Time and How to Calculate It: A Study and Edition with Translation of Book 10 of Hrabanus Maurus’ *De rerum naturis*

by

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Abstract

This study investigates the text and context of book 10 of Hrabanus Maurus’ *De rerum naturis* (DRN) and presents a new edition of the Latin text and an English translation. Chapter one provides an introduction to the topic of computus in the early middle ages, beginning with a definition of the term computus and its cognate disciplines. The chapter continues with a summary of the historical development of the computistical sciences from the early Christian church up to the Carolingian age. In order to contextualize book 10 of DRN, an overview of the encyclopedic genre is offered to lead into the discussions of Hrabanus’ computistical and encyclopedic works: *De clericorum institutione*, *De computo*, and DRN. Chapter two presents the first modern edition of the Latin text of book 10 of DRN based on the earliest manuscripts and includes descriptions of the sources and textual history, the manuscript witnesses used, and the editorial principles applied. Chapter three provides a commentary on the structure, content, textual sources, and literary traditions of book 10 of DRN. Particular attention is given to the four main source authors: Venerable Bede, Isidore of Seville, Cassiodorus, and the anonymous author of the *Clavis Melitonis*. As well, previously unidentified passages in book 10 are now
attributed to eight new sources including works by Ambrosiaster, Origen, and Paterius. Additional passages which were introduced in the later manuscript and print traditions have also been identified and sourced. Chapter four explores the reception and influence of book 10 of *DRN* and the story behind the possible twelfth-century additions to the text as well as possible future avenues of study. The three appendices comprise the new English translation of book 10, a glossary of computistical terms, and instructions for calculating the date of Easter.
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<th>Author</th>
<th>Title</th>
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<tbody>
<tr>
<td>Ambr. Rom.</td>
<td>Ambrosiaster</td>
<td><em>In epistolam ad romanos</em></td>
</tr>
<tr>
<td>Bede Joh.</td>
<td>Bede</td>
<td><em>In sancti Johannis evangelium expositio</em></td>
</tr>
<tr>
<td>Bede Mar.</td>
<td>Bede</td>
<td><em>In sancti Marci evangelium expositio</em></td>
</tr>
<tr>
<td>Bede epistolas</td>
<td>Bede</td>
<td><em>Super epistolas catholicas expositio in primam epistolam sancti Johannis</em></td>
</tr>
<tr>
<td>Cass. Psal.</td>
<td>Cassiodorus</td>
<td><em>Expositio in psalmus</em></td>
</tr>
<tr>
<td>CCCM</td>
<td>Corpus Christianorum, Continuatio Medievalis</td>
<td></td>
</tr>
<tr>
<td>CCSL</td>
<td>Corpus Christianorum, Series Latina</td>
<td></td>
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<tr>
<td>Clav.</td>
<td>Clavis melitonis</td>
<td></td>
</tr>
<tr>
<td>CSEL</td>
<td>Corpus Scriptorum Ecclesiasticorum Latinorum</td>
<td></td>
</tr>
<tr>
<td>DDTL</td>
<td>Bede</td>
<td><em>De divisionibus temporum liber</em></td>
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<tr>
<td>DRN</td>
<td>Hrabanus Maurus</td>
<td><em>De rerum naturis</em></td>
</tr>
<tr>
<td>DTR</td>
<td>Bede</td>
<td><em>De temporum ratione</em></td>
</tr>
<tr>
<td>Greg. Moral.</td>
<td>Gregory</td>
<td><em>Moralia in Job</em></td>
</tr>
<tr>
<td>HM</td>
<td>Hrabanus Maurus</td>
<td></td>
</tr>
<tr>
<td>Isid. Etym.</td>
<td>Isidore</td>
<td><em>Etymologiae</em></td>
</tr>
<tr>
<td>MGH</td>
<td>Monumenta Germaniae Historia, with subdivisions:</td>
<td></td>
</tr>
<tr>
<td>Capit.</td>
<td><em>Capitularia regum Francorum</em></td>
<td></td>
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<tr>
<td>Conc.</td>
<td><em>Concilia</em></td>
<td></td>
</tr>
<tr>
<td>Epp.</td>
<td><em>Epistolae in quarto</em></td>
<td></td>
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<tr>
<td>FIGA</td>
<td><em>Fontes iuris Germanici antiqui in usum scholarum separatim editi</em></td>
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<tr>
<td>LL</td>
<td><em>Leges</em></td>
<td></td>
</tr>
<tr>
<td>SRG</td>
<td><em>Scriptores rerum Germanicarum in usum scholarum separatim editi</em></td>
<td></td>
</tr>
<tr>
<td>SRG NS</td>
<td><em>Scriptores rerum Germanicarum, nova series</em></td>
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<tr>
<td>SRL</td>
<td><em>Scriptores rerum Langobardicarum et Italicarum</em></td>
<td></td>
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<tr>
<td>SS</td>
<td><em>Scriptores</em></td>
<td></td>
</tr>
<tr>
<td>Orig. Rom.</td>
<td>Origen</td>
<td><em>Commentaria in epistolam beati Pauli ad romanos</em></td>
</tr>
<tr>
<td>Orig. Isa.</td>
<td>Origen</td>
<td><em>Commentarium in Isaiam prophetam</em></td>
</tr>
<tr>
<td>Orig. 1 Cor.</td>
<td>Origen</td>
<td><em>Commentarii in epistolas sancti Pauli in primam epistolam ad corinthios</em></td>
</tr>
<tr>
<td>Pat. Exp. v+n test.</td>
<td>Paterius</td>
<td><em>Liber de expositione veteris ac novi testamenti</em></td>
</tr>
<tr>
<td>PL</td>
<td><em>Patrologia latina</em></td>
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Chapter 1
Introduction

1 Status quaeestionis

The goal of this thesis is to study the computistical writings of Hrabanus Maurus (c. 780 – 856) and to establish an edition and translation of book 10 of Hrabanus Maurus’ *De rerum naturis* accompanied by commentaries on its textual sources, dissemination, and later influence. Once completed, this thesis will contribute to the critical edition of *De rerum naturis libri viginti duo*, currently directed by Prof. William Schipper at Memorial University, to be published in the series *Corpus Christianorum, Continuatio Mediaevalis*.

The *De rerum naturis*, also known as *De universo*, is an encyclopedic compilation in 22 books composed in the interval (842-847) between Hrabanus’ tenure as abbot of Fulda and his appointment to the archiepiscopal seat at Mainz. The encyclopedia comprises two sections: books 1 to 11 focus on theological matters (God, the Bible, the church, etc.) and books 12 to 22 focus on secular affairs (the world, nature, human endeavours, domestic matters, etc.) This novel division of sacred and secular, seen in the earliest manuscript copies, combined with the work’s content and theological explanations, represents the most significant innovation in encyclopedic structure and technique between Isidore of Seville and Vincent of Beauvais. ¹

The *editio princeps* of *De rerum naturis* was edited and printed by Adolf Rusch in 1467 (Ru).² The Rusch edition was reprinted by George Colvener in his collected edition of Hrabanus' works in 1627 and again by Jacques-Paul Migne in the series *Patrologia latina* in 1851 (vol. 111, cols.

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Migne’s edition is unreliable in many places: among other anomalies, it includes an interpolation from William of Conches or possibly Boccacio. The recent revival of interest in Hrabanus, occasioned by the 1150th anniversary of his death in 2006, has renewed the call for critical editions and translations of his works. The creation and dissemination of analytical studies of Hrabanus’ works will not only support those scholars examining the intellectual culture of ninth-century Europe but will also benefit those working in cognate fields and different eras who aim to trace the literary and scientific legacy of Carolingian civilization.

There are 35 extant manuscript copies of *De rerum naturis*, in addition to a number of fragments and the Rusch edition. The illustrated copies, five complete and three fragmentary, have received a disproportionate amount of attention even though the earliest illustrated manuscript, Montecassino, Biblioteca dell’Abbazia, MS 132 EE, was copied in 1023 and hence does not reflect the state of the text during Hrabanus’ lifetime. Such scholars as Saxl, Lehmann, Panofsky, Le Berrurier, and Reuter have examined the origin and filiations of the more than 300 figurative illustrations and miniatures found throughout the 22 books. Book 10 comprises 17 chapters of which 7 have miniatures at their chapter headings: 1. De temporibus; 4. De diebus; 6. De nocte; 11. De vicissitudinibus temporum; 12. De anno; 13. De saeculo; and 15. De festivitatibus. These miniatures have been studied in detail by Reuter and Frandon and have been contextualized within broader iconographic and stylistic studies. Art historians differ in their findings: some advocate two distinct recensions and others hypothesize three illustrative traditions. The establishment of the textual tradition of *De rerum naturis* may help to clarify the ambiguities and to provide a solid foundation upon which further hypotheses can be constructed.

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3 There is a lacuna between the words stirpe and Agareni in 16.2 (PL 111, col. 438A) which, according to Schipper, corresponds precisely in its opening and closing words to a single leaf in Rusch’s edition. Migne’s *Patrologia latina* edition is unreliable because it also contains a number of lacunae and where Hrabanus quotes from Isidore, Migne corrected the text to correspond with the *Etymologiae*. For more details see Schipper, William. “Rabanus Maurus and his Sources” *Schooling and Society: The Ordering and Reordering of Knowledge in the Western Middle Ages*. Eds. Alasdair A. MacDonald and Michael W. Twomey (Leuven 2004) 1-21, p. 2

It may also help to shed light on the question of whether or not the illustrations originate with Hrabanus himself as Reuter has recently claimed.\(^5\)

Since the miniatures in book 10 have already been studied and since the earliest manuscripts of *De rerum naturis* are not illustrated, my thesis will focus only on the establishment of a text and the identification of the textual sources as well as the literary context of Hrabanus’ encyclopedic and computistical writings. In her 1969 dissertation, Heyse studied the textual sources for all 22 books of *De rerum naturis*.\(^6\) Although her work provides a valuable starting point, Heyse used only the unreliable Migne text and did not consider any manuscript evidence. In addition, there are over 30 passages in book 10 for which no source was identified. By going back to the earliest text, I hope to identify all the textual sources used by Hrabanus in book 10 and also to identify and correct Heyse’s attributions for passages which were introduced in the later manuscript and print traditions.

More recently, Schipper and Burrows have examined the dissemination and influence of *De rerum naturis* and concluded that the work’s enduring popularity is manifest in the numerous surviving copies, fragments, extracts, and adaptations. In addition, the number of heavily annotated manuscripts of the work indicates that Hrabanus’ text was not only copied but was also studied. A new edition of book 10 of *De rerum naturis* will grant scholars a deeper understanding of Hrabanus’ ingenuity and originality and will also enable further explorations of Hrabanus’ reception and influence.

Chapter one presents an introduction to the topic of computus in the early middle ages. Beginning with a definition of the term computus and its cognate disciplines, the chapter continues with a summary of the historical development of the computistical sciences from the early Christian church up to the Carolingian age. In order to contextualize book 10 of *De rerum naturis*, an overview of the encyclopedic genre is offered to lead into the discussions of


\(^6\) Heyse, Elisabeth. *Hrabanus Maurus’ Enzyklopädie “De rerum naturis”: Untersuchungen zu den Quellen und zur Methode der Kompilation* (Munich 1969)
Hrabanus Maurus’ computistical and encyclopedic works: *De clerorum institutione*, *De computo*, and *De rerum naturis*.

Chapter two presents an edition of the Latin text of book 10 of *De rerum naturis* and includes descriptions of the sources and textual history of book 10 of *De rerum naturis*, the manuscript and print witnesses used for this edition, and the editorial principles applied.

Chapter three provides a commentary on the structure, content, textual sources, and literary traditions of book 10 of *De rerum naturis*. Particular attention is brought to the excerpts in book 10 from such authors as the Venerable Bede, Isidore of Seville, Cassiodorus, and from the anonymous *Clavis melitonis*. As well, previously unidentified passages in book 10 are now attributed to 8 new sources including works by Ambrosiaster, Origen, and Paterius. Furthermore, additional passages which were introduced in the later manuscript and print traditions have been identified and sourced.

Chapter four explores the reception and influence of book 10 of *De rerum naturis* and the story behind the possible twelfth-century additions to the text as well as the avenues of future research that the commentary in the thesis proposes.

1.1 Computus in the Carolingian World

As a response to an earlier embassy from Charlemagne, Sultan Harun al-Rashid (766-809), the fifth caliph of the Abbasid Dynasty, sent a number of extraordinary gifts to Aachen in 807. The most impressive amongst these gifts was a highly intricate mechanical brass water clock.\(^7\) Not

\(^7\) *Annales regni Francorum* 807: …ad imperatorem pervenerunt munera deferentes, quae praedictus rex imperatori miserat...necnon et horologium ex auricalco arte mechanica mirifice conpositum, in quo duodecim horarum cursus ad clepsidram vertebatur, cum totidem aereis pilulis, quae ad completionem horarum decidebant et casu suo subiectum sibi cimbalum tinnire faciebant, additis in eodem eiusdem numeri equitibus, qui per duodecim fenestras completis horis exiebant et impulsa egressionis suae totidem fenestras, quae prius erant apertae, claudebant; necnon et alia multa erant in ipso horologio, quae nunc enumerare longum est. *Annales regni Francorum* 807. Ed. Friedrich Kurze. MGH SRG 6 (Hannover 1895) pp. 123-124; “The Persian envoys brought...a fabulous brass water clock, with a mechanism to make twelve little balls strike bells and twelve figurines of horsemen appear in twelve
only was the fascinating timepiece an example of skilled craftsmanship, but for Charlemagne it also symbolized a culture of learning and progress. Furthermore, as Duncan notes, “al-Rashid’s gift also must have underscored the Europeans’ backwardness. They had nothing approaching such a wondrous device as the caliph’s clock, a situation Charlemagne reportedly understood and deplored”.  

Thus, in order to counteract this deplorable situation, Charlemagne integrated time-reckoning as an element of his wider program of church reform.

For example, Charlemagne undertook to make certain that the clergy had the resources and education to learn and teach computus in order to understand enough about mathematics and time-reckoning to make competent calculations for the Christian calendar. He also attempted to reform certain aspects of the calendar itself. Perhaps wanting to emulate Caesar and Constantine, who transformed their calendars to mark new political and religious eras, Charlemagne incorporated the use of the anno Domini system of dating favored by Dionysius and Bede. In addition, he proposed to rename the months of the year to reflect the vernacular usage, although it never caught on.

These are just microcosmic examples of the many reforms proposed by Charlemagne to improve the administration and governance of his realm and to ensure a prestigious legacy. This new culture of learning and progress that Charlemagne strove to create is defined by Giles Brown as “the revival of learning in conjunction with a movement to reform (to ‘correct’) both the institutions of the church and the lives of the Christian peoples living under Carolingian rule”.


8 Duncan 1998, p. 95

9 See note 100 p. 23

It is within this context of renewal that Hrabanus Maurus saw fit to recreate Isidore of Seville’s encyclopedia in a new way.

Time-reckoning and Computistics

Although the general definition of the term *computus* denotes the art and science of making calendars, the more specific usage of the term in the early middle ages referred to the application of this discipline to one question in particular: the calculation of the date of Easter. The scope of computus has changed over time and other disciplines have become associated with it either by virtue of necessity, such as mathematics or astronomy, or by virtue of its application, such as liturgy or medicine. Wesley Stevens describes the broader meaning of computus as “reckoning at all levels from initial learning of numerals, practice of arithmetic, use of tables of dates, mastery for calculating dates themselves, explanation of the significance of such data and of the whole order of the cosmos – theologically as well as mathematically. Time-reckoning required some manipulation of numbers, recognition of the parts of the zodiac and the simple astronomy of solar and lunar motions, along with some history and theology”.  

The word *computus* is post-classical. *Computatio* is the term found in classical texts. According to the Oxford Latin Dictionary, *computare* is a mathematical or counting term, although it can also be used in the sense of ‘to work out (a problem etc.)’. The earliest example of computus used in connection with time appears in a fourth-century Roman astrological text. In the early sixth century, computus was rather narrowly defined as the means necessary for an understanding of Easter tables and the systems used to build them. From the middle of the seventh century onwards, computus became an organic synthesis of both theoretical and applied sciences, including finger-counting, arithmetic, astronomy, units and divisions of time, the

11 Stevens in the Introduction from *Rabani mauri de computo*. Ed. Wesley Stevens. CCCM 44 (1979) p. 167
history and workings of the lunar and solar calendar, algorithms for the calculation of chronological data (especially those connected to Easter), and theories about and simple tools for measuring time. According to Wallis, Bede seems to treat computus more as a “function” than as a “subject”, using it more in the active sense of what it can be used to achieve. In his works, Bede extended its boundaries to include astronomy and cosmology as well as moral theology and biblical exegesis as it applied to time. In short, “science was almost synonymous with computistics in the Christian milieu of the early middle ages”. Computus, then, in the Carolingian period influenced by Bede’s writings, “hovers somewhere between technique and a kind of science-in-progress, tentatively combing the flotsam and jetsam of ancient erudition in search of some as yet undefined identity”.

It is hard to equate computus to a scientific discipline in the modern sense of the term because it is more of an application of other sciences like astronomy and mathematics. It is not theoretical and has no universal principles, nor did it exist in the ancient canon of sciences or in the modern university. It can be reduced to the quest to answer one mathematical problem: how to find the date of Easter. Solving this problem, however, is not simple and requires detailed co-ordination of astronomical data as well as reconciling and interpreting a variety of biblical texts.

The basic challenge with the Easter question is twofold: what criteria determine a suitable date for Easter and how can such a date be calculated in advance? As Wallis describes it, the first question is essentially theological while the second is mathematical and astronomical. There are three conditions that are factored into the criteria for determining a valid Easter date. The first condition is that Easter is supposed to coincide with the Jewish Passover but Christians, at least from the second century on, chose to celebrate Easter only on a Sunday even though Passover

\[\text{\footnotesize 14} \text{ Warntjes, Immo.} \text{ The Munich Computus: Text and Translation} \text{ (Stuttgart 2010) p. xxxiii} \]
\[\text{\footnotesize 16} \text{ Wallis 2004, p. xxvi} \]
\[\text{\footnotesize 17} \text{ Wallis 2004, p.xvii} \]
can fall on any day of the week.\(^ {18}\) By the third century, “most Christians agreed that Easter should be kept on the Sunday after the fourteenth lune (luna XIV) of the first lunar month, a date known in the West as the Paschal term and in the East as the Legal [i.e. Old Testament] or Hebrew Pascha”.\(^ {19}\) Secondly, Nisan is ‘the first month’ and falls in spring, but the seasons are solar and, therefore, determining when spring begins and when Nisan begins depends on the solar calendar. Thirdly, after satisfying the above criteria, within what range of dates in the Julian calendar can Easter be celebrated? The problem then involves three distinct systems of time measurement: weekdays, which are arbitrary and not connected to any seasonal or astronomical phenomenon; Nisan, which is a month in the lunar calendar; and spring, which is a season in the solar calendar. In order to keep Nisan in the spring, “the Jews had to adopt a lunisolar calendar, which adjusted the lunations to the solar year. Potentially, such a calendar could match up dates in a solar calendar, like the Julian calendar, with phases of the Moon”.\(^ {20}\)

Constructing such a calendar was important because calculating the date of Easter in advance could not be determined by reactively watching the skies. The general practice was to calculate the date of Easter in advance. However, this was only possible after the Jews had established the date for Passover. “It was therefore necessary to construct a lunar calendar, which especially in the Latin world became more than a mere Easter-finding device”.\(^ {21}\)

A Brief History of Ancient and Early Medieval Computistics

The following brief history of ancient and early medieval computus will not only provide the background for understanding the state of computistical knowledge in Carolingian times but it will also introduce the various concepts, criteria, and calculations used in determining the date of Easter within several reckoning systems. In his computistical writings, including book 10 of *De

\(^ {18}\) Wallis 2004, pp. xxxiv-xxxv


\(^ {20}\) Wallis 2004, p. xxxv

\(^ {21}\) Blackburn & Holford-Strevens 1999, p. 801
rerum naturis, Hrabanus makes reference to and explains these concepts and criteria and also gives instructions for using these calculations.

The easiest way to trace the chronological development of the science of computus in the early middle ages is to identify stages of development based on the predominant computation (or reckoning) system in use. Over the course of eight centuries, three systems dominated the field: the 84(12) cycle (the *Supputatio romana*), the Victorian computation, and the Dionysiac computation. During the time that the Christian community was considered a sect within Judaism, that is, from the resurrection of Christ to the early second century, “the Christian communities commemorated the passion of Christ at the same time as the Hebrew pasch, in accordance with John’s Gospel”. They therefore celebrated Easter on the fourteenth moon of the Hebrew first month, Nisan. In the second century, a change in the meaning of Easter triggered a move from celebrating the passion of Christ to celebrating his resurrection. Consequently, the Christian communities began to celebrate Easter only on a Sunday. The rule they devised, which is still the basic rule used today, is to celebrate Easter on the first Sunday after the first full moon (which is the fourteenth moon) in spring.

By the middle of the second century, a controversy had arisen over the appropriate date to be used. The differences emerged because of the different backgrounds of Christian communities. On the one hand, Christians who converted from Judaism believed that the resurrection was a fulfillment of the Jewish Passover and therefore should be celebrated on the fourteenth of Nisan leading them to become known as the Quartodecimans. On the other hand, the Roman and Alexandrian Christians stressed the day of the week and celebrated Easter on the Sunday following the fourteenth of Nisan leading them to become known as the Pentodecimans. The difficulty of having Easter tied to the date of Passover was the implicit dependence on the Jewish

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22 Warntjes 2010, p. xxxiv
23 Warntjes 2010, p. xxxv
authorities. As a result, the Quartodeciman practice was rejected and treated as a heretical practice.  

Two further questions remained even after the rejection of Quartodecimanism. Firstly, could Easter be celebrated on the fourteenth of Nisan when it was a Sunday? Secondly, should the Christians rely on the Jews to determine the month of Nisan? Regarding the first issue, the Roman church advocated that “if Easter commemorated the resurrection, it could not be celebrated until the sixteenth of Nisan; this is the third day, counting inclusively, after the Passover, for the Resurrection took place on the third day after the Passion.” For the second question, the Christian stance was that the Jews were not determining Nisan correctly and that the Christians should develop their own determination of the equinox. The importance of establishing an independent system of advanced determination for the date of Easter was to avoid depending on the Jews and to accommodate the increasingly widespread custom of fasting before Easter.

Numerous heresies, beyond the Quartodecimans, were destabilizing the church, and to resolve the disputes Constantine called the first Ecumenical Council, the Council of Nicaea in 325. Records of the discussion do not survive and no related documents give any firm details about decisions regarding the authority to determine the date of Easter celebrations. In the following years, the Quartodeciman controversy continued and the disagreement between Rome and

25 Warntjes 2010, p. xxxiv
26 Wallis 2004, p. xxxvi
28 Holford-Strevens 2005, p. 45
29 318 representatives from all over Christendom met in the Imperial Palace at Nicaea (Iznil) in Bythnia from 20 May to 25 July in AD 325. Richards 1998, p. 347
30 Duncan, David Ewing. The Calendar: The 5000-Year Struggle to Align the Clock and the Heavens – and What Happened to the Missing Ten Days (London 1998) p. 59
31 The Quartodecimans were excommunicated by the Council of Antioch in AD 341 and further condemned in AD 364 at the Council of Laodicaea and in AD 381 at the Council of Constantinople. See Richards 1998, p. 348
Alexandria produced conflicting dates for Easter that needed to be resolved on an annual basis. The confusion continued in part because the only criterion that was established at the Council of Nicaea, that Easter “could not be celebrated on 14 Nisan “with the Jews” even if that day fell on a Sunday”, could still be interpreted in two ways depending on the set of lunar limits used. Complicating matters was the injunction that Easter should not be celebrated twice in the same year. However, determining the start of the year meant determining the date of the spring equinox and even this date, the artificial calendrical date that is, was not universal. Despite these fundamental differences, in practice the Romans almost always celebrated on the Alexandrian dates during the fourth and fifth centuries.

During the fourth and fifth centuries, at least two astronomers created Easter tables: Theophilus (Bishop of Alexandria 385-412) and his nephew Cyrillus (also Bishop of Alexandria). However, the difficulties in fusing the lunar and the solar calendars meant that these tables were still inaccurate and further work had to be done to reconcile the two calendars. The solution would be to find a system where each date in the lunar calendar can be assigned to a date in the solar calendar. However, since calendars are not equipped to count time in increments less than a day, only systems which can match up whole numbers can be used and in order to do this the calendars have to be artificially normalized. “The lunation is slightly more than 29 ½ days, and so the fiction was adopted that lunations were alternately 29 days and 30 days long; medieval

32 Wallis 2004, p. xxxviii; The Alexandrian interpretation used lunar limits of 15 to 21 meaning that when 14 Nisan fell on Sunday, Easter was celebrated the following Sunday. The Romans used lunar limits of 16 to 22 which allowed Easter to be celebrated on 15 Nisan. See Blackburn & Holford-Strevens 1999, p. 792
33 Wallis 2004, p. xxxviii
34 In the Roman solar year the equinox fell on 25 March and in the Alexandrian lunar year it fell on 21 March. Duncan 1998, p. 59
35 Wallis 2004, p. xxxix
36 Theophilus created a 100-year table covering the years 380 to 480 and Cyrillus devised a 95-year table for the years 437-531. Duncan 1998, p. 59; see also Stevens, Wesley M. “Ars computi quomodo inventa est.” Zwischen Niederschrift und Wiederschrift. Eds. Richard Corradini et al. (Vienna 2010) 29-65, p. 38
37 Both these tables suffered from the flaw in the Metonic cycle that 235 synodic lunar months do not fit exactly into 19 Julian years. There is a one-day remainder that over time creates a significant discrepancy. Duncan 1998, p. 59
computists called these “hollow” and “full” lunar months”.\(^{38}\) In addition, since the solar year is a quarter-day longer than the lunar year, the extra day in the calendar every four years had to be reckoned into the system. In antiquity and the middle ages, this extra day inserted every four years, that is every leap-year, was known as the ‘bissextus’, because it was inserted on 24 February (the sixth kalends of March), thereby creating two successive sixth kalends of March.\(^{39}\)

Another challenge to solve in the luni-solar calendar is that, given the shorter length of the lunar year (354 days) than the solar year (365\(\frac{1}{4}\) days), the age of the moon is 11 days older at the end of the solar year than it is at the beginning. When these 11 days accumulate to more than 30, then the computist must subtract this month from the total days and add a lunar month. In order to have a system that will repeat a cycle of correctly assigned equivalent dates in the lunar and the solar calendars, the computist must find “a whole number of solar years which can accommodate a whole number of lunations”.\(^{40}\) This is mathematically impossible but it can be estimated with certain common ratios: \(3/8 (.3750), 4/11 (.3636), 7/19 (.3684), 31/84 (.3690)\). These ratios give the computist a few options for building an Easter table and the reference to these ratios is used to distinguish the octaeteris (8-year), the \textit{Supputatio romana} (84-year), and the Metonic (19-year) cycle. The idea of the ratios that govern the tables is to intercalate the extra lunar months into the solar calendar resulting in either an intercalation of 3 lunar months over 8 years, 4 over 11, 7 over 19, or 31 over 84.\(^{41}\)

There were still the issues of when to insert these extra lunar months during the cycle of years and months and dealing with the fact that an inserted embolismic month can affect the calculation of 14 Nisan by a day. In addition, the calculations of the 19-year cycle leave it with an extra lunar day at the end. The lunar count had to jump over this extra day to remain as close to the real day as possible. This was what was referred to as the ‘leap of the moon’ (\textit{saltus

\(^{38}\)Wallis 2004, p. xlii

\(^{39}\)The leap-year is referred to as the ‘\textit{annus bissextus’}. Wallis 2004, p. xlii

\(^{40}\)The term ‘whole number’ refers to an integer, a number without fractions. Wallis 2004, p. xlii

\(^{41}\)Wallis stresses that in every case the lunar month is the calculated lunar month, and the solar year is the regularized solar year. Wallis 2004, p. xliii
lunae) and had to be incorporated in the Easter tables. Most tables could include the saltus lunae but to work they also had to accommodate a repeating cycle of Sundays. Only the 84-year cycle and the 112-year cycle could function adhering to all of these criteria. Of these two, it was variants of the 84-year cycle which became the commonly used tables in the Western Christian church in the early middle ages. It became known as the Supputatio romana and also had the features of placing the equinox on 21 March and inserting the saltus lunae every 12 years. The Supputatio romana was not a perfectly constructed Easter cycle and some years it did not list an Easter date at all. In these cases, the two nearest dates were given as options for the Pope to choose from. The increase of such situations made it clear that the Supputatio romana was more and more inaccurate in its predictions. Of the several reforms that were undertaken in the first half of the fifth century, the most important was the 14-year saltus lunae variant which became known as the latercus. The latercus, attributed to Sulpicius Severus (c. 410) had its lunar limits as Luna 14 to 20 and “it applied a different sequence of lunations and the saltus were placed in every fourteenth year instead of every twelfth”.

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42 Holford-Strevens 2005, p. 46

43 In order to accommodate the Sundays, a cycle would have to be divisible by 28, that is, the number of years in the weekday cycle. Wallis 2004, p. xliii

44 The 112-year cycle of Hyppolytus has a double cycle of 8 years repeated 4 times. Wallis 2004, p. xliii

45 The 84-year cycle, developed in the fourth century in Rome, functioned within the Easter limits of 16 to 22 and was based on the Roman New Year of 1 January. Its lunar calculations were based on the age of the moon on 1 January, also known as the epact. See Wallis 2004, p. xliiv and Richards 1998, p. 349

46 As Wallis explains, Celtic computus was a special variation on the 84-year system. There is a difference of 924 days (11x84) between 84 solar years and 84 lunar years. This also equals 30 intercalated lunar months, plus 24 days. When the remainder is treated as an extra embolismic month, the cycle ends 6 days behind the astronomical reality. To correct this discrepancy, the calculated moon will have to “jump back” six days by inserting a one-day “jump” (saltus) every 14 years, or a saltus every 12 years, and omit it in the last year of the cycle. The Celts used the first option (saltus every 14 years) and the Romans used the 12th-year saltus system. Wallis 2004, p. xlv-xlvi

47 According to Holford-Strevens the Supputatio Romana was a “shoddy piece of work that in some years gave two legitimate Easters, in others none.” Holford-Strevens 2005, p.46; see also Wallis 2004, p. xlv

48 Warntjes 2010, p. xxxvi
Gaul and other parts of continental Europe but it really took hold in Ireland and Britain, where it remained the predominant Easter reckoning until the eighth century.\textsuperscript{49}

While the \textit{Supputatio romana} and its laterculus variant were dominant in the West, in the East, the Alexandrian church had switched from the 8-year cycle of the octoæteris to the Metonic 19-year cycle favoured by professional astronomers.\textsuperscript{50} The Metonic cycle is actually more accurate than the 84-year cycle and was eventually incorporated into the Roman reckoning.\textsuperscript{51} The first recorded table based on the Metonic cycle was composed in 258 by Anatolius, bishop of Laodicea.\textsuperscript{52} By repeating the 19-year cycle 28 times it was transformed into a fully cyclical Easter table.\textsuperscript{53} The table mentioned above ascribed to the nephew of Theophilus, Bishop Cyril of Alexandria, was the first to modify the Metonic cycle to fit the Julian calendar.\textsuperscript{54} It was composed of five 19-year cycles (437-531) and began on 1 January with the leap-year day inserted on 24 February. Despite continued attempts to reconcile the Roman and Alexandrian reckonings in one cycle, the dates given for some years were too far apart or they violated the rules of the other cycle. The churches compromised in practice but still held to disagreeing principles, and the confusion and appearance of disunity led to renewed efforts to find evidence

\textsuperscript{49} Warntjes 2010, p. xxxvi

\textsuperscript{50} The name refers to its creator, Meton of Athens, who established this cycle in the fifth century BC. Wallis 2004, p.xlvii

\textsuperscript{51} The 19 solar years of the Metonic cycle can accommodate 228 lunar months of 29 ½ days (6,726 days), plus 7 intercalated lunar months of 30 days (210 days), plus 4 ⅝ additional lunar days for the leap years (6939 ⅝ days). Therefore, one lunar day is omitted at the end of the nineteenth year. In the 19-year cycle, the embolismic months are inserted as follows: year 3: 2 December, year 6: 2 September, year 8: 6 March, year 11: 4 December, year 14: 2 November, year 17: 2 August, year 19: 5 March. In years 8 and 19, the embolism occurs in March, at a time when it will affect the reckoning for Easter. Wallis 2004, pp. xlvi-xlvii

\textsuperscript{52} Anatolius’ table was easy to repeat and was successfully continued by computists in Alexandria, including by Athanasius and Theophilus. Richards 1998, p. 349

\textsuperscript{53} Wallis 2004, p. xlviii

\textsuperscript{54} The Alexandrian 19-year tables were hard to adapt because they were based on the Egyptian calendar, which began in September, and which inserted its leap-year day in August and because Egyptian and Roman months did not coincide. Wallis 2004, p. xlviii
for the validity of one of the systems.\textsuperscript{55} When this discrepancy happened in 444 and then again in 455, the crisis became a priority to quell. Pope Leo in Rome gave way both times for the sake of unity but also commissioned his archdeacon Hilarius to employ computists to identify the problem and fix the tables to resolve the disagreements once and for all.\textsuperscript{56}

The Victorian Era

Hilarius charged Victorius of Aquitaine to figure out the problem of the 84-year cycle.\textsuperscript{57} In 457 Victorius produced a paschal cycle of 532 years starting in AD 28 which was based on the 19-year Metonic cycle (7x19x4). The 532-year cycle was known in Alexandria and Victorius was perhaps familiar with Theophilus’ and Cyril’s tables.\textsuperscript{58} Despite trying to reconcile the Roman and Alexandrian systems, Victorius did not, in fact, solve the problem that his tables explicitly indicated double dates for some years. Although he adopted the Alexandrian system in principle, he kept the old Roman lunar limits of 16 to 22, rather than switching to the Alexandrian limits of 15 to 21.\textsuperscript{59} He also placed the saltus in the sixth year of the cycle instead of the nineteenth resulting in his cycle being out of phase with the Alexandrian one for years 7 to 19.\textsuperscript{60} Beside his own list of Easter dates he included a column of “Greek dates” and left it up to the Pope to decide which one to adopt.\textsuperscript{61} Nevertheless, when the Victorian cycle was officially published in

\textsuperscript{55} For a discussion of the occurrences of different dates and the fallout from these discrepancies see Blackburn & Holford-Strevens 1999, pp. 807-808
\textsuperscript{56} Blackburn & Holford-Strevens 1999, p. 793
\textsuperscript{57} Stevens 2010, pp. 38-39
\textsuperscript{58} Wallis 2004, p. xlix
\textsuperscript{59} Wallis 2004, p. lii
\textsuperscript{60} Holford-Strevens 2005, p. 49
\textsuperscript{61} His “Latin” Easter dates were often identical with the Alexandrian dates. Therefore, “if the Pope chose to celebrate the “Latin” Easter as recorded in Victorius’ table, he would, in years 7-19 of the cycle, in fact be choosing the Alexandrian Easter date.” Wallis 2004, p. lii
465 by Hilarius, now Pope, it gained authority and popularity since it appeared to be perpetual\(^{62}\) and it “retained the familiar reference to the epact and feria of 1 January”.\(^{63}\) The Victorian system proved popular in Francia “where it was decreed as the definitive reckoning at the Council of Orleans in 541, and where it was only gradually abandoned in a slow process throughout the eighth century”.\(^{64}\)

Scholarly opinion is divided on Victorius’ skills as a mathematician and computist due to his confusing use of double dates which solved some problems but created new ones. Wallis calls Victorius’ Easter table “a clumsy attempt” in agreement with Bruno Krusch’s 1937 negative assessment of Victorius’ mathematical skills. In the seventh and eighth centuries, Columbanus and Bede also noted their criticisms of Victorius’ work.\(^{65}\) However, in his review of Wallis’ analysis, Warntjes, declares Victorius to have been one of the best mathematicians of the fifth century and the first person to have calculated a 532-year Easter table. According to Warntjes, “to hold his invention of double dates against him, or his mathematical skill, is to misjudge his intentions; by presenting alternatives, he was simply more tolerant and less dogmatic than his contemporaries. It should be kept in mind that the composition of a new Easter table (not to be confused with the rather simple continuation of an old one) was beyond the skills of seventh- or eighth-century computists, of Bede or any other”.\(^{66}\)

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\(^{62}\) Victorius projected his cycles for 532 years, and he “knew that his table would repeat after this period – although he did not know why. Victorius saw his 532-year cycle as 4x133 years, not 19x28, as Bede correctly did.” Wallis 2004, p. li

\(^{63}\) Holford-Strevens 2005, p. 49; Richards 1998, p. 350

\(^{64}\) For a short time, it was also popular in southern Ireland and Anglo-Saxon England. Warntjes 2010, p. xxxviii


\(^{66}\) See Immo Warntjes’ review of Wallis 2010 in *The Medieval Review* 12.08.01
The Dionysiac Era

In Rome, the problems with Victorius’ system soon became apparent. Once again a new solution was sought, precipitated by an impending Easter date of 19 April 526, which fell on luna 22 (i.e.: outside of the Roman limits). It was Pope John I who commissioned a new study in the early 520s calling in a Scythian monk named Dionysius Exiguus. Dionysius followed Victorius in using the Alexandrian system and extended the table for 95 years (532 to 626). In some ways, his method was similar to Victorius’ in his mixing and matching of both Roman and Alexandrian principles. He translated the Egyptian dates into the Roman calendar while at the same time discarding the “Latin “ rules and ignoring 1 January for either epact or feria. He did, however, make a positive contribution by making the Alexandrian tables accessible in the Latin West since he was the first to translate them from Greek into Latin. Arguably the most important and lasting impact of the Dionysiac reckoning is his introduction of the anno Domini dating scheme. “Dionysius condemned the political custom of dating calendar years by the regnal periods of the Roman emperors, especially after the infamous persecutor of Christians,

67 “His incompetence was apparent as early as 482, for which he gave a Latin date of 18 April on luna XV, and a Greek of 24 [sic] April on luna XXII, violating both parties’ lunar limits and condemning the ‘Greeks’ to keep Easter on a Saturday.” Blackburn & Holford-Strevens 1999, p. 793

68 There was a serious discrepancy between the Victorian tables and the Alexandrian Easter date because of Victorius’ misplacement of the saltus. Wallis 2004, p. liii

69 For a full study of the work of Dionysius Exiguus see Mosshammer, Alden. The Easter Computus and the Origins of the Christian Era (Oxford 2008); see also Stevens 2010, pp. 38-39

70 Wallis 2004, p. liii

71 Bede built the second half of De temporum ratione around the Dionysiac table. A few notable features of the table include an epact of 1 January (as opposed to the Alexandrian epacts which began on 1 September, the Egyptian New Year) and the tying of the epacts to 22 March (because this date falls on the same weekday as the Roman leap-year day of 24 February and it marks the earliest possible date for Easter). Dionysius thus “adapted epacts both to Roman calendar usage, and the exigencies of Paschal reckoning.” His cycles also began in a year when the moon was new on 22 March and he chose a different era for his table, the year of the Incarnation. Wallis 2004, pp. liv-lv

72 Blackburn & Holford-Strevens 1999, p. 794; Holford-Strevens 2005, p. 50; One flaw in Dionysius’ system was the impossibility of matching up the seven-day week, in which Sunday fell, mathematically with a 95-year period of 19-year cycles since seven does not divide into 95. Duncan 1998, p. 74

73 Warntjes 2010, p. xxxix

Despite the fact that Dionysius’ tables were commissioned by Pope John I, the death of the Pope shortly thereafter, the unstable political situation of the Gothic Wars, and the establishment of Victorius’ system as the standard, meant that it took another century before evidence surfaced that the Dionysiac reckoning had taken hold.\footnote{Wallis 2004, p. liv; There is no proof that Rome had committed herself to Dionysius’ tables until 654 when St. Wilfrid claims to have learnt it there. Blackburn & Holford-Strevens 1999, p. 794} What really gave the Dionysiac reckoning a boost was its adoption by authors whose works became well-known. “It was Dionysius’ friend Cassiodorus who first used the AD system in a published work when, in 562, he and his monks wrote their textbook on how to determine Easter and other dates, the \textit{Computus paschalis}.\footnote{Duncan 1998, p. 75} Isidore of Seville knew of Dionysius’ table and attempted to reproduce it in book 6, chapter 17 of his \textit{Etymologiae}.\footnote{Wallis 2004, p. liv} “Isidore continued the tables for another 95 years, and the venerable Bede later completed them to the end of the second Victorian period (AD 1064)”.\footnote{Richards 1998, p. 351} In Northumbria, where Bede was writing, Dionysius’ Easter tables prevailed over Victorius’ by the late seventh century.\footnote{Holford-Strevens 2005, p. 124} It was really Bede’s choice to use the AD system in his \textit{Historia ecclesiastica gentis Anglorum}, instead of the world era which he had previously used in his chronicle, which helped spread the popularity of the Dionysiac system to the continent. It was adopted in Spain in 587 and probably first arrived in Francia in the seventh century through Italian and Spanish channels and then again when such Anglo-Saxon missionaries as Willibrord, Boniface, and Alcuin
brought it with them. By the early ninth century, “every region in Francia seems to have converted to the Dionysiac reckoning”.

The Irish Phase

The next stage in the development of medieval computistics is best described, as Immo Warntjes does, as the Irish phase, that is the period between the reception of Isidore and that of Bede. It is a period that sees the establishment of the Dionysiac reckoning and the refinement of the science supporting the use of the Dionysiac tables. It is also defined by the so-called “Insular crisis” in traditions of computus from which the Dionysiac reckoning solidified its dominant status. Another reason to name this period the Irish phase is to acknowledge the advances to computistics made by the Irish not only in devising their own version of the 84-year cycle but also by creating a literary genre which greatly influenced the teaching of computistics in the Carolingian realm.

According to Columbanus, at the close of the sixth century, Ireland possessed “mathematicians most skilled in the calculation of the computus” who studied Victorius’ tables and wrote treatises to explain the mathematics behind the system. Since three reckonings were known and used in the seventh century: the Latercus (the Irish version of the 84-year cycle); the

80 Richards 1998, p. 351
81 Warntjes 2010, p. xxxix
82 Warntjes 2010, p. xxii
83 Columbanus, Epist. 1, 3-4 in Sancti Columbani opera. Ed. and Trans. George Stuart Murdoch Walker (Dublin 1957) pp. 4-9
84 Irish writers claimed that words meaning number and calculation were better suited to the problem of the Paschal computus and used two words derived from Celtic roots: rima, number, and rimarius, calculator. McCluskey, Stephen. “Astronomies in the Latin West from the Fifth to the Ninth Centuries.” Science in Western and Eastern Civilization in Carolingian Times. Eds. Paul Leo Butzer and Dietrich Lohrman (Basel 1993) 139-160, pp. 143-144
85 The Latercus was based on an 84-year cycle with saltus at 14-year intervals. The solar limits were 26 March for the earliest Easter and 23 April for the last, the lunar limits lunae XIV to XX. The upper solar limit was the day after the Latin equinox; the other limits were taken from Augustalis. “The novelty was the lunar calendar, which
Victorian reckoning; and the Dionysiac tables, Irish computists set about studying each one to “decide which of these was to be considered as the theologically most justified and technically most accurate method”. In the process they wrote such textbooks as the *Computus Einsidlensis*, *De ratione computandi*, and the *Munich Computus*, which became, along with the works of Bede, the literary foundation of Carolingian computistics. Analyzing and deciding on an authoritative reckoning was not a purely theoretical pursuit and the differences in practices in the various regions created conflicts and spurred the pursuit for a solution. The Insular crisis came to a climactic conclusion at the Synod of Whitby in 664, where King Oswy of Northumbria decided to adopt the Roman criteria for canonical Easter. The Synod of Whitby was called to settle the matter after many years in which King Oswy, following the Celtic Easter calendar, and his wife Eanfleda, following the Roman church, celebrated Easter on different days.

abandoned the alternation of full and hollow months: the full month ending in January was followed by three successive hollow months; the remaining lunar months each contained one day fewer than the solar months in which they ended. A careful choice of initial epact ensured that, like the Alexandrian computus, and unlike either Augustalis or the *Supputatio Romana*, the *Latercus* gave a single Easter date for every year.” Holford-Strevens 2005, p. 51; see also Wallis 2004, p. lv

86 Warntjes 2010, p. clix
87 Warntjes 2010, p. clix
88 See Wallis 2004, pp. lvi-lxii for a detailed discussion of the Irish “forgeries” like the *Liber Anatolii* or canon of ps.-Anatolius, the primary document debated at the Council of Whitby in 664. It was one of Bede’s major sources of computistical knowledge and is found in the manuscripts known collectively as the “Sirmond Group”. Wallis also discusses Cummian’s *Epistola de controversia paschali* and the *Epistola Cyrilli*, which, like the *Liber Anatolii*, presents an altered version of an authentic text (a letter from Cyril of Alexandria to the Council of Carthage of 419) with an attached forged document. See also Duncan 1998, pp. 86-89 for a synopsis of Bede’s account of the Synod of Whitby.

89 The papal mission had introduced Roman practices to England while the spread in Ireland is well-documented: “The southern Irish followed the Roman computus by 631. The northern Irish, except for Iona, were converted for the most part by Adomnan, c. 686; their agreement was sealed at the Synod of Birr in 697. The Picts converted under their king Necthan about 710. Iona and its dependencies were won over by Egbert in 715 or 716.” Wallis 2004, p. lxi; see also Stevens CCCM 44 1979, p. 170

90 The monks of Iona held out until AD 715. Richards 1998, p. 35; Parts of Wales held out until the 840s. Holford-Strevens 2005, p. 51
Since the Irish textbooks provided a thorough analysis of the now standard Dionysiac reckoning, scholarly focus then shifted to refining the Dionysiac system. The basic preoccupation of computists now turned to the “invention of new and better methods of calculating calendrical data within this system”. It was the Dionysiac system that Bede chose to use in his writings and it was the system that he taught to his students at the monastery of Wearmouth-Jarrow. By providing an exposition of the Dionysiac Easter principles “together with a 532-year Easter table that did away with the need for recalculation every 95 years”, Bede’s tables became the standard pedagogical tools throughout the West. In addition to Dionysius’ Paschal tables, Bede also promoted Dionysius’ dating system of anno Domini – the first time this was done in such a prominent and widely-read history. At a time when the three systems were still competing for dominance, it was Bede’s “transformation of Dionysius’ system into a perpetual Paschal table, which effectively won the day for Dionysius” in the islands and the work of Bede’s pupils ensured the promotion of the Dionysiac system on the continent.

Beyond achieving a decisive victory for the Dionysiac reckoning, Bede’s works also changed how the discipline of computus was conceptualized, how it was taught, and how it was recorded. Bede supplemented computistical knowledge with material from such sources as Pliny, Vergil, Macrobius, Augustine, and Ambrose, thereby placing computus squarely within the discipline of astronomy. By helping to deepen his students’ understanding of the astronomical concepts

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91 Warntjes 2010, p. clix; for instance the De ratione computandi sets out a complete lunar calendar for the year on Dionysiac principles. Holford-Strevens 2005, p. 56

92 The system was not challenged for another two hundred years. It was only from the very late tenth century onwards with the introduction of fundamental Greek and Arabic texts, as well as astronomical instruments, that there were improvements of scientific expertise, especially in astronomical observations. “Even though the Dionysiac reckoning was not abandoned anywhere for another five hundred years, its faults became increasingly apparent, the critique of this system increasingly louder, until it finally culminated in the Gregorian calendar reform.” Warntjes 2010, p. xlvii

93 Holford-Strevens 2005, p. 54. See his figure 13, p. 55, for Bede’s Easter Tables. Bede did offer some improvements to the calculation methods of the Dionysiac tables.

94 Duncan 1998, p. 84

95 Wallis 2004, p. lxi
underlying the Easter question, “Bede shaped computus into its definitive form”.

He also brought together time-reckoning, the liturgy, and historiography, and Borst argues that “the one cannot be understood without the other two” especially within the monastic context. It is this Bedan computistical heritage which Alcuin passed on to Hrabanus and which shaped the way he and his contemporaries tackled computistical problems in the classroom as well as at court.

The Carolingian Era

Charlemagne’s personal interest in computus and the example he set by “learning the ars conputandi himself and studying the courses of the stars” give us an idea of the high regard given to computistics and astronomy at the court in Aachen. The status of computus and its central role in the governance of the whole realm can be seen in the study of the legislation arising from councils and of the texts studied and produced by the Carolingians, both for palace use and for the abbey classroom.

While deciding on one authorized formula for determining the date of Easter would maintain a powerfully centralized church structure, this was not the only element of calendrical reform that Charlemagne and his court officials discussed. In 797 a controversy erupted when Charlemagne wanted to move the intercalated extra day for the saltus lunae from November to March. This led to another conflict concerning the date of the beginning of the year. Charlemagne wanted the year to begin in September while Alcuin and his party of councillors wanted the year to begin with Christ’s Nativity, because it coincided with the winter solstice. Just as Caesar and Augustus had changed the names of the months to commemorate Roman usage, so Charlemagne

96 McCluskey 1993, p. 147

97 The computus, the martyrology and the chronicle were the three main foundations of scholarship which flourished in Benedictine monasteries and succeeded in bringing eternity into the present. Borst 1993, p. 41


wanted to change the Latin month names to Frankish ones in order to strengthen the “identity between his people and the calendar”. These debates were recorded in letters between Charlemagne and Alcuin and in two short treatises written by Alcuin to explain the concepts and justify his position concerning these controversies. The external consequences of these courtly debates are measured by the attention paid to astronomy and computus in the decrees and instructional letters sent out by Charlemagne to his governmental agents and church representatives.

The *Dionysio-Hadriana* text, so-called because it was a collection of canon law assembled in the early sixth century by Dionysius Exiguus and given to Charlemagne as a gift by Pope Hadrian on Easter 774, shows that further reforms were planned. In fact, a few years later, in 779, Charlemagne promulgated his first significant piece of legislation, the Capitulary of Herstal. The capitulary outlines themes that were to become familiar throughout the Carolingian reform movement: order, authority, and obedience to canon law. The *Admonitio generalis*, issued in 789, greatly expands on these injunctions. It contains 82 clauses, 59 of which draw extensively from the *Dionysio-Hadriana*. According to McKitterick, the literary style and content of the *Admonitio* is evidence of a much more advanced level of culture and learning and

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101 The correspondence between Alcuin and Charlemagne on problems of the calendar and astronomy consists of eight letters from Alcuin and one from Charlemagne, although several lost letters from Charlemagne can be deduced from Alcuin’s allusions. They are letters numbers 126, 143, 144 (Charlemagne’s response), 145, 148, 149, 155, 170, 171 in *Epistolae Karolini aevi* II. Ed. Ernst Dümmler. MGH (Berlin 1895) pp. 185-187, 224-235, 237-245, 249-253, 278-283. For an analysis of the correspondence see Lohman, Dietrich. “Alcuins Korrespondenz mit Karl dem Grossem über Kalender und Astronomie.” Science in Western and Eastern Civilization in Carolingian Times. Eds. Paul Leo Butzer and Dietrich Lohrmann (Basel 1993) pp. 79-114


103 The *Admonitio generalis* survives in over 40 manuscripts. McKitterick 2008, pp. 242, 263
its themes and topics clearly outline Charlemagne’s program for the reform of the church and its ministers.\textsuperscript{104} It also articulates the “king’s responsibility for the people of God and the need for everyone in the kingdom, and especially the secular and ecclesiastical elites, to work towards creating order and polity worthy of salvation”.\textsuperscript{105} In the preface, the method by which Charlemagne is to fulfill his responsibility as the ruler is described in terms of a shared responsibility at all levels from imperial councils to the missi sent among the clergy and people to further ensure the practices of proper observances. In order for the priests to carry out this mission they must be very well educated in not only the spiritual teachings of the church but also in the canonical law which governs the functioning of its institutions. The method to achieve this level of education in every parish, therefore, has to be supported by the availability of decent copies of the key Christian texts – biblical, canonical, penitential, and liturgical – as well as the sufficient means to use them.\textsuperscript{106} The clergy also need a certain level of literacy to access the texts and a sound understanding of exegetical principles in order to interpret and analyze the texts for their parishioners. In this capitulary, Charlemagne warns the clergy that they should know the calendar as well as they do the scriptures and that they should study computus in order that they would be able to “Comptum...bene emandate”\textsuperscript{107}. For instance, clause 72 of the \textit{Admonitio generalis} declares that both monasteries and cathedral schools be set up to teach the psalms, musical notation, singing, computation, and grammar.\textsuperscript{108} As part of their training,

\begin{itemize}
\item \textsuperscript{104} McKitterick 1997, p. 1 and 2008 pp. 239-243
\item \textsuperscript{105} McKitterick 2008, p. 308
\item \textsuperscript{106} Charlemagne’s encouragement of learning and pursuit of knowledge across the kingdom are manifest in the range of material produced, “from the many didactic and pedagogic tracts on grammar and spelling, the abundance of poetry and letters, to the commentaries on the Bible, sophisticated theological and philosophical discussion, encyclopedias, and historical writing”. McKitterick 2008, p. 349. For further discussions of the extensive range of materials see Contreni, John J. “The Carolingian Renaissance: Education and Literary Culture.” \textit{The New Cambridge Medieval History II: c. 700 – c. 900}. Ed. Rosamond McKitterick (Cambridge 1995) 709-785, pp. 758-85
\item \textsuperscript{107} \textit{Epist.} 22. \textit{Capitularia regum Francorum} I. Ed. Alfred Boretius. MGH LL1 (Hannover 1883) p. 60. For a more recent edition see \textit{Die Admonitio generalis Karls des Grossen}. Eds. Hubert Mordek, Klaus Zechiel-Eckes, and Michael Glatthaar. MGH FIGA 16 (Hannover 2012) p. 224
\item \textsuperscript{108} \textit{Epist.} 22: \textit{Et ut scolae legentium puerorum fiant. Psalmodia, notas, cantus, computum, grammaticam per singula monasteria vel episcopia, et libros catholicos bene emendate; quia saepe, dum bene aliqui Deum rogare cupiunt, sed per inemendatos libros male rogant. Et pueros vestros non sinite eos vel legendo vel scribendo corrumpere; et si opus est evangelium, psalterium et missale scribere, perfectae aetatis homines scribant cum omni diligentia.}
\end{itemize}
monks and clerics are instructed to ‘correct properly the catholic books’. The idea of the uniformity of faith being dependent on the uniformity of observance was also espoused by Cassiodorus (d. 585). And both observance and faith depend upon the widespread availability of corrected texts and ultimately on the availability of trained and learned scribes. Another example of the revival of learning under Charlemagne is found in his letter to Abbot Baugulf of Fulda, known as the *Epistola de litteris colendis*.\(^9\) Intended for circulation to every bishop and abbot, the letter states that, in addition to fulfilling their professional duties, they must also strive to provide an education to all in the community who are able to learn. An emphasis was placed on the knowledge of language (grammar, logic, and rhetoric) as the prerequisite for knowledge of the scriptures and understanding of scriptural mysteries. Being able to trust reliable texts and use them effectively also protected the clergy from falling into doctrinal error, raised their chances of salvation, and rendered their prayers more efficacious, a real necessity for the kingdom in times of war or hardship. The demand for uniformity is also seen in the pursuit of one liturgical practice based on the Roman model, coupled with the goal to make all monastic houses conform to the Rule of St. Benedict and the necessity for accurate time-keeping.\(^9\)

Thus, the use of computus supported the more spiritual endeavor of knowing the scriptures and properly celebrating the rituals of the church. Despite Charlemagne’s interest in computus as a scientific exercise, McCluskey states that “the Carolingian renewal of learning contained no agenda for astronomical research” since the true goal was primarily a religious concern to

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\(^9\) *Capitularia regum Francorum* I. Ed. Alfred Boretius. MGH LL1(Hannover 1883) p. 60. In the new edition of the *Admonitio generalis* MGH FIGA 16 (2012) this clause is number 70 on pp. 222-224

\(^9\) *Epist. 29. Capitularia regum Francorum* I. Ed. Alfred Boretius. MGH LL1 (Hannover 1883) pp. 78-79. According to Brown (1994, p. 20) the content of the letter is closely related to clause 72 of the *Admonitio generalis* and can therefore be dated to the same period, the late 780s or 790s, however, McKitterick (2008, pp. 240, 316) dates it more precisely to c. 784. Only two copies survive of the *Epistola de litteris colendis* both addressed to the abbot of Fulda. One is nearly contemporaneous and found in a manuscript in continental Anglo-Saxon minuscule from Würzburg, now codex Laudianus Misc. 126 of Oxford. See Levison 1946, p. 152 and Lehman, Paul. “Illustrierte Hrabanus Codices. Fuldaer Studien, neue Folge.” Sitzungsberichte der Bayerischen Akademie der Wissenschaften. Philosophisch-historische und historische Klasse (Munich 1927) no. 2, pp. 4-13; see also Stevens CCCM 44 1979, p. 174

\(^1\) McKitterick 2008, p. 316; Brown 1994, p. 21
establish and maintain standards. In addition to the reform of the infrastructure of the church, Charlemagne also promoted a uniformity in monastic education. The royal sanctioning of Benedictine monasticism, based on the teachings and writings of the sixth-century Italian monk Benedict of Nursia, necessitated an understanding of basic astronomy in order to complete the proscribed daily tasks. Within Benedictine monasticism, a monk’s daily tasks became his form of worship and the self-discipline required to follow a daily schedule of prayer, study, and work was a demonstration of his dedication to, and love for, God. For the first time in medieval Europe the time unit of the hour became an important schedule to establish and follow. This monastic way of life required theoretical knowledge of computus and also practice in celestial observation. It further required that young monks and priests be taught the computistical sciences and that texts and reference materials be made available to centers of learning and monastic communities. Therefore, among other texts which the Carolingians preserved for us through their intensive program of manuscript copying, the materials of astronomy and computus and the contemporary commentaries on these topics were collected, copied, and disseminated throughout the monastic network of schools and scriptoria.

The discussions and debates surrounding the controversies of calendar reform finally led Charlemagne to convene an official conference in 809 in Aachen to permanently decide on the standards of calendrical reform and practice. The result of this conference was a “court computus” collection which appeared in two versions. The first was the three-book computus represented today by two manuscripts of the Salzburg recension created under bishop Arno of Salzburg (c. 818), Vienna MS 387 and Munich MS CLM 210. The second group is the seven-

111 McCluskey 1993, p. 146
112 McKitterick 2008, p. 308; The reform councils of 813 held in Reims, Tours, Mainz, Arles, and Châlons-sur-Sâone (see MGH Conc. II, part 1, 34-38, pp. 245-306), further defined the duties of the bishops and priests as well as specified the key texts of the Christian faith and for the conduct of Christian life – Gospels, Acts, Epistles, liturgical books, patristic writings, the Rule of Benedict for monks, the Curæ pastoralis of Gregory the Great for bishops and priests, canon law, and civil laws for lay officials, and the Creed and Lord’s Prayer.
113 See Stevens 2010, pp. 47-51 for a discussion of the gathering in 809 and what precipitated the “workshop” as Stevens calls it. Hrabanus did not attend the 809 Aachen conference. He was prevented even from access to his pens and personal books by the Fulda abbot Ratgar (802-817) who required everyone to work on his new basilica and reduced hours of prayer as well as hours of study for this purpose. Stevens CCCM 44 1979, p. 175
book computus found in many manuscripts which began to appear in the third decade of the ninth century. Bruce Eastwood suggests that the seven-book computus was compiled very soon after the three-book computus as an improvement on it, which would explain why the three-book version only survives in two copies, as it was “quickly superseded by the other version”. The seven-book computus includes additional texts by Bede and Pliny, and although it does not have any additional diagrams, those it does contain have been modified from the previous set that appeared in the three-book computus and other earlier computus manuscripts like Cologne MS 83 (II). These modifications are studied in detail by Bruce Eastwood and he concludes that the additional texts by Pliny led the diagram designers to incorporate new information into the diagrams to reflect a Plinian understanding of planetary movements, and in particular of their apsidal orbits. A brief look at Munich MS CLM 210 will reveal how the court computus differs from the earlier computistic compilation found in Cologne MS 83 (II). According to McGurk, CLM 210 and Vienna MS 387 were copied from the same exemplar at Salzburg, and he refers to this exemplar as the compilation of 810, assuming that this compilation was put together as a direct result of the synod in Aachen in 809. While the textual content of MS 83 (II) seems to be a collection of various available computistical and astronomical materials from Anglo-Saxon and Irish sources that have only their subject matter in common, the organization and arrangement of the texts in the 810 compilation demonstrate a programmatic approach to

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116 The texts and images in Cologne MS 83 (II) reflect the state of computistical knowledge in the Anglo-Saxon world in the seventh century and although it has some parts, like the calendar based on the synod of Soissons of 794, that give it a local and contemporaneous context, these parts are simple additions to the manuscript and are not integrated into the internal logic of the compilation and do not engage in a dialogue with the Anglo-Saxon material.
118 McGurk 1981, p. 320
textual selection. Instead of a simple accretion of materials, as in MS 83 (II),\(^{119}\) we see in CLM 210 an exercise in editing a collection to fit the court program and to propagate this program throughout the monastic educational system. In compiling the 810 collection, the editors made conscious decisions to excerpt from certain authors, replacing, for example, sections of Isidore’s texts with sections of Pliny’s texts on the same topic.\(^{120}\) They also excised some texts and favoured others. In other words, they were creating a document that would reflect and justify the royal policy on calendar reform by creating an authorized reference collection of computistical texts. In summary, the texts and images in Munich MS CLM 210 reflect the state of computistical knowledge in the Carolingian world of the early ninth-century. The new texts added to the commonly used computistical texts were integrated with the old ones not only in the internal physical structure of the compilation but also in the way in which the texts were edited, excerpted, and glossed.

Beyond the plenary councils in 809 and 811, other synods where held and decrees sent across the Frankish kingdoms to remind clergy and church administrators of their duty to learn, teach, and practice the standard calendar of the Carolingians. The *Capitula in dioecesana quadam synodo tractata* of 803 or 804 “admonished the synods to ensure that the clergy knew chant and computus”.\(^{121}\) The memorandum *Quae a presbyteris discenda sint* (c. 805) states that priests should know computus and that each one was expected to own at least a calendar.\(^{122}\) Another

\(^{119}\) Another manuscript from Cologne, MS 103 is related to MS 83. It was presumably composed earlier than 83\(^{2}\) and is a collection of Bedan computistica with a few additions (including a calendar, a great Dionysiac Paschal cycle, and a copy of the Computus Rhenanus of 775). MS 103, according to Warntjes, appears to be designed as a “supplement to this Bedan codex, and anthology of texts presenting alternatives and/or additions to Bedan thought.” Warntjes 2010, pp. clxxix-clxxx

\(^{120}\) Eastwood 1987, p. 163

\(^{121}\) Wallis 2004, p. lxxxix; *Epist.* 119 *Capitularia regum Francorum* I. Eds. Alfred Boretius and Krause, Victor. MGH LL1 (Hannover 1897) p. 237

Frankish capitulary of 805 *Capitulare duplex in Theodonis villa promulgatum* states that all clergy should learn the computus.\(^{123}\)

In addition to these royal compilations and decrees, many collections of texts and tables were created to facilitate the transportation, storage, and use of computistical information whether it be for liturgical practice, scholarly study, or teaching. Many authors created collections of *argumenta* with the goal of distilling Bedan computistical knowledge into more readily accessible, comprehensible, and memorable statements. Some examples of these ninth-century collected *argumenta* are the *Comptus sancti Augustini, sancti Isidori, sancti Dionysii, sancti Quirilli Greciae et ceterorum*, and the *Computus grecorum sive latinorum*.\(^{124}\) The *Sententiae sancti Augustini et Isidori in laude compoti* “was the most popular collection of all during the ninth and tenth centuries and exists in several versions”.\(^{125}\) The topic was also much discussed in the well-known correspondence of Charlemagne and Alcuin, in an anonymous letter addressed to Agnardus on the calculations of Easter (809), a letter by Adalbert of Corbie (809) and Dungal’s answer to Charlemagne about the eclipse of the sun in 810.\(^{126}\) Also used frequently in the classroom as memory aids were computistical verses “such as *Ecloga XVII* of Ausonius which was used by Bede and Hrabanus\(^{127}\) or the verse *Nonae aprilis norunt quinos* which seems to have been known to Isidore of Seville and was later at Fleury and repeated by Hrabanus”.\(^{128}\)

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\(^{123}\) *Epist. 43 : De computo, ut veraciter discant omnes. Capitularia regum Francorum* I. Ed. Alfred Boretius. MGH LL1 (Hannover 1883), p. 121

\(^{124}\) Another handbook written in Salzburg in 818 “drew not only upon such argumenta but also on *Bedae De temporum ratione* and *Plinii Historia naturalis* at a time when the latter was known at the Carolingian court but was rarely available in the eastern parts of the Carolingian empire.” Stevens CCCM 44 1979, p. 170

\(^{125}\) Stevens CCCM 44 1979, p. 171

\(^{126}\) Stevens here speculates that Agnardus could be Einhard. Stevens CCCM 44 1979, p. 171: Charlemagne’s personal interest in astronomy continued after Alcuin’s death “as reflected in his correspondence with Dungal of St. Denis about two solar eclipses reported in the year 810.” McCluskey 1993, p. 152

\(^{127}\) See *Rabani mauri De computo* XXXVIII 27-28; Stevens CCCM 44 1979, p. 171

\(^{128}\) See *Rabani mauri De computo* LXXXII 6-25; Stevens CCCM 44 1979, p. 171
Sometimes appearing with Hrabanus’ work was a booklet of anonymous verses as well as another set which circulated under the title of *Carmina Saliburgensa*.  

The concept of an intellectual and spiritual revival is embedded in the pastoral responsibility of Christian ministers and is commensurate with the notion of moral *renovatio*. “The Christian soul relied ultimately for its *reformatio* or *renovatio* on divine grace, but *correctio*, *emendatio*, by the relevant authorities was important in order to create the context in which that divine grace could operate since human will alone could not be relied upon”.  

Authors writing during earlier reform movements, such as Isidore of Seville and the Venerable Bede, provided Carolingian intellectuals such as Hrabanus and Alcuin with the literary tradition from which they could continue this pursuit of Christian *emendatio*. Bede’s interests in learning, liturgical reform, clerical education, and correct Latinity, although applied to the eighth-century Anglo-Saxon kingdoms, were influential in Francia through the rapid dissemination of his writings by Anglo-Saxon missionaries such as St. Columbanus (d. 615), St. Willibrord (d. 739), and St. Boniface (d. 753) and in Alcuin (d. 804). Alcuin probably brought with him many books from the library at York, and if not the books themselves, at least their content in his memory and personal writings. He also probably brought with him a collection, *Libellus annalix*, “from which he taught *De bissextio*, *De cursu et saltu lunae*, and *Calculatio*”. Along with the computistical texts, the Carolingians also inherited the literature of the liberal arts and they “reformulated the study of astronomy by adding to the traditional computistical texts new texts reflecting the Carolingian interest in antiquity”. This combining of genres and disciplines is exemplified by the additions of the “descriptions of constellations, taken from various ancient sources, and

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129 Stevens CCCM 44 1979, p. 172; see also A. Cordolani 1942, pp. 51-72 for a register of Carolingian writings on computation.

130 Brown 1994, p. 1

131 Brown 1994, p. 9

132 For more details on the library at York see Ganz 2006, p. 101

133 Stevens CCCM 44 1979, p. 173

134 McCluskey 1993, p. 152
excerpts on the structure of the heavens from Pliny’s *Natural History*, Macrobius’s *Commentary on the Dream of Scipio*, and Martianus Capella’s *On the Marriage of Philology and Mercury*. Many of the ancient texts which were re-popularized during the Carolingian educational reform movement are encyclopedic in nature and touch on topics that help the reader understand the physical world with which they interact every day. Studying which texts they chose to preserve by assiduously copying, reading, and quoting them reveals how they prioritized the inherited knowledge and appropriated it for current purposes. The next section of this chapter looks at the encyclopedic tradition and the role these texts played in the revival of the Roman liberal arts curriculum and how and where computus and astronomy were incorporated into a variety of encyclopedias.

Hrabanus inherited a rich tradition from his immediate predecessors and, along with his contemporaries and students like Lupus of Ferrières and Walahfrid Strabo, he helped build an educational system which promoted a renewal of classical studies and contributed to an exchange of information between the monasteries, which were the heart of a true monastic network. The Carolingian educational reform program also saw the establishment of urban schools at the court at Aachen, of course, but also at Orleans, Metz, Cambrai, Lyon, Milan, Pavia, Liège, etc. Many of these urban and monastic centres were run by Irishmen: Bobbio, Fiesole, Milan, Pavia, Soissons, Laon, Metz, Fulda, St. Gall, Reichenau, etc.

This Irish and Insular heritage is also heavily reflected in computistical texts and the integration of computus into the Carolingian educational system. With the help of these texts, including the Bedan corpus, Carolingian scholars made ecclesiastical computus one of the essential components of clerical instruction, and transposed the discipline of antique Latin astronomy into a Christian conception of time. Along with the renewal of classical studies came the increased copying and extensive dissemination of astronomical texts which helped to continue the transformation started by Gregory of Tours and Bede of integrating all aspects of monastic traditions of reckoning time “not only as a basis for complex matters like the correct calculation

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135 McCluskey 1993, p. 152
136 Ribémont 2001, pp. 276, 280
of the date of Easter”, but also the “ensemble of techniques useful for the everyday challenges of ecclesiastical timekeeping; reckoning the proper times of the Mass and correctly maintaining the liturgical calendar”. The inclusion of computistical texts and tables as an essential part of the liberal arts curriculum “helped create an embedded body of knowledge that was not only scientific and philosophical but could be literary and artistic as well”.138

It was not only the lonely cleric in a rural parish or a small group of monks in a daughter-house who were interested in and studied the tools and techniques of time-reckoning. According to Einhard his biographer, the emperor Charlemagne himself set a good example by learning the *ars conputandi* and engaging in debates about the calendar.139 Charlemagne did not study computus solely out of curiosity but “intended to spread his newly acquired knowledge among the people” in order to reap the benefit of standardizing computistical knowledge and practice for the administration and governance of the Frankish kingdoms.140 The consolidation of religious and political power in the Frankish kingdoms during Charlemagne’s reign had consequences for the science of time-reckoning. The adoption and promotion of the Roman liturgy throughout the Frankish churches under Charlemagne, meant it was easy to dictate the use of one calendar and one Easter calculation. Secondly, the rise of the church as a major land owner gave it the political and economic clout to claim that its rule was sanctioned by God. For the fate of the calendar, this fusion of powers meant that anyone wanting to make changes or reforms to the Latin calendar would have to deal with St. Peter’s in Rome rather than with their local or national sovereign. Rome’s control over the calendar was so strong that it took another four and a half centuries from the time of Charlemagne until the first person, Roger Bacon, took on Rome in reforming the calendar.141

137 Corradini 2003, pp. 270-271
138 Corradini 2003, p. 271
139 See p. 22 above and note 98 for Einhard’s description of Charlemagne’s learning; Between 797 and 799, Alcuin provided Charlemagne with written explanations of computus and reckoning for the solar and lunar orbits. Borst 1993, pp. 42-43
140 Borst 1993, p. 43
141 Duncan 1998, p. 99
1.2 The Encyclopedic Tradition in the Early Middle Ages

Hrabanus and his teacher Alcuin were continuators of an ancient tradition of encyclopedic writings. They inherited not only the content of many Greek and Latin works but also the concepts and ideals that shaped the foundation and development of the literary genre. In order to fully understand the legacy of knowledge that Hrabanus incorporated into his encyclopedia, it is first necessary to briefly outline the works that were both the direct and indirect sources for *De rerum naturis*. This historical development can be generally divided into three stages: Greek; Roman; and early medieval. After describing the major works of each period and their relation to each other, this section will end with a discussion of the seven liberal arts and the evolution of these disciplinary ideals during the Carolingian age.

