

Historiography at the Crossroads: Eschatological Expectations, Biblical Exegesis, and Astronomical Cycles in the times of Charlemagne

Historiografia na encruzilhada: Expectativas escatológicas, exegese bíblica e ciclos astronômicos nos tempos de Carlos Magno

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ABSTRACT

This article suggests that the Carolingian effort in resetting the calendar of history at the time of Charlemagne's coronation to the year 6000 from the Creation and 801 from the Incarnation of Christ must be considered as only one of the period in the cycle of the processes of realigning, resetting and redeploying the calendar since the times of Augustine. During this period, the calculations necessary for the construction of the calendars and timelines lead to concerns regarding the end of history and the "end of times". The first time scholars like Jerome and Augustine had to address the ending of the calendar of the universal sacred history that the Christians inherited from the Old Testament was during the 4th and 5th centuries. The Carolingian period witnessed the second "time of reckoning" when Eusebius' date for the Incarnation of the Anno Mundi 5199 prompted scholars to reconsider the meaning of the Carolingian rule around the year 801, that is, the *Anno Mundi* 6000.

KEYWORDS

Eschatology; Carolingian historiography; Carolingian culture

RESUMO

Este artigo sugere que o esforço carolíngio em redefinir o calendário no momento da coroação de Carlos Magno para o ano 6000 da Criação e 801 da Encarnação de Cristo deve ser considerado como apenas um dos períodos no ciclo dos processos de realinhamento, redefinição e reimplantar o calendário desde os tempos de Agostinho. A primeira vez em que estudiosos como Jerônimo e Agostinho tiveram que abordar o final do calendário da história sagrada universal foi durante os séculos IV e V. O período carolíngio testemunhou a segunda "época do acerto de contas", quando a data de Eusébio para a Encarnação do Anno Mundi 5199 levou os estudiosos a reconsiderar o significado da regra carolíngia por volta do ano 801, ou seja, o *Anno Mundi* 6000.

PALAVRAS-CHAVE

Historiografia carolíngia, escatologia, cultura carolíngia

Introduction

The investigation of the Carolingian historical worldview has attracted scholars' attention since they were shown to emphasize history's important position in the process of constructing modes of communication between the rulers, the magnates and the ruled (MCKITTERICK 2004, p. 104; REIMITZ 2012). It has been argued that the knowledge of the past becomes critically important for the self-representation of the educated elite who was intentionally charged or unintentionally urged to write about the Carolingians and to envision their place in European affairs. The chronicles (like that of the Continuator of Fredegar, for example) were organized and reorganized to address the political aspirations of Pippin and Charlemagne (MCKITTERICK 2000, p. 165). History became part of the narratives of power that were deployed to construct and maintain the Frankish kingdom's political identities (COLLINS 1994; MCKITTERICK 2000; BARNWELL 2005; GANZ 2005; INNES 2000). This article approaches the problem of history as a way of communicating the message of power from one standpoint: the close connection between Christian exegesis, the science of constructing a universal calendar of sacred history, and the concept of history as it was expressed in traditional narrative stories. In this the article further analyzes the Carolingian historical worldview as one based on the concepts of the universal Christian history with a strong foundation in the biblical exegesis. The connection between the timescale of universal Christian history and the ways of constructing self-identification within it will be examined as part of thinking of the past in terms of the balance between linearity and cycles, which were, as it will be argued, the underlying mode of thinking and the algorithm of constructing concepts and narratives of history.

Einhard and the time of sacred history

Main narrative historical sources like the “Vita Caroli Magni” of Einhard and the stories of Thegan, Astronomer and Nithard were shown to represent the “short-term” historical outlook that was rooted in discussing only the events of the most recent past despite the fact that the model for such writing was borrowed from Suetonius and perhaps influenced by other Late Antique Roman authors (THEGANUS 1995; ASTRONOMUS 1995; GANZ 2014; NOBLE 2009). Despite this widespread interest in the Carolingian writings concerning history, themes and moments that still warrant further investigation are scattered in the well-studied texts. An excerpt in particular, namely the first sentences of Einhard’s introduction, has been studied regarding this worldview, but not its relation to the concepts of universal Christian history and particularly the way in which it found its expression in specialized calendars containing references to the Creation and the Incarnation eras. Although *Vita Caroli Magni* has been studied in various contexts, (LÖWE 1983; PATZOLD 2011; HOLDER-EGGER 1912; GLENN 2011; GANZ 2007, 2005; SCHERBERICH 2006) this short passage deserves to be investigated once again in light of the new approaches to the Carolingian sense of history that have appeared when scholars began to look at them with grounds on the calendric knowledge that in its own had received a significant boost during the rule of Charlemagne (BORST 1998; MEYVAERT 2002; ENGLISCH 2010). This introductory passage is as follows:

I have been careful not to omit any facts that could come to my knowledge, but at the same time not to offend by a prolix style those minds that despise everything modern, if one can possibly avoid offending by a new work men who seem to despise also the masterpieces of antiquity, the works of most learned and luminous writers. Very many of them, I have no doubt, are men devoted to a life of literary leisure, who feel that the affairs of the present generation ought not to be passed by, and who do not consider everything done today as unworthy of mention and deserving to be given over to silence and oblivion, but are nevertheless seduced by lust of immortality to celebrate the

glorious deeds of other times by some sort of composition rather than to deprive posterity of the mention of their own names by not writing at all.

