus six more; Eldredge (2004) adds a manuscript from Ansbach; and Beaujouan (1972: 177) describes a manuscript from the Biblioteca Nacional in Madrid. Eldredge (1993) discusses fully the relation of the manuscripts to each other. The printed editions listed are quite difficult to find, but see Eldredge (2007).

a *Nebula*, in §§57–82. The title, *De Probatissima Arte Oculorum*, is supplied by Benvenutus in the opening section of the treatise and is repeated frequently throughout. Many manuscripts give it a different title in the heading to the text or on the title page,[3] but Benvenutus' own title is consistently reported throughout the majority of the manuscripts.

The shorter recension of the treatise is found in the following twelve manuscripts, with their abbreviations listed to the left:

Be Besançon, Bibliothèque Municipale, MS. 475, ff. 59r–76r. Fifteenth century. Described in Castan (1897: 271–272). Printed in Laurans (1903).

Ber2 Bergamo, Biblioteca Civica Angelo Mai, MS. inc. h. 301/6 (olim sala I, P. 1. 25), ff. 361–399. Fifteenth century. Described in Agrimi (1976: 44). The scribe, Giorgio de Richi of Florence, dates his work between 1469 and 1476 and notes that it is copied from the printed edition of Ferrara 1474. Unpublished.

C Caen, Bibliothèque Municipale, MS. 93, ff. 40r–62v. Fourteenth century. Described in Couderc/Lavalley/Albanès (1890: 236–237). Unpublished.

Clm1 Munich, Bayerische Staatsbibliothek, MS. CLM 259, ff. 105r–112v. Fifteenth century. Described in Halm et al. (1873–1894: I.1, 66). Printed in Berger/Auracher (1884–1886).

Clm2 Munich, Bayerische Staatsbibliothek, MS. CLM 331, ff. 49r (100r)–51v (102v). Fifteenth century. Described in Halm et al. (1873–1894: I.1, 84). Incomplete, but printed *sparsim* as variants to Clm1 in Berger/Auracher (1884–1886).

Clm3 Munich, Bayerische Staatsbibliothek, MS. CLM 23907, ff. 1r–6r. Dated 1490 on f. 6r. Described in Halm et al. (1873–1894: II.4, 108). Condensed, but used by Berger/Auracher (1884–1886).

3 Lindberg (1975: 102) lists these titles.

G Wolfenbüttel, Herzog August Bibliothek, MS. Guelf 51.1. Aug. fol. (= 2584), ff. 60r–69r. Fourteenth century. Described in von Heinemann (1898: 288–290). Unpublished.

Mad Madrid, Biblioteca Nacional, MS. 3066, ff. 15v–21v. Fifteenth century. Described in Biblioteca Nacional de España (1953–2002: X, 11). Unpublished.

N Naples, Biblioteca Nazionale, MS. VIII. G. 100, ff. 48r (51r)–67v (70v). Fifteenth century. Described in Albertotti (1902: 1–2); printed in Albertotti (1902), in parallel columns with VV, Al, and VR.

Ric Florence, Biblioteca Riccardiana, MS. 2150, ff. 286r–292r. Dated on f. 293v 1453 and 1455. Described in Albertotti (1896: 27–101), and printed in Albertotti (1898: 10–57) in parallel columns with the Paris manuscript of the French translation.

Sl London, British Library, MS. Sloane 284 (*olim* Bernard 3650), ff. 77r (79r)–81v (83v). Fifteenth century. Described in British Museum ([1837–1840]: 44). Incomplete.

VV Vatican, Biblioteca Apostolica, MS. Vat. Lat. 5373, ff. 166v–181v. Dated 1475 on f. 181v. Described in Albertotti (1902: 2–6). Printed in Albertotti (1902: 10–140) in parallel columns with Al, N, and VR.

The fifteen manuscripts of the longer recension, adding descriptions and treatments of injuries to the eye, are the following, again with their abbreviations to the left:

Al G. Albertotti (*olim* Boncompagni 330), ff. 108r–128v. Fifteenth century. Described in Albertotti (1902: 6–8). Printed in Albertotti (1902: 11–139), in parallel columns with N, VV, and VR. Purchased in February 1898 by Albertotti from the estate of Prince Baldassare Boncompagni, present location unknown.

Am Erfurt, Universitäts Bibliothek, MS. Dep. Erf. CA. 4° 193 (*olim* Wissenschaftliche Bibliothek, MS. Amplonianische Q. 193), ff. 102r-117v. Late thirteenth to mid-fourteenth century. Described in Schum (1887: 451–454). Printed in Finzi (1900: 25–52).

Ans Ansbach, Staatliche Bibliothek, MS. 120, ff. 230v–242r. Fifteenth century. Described in Keller/Schmolinski (1994–2001: II, pp. 85–98). Unpublished.

Ash Florence, Biblioteca Medicea Laurenziana, MS. Ashburnham 225, ff. 1–21. Fifteenth century. Described in Paoli/Rostagno/Lodi (1887: 245). Printed in Albertotti (1898: 58–81).

Ber1 Bergamo Biblioteca Civica Angelo Mai, MS. MA 294 (*olim* Ψ viii. 19), ff. 48v–51v. Fifteenth century. Described in Agrimi (1976: 7–8). Unpublished.

Bo Oxford, Bodleian Library, MS. Bodley 484, ff. 56r–102v. Fifteenth century. Described in Madan et al. (1895–1953: II.1, 191–192). Complete, despite catalogue description. Unpublished.

F Ferrara, incunable edition of 1474 (Hain 7869). Described and printed in Albertotti (1897: 3–60).

H Hannover, Niedersächsische Landesbibliothek, MS. IV. 339, ff. 244v–253v and 279v–284v. Fifteenth century. Described in Härtel/Erkowski (1982–1989: II, 121–27). Unpublished.

M Metz, Bibliothèques-Médiathèques de Metz/Département Patrimoine, MS. 176, ff. 1r–16r. Fourteenth century. Described in Quicherat/Michelant/Raynaud (1879: 78–79). Printed in Laborde (1901) and this same volume.

P Forlì, Biblioteca Communale Aurelio Saffi, Collezioni Piancastelli, sala O, MS. 111/49 (*olim* Boncompagni 507), ff. 165r–177r. Dated 1476 on f. 220v and 1479 on f. 162r. Attributed by the scribe Marco Sinzanogio to Jacobus Palmerius, but actually the work of Benvenutus, though

arranged in a different order. Described and printed in Albertotti (1906: 7–80).

VP1 Vatican, Biblioteca Apostolica, MS. Palat. Lat. 1254 ff. 245v–256v. Circa 1400. Described in Schuba (1981: 299–303). Unpublished.