The Greek and Roman Encyclopedias

The beginning of the encyclopedia genre can be traced back to Plato, who through his lectures at his Academy in Athens “provided the full education that he believed every intelligent young man should possess”.\(^{142}\) This Greek program of secondary education, *enkuklios paideia*, existed as an oral tradition in the lectures of Plato and his rival Aristotle at his Lyceum in Athens.\(^{143}\) Plato’s words were transcribed by his nephew Speusippos and Aristotle wrote his own record of his lectures in a series of didactic texts with an encyclopedic approach to learning about the world writ large. Aristotle’s writings include such topics as philosophy, psychology, ethics, metaphysics, politics, government, education, most branches of science, aesthetics, poetics, and rhetoric. Works on astronomy, medicine, and the history of science were also produced by students of his school. While the Greeks contributed “a written record of the spoken word”,\(^{144}\)

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142 Collison 1964, pp. 21-22

143 Encyclopedia is a late Latin transliteration of a pseudo-Greek form taken from manuscripts of Pliny and others but the term “encyclopedia” was not used to describe these works until the seventeenth century, “though their range of material and their compilers’ knowledge had long been described as encyclopedic.” Sanford 1949, p. 462. See also Marrou, Henri-Irénée. “Les arts libéraux dans l’Antiquité classique.” *Actes du 4. congrès international de philosophie médiévale 1967: Arts libéraux et philosophie au Moyen Âge.* (Paris/Montréal 1969) 5-33, pp. 16-18

144 Collison 1964, p. 23
the Romans aimed to advance knowledge by epitomizing information that could be studied independently away from the podium in letters and books.

The first of the Roman collections of encyclopedic material is the series of letters (entitled *Praecepta ad filium*) written about 183 BC by the Roman consul Cato the Censor to his son. Even though the work is now lost, it is known to have addressed practical matters, knowledge of which was necessary for a patrician Roman to conduct himself properly in society. Marcus Terentius Varro (116-27 BC) classified his information in a very specific way. Each of the following topics was contained in its own book in the *Disciplinarum libri IX*, the seven liberal arts: grammar, logic, rhetoric, geometry, arithmetic, astronomy, music; plus medicine and architecture.\(^{145}\) His later work, *Rerum divinarum et humanarum antiquitates* included 41 books, the first 25 of which covered human affairs and the rest were devoted to discussions of the gods.\(^{146}\) Varro’s works reflect the Roman emphasis on temporal affairs over spiritual ones and were so popular that for six centuries after their creation they were copied, plagiarized, and used by later writers sometimes unaware of their true origin, the information had become so entrenched in the general knowledge of the time.\(^{147}\) Also only surviving in fragments is the work of first-century Roman patrician Aulus Cornelius Celsus known for the surviving part dedicated to medicine.

Perhaps the most well-known encyclopedic work of the Roman period is the *Historia naturalis* written in AD 77 by Pliny the Elder (Gaius Plinius Secundus AD 23-79). His monumental work comprises 2,500 chapters in 37 books and was meant as a reference depository of easily accessible information, not as a work to be read cover to cover.\(^{148}\) Pliny could not have been an expert in all of the topics, which included: book 1 Preface (contents, sources); 2 Cosmography

\(^{145}\) It is possible, according to Barney, to trace the shape of Isidore’s first five books directly to Varro’s influence, though, in fact, it is “unlikely that Isidore had direct access to texts of Varro.” Barney 2006, p. 11; see also Sanford 1949, p. 462

\(^{146}\) Collison 1964, p. 23

\(^{147}\) Much of this materials was transmitted to later scholars, through citations by the grammarian Priscian, and by Augustine, in *De civitate Dei*. Sanford 1949, p. 462

\(^{148}\) Collison 1964, p. 25
(astronomy, meteorology); 3-6 Geography (ethnography, anthropology); 7-11 Zoology (Man, Inventions); 12-19 Botany; 20-32 Medicine (pharmacology, magic); and 33-37 Metallurgy (mineralogy, the fine arts). Rather, Pliny was an anthologist who relied on some 470 authors for his source material and organized the topics on the basis of natural history, “from the mundus as a whole to its minute particles”.149 The 160 volumes of the work left to his nephew Pliny the Younger (Gaius Plinius Caecilius Secundus, AD 62-114) influenced all subsequent encyclopedias over the next 1500 years and were released in 40 editions and numerous epitomes, abridgements etc.150

A related type of work is the encyclopedic dictionary, a genre of lexicography “which included from the outset definitions, etymologies, and differentiae, the discrimination of meaning and usage of closely related terms”.151 Its Roman beginnings can be traced to Sextus Pompeius Festus’ De verborum significatu. A second-century grammarian, Festus drew most of his material from a lost larger work by the first-century grammarian Marcus Verrius Flaccus (f. 20 BC).152 The extent of Flaccus’ work is known today because of the brief summary of the work written by Paulus Diaconus in the eighth century.

From the second century, works of encyclopedic scope but not necessarily of encyclopedic form, as they are “organized in a deliberately casual manner” are the (mainly lost) Prata (early second century) of Suetonius Tranquillus and the Noctes atticae (late second century) of Aulus Gellius.153 A Christian writer, Lanctantius (ca. 240-ca. 320), contributed a corpus of broadly encyclopedic works, including the Divinarum Institutionum LibriVII.154

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149 Sanford 1949, pp. 462-463
150 Varro’s Natural History had a better fate than his encyclopedic works since many complete manuscripts are preserved and there have been numerous editions since the editio princeps of 1469. Sanford 1949, p. 462; see also Collison 1964, p. 25
151 Barney 2006, p. 12
152 Collison 1964, p. 25
153 Barney 2006, p. 12
154 Barney 2006, p. 12
The next encyclopedic author, Gaius Julius Solinus, working in the third-century, wrote a geographically-based work, *Collectanea rerum memorabilium*, incorporating both historical and natural topics.\(^{155}\) Solinus was indebted to Pliny’s work and also used material from Pomponius Mela’s geographical survey *De chorographia* (AD 37-41).\(^ {156}\) Another extract from Pliny’s encyclopedia that circulated on its own was the *Medicina Plinii*, compiled in the fourth-century from his materials on botany, zoology, minerals and medicinal waters.\(^ {157}\) Isidore also copied freely from Solinus’ work.\(^ {158}\)

In the fourth century, there is the *Compendius Doctrine* by Nonius Marcellus which was written early in the century and has the topics arranged in alphabetical order.\(^ {159}\) Then there are the vast commentaries by Servius from the end of the century. Servius’ commentaries contain materials from Donatus and the whole collection is not organized by topic or by alphabet but rather by the order of the text of Vergil. His works were also used as a source by Isidore in a version called the *Servius Danielis*, after its first publisher, Pierre Daniel.\(^ {160}\)

In the second and third decades of the fifth century, the Carthaginian Martianus Capella wrote a very influential encyclopedic work in a mixture of prose and verse called the *Liber de nuptiis Mercurii et philologiae*, but which is sometimes referred to as the *Disciplines* or the *Satiricon*. In this allegorical work, the first two books describe the nuptial event while the following seven books are each devoted to one of the seven bridesmaids representing what would become known as the seven liberal arts: Grammar; Dialectic (metaphysics and logic); Rhetoric; Geography; Arithmetic; Astronomy; Music; and Poetry. At the end of the fifth century, the Roman Senator

\(^{155}\) It was the standard source of geographical material for many centuries. Sanford 1949, p. 463; see also Collison 1964, p. 25

\(^{156}\) Collison 1964, p. 27

\(^{157}\) Although it was originally intended to make travellers independent of unscrupulous quacks, it was also used as a medical handbook in monastic infirmaries. Sanford 1949, p. 463

\(^{158}\) Solinus’ work was also referred to as the *Polyhistor*. Collison 1964, p. 27

\(^{159}\) Barney 2006, p. 12

\(^{160}\) Barney 2006, p. 12
Boethius (c. 480- c. 524) wrote works promoting arithmetic, music, Euclid’s geometry, and astronomy as the basis of all learning. Although only a part of his planned corpus was realized and an even smaller part survives, his works were highly regarded in the early medieval period and, although he did not compile one encyclopedic work, his philosophy about education and comprehension of the world became the basis for many later works as inspiration and as source material. 161

Another fifth-century author whose writings influenced later scholarship is St. Augustine and in particular his *De doctrina christiana*. Augustine’s division of pagan knowledge into works of mankind and natural works provided a template for later categorizations of subjects. He divided works of mankind into those in collaboration with demons such as magic, soothsaying, omens, and superstitious practices, and those on their own such as luxuries and utilities. Divinely inspired works he divided into those accomplished by reasoning such as logic, rhetoric, and mathematics, and those arrived at via the senses such as history, natural history, astronomy, and the useful arts like crafts, professions, and sports. 162

The Early Medieval Encyclopedic Authors: Cassiodorus and Isidore of Seville

Boethius’ successor as secretary to King Theodoric was another Senator, Cassiodorus (c. 480-575). Cassiodorus was very successful in his task of helping the Gothic king learn about the Latin cultural heritage over which he now governed. A collection of Cassiodorus’ official correspondence written while he served Theodoric and King Athalaric, entitled *Variae*, was used as a source for encyclopedic learning. 163 After his retirement in 551, he founded the monastery of Vivarium and it was this environment that inspired him to write his encyclopedic work the *Institutiones divinarum et humanarum lectionum*. This work, arranged in 36 chapters divided into 2 books, presents the basic knowledge that every monk was supposed to know in order to follow the daily life of the monastery and properly interpret the scriptures. The first book covers

161 Collison 1964, p. 28
162 Collison 1964, p. 33
163 Collison 1964, p. 30
the Bible and its commentaries, the history of Christianity, the church fathers, cosmography, the workings of the scriptorium, medicine, and prayers. The second book includes the tools necessary to learn all the topics of the first book: grammar; rhetoric; dialectic; arithmetic; music; geometry; and astronomy. Cassiodorus clearly placed Christian learning above pagan by relegating the non-sacred material to the second and much shorter book. However, it was the second book on the liberal arts which was more closely studied in later years.\textsuperscript{164}

As Ribémont observes, “the merit of the \textit{Institutiones} was that it fixed reference points for Christian culture”.\textsuperscript{165} By providing his monks with a virtual library in a two-volume work, Cassiodorus set the standard for Christian authoritative source materials not only for scriptural studies but also for more general encyclopedic matters. However much it was revered as the reference text for a Christian education and used as such, it was not the work most imitated in form by later authors. At the beginning of the seventh century, “it is the bishop of Seville – who exploits Cassiodorus’ work with skill – who will seduce posterity and initiate a literary movement” which will become a genre onto itself.\textsuperscript{166}

St. Isidore (c. 560-636) became bishop of Seville in 599. He remained in Seville until his death and spent his later years writing his greatest work, \textit{Originum seu Etymologiarum libri XX}. He dedicated his encyclopedia to his friend and disciple Bishop Braulio of Saragossa who also edited and corrected the text. Some of the completed parts were circulated during his lifetime and no standard order of the 20 books was ever established by Isidore or in later manuscripts and editions. However, one aspect is common to all the versions of the work: “the starting point is never theology”.\textsuperscript{167} Isidore’s source texts are mostly pagan, Latin rather than Greek, and he presents the liberal arts and secular learning as being the basis of Christian education and

\begin{footnotes}
\item\textsuperscript{164} Barney notes that Isidore knew only Cassiodorus’ second book. Whether Isidore had access to both and decided not to include material from book one or if he only had a copy of book two is not made clear in Barney’s analysis. The books did frequently circulate separately so it is very possible that Isidore only had physical access to book two. Barney 2006, p. 12, note 29; see also Collison 1964, p. 30
\item\textsuperscript{165} Ribémont 2001, p. 38
\item\textsuperscript{166} Ribémont 2001, p. 38
\item\textsuperscript{167} Collison 1964, p. 33
\end{footnotes}
therefore at a more primary stage of study. Despite the fact that he did not always name his sources, scholars have identified information from the works of Solinus, Varro, Orosius, St. Jerome, St. Augustine, Pliny, Lactantius, Boethius, Lucretius, Caelius Aurelianus, Sallust, Vitruvius, Suetonius, etc.\textsuperscript{168}

In one of the common orders for the books, the topics can be summarized as follows: Books 1-3 The liberal arts; 4 Medicine; 5 Jurisprudence, time, and a brief world chronicle; 6 The Bible; 7 The Heavenly hierarchy; 8 The church and heresies; 9 People, language, statecraft; 10 An etymological dictionary (alphabetically arranged); 11 Man; 12 Zoology; 13 The Heavens, the atmosphere; 14 The Earth, seas, and oceans; 15 Cities and towns, building; 16 Geology, weights and measures; 17 Agriculture and horticulture; 18 Warfare, public games; 19 Ships, houses, costume; 20 Food, tools, furniture.\textsuperscript{169} The scope of the material included is very general and comprehensive, much more so than that of his nearest contemporaries, Boethius and Cassiodorus. In Brehaut’s opinion, Isidore’s résumé surpasses all preceding and contemporary ones to the extent that “few writers of any period cover the intellectual interest of their time so completely”.\textsuperscript{170} The popularity and influence of the \textit{Etymologiae} is reflected in the 1000 manuscripts of the whole or part that have survived, the mention of the text in library catalogues and reference collections, the copious citations included in later works, and the large number of illuminated and illustrated copies produced.\textsuperscript{171} As Barney justly concludes, Isidore’s \textit{Etymologiae} is “arguably the most influential book, after the Bible, in the learned world of the Latin West for nearly 1000 years”.\textsuperscript{172}

\textsuperscript{168} Collison 1964, p. 34; see also Fontaine, Jacques. \textit{Isidore de Seville et la culture classique dans l’Espagne Wisigothique} (Paris 1959)

\textsuperscript{169} For a more detailed description of the contents of all the books in the \textit{Etymologiae} see Sanford 1949, pp. 464-466; see also Collison 1964, p. 34

\textsuperscript{170} Brehaut 1912, p. 9

\textsuperscript{171} Sanford 1949, p. 463; see also Collison 1964, p. 35

\textsuperscript{172} Barney 2006, p. 3
In his analysis of the encyclopedic genre, Ribémont has attempted to trace the stages in the development of the ancient and medieval encyclopedia and to further define the subgenres of the variety of texts mentioned so far. A discussion of these subgenres appears in chapter three below. However, at this point, a look at Ribémont’s arguments about the importance of Isidore’s works will help to establish the characteristics of medieval encyclopedism, its evolution from its ancient sources and literary tradition, and its influence of the content and form of Hrabanus’ encyclopedia.

Ribémont situates the encyclopedic genre within the framework of a historical family of texts. Each generation of this family is nourished by new external sources and integrates new methods and knowledge. However, because the method of medieval encyclopedism is essentially one of compilation, a process of auto-generation occurs which leads to the tendency of these texts to be recopied in each other. Ribémont searched for the origin of this family and concluded that, based on the frequency of explicit citations, Isidore occupies a particularly important place in the sources. The appearance of *ut dixit Isidorus* in later texts also helped him to identify members of later generations of this family reaching into the encyclopedic tradition of the thirteenth century. Given his findings, Ribémont declares Isidore to be the founding father of medieval encyclopedism.

What distinguishes medieval encyclopedism, as reflected in the *Etymologiae*, from ancient encyclopedism is the Christian nature of the texts and the methods of composition and compilation. In addition to being Christian texts, the medieval encyclopedias, due to being written after the fall of the Roman empire, also carry a sentiment of loss, of past glories and

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173 Ribémont 2001, p. 9

174 There is an earlier text which also follows this methodology and which is an important source for Isidore: Cassiodorus’ *Institutiones*. Although Ribémont concedes that Cassiodorus’ text is the historical origin of this genre, he argues that Isidore’s work supersedes it because Cassiodorus’ text was meant only to safeguard knowledge and diffuse it within the context it was composed for, namely his monastery at Vivarium. Therefore, because Cassiodorus’ work was disseminated and propagated through Isidore’s, it was really the *Etymologiae* that ensured the success of the genre and built the foundation for the medieval encyclopedic tradition. Ribémont 2001, pp. 10, 15, 17
prestige of knowledge, not present in the ancient texts. Ribémont further identifies four aspects of this new medieval methodology that Isidore used: the identification of knowledge from ancient authorities; the selection from this ancient reserve for presentation in a text meant for dissemination; the organization of this knowledge; and finally the management of the relationship between Christian and pagan cultures. A further innovation on Isidore’s part was his grammatical analysis. Isidore did not follow the traditional categories used by Donatus, Servius, and others. He searched for the causes and nature of all real things through language because for him knowledge of the world was essentially lexical.

Aside from works that are labeled encyclopedias by their authors or their readers, there are many other texts which are “encyclopedic in scope but not necessarily in form”. Other literary genres which inform the encyclopedic tradition are the hexameral works, lapidaries and bestiaries, strictly scientific, philosophical, or technical/domestic-arts literature, works whose primary subject matter is spiritual or moral, the vices and virtues tradition, school texts, manuals, glossaries etc. The variety and number of textual genres which formed part of the literary tradition inherited by the Carolingians had to be somehow incorporated into the educational system. The last part of this section looks at how the Carolingians adapted another ancient

175 Ribémont 2001, p. 15

176 Barney 2006, p. 12

177 The prime examples of hexameral works are those of Ambrose and Basil but Augustine’s City of God (413-426) could also be included here. The hexameral scheme treats natural subjects in order of their appearance in the book of Genesis and although they compile knowledge about all natural things they are not encyclopedias because they have a different purpose and methodology. For instance Ambrose, practicing a commentary of exegesis, directly addresses the reader using the second person, a procedure “totally absent in encyclopedic writing.” Another difference between the hexameral and encyclopedic traditions is their use by the reader in almost opposite ways. The hexameron is based on the biblical account of the six days of creation, its source is the Bible. Its purpose is to comment on the Bible after the reader has accessed the original scriptural text. The encyclopaedia, on the other hand, is meant to be used by the reader first, in order to prepare them to read the Bible and to be able to interpret it. “The tradition of the Hexameron therefore constitutes an independent method as far as genre goes, even if there is evidence of reciprocal influences.” Ribémont 2001, pp. 228-229. For further examples see Zahlten, Johannes G. Creatio mundi: Darstellungen der sechs Schöpfungstage und naturwissenschaftliches Weltbild im Mittelalter (Stuttgart 1979), a richly illustrated study of the hexameral tradition in biblical commentary and in medieval encyclopedias. Twomey 1988, pp. 140, 182

178 The Latin tradition of free-standing anonymous glossaries seems to begin with the source of Placidus’ glossary in the late fifth or early sixth century. Barney 2006, pp. 12-13
literary framework, the *artes liberales*, in order to structure knowledge for clerical and monastic education.

The Seven Liberal Arts and Carolingian Encyclopedism

The Greek program of education described above as the *enkuklios paideia* was adapted by the Romans under the concept of *liberalia studia* or *artes liberales*. In a well-known letter, Seneca, echoing Plato and Aristotle, discussed the *artes liberales* as “the group of subjects deemed appropriate for study by a free-born (liber) gentleman". The oldest statement associating the term *humanitas* with the *artes liberales* is found in the second-century *Noctes atticae* by Aulus Gellius. For him, the correct use of the word *humanitas* signified “education and training in the liberal arts. Those who earnestly desire and seek after these are most highly humanized [maxime humanissimi]. For the pursuit of that kind of knowledge, and the training given by it, have been granted to men alone of all the animals”. What the Romans did not inherit from the Greeks was a standard list of what subjects were or should be included in the *artes liberales*. A variety of combinations was promoted such as that by the Roman polymath Marcus Terentius Varro (118-29 BC), who, in a work now lost, included, along with geometry, arithmetic, astronomy, and music, the subjects of grammar, dialectic, rhetoric, medicine, and architecture, making a total of nine, and, at around the same time, Cicero who stated that “the liberal education of a gentleman should include mathematics (*geometria*, but probably including arithmetic), music, literature, poetry, natural science, ethics and political science”.

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181 Grant 1999, p. 100

For Christian authors, the idea that all knowledge could be harnessed in order to understand the scriptures and that all of nature should be studied because it was, after all, created by God, made it easy for them to incorporate secular subjects into their program of study. For example, Clement of Alexandria (d. c. 215) saw ancient philosophy as a gift from God and the Holy Spirit and believed that the liberal arts were a right place to begin in order to learn philosophy which led to Christian wisdom. Saint Augustine (354-430) also incorporated the thinking of Plato, his otherworldly tone relating so strongly to Christian divinity, in his support of pagan learning. For Augustine, the liberal arts were vital “mirrors of and pathways to” the divine order upon which God built the universe. This was particularly apparent in the four mathematical subjects: “in music, in geometry, in the movements of the stars, in the fixed ratios of number, order reigns in such manner that if one desires to see its source and its very shrine, so to speak, he either finds it in these, or he is unerringly led to it through them”. Augustine included many examples of the benefits of studying the liberal arts for Biblical study in his treatise on education, De Doctrina Christiana, for which it enjoyed much influence as the “most comprehensive syllabus” of learning inherited by the early middle ages.

As Augustine was promoting the liberal arts as an educational foundation, Martianus Capella, with his Liber de nuptiis Mercurii et philologiae, was narrowing the list down to seven subjects while at the same time giving them an allegorical dimension. In his work, Mercury and Philosophy, standing respectively for eloquence and for wisdom, are entrusted with the liberal arts as servants of higher learning and culture. The text had a great impact on education and it

184 Grant 1999, p. 101
187 Southern, Richard William. The Making of the Middle Ages (London 1959) p. 177
became the “most popular textbook in the schools of the early middles ages”.\(^\text{188}\) With an even narrower focus on the mathematical sciences were the works by Boethius (c. 480-525), which introduced for arithmetic, geometry, astronomy, and music, the collective name \textit{quadrivium}, “signifying the four ways to the higher truths of philosophy that these subjects were thought to represent”.\(^\text{189}\) Boethius had planned treatises on each of the four disciplines but only those on arithmetic and music survive. However, summaries of Boethius’ works on the liberal arts were incorporated into treatises by both Cassiodorus and Isidore.

In the \textit{Etymologiae}, Isidore combined encyclopedias of education, such as those by Cassiodorus and Capella, and general knowledge encyclopedias, such as those by Varro and Seutonius. According to Brehaut, the first 3 of the 20 books of the \textit{Etymologiae} are evidently educational texts (Grammar, Rhetoric, Dialectic, Arithmetic, Geometry, Music, and Astronomy) and the last 12 belong to the encyclopedia of all knowledge.\(^\text{190}\) So how can books four through eight be classified when they deal with the subjects of Medicine (4), Laws and Times (5), the books and services of the church (6), God, the angels and the orders of the faithful (7), and the church and the different sects (8)? Of Isidore’s two main sources, Capella gives only the seven liberal arts, but Cassiodorus gives a comprehensive plan of study including the liberal arts as well as topics for the religious education of the monk. Brehaut supposes that Isidore followed the example of Cassiodorus as they had similar purposes: Cassiodorus to train the monk and Isidore to educate the priest. “It is more natural to suppose that Isidore is giving in books one to eight of his \textit{Etymologiae} a comprehensive survey of the education of the secular clergy than to suppose that his educational texts stopped short at the end of the seven liberal arts”.\(^\text{191}\) Although Isidore incorporated subjects which were of practical use for priests like law, medicine, and chronology,

\(^{188}\) Grant 1999, p. 102

\(^{189}\) Grant 1999, p. 102; “This, then, is the quadrivium, by which we bring a superior mind from knowledge offered by the senses to the more certain things of the intellect.” Boethius. \textit{De Institutione Arithmetica}. Trans. Michael Masi as \textit{Boethian Number Theory} (Amsterdam 1983) I, 1

\(^{190}\) Sanford 1949, p. 464; Brehaut 1912, pp. 50-51

\(^{191}\) Brehaut 1912, p. 51
he did make the distinction that they were not part of the liberal arts but formed a “second
philosophy”, a higher class of education.

It was during the Carolingian period that the number and identity of the seven liberal arts were
standardized. Cassiodorus and Isidore built upon Capella’s example and the grouping by
Boethius of the four mathematical subjects together in the quadrivium was paralleled by the
trivium for grammar, rhetoric, and logic. The distinction between the two groups was more
than just one of mathematical versus verbal. The trivium, or scientiae sermonciales, was
considered sufficient training and grammar was the essential preliminary to all the liberal arts
since only the mastery of language allowed the other arts to be comprehended. A student could
then progress to studying the quadrivium or scientiae reales and this would equip them to pursue
their studies of Holy Scripture and theology.

Alcuin introduced the computus into formal schooling and it “duly became part of the training of
every clerk”. He wrote for his pupils a collection of Propositiones ad acuendos iuvenes
(Propositions for Whetting the Wit of Youth) and although his work contained 53 simple
problems in arithmetic, geometry, and logic, Alcuin maintained the tradition of placing grammar
first amongst the liberal arts. Hrabanus Maurus, “called primus praeeceptor Germaniae for his
pedagogical labors at Fulda”, continued his teacher’s emphasis on the proper training for priests
and monks and on the tradition inherited from Cassiodorus, Boethius, and Isidore, by reinforcing

192 Ribémont 2001, p. 275; see also the works of Brigitte Englisch.
193 Grant 1999, p. 102
194 Collison 1964, p. 44
195 Grant 1999, p. 102; see Stevens 2010, pp. 35-37 for a discussion of the level of minimum mathematical
knowledge required to study computus and understand the science of calendars.
196 See Burkholder, Peter J. “Alcuin of York’s ‘Propositiones ad Acuendos Juvenes’ (‘Propositions for Sharpening
Youths’) Introduction and Commentary.” HOST: An Electronic Bulletin for the History and Philosophy of Science
and Technology 1:2 (1993) which includes a translation of the text into English, together with introduction,
commentary, and the original text.
the importance of a basic liberal arts education and by emphasizing the necessity of knowledge in practical matters such as computus in his teaching and his texts.  

1.3 Hrabanus Maurus and his Computistical and Encyclopedic Writings

In order to fulfill his educational reform program, Charlemagne attracted scholars from all over Europe, scholars such as Paulinus of Aquileia, the grammarian Peter of Pisa, the Lombard scholar Fardulf and others from Moslem-occupied Spain. By far one of the most important scholars of all was Hrabanus’ teacher Alcuin of York (732-804), trained at Jarrow by Bede’s students. He played a prominent role in the drafting of documents such as the *Admonitio generalis* and the *Epistola de litteris colendis*. Alcuin’s broad interests in other areas of reform are seen in his other writings which include biblical commentaries, saints’ lives, moral writings on the virtues and vices and on the soul, and works on the trinity and against adoptionism. After 796 Alcuin was sent to teach at Tours, a transfer which can be seen as a way to spread the influence of the palace’s educational agenda to other scholarly centres. This practice of sending teachers and pupils to other centres, as outlined in the *Epistola de litteris colendis*, led to the rise in great centres of learning and book production. These centres included Lorsch (Ricbod and Adalung), St. Martin’s at Tours (Alcuin), St. Riquier (Angilbert), St. Amand and Salzburg (Arn), St. Wandrille (Einhard), and Lyons (Leidrad), in addition to St. Denis (Fardulf), and Fleury, Orleans, and St. Aignan (Theodulf of Orleans). In these centres students would gain a solid grounding in Christian culture through the study of scripture and then proceed to study the seven liberal arts, firstly the *trivium* (grammar, rhetoric and dialectic or logic) and then the *quadrivium* (arithmetic, geometry, music, and astronomy). For the subjects of the liberal arts

197 Grant 1999, p. 102  
198 See Levison 1946, p. 152 sqq. for details on the life and works of Alcuin.  
199 For a discussion of the educational system in the Carolingian monastic milieu see the recent article by John Contreni, “Learning for God: Education in the Carolingian Age” *Journal of Medieval Latin* 24 (2014) 89-129  
200 Brown 1994, p. 32  
201 Although the *Liber de nuptiis Mercurii et philologiae* of Martianus Capella implies the concept of the *trivium*, the term was not used until the Carolingian era when it was coined in imitation of the earlier *quadrivium*. Marrou,
the main texts used were those of Isidore of Seville, namely his *Etymologiae* and his *De natura rerum*, and Martianus Capella’s *Liber de nuptiis Mercurii et philologiae*, followed by Augustine’s *De doctrina christiana* and Cassiodorus’ *Institutiones II*. The study of these subjects was still guided by an emphasis on language and interpretation and therefore the study of grammar, rhetoric, and dialectic were of primary importance as they had been in the late Roman traditions of learning. However, the knowledge of grammar was only a means to an end and the study of every word of the Bible through Christian exegetical methods based on the works of Origen, Augustine, Gregory the Great, and Bede led to a multifold interpretation of scripture. The mysteries of the Bible could be found at the literal (or historical) level, the symbolic (or allegorical) level, the moral (or tropological) level, and the mystical (or anagogical) level. The study of the subjects of the *quadrivium* was more limited. Since they were more difficult to apply to Christian learning, the *quadrivium* topics were given practical applications. Arithmetic was needed for the study of computus, music was studied as a way of enhancing the liturgical experience, astronomy was how one tried to understand God’s plan in the sky, and geometry was used to study the natural world.

The writings of such scholars as Paul the Deacon and Alcuin demonstrate that the teaching of grammar and the liberal arts was flourishing at Aachen. The emphasis on latinity is seen in Alcuin’s choice of topics (*Ars grammatica, De dialectica, De orthographia*, and *De rhetorica*) as well as his legacy as a teacher to many of the scholars in the following generation at Aachen and Tours. Before his 20-year tenure as abbot of Fulda and his subsequent elevation to the office of archbishop of Mainz in 847, Hrabanus studied under Alcuin at Tours. Hrabanus was a prolific writer whose range of works presents a picture of the Carolingian reform program goals, that is, the primary goal of salvation and the secondary goal of acquiring useful knowledge to help the church and the individual with their aspirations toward divine grace. A large portion of his works was focused on the Bible as is fitting for someone of his profession and someone who had


202 Brown 1994, p. 30
absorbed Alcuin’s educational agenda. He composed commentaries on no less than 20 biblical books. The manuscript evidence shows that they were highly copied and used. According to Le Maitre, Hrabanus saw himself as the disciple of Bede and Alcuin. He strove to complete projects that they had begun by continuing to provide commentaries on books of the Bible and to update the commentaries for a ninth-century audience. Following the methods of Bede and Alcuin, Hrabanus’ commentaries are composed of quotations from the relevant works of other exegetes such as Augustine, Gregory, and Origen. This method is known as the catena (or chain) method of biblical commentary. In his works of biblical commentary, Hrabanus clearly acknowledged his sources by marginal annotation in a similar way to his identification of his own ideas with the initial ‘M’ (for Maurus). In a letter, Hrabanus chose to use the words of Bede to explain his method saying that he had been ‘solicitous throughout lest I should be said to have stolen the words of greater men and to have put them together as if they were my own’. A further discussion of Hrabanus’ method and of his use of sources as well as the question of plagiarism and originality is contained in chapter 1.3.3.2. The goal of attributing the quotations was to provide patristic authority to the interpretation as well as being a handy reference for students who would not have to look at the sources first-hand themselves in order to obtain the literal, allegorical, moral or spiritual meanings of the words. “His sense of mission was to ransack the storehouse of Christian learning, and thereby to render it and its wisdom, the highest form of knowledge, more readily accessible to a Carolingian audience”.

Although he readily relies
on authoritative writings, like those by Alcuin and Bede, to illustrate his commentaries, they do contain elements of originality. For example, nearly fifty per cent of his commentary on Matthew is his own prose.\(^\text{208}\) In addition to the prose itself, the manner in which the quotations are chosen and arranged make these compilations new and original works of scholarship. In the tradition of Augustine, learning, for Hrabanus and others, did not necessarily involve original thought but was more focused on acquiring pre-existing knowledge. In order to create works that met these criteria, an author would have to be very well-versed in the writings of the church fathers and this required many years of formal training in a centre with a well-stocked library and a scriptorium to maintain the library collection. “Hrabanus’s biblical commentaries, in their method and expertise, are thus as instructive of Carolingian scholarship, its methods and its limitations, as the testimony of the surviving manuscripts and book-lists”.\(^\text{209}\) His other works largely follow this same method of culling the great patristic and pagan texts for quotations to elucidate his analysis of the Christian meaning in the text. His *De institutione clericorum* closely follows Augustine’s *De doctrina christiana*, but makes his own arrangement of the materials, omitting some and adding material from Cassiodorus, Isidore, and Bede. His *De rerum naturis*, as will be shown below, starts out as a reworking of Isidore’s *Etymologiae* with additional material from the church fathers and the Bible to Christianize the message and highlight the allegorical and symbolic meanings of the universe. The idea behind the Christianizing of the message was that the origin and meaning of the names given to natural objects were a clue to their natural essence and thus to the divine meaning that God imbued in them. “The mystical symbolism of these objects was thus what mattered, not the objects themselves. Scientific knowledge, like other branches of learning, was thus relevant only in so far as it pertained to the

\[\text{Ecclesiae veneratione dignos judicabam, et eorum sententias prout ipsi eas protulerant opportunis locis simul cum nota nominum eorum in opusculis meis interposueram? Magis enim mihi videbatur salubre esse ut humilitatem servans sanctorum Patrum doctrinis inniter, quam per arrogantiam, quasi propriam laudem quaerendo, mea indecenter proferrem, quando hoc summæ humilitatis exemplar et magister ipse Dominus faciendum quoddammodo suo exemplo docere videatur.} \]


\(^\text{208}\) Brown 1994, p. 41

\(^\text{209}\) Brown 1994, p. 42
Christian faith and its significance. Hrabanus’s work, characteristic of Carolingian scholarship then in so many ways, is thus essentially derivative, self-consciously so.  

This form of scholarship is seen differently today but the aim of early medieval scholarship was to preserve patristic wisdom and change it in ways only so that it was accessible to a contemporary audience. Therefore, the interpretation and methods of analysis might be medieval but the knowledge they were communicating was ancient and therefore authoritative. In addition to his biblical commentaries, many of his works were meant to be used in an educational context either in a monastic or cathedral school or in the parish. Hrabanus wrote several of his biblical commentaries for friends and his De rerum naturis has two prefatory letters, one for Louis the German and the other for Haymo of Halberstadt. An extensive network of friends and fellow scholars was indicative of the cultural environment in the Carolingian realm and the manuscript evidence shows that both men and materials moved freely about the Frankish kingdoms fostering exchanges and ties between communities both secular and religious at the informal level as well as at the level of councils and synods.

Another student of Alcuin’s, Lupus, abbot of Ferrières from 841 to 862, describes in numerous letters the activities of scholars in exchanging manuscripts for studying and copying and in consulting with each other on points of correction or emendation. A common religious environment also brought Francia into closer contact with the rich cultural traditions of Italy and Spain.

The Monastery of Fulda and Its Library

Hrabanus’ writings are a product of his experiences as a teacher, monk, abbot, and scholar. Beyond the imperial palace at Aachen and the school at Tours where he studied under Alcuin,
the environment most influential in shaping these experiences was the monastery at Fulda. In the ninth century, the monastic foundation at Fulda had over 600 monks, a reputation under Hrabanus’ direction which eclipsed Tours and was equal to the future reputations of Corbie, Reichenau, and St. Gall, and had a renowned library able to support one of the largest communities of students and scholars in the Carolingian realm. Fulda was also a hub in the network of Carolingian monastic foundations described above, a network which extended beyond the borders of the Frankish kingdoms due to its origins in the Anglo-Saxon missionary movement and the traditions and texts inherited from early Insular monasticism.

The major figure in this missionary movement was Saint Boniface, who founded the monastery of Fulda in 744. Before he took on the name Boniface in 719, Wynfrith led a mission to convert the Frisians in 716 but returned to England when the mission failed. He left England again in 718 and found such success that in 722 he was made bishop and papal legate to Germany and then, in 732, archbishop of Germany east of the Rhine. Boniface was a grammarian and teacher and brought with him a personal library to support his missionary work and also solicited donations of manuscripts for the network of Benedictine foundations.

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213 Born in Mainz in 784, raised at Fulda, where Bangulfe sent him to the school at Tours, Hrabanus returns for his second stay at Tours after 801 and was then he was sent to Fulda until 822. He was abbot for twenty years, then after his five years of retirement he becomes bishop at Mainz in 847 and died in 856. He was loyal to Louis the Pious, but also intermittently had the favour of Louis the German and Lothaire the First. He was a grammarian, teacher, moralizer, exegete, and encyclopedist, poet, and all-round versifier and highly regarded by his contemporaries and the elite. De Ghellinck 1969, pp. 102-103

214 It is possible that Lorsch, like Reichenau and Weissenburg, sent promising boys to the great school at Fulda, widely renowned in its heyday under the direction of Hraban Maur and Rudolf. McKitterick, Rosamond. The Carolingians and the Written Word (Cambridge 1989) p. 190

215 The great ninth-century continental monasteries such as Corbie had some 300 monks and Fulda over 600. Ganz 2006, p. 96. See also De Ghellinck 1969, p. 102. For further details on the role of Fulda as a centre in the Carolingian realm see Brown 1994, pp. 1-51 (especially pp. 11-16)

216 One reflection of this Anglo-Saxon network of monasteries is seen in the careers of scribes, their status and positions within the monasteries, and how they and their work circulated in this network. McKitterick traces these career paths in her chapter on the status and office of scribes. McKitterick 1989, pp. 115-125

217 For a history of Fulda and the influence of its abbots see the recent work by Raaijmakers, Janneke. The Making of the Monastic Community of Fulda, c. 744-900 (Cambridge 2012)

218 Lapidge 2006, p. 39. For a further discussion of Boniface’s career see Levison 1946, pp. 70-93
established by his insular brethren. Based on a study of the correspondence between Boniface and his supporters in various parts of England and his fellow missionaries and successors, Michael Lapidge has been able to surmise the content of Anglo-Saxon monastic libraries as well as the manuscripts and texts which migrated to Anglo-Saxon and Irish foundations on the continent. The conclusions of his study provide a glimpse as to the content and extent of the library at Fulda which in turn helps in understanding what resources Hrabanus had at his disposal during his education and career.

Most monasteries would have had a basic collection of books required for religious observances, such as copies of the Gospels, the Pauline Epistles, and the Psalms; liturgical books such as missals and hymnals; computistical works, especially an ecclesiastical calendar; penitential handbooks; and sometimes written documents pertaining to the foundation of the monastery and its founder or patron saint. In addition, instructional books would have been required for monasteries with schools, such as books on “Latin grammar (notably Donatus and Priscian), natural philosophy (Isidore and Bede), ecclesiastical history (Eusebius in Jerome’s Latin translation and Orosius); and, most importantly, scriptural commentaries, especially those of the Latin fathers such as Jerome and Augustine”. Further to this basic collection, which can be assumed to have existed at such a large monastery school as Fulda, we can add 112 surviving manuscripts and fragments identified by Lapidge which were brought over or sent to the continental foundations of the Bonifatian network. Half of the manuscripts contain works by only four patristic authors, Gregory, Isidore, Jerome, and Augustine. This list is not surprising

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219 Levison 1946, p. 142
220 Lapidge 2006, pp. 77-78
221 Ó Néill 2006, p. 74; see also Ganz 2006, p. 95 where he discusses the ninth-century catalogues of Lorsch, St. Gall, Murbach and Reichenau: “These lists of some 300 to 500 titles are arranged by authors and subject headings, and reveal a sense of a systematic collection which matches the bibliographies of Cassiodorus (c. 485- c. 580) or Notker Balbulus (c. 840-912).”
222 As Lapidge reports, there are 20 manuscripts of the works of Gregory, made up of copies of the Hom. in Hierochilehem, the Regula pastoralis, the Dialogi, the Moralia in Job, and the Hom. xl. in Evangelia. Of the works of Isidore, there are 16 manuscripts, made up of the Etymologiae, the Synonyma, the De natura rerum, and 1 each of De ecclesiasticis officiis, De differentiis rerum, and Quaestiones in vetus Testamentum. Of Jerome’s works, there are 10 manuscripts in total, including his Comm. in Esaiam, his Comm. in Ecclesiasten, and 1 each of his commentaries on Daniel, Matthew, and the Pauline epistles, and 1 copy of his Epistulae. Finally, of Augustine’s
given that these works were also the staple texts in Anglo-Saxon monasteries. However, a different picture is revealed when the list of grammatical texts is studied. There are only seven grammatical manuscripts in the collection. This paucity, Lapidge claims, is not surprising given that Latin teaching for the missions would have been at the elementary level.\(^{223}\) The unexpected aspect of the collection is that the grammatical manuscripts include copies of works that are rare or unknown in Anglo-Saxon England.\(^{224}\) Lapidge postulates that perhaps these manuscripts came from private libraries of late antique Roman aristocrats in Rome and Ravenna. A study, discussed below, of the eighth-century Continental library inventories still extant, including one from Fulda, supports Lapidge's findings about the mix of patristic texts from Anglo-Saxon libraries and classical texts from late antique Italian libraries.

The Library at Fulda

Three of the earliest surviving Continental library inventories date from the eighth century and describe collections in the area of the Anglo-Saxon missions to Germany, namely Würzburg, Fulda, and (probably) Echternach.\(^ {225}\) A closer look at the inventory from Fulda will illustrate the corpus of the library which served the school where Hrabanus first studied and subsequently taught. The Fulda inventory\(^ {226}\) was discovered by Paul Lehmann in a manuscript now in Basel (UB, F III 15a) and is a copy of Isidore’s *De natura rerum* written at Fulda c. 800, “to which a

\[^{223}\text{Lapidge 2006, p. 80}\]

\[^{224}\text{The grammatical manuscripts include copies of Charisius, Diomedes, and Consentius: “authors of which no manuscript written or owned in Anglo-Saxon England survives. The same is true of the *Ars grammatica* of Julian of Toledo: no English manuscript of this exceptionally rare work survives. It is also striking that only a very few manuscripts of school-texts survive from the German missionary area: two copies of Caelius Sedulius, *Carmen paschale*, two copies of Aldhelm, prose *De virginitate*, and one copy of Bede, *De arte metrica.*” Lapidge 2006, p. 81}\]

\[^{225}\text{Lapidge 2006, p. 81}\]

\[^{226}\text{See Lapidge 2006 (App. B, no. b); see also Lehmann 1927, pp. 49-50}\]
coeval scribe added, on the last and badly abraded folio, a list of 20 books, which Lehmann reasonably interpreted as an inventory, the earliest such inventory in existence, of the library of Fulda”.  

The list is comprised mainly of biblical books, saints’ lives, chronicles, and the standard patristic works of Gregory (Regula pastoralis, Moralia in Job), and Isidore (Synonyma). Just as the surviving manuscripts described above showed, the libraries and principal centres of the Anglo-Saxon mission were, in their first half-century, “stocked solely with the staple patristic authors: Gregory, Isidore, Augustine, and Jerome, in approximately that order”. As McKitterick summarizes in her 1989 study, “It can hardly be said that this was a comprehensive library, or even a well-conceived missionary collection. But its biblical books and the Homilies of Gregory, as well as a selection of saints’ lives, were part of the basic equipment for an ecclesiastical establishment”. Further, the surviving manuscripts and inventories include no classical authors or texts. It is a point deservedly stressed by Lapidge because within a hundred years of its foundation, Fulda had acquired a reputation for being a repository of classical texts and many classical manuscripts with a Fulda provenance and dating from the second quarter of the ninth century survive today.

227 Lapidge 2006, p. 82; An inventory of 23 books (containing 48 titles) is preserved in a very damaged manuscript from Fulda, now Basle, UB, F.III. 15a, fos. 17v-18v. The inventory was first discovered and deciphered by Paul Lehmann (Fuldaer Studien, pp. 49-50) and has been re-edited by Schirmpf (Mittelalterliche Bücherverzeichnisse, pp. 5-11). The manuscript is dated to c. 800 by Spilling, “Angelsächsische Schrift in Fulda” pp. 62-64. Lapidge 2006, pp. 151-153. On the Fulda inventory see Gorman, Michael M. “The Oldest Lists of Latin Books.” Scriptorium 58 (2004) pp. 48-63

228 Lapidge 2006, pp. 82-83

229 For the writings of Gregory, there are three entries for the Dialogi, three for the Regula pastoralis, two for the Hom. xl. in Evangelia, and one for the Moralia in Job. For Isidore, there are two entries for the Sententiae, two for De natura rerum, and one each for De ecclesiasticis officiis and the Synonyma. For Augustine, there are two entries for De trinitate, and one each for De doctrina christiana, De fide et symbolo, De quantitate animae, the Enchiridion, the Speculum ‘quis ignorant’, and the Sermones. For Jerome, there is one entry each for De viribus inlustribus, the Epistulae, and the commentaries on Ecclesiastes and on the epistles of Paul. Lapidge 2006, p. 83

230 McKitterick 1989, p. 170

231 One example of several authors using the Fuldan library is Lupus of Ferrières who turned to Fulda in his search for copies of Suetonius’ De vita Caesarum, which he knew to exist as a two-volume set in Fulda’s library. Lapidge 2006, p. 83

232 The following titles give an indication of Fulda’s wide holdings in this domain: a copy of the Scriptores Historiae Augustae; Valerius Flaccus, Argonautica; Tacitus, Agricola and Germania combined with ‘Dictys Cretensis’, Bellum Troianum; Pliny, Epistulae, in the so-called ‘Nine-Book Tradition’; Ammianus Marcellinus, Res
The dates for these surviving manuscripts coincide with the abbacy of Hrabanus Maurus who was known mostly as a biblical and patristic scholar and not as a specialist in classical texts. However, Lapidge has found at least one manuscript which indicates Hrabanus’ “interest in the acquisition and copying of rare classical texts: a copy of Aulus Gellius, *Noctes atticae*, books ix-xx”.

It is thought that this manuscript was copied in 836 at Hrabanus’ request from an exemplar which had been lent to Lupus of Ferrières by Einhard. Lapidge hypothesizes that if Hrabanus had requested the copying of this text, then perhaps he did so for others. He could not ascertain where the exemplar for this and other classical texts originated from, but notes that perhaps the source was “the private libraries of late antique Roman aristocrats, principally in Rome and Ravenna”.

Lapidge concludes that, regardless of the source, the evidence of surviving manuscripts and inventories from the area of the Anglo-Saxon mission in Germany during the period c. 750 – c. 800, clearly shows that the exemplars of these classical texts did not come from England and were not part of Fulda’s library during the first half-century of its existence. The evidence does indicate that only patristic texts were sent from England to Boniface and his followers in Germany.

Further evidence of Hrabanus’ involvement with the library acquisitions at Fulda is discussed by Richard Corradini in his 2003 study of the computistical and annalistic texts kept and created at Fulda during the Merovingian and Carolingian periods. The oldest list of books in the Fulda library from c. 800 shows that the collection was a traditional one with a particular emphasis on liturgical works. However, Corradini studied a fragmentary catalogue dating from c. 830 which shows the changing nature of the library into one which supported a centre of education.

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*gestae*; Nonius Marcellus, *De compendiosa doctrina*; and the *Aratea* of Germanicus. A copy of the *Agrimensores* was unearthed at Fulda by Johannes Sichardt in 1526, but has since disappeared. Lapidge 2006, pp. 84-85

233 Leeuwarden, Provinciale Bibliotheek van Friesland, MS B.A. Fr. 55, Lapidge 2006, p. 85

234 Lapidge 2006, p. 85

235 Lapidge 2006, p. 85

236 Vat. pal. lat. 1877, Corradini 2003, p. 310
McKitterick also studied the same fragmentary catalogue and concludes that it and other later lists from the library of Fulda “record a great increase in the abbey’s literary possessions”.

In addition, the *Gesta abbatum Fuldensium*, composed around 920, illustrates the growth and organization of the library as one of the most important accomplishments of Hrabanus. Corradini concludes from his study of these documents that the “systematic register of the contents of the Fuldan library and its division into different sections dates to 830, that is, to Abbot Hrabanus and his librarian Hatto”.

**Hrabanus’ Computistical and Encyclopedic Works**

The focus of the final section of chapter one is on Hrabanus’ computistical and encyclopedic works and in particular his *De clericorum institutione, De computo*, and *De rerum naturis*. However, Hrabanus was also known for his biblical and panegyric writings. He wrote commentaries on 20 books of the Bible and his earliest composition was *De laudibus sanctae crucis*. This work was a collection of *carmina figurata* in emulation of a similar set praising emperor Constantine the Great which had been composed by Publibius Optatianus Porfyrius in 325. Whereas “the *carmen figuratum* was not an uncommon genre” and biblical commentaries abound from the Carolingian period, large encyclopedic projects were rare.

The overall impetus for the Carolingian educational reforms as well as the aim of the correction and preservation of texts certainly encouraged scholars like Hrabanus to compose, compile, and

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237 For example the portion of Vat. pal. lat 1877, ff. 35-43, dated to the first half of the ninth century, lists the books *de cella paugolfi*. McKitterick describes it as a ‘short title list’ of books, “neatly numbered, and with a new line for each title. After the missal, gospel lectionary and Bible, Jerome’s and Augustine’s works are listed, with a full provision of details concerning the letter collections. There are some other works noted, such as the chronicle of Eusebius and Jerome, a book of excerpts from the prophets and Lives of Paul the Hermit and Hilarion”. McKitterick 1989, p. 170

238 Fulda, Hessische Landesbibliothek MS B1

239 Corradini 2003, p. 310

240 Schipper 2004, p. 1

241 Schipper states that the *carmen figuratum* genre was practised by Boniface and Alcuin and those in their circle of influence, as well as other occasional practitioners such as Ausonius, Venantius Fortunatus, Theodulf of Orleans, and Paulus Deaconus. Schipper 2004, p. 2
copy texts for the good of the church and the realm. However, as Corradini reveals in his study on annalistic and computistical writings produced at Fulda during the last half of the eighth century and the first half of the ninth century, there were additional factors that arose at Fulda leading up to Hrabanus’ abbacy which led to an increasing interest in recording events and documenting the temporal character of the monastic community.

According to Corradini, “corrections to the art of computus in early ninth-century Fulda were closely connected to a serious crisis within the monastery, which lasted from around 802 to 818”. The basis of this crisis was the competition between the Bonifatian tradition and a movement within the monastery that supported the reforms of Benedict of Aniane. In addition, fatal epidemics in 807 and 810 and the problem-plagued abbacy of Hrabanus’ predecessor, Abbot Ratgar, compounded the negative effect of the conflict between the two factions. This disruption of normal life is reflected in an interruption in the maintenance of the list of monks and the Annales necrologici, a decrease in the flow of charters which almost ceased between 810 and 830, and a decline in the donations made to Fulda between 807 and 810. The ensuing dissolution of organization created a fear of loss which Corradini characterises as a loss of memoria, which he further equates with the practice of computus. It was this fear of losing their collective memoria which “stimulated a lively production of texts”. Among the many texts produced at this time were Hrabanus’ De clericorum institutione (819) and his De computo (820). As will be discussed further below, these texts were the products of not only the

242 Corradini 2003, p. 269
243 Corradini 2003, pp. 271-273
244 “Ulrich Hussong describes these developments as a ‘sudden collapse’ ('schlagartigen Zusammenbruch’) of the abbey’s leadership, which led to a ‘dissolution’ ('Auflösung’) of the abbatial organization between 815 and 816.” Corradini 2003, p. 273
245 Corradini 2003, p. 271
246 Corradini 2003, p. 273
247 “This burst of activity included the production not only of charters, necrologies and lists of monks, but also the Fuldan recension of the Chronicon Laurissense breve (a historiographical text linked with Hrabanus), and the Vita Sturmi...Further literary activity is reflected in the extensive marginal chronography found in contemporary texts.” Corradini 2003, p. 278; see also pp. 278-288 for descriptions of the manuscripts.
Carolingian reform writ large, including the network of scientific exchange among Frankish monasteries, but also of the corpus of computational texts and manuscripts at Fulda in the first half of the ninth century as well as the Fuldan community’s need to solve their internal crises and create their own temporal identity.\footnote{Corradini 2003, p. 275; In his study, Corradini found that a wide variety of computistical texts could be found at Fulda. In addition to Bede there was also Quintus Iulius Hilarianus’ \textit{De cursu temporum}, the calculus of Dionysius Exiguus, and the calculus of Victorius of Aquataine. The manuscript Basel, UB F. III 15k (fol. 57r-60v), contains chapters of Bede’s \textit{De tempore ratione} with Isidore of Seville’s \textit{De natura rerum} and \textit{De laude computi}. This manuscript, compiled around 820-840, also contains a computistical dialogue influenced by Hrabanus (fol. 24v-36r). A similar manuscript, Basel (UB A.N.IV. 18), according to Corradini, is a textbook produced at Fulda by multiple Anglo-Saxon and Carolingian scribes at the beginning of the ninth century, and includes maps of the celestial bodies and the earth, as well as two astronomical works (the \textit{Phainomeno} of Aratos of Soloi and the \textit{Aratea} of Germanicus) intended mainly for teaching. Hrabanus included the \textit{Phainomeno} in his \textit{De computo} and the \textit{Aratea} text may have served as a basic lecture in computus for students at Fulda. There is fragmentary evidence from the ninth century of a Fuldan version of Martianus’ \textit{De nuptiis Philologiae et Mercurii} and a copy of Isidore’s \textit{Etymologiae}. Two further manuscripts, Basel, UB F. III 15a and Basel, UB F. III. 15f, are both textbooks which together contain Isidore’s \textit{De natura rerum}, glosses on the position of the signs of the zodiac with a table for their coordination with months of the solar year and a list of equivalents of signs and months, and an eighth-century copy of Isidore’s astronomical \textit{Rotae} (\textit{De natura rerum sive liber rotarum}) together with medical and theological texts. Corradini 2003, pp. 304-309.}

Corradini’s study shows that texts such as glossed tables, calendars, chronicles, annals written in the margins of Easter tables, liturgical and computistical treatises, and necrologies produced during the first half of the ninth century at Fulda reveal that “computus, as a framework for memorial thought, was more than a means of reckoning time; it was a reckoning with and on time, and formed the basis for experience-based history in both the past and the future”\footnote{Corradini 2003, p. 320}. By writing \textit{De computo} in 820, Hrabanus was able to obtain acceptance for a new ordering of time and his subsequent election as abbot in 822 enabled him to “establish a new administrative and educational order within the monastic school and within the cloister in general”.\footnote{Corradini 2003, p. 271} His election also legitimized the Benedictine reform at Fulda and his writings and teachings solidified the concept of computus as a form of “glossing of a \textit{sacra historia}”.\footnote{Corradini 2003, pp. 291, 320}
1.3.1 De clericorum institutione

In the preface to his work *De clericorum institutione*, written in 819, Hrabanus very clearly outlines the genesis of the work, the intended purpose and audience, and his composition technique. Hrabanus intended this work to be a type of *vademecum* for clerics and, as he explains to Aistolfo, archbishop of Magonza, in the preface, a response to the various members of Fulda and those from abroad who consulted him about particular problems. Hrabanus was not the only one consulted on matters of offices, and at the beginning of the ninth century other authors in his circle also wrote similar works of liturgical commentaries and sacerdotal instructions such as Alcuin with his *Disputatio pueros* and Amalaris with his *Liber officialis*.

The didactic character of the work comes across in all three books. The first book covers the themes of the church, the sacerdotal grades, sacred clothing, and the sacraments. The second book deals with fasts, religious feasts, liturgical functions, and heresies. The final book examines Sacred Scripture, the liberal arts, and preaching. Hrabanus lists all his sources in the prologue: Ciprian, Hilary, Ambrosius, Jerome, Augustine, Gregory, John of Damascus, Cassiodorus, and Isidore etc. He also details to Aistolfo his threefold method of composition:

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253 Hrabanus Maurus. *De institutione clericorum, prologus*: *Quaestionibus ergo diversis fratrum nostrorum et maxime eorum, qui sacrat ordinibus pollebant, respondere compellebar, qui me de officio suo et variis observationibus, quae in ecclesia dei decentissime observantur, saepeissime interrogabant, et aliquibus eorum tunc dictis, aliquibus vero scriptis prout opportunitas loci ac temporis erat, secundum auctoritatem et stilum maiorum ad interrogata respondi. Sed non in hoc satis eis facere potui, qui me instantissime postulabant immo cogebant, ut omnia haec in unum volumen congerem, ut haberent, quo aliquo modo inquisitionibus suis satisfacerent, et in uno codice simul scriptum reperirent, quod antea non simul, sed speciatim singuli, prout interrogabant, in foliis scripta haberent. Quibus consensi et quod rogabant feci, quantum potui...Et quia haec omnia, quae diximus, ad clericorum officium maxime pertinent, qui locum regimen in ecclesia tenent et de universis legitimis dei populum dei instruere debent, placuit ipsos libros “de institutione clericorum” nuncupari, id est, cum qua se vel sibi subditos ad servitium divinum instituere debent*. Ed. Zimpel 1996, pp. 281-282


255 Hrabanus Maurus. *De institutione clericorum, prologus*: *...nec per me quasi ex me ea protuli, sed auctoritatis innitens maiorum, per omnia llorum vestigia sum secatus: Cyprianum dico atque Hilarium, Ambrosium, Hieronymum, Augustinum, Gregorium, Johannem Damasum, Cassiodorum atque Isidorum et ceteros nonnullos...* Ed. Zimpel 1996, pp. 282-283
reporting the sources word for word; re-elaborating and summarizing with his own words; and adding his own argument following the example of the source.\textsuperscript{256} This tripartite structure can be seen throughout the work and reveals the sign of a firm compository intention in adapting the treatise for the use of clerics.\textsuperscript{257}

In his examination of the third book of \textit{De institutione clericorum}, Bisanti highlights examples that illustrate each of the three techniques, sometimes used together in one chapter.\textsuperscript{258} The third book draws many passages from Augustine’s \textit{De doctrina christiana} and in chapter six, on the mode of reading the Sacred Scripture, Hrabanus takes up Augustine’s text at the exact point where he left it in chapter four (where he was copying \textit{De doctrina christiana} II, 8). Hrabanus interrupts the excerpt at the point where Augustine lists the Biblical books and inserts his own words to end the chapter. In the next chapter (seven), about the tripartite division in the book of the canons of the Hebrews, Hrabanus switches to an excerpt from Isidore’s \textit{Etymologiae} (VI, 1). Immediately after this excerpt, Hrabanus turns back to Augustine and wholly transcribes a passage from \textit{De doctrina christiana} II, 9. Then he inserts the passage from Augustine which he had skipped before, the listing of the sacred books. Amongst the passages from Augustine, Hrabanus adds brief comments of his own, usually no more than a simple phrase. At the end of chapter 15, Hrabanus acknowledges his debt to Augustine and directs the reader to search for more details in the original source.\textsuperscript{259} Hrabanus continues to excerpt from Augustine for the rest of the third book and ends the last chapter, 39, and the whole treatise in the name and words of Augustine.

\textsuperscript{256} Hrabanus Maurus. \textit{De institutione clericorum}, prologus: …quorum dicta alicubi in ipso opere, ita ut ab eis scripta sunt pro convenientia posui, alicubi quoque eorum sensum meis verbis propter brevitatem operis strictim enuntiavi; interdum vero, ubi necesse fuit, secundum exemplar eorum quaedam sensu meo protuli. Ed. Zimpel 1996, p. 283

\textsuperscript{257} Bisanti 1985, p. 10

\textsuperscript{258} Bisanti 1985, pp. 10-15

An example of Hrabanus’ own adaptation of a topic can be found in the second part of chapter eight which is a free re-elaboration of excerpts from De doctrina christiana II, 5. Another unique example is chapter 37, which is the longest in book three. In this case, Hrabanus transcribes only the beginning of each chapter of Gregory’s Regula then provides more ample listings of the dogmas to use according to the audience. Other examples of Hrabanus’ re-elaborations are found in chapter five where he discusses the concept that attaining integral knowledge also means attaining charity, and chapter 27 about the acquisition and exercise of virtue.

From his study, Bisanti concludes that originality did not interest Hrabanus. However, to appreciate the work for what it is, it must be judged within the context of its purpose as outlined by Hrabanus in the preface. His purpose was to educate the clergy of Germany and therefore he followed a linear and straightforward method of presentation to ensure the work succeeded in being a practical and useful guide. Hrabanus’ mission was “to provide to his disciples the instruments essential to a general culture and teoleology, indispensable to a religious and practical life”. He did so by giving his work a linear structure and by using a technique which included both simple compilation of sources as well as critical elaboration.

As for the art of computus in the life of a cleric, Hrabanus explains in book 3 chapter 25 that

It behoves God’s cleric by skilful art to learn about this part of astronomy which follows natural inquiry and which prudently searches out the courses of the Sun, Moon and stars and the sure distinctions of time, so that through sure interpretation of the rules, and established and true appraisal of the formulae, he may not only inspect in a trustworthy manner the past courses of the years but also know how to reason about the time to come, and so that he may find out for himself the beginning of the Paschal feast, and the true places [i.e. in the calendar] which ought to be observed for all solemnities and celebrations and be able to proclaim their lawful celebration to the people of God.

260 Bisanti 1985, pp. 16-17

261 Hrabanus Maurus. De institutione clericorum. 3:25: Hanc quidem partem astrologiae, quae naturali inquisitione exsequitur, solis lunaeque cursus atque stellarum et certas temporum distinctiones caute rimatur, oportet a clero Domini solerti meditatione disci, ut per certas regularum coniecturas et ratas ac veras
Since Cassiodorus did not include computus in his guide for monks De institutiones divina et humana, Hrabanus had to insert his brief introduction to the topic quoted above in the section on the liberal art of astronomy, or what Isidore would call astrologia naturalis.

1.3.2 De computo

Hrabanus’ computistical work De computo\textsuperscript{262} came about as a response to a letter which he received from Marcharius querying a series of computistical problems.\textsuperscript{263} Hrabanus attempted to answer the problems by providing a calendar and sufficient related information to enable someone to understand the reckoning of the moveable feasts of the Christian year. The work is appropriately organized and geared towards students. It is structured as 96 chapters which start with elementary arithmetic and general questions and answers and progresses to more complex matters of planetary motions and the complicated calculations required to use an Easter table and to understanding its base historical-theological assumptions. The tables themselves were presented in a new form by which Lent and Rogation could easily be reckoned without expert knowledge.\textsuperscript{264} The work ends with a theological explanation of the meaning of time itself. The text is presented in a dialogue format, a pedagogical exercise between master and student which aims to teach the student to solve the problem of determining the date of Easter this year and in any year. It is a form which was fairly common not only in other written works but also at Aachen and Fulda where this “intellectual give-and-take” pattern would have been practiced at

\textsuperscript{262} Stevens CCCM 44 (1979) pp. 165-323

\textsuperscript{263} Stevens 1979, p. 33, CCCM 44 1979, p. 176; “Rather than a global programme of this kind, the time-reckoners needed simple textbooks for discrete areas. In 820 Hrabanus Maurus responded to this need with a ‘computus’ based on Bede’s work, and later a ‘martyrology’ written between 840 and 854 when he was archbishop of Mainz.” Borst 1993, p. 44

\textsuperscript{264} Stevens CCCM 44 1979, p. 176
court and in the classroom. Hrabanus’ sources include Bede’s *De temporibus*, *De natura rerum*, and *De temporum ratione* (DTR), Isidore’s *De natura rerum* and *Etymologiae*, as well as collections of excerpts and paraphrases or *argumenta* along with the 19-year table created by Dionysius Exiguus.

According to Wesley Stevens, the editor of the critical edition CCCM of *De computo*, Hrabanus organized his work into five distinct sections. Chapters one to eight discuss number, numerals,

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265 Stevens CCCM 44 1979, p. 177; As a Biblical scholar Hrabanus would have known not only the question-posing rhetoric of Job but also several dialogue forms, both argumentative and didactic, in the Gospels. This form, favoured by medieval clerics since Augustine used it in his *De magistro*, came to be used many times by men who wanted to elaborate a pedagogical discourse on nature, like Abelard of Bath and William of Conches in the twelfth century. See Ribémont 2001, pp. 250-251

266 In the preface of *De temporum ratione*, Bede identifies his new book as a sequel to two others: *De temporibus*, his first work on the calendar, and *De natura rerum*, a treatise on cosmology. *De temporibus* was composed in 703, and is therefore one of Bede’s earliest works. *De natura rerum* was written shortly thereafter. According to Wallis, the two works “drew on quite separate models and were conceived by Bede as having distinctive missions. *De temporibus* was strictly about the calendar, but not modelled on any pre-existing computistical genre. Bede was certainly indebted to Irish models, notably to *De computo dialogus*; he also drew heavily on Isidore, both *De natura rerum* 1-7 and *Etymologiae*, Book 5...*De temporibus* is a concise and focused course in basic computistics, with no discussion of the Sun and Moon, or the zodiac, solstices and equinoxes, seasons and variations of daylight, or tides. Isidore had also dealt with these matters apart from the context of computus, in *Etymologiae* 3 (astronomy) and 13 (cosmology), and in *De natura rerum*. So when Bede wrote his own *De natura rerum*, he simply took Isidore’s framework in *De natura rerum*, and subtracted the section on the units of time, which he had already shifted to *De temporibus.*” Wallis 2004 pp. lxiv-lxv

267 When he wrote the *De natura rerum* (c. 703), Bede used Isidore’s *De natura rerum* and the pseudo-Isidorian *De ordine creaturarum* as his base and added passages from Pliny. See Jones’s edition of the *De natura rerum* in Bedae Venerabilis opera, pars VI: Opera didascalica I, CCSL 123A (Turnhout 1975), pp. 173-188 for details on the contents, textual history, and glosses as well as the introduction to Jones’s edition of Bede’s *De temporum ratione*, CCSL 123B, pp 241-61. As Wallis notes, Bede’s *De natura rerum* is simply Isidore’s *De natura rerum*, “minus the materials on the units of time, and improved by revisions based on Pliny, an author Isidore did not know. Bede replicates Isidore’s top-down arrangement, beginning with the universe as a whole, and then descending from the highest heaven down to earth, with its atmosphere, oceans and rivers, and land masses. The pattern is that of the four elements, with the heavens standing for fire, the atmosphere for air, the seas for water, and the land for earth.” Wallis 2004, p. lxv

268 Isidore’s *De natura rerum* (ca. 612-14) treats time, the world, the heavens and heavenly phenomena, bodies of water, and land. Twomey finds that Isidore’s sources are about evenly distributed between Christian and pagan (e.g. Lucretius, Chalcidius). Twomey 1988, p. 200; PL 83, cols. 963-1018, critical edition: Isidore de Seville. *Traité de la nature*. Ed. Fontaine, Jacques. Bibliothèque de l’École des hautes études hispaniques 28 (Bordeaux 1960)

269 According to Stevens, the authors and works which Hrabanus used in the Computus “could have been explicitly identified by Hraban but were not, even though the reader’s attention was called to the fact that the discussions had been supplemented by citations of ancient authorities (Prologus 17-18).” Stevens CCCM 44 1979, p. 178; see the first set of annotations in the critical edition of the Latin text in Stevens CCCM 44 1979
what they signify, and how to use them, for the science of number constat omnium disciplinarum esse magistram (I.3/4). Chapters 9 to 36 open with the definition Tempus est mundi instabilis motus rerumque labentium cursus (VIII, 5/6) which introduces the discussion of time itself and its terminology, starting with the simple smaller units of time and progressing to the increasingly larger and complex units. Chapters 37 to 53 introduce celestial phenomena: sun, moon, planets, stars, and their relative motions, zodiac, solstices and equinoxes, phenomena of eclipses and comets etc. This section also includes, in chapter 48, a few lines on the positions of the 7 planets at the time of composition: “Right now, that is 9 July 820, the sun is in the twenty-third part of cancer, the moon in the ninth part of taurus, saturn in the sign of aries, jupiter in libra, mars in pisces, while it does not appear in which sign venus and mercury tarry because they are now near the sun during daylight”. Chapters 54 to 92 are consecrated to the computistical material proper in its most technical aspects and an introduction to the calculation of Easter tables. Most of the information came from Bede’s De temporum ratione without the historical and theological discussions. Hrabanus also added eight of the nine Dionysiac arguments to provide alternate methods to solving the problems already explained by Bede. Hrabanus must have assumed, as Bede had done, that his text would either be bound together with a Dionysiac table or that the student would have one available. Here Hrabanus’ text offers a new table of

270 ‘Time is the motion of the restless world and the passage of decaying things’. “In this section Hraban’s authorship is strongly in evidence for chapters 11-12, 18-19, and long portions of 14, 27, 28, 32.” Stevens CCCM 44 1979, p. 181

271 The use of instruments and a star chart is implied in these chapters. There are also drawings of Fulda and Salzburg-Regensburg planispheres and a moon-finder that survive from this period. Stevens CCCM 44 1979, pp. 182-183

272 (XLVIII, 16/19), Stevens CCCM 44 1979, p. 183; There are many internal dating clauses in De computo: “By comparison with standard Dionysiac tables such as those which Beda and Hraban used it may be determined that only AD 820 could have been expressed in these several days. Presumably the materials had been accumulated and often used during previous years of teaching before Hraban set aside some part of each day to write this book, but during those 10 days he and his scribes had probably completed 7 chapters. Extrapolated at this rate and assuming no long interruptions, the period of writing for Hraban’s Computus may have been something like 65 to 70 days, from about the beginning of June to the middle of August, AD 820. The choice of that year may have been influenced by the fact that it was the fourth year of a 19-year solar cycle in the Dionysiac Easter Table whose details correspond exactly to data for AD 725, the annus praesens of Bedae DTR.” Stevens CCCM 44 1979, pp. 188-189

273 Stevens CCCM 44 1979, p. 183
moveable feasts, an innovation compared to its predecessors (chapter 83, 49/69 and 70/90). The treatise concludes with chapters 93 to 96 on the division of time in Biblical terms and the “significance and redemptive character of Easter”. Here Hrabanus defines the different ages of Biblical history for which he follows the traditional division of the six ages of the history of mankind.

Hrabanus’ *De computo* is primarily based on Bede’s *De temporum ratione*, both in form and in content. However, the discussion of the genre of *De computo* and its literary influences is not so straightforward. Although Jones, Wallis, and Warntjes all have differing views on the development of the computistical ‘textbook’ leading up to the ninth century, when it comes to the text that Hrabanus composed in 820, Wallis, Warntjes, as well as Stevens, the editor of *De computo*, readily use the term ‘textbook’ to describe Hrabanus’ *De computo*. For, as shall be demonstrated below, *De computo* was clearly intended for and used by students in a monastic classroom setting.