Since this excerpt raised the dichotomy of the recent events and the events that had long passed, I argue for its relevance in making it part of the practices required to reconcile the Creation era and its interpretation to the count of years and the meaning of the Incarnation era, and adjusting the theological interpretation of them both to the predicaments that the Roman empire faced in the 4th and 5th centuries and that the Frankish kingdom faced in the world that had changed with the coming of Islam.

The prologue of Einhard's "Life of Charles the Great" is remarkable for better understanding the structure of the sense of the past that Carolingian scholars constructed and helped proliferate during this period. The apology for writing recent history that Einhard voiced in these sentences is notable for the fact that one may sense in it a dichotomy that was subdued in or uncommon to the writings of historians in both Late Antiquity and the Middle Ages. This is the dichotomy of "modernity" in the sense of contemporary affairs and the past that was not as distant in terms of the era of Creation, but which was nevertheless considered a different epoch by historians. This earlier past might seem to us unworthy of being thought of as far removed from contemporary affairs, but for Einhard it was a distant matter that stood contrary to the affairs of his own lifetime. It is interesting that in this passage the biographer of Charlemagne clearly showed that he was aware of the long history that preceded the emergence of the Frankish kingdom and that it was likely that he kept in mind a long process of historical events that had began, perhaps, with the history of the Roman empire. It is likely because his attitude towards Merovingians was openly critical and one might feel warranted to argue that the Frankish history during the time of this dynasty's rule might not have been imagined by this author as the model. This distinction can be seen as having two different

aspects, a traditionally reserved self-assessment in contrast to the preceding classics of the genre that was common to many early medieval historians and, in addition to it, the assessment of the importance of peculiar historical periods to the general sense and plan of history. While the first aspect of this attitude to the writing of history has been noted and studied by modern scholars, the second, I suggest, is not a phantom of our understanding and it is indeed visible in the background of his work. And in this case I am not just referring to Suetonius as the classical example, which Einhard sought to imitate. I suggest that, in this case, he might have referred to the universal Christian history that he thought necessary to have in mind at least virtually, even though he was writing the history of recent events. It is, therefore, interesting, that in undertaking a complex work, wherein he sought to capture an important period in the history of the Frankish kingdom, Einhard operated within two frames of reference, the idea of distant history in general, which might have meant in practical terms the history of the Mediterranean in the times of the Roman empire, and current history, which was for him the history of the Pippinids and that of Charlemagne in particular.

This suggests that further investigation is required regarding this distinction between long-term history and the Carolingian “now”. In this paper, by looking at the connection between history and biblical exegesis related to the era of creation and the “Anno mundi”, I will suggest two points. On the one hand, I argue that the ability to manipulate the discussion of the historical periods of universal history came from a very specific skill to manipulate the biblical paradigms of time, the skill that was constructed in the Carolingian period on the solid foundation of Late Antique and early medieval scholarship. I suggest that hidden in the preface of Einhard was a complex science of biblical exegesis and time reckoning, furthering the idea that the biography of Charlemagne was constructed with grounds on sacred history (BECHT-JÖRDENS 2008). But I will seek to connect this attitude regarding time in the *Vita* of the Carolingian emperor not to the general perception of

the Christian history, but to the particular awareness and the skill to calculate the length of time from the beginning of sacred history and of the Creation, to the Incarnation and to the Apocalypse. I argue that Einhard's historical worldview was correlated with the eschatological concerns and the search to create the *computus* for which his time and his contemporaries were known. My approach will pay more attention to the specific computistic skills of measuring time of the sacred history among the people surrounding Einhard rather than to the general practice of reading the Bible. On the other hand, in this preface the renewed interest towards the fashioning of the Carolingian "today" by way of biblical metaphors was shown to its maximum extent. In fact, I argue that not only were the names of the biblical characters replayed in the narratives that accompanied the rituals of the court, but also entire periods associated with the beginning and the end of times.