VP2 Vatican, Biblioteca Apostolica, MS Palat. Lat. 1268, ff. 288r–314r. Dated 1434 on f. 314r. Described in Schuba (1981: 343–345). Unpublished.

VP3 Vatican, Biblioteca Apostolica, MS. Palat. Lat. 1320, ff. 97r–110r. Dated 1384 on f. 135v. Described in Schuba (1981: 418–423). Unpublished.

VR Vatican, Biblioteca Apostolica, MS. Regin. Lat. 373, ff. 29r–63v. Sixteenth century. Described in Albertotti (1896: 9) and Wilmart (1937–1945: 364–369). Printed in Albertotti (1902: 11–147), in parallel columns with Al, N, and VV.

Wr Wrocław (olim Breslau), Biblioteka Uniwersytecka, MS. III. Fol. 14, ff. 253v–267r. Dated 1461–1464 on f. 41v. Described in Albertotti (1896: 42–53). Printed in Berger/Auracher (1884–1886: II, 7–58).

Taking the two recensions together, we find that there are twenty-one manuscripts from the fifteenth century (seven dated), five from the fourteenth (one dated), and one from the sixteenth. If processes of time worked the way they should, we ought to be able to trace the decline of accuracy from the earliest to the latest manuscript, but the evidence does not support our expectations. It is true that manuscript VR, dating from the sixteenth century, omits the mountebank passage and the anatomy and goes directly to the diseases, begining with the cataract. And this would seem to suggest that the later in time we go, the more the manuscript reliability deteriorates. But on the other hand both N and Mad, from the fifteenth century, seem to preserve an accurate text of the shorter recension, where Am, for example, from the thirteenth to mid-fourteenth century, omits several important parts and M, a fourteenth-

century manuscript, includes much omitted from VR. On the whole I have found it best to take each manuscript as it stands and not to look for temporal trends but for completeness from manuscript to manuscript.

All the Latin manuscripts record the part of the treatise that deals with diseases of the eye and their treatments, §§15–55. Most of the manuscripts, whether of the long or the short version, record Benvenutus' anatomical section, where he defines the eye, describes its anatomy, and argues his theory on eye colour.[4] The exhortation at §56, always to have a supply of *Unguentum Alabastrum* at hand, is found in both the longer and the shorter recensions. This short recommendation concludes the common parts of the treatise, and following that paragraph each manuscript of the shorter recension adds a series of recipes and comments, few of which correspond with one another.

These additions often seem to suggest that a particular manuscript was used by a practicing physician or by a specialist ophthalmologist, and in fact the colophons to Clm1 and VV state that they were copied and evidently used by physicians. Most of the additions are recipes for various medicines which the copyist found useful, and in some places various experiences are recorded. For example on f. 179r VV tells how he cured an elderly man of a headache which had affected his sight, and on f. 179v he tells how the brother of the bishop of Verona was cured of an everted eyelid by an Arabic physician with a pair of remarkably fine sharp scissors (*forficellos tenuissimos et acutissimos*) with which he trimmed away the excess flesh. Another manuscript, Clm1, concludes on ff. 112r–v with thanks to God for his help in curing eye diseases and some eight recipes which he evidently found effective. Two manuscripts, Ric f. 292r and G f. 70r, record the same treatment for an eye that has been hit with a stick, and Clm3 f. 6r offers a dietary to promote good vision.

On the other hand the manuscripts of the longer recension, which include all the material on diseases from the shorter recension, also offer consistent agreement, in that all of them present very nearly identical additions to the text of the shorter version. These begin with the addition

4 A detailed description of some of these variations can be found in Eldredge (1993: 108–120).

of two melancholic diseases omitted from the shorter text, paragraph 57 dealing with an everted eyelid that may follow on from a badly healed stye and paragraphs 58–59 describing an infection in the corner of the eye nearest the nose. With a remarkable degree of consistency the additions then go on to add some fifteen accounts of injuries to the eye and their treatments (§§61–71). These injuries include various types of blow to the eye or to the bone around the eye, lacrimal fistulas, fragments in the eye such as might be an industrial hazard for a mason or a miller, and various bites from poisonous insects such as spiders and wasps.

From §72 to §81 the longer recension returns to diseases of the eye, specifically to a *Nebula*. It is difficult to say just what contemporary disease corresponds to a *Nebula*, but it seems to be a sort of film that develops over the conjunctiva, such that the patient sees everything as through a haze. The treatments that are prescribed generally include some sort of abrasive powder to be put into the eye, in an effort to erode the *Nebula*. The powders include the relatively innocuous sugar, which might scrape a bit but would eventually dissolve in tears. But some of the others, such as ground beryl or ground red coral, would seem at least at first glance more damaging than helpful.

The overall impression that the treatise, in both recensions, makes on the reader is that of a remarkably conservative text, where each manuscript describes pretty much the same diseases, the same diagnoses, the same treatments, the same warnings and cautions about what to do and what not to do. One might suppose that this agreement characterises, or ought to characterise, all medical manuscripts from the Middle Ages and Renaissance, for proper diagnoses and treatments depend on the accuracy and consistency of the texts upon which physicians depended – and the manuscripts of Benvenutus' treatise do in general meet our expectations.

4. Vision

In several places throughout the treatise Benvenutus uses the word *lumen*, most often to mean the sense of sight. For example in §35 he says, "... et patientes recuperabunt *lumen* usque ad plenum." Or again at §52, "... et rehabeat *lumen* suum sicut disiderat." Or at §72, "... corrodit nebulam, acuit *lumen*, pupillam constringit." It would serve little purpose to cite other instances, but the reader will note that there are many. Occasionally in the treatise, however, he uses the word to mean natural light outside the eye, such as sunlight or the light of a lantern. At §41 this meaning is evident: "... mittetis in oculis de puluere ... donec recipiat *lumen* usque ad plenum." Another instance of this usage in §51 is similar: "... et recipit *lumen* pacientis." One could argue that there is little or no difference in these two uses of the word, but there is, I would argue, a subtle difference which is clarified in the description of the anatomy of the eye, §§3–14.