For Wallis, Bede’s *De temporum ratione* is “the earliest comprehensive treatment of the subject” of computus because, prior to 725, computistical information existed only in the form of tables with technical apparatus in the form of operating instructions (called *canones*) or formulae

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274 Ribémont 2001, p. 290
275 Warntjes 2010, p. cxii, note 329
276 Other authors have divided *De computo* differently: Maria Rissell (1976, pp. 30-40) divides the work into 5 sections, dealing with arithmetic (c. 1-10), divisions of time (c. 11-36), astronomy (c. 37-53), Easter calculation (c. 54-94), and a world-chronicle (c. 95-96) respectively; Immo Warntjes (2010, p. cviii, p. cxii note 329) considers the divisions of time as the framework of the text, illustrated by the fact that Hrabanus outlines the 14 divisions of time in chapter 10 then in the following chapter (11) deals with the smallest of these units, atomos, and ending in the final two chapters (95-96) with a discussion of the largest units, *seculum* and *aetas*.
277 Warntjes 2010, p. cxii; Rissell (1976 pp. 30-40) outlines a source for each chapter, however, according to Stevens, she omitted some of the chapters, misnumbered some of them, named a source for a chapter which applied only to a few lines, and failed to distinguish quotations from paraphrases or simply related ideas. Rissell’s discussion of the overall contents (41-75) is “quite useful and will rarely need to be revised here, save for misinterpretations due to her use of the printed edition rather than manuscripts.” Stevens CCCM 44 1979, p. 178; Corradini adds that Hrabanus may have also used Alcuin’s tract on time (*Annalis libellus*), the so-called ‘Aachen Encyclopedia’ from 809/812, and the Veronese version of the *Liber annalis* (Berlin, SBPK Phill. lat. 1831, dating from c. 793/800) as further sources of information. Corradini 2003, p. 312
There were many different tables and versions of tables which circulated with attached explanations in the form of polemical letters or prologues to defend or promote one version or system over the others. Bede sought to promote one form of Paschal table, the Alexandrian 19-year cycle in the Dionysiac version, by “making it the basis of a comprehensive manual of time-reckoning...so lucid, thorough and well-organized...to have made computus into a science, with a coherent body of precept and a technical literature of its own”.

Wallis believes that De temporum ratione is a textbook since it was “designed for programmed teaching and learning, as distinct from speculation, meditation, exhortation, etc.”. C.W. Jones, the earlier editor of De temporum ratione, argued against it being used as a textbook and concluded that Bede wrote it as a polemical treatise in defense of the Dionysiac reckoning. Wallis argues that the form and content belied Bede’s intentions that his text be used for programmed instruction. She provides numerous examples from the text that reveal Bede’s classroom practices and his conscious structuring of a formal program of study. In the preface Bede states that he not only “gave” his earlier works on computus to his fellow monks, but also that he “began to expound” these books to them. He also explicitly “streams” his audience according to their level of background knowledge. Wallis concludes that Bede did indeed teach computus in a purposeful and programmed way and that if he did, then other monastic teachers probably did as well, and after 725 would have had Bede’s textbook to teach from.

Warnettes, in his 2010 edition of the Munich Computus, analyzed the relationship in structure and content of Bede’s computistical works, Hrabanus’ De computo, and Irish computistical texts. He found strong evidence for an Irish influence in Hrabanus’ work and was able to reconstruct a

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278 Wallis 2004, p. xvii
279 Wallis 2004, p. xvii
280 Wallis 2004, p. xvii
281 Wallis 2004, pp. xxx-xxxi; see Jones, Charles W. Bedae Opera de temporibus (Cambridge Mass. 1943)
282 Wallis 2004, p. xxxi; see Jones 1943
283 Wallis 2004, pp. xxxii-xxxiii; see Jones 1943
possible path of influence amongst these texts.\textsuperscript{284} Until recently, the earliest securely datable computistical textbook was Bede’s *De temporibus* (AD 703).\textsuperscript{285} It was quickly deemed to be too narrow in scope by the brethren of Bede’s monastery and so in 725 Bede wrote the more comprehensive *De temporum ratione* which became the standard text in the subject for centuries.\textsuperscript{286} However, Warntjes asserts that the evidence suggests “an equally comprehensive textbook originated earlier in 719, the *Munich Computus*”.\textsuperscript{287} It in turn is closely related to two earlier Irish computistical texts which do not have dating clauses, unlike the *Munich Computus*, so can only be dated in relation to the *Munich Computus*. The result is that the *Munich Computus* is now the earliest securely datable comprehensive computistical textbook known at present and the other two texts, *De ratione computandi* and the *Computus Einsidlensis* are related to it as follows: *Computus Einsidlensis* (689-719), *Munich Computus* (719), *De ratione computandi* (719-727).\textsuperscript{288} These three texts share a similar general structure which, according to Warntjes, “is a clear indication of their interdependency”.\textsuperscript{289} The structure of a passage at the beginning of these Irish texts was used as a model by Bede for both *De temporibus* and *De temporum ratione*. It is a passage on the concept of the divisions of time and it is this structure which was subsequently used by Bede and Hrabanus and “employed as the overriding theme for

\textsuperscript{284} Warntjes 2010, passim

\textsuperscript{285} According to Warntjes, Isidore was the first author “to assemble in a structured way a great variety of basic but essential information on the reckoning of time in general, and the calculation of Easter in particular.” However, he scattered this information into three sections of the *Etymologiae*. In book 3, chapters 24 to 71, he discusses astronomical theory; in book 5, chapters 28 to 39, the various divisions of time are outlined; book 6 chapter 17, then specifically deals with the calculation of Easter. In Warntjes’ opinion, the first computistical textbook consisted “merely of a combination of book 5, chapter 28 to 39, and book 6, chapter 17 of Isidore’s *Etymologiae*.” Warntjes 2010, pp. lii-liii

\textsuperscript{286} Warntjes 2010, pp. liii-liv

\textsuperscript{287} Warntjes 2010, p. liv

\textsuperscript{288} Warntjes 2010, p. lv; Both of these texts can be placed in the period between the reception in Ireland of Isidore and of Bede, c. 650 to 750. Warntjes 2010, p. lv

\textsuperscript{289} Warntjes outlines the basic framework of these textbooks in four sections: 1) A discussion of the various divisions of time from the smallest to the largest units; 2) Solar theory is then followed by lunar theory; 3) A combination of the two theories, for the reckoning of Easter; and 4) the construction of the 19-year cycle with an analysis of the saltus lunae. Warntjes 2010, pp. cvii-cviii
a computistical textbook as a whole”.\textsuperscript{290} In addition to the similar structure is also the fact that Hrabanus outlines 14 divisions of time in chapter 10 which is exactly the same number given in both the \textit{Munich Computus} and \textit{De ratione computandi}.

Hrabanus also cites passages from Isidore (although spurious) which do not appear in \textit{Computus Einsidlensis, Munich Computus}, and \textit{De ratione computandi}, but do appear in a later text, the Frankish \textit{Dialogus de computo Burgundiae} of 727, which indicates that both Hrabanus and the author of \textit{Dialogus de computo Burgundiae} were working from some version of the Irish \textit{De divisionibus temporum} (where these passages are attributed to Isidore).\textsuperscript{292}

Beyond looking at the structure and content of \textit{De computo} to establish it as a member of the textbook genre, another way to ascertain that Hrabanus was teaching computus to his students is to study what his students wrote and what sources they spent their time reading. According to Stevens “one could assume that Gottschalk came from Saxony, Walahfrid Strabo from Reichenau, and Servatus Lupus from Ferrières to Fulda to study the scriptures with a pious theologian. Yet Hrabanus was not yet known for his biblical commentaries, and only Gottschalk was preoccupied with theological questions”.\textsuperscript{293} It is really his student Walahfrid who reveals an interest in computistical material which must have been nurtured by his master Hrabanus’ teachings and writings. Over half the entries in Walahfrid’s \textit{vademecum} (ms St. Gall 878\textsuperscript{294}) are items of natural history, “including Bedae \textit{De temporibus} and \textit{De natura rerum} copied at Fulda.
as well as the earliest extant copy of Hrabani De computo studied and transcribed at Reichenau and other computistical argumenta found at Fulda, Weissenburg, and Aachen”. 295 Walahfrid’s personal notebook is an example of a collection of an array of materials for various scientific and mathematical studies at Reichenau and Fulda which were assembled as a result of a search for computistical texts. 296

Hrabanus’ De computo survives complete in 16 manuscripts and more than 20 fragments. Two manuscripts from Fulda provide the oldest extant examples: Oxford Bodleian Library, Canonici Miscellaneous 353 (dating from the second quarter of the ninth century), and what is likely a copy of the Oxford manuscript, St. Gallen Stiftsbibliothek 878 (written sometime in Fulda in the 820s). 297 Corradini concludes, based on the surviving manuscripts, that De computo “enjoyed an early and wide circulation”. 298 He further asserts that De computo goes beyond a purely pedagogical computistical text. For Corradini, it is more than just “a historization of computistical base materials lifted from Bede”, because it presents a new and more significant contextualization of theological and historical components of Christian time-reckoning. 299 In other ways Hrabanus also made improvements and innovations to Bede’s work. For example Bede does not discuss the “initium quadragesimae anywhere in his computistical works, even though it needs the same technical explanations as Easter Sunday, on which it totally

295 Stevens CCCM 44 1979, p. 165; According to Stevens the actual books in use indicated that their users were using a new curriculum. Walahfrid’s personal notebook as an example of a good computistical text containing selections of arithmetic, physics, metrics, music, history, astronomy, and theology. Stevens 1979, p. 49

296 Stevens 1979, p. 49; The text of pp. 178-240 of ms St. Gall 878 includes Hrabanus’ text De computo. Corradini suggests that the manuscript’s variety is a demonstration of the “interest in various interpretations of computus in the first half of the ninth century, as well as the malleable nature of textual transmission.” Corradini 2003, pp. 315-316

297 Ms St. Gall 878 was the “exemplar used – and partly compiled – by Walahfrid Strabo when, as a student of Hrabanus from 825-829, he transcribed a copy of the text contained today in the Oxford codex; he may even have relied upon the Oxford codex to correct his own version.” Corradini 2003, p. 312; Both the St. Gall and Oxford manuscripts include Bede’s De temporibus and De natura rerum along with computistical argumenta and Hrabanus’ De computo, and it “may even have been with Godescalc, also a student at Fulda, that this ‘Hrabanian’ form of computus arrived at Reichenau.” Corradini 2003, p. 316

298 Chroniclers such as Eusebius/ Jerome, Prosper, Tiro, Cassiodorus/Jordanes, Isidore, and Bede are found in manuscripts with Hrabanus’ De computo. Corradini 2003, p. 318

299 Corradini 2003, pp. 319-320
depends". He also introduced the atom as the smallest measure of time (22,560/hour) and as the smallest measure of number, the scrupulus (1/288 of a unit). Due to the success of Bede’s *De temporum ratione*, the composition of new computistical textbooks ceased by the 740s. More energy was spent on collecting computistical formulae, debating central chronological themes, and fostering the development of the new literary genre of the computistical encyclopedia. It was not until 820, with Hrabanus’ *De computo*, that the next computistical textbook was composed. Hrabanus wished to continue the Bedan tradition, improve it where he saw fit, and adapt it to the requirements of Carolingian scholars. He made available to them the calendrical instrument “which had been introduced by Dionysius Exiguus from Alexandrian antecedents”, which had already been explained by Bede in *De temporibus* and *De temporum ratione*, and which remains the basis for the European calendar tradition to today.

1.3.3 *De rerum naturis*

This section provides a brief overview of several textual, codicological, and historical aspects of the *De rerum naturis*. A discussion of the genesis, methodology, and genre of the work is

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300 Warntjes 2010, p. xlviii, note 111; see *De computo* chapter 83; According to Warntjes, Hrabanus only redacted not wrote the chapter, “which is largely based on chapter 28 of a still unpublished and originally unfinished Fulda computus of 789 (Basel, Universitätsbibliothek, F III 15k, ff. 36r-49r: ff. 43v-44r); this unfinished, but still extremely interesting text presumably has to be connected to the *Admonitio generalis* of the same year.” Warntjes 2010, p. xlvii, note 111

301 By day the movement of the sun, and by night, the motion of the stars, provided the horoscopus, calculator, the traveller, and the seafarer, with the smallest available measurement: the hour. Sundials were only accurate to the hour. But at night there was a need for a smaller unit of measurement than Bede presented. “Without using them to count, or measuring them with water-clocks, Hrabanus introduced the atom as the smallest measure of time, of which 22,560 went into an hour, and as the smallest measure of number, the scripulus, one 288th of a unit. The pejorative tone of our word scruple, however, tells us that Hrabanus and his hair-splitting’ failed to gain acceptance.” Borst 1993, p. 45, see list of references in note 73.

302 Warntjes 2010, p. cxi

303 Warntjes gives as examples the Aachen encyclopedia or 809 and the Salzburg encyclopedia of 818. Warntjes 2010, p. cxi; see also next section (1.3.3) on *De rerum naturis* for a discussion of encyclopedia sub-genres of the early middle ages.

304 Stevens CCCM 44 1979, p. 198
followed by a study of the structure, content, and sources, and a summary of the witnesses and textual tradition of Hrabanus’ 22-book encyclopedia. These topics will be covered more specifically for book 10 in chapter three below. As reflected in the bibliography, a number of scholars have studied one or more aspects listed above in relation to Hrabanus’ writings in general or on particular texts or genres such as *De laudibus sanctae crucis* or his biblical commentaries. With respect to *De rerum naturis*, Professor William Schipper has published the most comprehensive studies on all the facets of the production, textual evolution, and dissemination of the work. Schipper has already done much of the groundwork for a critical edition of the entire encyclopedia which is forthcoming in the *Corpus Christianorum, Continuatio Mediaevalis* series from Brepols. The overview offered here is based in large part on Schipper’s findings and analysis and, indeed, would not have been possible to complete within the scope of this thesis without his scholarship and support.

### 1.3.3.1 The Genesis of *De rerum naturis*

Hrabanus wrote two prefatory letters for *De rerum naturis* which give details about his genesis for the project, where, why, and how he wrote it, and for whom it was intended. In the first prefatory letter to Louis the German, Hrabanus states that he started the project at the personal request of Louis the German and that he did so while he was on a forced hiatus from official and administrative duties. After the death of Louis the Pious in 840, a dynastic struggle erupted between Louis the German and emperor Lothar II. Hrabanus supported Lothar and when he travelled to the emperor’s camp, Louis the German installed a new abbot at Fulda. Hrabanus then retreated to a small house on the domain of the monastery of Fulda at Petersberg and stayed there writing until he was elected archbishop of Mainz in 847.\(^\text{305}\) According to Schipper, had Hrabanus not been forced into retirement for five years he would likely not have attempted to complete such a large encyclopedic project.\(^\text{306}\) However, in the second prefatory letter to his friend Haymo of Halberstadt, Hrabanus does reveal that he had been thinking about such a

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\(^{\text{305}}\) Schipper 1997, p. 364

\(^{\text{306}}\) Schipper 2004, p. 2
project since his student days and that he finally had the opportunity to focus on it without outside distractions.  

There is also the political dimension of his purpose which must be taken into account and which Hrabanus himself highlights in the first prefatory letter to Louis the German who, as the commander of the work, is given the status of guarantor of the faith and the responsibility of the defence of the religion. To successfully defend the faith, Hrabanus proposes to expose the essential elements necessary to understand Scripture while at the same time denouncing pagan errors: 

\[ \text{Addidi quoque in praesenti opusculo non pauc a de fide catholica et religion e christiana: et e contrario de gentilium superstitione, et haereticorum errore, de philosophis et magis atque falsis diis, de linguis gentium.} \]

Hrabanus’ aim is to balance sacred matter which must be abundant with profane matter which must be reduced (\textit{e contrario}). According to Ribémont, Hrabanus is defending the orthodoxy of the church and re-affirming the message of Augustine’s \textit{De doctrina christiana} in that the \textit{De rerum naturis} “aims to produce the encyclopedia that \textit{De doctrina christiana} portraits in seed, in the sense that Isidorian encyclopedism did not completely fulfill this role”.

To achieve his goal, Hrabanus states in his prefatory letters that he will explain how things have various natures: 

\[ \text{sunt enim in eo plura exposita de rerum naturis, et verborum proprietatibus, nec} \]

\[ \text{Postquam me divina providentia ab exteriorum negotiorum cura absolvit teque in pastoralis cure officium sublimavit, cogitabam, quid tuae sanctitati gratum et utile in scribendo conficere possem quo haberes ob} \]

\[ \text{commemorationem in paucis brevi ter annotatum quod ante in multorum codicium amplitudine et facunda oratorum} \]

\[ \text{locutione dissertum copiose legisti. MS A, p. 5a; PL 111:11D-12D. After divine providence had relieved me of the} \]

\[ \text{care of external troubles, and raised you to the office of pastoral care, I thought that I might put} \]

\[ \text{together in writing something pleasing and useful for Your Grace: in which you have in short form, briefly annotated, for recollection,} \]

\[ \text{what you formerly read copiously expounded in the fullness of many books and in the rich speech of orators. Trans.} \]

\[ \text{Schipper 1997, p. 364} \]

\[ \text{Hrabanus Maurus. \textit{De rerum naturis}. PL 111, col. 10B; “Ce ne sont pas de minces contributions que j’ai faites dans le présent opuscule sur la foi catholique et la religion chrétienne: et, a l’inverse, sur la superstition des Gentils, l’erreur des hérétiques, des philosophes, des mages et des faux dieux, des langues des Gentils.” Ribémont 2001, p. 293} \]

\[ \text{Ribémont 2001, p. 294} \]

\[ \text{Ribémont 2001, p. 295} \]
non etiam de mystica rerum significatione.311 Here Hrabanus emphasizes the triad of medieval encyclopedic writing: things, signs, and symbols which a Christian encyclopedic text can reveal to have allegorical or mystical senses.312 Hrabanus distinguishes his work from Isidore’s and Bede’s by not only using the plural form of naturis but also by mediating between all three components without privileging one over the others.313 What Hrabanus does place above all else is the exegetical dimension, again expressed in the letter: quod idcirco ita ordinandum aestimavi, ut lector prudens continuatim positam inveniret historicam et mysticam singularum rerum explanationem; and further along he emphasizes the transition from the natural sense to the exegetical sense: ut lector diligens in hoc opere et naturae proprietatem juxta historiam, et spiritualem significationem juxta mysticam sensum simul posita inveniret.314 This emphasis gives the work “a more ecclesiastical and less philological character”315 and “shows how all knowledge was Christianized” by revealing the hidden traces of divine nature in the natural world “but in forms of meaning that could be unlocked by the use of allegory and symbol”.316

311 Hrabanus Maurus. De rerum naturis. PL 111, col. 9B

312 Ribémont 2001, p. 296; Jacques Fontaine refers to Hrabanus’ aim as a “third christianization” in response to the “two first phases of medieval encyclopedism: to Visigothic traditions and to their insular antithesis, to Isidore as to Bede.” pp. v-vi of the preface to Ribémont 2001

313 Isidore in his Etymologiae discards the third component and privileges the second; the third comes back in place, without showing any synergy in De natura rerum. Bede centres his own De natura rerum on the nature of things for which he uses etymology and the properties of words. See Ribémont 2001, p. 296; “Isidore generally avoids, in the Etymologiae, providing “spiritual”, or “mystical”, or “figurative”, that is, allegorical, interpretations of the items he adduces. These were the main content of his earlier work (perhaps 612-615), the Certain Allegories of Sacred Scripture... Isidore’s overriding interest, the fundamental principle of the Etymologies, falls under the discipline Isidore would call grammar, the “origin and foundation of liberal letters” (I.v.1), and what we would call philology – the art of understanding and correctly producing words and texts. In fact three sequential chapters (I.xxiv-xxxi) in his treatment of the art of Grammar treat three of the main informing principles of the Etymologies: these are etymology, glosses, and differentiae.” Barney 2006, pp. 21-22

314 PL 111, col. 9B-10A; See Ribémont 2001, p. 296; Also included in the letter to Haymo is the statement that he included in condensed form the ideas of earlier writers on the nature of things, but added to them “the mystical meaning of these same things, so that you [=Haymo] can always find in its place the historical and mystical explanation of everything” (...sed etiam de mystica earundem rerum significatione ut continuatim positam invenires historicam et mysticam rerum expositionem. MS A, p. 5b, PL 111, col. 12D) Trans. Schipper 1997, p. 364

315 Sanford 1949, p. 466

316 Brown 1994, p. 43
How Hrabanus went about revealing these hidden meanings and the methodology he used to replace the pagan references with biblical citations will be discussed in the following section.

1.3.3.2 The Methodology and Genre of *De rerum naturis*

Following on from Hrabanus’ explanations for the purpose of his work are his descriptions of his methodology which are explicitly mentioned in the prefatory letters and implicitly shown in the construction of the chapters in the 22 books. There have been studies of allegorical commentaries, including those by Hrabanus, which highlight the methodologies used by Carolingian scholars and encyclopedists.\(^{317}\) However, the focus of this section is Hrabanus’ methodology in composing the *De rerum naturis* and more specific discussions and examples for book 10 are provided in chapter 3. The following section discusses Hrabanus’ use of sources which goes hand in hand with his methodology and style. In fact, in his defense of his use of authoritative texts, Hrabanus illustrates how and why he incorporates citations and references to classical and biblical information. Presented here is a brief description of the method of composition of *De rerum naturis* with a discussion of the concept of “encyclopedic compiler” and its implications for the charge of unoriginal recopying and “plagiarism”. This then leads into a discussion of the genre of *De rerum naturis* before continuing onto the section dedicated to Hrabanus’ use of sources.

Hrabanus adheres to the characteristic encyclopedic writing style described by Ribémont: present tense, affirming verbs, use of the third person, and rare interventions by the author. However, the description of an encyclopedia given by Ribémont indicates just how much further Hrabanus goes with his work. Ribémont continues by saying that “there is no diegesis in an encyclopedia, but juxtaposition of definitions, of descriptions, of properties which are marked by the omnipresence of the coordination”.\(^{318}\) Hrabanus’ innovative organization of the topics in *De rerum naturis* and his own original comments and analysis make his work more than just the collection of excerpts described by Ribémont.

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\(^{317}\) For more about the allegorical method of medieval encyclopedias see the discussion and references in Twomey 1988, p. 183

\(^{318}\) Ribémont 2001, p. 236
As previously mentioned, Hrabanus opens most of the chapters with a text from Isidore’s *Etymologiae*. He then adds further texts on the same topic from other authors. The chapters usually close with Hrabanus’ allegorical explanations supported by biblical citations. Hrabanus frequently edits the text excerpts and replaces pagan examples with biblical stories such as in book 19 where he does not reproduce the citation of the Latin agriculturists nor the pagan poets but substitutes them with biblical extracts. \(^{319}\) This technique of pasting, substituting, and adding biblical materials is seen throughout the work and follows the outline, which Hrabanus himself described in the prefatory letters, of the triad of *res naturales, proprietates verborum et sensum mysticum vel allegoricum*. These three components are, however, not equal because the last one plays the simultaneous role of origin and goal all the while occupying quantitatively the most important part. As Ribémont concludes, Hrabanus’ work “is a rewriting, a new exploitation of the Isidorian prototype, oriented and fed by the Bible and the words of *De doctrina christiana*”. \(^{320}\)

In Hrabanus’ other exegetical commentaries, mostly on the books of the Bible, he used a particular method to compose the chapters. \(^{321}\) This method is not as apparent in the *De rerum naturis* and has really only been studied in the context of his other works. Constable notes that Hrabanus “was one of the first exegetes on the continent to use the so-called *catena* method of commentary, by which ‘chains’ of passages from earlier commentators were used to elucidate verses of Scripture”. \(^{322}\) In some manuscripts of his commentaries, Hrabanus does reference the text which he excerpts with the initials of the authors of the texts. More on his method of referencing is included in the next section. He was perhaps accused of using the words of other authors and took to defending his method in the prefaces to his commentaries. For example, in

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\(^{319}\) Ribémont 2001, p. 297

\(^{320}\) Ribémont 2001, p. 312


\(^{322}\) Constable 1983, p. 28; see also Hablitzel, Johann Baptist. *Hrabanus Maurus. Ein Beitrag zur Geschichte der mittelalterlichen Exegese*. Biblische Studien 11.3 (Freiburg-im-Br. 1906) pp. 96-97, who associated the origins of the Katenenmethode with Alcuin and the school of Tours.
the prefatory letter to his commentary on Matthew he paraphrased Bede saying that he had been “solicitous throughout lest I should be said to have stolen words of greater men and to have put them together as if they were my own”. 323

The accusations continue to today. In the ‘History of Encyclopedias’ article in the 2010 edition of the *Encyclopedia Britannica*, Hrabanus’s *De rerum naturis* is listed as nothing more than an “unintelligent plagiarism of St. Isidore’s work”. 324 However, the term plagiarism should not be used to describe Hrabanus’ work. Not only because it is not a simple re-copying of Isidore’s text but a new project with a different purpose and methodology but also because the concept of plagiarism is a modern construct. 325 As Sanford points out, ‘plagiarism’ “did not become a misdemeanor until the printing-press gave rise to copyright legislation”. 326 Hrabanus, in fact, followed the precedent created by Isidore and, as Sanford describes it, served up “scraps from his Homeric predecessors’ banquets”. 327 They were both following the tradition of using the prime witnesses available: the *auctores*. “Hence copious citations, in grammars and reference works, of wording from Vergil or Cicero or Horace not only displayed the writer’s liberal learning (and

323 MGH *Epistolae Karolini aevi* III, 389: In the preface to his commentary on Ezechiel he answered his critics by asking in what way he had sinned “in judging the masters of the church worthy of veneration and in placing their sentences as they themselves produced them, together with notes of their names, at opportune places in my works? It seems to me healthier to lean upon the doctrines of the holy fathers, and to preserve my humility, than improperly to offer my own, through pride, as if I were seeking my own praise...For those [of the Fathers] who sought praise and to be seen by men, dictated and wrote whatever they wished.” PL 110, col. 498A-B Trans. Constable 1983, p. 29; see also the prefaces to his commentaries on the letters of Paul and the Book of Numbers in PL 113, col. 587B-88A and 111, col. 1273-76

324 In Collison’s esteem “the development of the encyclopedia during the next 500 years [i.e. after Isidore’s *Etymologiae*], though of social interst, was undistinguished from the point of view of scholarship. Rabanus Maurus (c. 776-856), one of the English scholar Alcuin’s favorite pupils, compiled *De Universo* (“On the Universe”), which, in spite of its being an unintelligent plagiarism of St. Isidore’s work, had a lasting popularity and influence throughout the medieval period.” Robert L. Collison and Warren E. Preece. Eds. “History of Encyclopedias.” *Encyclopedia Britannica*. Vol. 18. 15th Ed. (Chicago 2010) 271-277, p. 272; See also Ponesse, Matthew. Learning in the Carolingian Court and Cloister: Compilation and Innovation in the Writings of Smaragdus of St. Mihiel. Dissertation (University of Toronto 2004) ProQuest Dissertations & Theses Global. (305066587) pp. 1-3 for a good summary of the modern negative assessments of ‘unoriginal’ Carolingian authors.

325 For an overview of the anachronistic attitude towards the role of ‘compiler’ see Ponesse 2004, p. 11

326 Sanford 1949, p. 466

327 Sanford 1949, p. 466
status), and not only illustrated particular literary techniques or fact, but also authenticated assertions by the highest standard – higher, indeed, than immediate experience of the world”. 328

In the middle ages, writers were sometimes criticized for copying or compiling, for stealing words and ideas from another author or source. 329 Citing others sources was meant to lend authority “rather than to acknowledge indebtedness to other writers”. 330 In fact, self-identified compilers in the middle ages, did not associate a negative sense with their task. Hathaway has studied the evolution of the negative and positive connotations of the term ‘compilator’ and concludes that compiling as a medieval notion was a neutral activity. One of the central activities of medieval Christian writers was “the gathering and dissemination of authoritative knowledge and adopting the traditions and topoi of dissemination stated by the authorities themselves”. 331 The verb compiló retained its original meaning ‘to plunder’ but the noun compilator was used by both pagan and Christian authors in reference to the written word in order to describe a sort of ‘literary plunder’. 332

328 Barney 2006, p. 14
329 Constable 1983, p. 27
330 Constable 1983, p. 27; St. Bonaventura in his commentary on the Sentences of Peter Lombard said that there were four ways of making a book (quadruplex modus faciendi librum). “Some one may write the works of others (aliena), adding or changing nothing, and he is called simply a scribe. Some one may write the works of others, adding but not from his own work (suo), and he is called a compiler. Some one may write the works both of others and of himself, but with the works of others predominating, and his own added for support; and he is called a commentator, not an author. Some one may write both his own works and those of others, with his own predominating, and that of others added for confirmation, and such a writer should be called an author”. (Trans. Constable). According to Constable, Bonaventura’s contrast between aliena and sua and his recognition that all books contain the work of others are characteristic of the medieval point of view. Furthermore, Bonaventure makes no reference to the possibility that a book could be entirely a writer’s own work. For him, writers are ranked according to the degree of independence in relation to existing books. The issue in the twelfth century was the balance between aliena and sua, since it was beginning to be recognized that the author was in some way superior to the scribe, compiler, and commentator. Constable 1983, p. 28. As Ponesse explains it “the authority of a compilation belongs to the auctoritates themselves, while credit for the ordinatio partium, the forma tractandi or the modus excerptoris goes to the compiler”. Ponesse 2004, p. 9
331 Hathaway 1989, p. 22
332 Hathaway 1989, p. 23; See also Ponesse 2004, pp. 9-10 for a more detailed semantic analysis of the terms ‘compilatio’ and ‘compilator’. 
An interesting way to gauge the connotations associated with the practice of excerpting and compiling is to study the defences offered by those actively plundering sources. Hathaway has gathered a number of examples of authors who explain their methodology by insisting on its utility and profit. For example, Jerome composed the *Hebraicae quaestiones* to provide useful etymologies and corrections that would rid the Bible of many errors. Jerome also provided a defence for Vergil by crediting him with the metaphor: “To wrench the club from the hand of Hercules is to have great power”; thereby stealing someone else’s ingenious idea or well-put phrase to express oneself as best one can. Jerome’s example was cited verbatim by Isidore in his discussion of the term ‘compilator’ in book 10 of his *Etymologiae*: A compilator is someone who mixes the sayings of others with his own, as paint sellers are wont to grind different combinations [of pigments] in a mortar. Having chosen a very practical task as an example to explain the activity of compiling, Isidore shows that he himself is compiling for the same reasons as Jerome did. The idea is here expressed more as ‘mixing’ which is less pejorative than ‘plundering’, ‘borrowing’ or ‘altering’.

Further examples of definitions of a compilator found in Carolingian texts associated with Alcuin and his pupils also indicate that “commonly understood meanings for *compilo* and *compilator* existed in the ninth century, and that these meanings were inherited from late antiquity through Isidore of Seville”.

An attempt to define the role of the compilator in the early medieval period must also include a look at the type of work, in this case a compilation, that the compilator produces. A work as

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333 Hathaway 1989, p. 27

334 Isidore. *Etymologiae* 10. 44. *Compilator, qui aliena dicta suis permiscet, sicut solent pigmentarii in pila diversa mista contundere. Hoc scelere quondam accusabatur Mantuanus ille vates, cum quosdam versus Homeri transferens suis permiscuisset, et compilator veterum ab aemulis diceretur, ille respondit: “magnarum esse virum clavam Herculi extorquere de manu.* (The compiler is one who mixes beforehand things said by others with his own things, in the same way merchants of colours are used to mixing different substances in the mortar. We accused a certain poet from Mantuanus who had mixed some verse of Homer with his own; the emulators of the ancients denounced him as a compiler. He responded: it takes a great force to tear the club from the hand of Hercules.) PL 82, col. 372A-B. Trans. Hathaway 1989, p. 28; For Isidor, the compiler is not a simple reader copying multiple texts of authorized sentences. He is an alchemist, combining diverse substances, adding some of his own, linking catalysts in order to produce what in the end is a completely new material.; see also Ribémont 2001, pp. 78-79

335 Hathaway 1989, pp. 28-29

336 Hathaway 1989, p. 29; see also pp. 28-31 for examples from a commentary on Horace’s *Ars poetica* (perhaps by Alcuin) and works by Hincmar of Reims.
extensive as Hrabanus’ also presents problems in typology because of the variety of subjects and the variety of formats which suit them. For instance in Isidore’s *Etymologiae*, the different genres of cosmology, historiography, and computus are dispersed throughout the work: book three deals with the movements of the sun and moon, book five deals with the units of time-reckoning and the chronicle of the world, and book six contains the paschal computus.337

Ribémont, in his study on the evolution of the encyclopedic genre, also notes that each book within a large encyclopedia can be considered as its own sub-genre of “encyclopédie éclatée”. For instance book 10 of Hrabanus’ *De rerum naturis* could be considered a stand-alone “computistical encyclopedia”;338 and so, in Ribémont’s system, would have evolved from previous similar works like Isidore’s *De natura rerum* and Bede’s *De natura rerum*.339 In his overall evaluation of *De rerum naturis* Ribémont labels it an “encyclopédie moralisée” because Hrabanus, starting from the *res*, offers almost systematically a Christian allegorical interpretation and an illustration or a Biblical concordance.340 Ribémont also argues that such an encyclopedia would never have been written outside of the political-geographical-cultural environment of the Frankish kingdoms and more specifically the school at Fulda under the influence of Alcuin and the Carolingian educational system he created.341 However much the stability of the Visigothic and Frankish kingdoms can be equated as fruitful environments for the creation of large encyclopedic works, what Hrabanus attempts to do by providing an encyclopedia with the unique goal of better grasping the hidden sense, the *sensum allegoricum* of Scripture, is much more than what Isidore offered in his *Etymologiae*.342 There is a ‘post-Isidian’ encyclopedic genre

337 Wallis 2004, p. lxiv
338 The term “computistical encyclopedia” is used in this study to mean a work that discusses all of the aspects of the topic of computus. Although it is focused on only one subject matter, the “encyclopedic” nature of the work comes from its inclusion of everything one would need to know about the topic and the utility of the text as the only source required to answer any questions about computus and provide all the instructions required to construct a liturgical calendar.
339 Ribémont 2001, pp. 196-197
340 Ribémont 2001, p. 313
341 Ribémont 2001, p. 206
342 Ribémont 2001, p. 316
exemplified by Hrabanus’ *De rerum naturis*, because *De rerum naturis* is an “entirely new creation, situated squarely in a Christian tradition of Biblical commentary, applied in a syncretistic manner to a text (Isidore) that is itself a synthesis of late classical scientific knowledge”.

1.3.3.3 The Structure and Content of *De rerum naturis*

The 22 books of *De rerum naturis* can be divided into 5 broad sections: Divine matters (books 1-5, God and the angels, Biblical persons, the church, the scriptures); Man (6-7, his body, his life, relationships, death); Animals (8); The physical world (9-13, the heavens, atmospheric phenomena, time, waters, lands, types of places); Human social activities and use of the natural world (14-22, buildings, non-Christian philosophers and gods, different peoples and nations, precious stones and metals, weights and measures, numbers, music, medicine, agriculture, wars, entertainments, ships, building techniques, clothes, food, domestic and rural implements).

The first four sections roughly follow the descending order of being, from the divine to man, then animals and the physical world. The last section is more unsystematic and is a miscellaneous gathering of material on human social life. As will be discussed in the next section, Hrabanus’ main source, in both form and content, was Isidore’s *Etymologiae*. Hrabanus did not include the topics of the first five books of the *Etymologiae* (the seven liberal arts, medicine, and law) in *De rerum naturis* as he dealt with some of them in other works, such as the liberal arts which he wrote about in his *De ecclesiasticis officiis*.

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343 Schipper 2004, p. 12
344 Burrows 1987, p. 31
345 Collison misunderstands Hrabanus’ omission of the liberal arts from *De rerum naturis* when he states: “Items (in particular, the liberal arts) which he felt were not relevant to the scriptures he omitted. He described his themes as ‘*de rerum naturis et verborum proprietatis, nec non etiam de mystica rerum significatione*’. Isidore had been careful in his arrangements of his subjects; Hrabanus, by omitting at least five of Isidore’s books and mutilating the rest, produced an untidy mass whose chief claim to study is that he started his encyclopedia with God and the angels – a pattern for a great many later works of the middle ages.” Collison 1964, p. 36; Hrabanus did not omit the liberal arts because he did not think they were relevant, in fact he thought they were so important he wrote a separate work mostly devoted to them: *De ecclesiasticis officiis*. In the prefatory letter to Louis, Hrabanus explains that “grammar should not be despised”, since it is helpful in Scriptural exegesis, while dialectic – “this most noble art” – should be used to combat the subtle arguments of heretics. He continues by explaining the Christian uses for the other liberal arts: rhetoric for teaching the faith, music for church services, etc.; see Burrows 1987, p. 32
As Isidore’s work of 20 books has been commonly divided into 2 decades, so too Hrabanus’ work has been divided into 2 halves of 11 books each. This division can be seen in some of the two-volume manuscript sets and it also divides the topics of the 22 books into 2 over-arching categories: books 1 to 11 focus on theological matters (God, the Bible, the church, etc.); 12 to 22 focus on secular things (the world, nature, human endeavors, domestic matters, and so on). As Schipper points out, this arrangement of topics, “beginning in book one with the names of God, and continuing through book 22 with domestic drinking vessels, is entirely original with Hrabanus”. This original aspect of Hrabanus’ work goes against the notion, still held by some scholars, that Hrabanus was simply recopying Isidore’s opus. Robert Collison states that the De rerum naturis is “an unintelligent plagiarism of Isidore”, but this statement fails to recognize the innovation that Hrabanus brought to his re-invention of the encyclopedic project and the fact that our modern idea of plagiarism is an anachronistic judgment. Despite his negative assessment of Hrabanus’ contribution, Collison does state that Isidore “failed to reflect the division between sacred and profane” which was taken up by Cassiodorus, Boethius and Hrabanus.

Hrabanus himself explains his reasons for organizing his work with a “proper” division between sacred and secular materials in his prefatory letter to Louis the German. The 22 books of the Old

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346. The twenty books can be divided in several ways. Some manuscripts divide the Etymologiae into 2 decades of 10 books. However, Barney reminds us that we need to “remember Braulio’s assertion in the Renovatio that it was he, not Isidore, who divided the text into books, where Isidore had left it only divided into “titles” (tituli) – perhaps what we call the “chapters” of the received text.” Barney 2006, p. 20

347. This division is seen in part two of the Reichenau copy (A), the Worms copy (W), and MS Harley 3092 (a tenth-century copy from Cusa) which all begin with book 12 (De terra). However, Schipper notes that the later two-volume copies invariably begin with book 11 (De diversitate aquarum) suggesting to him that the earlier division was original with Hrabanus. Schipper 1997, p. 363; see also chapter 1.3.3.6 for a discussion of the two-volume sets.

348. Schipper 1997, p. 363

349. See chapter 1.3.3.2 for a further discussion of the Carolingian idea of citing and quoting authoritative texts and how that does not equate with our modern idea of plagiarism and its negative connotations.

350. Collison 1964, p. 33; From the time of Boethius onwards, encyclopedia-makers were influenced by the classification theories of Aristotle as transmitted by Porphyry through Boethius and Cassiodorus. This division of things secular from divine is illustrated in Porphyry’s Tree which substance is divided into corporeal and incorporeal (corporeal equals the body and is subdivided into animate and inanimate). St. Augustine also divided pagan knowledge (De doctrina christiana, II, XIX, 29ff.) into works of mankind and natural works (those divinely inspired). For further discussion see Collison 1964, pp. 31-34
Testament were his inspiration: *Decrevi enim hoc totum opus (ut supra dixi) in viginti duos libros disperir: sub quo numero vetus testamentum legis divinae interpres beatus Hieronimus complexum se asseruit: ex cuius interpretatione et expositione quaedam obscura in hoc opere elucidavi.* 351 In general, every chapter of each book begins with a “suitable text from Isidore, followed by an allegorical or mystical explanation” 352 and sometimes a “series of figural meanings in bono and in malo and may include a classical myth”. 353 The structural aspects of book 10 described below show that it relies heavily on other sources in addition to Isidore and that only 12 of the 17 chapters include text from the *Etymologiae*. According to Schipper, the work is clearly unfinished since some chapters contain only a short excerpt from Isidore and no additional commentary from Hrabanus or biblical citations to illustrate the example discussed and book 22 ends abruptly. 354

1.3.3.4 The Sources of *De rerum naturis*

The major studies which review the sources Hrabanus used in the *De rerum naturis* are Elisabeth Heyse’s and Diane O. Le Berrurier’s dissertations and the work of William Schipper mentioned above. Heyse’s 1969 dissertation, under the direction of Bernhard Bischoff, reviewed the sources for all 22 books. 355 Unfortunately, she based her study on the text in the *Patrologia Latina* which, as discussed in the next section, is not reliable. She was not able to identify many passages that have now been identified by other scholars and in the present work and her manuscript contains many small errors. However, her study is a good starting point and does identify the main sources found in *De rerum naturis*. 356 Le Berrurier’s study focuses on the

351 Hrabanus Maurus. *De rerum naturis*. PL 111, 10B-C; see also Schipper 1997, p. 365
352 Collison 1964, p. 36
353 Twomey 1988, p. 186
354 Schipper gives examples of these unfinished chapters from book 13 (1997, p. 365) and in book 10 the last 3 chapters also follow this “unfinished” pattern (15. *De festivitatibus*, 16. *De sabbato*, 17. *De dominico die*).
355 Heyse, Elisabeth. *Hrabanus Maurus’ Enzyklopaedie ‘De rerum naturis’: Untersuchungen zu den Quellen und zur Methode der Kompilation*, Münchener Beiträge zur Mediaevistik und Renaissance Forschung 4 (Munich 1969); See analysis of her work in Schipper 2004, p. 8
356 A detailed analysis of her work on the sources for book 10 can be found below in chapter 3.2 below.
pictorial sources of the illustrated tradition of *De rerum naturis* and will inform the discussion below in chapter 1.3.3.6 on the manuscript tradition of the work.\(^{357}\) More recently, William Schipper, in his preparations for the publication of an edition of all 22 books, has published several articles and papers on the sources Hrabanus used in *De rerum naturis* as well as some of his other exegetical writings.\(^{358}\) Following a discussion of how Hrabanus used sources across his corpus, the present section will continue with a discussion of the relationship between *De rerum naturis* and the *Etymologiae* since “Isidore’s encyclopedia is undeniably Hrabanus’s primary source for about half of *De rerum naturis*”.\(^{359}\) A more detailed analysis of the additional sources which Hrabanus used in book 10 is provided below in chapter 3.2.

Given Hrabanus’ dependency on the *Etymologiae*, it is surprising that he does not mention Isidore by name, especially since he does mention some of the other writers he cites such as Gregory the Great, Augustine, and Jerome.\(^{360}\) In his other works, Hrabanus uses a system of marginal letters to reference the authors of passages not of his own composition. Hrabanus placed the initials of the authors in the margins of the manuscript folia: A/G for Augustinus, G/G for Gregorius, HR for Hieronymus etc.\(^{361}\) This system appears to have been invented by Bede and he describes it in the prefatory letter to his commentary on the Gospel of Luke: *Quorum quia operosum erat vocabula interserere per singula et quid a quo auctore sit dictum nominatim astendere commodum duxi eminus e latere primas nominum litteras inprimere perque has viritim ubi cuiusque patrum incipiat ubi seno quem transtuli desinat intimare sollicitus per omnia ne*

\(^{357}\) Le Berrurier, Diane O. *The Pictorial Sources of Mythological and Scientific Illustrations in Hrabanus Maurus’ De rerum naturis.* Outstanding Dissertations in the Fine Arts (New York 1978)

\(^{358}\) See Schipper’s works listed in the bibliography and, in particular, his 2004 and 2008 articles.

\(^{359}\) Schipper 2004, p. 9

\(^{360}\) “This silence is quite unlike his practice in *In honorem sanctae crucis*, where he mentions Porfyrius by name (and demonstrates that he is conscious of his methodology).” Schipper 2004, p. 9

\(^{361}\) Schipper 2004, p. 9; According to Stevens it a was well known that Bede, Alcuin, and Hrabanus regularly cited the authors whom they quoted or paraphrased in their theological essays and biblical commentaries by placing reference notes in the margins. For example in *Hrabani Commentarii in Genesium* (CLM 6260, Freising s. IX) the sources were identified AG (Augustinus), H (Hieronymus), etc. Stevens CCCM 44 1979, p. 178
Bede marked the beginning and ending of his sources in the margins with the letter ‘A’ for ‘Ambrosius’, ‘A’ and ‘V’ for ‘Augustine’, ‘G’ and ‘R’ for ‘Gregorius’, and ‘H’ and ‘R’ for ‘Hieronymus’. Hrabanus, however, takes Bede’s system to the next level, personalizing it by adding the marginal initial M for Magnentius to indicate his own prose. He explains his innovation in the prologue to his commentary on the Gospel of Matthew. After quoting the entire passage from Bede discussed above he adds the following: *Praeter haec quoque nonnulla, ut sine laesione aliorum dicam, quae mihi Auctor lucis aperire dignatus est, proprii sudoris indicia per notas vocabuli agnominisque mei, ubi opportunum videbatur, adnexui.* Hrabanus not only made

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362 Schipper 2008, p. 29; Bedae venerabilis in Lucae evangelium expositio et in Marci evangelium exposition. Ed. David Hurst. CCSL 120 (Turnhout 1969) 7, lines 105-115: “Because it was laborious to insert individual names each time and show by name what was taken from which author of these works, I considered it convenient to write the first letters of the names a bit to the side, and by these to show separately where the words of the fathers begin [and] where they end, anxious in all these writings, lest I be thought to have stolen the sayings of the old writers and claimed these as though they were my own.” Trans. Mark Stansbury in “Early Medieval Biblical Commentaries.” Frühmittelalterliche Studien 33 (1999) 49-82, p. 73. For a discussion of Bede’s system of reference see Kaczynski, Bernice. “Bede’s Commentaries on Luke and Mark and the Formation of a Patristic Canon.” Anglo-Latin and its Heritage: Essays in Honour of A.G. Rigg on his 64th Birthday. Eds. Siân Echard and Gernot R. Wieland, Publications of the Journal of Medieval Latin 4 (Turnhout 2001) pp. 17-26

363 Schipper 2008, p. 29; The marks were first identified in 2 Vatican manuscripts (BAV, Vat. lat. 10662) in Sutcliffe, E. J. “Quotations in the Venerable Bede’s Commentary on Saint Mark.” Biblica 7 (1926) 428-39; the list of manuscripts was expanded by Laistner, Max Ludwig Wolfram. “Source Marks in Bede Manuscripts.” Journal of Theological Studies 34 (1933) 350-54. See also the discussion by Gorman, Michael M. “Source Marks and Chapter Divisions in Bede’s Commentary on Luke.” Revue Bénédictine 112 (2002) pp. 246-90

364 Schipper 2004, p. 9

365 Schipper 2008, p. 30

366 Hrabani Mauri Expositio in Matthaeum. Ed. Bengt Loefstedt. CCCM 174 (Turnhout 2000) 3, lines 71-74: “In addition, so that I might speak without offending anyone, I have here and there added a few notes of my own work of things that the author of light [=God] deemed suitable for making public, marked with a letter from my nickname, where it seemed suitable.” Trans. Schipper 2008, p. 30; A decade later, when he is compiling the *Expositio librorum Regum*, he is even more explicit. In the letter to Hilduin, abbot of St. Denis (814-844), that constitutes the preface to this commentary, he writes: *Praenotavique in marginibus paginarum aliquid aliorum eorum nomina, ubi sua propria verba sunt; ubi vero sensum eorum meis verbis expressi aut ubi iuxta sensus eorum similitudinem, prout divina gratia mihi concedere dignata est, de novo dictavi, M litteram Mauri nomen expressim, quod meus magister beatæ memoriae Albinus mihi indidit. Hrabani Mauri Epistolæ. Epistolæ Karolini aevi III. MGH (Berlin 1899) letter 14, pp. 402-403. “And in the margins of the pages I have noted the names of any of them [i.e. sources], where their own words occur; but where I have expressed the sense in my own words, or where the sense is similar to theirs, just as divine grace deigns to reveal to me, I have said so from the start, expressing the name Maurus with the letter M, which Albinus [i.e. Alcuin] my teacher of blessed memory gave to me.” Trans. Schipper 2008, p. 30
sure that his own words were kept distinct from his patristic authorities but by including himself in the pantheon of authors, he also gave his additions and comments the same status and value as those of his predecessors. Contemporaries of Hrabanus, such as Theodolf of Orleans and Sedulius Scottus also used Bede’s marginal referencing system although Hrabanus “appears to be the only ninth-century writer who regularly inscribes himself in his own works”. However, Hrabanus did not use any marginal notes to indicate citations in *De rerum naturis*. In order to establish the relationship between *De rerum naturis* and Isidore’s *Etymologiae*, it is necessary to analyse what content Hrabanus takes from Isidore as well as how he structures this content across all 22 books. Both Schipper and Burrows have done detailed studies of the distribution of Isidorian text throughout *De rerum naturis* and thus what follows here is a brief summary of their findings.

Overall, Hrabanus excludes about 40 per cent of Isidore’s text. Omitted entirely are books 1, 2, and 10, and of the other 17 books Hrabanus does not use as many as 123 out of the 374 chapters. Amongst the subjects omitted are grammar, rhetoric, dialectic, law, and most of medicine and astronomy as well as some purely classical material, on topics such as the Olympiads, circuses, Roman authors, writers on agriculture, and dice. Hrabanus does quote verbatim from Isidore for the majority of the purely descriptive, non-mystical material. There

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367 In Hrabanus’ commentary on the book of Daniel completed c. 844, Schipper finds that Hrabanus normally uses an ‘M’, and occasionally an ‘R’ in the margins to indicate his own additions or paraphrases. Schipper 2008, p. 3; For further discussions of Hrabanus’ source marks see Verstrepen, Jean-Louis. “Raban Maur et le Judaïsme dans son commentaire sur les Quatre Livres des Rois.” *Revue Mabillon* 68 (1996) 50-55

368 Schipper 2008, p. 32

369 Twomey discusses the secondary literature of Isidore’s *Etymologiae* and notes that there are two complete editions: the edition in PL 82, cols. 19-728, is taken from the edition of Isidore’s *Opera omnia* by Faustino Arévalo (Rome 1797-1803), 7 vols, and is followed by appendices, variae, and notes (including Arévalo’s) in cols. 729-1054; and W.M. Lindsay’s edition, *Etymologiarum sive originum libri XX*, Scriptorum classicorum biblioteca Oxoniensis (Oxford 1911), 2 vols, which is a critical edition with an index at the end of vol. II. Twomey 1988, pp. 184-186

370 See Brehaut 1912, pp. 17-18 for a list on contents for the *Etymologiae* and pp. 23-26 for a list of Isidore’s sources; see Barney 2006, p. 13 for a discussion on how Isidore uses his sources.

are, however, some subjects that are treated with only a mystical analysis: Biblical persons (4.1); the human body (6.2-3); light, the sun and the moon, and constellations and numbers (9.7-10, 9.12-16); fire, coals, and ashes (9.21-24); Biblical place-names (13.6); and numbers (18.3). For the entries that Hrabanus does begin with an excerpt from Isidore, he usually abridges the text and then “subordinates it to lengthy quotations of mystical passages from the Biblical commentaries of the fathers (chiefly Augustine, Jerome, Gregory, Cassiodorus, Bede, and Origen”).

A common practice is seen in Hrabanus’ chapter on types of clothing where half of Isidore’s text is used and is broken up into seven separate passages with mystical material inserted in between them. In this case the quotations from the *Etymologiae* make up less than one third of Hrabanus’ final text. Not all chapters have the same percentage of text from the *Etymologiae* and various structures of composition can be seen across the whole of the *De rerum naturis*. An analysis of each chapter in book 10 is presented in chapter 3.3. Burrows observes that, in general, the material from Isidore is “clearly subordinated to the mystical quotations” and that Hrabanus uses Isidore “as a peg on which to hang mystical explanations, a foundation on which to build the main content of the *De rerum naturis*”.

Schipper has analyzed the concordance between the content of the *Etymologiae* and the *De rerum naturis* and in his 2004 article offers some general observations as well as a set of detailed tables showing the concordances chapter by chapter. Some chapters in *De rerum naturis* do

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372 Burrows 1987, p. 29


374 Other examples include Hrabanus using about half of Isidore’s chapter on quivers and dividing it into three sections (20.9, PL 11, cols. 540-541; Isidore, *Etymologiae* 18.9), and shorter chapters from Isidore, such as that on arrows (20.8, PL 111, cols. 539-540; Isidore, *Etymologiae* 18.8) are quoted as a whole with longer mystical explanations following the text from Isidore. Burrows 1987, p. 30

375 Burrows 1987, p. 30

376 Schipper 2004, see Table 1 on p. 13 and Table 2 on p. 14 where Schipper explains how Hrabanus’s books 1, 2, and 3 are based on Isidore’s 7 and 8; books 4 and 5 are based on Isidore’s 6; books 11 through 14 are drawn from Isidore’s 13, 14, and 15; books 15 and 16 from books 8 and 9; book 17 from book 16; books 19 to 22 are derived from Isidore’s books 17 to 20; and Hrabanus’s books 7, 9, and 18 are made up of selections from various parts of Isidore. Hrabanus also took a number of chapters directly from Isidore, without any modification: these include 4.2 to 4.8, 5.4 to 5.7, 5.12 to 5.15, 10.15 to 10.17, 11.3 and 11.4, 13.12 to 13.14, 14.5 to 14.10, 14.12 to 14.19, and selected chapters through the remainder of his book. Schipper 2004, p. 9
not have a counterpart in Isidore, for example, chapters 10.9, 10.10, and 10.14 are taken from Bede’s *De temporum ratione* chapters 8, 9, 10, and 11 with additions from Gregory’s *Moralia in Job* and the *Clavis melitonis*. In certain cases, Hrabanus rearranges the excerpts from Isidore, sometimes within one chapter of book 10, or other times, dispersed across several related chapters. For example, book 4, chapters 2 to 8, draws on Isidore’s books 7 and 8, but in *De rerum naturis* the order is 7.11, 8.1, 8.2, 7.1, 7.13, 7.14, and 8.3. Schipper remarks that the most frequent composition patterns of the chapters involve serial citations from Isidore’s encyclopedia with extracts from other writers as will be seen below in the analysis of chapter 10.8. He concludes that “the final product was never completed, no doubt because of a lack of time” and that had Hrabanus completed *De rerum naturis*, “most of it would likely have been structured in a complex fashion, as in books two or six, rather than looking like a set of extracts from Isidore”.

As for how much of the structure of the *Etymologiae* Hrabanus replicates in his work, Burrows looks at the overall pattern of the topics covered in the books in order to verify Collison’s assessment that Hrabanus mutilates Isidore’s *Etymologiae* and creates “an untidy mess”. Burrows discovers that the “general structure of the two works is similar, despite the differences

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377 Some examples of chapters that do not have a counterpart in Isidore are 4.10 (from Gennadius, *Liber dogmatum* 1-55); 5.3 (from Isidore’s *In libros veteris ac novi testamenti prooemia* 17-109); 6.2 and 6.3 (from the *Clavis melitonis* 8 and 9); 9.8 and 9.9 which are based on Cassiodorus. *Expositio in Psalmorum* 103.2 and 135.8; 9.12 to 9.16 which are based on Gregory the Great’s *Moralia in Job* 9, 9 and 30; 9.21 to 9.24 are taken from the *Clavis melitonis*, Cassiodorus, and Gregory’s *Moralia in Job*; and 10.9, 10.10, and 10.14 are from Bede’s *De temporum ratione* 8, 9, 10, and 11 with additions from Gregory’s *Moralia in Job* and the *Clavis melitonis*. Schipper 2004, p. 9

378 Schipper 2004, p. 10, see Table 2 on p. 14

379 Schipper 2004, pp. 11-12; Barney also points out that the *Etymologiae* “is not complete or polished – so Braulio implies and so Isidore says in the letters prefaced to the work in the manuscripts.” Barney 2006, p. 21

380 Burrows1987, p. 30; Isidore’s *Etymologiae* begins with five books which cover human learning: the seven liberal arts, medicine, and law. But starting in book 6 his plan is much the same as Hrabanus’, that is, divine matters (books 6-8) such as the scriptures, books and writing, rites of the church, God and the angels, Biblical and clerical persons, heresies, non-Christian philosophers and gods; human groups (book 9); human language (book 10); man (book 11) and his body, life, death, and monstrous men; animals (book 12); the physical world (books 13-14) of the heavens, atmospheric phenomena, waters, and lands; human social activities and the use of the natural world (books 15-20) such as buildings, precious stones and metals, weights and measures, agriculture, wars, entertainments, ships, building techniques, clothes, food, domestic and rural implements. Burrows 1987, p. 31
of detail”. His analysis finds that Isidore’s arrangement is “more complicated and ambitious than Hrabanus’, in general as well as within most subject groups” and that Hrabanus’ new organization simplifies the structure with the one consequence of increasing the miscellaneous character of the last section. Both Burrows and Schipper see no evidence to support Collison’s critique of “unintelligent plagiarism” and agree that Hrabanus’ *De rerum naturis* is “one of the better and more simply organized” works in the tradition of Christian encyclopedias and “does not deserve to be dismissed as an ‘untidy mess’, especially when compared with Isidore’s *Etymologiae*.”

1.3.3.5 The Manuscripts and Printed Editions of *De rerum naturis*

A complete *elencus manuscriptorum* is provided below. However, here it must be made clear that there is one important manuscript which does not contain book 10 and is therefore not included in the edition presented in chapter 2, but which is a key witness to the early transmission of *De rerum naturis* because it can be dated to before 852. Vienna, Österreichische Nationalbibliothek, MS 121 (olim philol. 113) is identified in the *conspectus siglorum* below as *W* and is also so identified by Schipper in all of his scholarship. Manuscript *W* is the second volume, containing books 12 to 22, of a two-volume set for which the first volume is now lost.

There are nearly 50 surviving manuscript copies of *De rerum naturis*, including substantial fragmentary copies, dating from 852 to the late fifteenth century. The earliest manuscripts are *W* (Vienna, Österreichische Nationalbibliothek, MS 121, containing books 12 to 22) and *A* (Karlsruhe, Badische Landesbibliothek, MS Aug. 96 containing books 1 to 11, and MS Aug. 68, containing books 12 to 22), dated to the late ninth or early tenth century. The earliest surviving

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381 Hrabanus essentially reorders some of Isidore’s books but keeps others in the same sequence. Books 11 to 20 are kept in the same order keep, but chapters from books 3 to 6 and 8 to 9 are inserted into this sequence. Content from books 7 and 8 are mixed together at the beginning. It is only the last 4 books (17-20 in Isidore, 19-22 in Hrabanus) that follow exactly the same order of subjects. Burrows 1987, pp. 30-31

382 Burrows 1987, p. 31

383 Burrows 1987, p. 32; Schipper 2004, p. 12

384 For a complete list see the *elencus manuscriptorum* below in chapter 1.3.3.5 and Schipper 1989, pp. 109-118 as well as the corrections and additions made by G. Cavallo in the introduction to the facsimile edition Hrabanus Maurus *De universo/De rerum naturis* 1994, pp. 43-63
illustrated copy is Montecassino, Archivio dell’Abbazia, MS 132 EE, “a copy produced in the scriptorium in the monastery in 1023, where it has been ever since”. There are also a number of surviving fragmentary copies, single leaves, extracts and even one copy “consisting entirely of lemmata arranged in semi-alphabetical order, forming a sort of index to the encyclopedia”.

The manuscripts can be divided into groupings following several criteria. The descriptions of these criteria and the group memberships are detailed in the next section (1.3.3.6). Briefly, there are two main groups, the first consisting of manuscripts which contain the two prefatory letters, the second group comprises those which do not and which also happen to be the illustrated manuscripts. The first group can be further sub-divided into two groups: a group of manuscripts containing a particular arrangement of the text in book 1 and a group of English manuscripts.

The editio princeps of *De rerum naturis* was edited and printed by Adolf Rusch in 1466. The Rusch edition was reprinted by George Colvener in his collected edition of Hrabanus' works in 1627 and again by Jacques-Paul Migne in the series *Patrologia latina* in 1851 (vol. 111, cols. 1-680). Since Colvener’s edition, only one editor has attempted to produce a new edition by collating manuscripts. Johann Baptist Enhuber, a Benedictine monk at St. Emmeram in Regensburg in the late eighteenth century, collated a number of manuscripts in preparation for a critical edition of the Hrabanian corpus. In 1896, Ambrogio Amelli, librarian at Montecassino, published lithographs of the miniatures in Montecassino MS 132 EE, the oldest

385 Schipper 2007, p. 103
386 Schipper 2007, p 104; This is the copy from Bury St. Edmunds (Ipswich, Old School Library, MS 6) which consists entirely of lemmata arranged in semi-alphabetical order that form a sort of index to the encyclopedia. For a discussion of the fragments see Schipper 1996, pp. 15 and 21, and Plates 10-12.
387 Contrary to all other scholars consulted, Collison states that “The first printed edition was issued at Venice in 1473, followed by another (by Mentelin) at Strasbourg (about 1474), and by Colvener at Cologne in 1627.” Collison 1964, p.36
388 See note 3 above. Schipper strongly warns that the Migne printing (*PL*) is not dependable because Colvener used a defective copy (missing several leaves) of the 1467 printing for the Cologne edition and Migne himself frequently emended Hrabanus’s citations from Isidore. Schipper 2007, p. 108
389 Although he never completed his edition, many of his notes have survived and, according to Schipper, his hand can be seen in two manuscripts of *De rerum naturis* now in Karlsruhe where he numbered the pages and added a blank leaf after p. 22 of A with the notation that a leaf was missing there. Schipper 1989, p. 109
extant illustrated manuscript of *De rerum naturis*, along with an introduction.\(^{390}\) The Montecassino manuscript, which dates from 1023, was reproduced in a full colour facsimile in 1994 with a companion collection of articles edited and introduced by G. Cavallo.

*Elenchus manuscriptorum*

**Manuscripts containing *De rerum naturis*: Complete Copies\(^{391}\)**

Angers, Bibliothèque publique, MS 31 (olim 27), s. xv
Arras, Bibliothèque municipale, MS 506 (832), s. xi
Cambridge, Corpus Christi College, MS 11, s. xii/xiii
Cambridge, University Library, MS Dd 1.30, (books 1-21), s. xiii
Cambridge, University Library, MS Dd 13.4, (books 1-10), MS Dd 8.13, (books 11-22), s.xiii
Darmstadt, Hessische Landes- und Hochschulbibliothek, MS 416, 1467
El Escorial, Real Biblioteca, MS f.I.12, s. xiv
Florence, Biblioteca Medicea Laurenziana, Fondo S. Croce, MS Plut. XXXI sin. 1, s. xii
Glasgow, University Library, MS Hunterian V.1.3 (366), s. xiii
Karlsruhe, Badische Landesbibliothek, MS Aug. perg. 96 (1-11), MS Aug. perg. 68 (12-22) s. ix\(^3\)
Leiden, Bibliotheek der Rijksuniversiteit, MS Vossianus lat. F5, s. xiv
London, British Library, MS Royal 12.G.xiv, s. xii
Madrid, Biblioteca nazionale, MS 12370, s. xiii
Molfetta, Biblioteca del Seminario, MS 5.7.V (3), s. xiv
Montecassino, Biblioteca dell’Abbazia, MS 132 EE, 1023
Naples, Biblioteca Nazionale, MS Borbon. V.C.46, s. xii
Oxford, Bodleian Library, MS Laud misc. 746, s. xiii
Oxford, New College, MS 159, s. xiv
Oxford, St. John’s College, MS 5, s. xii\(^{ex}\)
Oxford, St. John’s College, MS 88, s. xii

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\(^{391}\) For the *conspectus siglorum* please see pp. 101-102 below in chapter 2.1.
Oxford, Trinity College, MS 64, s. xiii
Paris, Bibliothèque nationale, MS lat. 2420, s. xiv
Paris, Bibliothèque nationale, MS lat. 7608, s. xiii
Paris, Bibliothèque nationale, MS lat. 11684, s. xii
Paris, Bibliothèque nationale, MS lat. 13411, s. xii
Paris, Bibliothèque nationale, MS lat. 16879, s. xii
Rheims, Bibliothèque publique, MS 441, s. xii
Rheims, Bibliothèque publique, MS 442, s. xv
Stuttgart, Württembergische Landesbibliothek, MS Theol. et philos. 2ª45, 1457
Vatican, Biblioteca Apostolica Vaticana, MS Pal. lat. 291, 1425
Vatican, Biblioteca Apostolica Vaticana, MS Vat. Regin. lat. 391, s. xiv/xv
Venice, Biblioteca Nazionale Marciana, MS lat. II 56 (=2094), 134 folia, (books 1-10), s. xiv
Vienna, Österreichische Nationalbibliothek, MS 121 (olim philol. 113), (books 12-22), ante 852
Worcester, Cathedral Library, MS F.21, (books 1-20), s. xii/xiii
Zürich, Zentralbibliothek, MS Car. C.97 (263), (books 1-11), s. xv

Manuscripts containing *De rerum naturis*: Fractments and Extracts

Augsburg, Staats- und Stadtbibliothek, 2ª MS 8, ff. 4v-5r, s. xi/xii
Augsburg, Staats- und Stadtbibliothek, 2ª MS 517, ff. 88v-97v, 1514
Augsburg, Universitätsbibliothek, Oettingen-Wallersteinsche Bibl., MS I.2.2ª38, ff. 1-2, s. ix³
Berlin, Staatsbibliothek Preussischer Kulturbesitz, MS lat. f. 930, s. xiv
Cambridge, St. John’s College, MS 62, f. 11, s. xiii
Engelberg, Stiftsbibliothek, MS 90, ff. 160r-166v, s. xii
London, British Library, MS Harley 3092, ff. 2r-28r, s. x
London, British Library, MS Royal 8.B.xiv, ff. 74-115, s. xiii
Munich, Bayerische Staatsbibliothek, MS CLM 28294, ff. Ira-IIvb and 170ra-171vb, s. xiv
New York, Columbia University, MS Plimpton 128, one folium, s. xiv
Oxford, Balliol College, MS 190, ff. 45-51, 1460/65
Paris, Bibliothèque nationale, MS lat. 1761, ff. 101-105, s. xiii
Paris, Bibliothèque nationale, MS lat. 2024, ff. 41-42v, s. xi
Paris, Bibliothèque nationale, MS lat. 2439, f. 182v, s. xii
Paris, Bibliothèque nationale, MS lat. 17177, s. xii
Stuttgart, Württembergische Landesbibliothek, MS Theol. et philos. 2º218, ff. 1-43, s. xii
Troyes, Bibliothèque municipale, MS 1628, ff. 24-27v, s. xii
Troyes, Bibliothèque municipale, MS 1926, f. 136, s.xii
Vatican, Biblioteca Apostolica Vaticana, MS Vat. lat. 939, ff. 120r-123r, s. xv
Vatican, Biblioteca Apostolica Vaticana, MS Vat. lat. 1149, s. xiiex
Venice, Biblioteca Nazionale Marciana, MS lat. Z. 497 (=1811), ff. 183r-184r, s. xi-xii

Manuscripts containing *De rerum naturis*: Alphabetical Versions

Ipswich, Old School Library, MS 6 item 9, ff. 125v-177, s. xiv
Leiden, Biblioteek der Rijksuniversiteit, MS B.P.L. 120, ff. 132-141, s. xiii
Paris, Bibliothèque nationale, MS lat. 11885, pp. 67-88, s. xii

1.3.3.6 The Textual History of *De rerum naturis*

In his preparatory studies for the critical edition of *De rerum naturis*, Schipper has reviewed the secondary literature and assessed the manuscript and print witness evidence. In several of his articles he has sketched out the early transmission and textual tradition of Hrabanus’ encyclopedia. The following is a synopsis of Schipper’s analysis as presented in his published articles and papers. An analysis based on the textual and manuscript evidence of book 10 and how it fits into the development of *De rerum naturis* as a whole and whether or not it parallels the relationships of the main tradition can be found in chapters three and four below.

By far Hrabanus’ most popular work was the *De laudibus sanctae crucis* which still survives in 81 copies.\textsuperscript{392} Some of his other works, such as his commentary on the Book of Daniel, exist in only one known copy.\textsuperscript{393} The *De rerum naturis* falls somewhere in between with around 50

\textsuperscript{392} Schipper 2007, p.103

\textsuperscript{393} His commentary on Daniel, produced during the same period, survives in a single fragmentary copy from Reichenau (Karlsruhe, BLB, MS Aug. 212). Schipper 2007, p. 103
complete manuscripts and fragments extant. It is therefore quite feasible to study the textual transmission of the work in general although a full collation of all the important manuscripts would be a large project given that the text of all 22 books is approximately 500,000 words in length. In addition to the large number of copies that survive, “the earliest copies can be dated to Hrabanus’ own time and others are very early if not produced while he was still alive”. Schipper concludes that parts of the textual tradition also show considerable editorial intervention, not only possibly by Hrabanus himself but also by later copyists and editors.

Having manuscripts which date to Hrabanus’ lifetime is very valuable in the study for the textual transmission and for establishing a text for an edition. However, a later manuscript, the oldest extant illustrated copy, Montecassino MS 132 EE, has to be considered in any analysis since collations with the earlier witnesses reveals that there are many differences between the witnesses. Not only do some of the witnesses of De rerum naturis contain an addition in book 15 in the section on Hercules, identified by Erwin Panofsky, but some also contain additional sentences, explanations, omissions of sentences, and a “substantial body of lexical substitutions that require explanation” and resolution with the evidence in the earlier manuscripts.

Manuscript Groupings

The surviving manuscripts can be divided into two main groups: the first group, which includes the earliest manuscripts, is made up of the manuscripts containing the two prefatory letters to Louis the German and Haymo of Halberstadt; the second smaller group omits these letters. Schipper posits that Hrabanus composed the letter to Haymo to accompany a copy of the text sent to his friend in c. 846 and that the second letter, to Louis the German, may have been written

\[394\] Schipper 2007, p. 103; Many though not all of the readings in Montecassino 132 “may have originated with Hrabanus himself, and they therefore need to be taken seriously.” Schipper 2007, p. 104

\[395\] Some of the types of changes include rearrangements of chapters or books, lexical substitutions, interlinear variants, the division of books into further chapters. Schipper concludes that not all have authorial status, because they occur only in copies or groups of copies whose earliest representatives date from the eleventh and twelfth centuries, and are thus relatively late. Schipper 2007, p. 103

\[396\] Created during the abbacy of Theobald (1022-1035)

\[397\] Schipper 2007, p. 104; See Panofsky 1967 and also Schipper 1997, pp. 363-377
in connection with Hrabanus’ rise to the archbishopric of Mainz in early 847. The first group includes the oldest witnesses A (a two-volume set from Reichenau) and W (a copy from Worms dated to 852 that is now in Vienna) while the Montecassino manuscript is the earliest extant member of the second group. The two oldest witnesses A and W, are similar in layout but were copied by different scribes. Most importantly for establishing a textual tradition is the fact that about 70 folia (more than half of the columns of text) in A and W begin and end with the same words, which Schipper suggests is evidence that “they were made at more or less the same time, and in the same centre, by scribes who were intent on closely following an exemplar”.