In defining the eye in §3, Benvenutus says: "Oculus est callus concauus, plenus aque clarissime, positus in fronte capitis ut ministret *lumen* toti corpori, adiuuante spiritu uisibili cum maiori *lumine*." And he goes on to clarify the function of the visible spirit: "Et per medium illius claritatis apparet pupilla per quam spiritus uisibilis ueniens ad neruum concauum habet exitum suum." Again in §4 he repeats essentially the same information: "... spiritus visibilis ueniens per neruum opticum repleat totam concavitatem oculi, donec iungantur cum maiori claritate – et simul *lumen* corpori ministrent." Paragraph **7** ostensibly deals with the tunics of the eye and with eye colour, but Benvenutus sneaks in another version of the same information: "Tunica oculi est ille circulus clarus ... et per medium circuli est foramen, de quo foramine ducitur pupilla per quam spiritus uisibilis, veniendo per neruum concauum, habet exitum suum et recipit *lumen* a maiori claritate."

The rest of §7 and all of §8 and §9 deal with eye colour, and §10 describes the humours of the eye, although without much anatomical detail. Paragraph 11 offers an alternative definition of the eye, described as a hollow thing at the end of the optic nerve. Paragraph 12, arguing

Benvenutus' own theory of the number of tunics, is marred by a confusion of pronouns and some anticipation of the treatment of cataracts, but it too concludes with a summary of the notion of *lumen*: "Vnde dicimus quod per illud foramen exit spiritus visibilis et recipit *lumen* a maiori *lumine*." I suggest that there is more here than meets the eye, and yet Benvenutus does little to explain further the theory on which he clearly depends.

During late antiquity and the Middle Ages, there were essentially two explanations to account for the sense of sight, extramission and intromission.[5] Both theories recognised a phenomenon which we can still recognise today: sight directed at an object brings that object into focus, but objects seen with peripheral vision are not in focus. This phenomenon led some early students of both optics and ophthalmology to pose the idea that the eye itself produced a sort of cone of light, which in extending to the thing seen met with natural light and grew broad enough to accommodate the thing seen. These were the extramissionists. Intromissionists on the other hand theorised that natural light illuminated a given object, and when the eye focused on it the reflected light was transmitted to the lens of the eye, which Galen took to be the actual organ of vision.

Benvenutus does not argue one theory or the other, or even make mention of either, but he does presuppose the validity of the extramission theory of vision. Moreover, he also assumes that the optic nerve is hollow. This too is consonant with most anatomical descriptions of the body during the Middle Ages, and the account of it depends on Galen's idea of the animal spirits. These spirits are generated in the heart and are distributed from there via the veins and arteries to the various parts of the body where they are needed. The animal spirits reaching the brain are partly used there and partly converted into the visual spirit, which was in its turn transmitted to the eye by means of the optic nerve. Yet this was the only nerve in the body through which a spirit flowed, and in order to accommodate this variation, the optical nerve was thought to be hollow.[6] Thus all that may seem merely a confusion of terms and

5 For a full account of the development of theories of vision, see Lindberg (1976).

6 Avicenna (1556), III.iii.1.cap.1, describes the optic nerve more fully.

their meaning does in fact exemplify a theory of vision contemporary with Benvenutus, even if he assumes it instead of describing it.

5. Instruments and Pharmacology

Generally medieval medicine had at its disposal various types of procedures and compounds, and Benvenutus relies on several standard ones and some of his own invention. In his armory he could count on purges (as the name suggests, laxatives), powders (usually mildly abrasive, to put into the eye), electuaries (to be swallowed, usually sweet), *colliria* (compounds to go into the eye), and egg white, which figures in many recipes and is also used directly in the eye. In addition he often mentions phlebotomy, diet, and cautery – frequently he recommends to his students a book he has written on cautery, but it has never been identified. At §66 he mentions another book he has written, this time on fistulas, but again it has never been identified. When the occasion calls for it, he suggests using an *emplastrum* or bandage, sometimes with a medicine on it, and a *bombax*, which was probably a bit of cotton, either a boll directly from the plant or a bit of finished cloth, to administer a medicine. A synonym for *bombax* is *stuppa*, and a *piluillum* is a small cushion or pillow to prevent the loss of a medicine or to staunch a flow of blood.

Among the surgical instruments available to him, Benvenutus chooses relatively few: a needle (*acus*) or sometimes two needles, two types of cautery irons (*cauterium*), a hook (*uncinum*), and a razor (*rasorium*).[7] As an instrument for couching a cataract in 16, Benvenutus recommends a silver needle; and to remove a fragment of stone or metal from the eye in §69, he describes using the length of the needle as

7 Illustrations of these instruments from medieval manuscripts can be found in Tabanelli (1973): hooks and needles, fig. 33 (following p. 32), cautery irons, fig. 56 and 61 (following p. 80), and razors (= scalpels), fig. 38 (following p. 48), figure 53 (following p. 72).

if shaving the fragment from the surface of the eye. In two places, §40 and §70, he describes using two needles, in §40 as a clamp and in §70 to catch the end of an awn, wind it round the needles, and roll it off the surface of the eye. For more surgical procedures he speaks of using a hook to lift a tumor or a bit of flesh (§§43, 52, 57) and a razor, as one might expect, to cut (§§42, 43, 52, 57, 58, 66). But wherever possible he avoids surgical procedures and prefers the use of the several types of compounds available to him.

Benvenutus generally does not rely on chemical or metallic medicines for the eye, although some contemporary physicians did. He does not say why this is the case, so we do not know whether he took a firm position against them or just did not know about them. Some of his medicines are *simples* – that is, medicines consisting of a single ingredient. The *Pulvis Benedictus* of §28, for example, consists of simply *Anzarut Album*, which he explains is the same as *Sarcolla* (more usually *Sarcocolla*), reduced to powder in a mortar, and administered directly into the eye as a cure for *Obtalmia*. Another single-ingredient medicine is *Virtus a Deo Data*, described in §61 and §69. This consists of the germ from a dozen egg whites beaten to an ointment. Other medicines are compounded of only two ingredients, such as *Pulvis Nabetis*, for which the recipe comes nearly at the end of the treatise at §76, though it is mentioned often earlier. It consists of powdered sugar and egg white. Another recipe of just two ingredients is called an *Emplastrum Gloriosum et Sanctissimum* and is made only of *Cardus Benedictus* or Our Lady's Thistle and egg white.

But Benvenutus's pharmacology consists chiefly of compound herbal medicines, whether a laxative or an electuary or a collirium, and often the ingredients for one of these will pile up to such an extent that the reader may wonder whether the complaint might not go away while the medicine is being made. Some of the compounds go by the name Benvenutus claims to have given them and others by formula alone. Often he refers to a compound before he gives a recipe for it, and presumably a prospective ophthalmologist would have to search the rest of the treatise to find how to make it. Below I list the ones he has named together with the number of the paragraph in which they are mentioned

and the ingredients. For the most part these are listed in an oblique case, since that is how they occur in the manuscript.