The first group includes two particular sub-groups that are distinguished by textual peculiarities suggesting that editors manipulated and commented on the work as early as the eleventh century. Schipper has identified Ro, (British Library, MS Royal 12.G.xiv) as the earliest and the master copy, based on the large size and care of execution, for a group of 10 manuscripts confined to England which share a particular variation in how books and chapters are divided. Manuscript Ro is also distinguished by a large number of alternate readings in the margins and between the lines which, according to Schipper, are only shared by a few, presumably descendent, copies of Ro: St. John’s College, Oxford, MS 5 (from Reading); Cambridge,

398 Schipper 2007, p. 104; See letters 36 and 37 in Dümmler, Ernst. Epistolae Karolini Aevi III. MGH, S. (1899) 470-474
399 Manuscript W contains the following colophon: ‘Anno incarnationis domini dcccliii. ego Berahtram indignus sacerdos hunc liber vitio scriptorum mendosum recitavi wormaciae. eodem anno basilica sancti petri ibidem restaurata est.’ For a facsimile of the colophon see Unterkircher 1969, Vol. 2, p. 18
400 The Augiensis scribe “writes in a clear even hand, while the Vienna scribe often appears to have difficulty staying between the lines. In some places, one of the Augiensis scribes, clearly a professional and practiced scribe, begins a gathering, while a less practiced hand continues the text.” Schipper 2007, p. 106
401 Schipper 2007, p. 106; See Schipper 1997, pp. 375-377 for an overview of the opening and closing words that match, a situation that shows that textually these two manuscripts differ very little from each other. Schipper 1997, p. 377
402 Schipper 2007, p. 105; G Cc Ck Cu Ob Oc Og On Or Wo
University Library, MS Dd 12.4 (from Kirkstead Abbey); and MS Dd 1.33 (from Chichester). In addition, Ro is related to an eleventh-century copy now in Arras (Ar) in that they share a number of readings which do not appear in any other continental manuscript. Based on these findings, Schipper concludes that someone in St. Albans used a northern French exemplar, “edited it to modify the chapter and book divisions, added the alternative readings (producing a kind of ‘critical edition’) and made the resulting copy available as a master copy to be reproduced”.

The other sub-group within the first group of manuscripts is distinctive for the evidence it presents about how De rerum naturis was used. There are two manuscripts in this sub-group: F (Florence, Biblioteca Medicea Laurenziana, Fondo S. Croce, MS Plut. XXXI sin. 1, from a Franciscan library), and Ob (Oxford, Bodleian Library, MS Laud misc. 746, also with a Franciscan provenance). The Laud manuscript (Ob) was commissioned by Robert Grosseteste and was designed to receive the special indexing marks Grosseteste devised for his uncompleted theological index project. These two manuscripts (F & Ob) contain a re-arrangement of the texts in books one and six.

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403 Similar annotations found in the Royal manuscript and its related copies help define this particular group of manuscripts. See Schipper 1996, pp. 1-6 and Plates 1-4

404 Arras, Bibliothèque municipale, MS 506 (832)

405 Schipper 2007, p. 105

406 For a discussion of the manuscript, see Schipper 1996, pp. 6-15; and Schipper 2008, pp. 40-41. The indexing marks were first noted by Harrison Thomson 1934, pp. 139-144. For further discussion see especially R. W. Hunt 1995, pp. 121-145. The pages of the manuscript are divided into three equal columns, the inner two of which contain the text of De rerum naturis, while the outer columns, subdivided into three columns each, were designed to receive the special indexing marks Grosseteste devised for the project. Schipper 2007, p. 105

407 Most copies of De rerum naturis begin with the words “Primum apud Ebreos Dei nomen Eli dicitur.” However, in F & Ob book 1 begins with the following words: “Adonay est septimum nomen,” which is part of a passage that in most copies occurs later in book 1. Portions of book 6 have also been transferred into book 1. According to Schippers analysis the Grossetete copy (Ob) appears to have been collated with a copy that did not share these modifications and in a number of instances the collator has added notes in the margin expressing surprise that the text differs. Schipper 2007, pp. 105-106
The eleventh-century Montecassino manuscript (C) is the earliest witness for the second group of manuscripts which all lack the prefatory letters.\textsuperscript{408} This group, which is also the group of extant illustrated manuscripts, was first identified by Erwin Panofsky. Panofsky identified an addition in the text of the description of Hercules in chapter 6 (\textit{De diis gentium}) of book 15.\textsuperscript{409} This addition is not included in the original source for this section: Isidore’s \textit{Etymologiae}, book 8, chapter 11.\textsuperscript{410} Other manuscripts in this group are Va (Vatican City, Biblioteca Apostolica Vaticana, MS Pal. lat. 291), Vc (Vatican City, Biblioteca Apostolica Vaticana, MS Reg. lat. 391) and St (Stuttgart, Württembergische Landesbibliothek, MS Theol. et philos. 2°45, 1457) as well as some fragments.\textsuperscript{411} This group is distinguished by at least 2 shared textual characteristics: the omission of the 2 prefatory letters and the inclusion of the Hercules addition in book 15.

The majority of the scholarship about Hrabanus’ \textit{De rerum naturis} has focused on the illustrated manuscripts and there are several theories about when and where the illustrated tradition originated and how these manuscripts are related to the other non-illustrated ones as well as to other illustrated manuscripts of Isidore’s \textit{Etymologiae}. Paul Lehmann concluded that there are “two independent traditions for the illustrated copies, both descended from a single copy made in Fulda during the ninth century”.\textsuperscript{412} Fritz Saxl saw the Montecassino manuscript as good

\begin{itemize}
\item In 1927 Paul Lehmann (1927) discovered two illustrated copies in the Vatican Library. In subsequent studies Lehmann (1930; 1938; 1950) he added several more to this number and drew attention to several of the earliest copies of the work that were not illuminated, notably A and W and the Harley manuscript (Lehmann 1930, pp. 23-24). Lehmann concluded that there are two independent traditions for the illustrated copies, both descended from a single copy made in Fulda during the ninth century. For further discussion see Schipper 1989, pp. 109-110
\item The addition appears in the 1467 \textit{editio princeps} (118vb-119ra) is reprinted by Colvener in the 1627 Cologne edition (p. 206b) and from there into Migne (111, col. 430C).
\item Extant fragments include Berlin, Preussischer Kulturbesitz, MS lat. f. 930, a fragmentary and badly mutilated copy that came to Berlin in 1936, and additional ones preserved in Columbia University Library (MS Plimpton 128) and in private hands in the U.S. Schipper 2007, pp. 106-107
\item Schipper 1989, p. 110
\end{itemize}
circumstantial evidence that earlier encyclopedias, in particular Isidore’s, were also illustrated.  
Panofsky, on the basis of an analysis of the text and illustrations for the section on Hercules, identified at least three layers in the textual tradition.  
Marianne Reuter also reviewed the scholarship and analyzed the illustrated manuscripts and hypothesized that Hrabanus himself authorized the illustrations.  
However, upon further investigation, she concludes that the illustrations as found in C, although they are a product of the ninth-century, cannot go back to Hrabanus since the cycle includes material not in the non-illustrated copies and could thus be later interpolations.  
Making the investigation more complicated is the fact that no illustrated version or fragments survive from the mid-ninth century and the Palatine manuscript (Va) contains spaces for more images than are contained in the Montecassino manuscript.  
Further, some chapters are fragmentary and perhaps Hrabanus had planned to return to them at a later time to add in more commentary and citations so that the short chapters would resemble the more integrated catena-style ones.  
As described above, this usually entailed beginning with a citation from Isidore, then expanding it with material from other sources, which were all then subject to an allegorical or mystical explanation from Hrabanus’ own pen or sometimes from other allegorical commentaries such as the Clavis melitonis by pseudo-Mellitus of Sardus.

413 Collison 1964, p. 36; Saxl 1957, passim
414 The first group is that of the earliest manuscripts like those from Reichenau which do not include the section on Hercules. The second includes all the illustrated manuscripts which do contain the Hercules section. The third is the edition by Rusch which the twelfth-century additions as well as the Hercules text. Panofsky 1969, pp. 24-25
415 Reuter 1984, p. 46
416 Schipper 2007, p. 107; Reuter 1984, pp. 46-48
417 Schipper 2007, p. 107; see Lehmann 1927, pp. 13-50; Reuter 1984, pp. 18-19 critiques Lehmann’s findings.
418 Book 13 chapter 22 is taken from Isidore (14.9.6) but is only one sentence fragment. Additionally many of the chapters in book 14 are only brief extracts from Isidore without any additional excerpts or commentary from Hrabanus. This is very similar to the last three chapters in book 10.
419 Pseudo-Mellitus Sardensis Clavis Melitonis 2, pp. 6-154. Schippers posits that the structure of this florilegium, which begins with ‘De deo’, may have inspired Hrabanus for his structuring of De rerum naturis.” Schipper 2007, p. 107
The Two-volume Format

Since the earliest extant copies of the encyclopedia were issued in two volumes either from Fulda or from Mainz using some Fulda scribes, the question arises as to whether or not the original and/or the archetype were planned and created as two volumes and, if so, whether this format had authorial sanction. In order to compare the two volumes, Schipper focused on some of the lexical variants from books 6 and 19 to see if they revealed any patterns to suggest not just the textual status but also the authoritative and authorial status of these variants. For this particular exercise, Schipper compared A, C, and W in order to see how the illustrated tradition differs from the earliest manuscripts. After analyzing six kinds of variants, Schipper concluded that the ratios show the second half of the text (the one in the second volume) to be less polished than the first half. He found that a significant number of variants “appear to fall too clearly into a pattern for all of them to be accidental” and concludes from this that “some of these seem to represent a layer of ‘corrections’ that go back to Hrabanus himself, though others may have originated in a later copy as annotations that were subsequently incorporated uncritically into a new copy.”

Based on his study of the textual and pictorial evidence in the manuscripts and the apparent desire to ‘make it better’ exhibited in the editorial changes of the lexical variants, Schipper

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420 Schipper 2007, p. 104
421 Karlsruhe, BLB, MS Aug. 96 (containing books 1-11), MS Aug. 68 (containing books 12-22), or Vienna, ONB, MS 121 (containing books 12-22)
422 Schipper 2007, p. 104; see Lehmann 1927, 1930, 1938, 1950
423 The six are: lexical substitution; omissions; additions; grammatical change; change in word order; error correction. Of particular importance is the fact that book 19 has nearly 3.5 times the number of lexical substitutions as in book 6. There are too many of these “to be the result of scribal error; instead they give the appearance of being deliberate and careful revision.” Schipper 2007, p. 108. For detailed results of his analysis see pp. 108-111, 114-123
424 Extant manuscripts show in his own handwriting how Hrabanus’ improved his texts. There are frequent substitutions of single words, deletion of words, and additions of phrases. Unfortunately no copies of De rerum naturis survive with Hrabanus’ handwriting. Leo Butzmann was the first to identify Hrabanus’ handwriting (1964, pp. 1-22) but Michel Perrin’s says that there are not enough examples of these textual edits to definitively say they are in Hrabanus’ own hand (Perrin 1989, p. 235). See also Bischoff 1981, pp. 12-13 and Spilling 1992, p. 75.
sketches out a possible life story for Hrabanus’ *De rerum naturis*. He suggests that when Hrabanus died on February 4, 856, “he left behind his own copy of the encyclopedia, missing the prefatory letters, and which contained corrections and improvements in his own handwriting that had not made their way into the edition as issued” by the scriptoria at Fulda or Mainz after 856. Although there is no surviving evidence to indicate this sequence of events, one can speculate on the possibility that this copy may also have contained notes that Hrabanus never meant to be included in the final version. In turn, someone else could have added further notes which may or may not have improved the text and introduced various errors. A later scribe might have faithfully reproduced all these annotations in the main text and a copy of this text would in turn become the exemplar for the copy made in 1457 now in Stuttgart (*St*). The exemplar for *St* would have lacked the prefaces, but included the addition on Hercules. It would also have shared many variants with *C* but not have had any images. Manuscript *St* has images in the margins that may have been inspired by an illustrated copy of *De rerum naturis*, or the *Etymologiae*, or any illustrated handbook on animals. The text of the exemplar for *St* would then have formed the basis for an illustrated copy which was taken to Montecassino in 1022 where a copy of it was made (manuscript *C*) and then returned to the Rheinland when *C* was completed. Back in the Rheinland it then became the exemplar for *Va*, the Palatine manuscript. All this would explain, as Schipper notes, the absence of the prefaces, the presence of the Hercules addition, and the fact that the exemplar for *St* shares distinctive readings with both the Stuttgart and Montecassino manuscripts. It would also explain why both *Va* and *C* have a full set of images but that *Va* has a few more than *C*. More than that, this would explain why there are more illustrations or spaces for illustrations in *Va*: “it is a more faithful copy of its

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425 This life story sketch is illustrated in Schipper’s *stemma* (2007, p. 112) and described in detail on pp. 111-114

426 Schipper 2007, pp. 11-13; According to Schipper, Hrabanus probably composed the letters specifically for the edition he issued before 852 and likely composed the letter to Haymo first, to accompany the copy of *De rerum naturis* he sent to Haymo c. 846, and the second letter, to King Ludwig, perhaps in connection with Hrabanus’ election and appointment as Archbishop of Mainz in early 847. Schipper 2007, p.104, n. 4, p. 113, n. 25. The letters were edited as numbers 36 and 37 by Ernst Dümmler. *Epistolae Karolini Aevi*, III, MGH (Berlin 1899), pp. 470-474
[exemplar] in that respect, while the person responsible for C decided to exclude a dozen or so of the pictures”.427

It is impossible to ascertain definitively, given the existing evidence, whether or not Hrabanus himself planned an illustrated edition or whether the illustrations originated under Theobald at Montecassino or somewhere, sometime, in between. There are no references to such a pictorial cycle in the library catalogues or annals of Fulda associated with De rerum naturis even though there is for Hrabanus’ other works and other manuscripts containing sets of illustrations.428 In his final analysis, Schipper concludes that the Montecassino copy represents a revised edition in progress. Although C “is not always a reliable witness for the text as originally envisioned by Hrabanus” it, nevertheless, contains lexical substitutions suggesting that this second main group of manuscripts represents a second recension.429

427 Schipper 2007, p. 113

428 See Rudolfus Fuldensis. Miracula sanctorum in Fuldenses ecclesias translatorum auctore Rudolfi. Ed. Georg Waitz. MGH Scriptores 15.1 (Hannover 1887) pp. 340-341. Rudolf devotes eight lines to a description of In honorem sanctae crucis, but makes no mention of De rerum naturis. Schipper 2007, p. 113

429 Schipper 2007, p. 114
Chapter 2
The Edition

2 An Edition of Book 10 of *De rerum naturis*

2.1 The Manuscripts

Criteria for Manuscript Selection

The group of manuscripts considered for this edition started as the group of 35 extant, mostly complete, manuscripts of *De rerum naturis* dating from the second half of the ninth century to the fifteenth century as well as the *editio princeps* of 1467.

*Conspectus siglorum*

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*Ru* Hrabanus Maurus *De sermonum proprietate, sive Opus de universo* Ed. Adolf Rusch (Strasbourg 1467)

Five of these manuscripts were not accessible at the time of preparation for this edition: *Pr* (s. xii), *Ma* (s. xiii), *M* (s. xiv), *D* (1467), *An* (s. xv). Next to be eliminated were *V* and *W* as they are incomplete: *W* is the second volume of a two-volume set, the first of which is no longer extant, and only contains books 12 to 22; *V* is defective and contains books 1 through 9 and only the first third of book 10.

This brought the group witnesses under consideration down to 28. Given the scope of the present thesis, it was decided to only include witnesses pre-dating the end of the thirteenth century. The dating of the witnesses was not done independently for this edition and thus they reflect the judgments of other scholars as reported in the manuscript catalogues. This dating
criteria eliminated 10 manuscripts and the editio princeps from consideration. Based on the exclusions listed above, the following 18 manuscripts remained under consideration: A Ar C Cc Ck Cu G N Ob Oc Og Or Pc Pg Pv Ro Rs Wo.

Of these 18 manuscripts, the following 10 were eliminated from consideration based on their proven derivation from other extant manuscripts: Cc Ck Cu G N Ob Oc Og Or Wo. The work of determining these derivations has been completed by scholars who have studied the paleography, codicology, and decorations of all 22 books of De rerum naturis in greater detail. Their findings are discussed above in chapter 1.3.3.5-6.¹

The eight remaining manuscripts (A Ar C Pc Pg Pv Ro Rs) were therefore selected for the present edition. In addition to the reasons given above, the decision to work with only eight of the earliest extant manuscripts was also made for the purposes of expediency and to remain within the scope of a doctoral thesis.

The following eight manuscripts were collated for this edition:

A  Karlsruhe, Badische Landesbibliothek, MS Aug. perg. 96
Ar  Arras, Bibliothèque municipal, MS 506 (832)
C  Montecassino, Biblioteca dell’Abbazia, MS 132 EE
Pc  Paris, Bibliothèque nationale, MS lat. 7608
Pg  Paris, Bibliothèque nationale, MS lat. 11684
Pv  Paris, Bibliothèque nationale, MS lat. 16879
Ro  London, British Library, MS Royal 12.G.xiv
Rs  Rheims, Bibliothèque publique, MS 441

For references to the textual additions found in chapters 1, 15, and 17 of some of the manuscripts see chapter 3.4 “The Evolution of Book 10 of De rerum naturis” below.

¹ For example, according to Schipper, Ro is the master copy of a group of 10 manuscripts confined to England. In this group are G Cc Ck Cu Ob Oc Og On Or Wo. Therefore, including Ro in the collations for this edition will establish the location in the stemma codicum for the beginning of the English branch of 10 manuscripts. Accordingly, the rest of the English manuscripts, descendent from Ro, have been eliminated from this edition. Schipper 2007, p. 105
A (Karlsruhe, Badische Landesbibliothek, MS Aug. perg. 96) contains books 1 to 11 of *De rerum naturis* and is dated to the late ninth or early tenth century (Holder 1906, p. 254). The text of book 10 begins on f. 199vb and ends on f. 267va. It is part of a pair with Karlsruhe, Badische Landesbibliothek, MS Aug. perg. 68 which contains books 12 to 22. The manuscript includes both the prefatory letter to Emperor Louis the German and the letter to Haymo of Halberstadt. There are no illustrations and the text, in a Carolingian script, is laid out in two columns per page. Manuscript A does not contain the additional passages in chapters 1, 15, and 17 that are found in some of the later manuscripts.

Ar (Arras, Bibliothèque municipale, MS 506 (832)) contains books 1 to 22 of *De rerum naturis* and is dated to the eleventh century (Quicherat 1872, pp. 200-201). The manuscript includes the prefatory letter to Louis the German only. Only 117 folia of the manuscript survive. The partial text for book 10 starts on f. 52ra and ends on f. 56rb. One of the missing folia would have followed the first prefatory letter, so the manuscript may have originally contained the letter to Haymo as well. The Carolingian-script text is laid out in two columns per page and includes rubricated uncial initials in the Roman style with green embellishments. Also, due to the missing folia, there are two lacunae in the text in Ar for book 10: lines 1-86 (chapters 1, 2, 3 and the first half of 4: *Tempora igitur a temperamento nomen...significat in illa sententia evangelii qui*); lines 586-717 (the end of chapter 11 to the beginning of chapter 15 inclusive: *Otrade ut non fiat fuga vestra hieme...nunc iterum per figuram repromissionis*). Book 10 in Ar is missing c. 2800 words which is equal to about 30 per cent of the text. It does not contain the additional passages in chapters 1, 15 and 17 that are found in some of the other manuscripts. Manuscript Ar also contains a 24-verse epitaph to Hrabanus Maurus which is also found in Pg, Rs and Rt.

C (Montecassino, Biblioteca dell’Abbazia, MS 132 EE) contains books 1 to 22 and is dated to 1023 (Inguanez 1915-41, p. 212). The text for book 10 begins on f. 174ra and goes to f. 184rb. The manuscript does not include the two prefatory letters but is the earliest extant illustrated version of *De rerum naturis*. The manuscript contains rubricated initials and 361 figural drawings of various colours. The Beneventan-script text is laid out in two columns per page. The beginning of book 10 is accompanied by a drawing across the entire bottom of the folium depicting scenes of harvesting and sowing. Chapter four (*De diebus*) starts with a 12-point wind diagram approximately the same size as the rubricated initial. Chapter six (*De nocte*) starts with
a line-drawing of an orb with a shadowed portion possibly representing the earth or the sun approximately the same size as the rubricated initial. Chapter 11 (De vicissitudinibus quatro temporum) opens with a one-column-wide drawing of four male figures engaged in various agricultural tasks representing the different seasons of the year. Before the start of chapter 12 (De anno) there is a one-column-wide circular drawing representing the signs of the zodiac. At the beginning of chapter 13 (De saeculo) is a one-column wide drawing containing 2 circles with several male figures both alive and dead representing the passage of time in salvation history calculated by saecula of generations and relating to the 6 ages of the world described in chapter 14 (De sex aetatibus saeculi). At the beginning of chapter 15 (De festivitatibus) is a drawing, 1½ columns wide, depicting the celebration of feast days when people made special offerings and gifts and played music. Manuscript C is missing lines 415-473 (the second half of chapter nine, De hebdomadibus, c. 750 words: Ad eius vero baptismum quando...Domine ne in ira tua arguas me etc.), roughly eight per cent of the text. Chapter 10 starts on a new folio and the catalogue description of the manuscript does not mention that any folia are missing from the manuscript. The later Arabic numeral pagination is continuous at this point. Also the catchword on the bottom of the folio is “de mensibus”, however, there are a few words after the sentence ending in “annis lunare cccxc” which may be an indication that the text continued. Manuscript C contains an addition of 58 words at line 730 in chapter 15 (De festivitatibus) just like N, St, Va, and Vc. Manuscript C does not contain the additions in chapter 1 or at the end of chapter 17.

Pc (Paris, Bibliothèque nationale, MS lat. 7608, olim Colbertinus) is dated to the thirteenth century (BNF 1739-44, p. 378) and contains both prefatory letters. The complete text of De rerum naturis is presented in a gothic textura script in two columns. The text for book 10 begins on f. 84ra and ends on f. 91rb. The beginning of book one opens with a full-page-high illustrated initial and each subsequent book starts with an illustrated initial nine lines high and each chapter with one three lines high. Manuscript Pc does not contain the additions in chapters 1 and 15 and it is the only extant manuscript from the thirteenth century that does not contain the additional 393 words at the end of chapter 17.

Pg (Paris, Bibliothèque nationale, MS lat. 11684) is dated to the twelfth century (Delisle 1865, p. 191). The text for book 10 starts on f. 103rb and goes to f. 111vb. It contains both prefatory letters but does not include the additions in chapters 1, 15, or 17. This manuscript contains the
complete text of *De rerum naturis* followed by Bede’s *De locis sanctis* starting on f. 218r. The text is presented in two columns and in Caroline minuscule script. Eight-line-high illustrated initials begin each book and the start of each chapter text has illustrated initials ranging from three to eight lines high. Manuscript *Pg* also contains, on f. 218r, a 24-verse epitaph to Hrabanus Maurus which is also found in *Ar*, *Rs* and *Rt*.

*Pv* (Paris, Bibliothèque nationale, MS lat. 16879) is dated to the twelfth century (Delisle 1870, p. 474) and contains both prefatory letters. The text for book 10 appears on f. 125rb to f.136ra. The complete text of *De rerum naturis* in gothic textura script is presented in two columns per page with illustrated initials, three lines high, at the beginning of each book. The first book, however, opens with a larger five-line illustrated initial. There are no distinguishing illustrated initials to mark the chapter beginnings in any of the books. Manuscript *Pv* does not contain the additional texts in chapters 1 and 15, however, it does include the additional passage at the end of chapter 17.

*Ro* (London, British Library, MS Royal 12.G.xiv, s. xii) contains a complete text of all 22 books of *De rerum naturis* and is dated to the twelfth century (Gilson & Warner 1921, pp. 73-74). The text for book 10 starts on f. 128va and ends on f. 140vb. Both prefatory letters are present. Book one opens with a full-page-high illustrated initial and subsequent books and all the chapters begin with three-line-high illustrated initials. The text is written in gothic textura script in double columns of gatherings of eight leaves and there are hundreds of interlinear annotations and marginal notations throughout the manuscript.² There are a few illuminated initials, for example the letter P on f. 6r which is the full height of the column. An *ex libris* on f. 6r indicates that it once belonged to St. Albans Abbey. It contains the addition in chapter 1 and at the end of the book in chapter 17 but not the addition in chapter 15. According to Schipper, *Ro* is the “earliest and, judging from the size and care of execution, the master copy for a group of 10 manuscripts”³ confined to England that are distinguished by a remarkable indifference in how

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² See Schipper 1997, EMS
³ Manuscripts *G* *Cc* *Ck* *Cu* *Ob* *Oc* *Og* *On* *Or* *Wo*
books and chapters are divided.\textsuperscript{4} Further, Schipper identifies a large number of alternate readings in the margins and between the lines that are unique to the copies made in England such as Or (St John’s College, Oxford, MS 5, s. xii, a direct copy from Ro), Ck (Cambridge, University Library, MS Dd 13.4 and MS Dd 8.13, s. xiii), and Cu (Cambridge, University Library, MS Dd 1.30 s. xiii).\textsuperscript{5} This highly annotated manuscript indicates that the text was being used and edited and book 10 in Ro provides 2 examples of text corrections that appear for the first time in the manuscript tradition.\textsuperscript{6} Manuscript Ro also shares a number of readings with Ar in the other books of De rerum naturis.

Rs (Rheims, Bibliothèque publique, MS 441) is dated to the twelfth century (Loriqet 1904-05, pp. 597-599) and contains the text of book 10 on f. 91ra to f. 105vb. The complete text of De rerum naturis is written in two columns in gothic textura script which is embellished with illustrated initials at the start of each book and chapter. The coloured initials that open each book range in height from 9 to 14 lines and the initials at the start of each chapter are mostly 2 lines high. Manuscript Rs includes both prefatory letters and contains the 24-verse epitaph to Hrabanus on f. 208r which is also found in Ar, Pg, and Rt. Manuscript Rs does not contain the additions in chapters 1 and 15 but does contain the extra passage at the end of chapter 17.

\textsuperscript{4} See note 402, p. 95
\textsuperscript{5} See note 406, p. 95
\textsuperscript{6} For example, in line 93, the correct form of the verb ‘intellegere’ appears and, in line 411, the number clxviii has been added to correctly complete the mathematical equation.
2.2 Stemma codicum

Criteria Used to Establish Manuscript Affiliations

Both internal and external evidence was taken into account to establish the relationships between the manuscript witnesses. External evidence such as the dating of the witnesses was taken from catalogues as well as from previously published sources, in particular the articles by William Schipper. In addition, some characteristics of *De rerum naturis* not found in book 10, such as the presence of the prefatory letters, was used to hypothesize the grouping of the manuscripts and to suggest the existence of hyparchetype φ and hyp-hyparchetypes β λ.

Additional Criteria Used to Establish Manuscript Affiliations

<table>
<thead>
<tr>
<th>MS</th>
<th>Date</th>
<th>Illustrations</th>
<th>Prefatory Letters</th>
<th>Addition Ch.1</th>
<th>Addition Ch. 15</th>
<th>Addition Ch. 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>c. 875</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ar</td>
<td>s. xi</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>1023</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Pg</td>
<td>s. xii</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pv</td>
<td>s. xii</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Ro</td>
<td>s. xii</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Rs</td>
<td>s. xii</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Pc</td>
<td>s. xiii</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The first prefatory letter is addressed to Louis the German, the second to Haymo of Halberstadt. The addition to chapter 1 starts at line 11 and contains 55 words (see p. 203 below). The addition to chapter 15 starts at line 730 and contains 58 words (see p. 205 below). The addition to chapter 17 starts at line 754 and contains 393 words (see p. 207 below).
The Nature and Significant Patterns of the Variants

The large majority of variants can be explained by false resolutions of the compendia. For example: line 207 where the other witnesses read ‘conceptum’ and C reads ‘conceptus’; line 272 where the other witnesses read ‘quando’ and C reads ‘quia’; line 293 where the other witnesses read ‘obfundatur’ and C reads ‘obfundantur’; line 549 where the other witnesses read ‘vocatus’ and Ar reads ‘vocatur’; line 559 where C Pv Ro read ‘inter’ and the other witnesses read ‘intra’.

1. Evidence for $\omega$ (A, Ar, C, Pc, Pg, Pv, Ro, Rs):

   106 ratio] ration $\omega$
   128 qui in requiem] inquirendum $\omega$
   384 utique] ut quae $\omega$
   399 ipsum quoque] ipsumque $\omega$
   506 asseritur] iussurit $\omega$
   513 sit] siti $\omega$
   553 inbrumari] inbrumati $\omega$
   722 indice] indicae $\omega$
   726 Septembri] Septembrio $\omega$
   732 dedicationis] dedicationem $\omega$

2. Evidence for $\phi$ (A, Ar, Pc, Pg, Pv, Ro, Rs):

   (a) ($\phi$-)C
   92 prodidisse] prodesse $C$
   188 solis cursus] cursus solis $C$
   199 discursandi] discurrendi $C$
   290 merentur] debentur $C$
   360 dies esse potuerint sed quod a requieionum] om. $C$
   513 salva sui] salvas quattuor $C$
Manuscript C has a large number of lectiones singulares (186, which is the most of any of the 8 witnesses). It does not share all the errors in A, β or λ and it introduces errors of its own. It is also the oldest witness containing illustrations of which none appear in the seven other witnesses. It is possible that it represents a distinct branch in the stemma codicum which split prior to the copying of A and, thus, might be directly descended from the archetype ω.

There are 22 readings in the apparatus criticus which conflict with the stemma codicum presented below in the sense that they suggest a possible contamination between C and other witnesses, hyparchetypes, and hyp-hyparchetypes. They may also indicate that C does not represent half of the primary split under ω. However, given the large number of lectiones singularis, the small number of shared readings with any one of the other seven manuscripts, the addition in chapter 15 (unique among the eight witnesses), the lack of the prefatory letters, and the inclusion of the illustrations, C was placed in the stemma codicum to represent a separate branch of the early transmission of book 10. As discussed below, the evidence will need to be re-analyzed and the stemma codicum updated accordingly once the patterns of the variants from the other 21 books of DRN are taken into account.

Additionally, evidence from later manuscript and print witnesses may also provide a clearer indication of C’s status in the illustrated tradition and its position in the history of the textual transmission of book 10.
For example, the reading in line 381 (anno] annos Ar C Pg Rs) suggests that an error existed in \( \omega \) that was transmitted to \( \lambda \) (through \( \varphi \) ) and C, and was corrected in A and \( \beta \). In this case, somewhere during the line of transmission between \( \varphi \) to A, and \( \varphi \) to \( \beta \), or when A, Pv, and Ro were copied, the error was corrected. Also possible is the situation where \( \omega \) and \( \varphi \) transmitted the correct word which still appears in A but the scribes for \( \lambda \), Rs and C made the same error independently.

Although the six readings below show some possible contamination between A and C (or errors inherited from \( \omega \) which were subsequently corrected in Ar, Pv and Rs), C cannot be proven conclusively to be derived from A since it does not share all of the variants in A.
Although the three readings below show possible contamination between $\beta$ and $C$ (or variants from $\omega$ which were subsequently corrected in $A$ and $\lambda$), $C$ cannot be proven to derive from $\beta$ because it does not share all the variants in $\beta$.

In a similar way, the three readings below, which show a possible contamination between $\beta$, $C$, and $Pg$, do not necessarily prove that $C$ is derived from $\beta$. Once again, errors inherited from $\omega$ and passed down to $\phi$ may simply have been corrected in $A$ and $Ar$.

In the three groups of variants discussed above, it is also possible that these readings show errors that do not appear in the archetype $\omega$ but that were made independently further down the line of transmission.

The following three variants that show a possible link between $C$ and $Ro$ may support the idea, discussed above and proposed by Schipper, that $Ro$ was heavily edited and corrected from multiple exemplars. In this scenario, perhaps, one of those exemplars was a member of the illustrated branch of the *stemma codicum*.

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47 scilicet] sed A C Pg Ro
89 eructat] eructat A C
135 psalmo] psalterio A C
260 quia] qui A Ar C
266 opinor] opinior A C Pg Pv
616 xxx] om. A C Pg Pv

16 tempora] et add. C $\beta$
122 psalmo] psalterio C $\beta$
347 gratia] gratiam C $\beta$

37 significat...decursum] brevissimum temporis decursum significat C Pg $\beta$
479 quoties] quotiens C Pg $\beta$
721 natus] est add. C Pg $\beta$

55 acceptum] acceptabile C $Ro$
120 psalmo] psalterio C $Ro$
373 agricolandi] agricolendi C $Ro$
The illustrated tradition of the manuscripts, with respect to C N St Va and Vc, is discussed above in sections 1.3.3.5 and 1.3.3.6. Manuscript C, as the earliest extant illustrated manuscript, is an important witness to the early transmission of DRN and was included in this edition and in the stemma codicum despite the fact that the evidence of the readings of the eight witnesses does not provide conclusive proof of when and where the illustrated tradition originated. Although this edition is based on the textual variants of book 10, omitting C based on its singularity would have produced an incomplete picture of the early textual history of book 10. In addition, C is the only witness in this edition that includes an additional passage of 58 words at line 730 in chapter 15 of book 10. This characteristic, which separates C from the other witnesses, is also the characteristic which it has in common with the other illustrated copies of book 10 (N, St, Va, and Vc). Further evidence linking C to the other illustrated manuscripts is their shared lack of prefatory letters. This fact reinforces the hypothesis that none of the twelfth- or thirteenth-century manuscripts in this edition (all containing the prefatory letters) are descendants of C. It also supports the separation of C in the stemma codicum from A and β, both of which have or carry the symptoms of the prefatory letters, thus adding to the arguments that C cannot be shown to derive from A or β. This in turn suggests that φ, the common ancestor of the seven other manuscripts, carried symptoms of the prefatory letters but that the common ancestor of φ and C (ms ω) might not have.

See pp. 96-97 above for a discussion of the differing theories on the illustrated tradition of DRN. Briefly: Paul Lehmann concluded that there are two independent traditions descending from a ninth-century Fulda exemplar; Fritz Saxl posited that Isidore’s encyclopedia was illustrated and began the tradition continued by DRN; Erwin Panofsky identified three layers in the textual tradition of the illustrated manuscripts; and Marianne Reuter concluded that the illustrations are a product of the ninth century but cannot be traced back all the way to Hrabanus.

Based on an examination of the text of book 10 of all available 29 manuscripts, it was discovered that only these 5 illustrated manuscripts contain an additional passage of 58 words at line 730 in chapter 15 of book 10.
3. The Tripartite Relationship of $A - \beta (P_v, R_s, R_o) - \lambda (A_r, P_g)$ under $\varphi$:

(a) $A\beta\lambda$

152 resurgent] resurgunt $A Ar P_g P_v R_s$
154 reddet] reddit $A Ar P_g P_v R_s$
239 contiscere] contiscere $A Ar P_g R_o R_s$
243 intempesta] tempesta $A Ar P_g P_v R_o R_s$
385 despectione] dispectione $A Ar P_g P_v R_o R_s$
456 resedent] resedit $A Ar P_g P_v R_o R_s$
486 et] ut $A Ar P_g R_o R_s$
645 praedicate] praedicare $A P_g P_v R_o$

(b) $(A-)\beta$

37 resurgimus] resurgemus $P_g P_v R_o R_s$
216 inluminatio] illuminatio mea $A P_v R_o R_s$
479 quoties] quotiens $P_g P_v R_o R_s$

(c) $(\beta-)A\lambda$

47 scilicet] sed $A P_g R_o$
48 artificialis] articulis $A P_g P_v$
57 dare] dari $A P_g$
418 populos] populus $A Ar$
422 dissipabit] dissipavit $A Ar$
450 perii] perit $A P_g$
459 ex] *om.* $A Ar R_s$
616 xxx] *om.* $A P_g P_v$
620 cxxxv] cxxxv $A P_g R_s$
620 cxxxv] cxxxv $A P_g R_s$
710 mutari] mutare $A P_g R_s$
(d) \((\lambda-\alpha)A\beta\)

31 debeant] debeat A Pv Rs
97 evanglium] evangeliste A Pv Rs
444 convenerant] convenerunt A Pv Ro
472 hic] hinc A Pv Ro Rs
637 sabbatum] sabbati A Pv Ro Rs

(e) \(A-\beta-\lambda\)

*Lectiones singularis* for \(A\)

51 allegorice] allegoricae A
417 lx] lxx A
421 coepit] caepit A
430 in\(^1\}] \textit{om.} A
444 turre] turrae A
594 innovando] innovanno A

*Lectiones singularis* for \(\beta\)

28 praedicti sunt] praedictis \(\beta\)
74 texerant terram] terram texerant \(\beta\)
279 ignorantiam, aliquando infidelitatem peccatorum, et aliquando] \textit{om.} \(\beta\)
433 inchoato] inchoante \(\beta\)
492 circulum] cursum \(\beta\)
590 voluerint] voluerit \(\beta\)
635 illos] istos \(\beta\)
672 aevus] aevum \(\beta\)

*Lectiones singularis* for \(\lambda\)

104 virtutum] virtutem \(\lambda\)
164 demoratus] demonstratus \(\lambda\)
243 Gallicinium] autem \textit{add.} \(\lambda\)
248 eoos erus equis eoasque] eo oserus equis oasque \(\lambda\)
301 bono] ponitur \textit{add.} \(\lambda\)
Manuscript \( P_c \) is most closely affiliated to \( A \). Manuscript \( P_c \) shares 82 of the 110 variants found in \( A \). It also introduces new variants of its own and, like \( A \), does not include any of the textual additions to chapters 1, 15, and 17. In addition, \( A \) and \( P_c \) share two variants not present in any other manuscripts (498 tres qui fiunt simul dies] dies tres qui fiunt simul \( A P_c \); 531 puncto] puncta \( A P_c \)). Although the evidence is not conclusive, it does support the probability that \( P_c \) is an apograph of \( A \) that has undergone some correction. The placement of \( P_c \) in the stemma codicum illustrates its likely derivative relationship with \( A \). For the purposes of this descriptive stemma codicum, \( P_c \) is considered a codex descriptus of \( A \) and its variants are thus not included in the apparatus criticus.

4. The Tripartite Relationship of \( P_v - R_o - R_s \) under \( \beta \):

(a) \( P_v R_o R_s \)

28 praedicti sunt\] praedictis \( P_v R_o R_s \)
74 texerant terram\] terram texerant \( P_v R_o R_s \)
279 ignorantiam, aliquando infidelitatem peccatorum, et aliquando\] om. \( P_v R_o R_s \)
433 inchoato\] inchoante \( P_v R_o R_s \)
492 circum\] cursum \( P_v R_o R_s \)
590 voluerint\] voluerit \( P_v R_o R_s \)
635 illos\] istos \( P_v R_o R_s \)
672 aevus\] aevum \( P_v R_o R_s \)

(b) \( (P_v-) R_o R_s \)

12 vero\] autem \( R_o R_s \)
73 circuitu\] circuitus \( R_o R_s \)
73 quod\] qui \( R_o R_s \)
116 et defecisse\] om. \( R_o R_s \)
118 nec eius\] necque \( R_o R_s \)
182 dicta\] dicta est \( R_o R_s \)
186 utique] quidem Ro Rs
274 matutinis] matutino Ro Rs
716 qui] quae Ro Rs

(c) (Ro-)PvRs
327 et aliter intellegi] intelligi et aliter Pv Rs
338 volunt] valent Pv Rs
366 inter quas] in qua Pv Rs
367 sola] solus Pv Rs
379 videlicet] scilicet Pv Rs
388 et impleatur] om. Pv Rs
458 est subacta] subacta est Pv Rs
507 quinque] annorum add. Pv Rs
578 autem] vero Pv Rs
702 xiiiiorro] porro xiii Pv Rs
709 in eis sola res] sola res in eis Pv Rs
737 sordidata] sordida Pv Rs

(d) (Rs-)PvRo
6 decurr] discurr} discurit Pv Ro
154 planam] plenam Pv Ro
346 unam] unum Pv Ro
477 iare] mare Pv Ro
550 hemispherii] hemisperi} hemisperii Pv Ro
554 vernum] est add. Pv Ro
746 observandam] observandum Pv Ro

(e)Pv-Ro-Rs
707 regnent] regnati sunt Pv regnati sunt Ro regnaturi Rs

A Selection of *Lectiones singularis* for Pv
21 Antiochi] antiquis Pv
41 queat tempus] potest hoc Pv
57  hoc est palam et dare operam] om. Pv
72  interdiu] in die Pv
92  Christum] male Pv
232  et ita eos invenerit] om. Pv
272  eluxit] advenit Pv
650  interpretatur] factus est Pv

A Selection of *Lectiones singularis* for Ro

11  iubileum vocari] annum iubileum Ro
23  tempus esse] esse tempus Ro
35  minimum atque angustissimum] angustissimum atque minimum Ro
41  hoc est indivisibile sive] sive indivisibile hoc est Ro
201  silvarum et cetera] silve Ro
454  eductae] sunt *add. Ro*
469  possidebunt] et *add. Ro*
628  sub brevitate declaratur] declaratur sub brevitate Ro

A Selection of *Lectiones singularis* for Rs

100-101  Dies et nox…et filii diei] om. Rs
147  vel lumen] numen Rs
159  superatur] seperatur Rs
202  scripturis] obscuris Rs
210  se blandiendo] sub audiendo Rs
447  semine] culmine Rs
591  intellegitur] intellitur Rs
665  perenni] perhennitate Rs
711  ab solito] absoluto Rs
716  annus] agnus Rs

In addition, only *Pv*, *Ro*, and *Rs* contain the additional text passage in chapter 17.
5. The Bipartite Relationship of \textit{Ar – Pg} under $\lambda$:

(a) \textit{ArPg} erring / straying together, independently of $A$, $\beta$, and $C$

104 virtutem\] virtutem \textit{Ar Pg} : virtute \textit{C}
164 demonstratus\] demonstratus \textit{Ar Pg}
243 Gallicitum\] autem \textit{add. Ar Pg}
248 eois eurus equis ...et eosaque\] eois eurus equis eosaque \textit{A} : eo oserus equis oasque \textit{Ar Pg} : eo us eurus equis et iterum eo absque \textit{C} : eoo serus equis oasque \textit{Pc} : eois earus equis [....] \textit{Pv} : eois eurus equis eosaque \textit{Ro} : eo oserus aequis oasque \textit{Rs}
301 bono\] ponitur \textit{add. Ar Pg}
513 ideoque\] ideo quia \textit{Ar Pg}
754 speraret\] spectaret \textit{Ar Pg}

(b) \textit{(Ar)-Pg} and \textit{(Pg)-Ar}, erring separately from one another

A Selection of \textit{Lectiones singularis} for \textit{Pg}
10 autem\] auctoritate \textit{add. Pg}
21 populus\] populo \textit{Pg}
188 obiecto\] abiecto \textit{Pg}
197 data\] dicta \textit{Pg}
258 et Silae\] licet \textit{Pg}
344 quidem\] quippe \textit{Pg}
388 adducatur\] adducitur \textit{Pg}
410 ergo\] enim \textit{Pg}
574 nos oporpet\] oportet nos \textit{Pg}
742 testamenti\] \textit{om. Pg}

A Selection of \textit{Lectiones singularis} for \textit{Ar}
126 perhibetur\] perhibatur \textit{Ar}
170 significat\] signum \textit{Ar}
302 spiritus sancti\] sancti spiritus \textit{Ar}
A relationship between Ar and Ro has been posited because of the findings of other scholars that link Ar and Ro to the group of English manuscripts. However, these common variants appear in the other 21 books of De rerum naturis, and not in book 10. Therefore, a dotted line is used in the stemma codicum to indicate this posited relationship.

Based on a collation of all eight manuscripts in this edition, several fundamental criteria for the placement of the twelfth- and thirteenth-century manuscripts in relation to the three oldest manuscripts are easily established. There are no conjunctive errors for the grouping of mss Pc Pg Pv Ro and Rs. This eliminates the possibility that they descended from ω independently of mss A Ar and C. In other words, these twelfth- and thirteenth-century manuscripts do not represent an independent branch of the tradition from ω. Ms C contains 151 variants which are not present in mss Pc Pg Pv Ro and Rs. This large number of lectiones singulares for C indicates that none of these twelfth- and thirteenth-century manuscripts is a descendant of ms C. Similarly, ms Ar contains 16 lectiones singulares and is therefore not a parent of mss Pc Pg Pv Ro Rs.

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9 The 1 variant shared by only Ar and Ro in book 10 is very weak (312 psaltero] psalmo Ar Ro). While both Ar and Ro contain the 2 prefatory letters, only Ro contains the additions to chapters 1 and 17.
Based on the variant groupings, the relationships between $A$, $Ar$, $C$, $Pc$, $Pg$, $Pv$, $Ro$, and $Rs$, can be illustrated in the following descriptive stemma codicum (Figure 1):

```
A  Karlsruhe, Badische Landesbibliothek, MS Aug. perg. 96, s. ix
Ar Arras, Bibliothèque municipal, MS 506 (832), s. xi
C  Montecassino, Biblioteca dell’Abbazia, MS 132 EE, 1023
Pc Paris, Bibliothèque nationale, MS lat. 7608, s. xiii
Pg Paris, Bibliothèque nationale, MS lat. 11684, s. xii
Pv Paris, Bibliothèque nationale, MS lat. 16879, s. xii
Ro London, British Library, MS Royal 12.G.xiv, s. xii
Rs Rheims, Bibliothèque publique, MS 441, s. xii
```
\( \varphi \) carries the symptoms of the two prefatory letters.

\( \beta \) carries the symptoms of the addition to chapter 17.

\( C \) contains the illustrations and the addition to chapter 15.

\( Ro \) contains the addition to chapter 1.

The *stemma codicum* of book 10 of *De rerum naturis* presented above is a descriptive one rather than a working one and does not show a strict recension due to the fact that the lacunae in \( Ar \) and \( C \) create stemmatic errors and several aspects of the text and images of book 10 as well as codicological evidence for the chosen manuscripts were not considered given the resources available and the scope of this thesis. For example:

1. Collation evidence comes only from 1 of the 22 books of Hrabanus’ encyclopedia and this single book only equals approximately two per cent of the complete work. All the variants from the rest of the books as well as the codicological evidence of the complete manuscripts, including other texts in the manuscripts, would need to be factored into the establishment of a *stemma codicum* for *De rerum naturis*. Furthermore, this *stemma codicum* describes the relationships of the 8 manuscripts based solely on the textual variants of book 10 and does not take into account the illustrations in \( C \). A good example of the caveats that come with studying only a portion of a text or manuscript is the relationship between \( Ar \) and \( Ro \) which is represented by the dotted line in the *stemma codicum*. A close relationship between \( Ar \) and \( Ro \) is not apparent in the variants of book 10 but, according to other studies, does appear very strongly in other books of *De rerum naturis*.

2. The earliest witness for *De rerum naturis* (\( W \)) was not included in this edition since the manuscript only contains books 12 to 22. The variants in books 12 to 22 may be very significant and strong, so much so that they outweigh the evidence in book 10, especially the weak variants found in book 10 and, therefore, a collation including \( W \) may produce a different picture of the early transmission of the complete text of *De rerum naturis*.

Given that the data sampling is incomplete, there is no strict recension represented in the *stemma codicum*. This descriptive *stemma codicum* would have to be revised if the variants from book
10 in additional manuscripts were added to the collation and if variants from the other 21 books of *De rerum naturis*, especially those contained in *W*, were also included in the analysis of the manuscript tradition.

*Constitutio textus*

As no single witness was favoured and readings have been drawn from multiple sources, this new Latin edition of book 10 of *De rerum naturis* is an eclectic one. As noted above, both external and internal evidence was used to determine the affiliation of witnesses as represented in the descriptive *stemma codicum*. As a result, the *stemma codicum* was not used as a tool for adjudicating between readings.
2.3 Editorial Principles

The Latin text below has been established in light of a comparison of the readings in seven witnesses: A Ar C Pg Pv Ro Rs. Orthography has been regularized following standard classical spelling according to the Oxford Latin Dictionary to provide consistency within the text presented (e.g. the spelling of *conpotus*\(^1\) has been changed to *computus*). The manuscript witnesses all contain common spelling variations such as \(e\) for \(i\) and vice versa, \(a\) for \(o\) and vice versa, \(b\) for \(v\) and vice versa, \(t\) for \(d\) and vice versa, and single instead of double consonants. Sometimes in the manuscripts \(e\) is used for \(ae\) and \(e\)-caudata is used both for \(ae\) and \(e\). In general, all collapsed diphthongs have been expanded in the text of the edition. The following examples of changes have been made: *aecclesia* to *ecclesia*, *vespera* to *vesper*, *aput* to *apud*, *inluminatio* to *illuminatio*, *ebdomas* to *hebdomas*, and *iubeleus* to *iubileus*. Common gender nouns, such as *dies*, appear in both genders in order to preserve the concordances with adjectives. Proper nouns, such as *Artaxerxes*, have also been standardized. As with the texts in the witnesses, the forms of numbers vary throughout the text of this edition and are either spelled out or are in Roman numerals. Roman numerals also represent all types of numbers, i.e. cardinals, ordinals, distributives, as well as multiplicatives. Abbreviations have been expanded to their inflected forms. Greek vocabulary has been transliterated into Latin. Biblical and literary citations appear in italics and are referenced in the footnotes of the Latin text.\(^1\) The chapter divisions and headings as presented in this edition are found consistently in all seven manuscripts. Punctuation and capitalization has been provided to aid the reader and add clarity to the syntax. References to *Patrologia latina* column numbers appear in square brackets.

\(^1\) In a Dutch dictionary written c. 1480, an entry notes that the original and linguistically correct word was computus, but it had to be modified to computus to make it easier on the ear. See *Lexicon latinitatis nederlandicae mediæ aevi* 2. Eds. Johann W. Fuchs et al. (Leiden 1980) col. 755. According to Borst, in the ninth and even in the thirteenth century, the stress on computus was placed on the first syllable following the classical convention. Borst 1993, p. 134, note 6

\(^1\) In relation to Hrabanus’ biblical commentaries: “En ce qui concerne les versions de la Bible utilisées, Raban prend pour base la Vulgate révisée par Alcuin.” Le Maitre 1990, p. 346. Le Maitre does not discuss Hrabanus’ computistical and encyclopedic writings in his analysis.
2.4 The Latin Text of Book 10 of *De rerum naturis*

[285A] INCIPIT LIBER DECIMUS

[1] **De temporibus**

Tempora igitur a temperamento nomen accipiant, sive quod unumquodque illorum spatium separatim temperatum sit, seu quod momentis, horis, diebus, mensibus, annis, saeculisque et aetibus omnia mortalis vitae curricula tempertur. Constat ergo trimoda ratione computum temporis esse discreetum: aut enim natura, aut consuetudine, aut certe auctoritate decurrit. Et ipsa quidem auctoritate bifarie divisa, humana videlicet, ut Olimpiadas quattuor annorum, nundinas octo dierum, indicationes xv annorum ambitu celebrari; diem quoque, qui ex quadrantibus conficiatur, mense Februario vel Augusto intercalari Greci, Aegyptii, Romanique pro suo quique captu iusserunt; divina autem, ut septima die sabbatum agi,\(^1\) septimo anno a rurali opere vacari,\(^2\) quinquagesimum iubileum vocari dominus in lege praecepit.\(^3\) Porro natura duce repertum est solis annum ccclxv diebus et quadrante confici; lunae vero annum, si communis sit cccliiii, si embolismus ccclxxxiiii, diebus terminari, totumque lunae cursum decemnovenalium circulo comprehendi, sed et errantia sidera suis quaeque spatiis zodiaco circumferri. Quae natura non iuxta aethnicorum dementiam dea creatrix una de pluribus sed ab uno vero deo creatae est, quando sideribus caelo inditis praecepit ut sint in signa et tempora dies et annos.\(^4\) Tempus autem, quod Graece chronos [285C] dicitur, ab initio mundi usque ad finem saeculi decurrit, ita ut momentis, horis, diebus, mensibus, annis, lustris, saeculis, aetibus, ut supra diximus, dividatur. Significat autem opportunam distributionem divinæ voluntatis. Unde est illud, *Oculi omnium in te sperant domine, et Iudas escam illis in tempore opportuno*, necnon et illud, *tempus faciendi domine, dissipaverunt iniqui legem tuam*.\(^5\) Praevidens ergo populus devotus temporibus Antiochi

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2. Cf. Leviticus 25: 1-7
3. Cf. Leviticus 25: 8-10
4. Cf. Genesis 1:14
5. Psalm 118: 126
a plebe Iudaica legem domini cultu demonum polluendam, velut ad medicum clamat aegrotus tempus esse subveniendi, ne morbis ingravantibus salus populi potuisset adsumi. Tempus est faciendi, non differendi, quod expedat. Iussaret enim per legem et prophetas, ut verus dominus quatinus [285D] eum homo reverentissima devotione coleret; sed quoniam hoc in suam perniciem contempsit obstinatio Iudeorum, clamat populus fidelis, Tempus faciendi, id est ut mundo salutaris appareas, peccata dissolvas, mortem vincas, ipsumque diabolum cum sua cohorte prosternas. Hoc est enim domini facere, praedicti sunt temporibus advenire. Unde et per prophetam dictum est, Tempore accepto exaudivi te et in die salutis adiuvii te. 6 Et apostolus, Ecce nunc tempus acceptabile, ecce [286A] nunc dies salutis. 7 Omnia enim quae dominus facit, aptissima dispositione complentur, ut ante fieri non debeant nisi quando ille miserator indulserit. Hinc est quod nobis semper expedit habere patientiam, expectare quae iussa sunt, rogare quae prosunt. Tempus autem faciendi novit ille, qui rector est.

[2] De momentis

Momentum est minimum atque angustissimum tempus, a motu siderum dictum. Est enim extremitas horae in brevibus intervallis, cum aliquid sibi cedit atque succedit. Momentum ergo significat brevissimum temporis decursum, ut est illud apostoli, Omnes quidem resurgimus, sed non omnes immutabimur [286B] in momento, in ictu oculi. 8 Per ictum oculi, nimiam brevitatem vult significare momenti ut quanta sit dei potentia ex resurrectionis celeritate cognoscas. De quo alia editio habet in atomo et in ictu oculi. Minimum autem omnium, et quod nulla ratione dividi queat tempus, ‘atomum’ Graece, hoc est indivisibile sive insectibile, nominant; quod ob sui pusillitatem grammaticis potius quam calculatoribus visibile est. Quibus cum versum per verba, verba per pedes, pedes per syllabas, syllabas per tempora dividant, et longae quidem duo tempora unum brevi tribuant, ultra quid dividant non habentibus, hanc atomum nuncupari complacuit.

6 Isaiah 49: 8
7 2 Corinthians 6: 2
8 1 Corinthians 15: 51-52
[3] De horis


Novissimam horam novissimum saeculi tempus quod nunc agitur illam parabolam domini ubi operarios in vineam conductos narrat. Prima hora est usque ad tempora Noe, a temporibus Noe hora tertia, a temporibus Abraham hora sexta, a data lege hora nona, a Christo in finem saeculi hora undecima in qua Antichristus futurus est prophetatus. Item hora prima infantia, sive pueritia, hora tertia adolescentia, hora sexta iuventus, hora nona senectus, hora undecima extrema senium, unde et supra exemplum datum est.

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9 John 11: 9
10 Romans 13: 11
11 2 Corinthians 6: 2
12 1 John 2: 18
De diebus

Dies est aer sole illustratus, nomen inde sumens quod tenebras disiungat ac dividat. Nam cum in primordio creaturarum tenebrae essent super faciem abyssi, dixit deus, Fiat lux et facta est lux; et vocavit deus lucem diem.\(^{13}\) Quae definitio bifari dividitur, hoc est vulgariter et proprie. Vulgus enim omne diem solis presentiam supra terras appellat. Proprie autem dies xxiii horis, id est circuitu solis totum orbem lustrantis impletur, qui secum semper et ubique lumen diurnum circumferens non minore aërum spatio noctu sub terras quam supra terras interdiu creditur exaltari. Ante vero solis creationem primitiae lucis circuitu, quod nunc per solm fit, agebatur, \(^{287C}\) primo quidem secundoque die aquas abyssi, quae omnem texerant terram, tertia vero aëra vacuum sua circumvagatione lustrantis. Quantum ergo nobis vestigia patrum sequentibus conicere datur, cum diceret deus, Fiat lux, mox tenebrae quae abyssum texerant abierunt, et lux ab oriente medias inter undas emergens cunctam terrae superficiem operuit latitudine sui fulgoris, boreales simul australis et occiduales oras attingens. Paulatimque se completo diei unius spatio subducens, inferiora terrae gyrando subiit atque, aurora praecedente, diem secundum tertiumque similis ordine complevit, hoc tantum a solari luce differens quod caloris fotu carebat et, quia sidera nondum erant, priscis adhuc \(^{287D}\) tenebris noctes illas reliquie obscuras. Dies autem iuxta allegoriam plures significaciones habet. Aliquando significat dominum salvatorem, aliquando sanctos eius, aliquando scientiam sanctarum scripturarum, aliquando caritatem, aliquando virtutum fulgorem, aliquando prosperitatem temporalem, aliquando diem iudicii, aliquando aeternam beatitudinem. Dies autem dominum significat in illa sententia evangelii, Qui ambulat in die non offendit,\(^{14}\) quia quisquis doctrinam sequitur salvatoris peccatorum offendicula non timebit. Item dies dominum Iesum Christum significat, ut est illud Psalmiste, Haec est dies quam fecit dominus.\(^{15}\) Item dies apostolos et sanctos dei significasse in illo Psalmistae versus intellegitur, Dies diei eructat

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\(^{13}\) Genesis 1: 1-4  
\(^{14}\) John 11: 9  
\(^{15}\) Psalm 117: 24
verbūm, id est dominus apostolis divina claritate inradians, verba caelestis luminum intimabat. Sicut e contrario in illo quod sequitur, Nox nocti indicat scientiam. Iudas Iudaeis Christum prodidisse cognoscit. Item diem scientiam sanctarum scripturarum in hoc intellegere possimus, quia ibi lumen iustitiae et verae sapientiae bene intellegentibus lucet. Unde apostolus admonet ut intenti simus ad meditandam legem dei, donec dies illucescat et Lucifer in cordibus nostris oriatur. Quod autem lux diurna caritate signifcet, ostendit Johannes in epistola sua dicens, Qui diligit fratre suum in lumine manet. Item dies evangelium demonstrat, ut est illud in Cantico canticorum, Donec aspiret dies, et amoveantur umbrae. Item dies vita praesens, ut est illud evangelii, Me oportet operari opera eius, qui misit me, donec dies est. Rursum dies futura vita iustis, ut in Esaia, Non est tibi amplius sol ad lucendum per diem. Dies et nox, iusti et peccatores, iustitia et iniquitas, ut in Psalmo, Non sumus noctis neque tenebrarum, omnes enim vos filii lucis estis et filii diei. Dies et nox, prosperitas est et adversitas, ut in Psalmo, In die mandavit dominus misericordiam suam, et nocte declaravit. Item ibi, Deus meus, clamabo per diem, nec exaudies et nocte, et non ad insipientiam mihi. Nam virtutum fulgorem et honestatem conversationis bonae dies significat in illa Pauli sententia ubi ait, Abiciamus ergo opera tenebrarum et induamur arma lucis sicut in die honeste ambulemus. Quia si ignorantias nostras scientiae ratio[n] fugiat et indignos

27 1 Thessalonians 5: 2  
28 1 Corinthians 3: 13  
29 Psalm 83: 11  
30 Psalm 89: 4  
31 Psalm 95: 2  
32 Exodus 3: 18  
33 Hosea 6: 3
illud in Apostolo, *Quoniam dies unus apud deum, sicut mille anni, et mille anni sicut dies una.*\(^{34}\) [289B] Septimus vero dies, qui in requiem dei sanctificatus scribitur, requiem significat omnium sanctorum post excursum vitae praesentis.\(^{35}\) Dies septem, omne opus vitae praesentis, quod in his septem diebus volvitur, continent sacramentum, in quibus praecipitur pascha celebrare, id est de peioribus ad meliora per emendationem vitae transire, et fermentum, quod est corruptio peccati, non comedere, sed *in azimis sinceritatis et veritatis* ambulare.\(^{36}\) Dies octava resurrectionis dominicae obtinet sacramentum. Item dies octava futuram omnium resurrectionem et diem iudicii, cuius mysterio sexti psalmi titulatio praesignatur, hoc est pro octava. Hodie aeternitas divinitatis intellegitur, nec initio incopta, nec fine claudenda; unde in [289C] psalmo, Pater ad filium loquitur, dicens, *Filius meus es tu. Ego hodie genui te.*\(^{37}\) Apud deum enim nec heri, nec cras, sed semper est hodie. Hodie omne praesens tempus significat, ut in Psalmo, *Hodie si vocem eius audieritis,*\(^{38}\) velut si dicatur, quocumque in tempore. Cras futurum tempus, ut in evangelio, *Nolite cogitare de crastino, quid manducetis aut quid bibatis.*\(^{39}\) Item ibi, *Si enim fenum,* id est peccatores, *quod hodie in agro est, et cras in clibanum,* hoc est in combustionem perpetuam, mittitur, *deus sic vester.*\(^{40}\) Et alibi, *Ne forte dicant filii vestri filiis nostris cras: Non est vobis pars in Israel.*\(^{41}\)

**[5] De partibus diei**


\(^{34}\) 2 Peter 3: 8  
\(^{35}\) Cf. Exodus 35: 1  
\(^{36}\) 1 Corinthians 5: 8  
\(^{37}\) Psalm 2: 7  
\(^{38}\) Psalm 94: 8  
\(^{39}\) Matthew 6: 31, 34  
\(^{40}\) Matthew 6: 30, Luke 12: 28  
\(^{41}\) Joshua 22: 27
melius luce? Mane autem significat tempus regenerationis in baptismate quo incipit homo esse filius lucis vel lumen bonorum actuum vel tempus resurrectionis. Unde est illud, Quoniam ad te orabo domine mane et exaudies vocem meam. 42 Ecclesia enim, quae se cognoscit habuisse tenebras peccatorum et de nocte mundi istius congregata<\*', tunc se exaudiri meritum credit cum in lucem verae resurrectionis erumpit. Tempus autem resurrectionis significat, ut est illud quod sequitur, Mane astabo tibi et videbo quoniam [290A] non volens deus iniquitatem tu es. 43 In die iudicii quando resurgent omnes homines a sopore mortis tunc apparebit aequitas iudicii dei, quando unicuique reddet secundum opera sua. Meridies dicta quasi ‘medidies’, hoc est ‘medius dies’; vel quia tunc purior dies est, ‘merum’ enim ‘purum’ dicitur. Significat autem planam doctrinam, cum claritate bonorum actuum, ut est illud in Cantico canticorum ubi sponsa dicit ad sponsum, Indica mihi ubi paschas ubi cubes in meridie. 44 Et alibi meridies in contrariam partem ponitur, ut est illud in Psalmo, A ruina et daemonio meridiano. 45 Daemonium meridianum est immene periculum fervore persecutionis accensum, ubi ruina plerumque metuitur, quando infirmitas humana superatur. [290B] Item a daemonio meridianum accipitur pro manifesto non occulto. Suprema est postrema pars diei, quando sol cursum suum in occasum vertit; dicta quod superest ad partem ultimam diei, quod declinat ad vesperam. Vesper ergo vel finem vitae humanae vel saeculi terminum vel paenitentiam futuram significat, nam quod vesper significet occubitum mortis Christi illud Psalmista declarat, Ad vesperum demorabitur fletus et ad matutinum laetitia. 46 Fletus demoratus est vesper quando Christus dominus noster peremptus est.

Tunc enim vere demoratus est fletus, dum per triduum fidelium turba congreguit, et mundi per ipsius occubitum natura concussa est. In matutino quoque orta est laetitia, quando tempore matutino resurrectio domini evangelio [290C] testante vulgata est et discipuli praesentiam domini sui immortalem cernere meruerunt. Vesper ergo finem mundi significat quando iam

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42 Psalm 5: 4
43 Psalm 5: 5
44 Cantic les 1: 6
45 Psalm 90: 6
46 Psalm 29: 6
tempus operandi finitum est, unde dicitur, *Venit nox quando iam nemini licet operari.*  


[6] De nocte  

Nox dicta quod noceat aspectibus vel negotiis humanis sive quod in ea fures latronesque nocendi [291A] aliis occasionem nanciscantur. Est autem nox solis absentia terrarum umbra conditi donec ab occasu redeat ad exortum iuxta quod naturam eius et poeta describens, *Inruit,* inquit, *oceano nox, involvens umbra magna terramque polumque.* Et Salomon sacris litteris expressit, *qui pascitur inter lilia donec aspiret dies et inclinentur umbrae,* eleganti utique sensu decessionem noctis inclinationem appellans umbrarum. Nam quoniam pro conditionibus plagarum quibus solis cursus intenditur et splendorem eius a nobis obiectio terrenae molis  

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47 John 9: 4  
48 Psalm 54: 18  
49 Matthew 26: 20  
50 John 18: 33  
51 John 19: 30  
52 Vergil, *Aeneid* 2. 250-251  
53 Canticles 2: 16-17
excludit, inumbratio illa, quae noctis natura est, ita erigitur ut ad sidera usque videatur extendi; merito contraria vicissitudine, id est lucis [291B] exortu, umbras inclinari, noctem videlicet deprimi pellique signavit. Quam videlicet umbram noctis ad aeris usque et aetheris confinium philosophi dicunt exaltari et acuminatis instar pyramidum tenebris lunam, quae infima planetarum currit, aliquando contingi atque obscurari nullumque aliud sidus taliter eclipsim, hoc est defectum sui luminis pati, eo quod circa fines telluris solis splendor undique diffusus, ea libere quae telluri procul absunt aspiciat; ideoque aetheris quae ultra lunam sunt spatia diurnae lucis plena semper efficiat, vel suo videlicet vel siderum radiata fulgore. Est autem noctis umbra mortalibus ad requiem corporis data ne operis avida continuato labore deficeret ac periret humanitas, et ut animantibus quibusdam, quae lucem solis ferre [291C] nequeunt, ipsis etiam bestiis, quae praesentiam verentur humanam, discursandi ubique ac victum quaeritandi copia suppeteret, iuxta quod in dei laudibus Psalmista decantat, *sol cognovit occasum suum, posuisti tenebras et facta est nox, in ipsa pertransibunt omnes bestiae silvarum* 


55 Iniquitas autem in noctis significatione exprimitur in illa sententia beati Job, *Pereat dies in qua natus sum, et nox in qua dictum est conceptus est homo.* 

56 [291D] Unde Psalmista in iniquitatibus conceptum se esse et in delictis natum testatur. 

57 Perire ergo optat beatus Job sper ab apostata angelo illatam qui diem se simulans, et promissione divinitatis emicuit; sed noctem se exhibens, lucem nobis nostrae immortalitatis obscuravit. Pereat antiquus hostis qui lucem promissionis ostendit sed peccati tenebras contulit; qui quasi diem se blandiendo innotuit, sed usque ad tenebrosam noctem ex impressa cordis caecitate perduxit. Adversa ergo in noctis nomine exprimuntur ubi Psalmista se in nocte clamare testatur, hoc est in tribulatione nec tamen exauditum esse. Item Psalmista dicit, *In die tribulationis meae deum exquisivi manibus meis* 

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54 Psalm 104: 19-20, 103: 19-20
55 1 Thessalonians 5: 5
56 Job 3: 3
57 Cf. Psalm 50: 7
In nocte [292A] coram eo, et non sum deceptus.\textsuperscript{58} In noctis nomine mundi istius significat vitam, quae quamvis lucem habere videatur, peccatorum tamen obscuritatem fuscata est. Item per noctem significavit inferni claustrum cum dicit, \textit{Forsitan tenebrae conculcabunt me et nox illuminatio in mea deliciis meis.}\textsuperscript{59} Quomodo ergo poterat a tenebris conculcari, cui erat nox illuminatio in deliciis suis? Ostendit enim tunc inferni claustrum revera illuminatum, quando potestatem diaboli contrivit et hominem sua miseratione liberavit. Nox vita praesens, ut in psalmo, \textit{In noctibus extollite manus vestras in sancta.}\textsuperscript{60} Item ibi, \textit{Nocte coram eo et non sum deceptus.}\textsuperscript{61} Nox futurae saeculum de peccatoribus significat, ut in evangelio, [292B] Veniet nox, quando nemo potest operari.\textsuperscript{62} Nox est vita peccatorum, ut in apostolo, \textit{Qui dormiunt nocte dormiunt; et qui ebrii sunt, nox ebrii sunt.}\textsuperscript{63} Nox caecitas cordis, vel vana securitas est, sicut in Job pro impio dicitur, \textit{Nocte opprimet eum tempestas.}\textsuperscript{64} Et in evangelio, \textit{Stulte, hac nocte repetant animam tuam a te, quae autem parasti cuius erunt.}\textsuperscript{65} Nox futura tribulatio, ut in evangelio, \textit{In illa nocte duo erunt in agro; unus assumetur, et unus relinquetur.}\textsuperscript{66} Nox tribulatio vitae praesentis in tempore, ut in evangelio, \textit{Quis vestrum habebit amicum, et ibit ad illum media nocte, et dicet illi: Amice, commoda mihi tres panes?}\textsuperscript{67} hoc est scientiam trinitatis. Media nox occultum domini iudicium significat, ut in evangelio, [292C] \textit{Media nocte, clamor factus est: Ecce sponsus venit.}\textsuperscript{68} Media nox mors ex improviso adveniens, sicut in Job de reprobis, \textit{Et in media nocte

\textsuperscript{58} Psalm 76: 3
\textsuperscript{59} Psalm 138: 11
\textsuperscript{60} Psalm 133: 2
\textsuperscript{61} Psalm 76: 3
\textsuperscript{62} John 9: 4
\textsuperscript{63} I Thessalonians 5: 7
\textsuperscript{64} Job 27: 20
\textsuperscript{65} Luke 12: 20
\textsuperscript{66} Luke 17: 35
\textsuperscript{67} Luke 11: 5
\textsuperscript{68} Matthew 25: 6
Prima vigilia, prima hominum aetas, id est infantia, sive pueritia. Secunda vigilia, adolescencia et iuventus. Tertia vigilia, senectus, ut in evangelio, *Et si in tertia vigilia venerit, et ita eos invenerit, beati sunt servi illi.*

[7] *De septem partibus noctis*


245 Vesper ergo et initium noctis significat vel initium tribulationis, quae post prosperitatem saeculi sequitur, vel exordium aversionis iniquorum qui aversi a luce vera mandatorum dei incidunt in tenebras [293B] peccatorum. Quando enim quis a veritate et iustitia recedit et in tenebras errorum atque peccatorum corruit, merito vesper nomine vocatur, quia Antichristi qui vesper in scripturis appellatur, consors efficitur. Intempestum autem, hoc est medium noctis, vel profunditatem peccatorum significat vel recessum a mundanis negotiis et ad

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69 Job 34: 20
70 Luke 12: 38
71 Vergil, *Aeneid* 1. 374
72 Vergil, *Aeneid* 2. 417, 1. 489
lauandum deum bonorum hominum studium. Unde propheta ait in Psalmo, *Media nocte surgebam ad confitendum tibi, super iudicia iustitiae tuae.*\(^{73}\) Non vacat quod dicit, *media nocte surgebam;* scit enim hoc tempore primogenita Aegyptiorum fuisset percussa; scit etiam ea tempestate Petri Pauli et Sileae in carcere positorum vincula resoluta, scit quoque sponsum media nocte esse venturum; ideoque eodem [293C] tempore surgit ad laudes, ne inter fatuas


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\(^{73}\) Psalm 118: 62  
\(^{74}\) 1 Corinthians 15: 34  
\(^{75}\) Psalm 62: 2, 7-8  
\(^{76}\) Psalm 107: 3  
\(^{77}\) Psalm 100: 8  
\(^{78}\) Job 38: 12
[8] De tenebris

Tenebras autem dictas, quod teneant umbras. Tenebrae autem significant aliquando profunditatem scripturarum divinarum, aliquando ignorantiam, aliquando infidelitatem peccatorum, et aliquando poenam Gehennae. Profunditatem ergo scripturarum illud significat propheticum testimonium quo ait, *Posuit tenebras latibulum suum.*\(^{79}\) Et alibi, *tenebrae non obscurabuntur abs te et nox sicut dies illuminabitur sicut tenebrae eius ita et lumen eius.*\(^{80}\)


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86 Matthew 22: 13
87 Cf. Job 10: 22
88 Psalm 56: 2
89 Psalm 16: 8
90 Matthew 17: 5
91 Lamentations 4: 20
92 Canticles 2: 17
93 Job 14: 2
94 Psalm 43: 20
95 Psalm 22: 4
in lacu inferiori in tenebris et in umbra mortis.\textsuperscript{96} In umbra mortis peccatorum indicat locum, quia mors delinquentium umbrosos ac tenebrosos patitur manes, dum eis gaudium non relucet, qui perpetua tristitiae suae obscuritate demersi sunt. Et ideo pro locorum qualitate verbum hoc multifaria significacione variatur. Caligo umbra est de spissitutinie aeris effecta. Et dicta caligo quod maximae aeris calore signatur. Iuxta allegoriam vero significat caligo divinorum secretorum operimentum. Unde legitur in Exodo, \textit{Stetit populus de longe, Moyses autem accessit ad caliginem, in qua erat deus.}\textsuperscript{97} Turba quippe populi allegoriarum caliginem non valet penetrare, quia valde [295C] paucorum est spiritalem intellectum rimari. Quia enim mentes carnalium sola saepe hystoria pascuntur, loquente deo, \textit{stetit populus de longe}, quia vero spiritales quique allegoriarum nubem penetrant, et spiritualiter dei verba cognoscunt, \textit{Moyses accessit ad caliginem, in qua erat deus.}\textsuperscript{98} Quia non ea claritate deus ab inferioribus cernitur, qua in superioribus dominatur. Quae sententia et aliter intellegi potest. \textit{Caligo} vero hic diabolicus est, qui hominum mentes innubilat, dum veritatis splendorem non facit videre quos possidet. \textit{Sub pedibus eius}, quia sine dubio maiestate domini salvatoris conculcatur daemonum exsecrando nequitia, sicut in nonagesimo Psalmo dicturus est, \textit{Super aspidem et basiliscum [295D] ambulabis et conculcabis leonem et draconem.}\textsuperscript{99} Item caligo significat caecitatem cordis persecutorum. Hinc dominus ad Job ait, \textit{Quis clausit ostiis mare quando erumpebat quasi de vulva procedens. Cum ponerem nubem vestimentum eius, et calagine illud quasi pannis infantiae obvolverem.}\textsuperscript{100} Mare seviens nube induitur, quia crudelitas persecuentium stultitiae suae velamento vestitur et perspicuam veritatis lucem videri non sufficit; et id quod agit per crudelitatem, per caecitatem non agnoscit. Quia ergo persecutores ecclesiae instabilitate cordis inquieti, atque huic saeculo dediti, non grandia, sed puerilia sapiunt, superno iudicio constringuntur, ne tantum persequi valeant quantum [296A] volunt. Item umbra et caligo aliquando peccata significant. Unde dicitur, \textit{Sedentes in tenebris et}
umbra mortis.\textsuperscript{101} Aliquando delectationem peccatorum, ut est illud in Job de diabolo dictum, \textit{Sub umbra in secreto calami et iunci, et locis humentibus,}\textsuperscript{102} et quia umbra non longe est ab aere cuius est umbra, ita et mors non longe est a poena. Hinc et in Job dicitur, \textit{Ubi umbra mortis et nullus est ordo et sempiternus horror inhabitat.}\textsuperscript{103}

[9] De hebdomadibus

Hebdomada Graece a septenario numero nomen accepit, humana quidem consuetudine septenis solum acta diebus, sed scripturae sacrae auctoritate multis speciebus insignis quae tamen cunctae, ni [296B] fallor, ad unam finem spectant, nos scilicet admonentes post operum bonorum perfectionem in spiritus sancti gratia perpetuam sperare quietem. Prima ergo singularis illa hebdomada, et a qua caetera formam capessunt, divina est operatione sublimis, quia dominus, sex diebus mundi ornatum complens, septima requievit ab operibus suis.\textsuperscript{104} Ubi notandum quod non ideo senarius numerus est perfectus, quia dominus in eo mundi opera perfecerit sed, sicut Augustinus ait, ideo dominus, qui omnia simul creare valebat, in eo dignatus est operari, quia numerus est ille perfetus, ut etiam per hunc opera sua probaret esse perfecta, qui suis partibus primus impletur, id est sexta, et tertia, et dimidia, quae sunt unum, duo, et tria, et simul sex fiunt. Ad huius [296C] exemplum divinae hebdomadis secunda hominibus observanda mandatur, dicente domino, \textit{Sex diebus operaberis et facies omnia opera tua; septimo autem die sabbati domini dei tui non facies omne opus. Sex enim diebus fecit dominus caelum et terram, mare et omnia quae in eis sunt, et requievit in septimo.}\textsuperscript{105} Quae a populo dei hebdomada ita computabatur antiquitus: prima sabbati vel una sabbati sive sabbatorum, secunda sabbati, tertia sabbati, quarta sabbati, quinta sabbati, sexta sabbati, septima sabbati vel sabbatum. Non quod omnes sabbatorum, hoc est requitionum, dies esse potuerint sed quod a requitionum die, quae

\textsuperscript{101} Psalm 106: 10  
\textsuperscript{102} Job 40: 16  
\textsuperscript{103} Job 10: 22  
\textsuperscript{104} Cf. Genesis 2: 1-2  
\textsuperscript{105} Exodus 20: 9-11
suo nomine et cultu singularis excellebat, prima vel secunda vel tertia vel caetera suo quaeque censerentur ex ordine. Tertia species hebdomadis in [296D] celebratione pentecostes agitur, septem videlicet septimanis dierum et monade, hoc est quinquaginta diebus, impleta. Qua die et Moyses ardentem conscendens in montem legem de caelo accepit, et Christus in linguis igneis spiritus sancti gratiam de caelo misit. 365 Quarta septimi mensis erat hebdomada, qui sollemnitatibus praeclaris paene totus expandebatur; inter quas praeципue dies propitiationis eminebat qua sola per annum pontifex, derelicto foris populo, sancta sanctorum intrabat annuis antea fructibus, hoc est frumenti, vini, et olei, ex ordine collectis; 366 significans Iesum pontificem magnum, impleta dispensatione carnis per proprium sanguinem, caelestis regni ianuas ingressurum, ut appareat nunc [297A] vultui dei pro nobis qui, foris adhuc positi, praestolamur et diligimus adventum eius. 370 Ubi notandum quia, sicut quidam inmundi per legem prima, tertia, et septima die iubebantur lustrari, sic et primus, tertius, ac septimus mensis suis quique ceremoniis exstitero sollemnes. Quinta hebdomada septimi anni quo toto populus ab agricolandi opere legis imperio vacabat, dicente domino, Sex annis seres agrum tuum, septimo cessabis. 375 Sexta, anni iubilei, hoc est remissionis, hebdomada est, quae septem hebdomadibus anorum, hoc est xlviii annis, textur; qua expleta, hoc est quinquagesimo demum anno incipiente, tubae claris resonabant et ad omnes, iuxta legem, possessio revertebatur antiqua. 380 Septima species hebdomadis est qua prophatha Danihel [297B] utitur, more quidem legis septenis annis singulas complectens hebdomadas, sed nova ratione ipsos annos abdrevians, duodenis videlicet mensibus lunae singulos determinans, embolismos vero menses, qui de annuis undecim epactarum diebus ad crescere solent, non lege patria tertio vel altero anno singulos adiciens, sed ubi ad duodecimum numerum augescendo pervenirent pro integro anno pariter inserens. Hoc autem fecit non veritatis cognitionem quaerentibus invidendo sed prophetiae more ipsum quaerentium exercendo ingenium, malum utique suas margaritas a filiis clausas fructuoso sudore investigari quam

106 Cf. Exodus 19: 18
107 Cf. Leviticus 16: 29-34
108 Cf. Hebrews 9 passim
109 Leviticus 25: 3
110 Cf. Leviticus 25: 8-31
profusas a porcis fastidiosa despectione calcari. Verum, ut haec apertius elucescant, ipsa iam
angeli ad prophetam dicta videamus, Septuaginta, [297C] inquit, hebdomadae abreviatae sunt
super populum tuum, et super urbem sanctam tuam, ut consumetur praevaricatio, et finem
accipiat peccatum, et deleatur iniquitas, et adducatur iustitia sempiterna, et ipleatur visio et
prophetia, et unguatur sanctus sanctorum. Nulli dubium quin haec verba Christi
incarnationem designent, qui tuli peccata mundi, legem et prophetas implevit, unctus est
oleo laetitia praecipibus suis, et quod hebdomadae lxx per septenos annos distinctae
quadringsentae et nonaginta annos insinuent. Sed notandum quod easdem hebdomadas non
simpliciter annotatas sive computatas, sed abreviatus, asservit, occulte videlicet lectorem
commonens ut breviores solito annos noverit indicatos. Scito ergo, inquit, et animadverte: ab
[297D] exitu sermonis ut iterum aedificetur Hiersualem usque ad Christum ducem, hebdomadae
septem et hebdomadae sexaginta duae erunt; et rursus aedificabitur platea et muri in angustia
temporis. Ezra narrante, didicimus quod Neemias, cum esset pincerna regis Artaxerxes,
vicesimo anno regni eius, mense Nisan impetraverit ab eo restaurari muros Hierusalem, templo
multo ante Cyro permittente constructo. Ipsum quoque opus ut dictum est in angustia
temporis perfecerit, adeo scilicet a finitimis gentibus inpugnatus, ut structores singuli gladio
renes accincti una manu pugnasse, altera murum recuperasse, narrebar. Ab hoc ergo tempore
usque ad Christum ducem hebdomadas lxx computa, hoc est annos duodenerum mensium
[298A] lunarium quadringsentae nonaginta, qui sunt anni solares quadringsentae septuaginta
quinque. Siquidem Persae a praefato vicesimo anno regis Artaxerxes usque ad mortem Darii

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111 Cf. Matthew 7: 6
112 Daniel 9: 24
113 John 1: 29
114 Matthew 5: 17
115 Psalm 45: 7, 44: 8
116 Daniel 9:25
117 Cf. Nehemiah 1: 11 - 2: 1
118 Cf. Nehemiah 4: 17-18
regnaverunt annis cxvi. Exhinc Macedones usque ad interitum Cleopatrae annis trecentis. Inde Romani usque ad septimum decimum Tiberii caesaris annum monarchiam tenuerunt annis lviii, qui sunt simul, ut diximus, anni ccclxxv, et continentur circulis decemnovennalibus xxv. Decies novies enim viceni et quini fiunt ccclxxv. Et quia singulis circulis embolismi vii ad crescunt, multiplica xxv per vii, fiunt clxxv, qui sunt embolismi menses quadringentorum lxxv annorum.

Si ergo vis scire quot annos lunares facere possint, partire clxxv per duodecim, duodecies deni et quaterni [298B] clxviii. xiiiis ergo annos faciunt, et remanent menses vii. Hos iunge ad suprascriptos ccclxxv, fiunt simul ccclxxxvii. Adde et menses superfluos vii, partemque octavi decimi anni imperii Tiberii quo dominus passus est, et invenies a tempore praefinito ad eius usque passionem hebdomadas lxx ad brevias, hoc est annos lunares cccxc. Ad eius vero baptismum, quando unctus est sanctus sanctorum descendente super eum spiritu sancto sicut columba, non solum hebdomadas vii et lx duas fuisse completas, sed et partem iam septuagesimae hebdomadis inchoatam. Et post hebdomadas, inquit, lx duas occidetur Christus, et non erit eius populos qui eum negaturus est. Non statim post lx duas hebdomadas, sed in fine septuagesimae hebdomadis occisus est Christus quam [298C] ide, quantum conicere possumus, segregavit a caeteris, quia de hac erat plura relaturus. Nam et Christus in illa crucifixus, et a populo perfido non modo in passione verum continuo, ex quo a Johanne praedicari coepit, negatus est. Quod autem sequitur, et civitatem et sanctuarium dissipabit populus cum duce venturo, et finis eius vastitas, et post finem belli statuta desolatio, non ad lxx hebdomadas pertinet. Praedictum enim fuerat quod ipsae hebdomadae ad Christi usque ducatum pertingerent, sed scriptura, praedicto adventu et passione ipsius, quid etiam post hanc populon qui eum recipere nollet, esset eventurum ostendit. Ducem enim venturum Titum dicit, qui quadragesimo anno dominicae passionis ita cum populo Romano et civitatem et sanctuarium [298D] dissipavit ut non remaneret lapis super lapidem. Verum his per anticipationem praebibatis, mox ad exponendum

120 Daniel 9: 26
121 Daniel 9: 26
hebdomadae quam omiserat redit eventum. Confirmabit autem pactum multis hebdomada una.  

Hoc est in ipsa novissima in qua vel Johannes baptista vel dominus et apostoli predicando multos ad fidem converterunt. Et in dimidio hebdomadis deficiet hostia et sacrificium. Dimidium hebdomadis huius quintus decimus annus Tiberii caesaris erat quando, inchoato Christi baptismate, hostiarum purificatio fidelibus paulatim vilescere coepit. Item quod sequitur, et in templo erit abhominatio desolationis et usque ad consummationem et finem perseverabit desolatio, [299A] ad sequentia tempora respicit, cuius prophétiae veritatem et historia veterum et nostrorum hodieque temporum testatur eventus. Octava species hebdomadis uniformis et sola sine circuitu revolutionis extans ad figuram per omnia primae hebdomadis labentibus huius saeculi conficitur aetatis. Prima enim die facta est lux, et prima aetate homo in Paradisi amoenitate locatur. Divisa luce a tenebris factus est vesper, et separatis dei filiis a semine nequam. Non longe post natis gigantibus corrupta est omnis terra; donec creator, poenitens se hominem fecisse, mundum diluvio perdere disponent. Secunda die firmamentum in medio libratur aquarum; secunda aetate arca in medio fertur aquarum, hinc fonte abissi subportata illinc caeli [299B] cataractis compluta; quae habuit vesperum, quando filii Adam pedes ab oriente moventes, qui in construenda superbiae turre convenerant. Linguarum divisione multati et ab invicem sunt dispersi. Tertia die, aquis in congregationem unam coactis, apparuit arida silvis herbisque decora; et tertia aetate, firmatis in cultu daemonum nationibus, Abraham patriarcha, cognitionem patriamque deserens, sanctorum semine fecundatur. Huic advenit et vesper quando gens Hebraea, malis coacta prementibus contra dei voluntatem, regem sibi petit, qui mox ordinatus primo domini sacerdotes prophetasque trucidat; postmodum ipse cum tota gente gladio perit allophilorum. Quarta die caelum luminaribus ornatur; quarta aetate gens illa, [299C] caelesti fide inclyta regno David et Salomonis gloriosa, templi etiam sanctissimi altitudine totum nobilitatur in orbem. Sed accepit et vesperum, quando crebrescentibus peccatis regnum illud a Chaldaeis dissipatum, templum dirutum, et tota gens est Babiloniam translata. Quinta die pisces avesque aquis eductae, hii patriis manent undis, illae aera terramque pervolant; quinta aetate

123 Daniel 9: 27
124 Daniel 9: 27
125 Daniel 9: 27
multiplicatus in Chaldaea populus Israhel, pars caelestium desideriorum pennis fulta
Hierosolimam petunt, pars volatu destituta virtutum inter Babyloniae fluenta resedent. Successit
et vesper quando, imminente iam salvatoris adventu, gens Iudaea propter scelerum
magnitudinem Romanis tributaria facta, insuper et alienis est subacta regibus. Sexta die terra suis
[299D] animantibus impletur et homo primus ad imaginem dei creatur, moxque ex eius latere
dormientis sumpta costa femina fabricatur, sexta aetate preconantibus prophetis filius dei in
carne qui hominem ad imaginem dei recrearet apparuit, 126 qui, dormiens in cruce, sanguinem et
aquam de latere, unde sibi ecclesiam consecraret, emanavit. Huius aetatis vesperr ceteris
obscurior in Antichristi est persecutione ventura. Septima die consummatis operibus suis deus
requievit, eamque sanctificans sabbatum nuncupari praecipit, quae vesperum habuisse non
legitur. Septima aetate iustorum animae post optimos huius vitae labores in alia vita perpetuo
requiescunt, quae nulla umquam tristitia maculabitur, [300A] sed maiori insuper resurrectionis
glolia cumulabitur. Haec aetas hominibus tunc coepit, quando primus martyr Abel, corpore
quidem tumulum, spiritu autem sabbatum perpetuae quietis intravit. Perficietur autem quando
receptis sancti corporibus in terra sua dupplicia possidebunt, 127 laetitiam sempiternam erit eis. Et
ipsa est octava pro qua sextus Psalmus inscribitur. Credo quia in sex huius saeculi aetatibus pro
septima vel octava illius saeculi est aetate supplicandum, in qua, quia iusti gaudia sed reprobis
sunt supplicia percepturi, Psalmus hic ingenti pavore incipit, currit, finitur, Domine ne in ira tua
arguas me, 128 et cetera.

[10] De mensibus

[300B] Menses dicti a mensura, qua quisque eorum mensuratur. Sed melius a luna quae Graeco
sermone ‘mene’ vocatur; nam et apud eos menses vocantur ‘menes’ sed et apud Hebraeos,
Hieronimo teste, luna, quam ‘iare’ nominant, mensibus nomen dedit; unde et Iesus filius Sirach
qui utique Hebraice scripsit, de luna loquens, ait, Mensis secundum nomen est eius. 129 Antiqui

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126 Cf. John 19: 34
127 Cf. Isaiah 61: 7
128 Psalm 6: 2
129 Ecclesiastes 43: 8
enim menses suos non a solis sed a lunae cursu computare solebant; unde quoties in scriptura
sacra sive in lege seu ante legem, quota die mensis quid factum dictumve sit indicatur, non aliud
quam lunae aetas significatur; a qua semper Hebraei, quibus credita sunt eloquia dei, antiquo
patrum more menses observare non cessant, primum mensem novorum, qui Paschae ceremoniis
sacratus est, nisan appellantes, qui [300C] propter multivagum lunae discursum nunc in Martium
mensem, nunc incidit in Aprilem, nunc aliquot dies Maiens occupat. Sed rectius Aprili
deputatur quia semper in ipso vel incipit vel desinit vel totus includitur, ea dumtaxat regula, cuius
et supra meminimus, observata, ut quae quinta decima post aequinoctium luna exstiterit primum
sequentis anni mensem faciat, quae vero antea, novissimum praecedentis, sicque per ordinem.
Secundus eorum mensis Iar Maio; tertius Sivan Junio; quartus Thamul Iulio; quintus Aab
Augusto; sextus Elul Septembri; septimus Thever Octobri, quem propter collectionem frugum et
celeberrimas in ipso festivitates novum annum appellant; octavus Maresvan Novembri; nonus
Casleu Decembri; decimus Debeth Ianuario; [300D] undecimus Sabat Februario; duodecimus
Adar Martio simili ratione comparatur. Quos videlicet menses, propter lunae circulum qui xx
novem semis diebus constat, tricenis, undetricenisque diebus alternantes, secundo demum vel
tertio anno exacto mensem superfluum, qui ex annuis undecim epactarum diebus confici solet,
interkalant. Unde nonnullo moveor scrupulo quomodo maiores nostri diem qua lex data est, quae
est tertia mensis tertii quinquagesimam ab agni occisione, computent, ponentes videlicet primi
mensis residuos dies numero decem et septem, quia tredecim priores fuerant ante Pascha
transacti, secundi xxx, tertii tres; qui fiunt simul dies quinquaginta, cum constet duas menses
[301A] lunares non sexaginta sed quinquaginta novem diebus terminari. Ideoque si paschalis
mensis xxx diebus computatus xvii sui cursus dies post pascha retinuerit, secundum iam mensem
non triginta sed undetriginta diebus debere concludi, ac per hoc in summa temporis memorati
non plus quam undequinquaginta dies inveniri; nisi forte putandum est sinedochicos, quae est
regula sanctae scripturae frequentissima, a parte totum computari. Verum haec utcumque acta vel
computata fuerint, claret tamen Hebraeos ad lunae cursum suos menses observare consuessa.
Nec aliter in Genesi recte sentiendum, ubi Noe cum suis septimo decimo die secundi mensis
archam ingressus et xxvii eiusdem mensis die post diluvium egressus asseritur,130 quam annum

130 Cf. Genesis 28: 15-18
[301B] solis integrum, hoc est trecentorum sexaginta quinque dierum, esse descriptum. Quia videlicet luna, quae praesenti anno, verbi gratia, per nonas Maias septima decima existit, anno sequente vicesima vii pridie nonas Maias occurret. Notandum sane quod nimium falluntur qui mensem definiendum vel ab antiquis definitum autamant quamdiu luna zodiacum circulum peragit, quae nimirum, sicut diligentior inquisitio naturarum edocuit, zodiacum quidem septem viginti diebus et octo horis, sui vero cursus ordinem viginti novem diebus et duodecim horis, salva sui saltus ratione, conficit. Ideoque rectius ita definiendum quod mensis lunae sit luminis lunaris circuitus ac redintegratio de nova ad novam. Solaris autem mensis digressio sit solis per duodecimam [301C] partem zodiaci, id est signiferi circuli, quae triginta diebus et decem semis horis impletur, viginti duabus videlicet horis ac dimidia lunari mense productior, ex quibus undecim epactarum dies et quadrans annuatim succrescere solent, duodecies enim viceni et bini ducentos sexaginta quattuor faciunt, quas esse horas undecim dierum hinc facile patet quia undecies viceni et quaterni eandem summam conficiunt; porro duodecies semis sex faciunt, quae annuae sunt horae quadrantis. Siquidem luna duodecim suos menses undecim diebus, ut dictum est, et quadrante breviores totidem solis mensibus agens, in his tandem peragendis tredecies zodiaci ambitum lustrat. Iuxta allegoriam vero mensis qui a luna nomen et ordinem accepit, significat [301D] sanctae ecclesiae coadunationem sive profectum. Unde et Job ait, Quis mihi tribuat ut sim iuxta menses pristinos?\textsuperscript{131} Quid nomine signat mensium nisi collectiones animarum sive aliquando mensis pro perfectione. Reminiscatur ergo per vocem Job ecclesia perfectionis pristinae et reducat ad memoriam quanta perfectio praedicationis suae collectis animabus reportatam lucra. Menses duodecim, eiusdem numeri sunt apostoli, ut in Apocalypsi, \textit{Per singulos menses reddentia fructum suum}.\textsuperscript{132} Item mensis sicut et sabbatum pro requie sempiterna posita inveniuntur, ut est illud Esaiae, \textit{Et erit mensis ex mense, et sabbatum ex sabbato},\textsuperscript{133} ut de carnalibus sabbatis, mensibusque fiant spiritalia [302A] sabbata delicata, qui sabbatismus dei populo reservatur. Et mensis spiritalis, quando a puncto usque ad punctum luna complebitur, et suo currit ordine, ut efficiat mensem integrum calendarium. Quod autem luna

\textsuperscript{131} Job 29: 2
\textsuperscript{132} Apocalypse 22: 2
\textsuperscript{133} Isaiah 66: 23
quae a sole illuminatur, significet ecclesiam a Christo illuminatam, non indiget explanari, et sabbatum requiem significat. Veniunt ex neomeniis et sabbatis, qui sex diebus in quibus factus est mundus, transcessis festinant ad septimum diem, id est sabbatum, in quo vera est requies. *Veniens omnis caro ut adoret coram facie mea dicit dominus,* non populus Iudeorum tantum nec in sola Hierusalem sed omne humanum genus ubique in toto orbe adoret patrem in spiritu et veritate.


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134 Isaiah 66: 23
135 Vergil, *Georgics* I, 340
morbis, facit hoc confinium frigoris et caloris, et conpugnantia inter se contrariorum aerum.

560 Mistice autem ver baptismi novitatem significat aut renovationem vitae post frigus infidelitatis et pigritiae torporem, sive resurrectionem corporum post mortis occubitum; unde dominus praecepit in lege mensem novarum observare et verni principium quando eduxit dominus filios Israel de [303A] terra Aegypti per mare rubrum. In quo et celebrare pascha iussit, quo etiam tempore salvator post passionem a morte surrexit et spem nobis resurrectionis tribuit. Aestas autem

venturae iocunditatis praefiguratio est, et fervorem caritatis exprimit, unde est illud in Psalmo, Aestatem et ver tu fecisti ea.\(^{136}\) Et in Salomone, Iam enim hiemps, transiit, et recessit; flores apparuerunt in terra.\(^{137}\) Aestas futura beatitudo, ut in Salomone, Propter frigus piger arare noluit, mendicabit aestate, et non dabitur et.\(^{138}\) Per haec duo tempora significat fideles diversa morum qualitate pollentes; alii enim sunt tamquam aestus fidei calore ferventes ad martyrium usque perducti; alii mansuetudine temperati tamquam ver, aequabili domino [303B] devotione familant. Omnia enim et ista et talia ipse fecit, cuius gratia conceditur, quod in hominum bona voluntate monstratur. Autumnns etiam in quo colliguntur fruges et tempus est messis atque vindemiae. Tempus universalis iudicii significat, quando unusquisque operis mercedem recipiet et metet fructum laboris sui. Iuxta illud apostoli, Omnes nos oportet stare ante tribunal Christi ut recipiat unusquisque prorsus suum gessit sive bonum, sive malum,\(^{139}\) quoniam qui seminat in carne sua de carne et metet corruptionem qui autem seminat in spiritu, de spiritu metet vitam aeternam.\(^{140}\) Sic enim dominus in evangelio ait, Messis vero consummatio saeculi est, messores autem angeli dei.\(^{141}\) Et alibi, sic est regnum dei, quemadmodum si [303C] homo iacia semem in terram et dormiat, et exsurgat nocte ac die et semen germinet et increscat dum nescit ille. Ultro enim terra fructificat, primum herbam, deinde spicam, deinde plenum

\(^{136}\) Psalm 73: 17
\(^{137}\) Canticles 2: 11-12
\(^{138}\) Proverbs 20: 4
\(^{139}\) 2 Corinthians 5: 10
\(^{140}\) Galatians 6: 8
\(^{141}\) Matthew 13: 39
frumentum in spica, et cum se produxerint fructus, statim mittat falcem, quoniam adest tempus messis.\textsuperscript{142} Tunc enim mittet filius hominis angelos suos et colligent de regno eius omnia scandala alligantque zizania fasciculis ad comburendum, triticum autem congregant in horrea sua.\textsuperscript{143} Item autemus aliando transacta salutis tempora significat, ut in Michea, Vae mihi, quia factus sum sicut qui colligit racemos in autumno.\textsuperscript{144} Hiemps vero tribulationem significat vel terminum mortalis vitae. Unde dominus praecepit in evangelio [303D] discipulis dicens, Orate ut non fiat fuga vestra hieme vel sabbato.\textsuperscript{145} Si de captivitatem Hierusalem hanc sententiam voluerimus accipere quando a Tito et Vespasiano capta est orare debent ne fuga eorum hieme vel sabbato fiat quia in altero duritia frigoris prohibet ad solitudinem pergere et in montibus desertisque latitare in altero autem transgressio legis est, si fugere voluerint, aut mors imminens, si remanserint. Si autem de consummatione mundi intellegitur, hoc praecepit ut non refrigescat fides nostra et in Christum caritas neque ut otiosi in opere dei torpeamus virtutum sabbato.

[12] De anno

[304A] Annus vel ab innovando cuncta quae naturali ordine transierant, vel a circuitu temporis nomen accepit, quia veteres ‘an’ pro ‘circum’ ponere solemant, ut Cato dicit in originibus, ‘oratorum an terminum’, id est ‘circum terminum’, et ‘ambire’ dicitur pro ‘circumire’. Est autem annus lunaris, est et solaris, est et errantium discretus stellarum, est et omnium planetarum unus quem magnum specialiter nuncupant. Sed lunaris annus quadrifariae accipitur; primus est namque cum luna xxvii diebus et octo horis zodiacum percurrens ad id signum ex quo egressa est revertitur; secundus duobus diebus et iii horis prolixior, qui consuete mensis appellatur [304B] cum solem, a quo nova digressa est, xxviiii diebus et xii horis exactis iam defecta repetit. Tertius, qui xii mensibus huiusmodi, id est diebus cccli, expletur et vocatur communis eo quod duo saepissime tales pariter currant. Quartus qui ‘embolismus’ Graece dicitur, id est super

\textsuperscript{142} Mark 4: 26-29  
\textsuperscript{143} Matthew 13: 41, 30  
\textsuperscript{144} Micah 7: 1  
\textsuperscript{145} Matthew 24: 20
augmentum, et habet xiii menses, id est dies ccclxxxiii. Qui uterque apud Hebraeos a principio
mensis paschalis incipit, ibidemque finitur; apud Romanos vero ab incipiente luna mensis
Ianuarii sumit initium, ibique terminatur. Item solis est annus cum ad eadem loca siderum redit,
peractis trecentis sexaginta quinque diebus et sex horis, id est quadrante totius diei. Quae pars
quater ducta cogit interponi unum diem quod Romani bissextum vocant, ut ad eundem circuitum
[304C] redeatur. Quartus solaris giri annus bissextilis est, ceteris tribus uno die prolixior, quo
conficit annis. Sive enim decies novies viceni et octoni seu vicies octies deni ac noveni
multiplicentur, quingentorum xxx duorum numerum complent. Unde fit ut idem circulus magnus
decemnovenales [304D] lunae circulos xxviii, solis autem, qui vicenis octonisque consummari
solent annis, x et novem habeat circulos: bissextos decies novies septenos, id est centum triginta
tres; menses solares vicies octies ducentos viginti et octo, id est sex milia trecentos octoginta
quattuor; menses autem lunares vicies octies ccxxxv, id est vi milia dlxxx. Dies, exceptis
bissextis, vicies octies vi milia dccccxxxv, id est exciiii milia clxxx; adpositis autem bissextis,
cxciii milia cccxiii. Qui ubi memoratam ex ordine mensium dierumque summam compleverit,
mox in seipsum revolutus, cuncta quae ad solis vel lunae cursum pertinent eodem quo
praeterierant semper tenore restaurat. Tantum anni dominicae [305A] incarnationis suo certo
tramite proficiunt in maius et indicationes quoquo ferantur in ordine, nil siderum cursum, atque
ideo nil paschalis calculi ordinem, movent. Anni enim iuxta allegoriam aliquando aeternitatem,
aliquando brevitatem humanae vitae significant, in illo enim prophetico ubi ad deum dicitur, Tu
autem idem ipse es et anni tui non deficient.\footnote{Psalm 101: 28} Natura eius sub brevitate declaratur, quia ipse
solus per se novit esse, qui ut sit, alio non eget adiutore. Alibi autem ubi scriptum est, Anni nostri
sicut aranea meditabuntur,\footnote{Psalm 89: 9} malignitatem vitae nostrae posita similitudo declarat. Aranea est


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148 Psalm 89: 10
149 Psalm 64: 12
150 Isaiah 61: 2
151 Luke 13: 8
152 Cf. Exodus 21: 2
De saeculo

[306A] Saecula generationibus constant; et inde ‘saecula’, quod se sequantur: Abeuntibus enim aliis alia succedunt. Hinc quidam quinquagesimum annum saeculum dicunt, quem Hebraei iubileum vocant. Ob hanc causam et ille Hebraeus, qui propter uxorem et liberos amans dominum suum aure pertusa et servitio subiugatus, servire iubetur in saeculum, hoc est usque ad annum quinquagesimum.\(^{153}\) Aliquando pro praesenti vita positum est, ut est illud, Confitemini domino quoniam bonus quoniam in saeculum misericordia eius.\(^{154}\) Saeculum huius vitae significat cursum, ubi miseri sunt quicumque delinquunt; ubi fas est corda nostra converti et misericordiam postulari. Ibi enim damnatio est confiteri peccatum, ubi constat esse iudicium. Aliquando pro aeternitate ponitur, ut est illud, memor fuit in saeculum testamenti sui,\(^{155}\) quia quicquid dominus promisit perenni firmitate mansurum est. Aliquando praeteritum tempus significat, ut est illud, misericordia domini a saeculo,\(^{156}\) hoc est a primordio mundi declarata est infidelibus suis et usque in saeculum saeculi,\(^{157}\) hoc est in praesenti et in futuro saeculo. Sic ergo ter hic positum saeculum aeternitatem domini absolute designat, quoniam et ille ante saeculum et in saeculo et post istud saeculum misericors esse monstratur. Aetas plerumque dicitur et pro uno anno, ut in annalibus, et pro septem, ut [306C] hominis, et pro centum, ut pro quovis tempore. Unde et aetas tempus, quod de multis saeculis instruitur. Et dicta ‘aetas’, quasi ‘aevitas’, id est similitudo aevi. Nam ‘aevus’ est aetas perpetua, cuius neque iniitium neque extremum nascitur, quod Graeci vocant ‘eonas’; quod aliquando apud eos pro saeculo, aliquando pro aeterno ponitur. Unde et apud Latinos est dirivatum. ‘Aetas’ autem proprie duobus modis dicitur: aut enim hominis, sicut infantia, iuventus, senectus: aut mundi, cuius prima aetas est ab Adam usque ad Noe; secunda a Noe usque ad Abraham; tertia ab Abraham usque ad David; quarta a David usque ad transmigrationem Iuda in Babiloniam; quinta deinde usque ad adventum salvatoris in carne;

\(^{153}\) Cf. Exodus 21: 5-6

\(^{154}\) 1 Paralipomenon 16: 34

\(^{155}\) Psalm 104: 8

\(^{156}\) Psalm 40: 14

\(^{157}\) Psalm 40: 14

680 [14] De sex aetatibus saeculi

De sex huius mundi aetatibus ac septima vel octava quietis vitaeque caelestis et supra in comparatione primae hebdomadis, in qua mundus ornatus est, aliquanta perstrinximus, et nunc in comparatione aevi uni us hominis, qui microcosmos Graece a philosophis, hoc est minor mundus solet nuncupari, de eisdem aliquanto latius exponemus. Prima est ergo mundi huius aetas ab Adam usque ad Noe, continens annos iuxta Hebraicam veritatem mille sexcentos quinquaginta sex, iuxta septuaginta interpretes ii milia cccxlii, [307A] generationes iuxta utramque editionem numero x. Quae universalis est deleta diluvio, sicut primam cuiusque hominis oblivio demergere consuevit aetatem; quotus enim quisque est qui suam recordetur infantiam? Secunda aetas a Noe usque ad Abraham generationes iuxta Hebraicam auctoritatem complexa decem, annos autem ccxcii, porro iuxta lxx interpretes annos dccccxl, generationes vero xi. Haec quasi pueritia fuit generis populi dei et ideo in lingua inventa est, id est Hebraea, a pueritia namque homo incipit nosse loqui post infantiam, quae hinc appellata est, quod fari non potest. Tertia ab Abraham usque ad David generationes iuxta utramque auctoritatem xiiii, annos vero dccccxl komplectens. Haec quaedam velut adulescentia fuit [307B] populi dei, a qua aetate quia incipit homo posse generare, propterea Matheus evangelista generationum ex Abraham sumpsit exordium, qui etiam pater gentium constitutus est, quando mutatum nomen accepit. Quarta a David usque ad transmigrationem Babilonis, annos habens iuxta Hebraicam veritatem cccclxxiii, iuxta lxx translationem duodecim amplius, generationes iuxta utrosque codices xvii; quas tamen evangelista Matheus certi mysterii gratia xiiii ponit. A qua velut iuvenilis aetas in populo dei regum tempora coeperunt, haec namque in hominibus aetas apta gubernando solet existere regno. Quinta quasi senilis aetas a transmigratione Babilonis usque ad adventum domini salvatoris in carne, generationibus [307C] et ipsa xiiii, porro annis dlxxxviii extensa. In qua, ut gravi senectute fessa, malis crebrioribus plebs Hebraea quassatur. Sexta, quae nunc agitur, aetas, nulla generationum vel temporum serie certa, sed ut aetas decrepita ipsa totius saeculi morte consumenda. Has erumnosas plenasque laboribus mundi aetates quique felici morte vicerunt; septima iam sabbati perennis aetate suscepti, octavam beatae resurrectionis aetatem, in qua semper cum domino regnent, expectant.
[15] De festivitatibus

Festivitas dicta a festis diebus, quasi festiditas, eo quod in eis sola res divina fit. Quibus contrarii sunt fasti, in quibus ius fatur, id est dicitur. Sollemnitas a sacris dicitur, ita suscepta ut mutari ob religionem [307D] Christi non debeat, ab solito, id est firmo atque solido nominata. Celebratam autem vocatur quod non ibi terrena, sed caelestia tantum aguntur. Pascha festivitatum omnium prima est, de cuius vocabulo iam superius dictum est. Pentecoste, sicut et pascha, apud Hebraeos celebris dies erat, quod post quinque decadas paschae celebratur, unde et vocabulum sumpsit.


158 Cf. Exodus 25: 30 passim
159 Psalm 80: 4
 clamaverunt, *Osanna, benedictus qui venit in nomine domini rex Israel.* Vulgus autem ideo hunc diem ‘capitilavium’ vocat, quia tunc moris est lavandi capita infantium, qui unguendi sunt ne observatione quadragesimae sordidata ad unctionem accederent. Hoc autem die simbolum competentibus traditur propter confinem dominicae paschae sollemnitatem, ut qui iam ad dei gratiam perciendam festinant, fidem, quam confiteantur, agnoscant. Caena dominica dicta est, eo quod in eo die salvator pascha cum suis discipulis fecerit; quod et hodieque, sicut est traditum, celebratur, sanctumque in eo die chrisma conficitur, atque initium novi testamenti et veteris testamenti cessatio declaratur.

[16] De sabbato

Sabbatum ab Hebrais ex interpretatione vocabuli sui requies nominatur, quod deus in ipso, perfecto mundo, requievisset. Siquidem in eo die requievit dominus in sepulchro, ut quietis illius mysterium confirmaret, quam Iudaeis observandam in umbra futuri preceptum est. Sed postquam Christus in sepultura sua eius figuram adimplevit, observatio eius quievit.

[17] De dominico die

Dominicus dies proinde vocatur, quia in eo resurrectio domini nostri declarata est. Qui dies non Iudaeis sed Christianis in resurrectione domini declaratus est, et ex illo habere coepit festivitatem suam. Illis enim solum celebrandum sabbatum traditum est, quia erat ante requies mortuorum; resurrectio autem nullius erat qui resurgens a mortuis non moriretur. Postquam autem facta est talis resurrectio in corpore domini, ut preiret in capite quod corpus ecclesiae speraret in fine, iam dies dominicus, id est octavus, qui et primus, celebrari coepit.

**EXPLICIT LIBER DECIMUS**

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160 John 12: 13
2.5  *Apparatus fontium*

For the sources identified, I have drawn freely on the work of Heyse. However, I have checked
all her references, correcting some, and adding citations to passages which she labeled as
‘unbekannt’. All the sources exist in modern editions and are listed in the bibliography.

Hrabanus very seldom paraphrases (when he does it is usually with excerpts from the *Clavis
melitonis*) and usually cites passages verbatim. Correspondences solely in content or concept to
other texts are not included. The line numbers refer to the text presented in this edition.

Ambrosiaster  *In epistolam ad romanos* (Ambr. Rom.)
Bede  *De temporum ratione* (DTR)
Bede  *De divisionibus temporum liber* (DDTL)
Bede  *In sancti Johannis evangelium expositio* (Bede Joh.)
Bede  *In sancti Marci evangelium expositio* (Bede Mar.)
Bede  *Super epistolas catholicas expositio in primam epistolam sancti Johannis* (Bede epistolas)
Cassiodorus  *Expositio in psalmus* (Cass. Psal.)
*Clavis melitonis* (Clav.)
Gregory  *Moralia in Job* (Greg. Moral.)
Paterius  *Liber de expositione veteris ac novi testamenti* (Pat. exp. v+n test.)
Isidore  *Etymologiae* (Isid. Etym.)
Origen  *Commentaria in epistolam beati Pauli ad romanos* (Orig. Rom.)
Origen  *Commentarium in Isaiam prophetam* (Orig. Comm. Isa.)
Origen  *Commentarii in epistolae sancti Pauli in primum epistolam ad corinthios* (Orig. 1 Cor.)

Hrabanus Maurus  *De rerum naturis*  Book 10

1.  *De temporibus*  

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</table>
2.6 Apparatus criticus

Variants are reported for A Ar C Pg Pv Ro Rs. The variants for Pc have been excluded as it was determined that Pc is a codex descriptus of A and, therefore, does not add any new data to inform the structure of the stemma codicum. For conciseness, Lectiones singulares have been omitted for all manuscripts except for C since it represents the illustrated branch of the tradition and, therefore, many of its variants also appear in the texts of the later illustrated manuscripts.

However, there is a lacuna in the text of C: lines 415-473 (the second half of chapter 9, De hebdomadibus, c. 750 words: Ad eius vero baptismum quando...Domine ne in ira tua arguas me etc.), roughly 8 per cent of the text. Therefore, variants reported for lines 415-473 can only be traced back as far as φ and cannot be attributed to ω. There are also two lacunae in Ar: lines 1-86 (chapters 1, 2, 3 and the first half of chapter 4: Tempora igitur a temperamento nomen...significat in illa sententia evangelii qui) and lines 586-717 (the end of chapter 11 to the beginning of chapter 15 inclusive: Orate ut non fiat fuga vestra hieme...nunc iterum per figuram repromissionis). Together the lacunae in Ar are c. 2800 words which equals about 30 per cent of the text. Therefore, no variants reported for lines 1-86 and 586-717 can be attributed to the hyp-hyparchetype λ. When emendations to the Latin text presented here are based on editions of the source text, the name of the editor of the edition of the source text is listed. The following abbreviations are used: ‘add.’ equals ‘added (in)’; ‘codd.’ equals ‘codices’; ‘conj.’ equals ‘coniecit’; ‘emend.’ equals ‘emendavit’; ‘om.’ equals ‘omitted (in)’; ‘suppl.’ equals ‘supplevit’.

1-86 Tempora igitur a temperamento nomen...significat in illa sententia evangelii qui] om. Ar
3 temperamento] temperando C
5 ergo] enim C
6 discurrunt β
9 intercalari] om. C
12 vero] autem β
15 deo vero C
16 tempora] et add. C β
21 iniqui] om. β
22 cultum C
23 absumi Pg Pv
praedicti sunt] praedictis \( \beta \)

debeat \( \varphi \)

significat...de cursum] brevissimum temporis de cursum significat \( C \) \( Pg \) \( \beta \)

resurgemus \( Pg \) \( \beta \)

quid] quod \( C \)

est diei \( C \)

scilicet] sed \( A \) \( C \) \( Pg \) \( Ro \)

artificialis] articulis \( A \) \( Pg \) \( Pv \) : articularis \( C \)

horae] \( om. \) \( C \)

acceptabile \( C \) \( Ro \)

dari \( A \) \( Pg \)

tempus est saeculi \( C \)

iuxtam \( C \)

circuitus \( \beta \)

quod] qui \( \beta \)

terram texerant \( \beta \)

superficiem terrae \( C \)

latitudinem \( Pg \) \( \beta \)

Psalmistae] in psalmus \( \lambda \) \( Pv \)

eructuat \( A \) \( C \)

illud \( C \)

prodesse \( C \)

intelle\( \omega \)

diurna caritatem lux \( C \)

evangeliste \( \varphi \)

evangelistae \( \varphi \)

noctis] filii \( add. C \)

dei \( C \)

die] enim \( add. C \)

virtutem \( \lambda : virtute \) \( C \)

significant \( C \)
106 ratio[n] secl. Caillau & Guillon
108 ambulemus C
108 in die] om. C
111 declaratur] declaravit C
112 otiosus C
114 declaravit C
116 et defecisse] om. β
118 nec eius] necque β
118 quam] qua C
119 permanens λ
120 psalterio C Ro
122 psalterio C β
123 utβ] et ω
124 vivificabit] vivificavit C
125 die tertio suscitabit nos] vivificavit C
127 unus C
128 qui in requiem] inquirendum ω: emend. Pitra
128 dei] domini C
130 continens C
133 obtinet] continet C
135 intellegitur eternas divinitas C
135 psalterio A C
139 enim] om. C
145 enimβ] autem ω
146 baptismate] in add. C
148 cognovit C
149 istius mundi C
149 << suppl. Adriaen
151 ad stabo C
152 resurgunt φ
153 reddit φ: reddet deus C
153 dicta] ita C
154 plenam β
156 cubas φ
158 ruinam C
160 currum C
164 demoratus] demonstratus λ
165 vere] om. C
168 sui] om. C
171 psalmus C
171 Vesper] et add. C Pg Ro
172 exaudies C
174 prodidisse] prodisse se φ
175 dicit] ait C
176 esse] om. C
177 respondet] respondit ω : emend. Adriaen
182 dicta] est add. β
184 natura C
185 Salomon] in add. C
186 utique] quidem β
188 cursus solis C
191 quam] quia C
191 umbra noctis usque ad aeris aetheris C
193 sidus] om. C
199 discurrendi C
203 et¹] om. C
204 significat] om. C
207 conceptus C
208 qui diem se] que diem φ
208 et] ex C
208 promissionem Ar Rs
210 peccatis C
se] sub \( \omega \) : emend. Adriaen

illuminatio] mea add. Ar C \( \beta \)

in deliciis suis illuminatio C

hac] ac C

autem] om. C

in tempore] om. C

habet C

adolescentia \( \phi \)

a stella] autem ab stella C

contiscere \( \phi \)

ag] agit C

intempesta] tempesta \( \phi \) : testas C : conj. Lindsay

gallicinium] autem \( \lambda \)

prenuntio C

sole C

quem nos per derivationem aurora C

eois eurus equis…et eoasque] eo oerus equis oasque \( \lambda \) : eo us eurus equis et iterum eo absque C

saeculi] om. C

enim] eius C

peccatorum atque errorum C

quia] qui C

hoc] om. C

Petri] et add. C Pg

ianuas C

quia] qui A Ar C

hic] enim C

misericordia tua C

opinior A C Pg Pv

doctorem] doctorum \( \omega \) : emend. Hurst

festinamus C
quando] quia C
matutino β
ignorantiam, aliquando infidelitatem peccatorum, et aliquando] om. β
illuminabuntur C
est] om. C
qui] quae C
merentur] debentur C
suæ praesentia cognitionis] sive cogitationis præsenta C
obfundantur C
et pedibus eius] eius et pedibus β
est] erit C
bono] ponitur add. λ
dei] om. C
tuarum] protege me add. β
inquit] om. C
umbra] inquit add. β
me] om. C
et] om. C
nubes Pg*: Ro
vetus testamentum C
psalmo Ar Ro : psalterio C Rs
ponitur umbra C
mortem corporis C
pena C
mala] om. C
umbrosus ω
tenebrosus ϕ
rimare ω
saepe] spe C
cognoscunt] ideo add. C
ea] om. C
intelligi et aliter β

quos] quae ω : emend. Adriaen

quia] equi C

maiestatem ω

volent] valent β

humentibus] umectibus C

unum β

gratiam C β

capescunt C

quia] qui φ

secunda] sabbata C

dies esse potuerint sed quod a requitionum] om. C

quaeque] quoque C

censeretur C

inter quas] in qua β : inter que C

solus β

praestulamur φ

et primus tertius ac] primus et tertius et β

agricolendi C Ro

septima A Pv

quae] quem C

videlicet] scilicet β

qui de] quidem C

annos λ. C Rs

auguescendo ω

utique] ut quae ω : emend. Jones

desperatione] dispositione C : emend. Jones

et impleatur] om. β

quin] quia in C Rs

impetravit C

ipsum quoque] ipsumque ω : emend. Jones
401 narrentur] narrantur \( \omega \) : emend. Jones
406 tenuerunt] om. C
410 duodecies] enim add. C
411 clxviii] om. \( \omega \)
411annis C
411 ad suprascriptos] a supradictos C
413 usque ad eius C
414-473 Ad eius vero baptismum quando...Domine ne in ira tua arguas me et cetera.] om. C
418 populus A Ar
422 dissipavit A Ar
433 inchoante \( \beta \)
434 perseveraverit \( \text{Pg Rs} \)
439 factum A Rs
444 convenerunt \( \varphi \)
450 perit A \( \text{Pg} \)
454 hii] hi \( \text{A Pv} \) : in \( \text{Pg \( \beta \)} \)
456 resedit \( \varphi \)
458 alienigenis subacta est \( \lambda \ \text{Ro} \) : alienis subacta est \( \beta \)
459 ex] om. A Ar Rs
461 ad imaginem] om. \( \beta \)
472 hic] hinc \( \varphi \)
476 et\(^2\)] om. C
477 iare] mene C : mare \( \beta \)
479 quotiens C \( \text{Pg \( \beta \)} \)
483 qui] om. C
486 et] ut \( \varphi \)
488 eorum] om. \( \beta \)
488 Aab] Ab \( \omega \) : emend. Jones
489 Septembri] September \( \omega \) : emend. Jones
489 Octobri] October \( \omega \) : emend. Jones
490 Novembri] November \( \omega \) : emend. Jones
171

491 Decembri] December ω : emend. Jones
491 ianuarius β
491 februarius β
492 martius β
492 circulum] cursum β
493 diebus semis C
497 ante] om. C
498 tricesimi terti t res qui fiunt simul dies] dies tres qui fiunt simul A Pc
502 undequinquaginta] quinquaginta C
502 inveniri] potestant add. C
503 haec] hoc C
504 consuesse] confuisse C
505 sentiendum] sentium C
506 asseritur] iusserit ω : conj. Jones
507 quinque] annorum add. β
509 falluntur] fallantur ω : emend. Jones
513 salva sui] salvas quattuor C
513 ideoque] ideo quia λ
513 sit] siti ω : emend. Jones
514 ac] hac C
514 novam] novum ω : emend. Jones
515 et] om. β
519 sex] sedecim β
521 peragentis β
522 zodiacum C
524 signat] significat C
527 animabus] animalibus C
527 sunt] om. C
527 apocalipsin φ
531 puncto] puncta A Pc
533 significat C
540 autem] om. C
546 et\(2\)] om. C
548 flore C
550 hemisphaerii] hemispherae \(\omega: \) hemisperii \(\beta: \) emend. Lindsay
553 inbrumari] inbrumati \(\omega: \) emend. Lindsay
554 vernum] est \(\add\ \beta\)
554 hivernus C Pv
554 totam \(\beta\)
557 torret C
557 graver \(\omega\)
559 intra \(\varphi\)
562 quando] enim \(\add\ C\)
570 domino] om. C
571 talia] alia \(\omega: \) emend. Adriaen
571 ipse] ipsa \(\omega: \) emend. Adriaen
578 autem] vero \(\beta\)
580 ille] om. C
584 in] om. C
586-717 Orate ut non fiat non fuga...nunc iterum per figuram repromissionis] om. Ar
590 voluerit \(\beta\)
591 mundi] saeculi C
595 an] annum \(\omega\)
596 an] annum \(\omega\)
602 huiusmodi] om. C
604 id est] om. C
605 vero romanos Pg \(\beta\)
613 paschae] om. C
616 xxx] om. A C Pg Pv
616 fit] est C
620 cxxv] cxxv A Pg Rs
620 dlxx] lxx C: dlxx \(\beta\)
621 dcccxxxv] dccxxxv ω
622 cxciii milia cccxiii] ccxc cccxiii β
625 in²] om. C
630 declarat posita similitudo C
632 dolosa Pg β
632 sic] et add. C
632 sunt] sed C
633 inanibus] in artibus β
634 si autem] om. C
635 illos] istos β
637 sabbati φ
638 septimum] om. ω
639 diem] om. C
645 praedicate] praedicare φ : praedica C
653 pentecosten φ
657 alia] alii A Rs
659 et] om. C
664 fuit] fui C
664 quia] om. C
672 aevus] aevum β
672 noscitur β
683 graece] om. C
687 universalis C
690 annos dccccxlii] anni mille lxxii ω
690 xi] xii C
692 loqui nosse C
693 utramque] veritatem vel add. C
694 quia] qua C
695 posse] om. β
702 xiii porro] porro xiii β
702 dlxxxviii] dlxxviii β
nunc] om. C
sola res in eis β
mutare A Pg Rs
soli deo Pg Rs
pentecosten Pg β
qui] quae β
dominici] dominicum ω : emend. Lindsay
vinum] atque add. C
autem sunt C
natus] est add. C Pg β
et] om. φ
gentibus C
indice] indicae ω : emend. Lindsay
Septembri] Septembrio ω : emend. Lindsay
insigni] insignis ω : emend. Lindsay
novum dicitur C
novum aliquid C
dercencia dicitur] om. C
dedicationis] dedicationem ω : emend. Lindsay
Octobri] Octobre ω : emend. Lindsay
obviam plebium C
autem] om. C
sordida β
confinium ω
confiteatur C
observandum β
De dominica die C
declarata est] gaudium celebratur C
domini] om. C
illo] illa ω : emend. Lindsay
festivitatem] sollemnitatem C
erat] quia *add. C*

moreretur *Pg β*

ecclesia quod corpus *C*

speraret] spectaret *λ*
Chapter 3
Commentary

3 Commentary on Book 10 of *De rerum naturis*

The first section of this chapter offers a description of the overall structure of book 10 as well as details of the content of each of the 17 chapters and an analysis of the models available to Hrabanus which may have influenced his compositional framework for the book. The second section discusses the sources which Hrabanus used in book 10 and which have not been discussed elsewhere in this study. Particular attention is given to the four main source authors: Venerable Bede, Isidore of Seville, Cassiodorus, and the anonymous author of the *Clavis Melitonis*. As well, previously unidentified passages in book 10 are now attributed to 8 new sources including works by Ambrosiaster, Origen, and Paterius and additional passages which were introduced in the later manuscript and print traditions have been identified and sourced. The third section presents an analysis of Hrabanus’ method of composition as revealed in each chapter in book 10. The last section focuses on the evolution of book 10 of *De rerum naturis* across the manuscript tradition and proposes hypotheses for the circumstances that led to the later additions and revisions of the text.

3.1 The Structure and Content of Book 10 of *De rerum naturis*

As discussed in chapter one, there are several possible ways to divide the books of *De rerum naturis* by theme or by format. By theme, book 10 can be included in the group that describes the physical world which includes books 9 to 13 dealing with the topics of the heavens, atmospheric phenomena, time, waters, lands, and types of places. A larger theme, which juxtaposes the divine versus the mundane, places book 10 in the first half of the work (books 1 to 11) which focuses on theological matters, a division which is mirrored in the physical format of the early two-volume sets of manuscripts. The natural world which is created by God but which

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1 For example, part two of the Reichenau copy (A), the Worms copy (W), and MS Harley 3092 (a tenth-century copy from Cusa) all begin with book 12. However, later two-volume copies begin with book 11, which suggests to
is the daily habitat for humans is therefore at the intersection of the divine and secular and is the space where man interacts with God through his creations. This juxtaposition is also confronted in the first chapter of book 10 in the discussion of methods of time calculation where the excerpt from Bede’s *De temporum ratione* (DTR) talks of the difference between natural and artificial (i.e. man-made) constructs of time. A further analysis of the place of book 10 within the whole encyclopedia is provided in chapter 4 where the discussion considers the significance and impact of the later two-volume sets which divide the work between books 10 and 11 as well as the later addition to chapter 17 at the end of the book.

Together the 22 books of *De rerum naturis* are approximately 500,000 words. Book 10 has 9,639 words and therefore makes up approximately 2 per cent of the encyclopedia. The 17 chapters of book 10 vary in length and composition. The average length of a chapter in book 10 is 567 words with the shortest being chapter 16 at just 49 words and the longest chapter 9 at 1661 words. Chapters eight and nine in the middle of the book offer an interesting juxtaposition: chapter eight is the most complex in composition and variety of sources while chapter nine, although the longest chapter in words, is the simplest in composition, being entirely an excerpt from Bede’s *De temporum ratione* without any commentary from Hrabanus. Other chapters with a single source and no additional commentary are chapters 9, 14, 15, 16, and 17. The chapters that exhibit the *catena* structure, popular in Carolingian Biblical commentaries and used by Hrabanus in his other works, are chapters 2, 3, 4, 5, 6, 7, 8, 10, 11, and 13 (chapters 1 and 12 are exceptions as they have little or no commentary). The unidentified passages in book 10, which can be assumed to be Hrabanus’ original commentary, equal 1219 words. However, this count includes 385 words of direct Biblical quotations. Therefore, the actual unidentified word count is 834 making Hrabanus’ contribution to book 10 equal to c. 8.65 per cent of the total content.

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Schipper that the earlier division was original with Hrabanus. See Schipper 1997 p. 363 and chapter 1.3.3.6 above for a discussion of the two-volume manuscript sets.

2 Schipper 2007, p. 103
Chapter 1: *De temporibus*

The first chapter in book 10 contains 399 words and includes excerpts from Bede’s *De temporum ratione* (DTR), Isidore’s *Etymologiae*, the *Clavis melitonis*, and Cassiodorus’ *Expositio in psalmus*. There is one section of original commentary by Hrabanus (15 words) located after the first excerpt in the chapter, one from DTR. This chapter discusses the various units of time and the different methods of measuring time starting with the premise, original to Bede, that there is a “distinction between natural, customary (or conventional), and authoritative time-reckoning”, a premise which is critical to his understanding of computus.\(^3\) Both the excerpts from Bede and Isidore include the list of divisions of time: moment, hour, day, month, year, *lustra*, *saeculum*, and age.

Chapter 2: *De momentis*

The second chapter at 134 words in length gives the definition for and examples of the unit of the *momentum*. It includes excerpts from the *Etymologiae*, Origen’s *Commentarii epistolae sancti Pauli in primam epistolam ad corinthios* (1 Cor.), and DTR, as well as 2 sections of original commentary from Hrabanus totaling 29 words. In the scheme taken from Isidore and Bede, the moment is the shortest interval of time.

Chapter 3: *De horis*

The third chapter dedicated to the time unit of the hour is 277 words long and includes excerpts from the *Etymologiae*, the *Clavis melitonis*, Ambrosiaster’s *In epistolam ad romanos*, and 3 from Bede’s works: DTR, *De divisionibus temporum liber*, and *Super epistolas catholicae expositio in primam epistolam s. Johannis 2*. It also contains 2 sections of original commentary (52 words). This chapter includes details about the distinction between the artificial hour, defined by the artifice of the sundial and therefore variable in length according to the season, and the natural hour (Bede’s term is equinoctial hour), which is a constant length of 1/24 of a day.

\(^3\) Wallis 2004, p. 264; Divisions of time can be either based on the natural movements of astronomical time-markers (the solar year of 365 1/4 days), others derive from convention (the 30-day “month”); and others are imposed by human or divine authority, such as the Olympiad or the Jubilee. Therefore, terms like “year” or “month” can have different meanings, depending on the mode of time-reckoning to which they refer. Wallis 2004, p. 264
Chapter 4: *De diebus*

The fourth chapter discusses in 1010 words the definition and examples of types of days and the different ways to measure a day. Excerpts are taken from DTR, *Clavis melitonis*, Cassiodorus, and Origen’s *Commentaria in epistolam beati Pauli ad romanos*. There are 5 sections of original commentary totaling 134 words. The discussion in chapter 4 covers the distinction between the day as the period of daylight and as a period of 24 hours. Examples of different meanings of the term day are also discussed in relation to the timeline of the creation of the world in the Book of Genesis.

Chapter 5: *De partibus diei*

The fifth chapter contains 480 words with passages from the *Etymologiae*, *Clavis melitonis*, Cassiodorus, and 4 sections of original commentary at 112 words. This chapter discusses the three parts of the day: morning (*mane*), midday (*meridies*), and evening (*suprema*). It provides examples from the Bible to illustrate the meaning of each part of the day and activities both supernatural and natural that should take place at a particular time of day. It also includes historically significant events which are associated with a certain time of day, for instance with Christ being taken before Pontius Pilate at noon.

Chapter 6: *De nocte*

The sixth chapter at 703 words covers the definition, examples, and significance of the term and unit of the night. Hrabanus uses excerpts from DTR, Gregory, Cassiodorus, the *Clavis melitonis* and includes 2 sections of his own commentary (119 words). The examples of the meanings of night-time are for the most part negative. “Night is a sinister time, and especially so for the computist because there is no instrument comparable to a sundial with which one can measure it in precise and uniform units”.

Chapter 7: *De septem partibus noctis*

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4 Wallis 2004, p. 276
The seventh chapter is 540 words long and contains excerpts from the Etymologiae, Cassiodorus, Clavis melitonis, Bede’s In sancti Marci evangelium expositio, and 3 sections of original commentary totaling 122 words. The seven parts of the night discussed are dusk (crepusculum), eventide (vesperum), the first part of the night (conticinium), dead of night (intempestum), cockcrow (gallicinium), early morning (matutinum), and daybreak (diluculum). The bulk of this chapter is dedicated to the etymologies of the seven terms and references to their mention in the Bible. As Wallis points out, there is a continuing theme of the night as an absence, lacking its own substance. The names themselves evoke an “image of the night as a time without light (crepusculum) or sound (conticinium), a time without time (intempestum)”.

Chapter 8: De tenebris

The eighth chapter, on the topic of darkness (843 words), contains excerpts from the Etymologiae, Cassiodorus, Bede’s In sancti Johannis evangelium expositio, Clavis melitonis, Gregory, and Paterius’ Liber de expositione veteris et novi testamenti. Interspersed amongst the excerpts there are 9 sections of original commentary equalling 255 words. This complex chapter provides numerous examples of the significance of not only the darkness of the night but of dark places such as the cell of hell, dark matter such as fog, and dark creatures such as demons or the devil himself. The type of examples and descriptions mirrors the notion that “night contrasts with the day in that its time is qualitative, not quantitative”.

Chapter 9: De hebdomadibus

The ninth chapter, the longest at 1661 words, is entirely an excerpt from Bede’s De temporum ratione and contains no original commentary from Hrabanus. This chapter discusses the definition of the types of weeks and gives examples from the different traditions, its origin in the

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5 Wallis 2004, p. 276
6 Wallis 2004, p. 276
Book of Genesis and how it can be mapped onto macrocosmic and microcosmic measures of the ages of the universe and of man. Discussed are the eight types of Scriptural weeks:

1. the divine week of Creation
2. the conventional seven-day week
3. Pentecost or the “feast of weeks”, i.e. the 50 days after Easter (7x7+1 days)
4. the Jewish seventh month (feast of the Atonement)
5. The Sabbath of the land in the seventh year
6. the Jubilee, the annual analogy of Pentecost (7x7+1 years)
7. the “prophetic week” of the Old Testament
8. the week of the World-Ages

Chapter 10: *De mensibus*

The tenth chapter covers the types of months in the Greek, Roman, and Jewish calendars in 834 words. There are excerpts from DTR, Gregory, *Clavis melitonis*, and Origen’s *Commentarium in Isaiam prophetam*. Hrabanus adds 4 sections of commentary totaling 82 words. The descriptions of the months also include a concordance amongst the months in the different calendars. There is a further discussion of the relation of calendar months to natural months (lunar or solar) and how lunations were distributed into alternating months of 29 and 30 days to avoid calculating the half-day of the synodic month (29½ days). This distribution, along with the variable times for intercalating additional lunar months, was what brought the lunar and solar years back into phase.

Chapter 11: *De vicissitudinibus temporum IIII*

The eleventh chapter (718 words) includes excerpts from the *Etymologiae*, *Clavis melitonis*, Cassiodorus, Bede’s *In sancti Marci evangelium expositio*, and 2 sections of original commentary at 225 words. Definitions and examples are given of the four seasons of the year:

\[\text{\footnotesize\textsuperscript{7}}\]

\[\text{\footnotesize\textsuperscript{8}}\]

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\[\text{\footnotesize\textsuperscript{7}}\] For a background discussion on the subject of Bede’s *De temporum ratione* chapters 8, 9, and 10 which are excerpted into chapter 9 of book 10 of *De rerum naturis*. See Wallis 2004, pp. 277-280

\[\text{\footnotesize\textsuperscript{8}}\] For more details of Bede’s discussion of the months see Wallis 2004, pp. 280-284
spring (ver), summer (aestas), fall (autumnus), and winter (hiemps), and how they differ in the calendrical systems mentioned in the previous chapter.

Chapter 12: De anno

The twelfth chapter contains 813 words and includes only excerpts from DTR, Clavis melitonis, Cassiodorus, and the Etymologiae. The passages define and explain the lunar year and solar year and how they are reconciled by intercalating leap years etc. There is also a discussion of the different beginning of the year according to Hebrew or Roman reckoning as well as an explanation of the Great Year as the length of time it takes for all the planets to resume the same position in relation to one another.\(^9\) There is also reference to the Great Cycle (“by which the Easters will repeat over 532 years”) and the jubilee year.\(^{10}\)

Chapter 13: De saeculo

The thirteenth chapter talks about the time unit of the saeculum which is defined in a variety of ways as a number of generations, a span of 50 years, an aeon (aevum), or an age (aetas). This 325-word chapter contains excerpts from the Etymologiae and Cassiodorus as well as 4 sections of original commentary at 74 words.

Chapter 14: De sex aetatibus saeculi

The fourteenth chapter contains only a 342-word excerpt from Bede’s world chronicle\(^{11}\) (DTR chapter 66) which discusses the 6 ages of the world and how they relate to the seventh and eighth as well as their relation to salvation history and the 6 ages of human life.\(^{12}\) There is also a

\(^9\) For further details see Wallis 2004, pp. 321-322
\(^{10}\) Wallis 2004, pp. 352-353
\(^{11}\) According to Wallis, Bede used the Dionysiac table to formally introduce the great chronicle in chapter 66 of De temporum ratione since the chronicle had little to do with the table as such. Wallis 2004, pp. lxviii-lxix
\(^{12}\) For background on the world eras see Holford-Strevens 2005, p. 120
reference to the notion of the divine 1000-year day which, “when joined to the analogy between the World-Ages and the days of Creation, produced the idea of the 1000-year World-Age”.13

Chapter 15: *De festivitatibus*

The fifteenth chapter contains just one excerpt from the *Etymologiae*. The 428 words cover festal celebrations and the variety of religious and pagan feast days in the Jewish, Egyptian, Roman, and Christian calendars.

Chapter 16: *De sabbato*

The sixteenth chapter is the shortest at 49 words and contains only 1 excerpt from the *Etymologiae* discussing the Sabbath in the Jewish calendar and the Old Testament.

Chapter 17: *De dominico die*

The seventeenth and final chapter of 83 words also only contains an excerpt from the *Etymologiae* focusing on the Lord’s day (*Dominicus*) and its significance to Jews and Christians.

Hrabanus had various models to choose from when he was deciding how to organize the contents of book 10. He had previously written about the units of time in his work *De computo* and had followed the Irish computistical tradition of listing 14 divisions of time and even of inventing a new one: the *scrupulus*.14 However, “since most of the definitions and etymologies of these units are based on Isidore’s works, it appears that Isidore’s list of eight divisions of time provided the basis and the impetus for subsequent lists and discussions composed in Ireland”.15 In establishing a list of the units of time for his encyclopedia, Hrabanus chose to follow this list of eight which he found in Isidore’s *Etymologiae* and Bede’s *De temporum ratione*. In the first

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13 Wallis 2004, p. 360. For details on the origins of Bede’s world chronicles see Wallis 2004, pp. 253, 353-365

14 For more on the Irish tradition of using 14 divisions of time as an introduction to terminology and a basis for structuring subsequent analyses see Warntjes 2010, pp. cxli-cxlii, clix

15 Warntjes 2010, p. cxlii
chapter of book 10, Hrabanus copies a passage from *Etymologiae* 5.29.1 which includes Isidore’s original list: “*Ita ut momentis, horis, diebus, mensibus, annis, lustris, saeculis, aetatibus, ut supra diximus, dividatur*”. In his more detailed discussions of the units in the subsequent chapters of book 10, Hrabanus dropped the *lustra* and added discussions on the parts of the day, the parts of the night, darkness, and the seasons. Isidore himself did the same thing by discussing “more divisions of time than the ones outlined in his list”.

Along with the “idea of basing his discussion on the units of time, ranked from smallest to largest”, which came through Bede from Irish and Isidorian sources, Hrabanus also replicated Bede’s insertion of a chronicle under the rubric of ‘world-ages’, a notion which Bede had adapted from book five of the *Etymologiae*. According to Wallis, Bede’s models – Isidore of Seville and the Irish treatises – “saw the chronicle as the capstone of an ascending series of units of time”. The world-chronicle had several functions but at its most basic it was a tool for finding dates and events. In patristic times, it also served as apologetic literature to counter the pagan claim that Christianity was just a short-lived fad by proving that it had ancient roots in Judaism. It was also used as a concordance with the Bible to disprove any contradictions in chronology. “Above all, chronicles were composed to prove or disprove contentions about the duration and approaching end of the world”. By arranging their discussions in an ascending hierarchy of the units of time and including a chronicle which explained the long expanse of

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16 The list is followed by detailed discussions of these units in Isidore’s *Etymologiae* 5.29-32, 5.36-37

17 Lustra, are five-year periods (see *Etymologiae* 5.37.2) but were soon regarded as an inappropriate unit of time and so fell out of the list at a very early stage. Warnhtes 2010, p. cxlii

18 Warnhtes 2010, p. cxlii; Atomos, quadrans (the quarter-day), the week, the season, and mundus were added to Isidore’s original list (For atomos see *Etym*. 13.2; quadrans see *Etym*. 16.25.27; the week see *Etym*. 5.32, *De natura rerum* 3; the season see *Etym*. 5.35, *De natura rerum* 7; mundus see *Etym*. 3.29, 13.1, *De natura rerum* 9). “Other units, like minutum and punctum, were invented for the simplification of calculations, i.e. when it was deemed appropriate to invent a specific term for a frequently recurring multiple or fraction of a known unit.” Warnhtes 2010, p. cxlii

19 Wallis 2004, p. lxv

20 Wallis 2004, p. lxx

21 Wallis 2004, p. lxx
salvation history, Isidore, Bede, and Hrabanus were following a similar pattern in visualizing a “grand scheme of time stretching from the briefest atom of duration to the eternity of the age to come”.22

3.2 The Sources of Book 10 of De rerum naturis

In addition to the list in section 2.5 above, which provides a detailed line-by-line breakdown of the identified passages and their source texts for book 10, below are 2 tables which outline the distribution of the excerpts from the 8 identified authors and their 14 texts.