- *Diaolibano Iherosolimitano*, an electuary, §22. *Olibani, gariofili, nucis muscate, nucis indice, croci, castorei, mellis*.
- *Collirio Iherosolimitano*, a collirium, §26. *Tutye alexandrini, vini albi, rosarum siccarum*, boiled over a slow fire until reduced to half its volume.
- *Puluerem Benedictum*, a powder, §28. Powered *anzarut album* or *sarcollam*.
- *Puluis Nabetis* and *Puluis Alexandrinis*, powders, mentioned without recipes, §§29, 35, and 41; §37 with recipe for *Puluis Nabetis* only. *Zuccaro nabetis or candi alexandrini* (i.e., sugar), ground to a fine powder.
- *Unguentum Alabastrum*, an ointment, §31. *Rubi, vini albi, rute, camomile*, alabaster, rose oil, wax – all ground together, then six egg whites added.
- *Emplastrum Laudabilem*, a plaster to put on the closed eye, §51. *Poma acerba et coque ... pistentur ... clara oui*.
- *Collirium Ruborum*, a collirium, §53. *Ruborum teneres ... vini albi*.
- *Virtus a Deo Data*, an ointment, §62. *Germina pullorum ... de oua recencia de gallinis albis*.
- *Pillulis Iherosolomitanis*, a laxative, §16. *Turbit, aloe epatici, macis, cubebe, masticis, croci ... cum succo rosarum*.

There are many more nameless compounds for various purposes in the text and although the variety of ingredients is striking, from soot and badger's gall bladder to roasted apples or roasted lily root, most of the ingredients seem harmless enough. But they probably would not have done much good either, although no doubt some patients responded to the placebo effect. A surprising number of recipes, however, especially those intended to go into the eye, contain egg white – in addition to

those mentioned above, these are in the following paragraphs: §§35, 38, 42, 43, 52, 54, 55, 58, 61, 66, 69–71, and 76. No doubt Benvenutus knew nothing of the actual chemical properties of egg white and probably used and recommended it because its consistency resembled that of the humours in the eye, as he explains in paragraph §11, and he assumed that like cures like. But he could not have known that egg white helps to heal diseases and injuries to the eye because it contains large amounts of lysozyme, an enzyme also found in tears, saliva, mucus, etc. Its natural function seems to be to keep the eye healthy by acting against any infectious matter that enters through the dust and grit of day to day activity.[8]

This brief essay is not the place for a full analysis of either the theories or the medical compounds of *De Probatissima Arte Oculorum*, but I hope that these few remarks may help a reader at least to place the procedures and pharmaceuticals somewhere in the full spectrum of medicine during the Middle Ages.[9]

8 See <http://en.wikipedia.org/wiki/Lysozyme> and <http://users.rcm.com/jkimball.ma.ultranet/BiologyPages/L/Lysozyme> (retrieved 14/12/2010).

9 I should like to thank the following people for their help in writing this essay: Sylwia Bulat, Peter Murray Jones, Lea Olsan and David Moreno Olalla. As the editor of MS *M*, I am most indebted to Klaus-Dietrich Fischer and David Moreno Olalla for their careful reading and suggestions; to Emilie Savage-Smith for her comments on Benvenutus' Arabic transcriptions; and to Sylwia Bulat for help with the Polish in connection with the Wrocław MS. Any errors that remain are, of course, my own responsibility

Javier Calle Martín

Through the Looking Glass: The Palaeography of Benvenutus Grassus' English Vernacular Tradition[1]

1. Introduction

A man of parts, as the English often say, may be a suitable designation to the author of *De Probatissima Arte Oculorum*, both on account of his self-taught medical expertise and his vast humanist education as the speaker of at least four languages. According to Laurence Eldredge, the scholar who with more impetus has investigated the textual transmission of this ophthalmic treatise, the life of Benvenutus Grassus has traditionally been in a welter of confusion (1996: 1–5; 1998: 47–52; 1999: 149–163). Of uncertain provenance (plausibly from Salerno, Jerusalem or Montpellier), Grassus was a medical practitioner educated in the first half of the 13th century becoming a well-known ocular surgeon in Italy in the second and third quarters of that same century.[2] Apart from all this, everything has been a matter of pure speculation.

González has recently reviewed the state-of-the-art about this piece of *Fachliteratur* providing a comprehensive account of some of the contradictions, these having to do with the author and the language of the original text (Marqués/Miranda/González 2008: 1–17). From an

1 The present research has been funded by the Spanish Ministry of Education (project FFI2008-02336) and the Autonomous Government of Andalusia (project P07-HUM–2609). These grants are hereby gratefully acknowledged.

2 Even though the 13th century is widely accepted to date Benvenutus Grassus' life, González finds an earlier 12th-century dating according to the Health Sciences Center of the University of West Virginia and at the Eye Center at the University of Chicago (Marqués/Miranda/González 2008: 11).

authorial perspective, on the one hand, he pinpoints not less than six common names for the author in the relevant literature, although he concludes that Eldredge's proposal for Benvenutus Grassus seems to be more widely disseminated. More doubts arise when considering the ups and downs of Benvenutus himself as to how such a self-taught man could have acquired the bulk of his medical expertise, something which could have been learnt by heart and/or through his supposed visits to Egypt and other Middle Eastern countries.

The language of the holograph, on the other hand, also remains unsolved, being plausible to assume a Latinate or a vernacular original. González summarises the pros and cons of these two alternatives by reconsidering Grassus' professional activity as a practitioner. The vernacular composition of the piece may be justified on account of the social background of his patients, probably accommodated burghers with whom he communicated in everyday language, eventually transposing this medical lore into the vernacular – Provençal or Neapolitan Romance as the most likely candidates. As a mediaeval scholar, Grassus was yet surely proficient in Mediaeval Latin and the academic nature of the specific vocabulary, which was "ultimately Greek in origin via Latin and Arabic calques" (Marqués/Miranda/González 2008: 13), a fact which supports a likely Latinate composition. Other possibilities cannot be discarded beforehand, as his journeys still give substantial evidence that he was fluent up to a certain extent in Arabic, Greek and Hebrew (or Aramaic).