Sources for Book 10 of De rerum naturis by Author

<table>
<thead>
<tr>
<th>Author</th>
<th>Number of Texts</th>
<th>Number of Words</th>
<th>Percentage of Book 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bede</td>
<td>5</td>
<td>4093</td>
<td>42.46%</td>
</tr>
<tr>
<td>Isidore</td>
<td>1</td>
<td>1414</td>
<td>14.67%</td>
</tr>
<tr>
<td>Anon (Clavis melitonis)</td>
<td>1</td>
<td>1278</td>
<td>13.26%</td>
</tr>
<tr>
<td>Cassiodorus</td>
<td>1</td>
<td>1226</td>
<td>12.72%</td>
</tr>
<tr>
<td>Gregory</td>
<td>1</td>
<td>163</td>
<td>1.69%</td>
</tr>
<tr>
<td>Origen</td>
<td>3</td>
<td>118</td>
<td>1.23%</td>
</tr>
<tr>
<td>Paterius</td>
<td>1</td>
<td>88</td>
<td>0.91%</td>
</tr>
<tr>
<td>Ambrosiaster</td>
<td>1</td>
<td>40</td>
<td>0.41%</td>
</tr>
</tbody>
</table>

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22 Wallis 2004, p. xxxii
<table>
<thead>
<tr>
<th>Text</th>
<th>Author</th>
<th>Number of Excerpts</th>
<th>Chapters Containing Excerpts</th>
<th>Number of Words</th>
<th>Percentage of Book 10</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>De temporum ratione</em></td>
<td>Bede</td>
<td>11</td>
<td>1, 2, 3, 4, 6, 9, 10, 12, 14</td>
<td>3820</td>
<td>39.63%</td>
</tr>
<tr>
<td><em>Etymologiae</em></td>
<td>Isidore</td>
<td>16</td>
<td>1, 2, 3, 5, 7, 8, 11, 12, 13, 15, 16, 17</td>
<td>1414</td>
<td>14.67%</td>
</tr>
<tr>
<td><em>Clavis melitonis</em></td>
<td>Anonymous</td>
<td>27</td>
<td>1, 3, 4, 5, 6, 7, 8, 10, 11, 12</td>
<td>1278</td>
<td>13.26%</td>
</tr>
<tr>
<td><em>Expositio in psalmus</em></td>
<td>Cassiodorus</td>
<td>22</td>
<td>1, 4, 5, 6, 7, 8, 11, 12, 13</td>
<td>1226</td>
<td>12.72%</td>
</tr>
<tr>
<td><em>Moralia in Job</em></td>
<td>Gregory</td>
<td>3</td>
<td>6, 8, 10</td>
<td>163</td>
<td>1.69%</td>
</tr>
<tr>
<td><em>In sancti Marci evangelium expositio</em></td>
<td>Bede</td>
<td>2</td>
<td>7, 11</td>
<td>125</td>
<td>1.30%</td>
</tr>
<tr>
<td><em>Liber de expositione veteris ac novi testamenti</em></td>
<td>Paterius</td>
<td>2</td>
<td>8</td>
<td>88</td>
<td>0.91%</td>
</tr>
<tr>
<td><em>Commentarium in Isaiah prophetam</em></td>
<td>Origen</td>
<td>2</td>
<td>10</td>
<td>70</td>
<td>0.73%</td>
</tr>
<tr>
<td><em>In sancti Johannis evangelium expositio</em></td>
<td>Bede</td>
<td>1</td>
<td>8</td>
<td>67</td>
<td>0.69%</td>
</tr>
<tr>
<td><em>Super epistolas catholicas expositio in primam epistolam s. Johannis</em></td>
<td>Bede</td>
<td>1</td>
<td>3</td>
<td>54</td>
<td>0.56%</td>
</tr>
<tr>
<td><em>In epistolam ad romanos</em></td>
<td>Ambrosiaster</td>
<td>1</td>
<td>3</td>
<td>40</td>
<td>0.41%</td>
</tr>
<tr>
<td><em>De divisionibus temporum liber</em></td>
<td>Bede</td>
<td>1</td>
<td>3</td>
<td>27</td>
<td>0.28%</td>
</tr>
<tr>
<td><em>Commentaria in epistolam beati Pauli ad romanos</em></td>
<td>Origen</td>
<td>1</td>
<td>4</td>
<td>26</td>
<td>0.27%</td>
</tr>
<tr>
<td><em>Commentarii in epistolas sancti Pauli in primam epistolam ad corinthios</em></td>
<td>Origen</td>
<td>1</td>
<td>2</td>
<td>22</td>
<td>0.23%</td>
</tr>
</tbody>
</table>
Of the eight authors listed, it is clear that four can be considered as major contributors: Bede, Isidore, Cassiodorus, and the anonymous author of the *Clavis melitonis*. Of the 14 texts listed, excerpts from 4 of them also make up almost 80 per cent of the text: Bede’s *De temporum ratione*,23 Isidore’s *Etymologiae*,24 *Clavis melitonis*,25 and Cassiodorus’ *Expositio in psalmus*.26

The most comprehensive published study of the textual sources of *De rerum naturis* to date is Heyse’s 1969 dissertation. The dissertation contains numerous typographical errors and many passages are listed as “unbekannt”. The present study offers corrections to Heyse’s list and also identifies the sources for much more of the text of book 10, including the identification of new source texts. Heyse only identified 6 text sources for book 10: Bede’s *De temporum ratione*, Cassiodorus’ *Expositio in psalmus*, *Clavis melitonis*, Isidore’s *Etymologiae*, Bede’s *In sancti Johannis evangelium expositio*, and Gregory’s *Moralia in Job*. As demonstrated in the *apparatus fontium* in chapter 2.5 and the tables above, a further 8 source texts have now been identified for book 10. In addition to these new texts, there are also passages that Heyse could not identify despite having listed the text as a source for book 10 and identifying other passages from these works elsewhere in the book. For example, she missed matching an excerpt of 53 words in chapter 6 (lines 207-211) with a passage in Gregory’s *Moralia in Job*. Another example is a passage in chapter 8 containing 67 words (lines 304-309) from Cassiodorus’ *Expositio in psalmus* which Heyse simply marks as unknown.

23 For a discussion of Bede’s sources in *De temporum ratione* see Wallis 2004, pp. lxxii-lxxxv and Ganz 2006, p. 100 for an analysis of resources available to Bede at Jarrow during the early eighth century.

24 See Barney 2006, p. 13 passim for a discussion of how Isidore uses his sources in the *Etymologiae*.

25 Another early collection of interpretations arranged topically is the eighth-century *Clavis scripturae* (or *Clavis Melitonis*), mistakenly identified as the translation of a lost work by Melito of Sardes. The most popular form of the *Clavis* (Stegmueller, Repertorium III, 559-61, #5574) is edited by Pitra, Spicilegium Solesmense II, 1-519 and III, 1-307. The text of the *Clavis* itself consists of the brief notations preceded by arabic numerals, which in each chapter stand between the large roman numeral and the heading *Veterum varius commentarius*. This edition includes a topical outline of the Clavis; a more convenient *Index rerum sive typorum out symbolorum*; indices of scriptural citations; and an index of early writers quoted or cited. Another version of the *Clavis*, considered by Pitra to be the earliest (Stegmueller, Repertorium III, 561-2, #5575), is edited by him in *Analecta sacra* II, 6-127, with a subject-index on pp. 147-54. Excerpts from the *Clavis* found in the Bible manuscripts of Theodulf of Orleans (8th-9th C; Stegmueller, Repertorium III, 562-3, #5576) are edited by Pitra, *Spicilegium Solesmense* II, lxvii-lxxxiii. Kaske 1988, p. 41.

Since Hrabanus, Bede, and Isidore excerpted texts from the same patristic sources it is possible that passages can be identified as having multiple layers of sources. There is one such instance between Heyse’s list and the one presented in this study. At the end of chapter 11 there is a passage of 78 words which Heyse lists as coming from Jerome’s Commentariorum in Matheum libri IV. In this study, this passage is identified as having as its source Bede’s In sancti Marci evangelium expositio. Both attributions are correct as it is impossible to ascertain whether Hrabanus took the excerpt directly from Jerome’s work or one degree removed from it through the intermediary of Bede’s work.

It is not surprising to see that Isidore and Cassiodorus are major sources for book 10 as they are major sources for the whole encyclopedia and, in particular, Isidore’s Etymologiae as has been discussed above. However, the other two major sources are exceptions. Bede’s De temporum ratione is an exception in the sense that it is used exclusively in book 10 and is not cited in any of the other 21 books. This is not hard to explain as De temporum ratione is a very specialized treatise on the main topic that is covered in book 10: how to calculate time. In addition there are no counterparts in Isidore for the content of chapters 9, 10, and 14 which forced Hrabanus to look to Bede’s specialized text. The Clavis melitonis is an exception in the sense that it is not a commonly cited work in medieval literature and does not play a large role in the early medieval development of the encyclopedic genre.

There are 73 items in chapter 4 of the Clavis melitonis which is entitled De diebus annis et temporibus. Only number 73 (Quinquegesimus annus, qui in levitico annus jubilaeus scribitur, venturae quietis est significatio) does not appear anywhere in De rerum naturis. Number 66

27 Heyse 1969, p. 110
28 See note 376, p. 86
29 Some chapters do not have a counterpart in Isidore as will be shown below. For example, 10.9-10, and 10.14 which are taken from Bede’s De temporum ratione 8, 9, 10, and 11 with additions from Gregory’s Moralia in Job and the Clavis melitonis.
30 An edition of the Clavis melitonis is being prepared by Toby Burrows for Corpus Christianorum. Burrows’ website has a bibliography: http://confluence.arts.uwa.edu.au/display/~tburrows/Clavis+Melitonis+project. For a summary of the current editions see Kaske 1988, pp. 34-35
(Hiems, torpor mentis. In salomone: propter frigus piger arare noluit.) is not used but it is essentially a repeat with the same biblical quotation as number 63 (Aestas, futura beatitudo. In salomone: propter frigus piger arare noluit, mendicabit aestate, et non dabitur ei.) which is used in book 10. The rest of the items in chapter 4 of the Clavis melitonis are used in either book 10 or book 11. The ones that are used in book 9 are 15, 16, 17 (in chapter 1: de mundo et quattuor plagis ipsius) and 18, 19, 20, 21, 22 (in chapter 8: De lucae). For some reason Heyse did not identify numbers 5, 25, 42, 43, 67, and 68 from chapter 4 as being sources in book 10. Perhaps it is because some of these were not copied verbatim but only paraphrased, whereas the items identified by Heyse were by and large copied verbatim. But 5, 25, 42, 43, 67, and 68 are easily recognizable as the source passages, with perhaps a few words changed or the verb tense altered but with always the same biblical quotation used. It could also be the result of typos and unintentional copying mistakes in Heyse’s dissertation. For instance the excerpt “Dies autem dominum significat in illa sententia evangelii: qui ambulat in die non offendit” is identified as Clav. melit. 4: 1 when it is actually 4: 43. (Another example of typos is the identification of the source for chapters 16 and 17 as Etymologiae 16: 1 instead of the correct 16: 18.)

3.3 The Chapter Commentaries for Book 10 of De rerum naturis

This final section of chapter 3 provides a brief study of Hrabanus’ method of composition and an analysis of the general trends in the composition of the 17 chapters as well as the distribution of patterns throughout book 10 and how they compare to patterns present in the other 21 books of De rerum naturis. Following this general discussion is an exposition of individual elements of each chapter.

As mentioned above (1.3.3.2), Hrabanus practiced the catena method of composing a commentary in many of his exegetical writings.31 This method of stringing together quotations from authoritative sources is associated with Bede.32 In Hrabanus’ case, the quotations compiled on each topic serve the purpose of not only adding auctoritas to the information but also

31 Le Maitre 1990, p. 346 passim
providing a variety of definitions and experiential or material examples to illustrate the allegorical or mystical sense of the thing, sign, or symbol.\(^{33}\)

One of the factors that makes *De rerum naturis* original and not just a plagiarism of the *Etymologiae* is Hrabanus’ own additions to the text. The additions can be categorized into three broad groups: linking and concluding sentences, new Biblical examples, and explanatory passages.

Hrabanus sometimes adds short phrases to link the excerpts or Biblical quotations. Examples of linking sentences are *quod declinat ad vesperum* (chapter 5, line 161), and *quae sententia et aliter intellegi potest* (chapter 8, lines 326-327). An example of a concluding sentence appears at the end of chapter 13 (lines 678-679), which Heyse names a “Schlußsatz”: *Sic ergo potest mundi aetas ad similitudinem aevi hominis comparari*.

The next type of addition is new Biblical examples. New because they are not part of an excerpt from one of the source texts such as *De temporum ratione* or *Etymologiae*. These Biblical quotations added by Hrabanus usually appear in-between excerpted passages or at the end of an explanation by Hrabanus. Thus, *Et in evangelio, et ecce nubs lucida obumbravit eos. Et alibi, sub umbra eius vivemus in gentibus*\(^{34}\) is added at lines 309-310 in chapter 8. An example of a commentary with new Biblical references appears in lines 278-282 in chapter 8:

> Tenebrae autem significant aliquando profunditatem scripturarum divinarum, aliquando ignorantiam, aliquando infidelitatem peccatorum, et aliquando poenam Gehennae. Profunditatem ergo scripturarum illud significat propheticum testimonium quo ait, *Posuit tenebras latibulum suum*.\(^{35}\) Et alibi, *tenebrae non obscurabuntur abs te et nox sicut dies illuminabitur sicut tenebrae eius ita et lumen eius*.\(^{36}\)

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\(^{33}\) For parallels with Hrabanus’ other exegetical writings see Le Maitre 1990.

\(^{34}\) Lamentations 4: 20

\(^{35}\) Psalm 17:12

\(^{36}\) Psalm 138: 12
Two examples of Hrabanus’ commentary in just his own words are found in chapters 7 and 11. The first at lines 249-255:

Vesper ergo et initium noctis significat vel initium tribulationis, quae post prosperitatem saeculi sequitur, vel exordium aversionis iniquorum qui versi a luce vera mandatorum dei incidunt in tenebras peccatorum. Quando enim quis a veritate et iustitia recedit et in tenebras errorum atque peccatorum corruit, merito vesper nomine vocatur, quia Antichristi qui vesper in scripturis appellatur, consors efficitur. Intempestum autem, hoc est medium noctis, vel profunditatem peccatorum significat vel recessum a mundanis negotiis et ad laudandum deum bonorum hominum studium.

The second at lines 560-564:

Mistice autem ver baptismi novitatem significat aut renovationem vitae post frigus infidelitatis et pigritiae torporem, sive resurrectionem corporum post mortis occubitum; unde dominus praecipit in lege mensem novarum observare et verni principium quando eduxit dominus filios Israel de terra Aegypti per mare rubrum. In quo et celebrare pascha iussit, quo etiam tempore salvator post passionem a morte surrexit et spem nobis resurrectionis tribuit.

The longest original passage (161 words) in book 10 is found in chapter 11 (lines 572-583). However, this is an example of a section where Hrabanus has included new biblical quotations which equal 124 words leaving only 37 words as his own.

The majority of the chapters in all 22 books of De rerum naturis follow a pattern. Hrabanus usually starts each chapter with a text from Isidore, sometimes modifying Isidore’s original arrangement.37 In most chapters Hrabanus also combines extracts from Isidore’s encyclopedia with extracts from other writers.38 In the case of book 10, there are 10 chapters which begin with an excerpt from Isidore: 2, 3, 5, 7, 8, 11, 13, 15, 16, 17. The remaining 7 chapters (1, 4, 6,

37 Schipper 2004, p. 10

38 Schipper characterizes the overall effect as one of an encyclopedic scope. “Only the words from Isidore remain, sometimes in fragments, at other times in recognizable blocks of text, to remind us of where he has started.” Schipper 2004, p. 11
9, 10, 12, 14) begin with an excerpt from the other major textual source for chapter 10, Bede’s DTR. In fact, Hrabanus almost alternates the start of his chapters between these two authors.

As Schipper has also noted for other books in *De rerum naturis*, there seem to be unfinished chapters and some books are divided into very short chapters. He suggests that these and “similar short chapters really read more like notes for future expansion or definitions than full-fledged descriptions of things in the world, and leave the impression of a work still in progress”\(^{39}\) and hypothesizes that “had he completed the book, most of it would likely have been structured in a complex fashion, as in books two or six, rather than looking like a set of extracts from Isidore”.\(^{40}\) From this, Schipper concludes that the final product was never completed, “no doubt because of a lack of time”.\(^{41}\) As will be shown below, this situation seems to explain what happened at the end of book 10 where the last 4 chapters contain only an excerpt from a single source and chapters 16 and 17 are 49 and 83 words respectively, the two shortest in the book.

Chapter 1: *De temporibus*

<table>
<thead>
<tr>
<th>3-16 (lines)</th>
<th>Bede DTR 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-17</td>
<td>HM</td>
</tr>
<tr>
<td>17-18</td>
<td>Isid. Etym. 5: 29</td>
</tr>
<tr>
<td>19</td>
<td>Clav. 4: 60</td>
</tr>
<tr>
<td>19-33</td>
<td>Cass. Psal. 118: 126</td>
</tr>
</tbody>
</table>

Chapter one is a straight-forward example of a *catena* structure with four excerpts from four different sources starting with Bede followed by Isidore, *Clavis melitonis*, and Cassiodorus. The chapter is book-ended by two long excerpts with a passage from Hrabanus (giving the Greek etymology for *tempus*) after the introductory excerpt from Bede and before the remaining two short excerpts.

\(^{39}\) Schipper lists examples of these truncated or unfinished chapters in books 13 and 14. For instance, 13.22 (*De erebo*) which is taken from *Etymologiae* 14.9.6 consists of a single sentence and many of the chapters in book 14 are just brief extracts from *Etymologiae* that Hrabanus never expanded with additional materials. Schipper 1997, p. 365

\(^{40}\) Schipper 2004, p. 12

\(^{41}\) Schipper 2004, p. 11
Chapter 2: *De momentis*

35-36 Isid. Etym. 5: 29
36-38 HM
38-39 Origen 1 Cor. 15
39-40 HM
40-44 Bede DTR 3

Chapter two is an almost perfect example of the *catena* structure in that the three excerpts (Isidore, Origen, and Bede) are separated by lines from Hrabanus. One might also expect a few lines from Hrabanus to comment on the excerpt from Bede as well to conclude the chapter. The first four sections are roughly the same length (c. 20 words) but the last excerpt, the one from DTR, is three times as long. Hrabanus’ contributions to this chapter are short explanations with new biblical references.

Chapter 3: *De horis*

46-47 Isid. Etym. 5: 29
47 Bede DTR 3
47-49 Bede DDTL 8
49-52 Bede DTR 3
52-56 HM
56-58 Ambr. Rom. 13: 11
58-59 Clav. 4: 42
60-63 Bede epistolas 2
63-65 Clav. 4: 44-48
65 HM

Chapter three continues with the *catena* method, intermingling excerpts from six different sources. Hrabanus divides the chapter into two parts giving his commentary after the first four excerpts and then a concluding phrase after the last four excerpts. This chapter is unique in that it contains the only excerpts in the book from Ambrosiaster’s *In epistolam ad romanos* and Bede’s *De divisionibus temporum liber* and *Super epistolas catholicas expositio in primam epistolam sancti Johannis*. Perhaps these two works were included because the excerpts from
Isidore and Bede’s *De temporum ratione* on the hours were not enough material and Hrabanus decided he needed additional source texts. Hrabanus was familiar with Bede’s *De divisionibus temporum liber* since he had previously cited it in his *De computo*. However, since the excerpts from Ambrosiaster and Bede’s *Super epistolae catholicas* speak to the Biblical interpretation of the meanings of the hours, it is more likely that Hrabanus just had these two sources at hand when he was composing or editing this chapter or that he was familiar enough with these works to know the quotations from memory and insert them in the appropriate chapter.⁴²

Chapter 4: *De diebus*

<table>
<thead>
<tr>
<th>67-82</th>
<th>Bede DTR 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>82-85</td>
<td>HM</td>
</tr>
<tr>
<td>85-86</td>
<td>Clav. 4: 43</td>
</tr>
<tr>
<td>86-87</td>
<td>HM</td>
</tr>
<tr>
<td>87-88</td>
<td>Clav. 4: 1</td>
</tr>
<tr>
<td>88-90</td>
<td>Clav. 4: 5</td>
</tr>
<tr>
<td>90-92</td>
<td>Cass. Psal. 18: 3</td>
</tr>
<tr>
<td>92-96</td>
<td>HM</td>
</tr>
<tr>
<td>96-104</td>
<td>Clav. 4: 2-4, 6-7</td>
</tr>
<tr>
<td>104-106</td>
<td>HM</td>
</tr>
<tr>
<td>106-108</td>
<td>Orig. Rom. 9: 32</td>
</tr>
<tr>
<td>108-112</td>
<td>Cass. Psal. 41: 9</td>
</tr>
<tr>
<td>113-114</td>
<td>HM</td>
</tr>
<tr>
<td>114-120</td>
<td>Cass. Psal. 83:11</td>
</tr>
<tr>
<td>120-134</td>
<td>Clav. 4: 33-41</td>
</tr>
<tr>
<td>134-142</td>
<td>Clav. 4: 30-32</td>
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Chapter 4 is a more complex *catena* arrangement of 16 distinct passages. However, these passages are only taken from four source texts and Hrabanus’ own commentary. Hrabanus

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⁴² Hrabanus uses several excerpts from both Bede’s *De temporum ratione* and *De divisionibus temporum liber* in chapter 17 on the hours in his *De computo*: *De temporum ratione* 1: 6-7 (cf. *Etym.* 5:29); *De temporum ratione* 3: 2-6, 17-18; *De divisionibus temporum liber* 6: 8-11, 14-23.
carefully disperses the excerpts from the sources into groups by re-arranging them to follow his own exposition of the topic. For instance, the excerpts from chapter four of the *Clavis melitonis* are inserted by Hrabanus in the following order: 43, 1, 5, 2-4, 6-7, 33-41, 30-32. They are also dispersed throughout the chapter starting at line 85 and lastly at the end in lines 134 to 142. This chapter also contains the only excerpt in book 10 from Origen’s *Commentaria in epistulam beati Pauli ad romanos*.

Chapter 5: *De partibus diei*

144-146 Isid. Etym. 5: 30
146-148 HM
148-150 Cass. Psal. 5: 5
150-151 Clav. 4: 10
151-153 HM
153-154 Isid. Etym. 5: 30
154-157 Clav. 4: 11-12
157-159 Cass. Psal. 90: 6
160-161 Clav. 4: 12
160-161 Isid. Etym. 5: 30
161 HM
161-164 Clav. 4: 13
164-166 Cass. Psal. 29: 6
166-171 HM
171-172 Clav. 4: 14
172-179 Cass. Psal. 54: 18
179-180 Clav. 4: 14

Chapter five is structured similarly to chapter four except that this time the excerpts from chapter four of the *Clavis melitonis*, while still dispersed throughout the chapter, appear in their original order: 10, 11, 12, 13, 14. Since this chapter talks about the three parts of the day, Hrabanus has almost composed this chapter in three sub-chapters. For instance, the first section, about *mane*, starts with an excerpt from Isidore and finishes with a commentary from Hrabanus at lines 151 to 153. The second section, about *meridies*, returns to start with Isidore at lines 153 to 154 and
ends with an excerpt from the *Clavis melitonis* at 159 to 160. The third section on *suprema* starts with Isidore at lines 160 to 161 and ends again with the *Clavis melitonis* at line 180.

Chapter 6: *De nocte*

182-201 Bede DTR 7  
201-207 HM  
207-211 Greg. Moral. 4: 1  
211-214 HM  
214-215 Cass. Psal. 76: 3  
219-233 Clav. 4: 49-59  

The sixth chapter is composed quite simply with an opening excerpt from Bede’s *De temporum ratione* followed by Hrabanus’ commentary and then examples explained in the excerpts from Gregory, Cassiodorus and finally the *Clavis melitonis* at the end of the chapter. Lines 207 to 211 contain the first of only 3 excerpts from Gregory’s *Moralia in Job* that appear in book 10 (the other 2 are in chapters 8 and 10).

Chapter 7: *De septem partibus noctis*

235-249 Isid. Etym. 5: 31  
249-255 HM  
263-264 HM  
264-267 Bede Comm. Marci 4: 14  
267-270 HM  
270-273 Cass. Psal. 62: 2  
274-276 Clav. 4: 8-9  

Unlike chapter five, where the chapter was divided into three distinct sections to mirror the division of the day into three parts, chapter seven on the seven parts of the night is not divided into seven separate parts. The chapter opens with an excerpt from Isidore covering etymologies and definitions for all seven parts of the night: *crepusculum, vesperum, conticinium,*
**intempestum, gallicinimum, matutinum, diluculum.** Hrabanus provides an 80-word commentary on Isidore’s passage and then illustrates some of the parts of the night with examples from Bede, Cassiodorus, and the *Clavis melitonis.* Interestingly enough the excerpt from Bede is not from *De temporum ratione* but rather from his *In sancti Marci evangelium expositio* and is the first of only 2 excerpts from this Bedan exegetical work (the second excerpt is in chapter 11).

Chapter 8: *De tenebris*

<table>
<thead>
<tr>
<th>Page Range</th>
<th>Author/Book Reference</th>
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<tbody>
<tr>
<td>278-282</td>
<td>Isid. Etym. 5: 31</td>
</tr>
<tr>
<td>283-286</td>
<td>Cass. Psal. 138: 12</td>
</tr>
<tr>
<td>287-289</td>
<td>HM</td>
</tr>
<tr>
<td>289-294</td>
<td>Bede Joh. 1: 5</td>
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<td>294-295</td>
<td>Clav. 4: 23</td>
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<td>295-301</td>
<td>HM</td>
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<td>301-303</td>
<td>Clav. 4: 25</td>
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<td>303-304</td>
<td>HM</td>
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<td>304-309</td>
<td>Cass. Psal. 16: 9</td>
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<td>309-310</td>
<td>HM</td>
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<td>310-312</td>
<td>Clav. 4: 24, 26-27</td>
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<td>312-314</td>
<td>HM</td>
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<td>314-318</td>
<td>Cass. Psal. 87: 7</td>
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<td>318-319</td>
<td>Isid. Etym. 13: 10</td>
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<td>319-320</td>
<td>Clav. 3: 37</td>
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<td>320-325</td>
<td>Pat. exp. v+n test. 2: 29</td>
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<td>325-326</td>
<td>Pat. exp. v+n test. 11: 38</td>
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<td>326-327</td>
<td>HM</td>
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<td>328-331</td>
<td>Cass. Psal. 17: 10</td>
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<td>331-332</td>
<td>HM</td>
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<tr>
<td>332-338</td>
<td>Greg. Moral. 28: 17</td>
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<td>338-339</td>
<td>HM</td>
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<tr>
<td>339-342</td>
<td>Clav. 4: 29, 28</td>
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</table>
Chapter 8 has the most complex composition of any chapter in book 10 and comes at the midway point of the book. The 843 words of the chapter are composed of 24 separate passages. Fifteen of those passages are excerpts from six different source texts (Isidore, Cassiodorus, Bede, Paterius, Gregory, Clavis melitonis). Interspersed amongst the excerpts are 9 sections of original commentary by Hrabanus equalling 255 words. The numerous sections to this chapter are not an indication of multiple topics such as in chapter five. Rather, this is a case of one topic, darkness, having multiple meanings and having many different allegorical and mystical interpretations.

This chapter contains the only excerpt from chapter 3 of the Clavis melitonis from lines 319 to 320 as well as the only instance of excerpts from Paterius’ Liber de expositione veteris ac novi testamenti. These 2 excerpts are placed one after another from lines 320 to 325 and 325 to 326. At lines 318 to 319 is the only excerpt from book 13 of Isidore’s Etymologiae. All other excerpts from Isidore from chapter 1 through to chapter 14 are from chapter 5 (as discussed below, chapters 15, 16, and 17 of book 10 are excerpts from Etymologiae 6:18). The second of 3 excerpts from Gregory’s Moralia in Job appears at lines 332 to 338. This chapter also contains the only excerpt in book 10 from Bede’s In sancti Johannis evangelium expositio (lines 289 to 294).

Chapter 9: De hebdomadibus

344-473 Bede DTR 8, 9, 10

Immediately following the most complex chapter is the longest one at 1661 words. Even though chapter nine is the longest chapter, it is, at the same time, one of the most simple with regards to a catena composition. Here Hrabanus uses only one source text, Bede’s DTR, and does not provide any of his own commentary or illustrative examples from any other authors. However, the one excerpt from Bede is not an integral passage from DTR, but is 4 separate excerpts from chapters 8 (on the week), 9 (on the 70 prophetic weeks), and 10 (on the week of the World Ages). The first excerpt Hrabanus uses (lines 344 to 362) is from the first third of chapter 8 and the second excerpt (lines 362 to 377) is from the last third of chapter 8. The third excerpt (lines 377 to 436) is one integral passage from the first three quarters of De temporum ratione chapter 9. The fourth excerpt (lines 436 to 473) is the entirety of De temporum ratione chapter 10.
Chapter 10: De mensibus

475-522 Bede DTR 11
522-523 HM
524-527 Gerg. Moral. 19: 10
527-528 Clav. 4: 71
528-529 HM
529-532 Orig. Comm. Isaiah 18
532-534 HM
534-535 Orig. Comm. Isaiah 18
536-538 HM

Chapter 10 is mostly composed as an alternation between one source excerpt followed by a commentary from Hrabanus. There are five source text passages and four of Hrabanus’ own additions. This chapter also has the only 2 excerpts from Origen’s Commentarium in Isaiam prophetam in all of book 10 (529 to 532 and 534 to 535). The first excerpt of the chapter which is from chapter 11 of Bede’s De temporum ratione makes up the majority of this chapter at 73 per cent of the text. The short excerpt from Gregory (524 to 527) is the third and last excerpt from this work for book 10.

Chapter 11: De vicissitudinibus temporum IIII

540-559 Isid. Etym. 5: 35
560-564 HM
564-568 Clav. 4: 61-63
568-572 Cass. Psal. 73: 17
572-583 HM
584-587 Clav. 4: 64-65
587-592 Bede Comm. Marci 4: 13

Chapter 11 is a typical catena construction starting with a substantial excerpt from the Etymologiae. Following the excerpt from Cassiodorus is the longest original passage of Hrabanus’ commentary in all of book 10 (161 words at lines 572 to 583). However, as explained above, this passage contains Biblical quotations which equal 124 words leaving only 37 words as
his own. Hrabanus closes this chapter with the second of only two excerpts of Bede’s *In sancti Marci evangelium expositio*.

Chapter 12: *De anno*

594-613  Bede DTR 36  
613-626  Bede DTR 65  
626-628  Clav. 4: 67-68  
628-629  Cass. Psal. 101: 28  
629-642  Cass. Psal. 89: 9-10  
642-649  Clav. 4: 69-70, 72  
649-654  Isid. Etym. 5: 37

There are two unusual characteristics about chapter 12 on the year. First, there are no additions by Hrabanus. It is purely a chain of excerpts from Bede, *Clavis melitonis*, Cassiodorus, and Isidore. Second, this chapter ends with an excerpt from Isidore, the only time Hrabanus lets Isidore have the last word. This is also the only chapter with excerpts from chapters 36 and 65 in Bede’s DTR. The excerpt from *De temporum ratione* 36 is the first three quarters of Bede’s chapter, the last quarter of which is an extended Biblical quotation which Hrabanus chose not to copy over to his work. The excerpt from *De temporum ratione* 65 (lines 613 to 626) is the first half of the chapter in Bede’s work.

Chapter 13: *De saeculo*

656-660  Isid. Etym. 5: 38  
660-661  HM  
661-663  Cass. Psal. 105: 1  
664  HM  
664-665  Cass. Psal. 104: 8  
665-668  HM  
668-669  Cass. Psal. 102: 17  
669-678  Isid. Etym. 5: 38  
678-679  HM
Like chapter 11, chapter 13 on the *saeculum* is a *catena* constructed of alternating source text excerpts and Hrabanus’ brief interjections. The chapter is book-ended by excerpts from Isidore’s *Etymologiae* which frame three excerpts from one source: Cassiodorus’s *Expositio in psalmus*.

Chapter 14: *De sex aetatibus saeculi*

681-707 Bede DTR 66

Chapter 14 is an integral excerpt from chapter 66 of Bede’s DTR. Chapter 66 of Bede’s work is known as his world chronicle and sometimes circulated separately as it is a very lengthy work. Bede’s chronicle is essentially a chronology of salvation history based on Biblical narrative and largely derived from Isidore’s chronicle in *Etymologiae* 5:29. The passage that Hrabanus excerpts is at the very beginning of the chronicle, an introduction which lays out the main structure of the world ages described in the rest of chapter 66. Of particular interest is the number 942 which appears on line 690 of this edition. This number is erroneously transcribed as 272 in all the manuscripts of Bede’s DTR, including those copied after Hrabanus’ *De rerum naturis* had been published. However, Bede records the correct figure, 942, in *De temporibus* (602.2) and the *Epistula ad Pleguinam* 5 (*Letter to Plegwin*). For the eight manuscripts of *De rerum naturis* included in this edition, none contain the correct number of 942. Instead, they all contain the erroneous number 1072 except for *Ar* and *Ro*. In the case of *Ar*, line 690 is part of a lacuna in the manuscript so it is impossible to know if it too contained 1072 or 272. However, *Ro* does contain the number of 272. This situation is evidence that either *Ro* was again revised based on Bede’s *De temporum ratione* or that its possible exemplar, *Ar*, was likewise revised. A possible explanation for the discrepancy between 1072 and 272 is based on the similarity of the

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43 See Wallis 2004, pp. 157-237 for a translation of the extensive text and then pp. 353-366 for a discussion of the text and Bede’s sources.

44 Bede largely follows Isidore in using the continuous *annus mundi* chronology, articulating Hebrew history according to patriarchs, judges, and kings, and dating reigns at their end rather than their start, and choosing the Incarnation as the beginning of the Sixth Age. See Wallis 2004, p. 365

45 *Bedae venerabilis Epistula ad Pleguinam*. Ed. Charles W. Jones. CCSL 123C (1980) pp. 617-26; “The correct figure is 942 years, and Bede records it as such in On Times (602.2) and Letter to Plegwin 5. Yet the MSS of the Reckoning of Time all read 272, despite the fact that it contradicts Bede’s statement, s.a. 1693, that the Septuagint’s reckoning of the first two Ages is longer than the Vulgate’s.” Wallis 2004, p. 157
suspensions for the number 1000 (m) and for the number 200 (cc) in some cursive scripts. Two actions could have taken place to produce the results listed in the *apparatus criticus*: the first is that Hrabanus transcribed 272 from Bede’s *De temporum ratione* into his autograph and then a scribal mistake changing the number to 1072 was introduced into the archetype (ω); the second is that Hrabanus himself could have introduced the mistaken number 1072 into his autograph.

Chapter 15: *De festivitatibus*

709-742  
Isid. Etym. 6: 18

See chapter 17 below for commentary.

Chapter 16: *De sabbato*

744-747  
Isid. Etym. 6: 18

See chapter 17 below for commentary.

Chapter 17: *De dominico die*

749-754  
Isid. Etym. 6: 18

The last 3 chapters of book 10 are very similar: short, only one excerpt from *Etymologiae* each, and no additions from Hrabanus. As Schipper suggested above, they seem unfinished when compared to the complex structures and multitude of sources in earlier chapters. It is possible that Hrabanus meant to go back at a later time to build a *catena* of excerpts and comments on feast days, the Sabbath, and the Lord’s day. Another aspect which sets them apart is their source of book 6 of *Etymologiae*, a book which Hrabanus does not use as a source anywhere else in book 10. Further discussion of how later readers and scribes saw these ‘unfinished’ final 3 chapters and what they added to them in attempts to complete the project is provided below in chapter 4.3.
3.4 The Evolution of Book 10 of *De rerum naturis*

The text of book 10 of *De rerum naturis* is highly stable in the 3 oldest manuscripts from the ninth to the eleventh centuries. The variants recorded in these three manuscripts mostly concern a difference of a few letters in a word or two adjacent words which are reordered. However, starting with some of the twelfth-century manuscripts, the text of book 10 has been revised to include 3 additional excerpts from Bede and Isidore with some additional commentary from an unidentified source or sources. Two short additions of several lines each appear in chapters 1 and 15 while the third and longest addition has been placed at the end of the last chapter of the book. The following discussion will present the additional texts, an analysis of how they are integrated into the chapters, and possible explanations about why they were added and who might have participated in these later revisions.

Additional passages appear in the following manuscripts:

(Unconfirmed for An D M Ma Pr V)

Chapter 1 line 11 (55 words) Ck Cu E Ob On Or Og Ro Wo

Chapter 15 line 730 (58) C N St Va Vc

Chapter 17 line 754 (393) Cc Ck Cu E F G L Ob Oc Og On Or Pb Pv Ro Rs Rt Wo

Addition to Chapter 1: *De temporibus*

The following 53 words are included in the text after *praecipit* (line 11) in

*Ck Cu E Ob On Or Og Ro Wo*:

Nam etsi barbarae gentes hebdomadas habere probentur, a populo tamen Dei mutuasse non latet. De consuetudine vero humana firmatum est ut mensis triginta diebus computaretur, cum hoc nec solis nec lunae cursui conveniat. Siquidem lunam duodecim horis minus salva vero ratione saltus, solem decem horis et dimidia plus habere, qui sollertius exquisiere testantur.46

46 “For although it is true that barbarian nations are believed to have weeks, it is nonetheless obvious that they borrowed this from the people of God. Now it is by human custom that the month is considered as having 30 days, even though this does not match the course of either the Sun or the Moon. Those who probe with subtlety into these matters confirm that, in fact, the Moon has – setting aside the calculation of the ‘leap of the Moon’ – 12 hours less [than 30 days], and the Sun has 10½ hours more.” Trans. Wallis 2004, pp. 13-14
As noted above the content of the first 16 lines of chapter 1 is taken entirely from Bede’s *De temporum ratione* chapter 2 (*De trimoda temporum ratione*). The text of these 16 lines as it appears in the edition above (reflecting the 3 oldest mss) is in fact 2 excerpts from Bede’s chapter: the first 106 words of Bede’s chapter 2 (*Tempora igitur...in lege praecipit*) and the last 71 words from Bede’s chapter 2 (*Porro natura duce...et dies et annos*). The middle part of Bede’s chapter, missing from Hrabanus’ chapter, is in fact the 54 words above which appear in the text of the later manuscripts of book 10. The later editor has simply restored the integrity of the excerpt from Bede. At some point, an editor consulted Bede’s text and decided to include the missing part of the chapter. It is impossible to ascertain whether or not the later editor thought the omission was a one-time scribal error appearing only in his exemplar or if he, in fact, did consider the possibility that Hrabanus had intentionally chosen to leave out these few lines.

If Hrabanus did intentionally omit these words, why did he do it? The outline of the structure of each chapter (see chapters 3.1 and 3.3 above) reveals that Hrabanus quite frequently took non-contiguous parts of chapters from a single source text like *De temporum ratione* and the *Etymologiae* and combined them together to include them as one link in the chain of sources for a chapter. Therefore, his arrangement of the text from Bede in chapter 1 of book 10 is not an aberration of his methodological process. Turning to the question of why Hrabanus might have decided to omit these lines from Bede leads to only one hypothesis at this time and it is based on the reference to the *barbarae gentes*. The term for barbarian appears nowhere in the entirety of book 10 in any lexical form.\(^{47}\) Perhaps this reference to the barbarians reflects a continuous Carolingian interest in the periphery, if not by Hrabanus himself, then by his readers and copiers who may have reinserted the text at a later date. Interestingly enough, the addition occurs in manuscripts associated with England and not with Austria or the East Frankish Kingdom as would perhaps be expected for this reference. If, in future studies of the other books of *De rerum naturis*, a pattern emerges of omissions based on the content of the source text referencing the barbarian peoples, then perhaps an interesting argument can be made for an additional element to Hrabanus’ purpose in writing his encyclopedia and for the wider context of the project’s genesis.

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\(^{47}\) A search of the online *Patrologia latina* turned up only two instances of the adjective *barbara* in *De rerum naturis*. These are in reference to the *lingua barbara* in 16:2 (*De gentium vocabulis*).
Addition to Chapter 15: De festivitatibus

The following 58 words are included in the text after sollemnitatis vestrae (line 730) in C N St Va Vc:

Conceptus est dominus noster Jesus Christus die dominico octavo kalendas aprilis, natus est tertia feria, baptizatus est octavo idus Ianuarii secunda feria. Ex octavo kalendas aprilis in octavo kalendas ianuarias dies sunt ducenti septuaginta sex. A nativitate eius usque in diem qua passus est fiunt anni triginta duo et mensae tres, qui sunt dies duodecim milia quadringenti quindecim.

This passage does have some similarities with several other texts but only to the extent that it can be called a paraphrase. The first possible source is the Liber Dionysii exigui argumenta XV: de die aequinoctii et solstitiali [506A-506C] PL 67, which includes similar phrases containing the same explanations for the quantification of the events of Jesus’ lifetime but does contain some numerical discrepancies.

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48 The 276 days also refers to the time it took to build the temple in Jerusalem. See John 2:20-21

49 “Our Lord Jesus Christ was conceived on Sunday the eighth kalends of April, was born on the third day of the week, and was baptized on the eighth ides of January, the second day of the week. From the eighth kalends of April to the eighth kalends of January there are 276 days. The time from his birth to his death is 32 years and 3 months which makes 12,415 days.” Trans. Lisa Chen Obrist

The second possible source is a pseudo-Bedan work entitled De argumentis lunae libellus: de solstitiis et aequinoctiis [724B-D] PL 90, also containing the same information. Even Hrabanus uses similar paraphrases in his earlier commentary on the Book of Wisdom.

These five manuscripts in which this addition appears (C N St Va Vc) are not just linked together by their cycle of illustrations. They also share distinctive textual variants that give them the status of a separate branch in the manuscript stemma representing a unique recension of the text. In 1967, Erwin Panofsky identified this group of illustrated manuscripts for which the Montecassino manuscript (C) is the earliest witness. His particular case study focused on the illustration of Hercules in book 15, chapter 6 that differed between this group of illustrated manuscripts and the rest of the witnesses. Alongside the illustration, Panofsky also identified an addition of a description of Hercules which is missing from the source text for this section, Isidore’s Etymologiae 8: 11. Unfortunately, this example does not fit the exact profile of the addition to book 10, chapter 15 found in the illustrated manuscripts because, unlike the addition

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52 Veruntamen decimo mense post conceptionis ejus tempus nativitas ipsius a Christianis celebratur solemnitas, quando ab octavo Kalendarii Aprilium quo conceptus creditur usque adeoctavum Kalendarii Januarii ubi natus traditur, ducenti septuaginta sex dies anumerantur, qui numerus dierum copulet novem menses et sex dies, et ita illa sententia Evangelica qua idem Salvator quadraginta sex annis templum corporis sui aedificatum a Judaeis praedixit dissolvendum, per senarii numeri multiplicationem perfectionem incarnationis ejus ostendit: quia ducenti et septuaginta et sex quadragies sexies senariun habent. Unde evidenter claret quod sicut perfectus Deus, ita et perfectus est homo Jesus Christus Dominus noster. Hrabani mauro commentariorum in Librum sapientiae libri tres. lib. 2 cap. II. PL 109, col 697C-D

53 Panofsky 1969, passim
listed above, the addition identified by Panofsky does occur in the 1467 Strasbourg printing by Adolph Rusch, subsequently reprinted by Colvener in the 1627 Cologne edition and by Migne in the *Patrologia latina*.\textsuperscript{54} As discussed above in chapters 1.3.3.5 and 2.3, the illustrated manuscripts do form their own group because of the illustrations, their lack of the prefatory letters, and now, it can be added, their inclusion of textual additions in at least two places, book 10, chapter 15 and book 15, chapter 8. The only difference is the inclusion of the Hercules addition in the printed versions of the text. As Schipper has concluded, the textual evidence drawn from these manuscripts suggests that the “Montecassino copy appears to represent a revised edition in progress” and that the lexical substitutions he found suggest that “this group of manuscripts represents a second recension”.\textsuperscript{55} Given the present analysis of the addition to book 10, chapter 15, there is now evidence to suggest that within the illustrated manuscript tradition there is the possibility that 2 textual recensions exist. Since the exemplar for Rusch’s *editio princeps* has not been identified and there are no more known manuscript witnesses that are linked to the illustrated group, it is impossible to definitively explain why the print tradition of *De rerum naturis* includes the Hercules description from the illustrated manuscripts but not the passage describing Jesus’ lifetime in numbers from book 10, chapter 15.

Addition to Chapter 17: *De dominico die*

The following 393 words are included at the end of the text after *celebrari coepit* (line 754) in *Cc Ck Cu E F G L Ob Oc Og On Or Pb Pv Ro Rs Rt Wo*:

\begin{quote}
Ipse est enim primus qui post septem reperitur octavus. Unde in ecclesiasten ad duum testamentorum significationem *datur illi septem et illi octo*.\textsuperscript{56} Dominicum diem apostoli ideo religiosa sollemnitate sanxerunt quia in eodem redemptor noster a mortuis resurrexit. Quique ideo dominicus appellatur, ut in eo, a terrenis
\end{quote}

\textsuperscript{54} The description of Hercules addition identified by Panofsky exists in the following manuscripts in addition to *C*: Vatican City, Biblioteca Apostolica Vaticana, MS Pal. Lat. 291 and Reg. Lat. 391; Stuttgart, Württembergische Landesbibliothek, MS Theol. et philos. 2’45 [1457]; and Berlin, Preussischer Kulturbesitz, MS lat. f. 930, a fragmentary and badly mutilated copy that came to Berlin in 1936; and additional fragments preserved in Columbia University Library (MS Plimpton 128) and in private hands in the U.S. Schipper 2007, pp. 106-107

\textsuperscript{55} Schipper 2007, p. 114

\textsuperscript{56} Ecclesiastes 11:2
operibus vel mundi illecebris abstinentes tantum divinis cultibus serviamus dantes scilicet diei huic honorem et reverentiam propter spem resurrectionis nostrae quam habemus in illo. Nam sicut ipse dominus noster Iesus Christus redemptor et salvator noster tertia die resurrexit a mortuis ita et nos resurrecturos in novissimo die speramus. Unde etiam in dominico die stantes oramus quod est signum futurae resurrectionis. Hoc agit universa ecclesia quae in peregrinatione mortalitatis inventa est expectans finem seculi quod in domini nostri Jesu Christi corpore praemonstratum est qui est primogenitus a mortuis. 57 Sabbatum autem a priori populo in initio celebratum legitimus ut figura esset in requiem. Unde et sabbatum requies interpretatur. Apparet autem hunc diem etiam in scripturis sanctis esse sollemne. Ipse est enim dies primus saeculi in ipso formata sunt elementa mundi in ipso creati sunt angeli in ipso quoque a mortuis resurrexit Christus in ipso de caelis super apostolos spiritus sanctus descendent. In ipso credimus universam et immensam multitudinem totius mundi resurrectaram ad ipsum terribile dei iudicium quod caput est octavi et ab illa die octavum celebrare sine cessatione sive iustos cum angelis dei in perpetua exultatione sive reprobos cum diabolo et satellitibus eius in perpetua damnatione. Namque quod creavit angelos et a mortuis resurrexit et spiritum sanctum super apostolos ad nostram corroborationem et confirmationem misit. Nobis valet nil credere nisi fidem nostram bonis perornemus et sanctis virtutibus carnisque in vitam aeternam credamus resurrectionem. Nam nobis hoc apostolicum contestatur eloquium dicendo, Fides sine operibus mortua est. 58 Et dominus in evangelio, Qui non crediderit resurrectionem non habebit vitam aeternam. 59 Manna in heremo in eodem die de caelo data est primo. Sic enim dicit dominus, Sex diebus collegetis manna in die autem sexto dupplum colligetis. 60 Sexta enim dies est parasceve quae ante sabbatum ponitur. Sabbatum autem septimum dies quem sequitur dominicus in quo primum manna de caelo venit. Unde intellegent iudei iam tunc praelatam esse iudaico sabbato dominicam nostram. Iam tunc indicatum quod in sabbato ipsorum gratiam dei de caelo ad eos

57 Colossians 1:18
58 James 2: 26
59 John 3: 15-16
60 Exodus 16: 26-29
nulla descenderit sed in dominica nostra in qua primum dominus de caelo eam pluit.61

This passage starts off with an explanation of the eighth day of the week which turns out to be quite simple.62 The eighth day of the week is just the first day of the week.63 The first and the eighth day of the week also happen to be the Lord’s Day, a day to commemorate the significance

61 “For this day, the first to be found after the seven days, is the eighth. Hence, even in Ecclesiastes its significance for the two Testaments is stated: *Divide your means seven ways for the one, or even eight*. The apostles sanctified the Lord’s Day by religious solemnity, because on that day our redeemer rose from the dead. Thus, this day is called the Lord’s so that on it, abstaining from earthly works and the allurements of the world, we might serve him only in divine worship, giving honour and reverence on this day, certainly, for the hope of our resurrection which we have in him. For just as our Lord, Saviour, and Redeemer Jesus Christ himself rose from the dead on the third day, so also we hope that we shall be raised on the last day. Hence also on the Lord’s Day we pray standing because this is a sign of the future resurrection. The universal church which is found in the pilgrimage of mortality does this, looking forward at the end of time to what was first indicated in the body of our Lord Jesus Christ, who is the first-born from the dead. We read that the Sabbath was celebrated by the first people in the beginning so that their bodily form might be at rest. Thus the Sabbath is interpreted as rest. This day appears as solemn even in Sacred Scriptures. For this is the first day of the period and on this day the elements of the world were formed, on this day the angels were created, on this day also Christ rose from the dead, on this day the Holy Spirit descended from heaven upon the apostles. On this day, which is the beginning of the eighth period, we believe that the universe in the multitude measure of the whole world will be resurrected in the terrible judgment of God and from this day on the octave, either the just celebrate without cessation with the angels of God in perpetual exultation or the rejected celebrate with the devil and his minions in perpetual damnation. For he created angels and rose from the dead and he sent the Holy Spirit upon the apostles for our corroboration and confirmation. Nothing is able to be believed by us unless we greatly adorn our faith with good and holy virtues and believe in eternal life and the resurrection of flesh. For it is witnessed by us in the apostolic speech as he says: *Faith without works is dead*. Also the Lord in the gospel says: *He who will not believe in the resurrection will not have eternal life*. On this day in the desert, manna from heaven was first given. For thus says the Lord: *Six days you shall gather it, on the sixth day he gives you food for two days*. Thus, the sixth day is the day of preparation that is placed before the Sabbath. The Sabbath is the seventh day, which is followed by the Day of the Lord on which the manna from heaven first came. Consequently, the Jews may now understand that our Lord’s Day is superior to the Jewish Sabbath. It is now clear that the grace of God never descended on them from heaven on their Sabbath but rather on our Lord’s Day, on which the Lord first rained down the manna.” Trans. Thomas Knoebel and Lisa Chen Obrist


63 Bede devoted three chapters to the week which underscore its status as the privileged symbol of sacred time. As Wallis notes, Bede also elaborated a theme found in Irish computi, and ultimately derived from a hint in Isidore’s *De natura rerum* 3, about the notion that the “week” is not a univocal category; rather there are eight different kinds of weeks. “The message is that whereas human authority restricts the meaning of time, the divine authority of Scripture expands and diversifies that meaning.” Wallis 2004, p. 278. The ninth chapter in book 10 of Hrabanus’ *De rerum naturis* discusses the 8 types of Scriptural weeks: the divine week of Creation; the conventional 7-day week; Pentecost or the “feast of weeks”, i.e. the 50 days after Easter (7x7+1 days); the Jewish seventh month (feast of the Atonement); the sabbath of the land in the seventh year; the Jubilee, the annual analogy of Pentecost (7x7+1 years); the “prophetic week” of the Old Testament; and the week of the World-Ages. Isidore also refers to the eighth day of the week at the end of book five in *Etymologiae* in which he underlines the cyclical character of the week in which the eighth day is identified as the first.
of the life and death of Jesus. This system of counting the weekdays is not unique and in fact the opening of book 10 describes another instance of inclusively counting the days of the week. That is: there are seven complete days in the span of a week but for the weeks to exist in a cycle they must repeat themselves and thus the eighth day of the week must exist and be at one and the same time the first and the last day of the cycle. Without the concept of the eighth day, the week would come to an end and cease to be part of a cyclical sequence. The example given in chapter one of book 10 involves the Roman secular market week cycle known as the *nundinae*. The term literally means nine days and marks the repetition of market events every nine days. That is: this cycle comprised eight days between market days, with the market day, the first day of the cycle, also being the ninth day.

The example of the *nundinae* is given within an explanation of the different ways of conceptualizing time measurement. It is the ever present dichotomy of God and man, heaven and earth, of the human and the divine which is reflected in the organization of the 22 books of the complete text. It is the problem of how to reconcile observations of nature, what they see in the world around them, with what they read about in the texts of divine authority. The *nundinae* is here given by Hrabanus as an example of an entirely human and mundane construct of time measurement.

Chapter 17 of book 10 opens with an excerpt from Isidore’s *Etymologiae* (book 6, chapter 18: 20-21) about the different meaning of the Lord’s Day for the Christians and the Jews, and this excerpt does include mention in the last sentence of the Lord’s Day as the eighth day of the week. The rest of the chapter continues on the topic of the Lord’s Day being the eighth day and goes on to talk about why the Lord’s Day is celebrated, what will happen on the last day when all believers will be resurrected like Jesus, and the difference between the Christian and Jewish understandings of eternal salvation. Therefore, the additional mystery text is a continuation and expansion of the discussion, resulting in the extension of chapter 17 from about 80 words (from

64 The eighth day of the week is also referred to in chapter 4 of book 10 in 2 sentences which Hrabanus borrows from the *Clavis melitonis*. This excerpt discusses the same instance of the Lord’s Day being the first and the eighth day of the week.
Isidore) to almost 500 words. This additional text not only concludes the chapter but also concludes the entire book.

Following research undertaken for the present thesis, the source for the majority of this additional passage can now be identified. Not surprisingly, it is taken from another work by Isidore of Seville, his De ecclesiasticis officiis (On the Ecclesiastical Offices). The text is taken from book 1, chapters 24 (The Lord’s Day) and 25 (The Sabbath) and not in sequential order. In fact, there are 5 separate excerpts from different sections of chapters 24 and 25 and they are spliced together in a patchwork way similar to the catena method. Sources for the addition to chapter 17 De dominico die are as follows:

**Ipse est enim...et illi octo**: (22 words) Isidore’s De ecclesiasticis officiis (DEO) lib. 1: cap. 25

**Dominicum diem apostoli...primogenitus a mortuis**: (111 words) DEO 1:24

**Sabbatum autem a priori...requies interpretatur**: (19 words) DEO 1:25

**Apparet autem hunc...sanctus descendit**: (43 words) DEO 1:25

**In ipso credimus universam...habebit vitam aeternam**: (106 words) unidentified

**Manna in heremo...caelo eam pluit**: (86 words) DEO 1:25

Isidore’s De ecclesiasticis officiis is not identified by Heyse or Schipper as a source found in any of the 22 books of De rerum naturis. However, work is still ongoing with the complete edition and this source will now have to be kept in mind as a possibility for other, up until now, unidentified passages. There is precedent for Hrabanus’ use of Isidore’s De ecclesiasticis officiis before he set about writing his encyclopedia. In 819, Hrabanus used Isidore’s text as a source for his De institutione clericorum. In fact, in book 2, chapter 42 (De die dominica), Hrabanus used the exact same excerpts that appear in the additional passage. Therefore, given this precedent,

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65 *Dominicum diem apostoli ideo religiosa solemnitate sanxerunt, quia in eodem redemptor noster a mortuis resurrexit; quique ideo dominicus appellatur, ut in eo a terrenis operibus vel mundi inlecebris abstinentes tantum divinis cultibus serviamus, dantes scilicet diei huic honorem et reverentiam propter spem resurrectionis nostrae, quam habemus in illa. Nam sicut ipse dominus Iesus Christus et salvator noster tertia die resurrexit a mortuis, ita et nos resurrecturos in novissimo die speramus. Unde etiam in dominico die stantes oramus, quod est signum futurae resurrectionis. Hoc agit universa ecclesia, quae in peregrinatione mortalitatis inventa est, expectans in fine saeculi, quod in domini nostri Iesu Christi corpore praemonstratum est, qui est primogenitus a mortuis. Sabbatum autem a priori populo in otio corporali celebratum legimus, ut figura esset in requie; unde et sabbatum requies interpretatur. Dies autem dominicus non iudaicus, sed christianis per resurrectionem domini declaratus est, et ex illo coepit habere festivitatem suam. Ipse est enim dies primus, qui post septimum reperitur octavus; unde et in*
it is possible that Hrabanus was responsible for adding these excerpts to the end of book 10, chapter 17. As for the unidentified passage of 106 words that appears in the middle of this addition, through the process of searching other source texts, it is possible that, on the one hand, there may be a discovery as to where else Hrabanus was mining his information from but, on the other hand, this passage may be further evidence of Hrabanus’ original contribution to the work. In this case, no help is forthcoming from Heyse’s work to indicate the direction to look in other than combing through the works of the usual suspects such as Isidore, Bede, Cassiodorus, and Hrabanus himself. Heyse based her source study on the text in the *Patrologia latina*, which goes back to the first edition by Rusch and which does not include this additional text.

However, in this case a spanner gets thrown into the works and here the manuscript evidence leads towards textual developments which may have taken place many centuries after Hrabanus and his students. Of the 18 manuscripts that have been confirmed to contain the additional text at the end of chapter 17, none dates from the ninth century. In fact, the earliest manuscript dates from the twelfth century, far from Hrabanus’ lifetime. Therefore, the possibility must be entertained that the passage was added by someone else and perhaps at a later date. It is not surprising that its first appearance is in a twelfth-century manuscript during a time when Europe saw a new wave in encyclopedism. As discussed above, William Schipper has shown that manuscript copies from the twelfth century and later, particularly from England, are highly annotated and obviously well-used.66 These possible explanations lead to questions regarding

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66 Schipper 1997, EMS, pp. 1-23
the status of Hrabanus’ *De rerum naturis*. How much and in what way was his work valued? Did later editors think they were fixing a mistake by completing what they thought was an unfinished chapter? Could the additional text be past marginal notes which were then inserted into the primary text during the copying process before or during the twelfth century? Was it considered a stable text? Or was it fair game for additions, in some cases reflecting Hrabanus’ own method of compilation, organization and analysis? Did a later scholar perhaps believe he was doing just the same thing in imitating Hrabanus’ method? Modern notions of ‘authorial originality’ and ‘plagiarism’ give this a negative spin but was it really such a bad thing, to enhance the work not because it was seen as lacking or unworthy of reverence but because it was seen as an important and valued resource, worthy of attention and enhancements?

Ultimately, the concept of the eighth day of the week is not an obscure alternative calendrical unit, it did not make that much difference in the classical and medieval understanding of hebdomenal time measurement, as much as it must seem out of the ordinary to modern western readers. It is simply a different way of conceptualizing and counting the days of, as it is called by most, the seven-day week. Different systems were successfully reconciled so that both theoretical and literal textual explanations could coexist with everyday experiential reality. There is still, however, the question about the status of the additional text and what it means to our understanding of the status of *De rerum naturis* as a whole as well as who was responsible for adding excerpts from another work by Isidore. It is precisely because of these questions that this addition to the end of book 10 about the eighth day of the week does make a significant difference to our understanding of the reception and influence of Hrabanus’ encyclopedia.

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67 Chapters 15, 16, and 17 are very short and only include an excerpt from the *Etymologiae* similar to the opening structure of other chapters in the majority of the 22 books of *De rerum naturis*. It is quite feasible that these chapters were unfinished and that later editors strove to complete them (so far no evidence has been found of any additional passages associated with chapter 16).

68 See chapter 1.3.3.2 above and Hathaway, Neil. “Compilatio: from plagiarism to compiling” *Viator* 20 (1989) 19-44
The Manuscript Groupings for the 3 Additions to Book 10

The addition to chapter 1 first appears in twelfth-century witnesses and in manuscripts that are associated with the English group. The addition to chapter 15 first appears in 1023 in Montecassino and in manuscripts included in the illustrated tradition. The addition to chapter 17 appears in many more manuscripts from the twelfth century onwards and includes some manuscripts which have the chapter 1 addition as well. In the end this creates six groups of witnesses:

Six manuscripts for which no confirmation can be made: An D M Ma Pr V

Four manuscripts with no additions: A Ar Pc Pg Z

Nine manuscripts with the addition to chapter 1: Ck Cu E Ob On Or Og Ro Wo

Five manuscripts with the addition to chapter 15: C N St Va Vc

Eighteen manuscripts with the addition to chapter 17:
   Cc Ck Cu E F G L Ob Oc Og On Or Pb Pv Ro Rs Rt Wo

Seven manuscripts with additions to chapters 1 and 17: Ck Cu E Ob On Or Wo

None of these three additions appear in A Ar Pc or Pg, of which A is the oldest witness for book 10. This does not necessarily discount the possibility that they did appear in the original and the archetype and were then omitted from subsequent copies. However, it is more likely that these passages were added to the work at a later date and, given the groupings analysed above, were not necessarily added at the same time or in the same place. Although the illustrated group of manuscripts seems to be a rather closed tradition, the same cannot be said for the group of manuscripts with the additions to chapters 1 or 17 or both. These three additions, therefore, are not markers of three separate, mutually exclusive, textual branches of the *stemma codicum*.

A further analysis of the place of book 10 within the whole encyclopedia is provided in chapter 4 where the discussion considers the significance and impact of the later two-volume sets which divide the work between books 10 and 11 as well as the later manuscripts containing the additions to chapter 17 at the end of the book. The textual evolution of book 10 outlined in this chapter, in addition to the literary and codicological evidence to be presented in the next chapter, will help in the evaluation of the reception and influence of all 22 books of *De rerum naturis*. 
Chapter 4
Conclusions

4 Book 10 of *De rerum naturis* After Hrabanus Maurus

The final chapter of this study presents the story of the ‘Nachleben’ of book 10 of *De rerum naturis*. The first section continues the outline presented above in chapter one about the development of the encyclopedic genre and follows the story up to the thirteenth century. The second section presents a similar analysis for the computistical textbook genre and discusses the reception and influence of Hrabanus’ *De computo*. The third section looks at the literary, textual, and codicological evidence presented in previous chapters in order to evaluate the reception and influence of Hrabanus’ *De rerum naturis*. The final section offers general concluding remarks on this edition as well as the accompanying analysis and commentary and provides suggestions for future avenues of study.

4.1 The Encyclopedic Tradition in the Later Middle Ages

Following the history of the encyclopedic tradition up to and during the Carolingian period outlined in chapter 1.2 above, the first part of chapter 4 presents a continuation of this outline focusing on the development of the genre from the Ottonian age to the thirteenth century. According to Burrows, only “two major encyclopedias were compiled in Western Europe in the earlier Middles Ages: the *Etymologiae* of Isidore of Seville, in the early seventh century, and Hrabanus Maurus’ *De naturis rerum*, in the early ninth century. Between them, these two works dominated the field of Christian encyclopedic scholarship until the twelfth century”.

There were, however, developments in encyclopedic thought and in shorter treatises as well as the sub-genre that Ribémont calls the “encyclopédie éclatée”.

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1 Burrows 1987, p. 28

2 For a discussion of the development of the computistical genre see chapter 4.3 below and for a discussion of Ribémont’s analysis see chapters 1.2 and 1.3.3.2 above. See Ribémont 2001, passim
The manuscript evidence supports Burrows’ assertion and literary and textual scholars such as Joseph De Ghellinck and Ernst Curtius emphatically promote the importance of Isidore’s oeuvre. There are nearly 1000 extant manuscripts of the *Etymologiae*, an extremely large number for an early medieval text. As evidence of its “continuing popularity down to and after the advent of printing,” Barney points to the more than 60 manuscript copies of the whole work and more than 70 copies of excerpts that were written in the fifteenth century alone. The *Etymologiae* was also among the earliest printed books, first appearing in 1472, followed by nearly a dozen printings before the year 1500. According to De Ghellinck the *Etymologiae* “was used by the Middle Ages under all possible forms” and further that “there is no medieval author who does not make use of Isidore”. This opinion is similarly espoused by Curtius: “the importance of this work cannot be overestimated; it may be called the basic book of the entire Middle Ages”. There is no doubt, as Burrows emphasizes, that Isidore’s *Etymologiae* “was a crucial book in the intellectual history of Western Europe, both as a summary of classical knowledge and as a source for writers in subsequent centuries”.

Hrabanus’ *De rerum naturis* never eclipsed its inspirational source text to become the standard encyclopedia after the Carolingian period and, although popular, was never disseminated to the extent of Isidore’s work. The influential reach of Hrabanus’ encyclopedia is discussed further below in chapter 4.2. Due to the special exegetical nature of *De rerum naturis* it became a sort of companion text to Isidore’s encyclopedia and was used by later encyclopedists in general but

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3 De Ghellinck, Joseph. *Littérature latine au moyen âge* vol. 1 (Paris 1939); Curtius, Ernst. *Europäische Literatur und lateinisches Mittelalter* (Bern 1948)

4 Barney 2006, p. 24

5 For a detailed discussion of the reception of Isidore in and after Carolingian times see Barney 2006, pp. 25-26

6 De Ghellinck 1939, pp. 28-29


8 Burrows 1987, p. 28
also by those in the monastic milieu, in particular, the preaching orders, as a specialized reference tool very useful for their purpose of finding Biblical exempla.

After Hrabanus Maurus, there was an interval of “more than 250 years before any notable new encyclopedia appeared in the West”.9 During this time the De rerum naturis was used, copied, and deemed worthy of being made into labour-intensive illustrated presentation copies. As Twomey rightly points out, the manuscript evidence does not indicate precisely “when the Carolingian encyclopedias ceased to serve as school texts, but it is clear that as a group their influence waned from about 1200 on”.10 The Carolingian texts were not immediately replaced when new encyclopedias appeared in the twelfth and thirteenth centuries. The manuscript evidence suggests that they continued to be read in English religious houses to at least 1400.11

The new wave of encyclopedic texts appearing in the twelfth century began in 1110 with the Imago mundi by Honorius Augustodunensis.12 Throughout this century there followed, among others: Didascalicon (Hugh of St. Victor); Heptateuchon (Thierry of Chartres); Gregorianum (Garner of St. Victor); Imago mundi (Anselm of Canterbury); Otia imperialia (Gervase of Tilbury); De philosophia mundi (William of Conches); Cosmographia (Bernard Sylvestris); Liber floridus (Lambert of St. Omer); and De diversis artibus (Theophilus Presbyter).

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9 Collison 1964, p.45
10 Twomey 2008, p. 245
11 Twomey 2008, p. 246; see the discussion in the next section on MS Laud. misc. 746 (Oxford, Franciscans, s. xiii) which contains Hrabanus’ De rerum naturis and was heavily annotated by Robert Grosseteste.
12 The Imago mundi was the geographical and historical resource of choice until it was superseded by Bartholomaeus Anglicus’ De proprietatibus rerum in the later thirteenth century. When this happened the Imago mundi gained a new life by becoming the first Latin encyclopaedia to be translated into a vernacular language. Twomey 1988, p. 246; For a general account of Honorius, and further detail on the Imago mundi, see Sanford, Eva Matthews. “Honorius, Presbyter and scholasticus.” Speculum 23 (1948) 397-425. For more details on the twelfth- and thirteenth-century encyclopedic text and late medieval encyclopedism in general see the works by Twomey, Collison, Kaske, Grant, and Burrows listed in the bibliography.
In the thirteenth century the stream of works continued with: *De naturis rerum* (Alexander Neckham); *De proprietatibus* (Bartholomeus Anglicus); *Liber de natura rerum* (Thomas of Cantimpré); *Speculum maius* (Vincent of Beauvais); *Grande e general estoria* (Alfonso X); *L’Image du monde* (Gossuin of Metz); *Speculum universale* (Raoul Ardent) etc. Examples of moralized encyclopedias from the fourteenth century include *Reductorium morale* (Pierre Bersuire) and *Summa de exemplis et rerum similitudinibus* (John of San Gimignano).

The differences between the early medieval and late medieval encyclopedias are reflected in the different intellectual cultures which contextualized their creation. Furthermore, although generalizations can be made about these two groups of texts, there are also differences which characterize the encyclopedias written at the opening of the twelfth century and those written in the thirteenth and fourteenth centuries. The following discussion outlines some general characteristics which distinguish the stages in the chronological development of encyclopedic thought and some of the social, intellectual, and religious movements which shaped this development.

There are several significant aspects of western Europe in the twelfth century which contributed to the flowering of a new encyclopedic movement. First, there was the rediscovery of ancient medical, mathematical, and philosophical texts which arrived via the Arabic world. These texts were not only ancient Greek texts but also texts from eastern Mediterranean cultures arriving in Europe for the first time. Chief among these rediscovered texts was a corpus of Aristotelian writings. Second, the rise of universities led to a new academic and intellectual culture which eventually expressed itself in the thirteenth century through the humanist and scholastic schools of thought. Third, was the establishment of vast complete libraries in universities, cathedrals, etc.

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13 Like Bede and Hrabanus, Alexander Neckam (1157-1215) taught in the schools, but he was also the first encyclopaedist to teach at a university (Paris, c. 1175-82). His *De naturis rerum* (c. 1200-4) is the most frequently mentioned encyclopedia in the *Registrum Anglie* after Isidore’s *Etymologiae* and Hrabanus’ *De rerum naturis*. Twomey 2008, p. 246

14 Alexander Neckham, Bartholomeus Anglicus, Thomas of Cantimpré, and Vincent of Beauvais were all university masters or close to the university milieu.
monasteries, and royal and civil courts. At the same time, new groups were reading, writing, and using new content and new texts. These new textual mediators, the academics, the intellectual royals, and the preachers from the new religious orders, created new demands for encyclopedias with different content, formats, and purposes.

Aristotelian thought is one characteristic that scholars use to differentiate between early and late medieval encyclopedism. This, according to Picone, is what separates Isidore and Hrabanus from Bartholomeus Anglicus and Vincent of Beauvais. In other words, the Christian Neo-Platonism in the encyclopedism from the seventh to the twelfth centuries is juxtaposed with the Arabic Aristotelianism prevalent in the twelfth and thirteenth centuries. There is also a shift from an encyclopedia based on the reading of the Bible, which is the foundation of the Isidorian encyclopedia, and an encyclopedia based on the book of nature, read through an Aristotelian lens. According to Picone and Le Goff, this shift is best reflected in the concept of ordo and how it is manifest in the organization and categorization of these new encyclopedias. In the prologue of the Speculum maius, Vincent of Beauvais explains that his main contribution to the work was in his capacity to organize the contents: Hoc ipsum opus utique meum simpliciter non sit...nostrum autem sola ordinatione. Even the titles of the texts emphasize this new relationship with the organization of knowledge and with man’s place in the natural world. The texts must be comprehensive and act as microcosmic libraries, hence the qualifiers universale,
magnus, maius etc. Other titles imply the human and natural focus of the attainment of knowledge with words such as *Imago mundi* and *Speculum*.

As discussed above in chapter 1.2, the seven liberal arts were used by the Carolingians as a way to not only categorize fields of knowledge and disciplines but also to structure texts and curricula. In fact, “the high point in the long history of the ‘seven sisters’ came in the first few decades after 1100” when they had on their side “both the momentum of tradition and...a near monopoly on potential texts”.  Before the arrival of new material from the east, the liberal arts were the summit of secular learning. This state of learning is illustrated in the *Didascalicon* by Hugh of St. Victor (1120s) and by Thierry of Chartres’ (d. c. 1155) *Heptateuchon*. Hugh added the “mechanical arts” to his study of the liberal arts but placed them below the *trivium* and *quadrivium*. Thierry advocated for the study of mathematics which he explained led directly to knowledge of God but must however only be undertaken after the philosopher has honed his two instruments: his mind, enlightened by the quadrivium, and his means of expression furnished by the trivium. “Hugh of St. Victor’s exposition, and Thierry’s compilation, with their celebration of the liberal arts’ uniqueness, were to be among the last of their kind”.