It is a fact that Grassus' work was widely known in the latter Middle Ages, both among general practitioners and laymen. The mediaeval appraisal of this work is corroborated by the number of handwritten copies, not only in Latin, but also in different European vernacular languages, Spanish also included (Marqués/Miranda/González 2008: 28). This scholarly interest in Grassus' work has persisted thereafter with the publication of several printed editions (Albertotti 1896; 1902; Berger/Auracher 1884–1886; Wood 1929). In the particular case of mediaeval England, the level of estimation was such that a saga of vernacular copies proliferated from the 15th century, where

four different witnesses have been preserved, all of which accordingly reproduced in the present volume:

H503 Glasgow, GUL, Hunter MS 503 (V.8.6), pp. 2–137.
H513 Glasgow, GUL, Hunter MS 513 (V.8.16), ff. 1r–37r.
A Oxford, Bodleian Library, Ashmole MS 1468, pp. 1–6.
S London, British Library, Sloane MS 661, ff. 32r–46v.

While the three first witnesses are 15th-century copies, the Sloane manuscript is by an early modern hand. In light of this, the objective of the present contribution is to review the palaeography of the English versions of Grassus' *De Probatissima Arte Oculorum* in terms of a) the inventory of letterforms; and b) the scribal attitude towards line-final word division. According to the above premises, the study has been organised into four different sections. Section 2 describes the framework and the methodology used for the analysis of the different witnesses. Sections 3–4, in turn, concentrate on the palaeography of the witnesses in terms of the script and word division. Finally, Section 5 contains the conclusions deriving from the study.

2. Methodology

The present paper forms part of an on-going collaborative project of the universities of Málaga, Murcia, Oviedo, Jaén and Glasgow which contemplates the electronic editing of the mediaeval handwritten material, of a scientific scope, hitherto preserved in the Hunterian collection at Glasgow University Library. The task is therefore accomplished in two stages, necessarily sequential. The first consists in the graphemic transcription of the material, provided on-line together with the digitised images and some palaeographic/codicological information (see <http://hunter.uma.es>). The impetus here is the offering of a diplomatic transcription which may be used for research in a variety

of disciplines, not only linguistic (Orthography, Phonology, Morpho-syntax) but also extra-linguistic (History of Medicine, Palaeography, etc.). Second, the bulk of transcribed material is later taken as the input for the compilation of an annotated corpus. The particularities of the corpus as to genre (*Fachliteratur*), chronology (14th- and 15th-century English) and annotation (containing the lemma, word class and accidence of every corpus item) shape it as an ideal tool for research in late Middle English (Moreno Olalla/Miranda García 2009).

On methodological grounds, the present study exclusively rests upon the high-quality digitised images of the witnesses, with the exception of *A* which has been based on a microfilmed copy, all allowing the researcher to examine the scribe's handwriting in sufficient detail. Our approach to letterforms, on the one hand, relies on the accounts provided by the foundations of Palaeography, particularly Petti (1977), Derolez (2003) and Roberts (2005) for the mediaeval copies whilst Tannenbaum (1930), Denholm-Yong (1954) and Hector (1958) have been used as secondary sources for the early modern version.

The analysis of line-final word division, on the other hand, is modelled on Hladký's original scheme (1985a; 1985b) and later reformulated by Calle Martín (2009), proposing to study the phenomenon in light of the ultimate motivation for the break, distinguishing morphological, phonological and anomalous divisions (see also Powell 1984: 452–458). This aspect of Palaeography will be investigated across the four texts to determine the level of scribal variation and find whether the scribal practice is governed by a predetermined set of rules, a statement which is often discarded in the literature. For the purpose, an Excel spread-sheet has been used wherein all word-division instances have been allocated in terms of a) the manuscript; b) the type of division involved; and c) the rule used in each case.

3. Letterforms

The present section reports the inventory of letterforms found in the English vernacular tradition of this ophthalmic treatise, including both minuscules and figures, on the assumption that they are reliable clues to date handwritten documents. Marginalia and other inscriptions, however, have been systematically ruled out from our analysis for they constitute an alternative text, therefore alien to the scribe's hand.

3.1. Glasgow, GUL Hunter MS 513 (V.8.16)

Two different dates have been proposed for this witness. Young and Aitken's cursory glance at the manuscript led them spuriously to suggest a late 14th-century composition (1908: 421–422), an opinion which has been later disproved by other fresh approaches, such as those by Eldredge (1996: 27) and Cross (2004: 35), reconsidering it a mid-15th-century text. Although the most recent edition of this text reports that "the evidence that all of them use to support such a claim remains in the shadow" (Marqués/Miranda/González 2008: 27), a palaeographic approach serves here to corroborate Eldredge's and Cross' proposals.

The hand of *H513* has already been the object of palaeographic description (Marqués/Miranda/González 2008: 31–36) and, as far as the script is concerned, the volume overwhelmingly displays a pretty clear cursive 15th-century Secretary hand with sporadic tinges of the Anglicana, the latter skipped in Eldredge's account (1996: 27). Figure 1 below reproduces the inventory of the minuscules and the figures used by the scribe, numbered for reference purposes.

Fig. 1. Inventory of minuscules and figures in *H513*.

As illustrated, the Secretary script characterises by the use of distinctive letterforms, which sharply differ from the conventional cursive hand of the Anglicana. Among others, the following stand out: single-lobed ⟨a⟩ with a pointed head (1); two-lobed ⟨b⟩ (2); the letter ⟨d⟩ either with a looped stem (4) or with a shank and an oblique ascender (5); the single stroke ⟨e⟩ (6); the letter ⟨f⟩ showing a shaft with an arced headstroke (7); the 15th-century crossed ⟨g⟩ with a pronounced headstroke (8); the letter ⟨k⟩ with its characteristic right-arced headstroke (11); the letter ⟨l⟩ with a lobed arm (12); the right-shouldered ⟨r⟩, footed and sitting on the script line (18); the heavy ascender of the letter ⟨v⟩; and cursive ⟨x⟩ written with a single stroke (30). The letter ⟨þ⟩ consists of an infra-linear letter rendered by a vertical and clubbed stroke with a curved serif at the top of the backbone (25), thus preventing the likely association with the letter ⟨y⟩.

In light of the currency of these scripts in the 15th century, Petti argues that "*secretary* and *anglicana* often borrowed from one another both in features of general style and in use of graphs" (1977: 15). This is particularly the case of *H513* wherein three conventional Anglicana letterforms co-occur with the dominant script to such extent that many a time they eventually adopt specific contexts. The letter ⟨s⟩, on the one hand, is particularly illustrative insofar as the Anglicana grading

is witnessed in the use of the double-length long ⟨s⟩ with its upright form (21), systematically in initial and medial positions, together with the diamond-shaped sigma-like form (23), which is the choice if word-finally. The Secretary beta-like ⟨s⟩ (22) is sporadically used in final position, particularly in the rendering of foreign words, thus co-existing with the Anglicana version (Petti 1977: 14). Similarly, the Secretary ⟨r⟩ predominates over the long-forked Anglicana version (19). Finally, a similar picture is witnessed in the distribution of the letter ⟨w⟩, consistently displaying double ⟨v⟩ (29) instead of the combination of two looped *l*'s and a *3* (28), a letterform which belongs to the late 14th-century *Anglicana* script.

To the letterforms must be added the scribal use of Arabic figures, which may be taken as reliable cues for a close dating of the text, there being sharp palaeographic discrepancies from one century to another (see Hector 1958: 43–45). In the particular case of *H513*, Arabic figures consistently point to a 15th-century composition: ⟨4⟩ resembling a pair of pincers wherein two curved lines are crossed near their bases (35); the G-like form of ⟨5⟩ (36); the sigma form of ⟨6⟩ (37) together with the characteristic form of ⟨9⟩, with a pointed head and the tail curved leftwards (40).

3.2. Glasgow, GUL Hunter MS 503 (V.8.6)

According to Eldredge's own inspection, this text was composed with a fairly legible *Bastard Anglicana* script (Eldredge 1996: 25), defined by Derolez as the result of the merging of two prior variations of the Gothic script, the Textualis and the Anglicana (2003: 140–141). On the whole, this emerging style agglutinates "the best features of text and cursive" (Petti 1977: 15). Thus, the size, beauty, angularity and spikiness are a direct influence of the Textualis whilst letterforms and the ease of writing becomes notably cursive in origin. On chronological grounds, this handwriting style spread in English documents from the second half of the 14th century reaching its climax one century later when the two composites were completely assimilated. As a result,

this style eventually became a recurrent choice for the composition of luxury manuscripts.

H503 is a neat example of this late mediaeval English script, though at the same time incorporating some Secretary element. Roberts refers to this grading of Secretary influence by adding *hybrida* to *Formata*, thereby termed as *cursive anglicana formata hybrida* (Roberts 2005: 164). Even though the text has been traditionally dated as a 15th-century composition (Young/Aitken 1908; 411; Cross 2004: 34), it is Eldredge who further proposes the last quarter of the 15th century on account of its palaeographic similarity with Parkes' plate 8 (1979: 8). Fig. 2 below reproduces the complete inventory of letterforms used by the scrivener.

Fig. 2. Inventory of minuscules in *H503.*

Fig. 2 allows the analyst to classify the letterforms from a threefold perspective. The textualis gradient, on the one hand, consists of a predefined set of letters common to the vast majority of manuscripts written under the shelter of this style, leaving then small room for the scribe to reshape the inventory. These items are the two-compartment ⟨a⟩ (1); the loopless ⟨d⟩ (4); the single-compartment ⟨g⟩, with occasional horns (7); the 8-shaped ⟨s⟩, exclusively word-finally (20); and the two versions of letter ⟨r⟩, *i.e*. the short and right-shouldered one (17) together with the 2-shaped alternative (18), the latter exclusively after vowel ⟨o⟩ and other letters with a bow (see Derolez 2003: 138; Roberts 2005: 164).

The cursive component, on the other hand, predominates in the text as a result of the larger contribution of the Anglicana Formata forms. The most distinctive cursive letterforms are the following: the loop at the right side of the letter ⟨b⟩ (2); the absence of infralinear ⟨f⟩ (6); the (occasional) hooked ascender of the letters ⟨h⟩ (8) and ⟨l⟩ (11); the three-stroke ⟨m⟩ (12) – a clue which sharply differentiates the Anglicana Formata from the single stroke Anglicana (Derolez 2003: 138); long ⟨s⟩ in initial and medial positions (19); the long-approach stroke of the letter ⟨v⟩ (24) together with the conventional form of the letter ⟨x⟩ (26).

The grading of the Secretary script is also witnessed in the use of two letters. First, the scribe abandons the looped and three-shaped final stroke ⟨w⟩ of the Anglicana in favour of the simpler version of the Secretary, thus resembling a double ⟨v⟩ (25). Second, as noted by Eldredge (1996: 25), the text shows the use of the three-stroke ⟨e⟩ (5) instead of the conventional Anglicana two-stroke form (see Derolez 2003: 137).

Of the special letters, it is significant to note that the author does not differentiate ⟨þ⟩ from ⟨y⟩, the latter also systematically undotted. Likewise, this picture is partially mirrored in the writing of the letters ⟨u⟩ and ⟨v⟩ insofar as the conventional distribution of these letters in mediaeval compositions is not always observed inasmuch as both can occur in word-initial and word-medial environments.

3.3. Oxford, Bodleian Library, Ashmole MS 1468

A is a long volume (378 pages) hosting three different manuscripts which contain, among others, some well-known pieces of the Middle Ages, both of scientific and literary merit, i.e. Guy de Chauliac's *Cyrurgia* (pp. 7–54) and William Langland's A version of *Piers Plowman* (pp. 307–378). Some of them are unfortunately abridged; this is the case of Grassus' treatise, which is the shortest witness of the tradition. According to Black's own collation, the volume was originally conceived in groups of ten pages and "it seems that not only

'Aj' (before what is now p. 7) is lost, but 7 leaves out of the first […] set, namely, 6 leaves before p. 1, and 1 leaf after p. 6; which last seems […] to have been vacant" (Black 1845: 1275).

Even though the hand of the text has been commonly dated in the 15th century (Black 1845: 1275), Eldredge, based on some palaeographic evidence, has recently proposed a more precise ascription to the first half of that same century (1996: 23). Eldredge's proposal is well-founded on account of the writer's hybrid script, which displays a 15th-century Secretary hand combined with some characteristic items of the Anglicana, this hybrid hand being a commonplace practice in the early phase of the 15th century (Petti 1977: 15). Still, the presence of the Anglicana is inadvertently skipped in Eldredge's description. The inventory of letterforms used by the writer is reproduced in Fig. 3 below:

Fig. 3. Inventory of letterforms in *A*.

The cursive component of the Secretary, on the one hand, is characterised by two distinguishing features: the angularity of some letters – with loops and horns on the head and sides of letters (see the letters ⟨f⟩ and ⟨k⟩ for instance); and the combination of thin and thick strokes (as in the letters ⟨a⟩ and ⟨e⟩, for instance). In this fashion, the letters which mostly typify the Secretary hand are the following: the single compartment ⟨a⟩ with a pointed head (1), the double-compartment ⟨b⟩ (2); the letter ⟨d⟩, both looped (4) and loopless (5), irrespective of context; the tailed

⟨g⟩ with an *u*-shaped top and a headstroke (8), hence anticipating the Tudor and the Elizabethan forms; the letters ⟨h⟩ (8), ⟨k⟩ (11) and ⟨l⟩ (12) with the characteristic loop at the top of the ascender, the former also displaying a distinctive extension of the right limb below the baseline whilst the letter ⟨k⟩, in turn, presents the shortened form of the right limb (Clemens/Graham 2007: 167–168); together with the one-stroke versions of the letters ⟨m⟩ (13) and ⟨n⟩ (14).