The new kind of encyclopedia which followed in the thirteenth century was focused on man and his place in the natural world. The encyclopedic movement developed alongside the humanist movement which transitioned to a view of man, created by God in his image, but also endowed with the capacity and knowledge to order the natural and known world. According to Le Goff, the great flourishing of encyclopedias in the thirteenth century only happened because of the growing self-confidence of man and a Christian rationalism which allowed him to be the central

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21 Grant 1999, p. 103
22 Le Goff 1992, p. 33
23 Grant 1999, p. 104
focus of the pursuit of knowledge.\textsuperscript{24} It is this double focus, on man himself and on nature, which represents the novelty of the encyclopedias of the thirteenth century.\textsuperscript{25}

The efforts of the late medieval encyclopedic movement were centered around two frequently overlapping groups: the university masters and students and the members of religious orders. The need for reference tools in the classroom and library as well as the availability of resources in the institutional libraries prompted and facilitated the creation of new encyclopedias and glossaries.\textsuperscript{26} The Mendicant and Cistercian orders both encouraged their members to study and also to produce texts which travelling preachers could rely on for suitable material for their sermons.\textsuperscript{27} Neckham’s encyclopedia was the first one used for preaching, and according to Twomey, preaching became “the chief application for encyclopedias after c. 1200”.\textsuperscript{28} In the schools, the encyclopedias had been the sources for the study of the artes, but outside of the university, monastery or cathedral school they served as the sources of exempla for sermons. There were four encyclopedias that became the main source books for preachers’ handbooks called libri exemplorum: Neckham’s De naturis rerum, Bartholomaeus’ De proprietatibus, Thomas of Cantimpré’s Liber de natura rerum, and Vincent of Beauvais’ Speculum maius.

Despite the major intellectual and cultural shifts that happened between the sixth century, the ninth century, and the later middle ages, some aspects of medieval encyclopedism remained constantly present in the texts. After surveying the field of early and late medieval encyclopedias, Twomey concluded that “only three encyclopedias enjoyed continuous use from the time of their composition to the end of the fourteenth century: Isidore was employed in the

\begin{itemize}
\item \textsuperscript{24} Le Goff 1992, pp. 27-28
\item \textsuperscript{25} On this point Le Goff credits the historian Marie-Dominique Chenu for having shown how, as a result of this descending of values from heaven to earth from the late twelfth to the early thirteenth centuries, a sense of history is recovered by christianism in the second half of the thirteenth century. Le Goff 1992, p. 39. See also Chenu, Marie-Dominique. Nature, Man, and Society in the Twelfth Century: Essays on new theological perspectives in the Latin West. Trans. Jerome Taylor and Lester K. Little (Chicago 1968)
\item \textsuperscript{26} Le Goff 1992, p. 30
\item \textsuperscript{27} Le Goff points out that Vincent of Beauvais, a Dominican, worked in the libraries of convents in Paris and Cistercian convents. Le Goff 1992, p. 29
\item \textsuperscript{28} Twomey 2008, p. 246
\end{itemize}
study of grammar, while Bartholomaeus and Neckham provided material for sermons as well as scientific information”.  

That the Isidorian influence remained strong throughout these stages of development should come as no surprise since his method was still used by authors of the thirteenth century, albeit under different terminology. The Isidorian method has a triple heritage: that of grammarians who propose an analysis of the discourse of research into an origin; that of the logicians who pose the problem of the nature of the name; and finally that of the theologians for whom the logical and grammatical investigation of the name permits access to divine ideas. These three aspects re-appear in the intentions mentioned by the authors of the thirteenth century, “their triple intention of semiotics, logic, and theology which is measured in the power of the word, the *vis verbi* or *vis nominis*, an expression already in use by the ancient grammarians”.  

It is this Isidorian tradition and method which Hrabanus recognized as being so fundamental to the encyclopedic project that it could only be improved upon but never replaced.  

### 4.2 The Reception and Influence of Hrabanus’ Computistical Writings

There is evidence of the use of Hrabanus’ *De computo* by later computistical writers in the Carolingian and Ottonian ages. However, after the eleventh century the activity in this field slows down and is eventually transformed in the twelfth century, like the encyclopedic works described above, by the introduction of content from the Arabic world. The influence of Hrabanus’ computistical writings can be seen in two types of texts: textbooks and handbooks; and mnemonic verses.  

According to Warnţjes, “from the composition of Hrabanus Maurus’ *De computo* until the end of the ninth century, no computistical textbook is known at present”.  

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29 Twomey 2008, p. 247  
30 Ribémont 2001, p. 44  
31 Although he does concede that this may be due to a lack of interest in ninth-century computistics by modern scholarship. Warnţjes 2010, p. cxii. There is a text by Pacificus of Verona (778-846) edited in Meersman & Adda, *Mauale di computo*, pp. 82–137, but it is more of a horological study and is known for its description of Pacificus’ star clock. For the role of Pacificus’, Hrabanus’ and Helperic’s textbooks in the computistical discourse of the ninth century see Wiesenbach, *Sigebert von Gembloux*, pp. 55–57. For a more positive argument for Pacificus of Verona’s contributions to science as well as a detailed study of his political activities see La Rocca, Cristina. “A man for all seasons: Pacificus of Verona and the Creation of a Local Carolingian Past.” *The Uses of the Past in the Early Middle Ages*. Eds. Yitzhak Hen and Matthew Innes (Cambridge 2000) 250–277
that Helperic of Auxerre wrote a new textbook called *Liber de computo* which “proved to be extremely influential right into the thirteenth century”. Helperic proposed some reforms and insisted that “any *studiosus* who trusted his own eyes more than letters should be able not only to calculate the times of the rising and setting of the sun, but also observe and measure them”. In his instructions for the calculation of the moon, Helperic explained that these measurements could not be made with whole numbers and that the student must first reduce the measurements to the fractions of time and number introduced by Hrabanus in his textbook. Helperic’s work dominated the tenth century in large part because it was a comprehensive textbook as opposed to a treatise dealing with some specific computistical aspect.

The next author to tackle computistical problems was the monk Abbo of Fleury (945-1004) who “advocated the use of water clocks that were more accurate than the sundial used by monks since before Bede”. By using the water clock, Abbo was able to present more accurate measurements for days, months, and years in his work *De differentia circuli et sphaerae* than Bede had in his computistical writings. Abbo also proposed a change to Dionysius Exiguus’ chronology using anni Domini. Abbo “substituted the old Latin style of passing from year 1 to year -1 to a timeline that added a placeholder in the zero position”. Abbo’s recalculation led him to conclude that the date for Christ’s death as calculated by Dionysius was incorrect by some 20 years. Although Abbo’s suggestions about the improvement of measurements using the water clock and his innovations to Dionysius’ chronology were ignored, his work was consulted by other authors interested in, and writing about, chronology and computus. Stevens even suggests

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32 Warntjes 2010, p. cxii; Helperic’s *Liber de computo* exists only in an early 18th-century edition by Bernard Pez (reprinted in PL 137, cols.15-48). For this text and its various later recensions see Traube *Computus Helperic* (1893) 128-52 and Warntjes 2012, p. lvi

33 Borst 1993, p. 48

34 Warntjes 2010, p. lvi

35 Duncan 1998, p. 141; for more details on Abbo of Fleury see also Borst 1993, pp. 52-53

36 Duncan 1998, p. 141

37 Abbo designated this “new” year with the symbol for null, since zero itself had not yet reached Europe. Duncan 1998, p. 141
that it is through Abbo that Hrabanus’ computus text was introduced to the English. Both Abbo’s work and Hrabanus’ *De computo* are quoted by Byrhtferth of Ramsay (d. c. 1020) in his extensive work on computus, the *Enchiridion*.

In 1042, Hermann the Lame (1013-1054) of Reichenau wrote, what Duncan judges to be, the last important work done in the “traditional mold of computus and time-reckoning”. Following Bede, Hermann insisted that all scientific conclusions should be supported by evidence from nature. He used the “recently arrived astrolabe and a special column sundial that he invented to compare what he saw in the sky to the fixed numbers used for centuries by computists”. He found that the dates for Easter and feast days, and in fact the church’s calendar in general, were out of sync with the cosmos. Even if Hermann and others were aware that “the centuries-old tradition of computus and time-reckoning was hopelessly flawed” no one was willing to challenge the church in “an era when questioning St. Peter’s was the same as doubting the Lord”.

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38 Stevens CCCM 44 1979, p. 171

39 The sources drawn upon by late Anglo-Saxon authors provide a fuller picture of the texts available to a few, perhaps exceptional, scholars. For example, Byrhtferth of Ramsay (d. c. 1020), in his *Enchiridion*, quotes from the Old and New Testaments and from the New Hymnal, from Servius and Priscian, Bede’s *De arte metrica* and *De schematibus et tropis*, Isidore’s *Etymologiae*, Cato, Sedulius, Arator, Aldhelm, the *De natura rerum* of Isidore and of Bede, Boethius’ *De consolatione philosophiae*, Macrobius, Abbas’ *De differentia circuli et sphaerae*, Hrabanus’ *De computo*, Helperic’s *De computo ecclesiastico*, Bede’s *De temporum ratione*, Jerome’s *Liber interpretationis Hebraicorum nominum* and *In Matthaeum*, Gregory’s Homilies on the Gospels and *Moralia in Job*, Isidore’s *Sententiae*, and Haimo of Auxerre’s *Homiliae*. This, estimates Ganz, is an impressive list of schoolbooks since it is so broad and also includes advanced works by authors such as Macrobius and Abbo. Ganz 2006, p. 104

40 Duncan 1998, p. 142; Hermann’s works on astronomy, mathematics and geometry include: *Liber de mensura astrolabii*; *De utilitatis astrolabii libri duo*; Prognostica de defectu solis et lunae; *De mense lunari*; *De horlogiorum compositione*; *Regulae in computum*; *De conflictu rithmimachiae*; *Qualiter multiplicationes fiant in abaco*; and *De geometria*.

41 Duncan 1998, p. 142

42 Duncan 1998, p. 142
The first author to take Hrabanus’ computistical writings and transform them into verse was his pupil Walahfrid Strabo. Starting in about 827 in Fulda, then in Aachen, and finally at his home on the Isle of Reichenau, Walahfrid made an intensive study of the computistical and astronomical encyclopedia collection of 809 and made copies of many of the texts for his personal use. He also converted some of his master’s computistical and hagiographical endeavours into poems. According to Stevens, “computistical verses had long been used as aids to the memory”. Examples are the Ecloga XVII of Ausonius which was used by both Bede and Hrabanus and the verse Nonae aprillis norunt quinos... which was known to Isidore. There was also an entire booklet of anonymous verses which accompanied some computi and which appeared with Hrabanus’ work as well as another “all-purpose set which travelled under the rubric Carmina saliburgensia”. Other computistical verse writers include Paul the Deacon (c. 720 - c. 799), Wandalbert of Prum (813 - c. 870), Agius of Corvey (865-888), and Erchempert of Monte Cassino (904). The computistical dialogue found in the manuscript

43 For biographical details of Walahfrid Strabo and a study of his works see Stevens, Wesley M. “Computus-Handschriften Walahfrid Strabos.” Science in Western and Eastern Civilization in Carolingian Times. Eds. Paul Leo Butzer and Dietrich Lohrman (Basel 1993) 363-381
44 Borst 1993, p. 45
45 Before AD 849. See Stevens 1993, passim and Stevens CCCM 44 1979, pp. 171-172
46 Stevens CCCM 44 1979, p. 171
47 De computo XXXVIII 27-28, Stevens CCCM 44 1979, p. 171
48 Stevens CCCM 44 1979, pp. 171-172
49 In addition to his exegetical and historical works, he also composed many poems and letters as well as a work entitled De verborum significatu.
50 His didactic poems include: Horologium, De horarum metis, De mensium nominibus, De creatione mundi
51 In 863, Agius of Corvey composed computistical distichs on an Easter table, and in 864, a more comprehensive collection of hexameters. Borst 1993, p. 46
52 Computistical verses are found in his chronicle of Lombard history, Ystoriola langobardorum beneventi degentium. Ed. Georg Waitz. MGH SRL (Hannover 1878) 231-264
of Basel Universitätsbibliothek F. III. 15k was also derived from Hrabanus’ computistical work.54

The relative stability in the field of computistics from the early ninth century to 1582, brought about by the unanimous acceptance of the Alexandrian/Dionysiac reckoning throughout Christendom,55 resulted in a decrease of new computistical treatises and polemical texts with an agenda for reform or correctio. “Whereas the Easter controversy had been an integral part of society in the early middle ages with three fundamentally different systems (the 84 (14), the Victorian, and the Dionysiac reckoning) competing with each other, no such conflict existed from the early ninth century to the end of the middle ages, from the adoption of the Dionysiac reckoning in the last region of Western Europe to the Gregorian calendar reform”.56 There were thus no attempts to remake Hrabanus’ De computo or the Bedan works upon which it was based. They served their purpose as computistical textbooks in the monastic school milieu very well until the twelfth century when not only the knowledge base changed with the arrival of new material from the eastern Mediterranean but also the educational environment itself changed with the rise of universities, professional schools, urban cathedral schools, and the scholastic movement.

4.3 The Reception and Influence of De rerum naturis

The reception and influence of De rerum naturis can be traced through the codicological, textual, and literary evidence related to Hrabanus’ encyclopedia and its dissemination. The manuscripts and print editions of De rerum naturis provide codicological clues about the production and transmission of the text and the variety of physical forms in which it survives. The Latin text provides philological clues about its relation to the source texts, its influence on later texts, and its evolution through the hands of the author, the scribes, and the medieval and modern editors.

53 Benediktbeuren (AD 820-840) ff. 24v-36. See Stevens CCCM 44 1979, p. 172
54 Stevens CCCM 44 1979, p. 172
55 Warntjes 2010, p. xli
56 Warntjes 2010, p. xli
The larger cultural and literary context of the use, and perhaps abuse, of *De rerum naturis* as reflected in the way Hrabanus’ contemporaries and his successors valued his encyclopedia, making it an object of their own studies and an object treasured in their library collections, can also provide clues to explain how and why today’s scholars inherited *De rerum naturis* in its current form.

Codicological Evidence

The codicological evidence reveals that *De rerum naturis* existed in a variety of physical forms. The circumstances under which it was produced, the methods of the author, the resources of the location, and the intended use of the text, all contributed to the various manifestations of Hrabanus’ work. The over 50 extant complete and fragmentary copies of *De rerum naturis* were copied in Austria, Germany, Switzerland, Italy, France, the Low Countries, and England.\(^{57}\)

Although this number of surviving copies is nowhere near the hundreds that survive of Isidore’s *Etymologiae*, it is still considered a relatively large number and, along with other indicators discussed below, points to its wide dissemination, especially after 1100.\(^{58}\) *De rerum naturis* was deemed worthy of being reproduced as a highly colourful illustrated display copy in 1023 at the Monastery of Montecassino.\(^{59}\) In addition, it was one of the earliest printed books with the *editio princeps* dating from 1467. One particular feature of the early manuscripts is the production of several two-volume sets. Although the story surrounding the writing of the apograph of the encyclopedia and its publishing history during Hrabanus’ lifetime was presented above in chapter 1.3.3.1, one element of the story was not considered which relates to these two-volume sets. Indeed, the oldest surviving manuscript of *De rerum naturis* was not included in this edition or considered in the analysis of the text because it does not contain book 10. Only the second volume of this set (\(W\)), containing books 12 to 22, survives.\(^{60}\) However, in his analysis and preliminary study for the forthcoming edition of all 22 books of *De rerum naturis*,

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\(^{57}\) See chapter 1.3.3.5 above for a discussion of all the manuscript and print editions of *De rerum naturis*.

\(^{58}\) Schipper 1997, EMS, p. 1

\(^{59}\) See chapter 1.3.3.6 above for a discussion of the illustrated tradition of *De rerum naturis*.

\(^{60}\) Vienna, Österreichische Nationalbibliothek, MS 121 (olim philol. 113), ante 852
Schipper has, naturally, included W in his collations for books 12 to 22 and also factored in the codicological and textual characteristics of this manuscript to his hypothesis on the early production and transmission of the Hrabanus’ encyclopedia. Such an early datable manuscript is extremely important in helping modern editors determine the writing and publishing process that took place in two of the main Carolingian centres of learning and manuscript production: Fulda and Mainz.

As Hrabanus states in the prefatory letters to his encyclopedia, he finally had time to work on his project during his hiatus from leaderships roles. While in a forced retirement, between his 20-year tenure as abbot at Fulda and his appointment to the archiepiscopal see in Mainz in 847, Hrabanus finished the bulk of the 22 books. Schipper suggests that when Hrabanus was recalled from retirement this likely gave him “little further leisure time to complete the encyclopedia, resulting in a decision to permit the book to circulate from Mainz”. Clues from Hrabanus’ other works as well as other manuscripts from the libraries of Fulda and Mainz provide a possible story for the publication of the first copies of De rerum naturis. According to Schipper there are a number of manuscripts from the middle of the ninth century that “show a remarkable mixture of Fulda and Mainz scribal hands at work in the same manuscripts”. This close relationship between the scriptoria of Fulda and Mainz is also evident in the well-known deluxe copies of De laudibus sanctae crucis that were produced as papal and royal gifts by scribes from Fulda which Hrabanus had brought with him to Mainz. Based on these examples, Schipper suggests that De rerum naturis was likely produced in a similar way. Namely, that publication of his encyclopedia “probably took place from the archiepiscopal scriptorium in

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61 In 847, after the death of Otgar, Archbishop of Mainz, with the support of Louis the German, Hrabanus was recalled from retirement to succeed Otgar. Schipper 1997, p. 365
62 Schipper 1997, p. 365
63 Schipper 1997, p. 366
64 Schipper 1997, pp. 365-366
Mainz, not from Fulda,” using some of the scribes that arrived from Fulda via the Petersberg where Hrabanus spent five years writing and compiling *De rerum naturis*.  

That the oldest surviving manuscript is a two-volume set and given the collaboration between the two scriptoria and the unfinished nature of the work, it is possible that the exemplars of the individual books of *De rerum naturis* circulated amongst the scribes at the two scriptoria either separately or grouped as they appear in each volume. In fact, it is also possible that Hrabanus ‘published’ the books of *De rerum naturis* as he finished them and scribes began copying them in serial fashion. This production method would have afforded Hrabanus the opportunity of revising or editing his own work, already copied and sent back to him, while other parts of it were still out to be copied. This might also explain why some of the chapters of book 10, such as 15, 16, and 17, seem unfinished in the same way that scholars have identified other books of *De rerum naturis* as having been only framed with the quotes from Isidore as if still waiting for Hrabanus to add his commentary.

Textual Evidence

While the numerous copies of *De rerum naturis* that survive speak to its popularity throughout the medieval period, the way in which the text was used also “demonstrates that the encyclopedia continued to be taken seriously centuries long after its genesis”. As textual and art historical scholars have noted, there are multiple recensions of the text and “parts of the textual tradition also show considerable editorial interventions” such as re-arrangements of chapters or books, lexical substitutions, interlinear variants, and the division of books into further chapters. Indeed, surviving manuscripts even contain “shorter and longer extracts consisting entirely of

65 Schipper 1997, pp. 365-366
66 The first copies of *De rerum naturis* appear to have been originally issued as two-volume set. For example, A (Karlsruhe, BLB, MS Aug. 96, containing books 1-11, and Aug. 68, containing books 12-22), and W (Vienna, ONB, MS 121, containing books 12-22). Schipper 2007, p. 103
67 Schipper 2007, p. 103
68 Schipper 2007, p. 103
lemmata arranged in semi-alphabetical order, forming a sort of index to the encyclopedia”. 69

Some of these interventions have been discussed above: there is the addition of the two prefatory letters to Louis the German and Haymo of Halberstadt which appear in most of the manuscripts except for those in the illustrated branch of the stemma (see chapter 1.3.3.6); the textual additions that appear only in the illustrated manuscripts 70 and of course the illustrations themselves as editorial interventions (see chapter 1.3.3.5-6); and the later additions to chapters 1, 15, and 17 of book 10 (see chapter 3.4). However, a particular group of manuscripts copied in England show detailed evidence of the way medieval scholars mined Hrabanus’ text for information.

Amongst the group of manuscripts identified above that have as their common characteristic the inclusion of the two prefatory letters, one subgroup stands out for the details it provides that “demonstrate that there were editors at work on the text as early as the eleventh century in centres such as St. Alban’s in England”. 71 This English group of manuscripts has as its fountainhead Ro (British Library, MS Royal 12.G.xiv) which Schipper judges to be the master copy for a group of 10 manuscripts confined to England due to its size and care of execution. How the English group of manuscripts is related to the other branches of the manuscript stemma is explained above in chapters 1.3.3.5-6, and 2.3. Descended from a French exemplar, these manuscripts are distinguished in a unique pattern of book and chapter divisions as well as a number of alternate readings in the margins and between the lines and “provide a good example of the process of adding and incorporating marginalia”. 72 In Ro, there are marginal and interlinear notes marked ‘i.’ (‘id est’) or ‘l/’ (‘vel’) and were, according to Schipper’s analysis,
“transmitted more or less faithfully as marginal or interlinear notes” into the descendent manuscripts.73 However, over the many times these marginal notes were copied with the text they became an “inseparable part of the text” and sometimes, as in copies made a century or more after Ro, these marginal variants moved from the margins and into the text block itself.74

A second subset from the English group which shows the text being manipulated for a specific purpose is comprised of Ob (Oxford, Bodleian Library, MS Laud misc. 746, s. xiii) and F (Florence, Biblioteca Medicea Laurenziana, Fondo S. Croce, MS Plut. XXXI sin. 1, s. xiv), both of Franciscan provenance.75 They are related to a series of manuscripts prepared for Robert Grosseteste (c. 1170-1253)76 which were part of his uncompleted project to create a master index of theological writings.77 To accomplish this, Grosseteste devised a complex set of symbols that were marked in the margins of these manuscripts to be collated together to form a master concordance of all the texts.78 The Bodleian Library Laud manuscript was one such copy that was prepared to be cross-referenced with the master index. Each page of the manuscript is divided vertically into three columns of equal width. The two inner columns contain the text of Hrabanus’ *De rerum naturis* while the outermost column is itself divided into three columns designed as the space for Grosseteste’s special symbols.79 The text of *De rerum naturis* is also altered in these two manuscripts: parts of book six have been transferred to book one and the

73 Schipper 2008, p. 28
74 This move into the text block is seen in Cambridge, University, Dd. 1. 30, s. xiii. See Schipper 2008, p. 28
75 Schipper 2007, p. 105
76 Robert Grosseteste succeeded Hugh of Lincoln as bishop of Lincoln from 1235 until 1253 and was a leading theologian and philosopher. Schipper 2008, p. 40
79 For plates from this manuscript showing the layout of the Grosseteste Rabanus see Schipper 1997, EMS, p. 4 (Plate 2b), p. 9 (Plate 4b) , p. 15 (Plate 7b), p. 16 (Plate 8), and p. 17 (Plate 9)
opening of book one starts with a passage that usually appears in the middle of the book. This manuscript also has a variety of notes in the margins that are not part of Grosseteste’s indexing system but must be from the copyist or the person responsible for entering the reading marks. These notes show that this person must have checked this manuscript against another one that did not have the altered text arrangements as the notes are “queries, expressions of surprise, and cross-references, as well as variant readings from another copy.”

In his analysis of these annotated English manuscripts of *De rerum naturis*, Schipper has commented on the relative value of the main text and its marginalia based on the intended use of the information. He suggests that, in some cases, the roles may be reversed and a medieval reader might consult such a manuscript not for the base text presented but, rather, for the commentary and references that are physically peripheral to the main text, in the same way that modern scholars value the criticism of secondary source literature as much as they value the primary source content. What is in the margins may even become more important than the central text. In the case of *De rerum naturis*, the text is both central and marginal. It can be considered central in that the commentators are interested in it as an object of study and highly value its accuracy. It can be considered marginal in that the value of the text in this copy was also in the data that was extracted for theological purposes and not necessarily as an actual copy of *De rerum naturis*. For Grosseteste, therefore, the marginal notes and marks were of more value than the text itself.

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80 See note 407, p. 95
81 See Schipper 1997, EMS, p. 10 and plates for examples of these marginal notes.
82 Schipper 2008, p. 41; The Grosseteste copy, appears to have been collated with a copy that did not share theses modifications. Schipper has identified a number of instances where the collator has added notes in the margin expressing surprise that the text differs and places where he provides cross-references to the chapter or book from which the text has been transferred. Schipper 2007, pp. 105-106; Schipper also finds that the Royal and Laud manuscripts are linked in another way: the corrections and additions in the Laud manuscript were taken from an exemplar whose text was closely affiliated with the Royal manuscript. Schipper 1997, EMS, p. 2
83 Schipper 2008, p. 40
84 Schipper 2008, p 41
Literary Evidence

In addition to the manuscripts themselves, surviving library catalogues, medieval booklists, and references in other texts can reveal the extent of the impact of Hrabanus’ encyclopedia. Even if later authors did not cite him directly or identify his work as a source, they did continue to use his structures, content, and methodology as they continued writing in the early medieval genres that he helped to shape. The broader topic of the encyclopedic genre in the later middle ages is addressed above in chapter 4.1 and the influence of Hrabanus’ other computistical writings is discussed in chapter 4.2. The following are some examples of how De rerum naturis has influenced later authors and been appropriated for different uses.

More evidence exists for the survival of manuscripts of De rerum naturis in England, in particular because of the survival of medieval book lists, which are mostly from the twelfth century or after and exist in various states of completeness, as well as monastic and cathedral library catalogues. 85 In addition to the 10 complete copies produced in England which still remain in libraries in Worcester, Glasgow, Oxford, Cambridge, and London, the existence of other copies of De rerum naturis is recorded in libraries at Canterbury, Salisbury, Wells, Durham, Hereford, and York. 86 The highly annotated character of some of the English manuscripts discussed above along with the fact that nearly 30 per cent of the total surviving manuscripts of De rerum naturis are copies from England indicate that “Hrabanus’ work remained a significant book in English monastic and cathedral libraries throughout the later Middle Ages” and “demonstrate that his influence was both widespread and far-ranging”. 87

The new encyclopedias of the twelfth and thirteenth centuries did not drive out the old encyclopedias. The first of these new encyclopedias were the Imago mundi of Honorius

85 Twomey 2008, p. 247
86 Schipper 1997, EMS, p. 1; There is evidence from booklists and catalogues of copies of the encyclopedia that have not survived from centres such as Wells, Salisbury, Durham, and York. Schipper finds the number the number that have survived from English centres impressive considering the dispersion of many English monastic libraries in the sixteenth century. Schipper 1997, EMS, p. 21
87 Schipper 1997, EMS, pp. 1, 21
Augustodunensis and the *De naturis rerum* of Alexander Neckham. Both works promoted Carolingian learning and can be found side by side with Carolingian works in library catalogues as well as in the manuscripts themselves. The *Registrum angieli* includes listings for several encyclopedias and the top three most frequently mentioned are Isidore’s *Etymologiae*, Hrabanus’ *De rerum naturis*, and Neckham’s *De naturis rerum*. An example of a manuscript containing a mix of new and old encyclopedias is Oxford, Trinity College, MS 64 (s. xiii), from St. Peter’s Abbey, Gloucester, which contains Isidore’s *Etymologiae*, Honorius’ *Imago mundi*, and Hrabanus’ *De rerum naturis*.

In addition to the influence that Hrabanus had on the encyclopedic genre discussed in chapter 4.1 above, later encyclopedists paid homage to Hrabanus’ work by imitating his structure and method in a similar way to Hrabanus’ implicit acknowledgement of indebtedness to Isidore’s work. Just as Isidore had compiled the *Etymologiae* by pulling together quotations from classical and patristic authors, so Hrabanus and his successors followed the same pattern. Burrows points out that Vincent of Beauvais “carefully assesses the relative authority of his various sources” and Bartholomeus Anglicus overtly states in the prologue that “in this work I have put of my own will little or nothing, but all that shall be said is taken from authentic books of holy saints and of philosophers”.

Hrabanus’ successors also organized their material following his order of placing God before man which he explained in his prefatory letters. Just like Hrabanus’ original idea of dividing the sacred and secular materials into the two halves of his work, reflected in the two-volume manuscript sets, Vincent of Beauvais also divided his material between the heavenly and earthly

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88 Twomey 2008, p. 246
89 Twomey 2008, p. 247
91 Burrows 1987, p. 32; “There seemed to me no better way to begin this work than from our Creator himself, who is the head and beginning of all things”. Hrabanus Maurus, *De rerum naturis, Praefatio ad Ludovicum regem*. 
realms and in fact took it one step further and created two independent works. The topics of God’s creations are discussed in his work entitled the *Speculum naturale* which frames the material of the physical world within the divine works of the six days of Creation by blending Christian symbolism with natural history. His second work entitled *Speculum doctrinale* covers human learning and was “based on the structure of university curricula and the writings of Aristotle”.

As seen in the example above of the Oxford manuscript containing both Hrabanus and Honorius’ encyclopedias, the Carolingian works were still current reference sources for later medieval scholars. As Burrows notes, later encyclopedists felt it necessary to replace Isidore’s work “to cope with the flood of new descriptive knowledge in the twelfth and thirteenth centuries” due to the introduction of translations of Aristotle and Arabic writers “but no attempt was made to revise or replace” Hrabanus’ work. The explanation for this situation, according to Burrows, is partly due to the orthodox and patristic sources Hrabanus used, which were still authoritative in the later middle ages, and partly due to the fact that the descriptive encyclopedia at the base of *De rerum naturis* would have to be revised. In other words, a new version of the Hrabanian mystical encyclopedia could only follow a new version of the Isidorian descriptive encyclopedia. Although the intellectual milieu of the universities and cathedral schools was “preoccupied with systematic descriptive knowledge about God and the world” and this did lead to new descriptive encyclopedias being written, there was no appetite to move further in the development and create a new mystical encyclopedia. This preoccupation with the descriptive mode left little interest in an exegetical approach that reflected Carolingian monastic culture. As Burrows rightly emphasizes, it is exactly the fact that this monastic culture is conveyed by Hrabanus’ work that makes *De rerum naturis* so valuable.

Scholars have also suggested further instances where later authors have used *De rerum naturis* as a source for their own texts or later texts were introduced into Hrabanus’ encyclopedia. These

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92 Burrows 1987, p. 32
93 Burrows 1987, p. 36
94 Burrows 1987, p. 37
include a suggestion that Hrabanus’ work was also used by Boccacio in his treatise on the
genealogy of the gods, *Genealogia deorum gentilium libri*. In his study of the later use of
Isidore’s *Etymologiae*, Barney suggests that Boccacio “naturally derives material from Isidore”
either directly or indirectly through quotations of the *Etymologiae* found in Hrabanus’ work or
the texts of Vincent of Beauvais.\(^\text{95}\) Through his study of the Hercules illustrations and texts,
Panofsky also identified interpolations that could possibly derive from Boccacio or even William
of Conches.\(^\text{96}\) Particular to the text of book 10 are the 3 examples discussed above in chapter 3.4
of additional passages which were inserted into some of the eleventh and twelfth century
manuscripts.

### 4.4 General Conclusion

Given the overarching structure of the 22 books of *De rerum naturis*, the topic of computus
appearing in the middle of the encyclopedia is quite appropriate. At the point where the topics of
the books move from sacred to secular, Hrabanus places the subject which bridges both these
domains. The topic of computus is also the bridge between the volumes of the later two-volume
sets of *De rerum naturis*. Even Augustine himself “conceded that time-reckoning could be
tolerated in one area where the sacred and the profane could not be disentangled: calculating and
predicting the date for Easter”.\(^\text{97}\) The multi-disciplinary nature of computistics was also
reflected in how it was taught in monastic and cathedral schools and how that knowledge was
preserved and disseminated. As discussed in chapter 1.1, the variety of sources for computistical
data – biblical, patristic, observational, annalistic, etc. – resulted in a plethora of texts and tables,
sometimes complementary, sometimes contradictory. As Wallis observes, the “relation of
textbook to reference document was a constantly evolving and complex one, and in some
respects defines the ambivalent status of computus itself, as neither exactly a *disciplina* conveyed
through authoritative texts, nor yet purely a technique”.\(^\text{98}\)

\(^{\text{95}}\) Barney 2006, p. 26

\(^{\text{96}}\) Panofsky 1969, p. 27; Schipper 1997, EMS, p. 21

\(^{\text{97}}\) Duncan 1998, p. 59

\(^{\text{98}}\) Wallis 2004, p. 281
For such a hard-to-define and fluid subject area it is, therefore, not surprising to find that the early writings about computistics also confronted this dual nature of the subject matter and led early authors to scatter their information on its multiple aspects in different texts or under different rubrics in the same work. Cassiodorus makes a critical distinction between time measurement and time-reckoning describing the first as “merely a matter of making observations of celestial bodies and jotting down numbers, and using mechanical devices such as clocks that require technical skill but not intellectual achievement”. In opposition, time-reckoning for him was purely an intellectual pursuit which enabled man to “recognize God’s miracles of numbers and their usefulness in making calculations of time”. Isidore also believed in this distinction and “instructed his brothers to think of timekeeping devices as mere tools, like a key or a chain”. Despite the disciplinary dichotomy espoused by Cassiodorus and Isidore, the advantages of having the texts for both time measurement and time-reckoning together were obvious to their readers. Isidore’s writings on astronomy, cosmology, and chronology were in themselves compilations of earlier texts from many sources but were scattered in three sections of his *Etymologiae*. According to Warntjes, it was Isidore who first assembled in a “structured way a great variety of basic but essential information on the reckoning of time in general, and the calculation of Easter in particular”. The later readers who realized the utility of having these disparate texts united in one place copied Isidore’s chapters on the various divisions of time, his chronicle, and his chapters on astronomy and on cosmology into an independent text which was transmitted separately from his encyclopedia.

99 Duncan 1998, p. 68
100 Duncan 1998, pp. 68-69
101 According to Duncan this notion perpetuated the prevailing simplification of Augustine of Hippo’s view that understanding time beyond a simple calendar and dating Easter was better left to God. Duncan 1998, p. 79
102 See note 285, p. 67
103 Warntjes 2010, p. lii
Later, monks like Gregory of Tours saw the necessity for priests and monks in isolated parishes and cells to have all the information and skills of both time measurement and time-reckoning at their disposal.\(^\text{105}\) And at the edge of the world, the Venerable Bede became the expert computist by studying and employing all the technical, observational, mathematical, and theoretical methods known to him. His works became the trusted source for computistics due to his success in compiling and commenting on all aspects of the subject in textbooks that promoted a holistic approach to the art and science of calendar-making. Hrabanus benefitted from the efforts of Cassiodorus, Isidore, and Bede, among others, not only for his computistical writings but also in his encyclopedic project. What Ribémont states about Hrabanus’ *De computo* also easily applies to his encyclopedia: “It is placed in the line of Bedan computus and brings to light a fundamental tendency of Hrabanian writing: offering the light of science but under the patronage of the sacred word”.\(^\text{106}\) Hrabanus did not simply repeat the same information or only copy their texts. He derived his information from their writings and their sources but added this sacred dimension to the study of the essence of heavenly and earthly objects.\(^\text{107}\)

The historical development of the encyclopedic genre discussed in chapter 1.2 highlights the major changes in form and content which took place from the classical Greek and Roman periods of Aristotle, Varro, and Pliny the Elder, to the early medieval period of Augustine, Cassiodorus, and Isidore, to the Carolingian period of Alcuin and Hrabanus, and then to the twelfth and thirteenth-century universities of Hugh of St. Victor, Alexander Neckham, and Vincent of Beauvais. However, there are really two highpoints of the encyclopedic tradition prior to the rise of the universities: Isidore’s *Etymologiae* in the early seventh century and Hrabanus’ *De rerum naturis* in the early ninth century. As explored in the introduction, these two works also represent the height of two prominent civilizations: the Visigothic and the

\(^{105}\) See McCluskey, Stephen C. “Gregory of Tours, Monastic Timekeeping, and Early Christian Attitudes to Astronomy” *Isis*, 81:1 (1990) 8-22

\(^{106}\) Ribémont 2001, p. 291

\(^{107}\) In summing up the entirety of Hrabanus’ texts, Brown uses the phrase: “Hraban’s other works largely follow the same derivative path.” Brown 1994, p. 42. The evaluation is a negative one but the implications of the term are such that Hrabanus must have created something new and was not merely a copy. It would be highly unlikely and unexpected if Hrabanus’ encyclopedia came to life *sui generis* without any connection to its literary heritage.
Carolingian. Therefore, by presenting a detailed study of book 10 of Hrabanus’ *De rerum naturis*, this thesis provides more insight into the Carolingian milieu which shaped Hrabanus’ worldview – as an intellectual, a monk, a leader, and a teacher – a cultural and intellectual milieu, unique to its time and place, from which could only have come such an encyclopedia and the will and confidence to write it.

Although Hrabanus played an influential role in shaping the political, administrative, and educational characters of the Carolingian sphere, it is his impact and legacy as an author that is the focus of this study; in particular, Hrabanus’ influence through his popular encyclopedia *De rerum naturis* as well as his computistical writings and teachings. The assessments of Hrabanus’ literary and intellectual importance run the gamut from outright dismissal, or even worse, intentional plagiarism, to the culmination of Carolingian culture and a lasting legacy. This study shows that Hrabanus’ computistical and encyclopedic writings do represent original scholarship which supported the aims of the Carolingian ecclesiastical and educational reforms of the ninth century and which was used by Hrabanus’ contemporaries and successors. The *De rerum naturis* is not a mutilated, untidy mess of Isidore’s encyclopedia as Collison suggests nor is it a “shameless plagiarism” or poor imitation of Isidore.

Hrabanus’ *De rerum naturis* is, of course, based on Isidore’s encyclopedia and much of what scholars have said about Isidore’s work can equally apply to Hrabanus’. For example, Barney’s description of Isidore’s work as consisting mostly of intricately woven excerpts and paraphrases of the works of earlier writers can also generally be used to characterize Hrabanus’ encyclopedia.

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108 According to De Ghellinck, Hrabanus’ contribution to the enrichment of the library at Fulda and to its role as a centre of learning, as well as the way others spoke of his works, in particular the Biblical commentaries, and his introduction of ancient pagan and christian authors to the Germanic milieu (demonstrated in the works written by Eginhard at Fulda) justify his fame. De Ghellinck 1969, p. 104

109 Collison 1964, p. 36; In addition the entry in the 2002 edition of the *Encyclopedia Britannica* continues to insist, in the article on ‘History of Encyclopedias’, that Hrabanus’s *De rerum naturis* is ‘nothing more than an unintelligent plagiarism from Isidore’. See Schipper 2004, p. 12

110 De Ghellinck 1969, p. 103; Schipper concludes that Hrabanus never completed his encyclopedia because of a lack of time. Had he had the time to finish compiling and commenting then “most of it would likely have been structured in a complex fashion, as in Books 2 or 6, rather than looking like a set of extracts from Isidore.” Schipper 2004, pp. 11-12
However, Barney does see a distinction between the two authors when it comes to commentary and interpretation. Isidore’s achievement, he says, is not original research or innovative interpretations, but rather the ambition of the whole design, his powers of selection and organization, and his grand retentiveness. Hrabanus, on the other hand, does add innovative interpretations and his own commentary to the carefully chosen excerpts he presents. Where Isidore offers authority, accessibility, and the preservation of knowledge, Hrabanus offers a new framework for the subjects, subordinating the secular to the Christian elements, and augments it with novelty, originality, and transmission of knowledge.\textsuperscript{111}

In his prefatory letter to Haymo, Hrabanus outlines his aim to add the mystical significance of objects to his encyclopedia so that it contains all the materials necessary for the interpretation of Scripture. The encyclopedia here is at the service of Biblical reading.\textsuperscript{112} By fusing the encyclopedic tradition exemplified in Isidore with the patristic tradition of mystical exegesis, Hrabanus thus creates an encyclopedia of mystical meaning.\textsuperscript{113} His encyclopedia goes beyond Isidore’s purpose to assemble descriptive information in some coherent order.\textsuperscript{114} Hrabanus, according to Burrows, is the only encyclopedist whose main purpose is not descriptive and that his “mystical and allegorical focus has no parallel among other Christian encyclopedias”.\textsuperscript{115} Hrabanus’ \textit{De rerum naturis} is also more than just a moralized Isidore as Ribémont suggests. It is, as Schipper suggests, an entirely new creation which incorporates both Christian Biblical commentaries and allegorical traditions and grafts them onto an entirely new framework.\textsuperscript{116}

\begin{itemize}
\item \textsuperscript{111} Barney 2006, p. 10
\item \textsuperscript{112} Ribémont 2001, p. 292; The many added Biblical citations and allegorical interpretations give the work a more ecclesiastical and less philological character. See Sanford 1949, p. 466
\item \textsuperscript{113} Burrows 1987, p. 33
\item \textsuperscript{114} Brehaut 1912, p. 39
\item \textsuperscript{115} Burrows 1987, pp. 35-36; A common contemporary metaphor likened literal exegesis to the foundations of a building, with allegorical and mystical exegesis as the building itself. See Gregory the Great, \textit{Moralia in Job}, Adriaen, Ed. CCSL 143. Burrows notes that Hrabanus’ task is thus more ambitious and difficult, since he is dealing with a higher level of meaning. The result is a book which is broader in scope and more valuable, from a Scriptural and exegetical perspective and unique in its focus on these hidden meanings. Burrows 1987, p. 36
\item \textsuperscript{116} Schipper 2004, pp. 3, 12
\end{itemize}
Hrabanus’ writings are important not only for the content which he passed on to his successors but also for how he made it accessible to his pupils and later scholars. By reproducing his sources with probity, Hrabanus transmitted a large part of the heritage of the church fathers. His choices of text excerpts had a lasting influence on the orientation of the knowledge that the middle ages had of patristics. Through his original interventions, he strongly privileged certain interpretations and by his methods he favored a certain approach inherited directly by the *glossa ordinaria*.117

By establishing a hexaemeral *ordo rerum* within the encyclopedic genre, Hrabanus “wrote the first fully achieved medieval encyclopedia”.118 This achievement was recognized by both his contemporaries and successors, and is also valued by modern scholars for its provision of a glimpse into the library and classroom of Carolingian Fulda and Mainz. The ultimate compliment was paid to Hrabanus by his master Lothar I, who is reported to have said: “Just as God gave my predecessors Jerome, Augustine and Ambrose, so he has given me Hrabanus”.119 According to Le Maitre, Hrabanus was, without a doubt, during the two centuries after his death, the most read author in the monasteries of northern Europe, along with Augustine and Gregory.120 However, his successors were not just reading his encyclopedia they were also actively using it for their own purposes. Parts of the textual tradition show considerable editorial intervention, as seen in the additional passages in chapters 1, 15, and 17 of book 10 in the later manuscripts. Hrabanus’ mystical and exegetical approach belongs to an earlier monastic culture, one which was dominant until the twelfth century. His *De rerum naturis* is valuable to modern readers precisely because it conveys, in a uniquely systematic way, a monastic culture centered around Scripture and its interpretation in monastic learning. Hrabanus’ encyclopedia is itself a

117 Le Maitre 1990, p. 352
118 Twomey 1988, p. 186
119 *Nam si illis Hieronimum, Augustinum, Gregorium Ambrosiumque et ceteros quam plurimos prebuit, et nobis idem opifex eiusdem meriti et scientiae contulit Hrabanum Maurum. MGH Epist. 5, 49.50,* p. 504; See also Brown 1994, p. 42
120 Le Maitre 1990, p. 343; De Ghellinck also emphasizes that Hrabanus’ commentaries of various Biblical books were very useful to his contemporaries for their large excerpts from patristic sources. De Ghellinck 1969, p. 103
central point for the modern reader since it collects into one text the symbolical, mystical, and contemplative perspectives of the Carolingian world, founded on Scripture, which are otherwise dispersed amongst numerous biblical commentaries. Book 10 of *De rerum naturis* is a unique witness to the variety of sources and systems which the Carolingians inherited, studied, and used concerning the meanings and measures of time. It is, in a sense, a 1200-year-old time capsule revealing to the modern reader and editor Hrabanus’ view of God’s temporal design and Carolingian man’s understanding of time and how to calculate it.

**Topics for Future Research**

The fruits of the present investigation of book 10 will hopefully be incorporated into the edition of the complete *De rerum naturis* text currently being prepared by Prof. William Schipper at Memorial University. Comparing the findings of the study of book 10 to the overall aspects of the encyclopedia may result in some changes to the description of the manuscript tradition and the *stemma codicum* as well as some of the conjectures presented here regarding the reception and influence of Hrabanus’ work. One aspect that will have to be considered is the role of W and how its place in the manuscript tradition of books 12 to 22 will change the form of the *stemma codicum* presented above. As Schipper has argued, it is thanks to what was clearly an “active dissemination program of copies of Hrabanus’ writings in Mainz during his tenure as archbishop that we can recover the text using copies that he himself probably authorized for publication”. Manuscript W is one of these early copies which was not used in this edition and so further work can be done to map the *stemma codicum* of the full edition of *De rerum naturis* with the ones presented in this study to take into account the relationship of W to the other extant manuscripts.

Producing a full critical edition with collations of all known witnesses of book 10 of *De rerum naturis* could also provide a more complete understanding of the literary history and manuscript tradition of Hrabanus’ encyclopedia. In addition, this critical edition and study could fully

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121 Burrows 1987, p. 37
122 Schipper 1997, p. 373
integrate all the visual evidence from the illustrated copies as well as the art historical and codicological scholarship to create a working *stemma codicum* and not just a descriptive one.

A comparison of the structure of book 10 and the sources Hrabanus used with the other 21 books would illuminate whether or not the patterns identified in book 10 are common to the encyclopedia or unique to the computistical subject book. It would be interesting to discover if certain source authors are treated the same way throughout the encyclopedia as they are in book 10. For example, in book 10, Hrabanus quotes extensively from Bede in passages that are taken verbatim even though they were written in the first person by Bede and include dating clauses used by Bede but not necessarily relevant for Hrabanus or his pupils.\(^{123}\)

Further research can be done into the passages added to book 10 in chapters 1, 15, and 17. Expanding the study to include more later manuscripts could lead to a further trace of where and when the additions were introduced into the manuscript tradition and could possibly lead to further source attributions. In particular, it would be very helpful to ascertain whether there are any other excerpts from Isidore’s *De ecclesiasticis officiis* in the rest of the encyclopedia and to establish when and where they were introduced into the manuscript tradition. Similarly, it is still possible that some of the unidentified passages in this edition of book 10 can be, after further research, attributed to known sources.

Given the strong Irish influence on Carolingian knowledge in general and computistics in particular, further study can be done on the reception of Irish computistical thought and texts in Fulda and Mainz as reflected in Hrabanus’ writings. In his recent study of the *Munich Computus*, Immo Warnjes has shown the close relationship with computistical texts and calendars which originated in insular monastic communities and which then circulated in the Frankish and Carolingian monastic network.

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\(^{123}\) See Bede’s *De temporum ratione* chapter 8 for references to calculations for the year 722 which was Bede’s contemporary example in his text to his students. Hrabanus does not change the reference to “*quae presenti anno*” in the excerpt from *De temporum ratione* chapter 8 which he includes in *De rerum naturis* chapter 10 (line 508). There are 4 instances in the excerpts from Bede where Hrabanus quotes Bede verbatim when Bede is expressing a personal opinion and using a verb in the first person to indicate such. In chapter 7 (line 266) Bede writes “*opinor*”, in chapter 9 (lines 346 and 470) Bede’s writes “*ni fallor*” and “*credo*” and in chapter 10 (line 495) Bede writes “*moveor*”. Since Hrabanus does not indicate his source for these passages the reader is left with the impression that the opinions stated are those of Hrabanus and not Bede.
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Appendix 1: An English Translation of Book 10 of *De rerum naturis*

Many of the source texts used by Hrabanus Maurus for book 10 have been published in modern English translations. The translation presented below is largely based on the following works:


For the source texts not available in English translations and the unidentified passages, the English translation of *De rerum naturis* by Priscilla Throop was consulted when necessary.
[1] On Times

Times [tempora] take their name from ‘measure’ [temperamentum], either because every unit of their space is separately measured, or because all the courses of mortal life are measured in moments, hours, days, months, years, lustra, saecula, and ages. Therefore, it is established that the reckoning of time can exist in three ways: it operates either according to nature, or according to custom, or according to known authority. This authority is itself twofold. It is either human authority – for example, holding Olympics in a cycle of 4 years, markets in a cycle of 8 days, and indictions in a 15-year cycle; like-wise the Romans, Greeks, and Egyptians ordered that the [leap-year] day which is formed out of quarter-days be intercalated in the month of February or August as it pleased them [285B] – or divine authority, as the Lord in the law commands that the Sabbath be kept on the seventh day,¹ that one refrain from agriculture in the seventh year,² or that the fiftieth year be called a jubilee.³ Thus, with nature as our guide, we establish that the solar year is made up of 365 ¼ days, but the lunar year is finished in 354 days if it is common and 384 days if it is embolismic, and that the complete course of the moon is encompassed in a 19-year cycle. But each of the planets as well is borne around the zodiac in its own space of time. This nature is not, according to the folly of the pagans, a creating goddess, one amongst many, but was created by the one true God when he commanded that the stars which he had set in the heavens should be the signs of seasons, days, and years.⁴ Moreover, time, which is called ‘chronos’ by the Greeks, [285C] runs from the beginning of the world up to the end of the world. As we have said above, it is so divided into moments, hours, days, months, years, lustra, saecula, and ages. It signifies the apportioned distribution of the divine will. Whence it is said: The eyes of all hope in you, O Lord, and you give them food in due season. And likewise there: It is time,

¹ Cf. Exodus 23: 11-12
² Cf. Leviticus 25: 1-7
³ Cf. Leviticus 25: 8-10
⁴ Cf. Genesis 1: 14
O Lord, to do: the wicked have dissipated your law. The devoted people foresaw that in the days of Antiochus the Lord’s law would be polluted with cults of demons by the Jewish people: just as in their sickness they cry out as though of a physician that it is time to lend help, so that the health of the people may not be ruined by mounting illnesses. They say: It is time to do, not to put off, what is expedient. For he had commanded through the law and the prophets that the true Lord be worshipped, as far as [285D] a man can worship him, with the most devoted piety, but since the obstinacy of the Jews spurned this injunction for their own destruction, the faithful people cries: It is time to do, in other words, time that you should appear as Saviour to the world, to loosen sins, to conquer death, and to lay low the devil with his troop; that is, it is the Lord’s doing: to come at the prophesied time. Whence in the words of the prophet: In an acceptable time I have heard you, and in the day of salvation I have helped you. And as the apostle says: Behold, now is the acceptable time; behold, [286A] now is the day of salvation. All things that the Lord does are fulfilled in the most suitable sequence so that nothing must come to pass until in his mercy he allows it. This is why it is always profitable for us to have patience, to await orders, to ask for what avails us. The one who is a ruler knows the time for action.


A moment [momentum] is the least and shortest bit of time, so called from the movement of the stars. It is said to be the extreme limit of brevity of the hour’s intervals, when one instant stops and another starts. Therefore, a moment signifies the briefest course of time. For as the apostle says: We shall all rise, but we shall not all be changed, [286B] in a moment, in the twinkling of an eye. You should know that the blink of an eye is the briefest action that can signify a moment and in this way suggest the power of God through the swiftness of the resurrection. But in other places an edition uses ‘in an atom’ and ‘in the blink of an eye’. The smallest time of all, and one which cannot be divided by any reckoning, they call by the Greek word ‘atom’, that is,

5 Psalm 118: 126
6 Isaiah 49: 8
7 2 Corinthians 6: 2
8 1 Corinthians 15: 51-52
‘indivisible’ or ‘that which cannot be cut’. Because of its tiny size, it is more readily apparent to grammarians than to computists, for when they divide a verse into words, words into feet, feet into syllables, and syllables into quantities [tempora], and give double quantity to the long [foot] and single to the short, they are pleased to call this an ‘atomus’, as they had nothing more beyond this which they could divide.

[3] De horis

[286C] Hour [hora] is a Greek term but it is pronounced in the same way in Latin. For the hour is the boundary of time, just as the word ‘ora’ means the shores of the sea, or the banks of a river, or the borders of a garment. The 12-hour part of the day, namely the artificial part, that is from the rising of the sun up to its setting, is not natural. It is well known that from the rising of the sun to the next rising of the sun 24 hours are completed. And a day is made up of 12 hours, as the Lord testifies, saying: Are there not 12 hours in a day? If any man walk in the day, he stumbles not.⁹ Here, although he called himself allegorically the ‘day’, and his disciples (who were being enlightened by him) he called ‘hours’, he nonetheless defined the number of hours according to the usual manner of human computation. But we must be aware that sometimes an ‘hour’ is used for ‘time’ and [286D] sometimes for the ‘age of the world’. For the term ‘hour’ is used instead of ‘time’ in the letters of Paul in which he says: It is now the hour for us to awake from sleep,¹⁰ which looks towards the passage where it is said: Behold, the time has now come, behold, the day of salvation is now.¹¹ For in the gospels, by which we should advance to merit, ‘time’ means to awaken from sleep, to work good as in the day, that is openly, and to give work so that, living purely, we might come to the promised reward, with the sleep of ignorance and neglect [287A] having been shaken off. Therefore ‘hour’ is used instead of ‘age of the world’ in the letter of John where he says: Little sons, this is the newest hour.¹² He says that the newest hour is the newest time of the world which is now unfolding, according to the parable of the

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⁹ John 11: 9
¹⁰ Romans 13: 11
¹¹ 2 Corinthians 6: 2
¹² 1 John 2: 18
Lord, where he narrates that the workers were led into the vineyard. The first hour is up to the
time of Noah, the third hour from the time of Noah, the sixth hour from the time of Abraham, the
ninth hour from the time that the law was given, and the twelfth hour is from Christ up to the end
of the world in which the foretold Antichrist will come. Indeed, the first hour is infancy or
childhood, the third hour is adolescence, the sixth hour is youth, the ninth hour is maturity, and
the twelfth hour is the end of old age, as in the example given above.


[287B] ‘Day’ is air which is lit up by the sun, and it takes its name from the fact that it separates
and divides the darkness. Because, *at the very beginning of Creation, darkness was upon the
face of the deep*, and God said: *Let there be light, and there was light. And God called the light
‘day’.* 13 This word is defined in two ways, that is, according to common use, and according to
its proper [meaning]. On the whole, ordinary folk call the presence of the sun above the earth
‘day’. But properly speaking, a day comprises 24 hours, that is, a circuit of the sun lighting up
the entire globe and the sun always and everywhere carries the daylight around with itself. It is
believed to be borne aloft at night under the earth by no less a space of air than it is by day above
the earth. But before the creation of the sun, what now comes to pass by means of the sun was
accomplished by the circling of the primeval light, [287C] lighting up in its circuit on the first
and second days the waters of the abyss, which covered the whole earth, and on the third day, the
empty air. Therefore, we who follow in the footsteps of the fathers may conclude that when God
said ‘Let there be light’, then the darkness, which covered the deep, vanished, and light,
emerging from the east in the midst of the waves, covered the whole surface of the earth in the
expanse of its splendour, reaching in a single instant to the northern, southern, and western
shores. Gradually setting as the interval of the day was completed, it passed in its orbit beneath
the lower parts of the earth and, preceded by the dawn, completed the second and third day in the
same sequence. It differed from solar light only in that it lacked heat, and because the stars did
not yet exist, [287D] it left those nights still blackened by the primal darkness. A day has many
allegorical meanings. Sometimes it signifies the Lord our Saviour, sometimes his saints,

13 Genesis 1: 1-4
sometimes the knowledge of Holy Scripture, sometimes charity, sometimes the glory of virtues, sometimes temporal prosperity, sometimes the day of judgement, and sometimes eternal beatitude. The day signifies the Lord in the letter of the evangelist: *Who walks in the day does not stumble,*\(^{14}\) since whoever follows the doctrine of the Saviour will not fear the little obstacles of sins. The day signifies the Lord Jesus Christ, as is written in the Psalm: *This is the day which the Lord has made.*\(^{15}\) The day is understood to signify the apostles and the holy people of the Lord in this verse of the Psalmist: *Day to day utters speech,*\(^{16}\) [288A] that is, when the Lord, radiating divine clarity to the apostles, intimated words of the celestial light. Just as in the opposite way in what follows: *Night to night shows knowledge,*\(^{17}\) when Judas knew that he would betray Christ to the Jews. We are able to understand in this that the day is the knowledge of the Holy Scriptures since here the light of justice and of true knowledge shines clearly for those who understand. Whence the apostle admonishes, in order that we may strive to meditate on the law of God: *That the day will shine until Lucifer arises in our hearts.*\(^{18}\) And that daylight can signify charity, John shows in his letter saying: *Who loves his brother shall remain in the light.*\(^{19}\) For the day is demonstrated by the evangelist, as in the Song of Songs: *Until the day breaks and the shadows retire.*\(^{20}\) [288B] The day also means the present life, as in the words of the evangelist: *I must work the works of him that sent me, while it is day.*\(^{21}\) Again, the day can signify the future life for the just, as in Isaiah: *The Sun shall no longer be your light by day.*\(^{22}\) The day is like the just and justice and the night is like the sinners and iniquity, as in the words of

\(^{14}\) John 11: 9  
\(^{15}\) Psalm 117: 24  
\(^{16}\) Psalm 18: 30  
\(^{17}\) Psalm 18: 30  
\(^{18}\) 2 Peter 1: 19  
\(^{19}\) 1 John 2: 10  
\(^{20}\) Canticles 1: 17  
\(^{21}\) John 9: 4  
\(^{22}\) Isaiah 60: 19
the apostle: *We are neither of the night nor of the darkness, for you are all children of the light and children of the day.*[^23] The day is prosperity and the night is adversity, as in the Psalm: *In the daytime the Lord has commanded his mercy and at night has declared it.*[^24] Also there it is written: *O my God, I shall cry by day, and you will not hear; and by night, and it shall not be reputed as folly in me.*[^25] For the day signifies the glory of virtues and the honour of a good path in that sentence of Paul where he says: *Let us cast off the works of darkness and put on the armour of light, let us walk honestly, as in the day.*[^26] Since, if reason should flee our ignorance of knowledge and, avoiding unworthy acts, we pursue the honest and pious ones, we are placed in the light, walking honestly as if in the day, on which it is written: *In the daytime the Lord has commanded his mercy, and at night has declared it.* Let us accept daytime as the leisure-time in which the Lord’s precepts are learned. For we drink in his law at a time of tranquility, for there is time to learn when there is nothing to hinder us. Next comes: *And at night has declared it.* It is especially what we learn in repose that we utter in tribulation. The words of the law are learned first in leisure, but their fruit is demonstrated in affliction.  

[^288D] That the word ‘day’ also signifies the time of judgment is shown in the letter of the evangelist in which it is said: *For the day of the Lord shall come just like a thief in the night.*[^27] And also in the words of the apostle: *He will declare the day of the Lord.*[^28] And the prophet showed that ‘day’ is used instead of ‘eternity’, saying to the Lord: *For better is one day in your courts above thousands.*[^29] These courts are the courts of the Lord for which earlier he witnessed that he was longing and fainting, and in which he rightly aspires to dwell for a single day; for that day is never-ending, as it does not begin with sunrise nor end with sunset. Tomorrow does not follow it

[^23]: 1 Thessalonians 5: 5  
[^24]: Psalm 41: 9  
[^25]: Psalm 21: 3  
[^26]: Romans 13: 12-13  
[^27]: 1 Thessalonians 5: 2  
[^28]: 1 Corinthians 3: 13  
[^29]: Psalm 83: 11
nor does yesterday precede it, but it remains unchangeable in abiding singleness. Above thousands refers to the life in this world, where thousands of days suffer an end. [289A] A day is a thousand years, as in the Psalm: For a thousand years is just like a day in your eyes.\footnote{Psalm 89: 4} Two days seems to represent the Old and New Testament to some, as in the Psalm: Bless his salvation from day to day.\footnote{Psalm 95: 2} Three days is recognized as the trinity, as in Exodus: We will go three days’ journey to sacrifice unto the Lord our God.\footnote{Exodus 3: 18} Three days also includes the crucifixion, burial, and resurrection of the Saviour, as in Hosea: The Lord will revive us after two days and on the third day he will raise us up and we shall live.\footnote{Hosea 6: 3} The sixth day is the present world which is shown to have been made in six days; whence six days are said to have the meaning of six thousand years, just as the apostle said: That one day with the Lord is as a thousand years, and a thousand years as one day.\footnote{2 Peter 3: 8} [289B] The seventh day, which is described as being consecrated to the repose of the Lord, signifies the rest of all the saints after the course of the present life.\footnote{Cf. Exodus 35: 1} ‘Seven days’ is all work of this present life which is undergone in seven days, and they contain the sacrament by which Easter is taught to be celebrated, that is, passing from the worst to the best through the emendation of life; and it is taught not to eat leaven bread, which is the corruption of sin, but to walk in the unleavened bread of sincerity and truth.\footnote{1 Corinthians 5:8} The eighth day contains the sacrament of the resurrection of the Lord. It foreshadows the future resurrection to come for all and the day of his judgment, whose mystery is signified in the title of the sixth Psalm, that is, for the octave. ‘Today’ is understood as the immortality of divinity with neither the beginning having begun nor the end to be finished; whence in the [289C] Psalm the father
spoke to the son saying: *You are my son. This day have I begotten you.*\(^{37}\) For with God there is no yesterday or tomorrow but today is forever. For ‘today’ signifies all the present time, as in the Psalm: *Today if you shall hear his voice,*\(^{38}\) just as if it is said ‘at whatever time’. ‘Tomorrow’ is future time, as in the gospel: *Do not think about tomorrow, thinking of what you shall eat or what you shall drink.*\(^{39}\) Also, there it is written: *And if the grass (that is the sinners) of the field, which is today, and tomorrow is cast into the oven (that is perpetual fire), God clothes you in this way.*\(^{40}\) And elsewhere: *Lest your children tomorrow may not say to our children: There is no part for you in Israel.*\(^{41}\)


[289D] There are three parts of a day: morning, midday, and evening. In the morning the light is advanced and full, no longer twilight. It is called morning [mane] from the adjective ‘good’, because the ancients used ‘manus’ as a word for ‘good’ – for what is better than light? Moreover, ‘morning’ signifies the time of regeneration in baptism, when man begins to be the son of light, or it is the light of good acts, or the time of resurrection. Whence it is written: *For to you will I pray, O Lord, in the morning you shall hear my voice.*\(^{42}\) For this church which knows that the darkness of sins holds it and that it is gathered by the night of this world, then rightly believes that it will be heard when it springs into the light of the true resurrection. For ‘morning’ signifies the time of the resurrection, as in what follows: *In the morning I will stand before you, and will see because [290A] you are not a God that wants iniquity.*\(^{43}\) On the day of judgment when all men will rise from the sleep of death, the equity of the judgment of God will

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\(^{37}\) Psalm 2: 7  
\(^{38}\) Psalm 94: 8  
\(^{39}\) Matthew 6: 31, 34  
\(^{40}\) Matthew 6: 30, Luke 12: 28  
\(^{41}\) Joshua 22: 27  
\(^{42}\) Psalm 5: 4  
\(^{43}\) Psalm 5: 5
then appear, when he renders to each and everyone according to their deeds. Midday [meridies] is so called as if the word were ‘medidies’, that is, the ‘middle of the day’ [medius dies], or because then the day is purer, for ‘merum’ means ‘pure’. For it signifies clear doctrine, with the clarity of good deeds, as it is written in Canticles, where the bride says to the bridegroom: *Show me where you eat and where you rest in the midday.* And elsewhere, ‘midday’ is used in the opposite way, as in the Psalm: *Of disaster or of the noonday devil.* The ‘noonday devil’ is the massive danger ignited by the heat of persecution, where destruction is often feared, and when human weakness is overcome. [290B] Also, ‘from the noonday devil’ is taken as something manifest, not secret. Evening [suprema] is the last part of the day, when the sun turns its course toward its setting – so called because it ‘still exists’ [superesse] up to the final part of the day, which turns toward evening. Therefore, the evening signifies the end of human life, or the end of the world, or the penance to come, for this evening signifies the fall of the death of Christ, as the Psalmist declares: *In the evening weeping shall have place, and in the morning gladness.* And this weeping happened in the evening when our Lord Christ was killed. Then there was truly an occasion for weeping, when for three days the crowd of the faithful mourned, and the nature of the world was shaken from its sleep. Gladness also arises in the morning, when the resurrection of the Lord was made known, as is attested to in the gospel, [290C] when the disciples were allowed to witness the immortal presence of their Lord. Therefore, the evening signifies the end of the world, when the time for work is finished. Whence is spoken: *Night comes when no one is able to work.* It signifies future repentance, when sinners are described as those to be thrown into the exterior darkness. These three times are included in one verse of the Psalmist who says: *At evening, morning, and noon, I will speak and declare: and he shall hear my voice.* These words declare great mysteries to us. *Evening* denotes the time of betrayal when Judas is known to have betrayed [Jesus] to the cohorts who sought him; *morning*, when he was taken to Pontius

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44 Canticles 1: 6  
45 Psalm 90: 6  
46 Psalm 29: 6  
47 John 9: 4  
48 Psalm 54: 18
Pilate to be heard; *noon*, because at the sixth hour, as the evangelists says: *He was hung on the cross.*[49]  [290D] *I will speak* refers to the evening, for it is clear that he revealed everything which the most wicked Judas planned to do. *I will declare* corresponds to the morning, when at Pilate’s words, *Are you the king of the Jews?*, he declared: *For this was I born,*[50] and the other words spoken then by the Lord. He further added: *And he shall hear my voice.*  This refers to noon, when he said on the cross: *It is consummated; and he gave up the ghost.*[51]  Thus ‘evening’ signifies the passion, ‘morning’ the resurrection, and ‘midday’ his ascension into heaven.


‘Night’ is so called because it detracts from human affairs or visions, or else because thieves and robbers find occasion during it to harm others. [291A] Moreover, night is the absence of the sun, when it is concealed by the earth’s shadow, from the time it sets until the time it rises again. The poet describes its nature accordingly: *Night sank into the ocean wrapping earth and pole in a great shadow.*[52]  And Solomon in Holy Scripture said: *Who feeds amongst the lilies until the day breaks and the shadows give way,*[53] alluding to the departure of night, in an altogether elegant turn of phrase, as the giving way of the shadows. However, because the earth’s mass blocks the splendour of the sun from us, according to the location of the regions through which its path passes, that shadow, which is the very essence of night, is projected so far upwards that it appears to reach to the stars. Appropriately, [Solomon] signified that by the opposite change, that is, [291B] the rising of the light, the shadows give way, that is, night is suppressed and driven down. Philosophers say that this shadow of night extends upwards to the frontier between air and ether, and that the moon, the lowest of planets, is occasionally touched and obscured by the shadow as it comes together into a point like a pyramid. No other star undergoes such an

49 Matthew 26: 20  
50 John 18: 33  
51 John 19: 30  
52 Vergil, *Aeneid* 2. 250-251  
53 Canticles 2: 16-17
eclipse, that is, the loss of its light, in this fashion, because the sunlight, diffused everywhere around the confines of the earth, shines without impediment on those [stars] which are at a great distance from the earth. Therefore [the sun] makes the tracts of ether which are beyond the moon to be always full of daylight, either by its own brightness or by that which beams from the stars. The shadow of night was given to mortals for the repose of the body lest mankind perish and die because of unendingly immoderate exertion at its work. It was given as well to certain animals who cannot bear the light of the sun, [291C] and likewise to those beasts who fear the presence of human beings, in order that they may have an opportunity to go about and seek their food. As the Psalms in praise of God: The sun knew its setting; You set out the shadows and made the night, in which all the beasts of the wood go forth, etc.\(^{54}\) For thus, allegorically, ‘day’ signifies the light of faith, the equity of justice, and prosperous and happy things in the Scriptures. So ‘night’ designates injustice, infidelity, and adversities. For ‘night’ signifies infidelity in the letter of the apostle in which it says: We are not sons of the night nor of the darkness.\(^{55}\) Iniquity is expressed under the signification of ‘night’ in that sentence of blessed Job: Let the day perish wherein I was born, and the night in which it was said: A man child is conceived.\(^{56}\) [291D] Whence the Psalms attested that he was conceived in iniquities and born in sins.\(^{57}\) Therefore, the blessed Job prayed that the hope brought forth by the apostate angel, who disguised himself as the day, and who shone forth with the promise of divinity, should perish; but showing himself instead to be the night, he hid the light or our immortality from us. Let our old enemy, who displayed the light of promises but bestowed the darkness of sin, perish; who, as it were, presented himself as day by his flattery, but led us to a night of utter darkness by sealing our hearts with blindness. But other things are expressed in the name of the night when the Psalms attests that he shouts in the night, that is, in tribulation, although he is not heard. Thus the Psalms says: In the day of my trouble I sought God, with my hands lifted up to him in

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\(^{54}\) Psalm 104: 19-20, 103: 19-20

\(^{55}\) 1 Thessalonians 5: 5

\(^{56}\) Job 3: 3

\(^{57}\) Psalm 50: 7
the night, [292A] and I was not deceived.\textsuperscript{58} In the name ‘of the night’ signifies the life of this world which, although it is seen to have light, nevertheless is blackened by the darkness of sins. Also the cell of hell is signified by the term ‘night’ when he says: \textit{Perhaps darkness shall cover me and night shall be my light in my pleasure.}\textsuperscript{59} How is he able to be oppressed by the darkness, for whom night was the illumination in his pleasure? For [Jesus] showed the cell of hell to be in fact illuminated, when he destroyed the power of the devil and liberated man from his misery.