There are three letters which deserve special attention. The first is the letter ⟨r⟩ insofar as it is rendered with a twofold representation in *A*, the right-shouldered ⟨r⟩ (18) with the typical angularity of the Secretary hand, and the long-forked ⟨r⟩ extending below the baseline, which stands out as a direct influence of the Anglicana (19). There is no trace, however, of the *v*-form of ⟨r⟩ which characterises the 15th-century version of the Secretary, a fact which may also witness the early composition of this copy.

A similar picture is observed in the rendering of the letter ⟨s⟩ to such extent that the typical forms of the Secretary and the Anglicana occur, more virtually than effectively, in particular contexts. In this vein, the long hooked ⟨s⟩ (20) of the cursive script is vastly preferred in initial and medial positions whilst the Anglicana sigma form of ⟨s⟩ (21) predominates word-finally. Still, the odds are not an exception and the reader occasionally finds word-initial instances, monosyllabic words in particular, as in *so* (p. 1), *sunne* (p. 2), *sonne* (p. 3). Likewise, the letter ⟨w⟩ also shows the parallel use of two writing standards: the Secretary form, resembling a double *v* (26), predominates word-initially while the Anglicana style, consisting of two looped l's (27), is the alternative if in the middle of a word.

Apart from the above contributions, the Anglicana grading is also noted in the writing of other letterforms, such as the letter ⟨c⟩, rounded and curved at the bottom (3); the letter ⟨e⟩, with three strokes and a pointed head (6); and the letter ⟨x⟩ (28) with the two distinctive 15th century strokes (Derolez 2003: 140).

Finally, the letters ⟨u⟩ and ⟨v⟩ are virtually indistinguishable from each other, except word-initially, where the latter presents a tall left limb curved to the left (nos. 24 and 25). Contrariwise, the letter ⟨y⟩ is

consistently dotted in the manuscript, not in order to distinguish it from the letter ⟨þ⟩ – because they actually keep distinctive forms (see nos. 23 and 29 above), "but according to general medieval practice" (Derolez 2003: 140).

3.4. London, British Library, Sloane MS 661

Different dates have been proposed for this text in the relevant literature. Voigts and Kurtz, on the one hand, dated the witness in the 16th century, plausibly after a careful inspection of the original (Voigts/Kurtz 2000). The holder, on the other hand, reports it as a 15th-17th century English translation, a hitherto long time-span which is certainly in need of some kind of revision.[3] A cursory look at the palaeography of the text reveals that the translation kept in *S* is unlikely to be dated as early as the 15th century nor as late as the 17th century, the 16th being then the most likely candidate.

Even though similar to Petti's *Engrossing Elizabethan Secretary* in many respects (1977: 17), the wider range of minuscule forms found in *S* – letters ⟨a⟩, ⟨f⟩, ⟨h⟩ and ⟨s⟩ in particular, easily allows attributing a commonplace Elizabethan Secretary hand, plausibly from the last quarter of the 16th century on account of the use of particular letterforms, which help the analyst ascertain a likely date with some level of accuracy.

Fig. 4 reproduces the complete inventory of letters in *S*, where four items may be singled out for descriptive purposes. The letter ⟨a⟩ shows the conventional shapes of Elizabethan penmen, both with the oval body open at the top (2) and with an oblique supralinear descending stroke (1), the latter a recurrent scribal practice by the end of the century (Petti 1977: 17). Second, the letter ⟨e⟩ is rendered with the Greek (7) and with the open reversed form (8), there not being any contextual clues governing the use of one or the other. Third, the shape of the letter ⟨h⟩ is also twofold, with a reduced supralinear loop and an infralinear tail (13) and with a simple double-looped shaft (14), the former predominating

3 See <http://www.bl.uk/catalogues/manuscripts> (retrieved 18/05/2011).

in initial and medial positions while the latter is exclusively word-final. Denholm-Young describes a characteristic gradient of this letter for the purposes of identification in the sense that "in the first half of the period the letter *h* is still half above the line. As time wears on it sinks lower and lower" to such extent that three quarters of the letter are below the line in the later Secretary hands (1954: 71). In this particular case, the letter is conspicuously infralinear, which suggests a late 16th century composition.

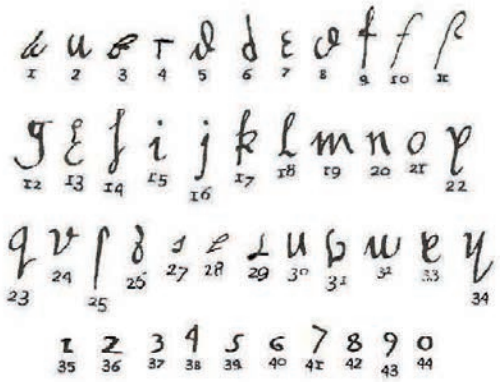

Fig. 4. Inventory of minuscules and figures in *S*.

Contrariwise, the letter ⟨s⟩ does not respond to any contextual variation, where four different types are observed, the long hooked form (25), the sigma ⟨s⟩ (26) and the two varieties of the small round ⟨s⟩ (27 and 28), the former sporadically found in *S* in the writing of foreign words.

There are other letters which also help typify the Elizabethan Secretary hand of *S*: the letter ⟨c⟩ characterised by the horizontal stroke at the top of the crescent with the absence of the foot serif (4); the ⟨g⟩ with its head converted into a semi-oval and the infralinear loop into a simple tail (12) (Tannenbaum 1930: 45); the v-like ⟨r⟩ (24); and the letter ⟨f⟩, which is markedly leant to the right among Elizabethan writers (10 and 11), the latter in final with the crossbar omitted, its place accordingly taken by a flourish at the lower end of the head loop.

Finally, as in the case of *H513* above, the scribal use of Arabic figures may provide the analyst with additional cues about the composition of the manuscript. In this vein, the shape of some distinct figures actually corroborates the conclusions obtained from the analysis of letterforms, thus pointing to a late 16th century hand. Of these, number one is a conspicuous example consisting of a simple stroke with the (conventional) head and foot serifs at the time (35). Number four, in turn, already appears with its present form, though slightly leant, which was, according to Petti (1977: 28), recently adopted throughout the second half of the 16th century (38). A similar point may be used to establish the chronology of number five, which develops from the mediaeval angular ⟨h⟩ to a lower-case printed ⟨s⟩ in the course of the 16th-century (39). Finally, the traditional acute angle form of number seven is also progressively modified to such extent that its left arm shortens while the right one moved vertically towards the end of that same century (41).