‘Night’ represents the present life, as in the Psalm: \textit{In the nights lift up your hands to the holy places.}\textsuperscript{60} Also there: \textit{To him in the night I am not deceived.}\textsuperscript{61} ‘Night’ signifies the future world for sinners, as in the gospel: [292B] \textit{Night comes when no one is able to work.}\textsuperscript{62} ‘Night’ is the life of sinners, as in the writings of the apostle: \textit{For they that sleep, sleep in the night; and they that are drunk, are drunk in the night.}\textsuperscript{63} ‘Night’ is blindness of heart, or a vain sense of security, as in Job, it is said about the wicked one: \textit{A tempest shall oppress him in the night.}\textsuperscript{64} And in the gospel: \textit{You fool, this night do they require your soul from you and in whose shall be those things which you have provided?}\textsuperscript{65} ‘Night’ is future tribulation, as in the gospel: \textit{Two men shall be in the field; the one shall be taken, and the other shall be left.}\textsuperscript{66} ‘Night’ represents the tribulation in the time of our present life, as in the gospel: \textit{Which of you shall have a friend, and shall go to him at midnight, and shall say to him “Friend, lend me three loaves”},\textsuperscript{67} that is, the knowledge of the trinity. ‘Midnight’ signifies the hidden judgment of the Lord, as in the gospel: [292C] \textit{At

\begin{itemize}
\item \textup{58} Psalm 76: 3
\item \textup{59} Psalm 138: 11
\item \textup{60} Psalm 133: 2
\item \textup{61} Psalm 76: 3
\item \textup{62} John 9: 4
\item \textup{63} 1 Thessalonians 5: 7
\item \textup{64} Job 27: 20
\item \textup{65} Luke 12: 20
\item \textup{66} Luke 17: 35
\item \textup{67} Luke 11: 5
\end{itemize}
midnight there was a cry made “Behold the bridegroom comes”.68 ‘Midnight’ is death coming unexpectedly, just as Job writes about the rejected ones: At midnight they shall be taken away.69 The ‘first part of the night’ is the first age of man, that is, infancy or childhood. The ‘second part of the night’ is adolescence and youth. The ‘third part of the night’ is old age, as in the gospel: And if he shall come in the third watch, and find them so, blessed are those servants.70

[7] On the Seven Parts of the Night

There are seven parts of the night: dusk, eventide, the first part of the night, dead of night, cockcrow, early morning, and daybreak. Dusk [crepusculum] is uncertain light, for we say that something doubtful is ‘murky’ [creperum], that is, between light and darkness. [292D] Evening [vesperum] is named for the western star which follows the setting sun and precedes the oncoming darkness. About which the poet says: The evening star [vesper] would close the gates of Olympus against the day.71 The first part of night [conticinium] is when everything is hushed [conticescunt], that is, silent. For hushed [conticescere] means silent. The ‘dead of night’ [intempestum] is the middle and inactive time of night, when nothing can be done and all things are at rest in sleep. For time is not perceived on its own account, but by way of human activities, and the middle of the night lacks activity. Therefore intempestus means ‘inactive’, as if it were ‘without time’, that is, without the activity by which time is perceived. Whence the expression, ‘you have arrived ‘at an untimely moment’ [intempestive]’. Hence the ‘dead of night’ is so called because it lacks time, that is, activity. Cockcrow [gallicinium] is so called from roosters [gallus], the heralds of light. [293A] The ‘early morning’ [matutinum] falls between the passing of darkness and the coming of dawn, and it is called matutinum because this is the time of the beginning of morning [mane]. Daybreak [diluculum] is so called as if it were the little ‘light of day’ [diei lux] just now beginning. Thus aurora is the prelude of the day as it grows light and the first brightness of the air, which is called ‘dawn’ in Greek. By our derivation we name it aurora,

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68 Matthew 25: 6
69 Job 34: 20
70 Luke 12: 38
71 Vergil, Aeneid 1. 374
as if it were ‘eorora’. Whence: And the East Wind rejoicing in its horses of dawn, and; And the Eastern Battle lines.\(^{72}\) Therefore ‘evening’ and the beginning of night signifies either the beginning of tribulation, which follows the prosperity of the world, or the beginning of the turning away of the wicked who, averse to the true light of the commands of God, fall into the darkness of sins. \(^{293B}\) For when anyone recedes from truth and justice, and runs towards the darkness of errors and sins, he is called rightly by the term ‘evening’, since he is made the consort of the Antichrist, who is called ‘evening’ in the Scriptures. So ‘intermestum’, that is, the middle of the night, signifies either the profoundness of sins or the withdrawal from mundane affairs and the zeal of good men towards the praising of God. Whence the prophet said in the Psalm: I rose at midnight to confess to you, for the judgments of your justice.\(^{73}\) The words, I rose at midnight, are not meaningless. They knew that at that hour the first-born of the Egyptians were smitten, that at that time the bonds of Peter, Paul, and Silas who lay in prison were loosed, that the bridegroom would also come at midnight. So at the same time \(^{293C}\) they rise to give praise, so that they may not stand among the foolish virgins, and the door remain closed to them. The expression, I rose, is also meaningful, because we always rise when we hasten to the Lord’s praises. To confess, here means to give praise, for the words that follow are for the judgments of your justice. If the sense to be understood had been confession of repentance, the words would have been for your mercy, not for the judgments of your justice. The cockcrow signifies the conversion of sinners. Whence, at that time, Peter who had erred by denying the Lord in the darkness of oblivion, corrected everything he had agreed to and, with the reminder of the hoped-for light and the presence of that same true light having arrived, straightened up fully. I believe that this rooster must be understood as the teacher who, waking us as we sleep, scolds us sleepers, saying: \(^{293D}\) Awaken rightly and do not sin.\(^{74}\) Therefore ‘matutinum’ signifies the early morning, the time of the resurrection of the Lord, or the complete conversion of man, from sins to justice. Whence the Psalmist says to the Lord: To you do I watch at daybreak and I will meditate on you in the morning, because you have been my

\(^{72}\) Vergil, Aeneid 2. 417, 1. 489

\(^{73}\) Psalm 118: 62

\(^{74}\) 1 Corinthians 15: 34
He is awaken to this as often as he is asleep to ambition of the world. For we so follow the former if we hasten to desert with the latter. Moreover he rightly adds: *I will meditate on you in the morning.* And elsewhere: *I rise up at daybreak,* which is when the time of the resurrection of the Lord illuminates, so that he may then sing his praises, and when he inspired the human race by the example of his resurrection. ‘Morning’ is the day of judgment or the resurrection of the dead, as in the Psalm: *In the morning [294A] I put to death all the wicked in the land.* ‘Dawn’ is the church because it is illuminated by the light of faith, after the darkness of sins, as written in Job: *And did you show the dawning of the day its place?* 

[8] On Darkness

‘Darkness’ is so called because it ‘holds shadows’ [tenere umbras]. Moreover, ‘darkness’ sometimes signifies the profoundness of the Divine Scriptures, sometimes ignorance, sometimes the infidelity of sinners, and sometimes the punishments of Gehenna. Therefore, it signifies the profoundness of Scriptures in the prophetic letter, which says: *He made darkness his hiding place.* And elsewhere: *Darkness shall not be dark to you, and night shall be light as day, the darkness thereof, and the light thereof are alike to you.* [294B] For he says darkness is like the mystery and the profoundness of the Divine Scriptures, according to which we read in Proverbs: *He understands the parable and the dark sermon.* And so in another Psalm we read: *The dark water in the clouds of air.* Therefore, these shadows will not be hidden, but rather are illuminated by the Lord, because the prediction of the prophets is fulfilled by His coming.

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75 Psalm 62: 2, 7-8
76 Psalm 107: 3
77 Psalm 100: 8
78 Job 38: 12
79 Psalm 17: 12
80 Psalm 138: 12
81 Proverbs 1: 6
82 Psalm 17: 12
Moreover ‘darkness’ signifies ignorance, as in this apostolic letter concerning sinners where it says: *Having a heart obscured by darkness.*\(^{83}\) Also infidelity of evil men is noted where it is written: *The light shines in darkness, and the darkness did not comprehend it.*\(^{84}\) Christ indeed is the light of men, and the presence of his knowledge illuminates all human hearts which merit being illuminated. [294C] For ‘darkness’ means the foolish and the wicked; the light of eternal wisdom clearly understands how blind their hearts are, although they are not at all able to grasp the rays of its light through intelligence, just as if some blind person is covered by the radiance of the sun, but he does not see the sun, by whose light he is drenched. ‘Darkness’ is the devil or demons, as the prophet says: *Darkness shall pursue his enemies, that is the Lord’s enemies.*\(^{85}\)

The punishments of Gehennae is signified by ‘darkness’, as in the letter of the gospel where it is read about a sinner: *With his feet and hands bound, send him into the exterior darkness where there will be weeping and gnashing of teeth.*\(^{86}\) Therefore, whoever, in the present life of infidelity and sins, is obscured by the interior darkness, [294D] it is necessary that he, if appropriate penitence does not come to his assistance, be cast out after the exit of the present life into the exterior darkness, where horror lives and the pain of death is eternal.\(^{87}\) Therefore, a ‘shadow’ is used sometimes in place of ‘good’ and sometimes in place of ‘bad’. It is used for ‘good’ when it signifies the care of God and the protection of the holy spirit, as it does in the Psalm: *Under the shadow of your wings I hope until iniquity passes away.*\(^{88}\) And elsewhere: *Keep me, he says, as the pupil of your eye, protect me under the shadow of your wings.*\(^{89}\) He very fittingly seeks to be protected, as the pupil of an eye, since we both discern visual things through it (the pupil), and nothing else in our body is found to be more excellent. It is followed

\(^{83}\) Ephesians 4: 18
\(^{84}\) John 1: 5
\(^{85}\) Nahum 1: 8
\(^{86}\) Matthew 22: 13
\(^{87}\) Cf. Job 10: 22
\(^{88}\) Psalm 56: 2
\(^{89}\) Psalm 16: 8
by under the shadow of your wings protect me, and this is [295A] introduced by a scheme which in Greek is called a parabola [parallel] and in Latin a comparison, when dissimilar things are associated with each other as a reminder. For ‘wings’ are compared with paternal protection. Indeed, mercy and charity are as if wings of the Father; with them, he explains, he is fittingly protected. And in the gospel: Behold a bright cloud overshadowed them.⁹⁰ And elsewhere: Under your shadow we shall live among the Gentiles.⁹¹ ‘Shadow’ is likened to the Old Testament, as in Salomon’s Canticle: Until the day breaks and the shadows retire.⁹² ‘Shadows’ are like the life of man, as in Job: Flees as a shadow.⁹³ A shadow is like the death of the flesh, as in the gospel: The shadow of death has covered us.⁹⁴ Moreover the word ‘shadow’ is used for an evil thing when it means either the death of the body or the punishment of Gehenna, as is said: For though I should walk in the midst of the shadow of death, [295B] I will fear no evils, for you are with me.⁹⁵ And elsewhere: They have laid me in the lower pit: in darkness and in the shadow of death.⁹⁶ In the shadow of death indicates the place of sinners, since the death of the wicked allows shadowy and dark shades while joy does not illuminate them, and they are plunged in the enduring darkness of their melancholy. So the word has varied senses according to the nature of the passages. A fog cloud is effected from the density of air, and it is called fog [caligo] because it is mainly generated from the warmth [calor] of the air. But according to the allegorical meaning, fog signifies the covering-over of divine secrets. Whence it can be read in Exodus: The people stood far off but Moses went to the dark cloud wherein God was.⁹⁷ In fact, a crowd of people is not able to penetrate the fog of allegories since spiritual understanding is

⁹⁰ Matthew 17: 5  
⁹¹ Lamentations 4: 20  
⁹² Canticles 2: 17  
⁹³ Job 14: 2  
⁹⁴ Psalm 43: 20  
⁹⁵ Psalm 22: 4  
⁹⁶ Psalm 87: 7  
⁹⁷ Exodus 20: 21
strongly searched for only by a few. Indeed, minds of carnal people often feed only on the simple record of facts. When God was speaking, the people stood far off, since those who are spiritual penetrate the cloud of allegories, and recognize, spiritually, the words of God: Moses went to the dark cloud wherein God was. Here in the Psalm it is written: Darkness was under his feet, since God is not discerned from low places with that same clarity by which He rules in high places. Here in this letter it can be understood in another way. Darkness here is the devil, who clouds men’s minds, while making those whom he possesses unable to see the brightness of truth. Under his feet, since without doubt he (the devil), with the accursed wickedness of demons, is trodden underfoot by the majesty of the Lord Saviour. As the prophet foretells in Psalm 90: You shall walk upon the asp and the basilik, and you shall trample underfoot the lion and the dragon. Here ‘fog’ signifies the blindness of heart of the persecutors. Hence the Lord said to Job: Who shut up the sea with doors, when it broke forth as issuing out of the womb, when I made a cloud the garment thereof, and wrapped it in a mist as in swaddling bands? The savage sea is dressed in a cloud, since the cruelty of persecutors is vested with the veil of their stupidity, and does not suffice for the clear light of truth to be seen; that which is it does because of cruelty, it does not recognize because of blindness. Therefore, since the persecutors of the church, restless from instability of the heart, and given over to this world, know childish things, not the sublime, they are constrained by supernal judgment so that they are not able to persecute as much as they want to. [296A] For ‘shadow’ and ‘fog’ sometimes mean sins. Whence it is said: Those sitting in darkness and the shadow of death. Sometimes it means the pleasures of sins, as in the book of Job, where it is said about the devil: Under the shadow in the secret place of the reed and of the rush and in moist places. And since the shadow is not far from the air, whose shadow it is, thus death is not far from its pain.

98 Psalm 17: 10
99 Psalm 90: 13
100 Job 38: 8-9
101 Psalm 106: 10
102 Job 40: 16
Hence in Job it is said: Where the shadow of death, and no order, but everlasting horror dwells.\textsuperscript{103}

[9] On Weeks

‘Hebdomada’ is a Greek word which takes its name from the number seven. According to human custom it is merely seven days but according to the authority of Sacred Scripture there are many kinds, all of which, if I am not mistaken, [296B] look towards a single end: namely that we should hope for perpetual rest in the grace of the holy spirit at the time after good works are accomplished. Thus the first week, unique from all, from which the others devise their form, is elevated by divine action, because the Lord, completing the adornment of the world in six days, rested from his labours on the seventh.\textsuperscript{104} It should be noted that the sixth number is perfect, not because the Lord perfected the works of the world in it [six days], but because, as Augustine says, the Lord, who was capable of creating everything simultaneously, deigned to do his work within this number, because it is a perfect number, in order that he might demonstrate the perfection of his achievements through this number, which is the first to be formed by its parts, that is, of a sixth, a third, and a half, namely one, two, and three, and which together make six.\textsuperscript{[296C]} The second week was mandated to be observed by men according to the example of this divine week. The Lord said: Six days shall you labour and do all you have to do; but on the seventh day, the Sabbath of the Lord thy God, you shall do no work. For in six days the Lord made heaven and earth, the sea and all that is herein, and he rested on the seventh.\textsuperscript{105} In olden times, the week was computed by the people of God in this way: the first [day] of the Sabbath, or [day] one of the Sabbath or Sabbaths; the second of the Sabbath; the third of the Sabbath; the fourth of the Sabbath; the fifth of the Sabbath; the sixth of the Sabbath; the seventh of the Sabbath, or the Sabbath. Not that all days could be Sabbaths or days of rest, but that the first, the second, third and so on should be counted in their sequence from the day of rest, which took precedence by virtue of its name and observance. A third type of week happens [296D]

\textsuperscript{103} Job 10: 22
\textsuperscript{104} Cf. Genesis 2: 1-2
\textsuperscript{105} Exodus 20: 9-11
during the celebrations of Pentecost. It is completed in seven times seven days, plus one, which is 50 days. On this day Moses, climbing the fiery mountain, received the law from heaven, and Christ sent the grace of the holy spirit from heaven in tongues of fire.\textsuperscript{106} The fourth week was that of the seventh month, which was almost entirely taken up by special ceremonies. Amongst these [days] the day of atonement was particularly important. Only on this day of the year did the high priest, leaving the people outside, enter the holy of holies after the year’s fruits of grain, wine, and oil had first been collected in order.\textsuperscript{107} This signifies that Jesus the great high priest, having fulfilled the dispensation of the flesh through his own blood, prepares to enter the gates of the heavenly kingdom, in order that he might now appear before the [297A] face of God on our behalf who, still standing outside, are ready and eagerly await his coming.\textsuperscript{108} It should be noted here that just as certain unclean persons are commanded by the law to be purified on the first, third, and seventh day, so the first, third, and seventh month are dedicated to their own ceremonies. The fifth week is that of the seventh year, in which the entire people, by order of the law, rested from agricultural labour. The Lord said: \textit{Six years shall you sow your field, and on the seventh you shall cease}.\textsuperscript{109} The sixth week is that of the jubilee year, the year of remission, which is encompassed in 7 weeks of years, that is, in 49 years. When these were completed – that is, at the beginning of the 50 year – trumpets rang out clearly, and the ancient possession was returned to everyone according to the law.\textsuperscript{110} The seventh kind of week is that employed by the prophet Daniel, [297B] comprising (after the manner of the law) seven years in each week, but abbreviating these years by a new calculation; that is, he fixed each [year] at 12 lunar months. He did not include in the second or third years (as tradition decrees) the embolismic months which normally accumulate from the 11 days of the epact of every year. Rather, he inserted a whole year whenever the sum of 12 [lunar months] was reached. He did this, not because he begrudged the knowledge of the truth to those who sought it, but in order to exercise

\textsuperscript{106} Cf. Exodus 19: 18
\textsuperscript{107} Cf. Leviticus 16: 29-34
\textsuperscript{108} Hebrews 9 passim
\textsuperscript{109} Leviticus 25: 3
\textsuperscript{110} Cf. Leviticus 25: 8-31
the inquirers’ intelligence, in the manner of prophecy, preferring to hide his pearls away from his sons, so that they might discover them with fruitful effort, rather than have them scattered abroad to be trodden underfoot by swine in contemptuous disdain.\(^{111}\) In order to explain this more clearly, let us look at the words of the angel to the prophet. [297C] He says: 70 weeks are diminished upon your people and upon your holy city, to finish the transgression, and to make an end of sins and to wipe out iniquity and bring in everlasting righteousness, and to fulfill the vision and prophecy, and to anoint the most holy.\(^ {112}\) There is no doubt but that these words refer to the incarnation of Christ, who took away the sins of the world,\(^ {113}\) fulfilled the law and the prophets,\(^ {114}\) and was anointed with the oil of gladness above his fellows\(^ {115}\) and that the 70 weeks multiplied by 7 years work out to 490 years. But note that he claims that these weeks are not simply ‘observed’ or ‘calculated’ but ‘diminished’; that is, he covertly impresses upon the reader that he should understand that the years indicated are shorter than usual. He says: Know therefore and understand [297D] that from the rebuilding of Jerusalem unto the Christ, the prince, shall be 7 weeks and 62 weeks; in a brief space of time the street and the wall shall be built again.\(^ {116}\) From Ezra’s account we learn that Nehemiah, when he was cup-bearer to King Artaxerxes, in the 20\(^{th}\) year of his reign, in the month of Nisan, obtained [the king’s] permission to restore the walls of Jerusalem. The temple had been constructed long before this by permission of Cyrus.\(^ {117}\) As it is said, he actually completed this work in a very short space of time; so hard-pressed was he by the neighbouring peoples, that it is written that each builder, gird about the loins with a sword, fought with one hand and repaired the wall with the other.\(^ {118}\)

\(^{111}\) Cf. Matthew 7: 6  
\(^{112}\) Daniel 9: 24  
\(^{113}\) John 1: 29  
\(^{114}\) Matthew 5: 17  
\(^{115}\) Psalm 45: 7, 44: 8  
\(^{116}\) Daniel 9: 25  
\(^{117}\) Cf. Nehemiah 1: 11 – 2. 1  
\(^{118}\) Cf. Nehemiah 4: 17-18
Calculate, therefore, 70 ‘weeks’ from this time until Christ the prince, that is, 490 years of 12 lunar months, which make [298A] 475 solar years. Now the Persians ruled 116 years from the aforementioned 20th year of King Artaxerxes until the death of Darius. After that are the Macedonians with 300 years until the downfall of Cleopatra. Then the Romans held the monarchy 59 years until the 17th year of Tiberius Caesar. Together these make, as we said, 475 years, and contain 25 19-year cycles. Nineteen times 25 is 475, because 7 embolismic [months] accrue in each [19-year] cycle, multiply 25 by 7 and it makes 175, which are the embolismic months in 475 years. Therefore, if you wish to know how many lunar years these make, divide 175 by 12: 12 times 14 is 168, [298B] and, therefore, it makes 14 years with 7 months remaining. Add these to the above-mentioned 475, and together they make 489. Add the 7 extra months, and the part of the 19th year of the Emperor Tiberius, in which the Lord suffered, and you will find that from the prescribed time up to his passion there are 70 ‘diminished weeks’, that is, 490 lunar years. At the time of his baptism, when he was anointed as the most holy one, the Holy Spirit descending upon him like a dove,119 not only were the 7 and 62 weeks completed, but a part of the 70th week had begun. He said: And after threescore and two weeks shall the Messiah be cut off, and there will be none among the people to refuse him.120 Christ was killed, not immediately after the 62 ‘weeks’, but at the end of the 70th ‘week’. Therefore, [298C] as far as we can see, [the angel] separated this week from the others because there was more to be related concerning it. For in it Christ was crucified, and refused by the faithless people, not only during his passion, but in fact continuously, from the time when he began to be preached about by John. Now what follows – And the people that shall come with the prince shall destroy the city and the sanctuary, and the end thereof shall be devastation and after the end of the war a devastation shall be determined121 – does not pertain to the 70 weeks. For it was predicted that these weeks would extend up until the reign of Christ. But scripture, having predicted his coming and his passion, shows what would happen afterwards to the people who did not receive him. It calls Titus ‘the prince who shall come’, who in the 40th year of the Lord’s passion, together with the

120 Daniel 9: 26
121 Daniel 9: 26
Roman people, so destroyed the city and sanctuary [298D] that there did not remain one stone standing upon another. After these things had been tasted through anticipation, [the angel] returns to explain what will happen in the week he left out. And he shall confirm the covenant with many for one week – that is, in that newest week when either John the Baptist or the Lord and the apostles by their preaching shall convert many to the faith. And in the middle of the week the sacrifice and the oblations shall cease. The middle of this week was the fifteenth year of Tiberius Caesar when, commencing with the baptism of Christ, purification by sacrifices gradually began to be disdained by the faithful. Likewise what follows – and in the temple shall be the abomination of desolation and the desolation shall continue until the consummation and the end – [299A] refers to the time following this, and the truth of this prophecy is attested both by the account of men of old and by the events of our own time. The eighth kind of week, uniform and unique, existing without a circuit of revolution, is composed of the unstable ages of this world, and follows in all respects the figure of the first week. For on the first day, light was created, and in the first age man was placed in the beauties of paradise. When light was divided from darkness, evening was made, and evil came about when the sons of God were separated from [their] seed. Not long after, when the giants were born, the whole earth was corrupted, until the creator, regretting that he had made man, determined to destroy the world by a flood. On the second day, the firmament was suspended in the midst of the waters; in the second age, the ark was borne up in the midst of the waters, at once carried aloft on the fountain of the deep, and deluged by the cataracts of heaven. It was the evening of this day when the sons of Adam, walking from the east, conspired together in the building of the tower of vainglory. They were punished by the division of languages, and scattered from one another. On the third day, when the waters were gathered together, dry land appeared, adorned with woods and grasses; and in the third age, when the nations were rooted in the worship of demons, Abraham the patriarch, leaving his people and his homeland, was made fruitful in the seed of the saints. The evening

123 Daniel 9: 27
124 Daniel 9: 27
125 Daniel 9: 27
came when the Hebrew people, beset by wicked men, acted against the will of God and
demanded a king of their own, who, as soon as he was set upon the throne, butchered the priests
of the Lord and the prophets. Afterwards, he and all his people perished by the sword of
foreigners. On the fourth day, the heaven was adorned with lights; in the fourth age this people,
[299C] renowned for its heavenly faith and glorying in the rule of David and Solomon, became
famous throughout the whole world for the greatness of its most holy temple. But it too accepted
its evening. Since sin increased, that realm was shattered by the Chaldeans, the temple
demolished and the whole nation carried off to Babylon. On the fifth day, the fishes and birds
came forth from the water: the former remained in their native waves, while the latter flew over
air and land. In the fifth age, the people of Israel multiplied in Chaldea; some of them sought out
Jerusalem, fully adorned with the plumage of heavenly desires, and others resided amongst the
rivers of Babylon, lacking all powers of flight. The evening arrived when, with the coming of
the Saviour imminent, the Jewish people was made tributary to the Romans on account of the
magnitude of their wicked deeds, and moreover was made subject to foreign-born kings. On the
sixth day, the earth was [299D] filled with its living creatures, and the first man was created in
the image of God. Soon after, woman was fashioned from a rib taken from his side as he slept.
In the sixth age, as the prophets foretold, the son of God, who would recreate man in the image
of God, appeared in the flesh.\textsuperscript{126} He slept upon the cross and water and blood flowed from his
side, from which he would consecrate the church to himself. The evening of this age, darker
than all the others, will come with the persecution of the Antichrist. On the seventh day, with his
labours having ended, God rested and blessing that day, he bade it be called ‘Sabbath’, and we
do not read that it had an evening. In the seventh age the souls of the righteous, after the great
labours of their lives are finished, will rest forever in another life, which will never be blemished
by any sorrow, [300A] but rather will culminate in the greater glory of the resurrection. For
men, this age began when the first martyr Abel, his body having been buried in the earth, entered
in spirit into the Sabbath of perpetual rest. It will be complete when the saints, having taken up
their bodies [again], shall possess a double measure in their land.\textsuperscript{127} Everlasting joy shall be

\textsuperscript{126} Cf. John 19: 34

\textsuperscript{127} Cf. Isaiah 61: 7
their. This is the eighth age, concerning which the sixth Psalm was written. I believe that in the six ages of this world we ought to pray for the seventh or eighth age of the world. Because in them the just shall receive joy, but the wicked punishment. This Psalm concerning this age begins, proceeds and ends in great fear: *O Lord, rebuke me not in your anger*, etc.\(^{128}\)

[10] On Months

\[300B\] The months [menses] take their name from the measure [mensura], by which each of them is measured. But more correctly they take their name from the moon, which in the Greek language is called ‘mene’. For the Greeks call the months ‘mene’ but also Jerome says that amongst the Hebrews, the moon, which they call ‘iare’, gives its name to the months. Hence Jesus son of Sirach, who undoubtedly wrote in Hebrew, says, in speaking of the moon: *the month is called after her name*.\(^{129}\) The ancients were accustomed to calculate their months not by the course of the sun, but by that of the moon. Hence whenever in Holy Scripture (whether [speaking of time] under the law or before the law) is indicated a day of the month on which something was said or done, it signifies nothing other than the age of the moon. About this always, the Hebrews, to whom the oracles of God are entrusted, have never ceased to observe the months after the ancient custom of their fathers. They call the first month Nisan, the month of the new things, which is dedicated to the rites of Passover. \[300C\] On account of the fluctuating course of the moon, it sometimes falls in March, sometimes in April, and sometimes occupies some days of May. But it is properly assigned to April, because it always either begins, ends or is totally included within it. Provided that the rule we discussed above [DTR chp.6] is observed: when the fifteenth day of the moon is after the equinox, it constitutes the first month of the following year, and when it comes before the equinox, it forms the newest [i.e. last] month of the preceding year, and so on in sequence. In a similar way they calculate their second month, Iyyar, which corresponds to May; their third, Sivan, to June; their fourth, Tammuz, to July; their fifth, Av, to August; their sixth, Elul, to September; their seventh, Tishri, to October, which they call the new year, because then the harvest is gathered and special festivities held; the eighth,

\(^{128}\) Psalm 6: 2

\(^{129}\) Ecclesiastes 43: 8
Marheshvan, to November; the ninth, Kislev, to December; the tenth, Tevet, to January; [300D] the eleventh, Shevat, to February; and the twelfth, Adar, to March. Since the lunar orbit comprises 29 ½ days, these months alternate between 30 and 29 days, and in the second or third year they intercalate an extra month, which should be made up from the days of the 11 epacts from each year. Hence I have some misgivings about how our predecessors calculated the day on which the law was given – which is the third day of the third month – as being the 50th day from the slaying of the lamb. They count 17 days left over from the first month (because the first 13 had elapsed before Passover), 30 in the second month, and 3 in the third. Together these make 50 days, but it is agreed that 2 [301A] lunar months finish not in 60 but in 59 days, and, therefore, if, having calculated the paschal month at 30 days, one retains the 17 days of its course which follow Passover, the second month ought to end not in 30 but in 29 days and by this calculation no more than 49 days will be found at the end of the specified time, unless one considers that the whole is calculated from the part by synecdoche, which is a very common rule in Holy Scripture. But however these things were done or reckoned, it is obvious that the Hebrews were accustomed to observe their months according to the course of the moon. In the book of Genesis, there is no other way to understand this when Noah is said to have gone into the ark with his people on the 17th day of the second month, and to have left it on the 27th day of the same month after the flood, than that a whole [301B] solar year, that is, 365 days, is described.130 For the moon, which this year, for instance [722 for Bede] is in its 17th day on the nones of May [7 May], will next year occur on the 27th, the day before the nones of May. Note well that those who say that the month ought to be defined, or was defined by the ancients, as the length of time in which the moon traverses the zodiacal circle, make a grave mistake. As more painstaking inspection of nature has taught, the moon plainly completes the zodiac in 27 days and 8 hours, but its proper course is 29 days and 12 hours, setting aside the calculation of the ‘leap of the moon’. Therefore, it is better to define a lunar month as the circuit and reintegration of the lunar light from new moon to new moon. Moreover the solar month is the passage of the sun through a 12th [301C] part of the zodiac, that is, the circle of the signs, which is accomplished in 30 days and 10 ½ hours. It is longer than a lunar month by 22 ½ hours, and

130 Cf. Genesis 28: 15-18
from this the 11 ¼ days of the epacts should annually accrue. For 12 times 22 makes 264, which
it is easy to see are the number of hours in 11 days, because 11 times 24 makes the same total.
Then, 12 times ½ makes 6, which is the number of hours in a quarter-day in each year. Now if
the moon [has] 12 months, which (as was said) are, when cumulated, shorter by 11 ¼ days than
[12] solar months, then, while these 12 months run their course, the moon illuminates the path of
the zodiac 13 times. But according to the allegorical meaning of the month, which takes its
name and order from the moon, it signifies [301D] the unification or progress of the holy church.
Whence in Job it says: Who will grant me to be as I was in months past? The name of the month, if not the collections of souls, or sometimes month is for perfection. The
church remembers, through the voice of Job, its early perfection and recalls how great was the
perfection of its preaching, which brought profit to the souls gathered. The 12 months have the
same number as the apostles, as in the book of the Apocalypse: Yielding its fruit every month.
Also ‘month’, just like the Sabbath, is found expressing eternal rest, as it is written in Isaiah: And
there shall be month after month, and Sabbath after Sabbath, so that from carnal Sabbaths and
months are made the favourite spiritual Sabbaths, which is marked by the people of God.
The spiritual month will be completed by the moon, from point to point, when it runs its course,
so that it completes a full month of the calendar. Because the ‘moon’, which is illuminated by
the sun, signifies the church illuminated by Christ, it does not need to be explained that the
Sabbath signifies rest. They come from the new moons and the Sabbaths, having exceeded six
days in which the world was made they hasten to the seventh day, that is, the Sabbath, in which
there is true rest. All flesh will come to adore in the presence of my face, says the Lord; not
only the people of the Jews, nor those in Jerusalem alone, but all humankind, everywhere in the
world, adores the Father in the unity of spirit and truth.

131 Job 29: 2
132 Apocalypse 22: 2
133 Isaiah 66: 23
134 Isaiah 66: 23

[302B] There are four seasons of the year: spring, summer, fall, and winter. They are called seasons [tempus] from the ‘balance of qualities’ [temperamentum] that each shares, because each in turn blends [temperare] for itself the qualities of moisture, dryness, heat, and cold. The seasons are also called circuits [curriculum] because they do not stand still, but ‘run a course’ [currere]. Further, it is clear that after the world was made the seasons were divided into groups of three months because of the quality of the course of the sun. The ancients divided each season, so that in its first month spring is called ‘new’, in its second ‘mature’, and in its third ‘declining’. So in its three months summer is new, mature, declining. Likewise the new, mature, and declining fall, and the new, mature, and declining or ‘extreme’ winter. Hence the verse:

[302C] At the setting of extreme winter.135 Spring [ver] is so called because it ‘is green’ [virere], for then, after winter, the earth is clothed with plants and everything bursts into flower. Summer [aestas] takes its name from ‘usta’, that is, ‘heat’; also aestas as if it were ‘burnt’ [ustus], that is, ‘burned out’ [exustus] and arid, for heat is arid. Fall [autumnus] is so called from the season when the leaves of the trees fall and everything ripens. The ratio of the celestial hemisphere [hemispherum] gave its name to winter [hiems], because at that time the sun revolves in a shorter course. Hence this season is also called ‘bruma’, as if it were ‘braxin’, that is, short [brevis]. Or the name ‘winter’ is from food, for ‘voracity’ in Greek is called ‘bruma’ – hence also a person who is squeamish about food is called ‘inbrumarius’. The ‘hibernal’ [hibernus] time is between winter and spring, as if it were ‘hievernus’; this commonly signifies ‘winter’, giving the name of its part to the whole season. These seasons are ascribed [302D] to particular parts of the sky. Thus spring is given to the east [oriens], because at that time everything springs [oriri] from the earth. Summer to the south, because at that time everything is more flaming with heat. Winter to the north, because it is numb with cold and continual frost. Fall to the west, because it brings serious diseases, whence also at that time all the leaves of the trees fall. In such a way the meeting of cold and heat and the conflict between different kinds of air are the reason why fall abounds with diseases. Moreover ‘spring’ mystically signifies the newness of baptism, or the renewal of life after the frost of infidelity and the torpor of sloth, or the resurrection of bodies after the sleep of

135 Vergil, Georgics I, 340
death; whence the Lord, in the law, instructed [Moses] to observe the month of new fruits and the beginning of spring, when the Lord led the children of Israel from the land of Egypt through [303A] the Red Sea. In which law, he also ordered them to celebrate the Passover, the time at which the Saviour rose from the dead after the crucifixion and granted the hope of resurrection to us. ‘Summer’ is the foreshadowing of future happiness and expresses the fervor of charity; whence it is said in the Psalm: Spring and summer, you made them.\(^{136}\) And in Solomon: For winter is now past and gone, the flowers have appeared in the land.\(^{137}\) ‘Summer’ is future beatitude, as in Solomon: Because of the cold the sluggard would not plough, he shall beg therefore in the summer, and it shall not be given him.\(^{138}\) On this account these two seasons signify the faithful, strong in the diverse quality of their characters. For some of them are like summer, fervent with the heat of faith and led all the way to martyrdom. Others are like spring, temperate in gentleness, attending to the Lord with appropriate devotion. [303B] For he made all of them, the former and the latter, he of whom grace is conceded because he is shown in the good will of men. ‘Autumn’ is the time of the crop and grape harvest, in which fruits are gathered. It signifies the time of universal judgment, when each and everyone will receive the reward of their work and reap the fruit of their labours. According to the apostle: For we must all stand before the judgment seat of Christ so that everyone may receive the proper things of the body, according to what he has done, whether it be good or evil,\(^{139}\) since he who sows in his flesh reaps the corruption of the flesh but he who sows in the spirit reaps eternal life from the spirit.\(^{140}\) So the Lord says in the gospel: But the harvest is the end of the world and the reapers are the angels of God.\(^{141}\) And elsewhere: So is the kingdom of God, [303C] as if a man should cast seed into the earth, and should sleep, and rise, night and day, and the seed should spring,

\(^{136}\) Psalm 73: 17
\(^{137}\) Canticles 2: 11-12
\(^{138}\) Proverbs 20: 4
\(^{139}\) 2 Corinthians 5: 10
\(^{140}\) Galatians 6: 8
\(^{141}\) Matthew 13: 39
and grow up while he knows not. For the earth of itself brings forth fruit, first the blade, then the ear, afterwards the full corn in the ear and when the fruit is brought forth, immediately he puts in the sickle, because the time of the harvest is come.\(^{142}\) For then the son of man sends his angels and collects and gathers all the scandals from his kingdom in order to destroy the bunch of weeds and gathers the wheat in his storehouse.\(^{143}\) ‘Autumn’ sometimes signifies the times of salvation which have been completed, as in Micheas: Woe is me, for I am become as one that gleans in autumn the grapes.\(^{144}\) ‘Winter’ signifies tribulation or the end of mortal life. Whence the Lord commanded to the disciples in the [303D] gospel saying: But pray that your flight be not in the winter, or on the Sabbath.\(^{145}\) If this sentence is understood to be about the captivity of Jerusalem, when it was captured by Titus and Vеспасианус, the people ought to pray lest their flight happen in winter or on the Sabbath, since on the one hand, the harsh cold prohibits proceeding toward the wilderness and hiding in the mountains and deserts, on the other hand, it is a transgression of the law, if they wish to flee, or imminent death if they remain. But if this is understood to be about the conclusion of the world, he warns us about it so that our faith and charity in Christ does not grow cold and that, being free from the works of God, we are not lethargic on the Sabbath of virtues.

[12] On the Year

[304A] ‘Year’ [annus] takes its name from either the renewal [innovando] of all things which pass away according to the natural order, or the cycle of time, for the ancients were accustomed to use ‘an’ for ‘circum’ – as Cato says in the Origins, ‘oratorum an terminum’, that is ‘circum terminum’, – and to say ‘ambire’ for ‘circumire’. There is a lunar year and a solar year, a separate year for [each of] the wandering stars, and one for all of the planets, which they specially call ‘the great year’. But ‘lunar year’ is taken in four ways. The first is when the moon, traversing the zodiac in 27 days and 8 hours, returns to the sign from which it set out. The

\(^{142}\) Mark 4: 26-29

\(^{143}\) Matthew 13: 41, 30

\(^{144}\) Micah 7: 1

\(^{145}\) Matthew 24: 20
second is 2 days and 4 hours longer, and is customarily called a month; [304B] after 29 days and
12 hours, the now waning moon seeks the sun from which it departed when it was new. The
third is when the moon completes 12 of these months, that is 354 days; this is called a common
year, because 2 of them usually run together. The fourth, which is called by the Greek name
‘embolismic’ (that is, ‘augmented over and above’), has 13 months, that is, 384 days. Both these
years begin, according to the Hebrews, at the commencement of the paschal month, but amongst
the Romans they have their beginning and end with the lunation that begins with the month of
January. Again, the year of the sun is [complete] when it returns to the same place with respect
to the fixed stars after 365 days and 6 hours, that is, a quarter of a whole day. The fraction,
multiplied by four, makes it necessary to interpolate one day, which the Romans call the
bissextus, so that the sun is brought back into the same cycle. [304C] The fourth year of the
solar cycle is bissextile, and one day longer than the other three. When it is finished, the sun
returns to all the places of the zodiac signs at the same time of day or night as it did four years
previously. The year of the wandering stars is that in which each of them lights up the circuit of
the zodiac, of which we spoke above. The ‘great year’ is when all the planets return at one and
the same time to the very places where they once simultaneously occurred. What, furthermore,
explains the ‘great paschal cycle’? When the lunar and solar cycles are multiplied together, a
‘great paschal cycle’ is completed in 532 years. For whether you multiply 19 by 28, or 28 by 19,
it makes 532. Hence this cycle has 28 19-year lunar cycles [304D] and 19 solar [cycles] (which
are completed in 28 years); 19 times 7 leap-year days, that is, 133; 28 times 228 solar months,
that is, 6,384; 28 times 235 lunar months, that is 6,580; 28 times 6,935 days (leap-year days
excluded), that is 194,180; with the leap-year days added, 194,313. When it has completed this
total through the sequence of months and days, it immediately returns upon itself, and
recommences everything pertaining to the course of the sun and moon in exactly the same
fashion as it happened before. But the years of our Lord’s incarnation [305A] continue to
increase in their particular column, and the indications in the rank in which they are conveyed [i.e.
the column in which they are listed] do not affect in any way the course of the stars [i.e. sun and
moon], and hence do not affect the order of the calculation of Easter. For according to the
allegory of the ‘year’, it is sometimes eternity and sometimes signifies the brevity of human life, for there in the prophetic work it is said to God: *But you are always the selfsame, and your years shall not fail.* His nature is declared briefly since he alone knows himself to be who he is, and he, just as he is, does not need another helper. There follows as is written, *our years laid plans like a spider,* a parallel which makes clear the barrenness of our lives. For a spider is a feeble and scraggy creature which craftily weaves webs for passing flies so as to obtain its food. Likewise are the years of those bent [305B] on wicked activities spent on empty and cunning stratagems. Then it subsequently says: *The days of our years in them are 70 years: but if among the powerful, they are 80 years, and the greatest number of them are labour and sorrow.* If we seek to interpret these years literally, you will find that many people even in their 90s are in good health, whereas others not yet 70 are wholly enfeebled, so that the statement here seems impossible to stand. But we more appropriately apply the number 70 to the law, which prescribed observance of the Sabbath on the seventh day, and we most fittingly associate the number 80 with the Christian people, who reverence the eighth day as the Lord’s resurrection-day with holy joy. To the number 80 he added, *among the powerful,* because it was when the Lord Saviour appeared to us that we truly began to have power. [305C] So these are the days of our years, which bestow on us the brightness of a praiseworthy life. The year is believed to be the Lord Jesus Christ by some people, as in the Psalm: *You shall bless the crown of the year of your goodness and your fields shall be filled with plenty.* The ‘year’ is said to be the present time, from the coming of the Lord up until the end of the world, in which repentance and the remission of sins is preached, as it is written in Isaiah: *To proclaim the acceptable year of the Lord and the day of vengeance.* Here in the gospel, the farmer said to the Lord: *Lord, let it

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146 Psalm 101: 28  
147 Psalm 89: 9  
148 Psalm 89: 10  
149 Psalm 64: 12  
150 Isaiah 61: 2
alone this year also, until I dig about it, and cover it with manure.\textsuperscript{151} These six years, about which it is taught in the law, that a Jewish boy, after serving his master for a period of six years, can be bought for a price to get his liberty in the seventh year, [305D] signify the present time because the world was made in six days. A jubilee [jubileus] is translated as ‘a year of forgiveness’. Both the term and the number are Hebrew. It is made up of 7 sets of 7 years, that is, 49 years. In the jubilee, trumpets blared, their old holdings reverted to each person, debts would be forgiven, and liberties confirmed.\textsuperscript{152} We ourselves celebrate this number still in the number of days of Pentecost after the resurrection of the Lord, with sin forgiven and the written record of our whole debt erased, as we are freed from every trammel, receiving the grace of the holy spirit coming upon us.


[306A] ‘Ages’ [saecula] consist of generations, and hence the term ‘saeculum’, because they ‘follow’ [sequi] one after another, for when some pass away, others take their place. Some call a ‘saeculum’ a period of 50 years, which the Hebrews call a jubilee. It was for this reason that the Hebrew who – on account of his wife and children, and loving his master – kept in slavery with his ear pierced, was commanded to serve for a ‘saeculum’, that is, up to the 50\textsuperscript{th} year.\textsuperscript{153} Sometimes it is used in place of the present life, as it is written: \textit{Give glory to the Lord, for he is good, for his mercy endures forever.}\textsuperscript{154} The ‘saeculum’ signifies the course of this life when we are miserable and each and everyone offends, when it is correct that our hearts \textsuperscript{306B} be converted and that mercy be sought. For there is condemnation for sins to be confessed, where there is known to be judgement. Sometimes the term is used instead of eternity, as in this quote: \textit{He had remembered his covenant forever,}\textsuperscript{155} because whatever the Lord has promised will

\begin{itemize}
  \item \textsuperscript{151}Luke 13: 8
  \item \textsuperscript{152}Cf. Exodus 21: 1
  \item \textsuperscript{153}Cf. Exodus 21: 5-6
  \item \textsuperscript{154}1 Paralipomenon 16: 34
  \item \textsuperscript{155}Psalm 104: 8
\end{itemize}
remain with enduring stability. Sometimes it signifies past time, as it is written: *The mercy of the Lord from the saeculum,* that is, it was declared to the unfaithful from the beginning of the world *up until the age of ages,* that is, in the present and the future age. Thus, the term ‘saeculum’ can be used in three ways to designate the eternity of the Lord, since his mercy is shown to be before the world, in the world, and after the world. An ‘age’ commonly means either one year, as in the annals, or seven, as one of the ages of a human, or a 100 – or any period. Hence an age is also a time composed of many centuries. And an age [aetas] is so called as if it were ‘aevitas’, that is, something similar to an ‘aeon’ [aevum]. For an ‘aeon’ is a perpetual age, whose beginning or end is not known. The Greeks call this an ‘eonas’, and they sometimes use this word for ‘century’, sometimes for ‘eternity’ – and from Greek it was borrowed by Latin speakers. The term ‘age’ properly is used in two ways, either as an age of a human – as infancy, youth, old age – or as an age of the world, whose first age is from Adam to Noah, second from Noah to Abraham, third from Abraham to David, fourth from David to the exile of Judah to Babylon, fifth from then, [the Babylonian Captivity], to the advent of our Saviour in the flesh, and sixth, which is now under way, to when the world itself comes to an end. The ages of the world are thus able to be compared by simile to the ages of man.


We have mentioned a few things about the six ages of this world, and about the seventh and eighth [ages] of peace and heavenly life above, by way of comparison to the first week in which the world was adorned. And now I will discuss the same subject somewhat more extensively, comparing it to the ages of one man, whom the philosophers are accustomed to call ‘microcosm’ in Greek, that is, ‘smaller universe’. The first age of this world, then, is from Adam to Noah, containing 1,656 years according to the Hebrew truth, and 2,242 according to the septuagint, [307A] and 10 generations according to both versions. This [first age] was wiped out in the universal flood, just as the first age of every person is usually submerged in oblivion. For how many people can remember their infancy? The second age, from Noah to Abraham, comprises

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156 Psalm 40: 14
157 Psalm 40: 14
10 generations and 292 years according to the Hebrew authority, but according to the septuagint 942 years and 11 generations. This was like the childhood of God’s people, and therefore it is discovered in a language, that is, in Hebrew. Because from childhood on, when infancy [infantia] is over – which is so called because an infant cannot speak [fari] – a person begins to learn to speak. The third, from Abraham to David, contains 14 generations and 942 years according to both authorities. This [age] was like the adolescence of the people of God, [307B] because from this age on, a person is able to reproduce. For this reason, the evangelist Matthew takes the beginning of the generations from Abraham, who was established as the father of the nations when he received his altered name. The fourth, from David up to the exile to Babylon has 473 years according to the Hebrew truth, 12 more according to the septuagint, and 17 generations according to both texts. However, the evangelist Matthew puts these [generations] at 14, for the sake of a certain symbolism. From this age – youth, so to speak – the era of the kings began among the people of God, for this age in men is normally apt for governing a kingdom. The fifth age is like maturity, from the exile into Babylon until the coming of our Lord and Saviour in the flesh, [307C] extends for 14 generations and 589 years. In this age, the Hebrew people were weakened by many evils, as if wearied by heavy age. The sixth age, which is now in progress, is not fixed according to any sequence of generations or times, but like senility, this [age] will come to an end in the death of the whole world. By a happy death, everyone will overcome these ages of the world which are full of hardships and labours, and when they have been received into the seventh age of perennial Sabbath, they look forward to the eighth age of the blessed resurrection, in which they will reign forever with the Lord.

[15] On Festal Celebrations

A ‘festal celebration’ [festivitas] is so called from ‘festal days’ [festus dies], as if the word were ‘festiditas’, because during those days only sacred activities are carried out. The contrary to these are court-days [fasti], on which the law ‘speaks’, that is, is pronounced. A ‘solemn feast’ [sollemnitas] is so called from its holy rites, a day adopted in such a way that for religious [307D] reasons it ought not to be changed. It is named from ‘customary’ [solitus], that is, firm and solid [solidus]. A celebration [celebritas] moreover is so called because during it earthly activity is not carried out, but only celestial activities. Easter day is the first of all the feasts; we have spoken of this term above. Like Easter day, Pentecost was a feast day among the Hebrews,
because it was celebrated five tens of days after Easter day – whence it takes its name, for ‘pente’ means ‘five’ in Greek. On that day according to the Law the ‘loaves of proposition’ would be offered from the new crops.\textsuperscript{158} The jubilee year in the old testament prefigured this, and now in turn it prefigures eternal rest through its figure of redemption. The Greek term ‘Epiphany’ [Epiphania] is ‘appearance’ or ‘manifestation’ in Latin. For on that day, with the indication of the star, [308A] which was a sign for the beginning of the gentile believers, Christ appeared to the magi to be worshipped. On Epiphany day were also manifest the sacrament of the Lord’s baptism and the water changed into wine, the first of the signs performed by the Lord. There are, in fact, two epiphanies: the first, in which, when the angel announced it, the newborn Christ appeared to the Hebrew shepherds; the second in which a star, by its guidance, caused magi from the pagan peoples to come to worship at the cradle that was a manger. ‘Scenopegia’ is a feast day of the Hebrews, translated from the Greek into Latin as ‘feast of tabernacles’ which is celebrated by Jews in memory of their sojourn, when they were living in tabernacles after they advanced out of Egypt, and from that, ‘scenopegia’, because ‘scena’ in Greek means ‘tabernacle’. This feast is celebrated among the Hebrews in the month of September. The ‘neomenia’ [308B] we call kalends (i.e. the first day of the month), but this is the Hebrew usage, because their months are computed according to the lunar course, and in Greek the moon is called ‘mene’, hence ‘neomenia’, that is, the new moon. Those kalends were solemn among the Hebrew on account of a legal statute, concerning which it is said in the Psalm: Blow up the trumpet on the first of the month, on the noted day of your solemnity.\textsuperscript{159} ‘Encaenia’ is a new dedication of the temple, for in Greek ‘cenon’ means ‘new’. When something new is dedicated, it is called an ‘encaenia’. Jews celebrate this feast of the dedication of the temple in the month of October. Palm Sunday is so called because on that day our Lord and Saviour, as the prophet sang, is said to have sat on a donkey while heading for Jerusalem. Then a multitude of the common people walking before him with branches of palms [308C] shouted: Hosanna, blessed is he that comes in the name of the Lord, the king of Israel.\textsuperscript{160} Further, common people call this

\textsuperscript{158} Cf. Exodus 25: 30 sqq.
\textsuperscript{159} Psalm 80: 4
\textsuperscript{160} John 12: 13
day ‘Capitilavium’ because [on that day] the custom then was for the heads [capud, plural capita] of infants who were to be anointed to be washed [lavare] so that in their observation of Lent they would not approach the anointing dirty. Moreover on this day the creed is taught to the catechumens, because of the adjoining celebration of Easter, so that those who already are hastening to receive the grace of God may come to know the faith that they profess. The Lord’s Supper is so called because on that day the Saviour celebrated the Passover with his disciples. This day is still celebrated just as it has come down to us, and on that day the holy chrism is prepared, and the beginning of the new testament and cessation of the old is declared.

[16] On the Sabbath

[308D] Sabbath, for the Hebrews, according to the translation of their own word, is called ‘rest’ [requies] because, having completed the creation of the world, God rested on that day. And indeed on that day the Lord rested in his tomb, in order that he might confirm the mystery of that rest, for, in a foreshadowing of future things, this day was mandated to be observed by the Jews. However, after Christ fulfilled the figure of the Sabbath in his tomb, the observation of that day ceased.

[17] On the Lord’s Day

From that point on, Sunday is called the Lord’s [Domincus] day, because on that day the joy of the resurrection of our Lord [Dominus] is celebrated. This day was authorized, not by Jews but by Christians, as the day of the resurrection of the Lord, [309A] and from that time it began to have its own liturgical celebration. For the Jews, only the Sabbath was passed down as a solemn day, because before that time there was the repose [requies] of the dead, but there was no resurrection for anyone who, rising from the dead, might not die. But after the resurrection of the body of the Lord took place in such a way that he might go before, at the head of the church, demonstrating what the body of the church could hope for at the last, then Sunday, the Lord’s day, that is the eighth day, which is also the first day, began to be celebrated.

Here Ends Book 10
Appendix 2: Glossary of Computistical Terms

There are three recent works that include comprehensive glossaries of computistical terms worth recommending for further reading. The first is the 2010 work by Immo Warntjes entitled The Munich Computus: Text and Translation. Although its main focus is the edition of the text now known as the Munich Computus, the extensive introduction, commentary, and bibliography along with the glossary offer an excellent introduction to the topic of medieval computistics. The second is the English translation of Bede’s The Reckoning of Time (De temporum ratione) by Faith Wallis from 2004. Again, this English edition of the work offers a detailed introduction, commentary, and references to the context of Bedan computistics and its broad influence. The third work is The Oxford Companion to the Year (1999) by Bonnie Blackburn & Leofranc Holford-Strevens. While this work is organized as a reference book on the general aspects, both historical and technical, of time-reckoning it also presents quite detailed explanations and data on the ancient and medieval systems referred to in this thesis. The definitions included below were selected directly from the complete glossary list in Blackburn & Holford-Strevens, The Oxford Companion to the Year, which can be found on pages 879-883.

*annus vagus*: a year of fixed length not adjusted by intercalation to keep pace with the sun or moon: e.g. the ancient Egyptian, Iranian, Armenian, and Mesoamerican years of 365 days.

*apparent solar time*: time measured by sun’s position relative to earth, e.g. by a sundial; opposite of mean solar time.

*artificial day*: the period of light between sunrise and sunset.

*backward count*: the counting of days (in the Roman calendar and the consuetudo Bononiensis), weeks (in the Icelandic calendar), or years (in BC dating) before a given point.

*calculus astronomicus*: the calculation of Easter according to the best available astronomical information in preference to cyclical tables.

*calendar month*: the period from a quantième in any month to the same quantième in the next month.
*cardinal days:* the summer and winter solstices and the spring and autumn equinoxes.

*century:* period of 100 years, counted in any era from the year ending 01: thus the first century is 1-100, the second 101-200. This also applies in backward reckoning: the first century BC is 100-1 BC, the second 200-101 BC.

*Circumcision style:* same as ‘modern style’.

*civil day:* the period of time defined as a day by law or custom, a calendar day.

*clavis:* ‘key’, the date from which a moveable feast is to be found by counting forwards, inclusively, a number of days known as the clavis terminorum and varying with the annual epact.

*common year:* a year without intercalation; opposite of embolismic, leap year.

*computus:* the calculations pertaining to the calendar, in particular for finding Easter.

*concurrent:* the feria of a given day, especially in Easter computus of 24 March; from Latin dies concurrentes, ‘days running with [the sun]’, i.e. in excess of a complete week.

*current year:* dating that includes the year in progress; opposite of elapsed.

*cycle:* any sequence of years (or other units of time) that repeat themselves in a particular respect after a fixed interval; also a year within a cycle (‘cycle 3’ i.e. the third year of the given cycle).

*decade, décade:* respectively English for a period of 10 years and French for a period of 10 days; both from Greek dekas, ‘the number 10’, ‘group of 10’. The French for a decade is ‘une décennie’.

*decemnovenal cycle:* the Metonic cycle used to calculate Easter at Alexandria, ultimately adopted by the Western church, reckoned from 1 BC.

*Diocletian, era of:* Alexandrian era reckoned from 29 August AD 284.

*ecliptic:* the path of the sun’s apparent annual course through the heavens, so called because eclipses occur only when the moon crosses it; see also ‘zodiac’.
elapsed years: dating that excludes the year in progress; opposite of current years.

embolism: intercalation of a month, or the month so intercalated (from Greek embolismos, ‘intercalation’).

embolismic year: a year with an intercalary month, e.g.: 13 lunar months; opposite of common year.

enneakaidekaeteris: a Metonic cycle, in particular the Alexandrian cycle (called ‘decemnovenal’ in the West) and the ‘Byzantine’ lunar cycle (q.v.).

epact: the age of the moon on a given day of the solar year, especially in Easter computus that on 1 January, 22 March, or 31 December, from Greek epaktai hemerai, ‘additional days’, ought strictly to be plural.  

epagomenal days: days not counted within any month but added to the year in order to make up the right length.

epoch: the date from which an era is reckoned.

era: reckoning of years in continuous numerical sequence from an epoch; the years may be either current or elapsed (qq.v.), the former being more usual outside India.

feria: the day of the week on which any given date falls, expressed either by its name or by a number: 1=Sunday, 2=Monday, 3=Tuesday, 4=Wednesday, 5=Thursday, 6=Friday, 7=Saturday.

ferial formula: the general rule for finding the feria of any date in a calendar of Julian or Gregorian type, by adding to the year of the era a quarter of itself, not counting fractions,

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1 Since the solar year is 365 days long, and the lunar year is 354 days long, the age of the moon on any given calendar date increases by 11 days each year. Therefore, when the accumulation of extra days reaches 30, an additional thirteenth lunar month is inserted within the calendar year. This additional intercalated lunation is called an “embolism” and a year with 13 lunations is “embolismic”. Wallis 2004, p. 427

2 In the context of Dionysius Exiguus’ 19-year cycle, “epact” refers to the age of the Moon on 22 March. However, in four-year cycles, and in the Victorian tables, the epact is the age of the Moon on 1 January. Wallis 2004, p. 428
together with the appropriate parameter, and taking the remainder to seven; it may be written
\[ F \equiv Y + \left\lfloor Y/4 \right\rfloor + P \pmod{7}. \]

*forward count*: the reckoning of days within the month as 1\textsuperscript{st}, 2\textsuperscript{nd}, etc. till the end.

*full month*: in a lunar or luni-solar calendar, a month of 30 days; opposite of hollow.

*Golden Number*: the number indicating the place of the year in the decemnovenal cycle as used by the Western church, found by adding 1 to the year AD and dividing the sum by 19; the remainder is the Golden Number, or if there is no remainder, the Golden Number is 19.

*Grace, era of*: Alexandrian (Coptic, Ethiopic) era calculated from 1 Toth 77 Diocletian = 29 August AD 360; but the term ‘year of Grace’ was sometimes applied to the era of Diocletian. It is also a common synonym for the year AD.

*Gregorian calendar*: the reformed calendar promulgated in 1582 by Pope Gregory XIII, comprising the New Style (q.v.) and the Easter tables of Aloysius Lilius.

*historical year*: the year reckoned in modern fashion from 1 January, irrespective of the system in use at the time and place under discussion.

*hollow month*: in a lunar or luni-solar calendar, a month of 29 days; opposite of full month.

*Incarnation era*: an era reckoned from the supposed date of Christ’s Incarnation’ usually that of the year AD, otherwise called the Nativity, Christian, or Common era, but in an Alexandrian, Coptic, or Ethiopic context an era reckoned from 29 August AD 8. (The distinction between Incarnation and Nativity was not drawn until the late ninth century, when in some places the Incarnation epoch was identified with Christ’s conception, i.e. the Annunciation on 25 March; see ‘Annunciation style’.)

*indiction*: a 15-year cycle devised in the later Roman empire for taxation purposes, and long maintained as a dating formula.
intercalation (adj. intercalary): the addition of one or more days or months to the year beyond its normal length in order to keep pace with the moon or sun. The Greek name embolism is sometimes used for the addition of a month.

*Julian calendar*: The Roman calendar as reformed by C. Julius Caesar and adopted by the Christian church, but not subjected to the Gregorian reform, i.e. retaining Old Style and the unreformed Easter computus.

*Latercus*: the Insular (British and Irish) 84-year Easter table.

*leap year*: a year containing an intercalary day.\(^3\)

*luna XIV*: the fourteenth day of the first lunar month of spring, also called the ‘paschal term’ because Easter is the Sunday after it.

*lunar calendar*: a calendar based on the moon: it may be either pure, taking no notice of the sun (eg: Muslim Calendar), or luni-solar.

*lunar cycle*: a Metonic cycle; specifically that used by the Byzantine church, which runs three years behind the decemnovenal (q.v.).

*lunar month*: a month of a lunar calendar.

*lunar regulars*: numbers that when added to the epact yield the lune of the 1\(^{st}\) of a given month.

*lunation*: the synodic month from conjunction (new moon) to conjunction.

*lune*: a day of the lunar month.

*luni-solar calendar*: a lunar calendar adjusted by embolisms to take account of the sun in order to keep in line with the seasons: e.g. the Jewish, Chinese, and some Hindu calendars.

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\(^3\) In the Julian calendar, the leap-year day was inserted on the sixth kalends of March (24 February). Therefore, this intercalated day was the “second sixth (kalends)” or *bissextus*. A leap year is thus called an *annus bissextilis*. Wallis 2004, p. 427
mean solar time: time reckoned according to the average length of the apparent day solar day.

Metonic cycle: a 19-year cycle of 235 lunar months, including 7 embolisms; named after the Athenian astronomer Meton (fl. 432 BC).\(^4\)

modern style: the year reckoned from 1 January; same as ‘Circumcision style’.

Nativity Style: the Christian era with years counted from the 25 December before the beginning of the modern year; also called ‘the style of the Roman curia’.

natural day: the time taken for the earth to rotate once on its axis relative to the sun; also the day defined by the passage of time as against a nominal day. Now sometimes used for ‘artificial day’.

new moon: (i) the conjunction of sun and moon; (ii) the first sighting of the crescent.

New Style: the date according to the Gregorian calendar; cf. II: Modern Calendar. Sometimes used for modern style (a usage already attested in French before the Gregorian reform, but best avoided as ambiguous), and in Groningen of the Julian calendar restored in 1594.

nominal day: the verbal expression of a date, irrespective of its relation to an actual day.

Old Style: the date according to the Julian calendar.

paschal cycle: period of 532 years after which, in the Julian calendar, Easter dates repeat themselves.

paschal limits: the lunar or solar (i.e. civil) dates within which Easter is allowed to fall.

paschal regular: number added to the concurrent to give the feria of Paschal term.

paschal term: same as luna XIV.

\(^4\) The first 8 years of the 19-year cycle, where the pattern of common and embolismic years is CCECCECECE is called the ogdoas. The final 11 years of the 19-year cycle, where the pattern is CCECCECCECE is called the hendecas. Wallis 2004, p. 429
**quantième**: the serial number of the day in the month, or the day so numbered.

**Quartodecimam**: one who keeps Easter on luna XIV irrespective of feria; polemically extended to those who did not defer Easter when luna XIV was a Sunday.

**red-letter day**: a major feast, recorded in church calendars with red ink; in Great Britain also a day on which the judges of the Queen’s Bench Division wear scarlet robes.

**retroproject**: to apply a calendar, especially the Julian, to the period before its inception.

**revised Julian calendar**: the reform adopted for reckoning immovable feasts by some orthodox churches, in which centennial leap years after 1800 are omitted unless they leave a remainder to 900 of 200 or 600.

**Roman count**: reckoning by Kalends, Nones, and Ides, and days before them.

**saltus lunae**: the omission of a day in the luni-solar calendar in order to keep in step with the solar calendar. (The plural of saltus is saltus with long u, sometimes written saltus.)

**sedes**: literally ‘seat’, the day to which a computistic parameter is calibrated; sedes concurrentium, 24 March; sedes epactarum, variously 1 January, 22 March, 31 December.

**sidereal year**: the earth’s orbital period relative to the stars = 365.25636 d. = 365d 6h 9’ 9.5”.

**solar calendar**: a calendar taking note of the sun but not of the moon: e.g. the Julian and Gregorian calendars, based on the tropical year, and certain Hindu calendars based on the sidereal year.

**solar regulars**: numbers that when added to the concurrent of a given year yield the feria of the first of a given month.

**style of the Roman curia**: same as ‘Nativity style’.

**Supputatio romana**: the Easter computus based on an 84-year cycle and Roman paschal limits.
symbolic calendar: general term for English clogs and Scandinavian ‘runic calendars’, in which important days are marked with symbols.

synodic month: the moon’s orbital period from new moon to new moon = 29.53059 d. = 29d 12h 44’ 3’’. 

table of days: the manner of counting the days within the month.

tropical year: the earth’s orbital period from vernal equinox to vernal equinox = 365.24219 d. = 365d 5h 48’ 45.2’’. It is decreasing by about 0.53 seconds in a century.

zodiac: a celestial belt some 16˚ wide centred on the ecliptic, so called after the twelve ‘little beasts’ (zodiac) or star-signs into which it is divided; although these constellations no longer occupy the places they held when the 30˚ sectors were named after them, the ‘signs’ (except in Hindu astronomy) remain unchanged.
Appendix 3: How to Calculate the Date of Easter According to the Dionysiac Reckoning

There are three easily accessible works which explain, according to the various historical methods, the steps to determining the date of Easter in both the Julian and Gregorian calendars. The first is the work excerpted below entitled *Mapping Time* by E. G. Richards (1998). The second is the comprehensive reference book by Bonnie Blackburn and Leofranc Holford-Strevens entitled *The Oxford Companion to the Year* (1999). Both these works contain useful narrative explanations as well as glossaries, tables, and diagrams. The Blackburn and Holford-Strevens tome has a more detailed look at the various medieval systems and methods including those used in the insular and Celtic worlds, such as the Bedan lunar calendar, which were an important influence in Carolingian computistics. The third work is almost like a pocket version of *The Oxford Companion to the Year* written by Holford-Strevens as *The History of Time: A Very Short Introduction*. It provides brief explanations of a variety of calendars and their history while still including a helpful glossary of terms.

The following explanation for calculating the date of Easter according to the Dionysiac reckoning as well as the content of Table 3 are taken directly from Richards, *Mapping Time* (1998) pp. 360-364:

The date of Easter was originally worked out with tables; instead, it can be calculated using the rule, according to the Dionysiac canon, that Easter Sunday is the first Sunday that follows the paschal full moon. The paschal full moon is defined to be the first one that occurs on or after the vernal equinox which is taken, notionally, to fall on 21 March. A full moon occurs 13 days after its corresponding new moon, counting the day of the new moon as the first day. Thus, the paschal new moon must fall no earlier than 13 days before 21 March, that is, on or after 8 March. There is in fact a new moon on 8 March in year XVI, so that Easter Sunday must fall on a Sunday after 21 March; its earliest possible date is 22 March. The paschal new moons for the other 18 years of the cycle fall on dates after 8 March; the latest falls on 5 April in year VIII, with the corresponding full moon on 18 April. If this happens to be a Sunday, Easter Sunday must be seven days later than this, on 25 April – its latest possible date. Thus, Easter Sunday
could fall on any day from 22 March to 25 April, a period of 35 days. Likewise the paschal full moon can fall on any day from 21 March to 18 April, and the paschal new moon on any day from 18 March to 5 April.

To explain how Easter may be calculated, first construct the paschal table shown in Table 3 below. In this, column $G$ shows the golden number of each year of a cycle, and the date column shows the dates of the corresponding paschal full moons, arranged in temporal order. These dates must lie in the range 21 March to 18 April, as just explained. Column $R$ shows the ‘Day of March’ for every date; this is simply the number of the day counting from 1 March.

To find the date of Easter Sunday for any year, first find the golden number and the dominical letter. Next locate the golden number in Table 3, and then scan down the date column from this line to reach a date whose calendar letter (as given in column $C$) is the same as the dominical letter of the year in question. This gives the date of Easter Sunday. As an example, consider the year 1500. Its golden number is $1 + \text{mod}(1500,19) = 19$ and its dominical letter is $D$. The paschal full moon in year XIX fell on 17 April; the calendar letter of this date is $B$; the first day after 17 April whose calendar letter is $D$ is 19 April. This is Easter Sunday for 1500.

Table 3: The Dionysiac Paschal Table

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R$</td>
<td>‘Day of March’ of paschal full moon</td>
</tr>
<tr>
<td>$Date$</td>
<td>Calendar date of paschal full moon</td>
</tr>
<tr>
<td>$C$</td>
<td>Calendar letter of date</td>
</tr>
<tr>
<td>$G$</td>
<td>Golden number whose paschal full moon falls on date</td>
</tr>
<tr>
<td>$E$</td>
<td>Epact corresponding to golden number</td>
</tr>
<tr>
<td>$Sum$</td>
<td>Sum of epact and ‘Day of March’</td>
</tr>
</tbody>
</table>

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1 For definitions of golden numbers and dominical numbers see Glossary of Computisitical Terms in Appendix 2 above. For instructions on calculating the value of golden numbers (requiring a table for the metonic cycle) and dominical numbers (requiring a table for regulars and concurrents) see Richards 1998, pp. 302-309
Epacts within parentheses do not occur but are entered to demonstrate the continuity of their progression.

<table>
<thead>
<tr>
<th>$R$</th>
<th>Date</th>
<th>$C$</th>
<th>$G$</th>
<th>$E$</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>21 March</td>
<td>C</td>
<td>XVI</td>
<td>23</td>
<td>44</td>
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<td>22</td>
<td>22</td>
<td>D</td>
<td>V</td>
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<td>31</td>
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<td>(13)</td>
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<td>32</td>
<td>1 April</td>
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<td>XV</td>
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<td>IV</td>
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<td>56</td>
<td>25</td>
<td>C</td>
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</table>
It is possible, however, to derive a formula for this date, and thus dispense with the table. This is most easily expressed in terms of the epact. The epact of a year is defined as the age of the notional moon on the first day of the year, 1 January; if there is a new moon on this day, as in year III, the epact is zero. The epact can be used to calculate the date of Easter in the Julian calendar and was cleverly adapted by Lilio and Clavius to perform a similar role in the Gregorian calendar.

As noted, the epact of year III is zero, since a new lunation begins on 1 January; the epact increases by 11 days for each succeeding year, but when it comes to exceed 30, 30 is subtracted. There is an exception when we pass from year XIX back to year I, for then the epact increases by 12 from 26 to 38, or 8 after subtracting 29. This progression in the value of the epacts can be verified from Table 3, if it is kept in mind that the notional moon that is relevant is the first of each year which ends in the year in question. There is a unique epact for every golden number.

It is clear from this definition of the epact, $E$, that it may be calculated from the golden number, $G$, by the formula:

$$E = \text{MOD}(11G - 3, 30)$$

The epacts for all 19 golden numbers are shown in column $E$ of Table 3. Since there are only 19 golden numbers, there are only 19 possible values for the epact, and these are seen to fall in the range of zero to 29.

Column $S$ gives the sum of the epact and the ‘Day of March’, and we see that this is either 44 or 74; it is 74 only for the years VIII, XI, and XIX. It is clear that the date of the paschal new of full moon may be deduced easily from the epact, which in turn may be calculated from the golden number. The fact that the epact progresses by 12 instead of 11, in passing from year XIX to year I, may explain why the computists moved the hollow embolismic month from year II to year XIX. If they had not done this, the sum for year XIX would have been 73 instead of 74.

It is now clear how the tables may be dispensed with entirely and the date of Easter obtained by pure calculation. From the year, $Y$, first calculate the golden number, $G$, the dominical number, $N$, and the epact, $E$, using the formulae already given. Now calculate the ‘Day of March’, $R$, of the day following the paschal full moon:
\[ R = 44 + I - E \quad \text{if} \quad E < 24 \]

or \[ R = 74 + I - E \quad \text{if} \quad E \geq 24 \]

It is possible to combine these two relations and show, as may be readily verified, that \( R \) is given, quite generally by:

\[ R = 22 + \text{mod}(30 + 23 - E, 30) \]

or \[ R = 22 + \text{mod}(53 - E, 30) \]

The calendar number (see chapter 24) of this day is given by:

\[ C = I + \text{mod}(R + 2, 7) \]

Easter Sunday may be this day if \( R \) is a Sunday \((N = C)\), otherwise it is the next Sunday which follows. It is supposed that this Sunday occurs \( d \) days later than \( R \) hence on a day whose ‘Day of March’ is \( R + d \).

If \( N = C \) then \( d = 0 \)

\( N > C \) \( \quad d = N - C \)

\( N < C \) \( \quad d = 7 + N - C \)

or quite generally:

\[ d = \text{mod}(7 + N - C, 7) \]

Thus the ‘Day of March’ of Easter Sunday, \( S \), is:

\[ S = R + \text{mod}(7 + N - C, 7) \]

For example, if \( Y = 1500 \), then \( G = 19, \ N = 4, \ \text{and} \ E = 26 \). These give \( P = 49, \ C = 3, \ D = 1 \), and hence \( S = 50 \), which indicates that Easter Sunday fell on 19 April.
An Algorithm for Easter Sunday by the Dionysiac Canon

The component parts of the complete algorithm for finding the ‘Day of March’ of Easter Sunday, \( S \), according to the Dionysiac canon for any Julian year, \( Y \), are assembled together and simplified to give the following algorithm.

Algorithm \( M \)

1. \( P \leftarrow Y + Y/4 + 4 \)
2. \( N \leftarrow 7 - \text{mod}(P, 7) \)
3. \( G \leftarrow 1 + \text{mod}(Y, 19) \)
4. \( E \leftarrow \text{mod}(11*G - 3, 30) \)
5. \( R \leftarrow 22 + \text{mod}(53 - E, 30) \)
6. \( C \leftarrow 1 + \text{mod}(R + 2, 7) \)
7. \( S \leftarrow R + \text{mod}(7 + N - C, 7) \)

This may be simplified to give a shorter and more efficient version:

Algorithm \( N \)

1. \( A \leftarrow \text{mod}(Y, 19) \)
2. \( B \leftarrow 22 + \text{mod}(225 - 11*A, 30) \)
3. \( S \leftarrow B + \text{mod}(56 + 6*Y - Y/4 - B, 7) \)

This algorithm is valid for any year in the Christian era. It is a simple matter to convert \( S \), the ‘Day of March’ of Easter Sunday, to a date in March or April, D/M/Y, by:

4. \( M \leftarrow 3 + S/31 \)
5. \( D \leftarrow 1 + \text{mod}(S - 1, 31) \)