4. Line-final word division

4.1. Rationale

Following the line initiated in two other recent studies (Calle Martín, 2009, forthcoming), this section investigates line-final word-division practice in the English vernacular tradition of Grassus' *De Probatissima Arte Oculorum*. The relevant literature has been eye to eye as to the arbitrary character of line-final breaks in early English handwriting. Most palaeographic publications contain just brief notes about the topic where the only precept "seems to have been that not less than two completing letters could be carried over to the second line" (Hector 1958: 48; Denholm-Young 1964: 70). Even though true in many a scribal composition, the modern approaches have found the existence

of recurrent patterns used by mediaeval scribes (Hladký 1985a: 73; Lutz 1986: 193; Burchfield 1994: 182).

From a methodological standpoint, Hladký's approach to the study of word division in English historical texts is partially adopted as a theoretical framework (1985a; 1985b). He proposes a functional classification of the phenomenon in terms of the two basic tendencies for splitting, *i.e.* Morphology and Phonology. The former recurs to word formation whereas the latter divides words in terms of its actual pronunciation, i.e. ⟨dri-ed⟩ (*H503*) vs. ⟨corrupt-cion⟩ (*H503*). Still, a third group has been added to account for those anomalous divisions which fall apart from this classification, and which seem to escape Hladký's attention, i.e. ⟨vpri-ght⟩ (*H513*), ⟨ab-undance⟩ (*S*), etc. The present paper also examines the distribution of the rules which seem to govern the breaking of a word, both morphologically and phonologically. The former necessarily depend upon word-formation processes and the latter are liable to incorporate different rules. In this fashion, Hladký (1985a; 1985b) observes the division after an open syllable (henceforth the CV – CV rule), the division between two consonants (the C – C rule), the division between two vowels (the V – V rule) and the division between the pairs *-st* and *-ct* (the ST rule and the CT rule, respectively).

In light of these premises, this section investigates line-final breaking devices in Grassus' copies with the following objectives: a) to evaluate the weight of morphological and phonological boundaries; b) to offer a taxonomy of word-division rules used by mediaeval scribes; and c) to find whether the chaotic situation referred to in the literature can be safely applied to the pieces under examination.

4.2. Analysis

The marking off of a line-final break is not orthographically conventionalized among mediaeval scribes and the use of one symbol or another will ultimately depend upon variables such as the scribal choice, on the one hand, and the space available at the margin of the folio, on the other. In this vein, up to three punctuation symbols may

occur therein, i.e. the colon, the hyphen and the double hyphen (Calle Martín/Miranda García 2005: 32). In Benvenutus Grassus' vernacular witnesses, the four copyists opted for the double hyphen, slightly curved upwards whilst still horizontal in the Sloane version. Even though the double hyphen is consistent across the hands, the symbol is left out many a time when there is not enough room at the margin, particularly in the case of *H503*.

Table 1 below reproduces the distribution of line-final breaks in the four pieces. For comparative purposes, the figures have also been normalized to a text of 1,000 words. From a quantitative perspective, one can tentatively conclude that the phenomenon is irregularly distributed across the samples in the sense that *H503* amounts to 339 word-division instances in spite of having conspicuously less running words than the other Hunterian witness (13,306 vs. 15,655 words), the writer therefore being more committed to line-final boundaries than the other copyists. Setting aside *H503*, the phenomenon is observed to correlate in the other witnesses, ranging from 8.1 to just 13.5 occurrences every 1,000 words in *A* and *H513*, respectively.

On a qualitative perspective, on the other hand, the four manuscripts tentatively confirm an overwhelming preference for phonological boundaries to such extent that they exceed 80% of the occurrences across the samples, with the only exception of *A* that reaches just 60.52%, plausibly as a result of its fragmentary condition. Morphological and anomalous divisions, on the whole, are sporadic and one can tentatively conclude that they occur when there is little room available at the margin of the folio. In this same fashion, if compared with the other pieces, the figures for morphological and anomalous divisions are notably higher in *A* as it is the only text written in two columns, a fact which substantially constrains the scribe's act of writing.

MS	Instances	Morphological	Phonological	Anomalous	Total
H503	*Absolute*	39	285	15	339
	Normalized	2.46	18.42	0.96	21.84
H513	*Absolute*	30	206	14	250
	Normalized	1.62	11.14	0.75	13.5
S	*Absolute*	9	81	1	91
	Normalized	0.93	8.37	0.1	9.4
A	*Absolute*	12	23	3	38
	Normalized	2.58	4.97	0.64	8.1

Table 1. Word division instances (absolute and normalized figures).

The second objective of this survey is the assessment of the word-division rules used by mediaeval scribes in these MSS. Figure 5 below reproduces, in absolute figures, the distribution of the phonological rules in the witnesses under examination. As observed, the four copies reveal a major preference for the CV – CV rule, as in ⟨ca-teractis⟩ (*H503*), ⟨ma-lancoly⟩ (*H513*), ⟨uisi-ble⟩ (*A*) or ⟨disfi-gured⟩ (*S*). The only exception to this rule is consonant ⟨x⟩, which is systematically attached to the preceding vowel regardless of any other phonological consideration as in ⟨alex-andrinum⟩ or ⟨lax-atyff⟩ (*H503*). This orthographic convention often coincides with a morphological division, i.e. ⟨flex-en⟩ (*H503*).

Second, if the word at a line-end is not amenable to open syllable division, the scribe is therefore committed to divide between two consonants (the C – C rule) and to a lesser extent, between two vowels (the V – V rule), always on condition that the result is readable and that the consonants do not belong to the same syllable, i.e. ⟨mor-ter⟩ (*H503*), ⟨oc-casioun⟩ (*H513*), ⟨wor-mode⟩ (*A*) or ⟨begin-ninge⟩ (*S*). In the case of the V – V rule, in turn, the scribe is not particularly concerned about the phonological dimension of the split vowels, both diphthongs and monophthongs, being a visual rather than a strictly phonological rule in order to facilitate the reading of these groups, i.e. ⟨occasy-on⟩ (*H503*), ⟨no-ught⟩ (*H513*) and ⟨speci-allye⟩ (*S*) vs. ⟨se-ed⟩ (*H503*), ⟨wo-unde⟩ (*H513*) and ⟨glorio-us⟩ (*H513*).