This distinction between the time of Creation and the "history of today" would have remained of interest only to the specialists in the modes of writing history if it had no relevance to the current affairs of the Carolingian kingdom. And, in light of recent studies, the affairs that seemed contemporary to Einhard were shown to be quite controversial from many standpoints. The long-term processes of the construction of the Carolingian monarchy were interspersed with short-term shortcomings. The last decade of Charlemagne's rule came to be considered not as a success, but also as the ultimate failure of the Frankish king's rule, and the disenchantment experienced by magnates with Charlemagne's campaigns was acknowledged in studies (GANSHOF 1971; BRUNNER 1979). Even if the claims of significant "aristocratic opposition" to the Carolingian authority are an overstatement, the clear fatigue of aristocrats and the population cannot be denied. The pressure that the Frankish king's campaigns put on Frankish society was shown to be considerable, as it might have led to a significant demographic crisis among the free landowning Franks (REUTER 1990). Thus, scholars noted that many stories contain signs of alternative visions of the past that saw conflict rather than consensus in

the relations between the Frankish king and local magnates (BRUNNER 1983, p. 22). During the beginning of his reign, the first thing that the son of Charlemagne Louis the Pious did was to discharge of all treasures his father had accumulated, giving away the gifts the king of the Franks had gathered in the course of his successful campaigns (THEGANUS 1995, Chap. 8). Einhard, whose main prejudice was believed to be directed towards the Merovingians, and even more so, Thegan, was writing in a period when the image of Carolingians themselves had not yet settled down (MCKITTERICK 2000; MCKITTERICK 2004). In other words, the history of Charlemagne had not yet become part of the narrative built into the scheme of universal sacred history. Although his treatment of Charlemagne was considered uncontroversial, the matter of what picture of “today” it showed may be reconsidered and investigated again in light of the inconsistencies in the presentation and continuous support for the Pippinids. Apologizing to his readers for discussing the recent events, he might have implied that they could have been interpreted as too contemporary. This might have been an apology for the lack of balance between the “history of today” and the schemes of universal history, which by that day’s standards might have been assumed to be played out in a way that implied the ability to manipulate eschatological exegesis.

This suggests that the historical image of Charlemagne’s rule had already stabilized by the time of Einhard. I propose that that was due to the significant reshaping of calendars in this period due to the old Easter tables running out and due to the fact that the overall feeling of the historical epoch was closely related to the expectations of the year 6000 AM. The signs that had been discussed as indicating the upcoming Millennial kingdom were widely used by the educated people in the Frankish kingdom (PALMER 2011, p. 1317). The *Admonitio generalis* in 789 warned of the *pseudo doctores* who would come in the new times (*tempora novissima*) (BORETIUS 1883, c. 63). Alcuin, in his *Vita Vedasti*, warned of the modern “dangerous times” (*tempora periculosa*) and the new doctrines that the

“new sect” was attempting to impose on scholars of various disciplines (ALCUIN 1844, col. 666; PALMER 2011, p. 1317). This was not the discourse that could be employed by Einhard in the life of Charlemagne. This passage suggests that Alcuin was among those people who took the discussions of the year 800 as the *Anno mundi* 6000 seriously and replayed it in the discourse that described the rituals of his own community. This statement of the Anglo-Saxon correlated with the awareness of the end of the 6th millenium since creation that some scholars might have experienced in this period (LANDES 2000; HEIL 2000, p. 100–103; PALMER 2014, p. 130; REIMITZ 2004, p. 198; BORST 1972, 1992; WARNTJES 2018, p. 51; NELSON 2019, p. 381). The second mention of “false doctors” was also interpreted as supporting the dominance or at least presence of the eschatological framework in the minds of Carolingian scholars, as eschatological concerns and the ways of thinking about the end of times were critically important for the Carolingian scholars’ self-perception and worldview. I would argue that searching for the eschatological context in the second case where Alcuin talks about the present times is proof of that. Interestingly, in this way the subject of Apocalypse, which had been constructed as the dramatic end for the longer periods of sacred history, became present in the everyday life of an intellectual. The issue was not the fact that this Apocalypse was “now”, but the fact that the biblical history was drawn closer to today and made part of today’s historical discourse. In this fashion, sacred history was played out in front of the eyes of Alcuin and the addressee of his letter, Charlemagne.

Chronology and Time Reckoning in Early Medieval Europe

The process of constructing and conceptualizing the calendar of universal history in the Carolingian period needs to be investigated further through the lens of its connection to exegesis, since it heavily depended on Late Antique calendric concepts and since the calendric science at this time was

inseparable from the works on the church's doctrine. Irish scholars were the 'bridge' that carried over the methods and approaches of biblical exegesis from Antiquity in its relationship to the calculations of the time of sacred history and the annual sacred holidays (STANSBURY 2016; WARNTJES 2016; MEEDER 2016). Critical to the construction of historical worldview in this age was the common knowledge of early medieval scholars that the symbols used in the Bible were a concession to human weakness and their acknowledgment of the fact that they needed to "read between the lines" to transform these symbols into the concept of history (JAMES 2000).

Such an approach requires examining the traditions and the cardinal shifts in scholarly analysis of the matters of chronology and time reckoning. In addition to the classical works on time reckoning (JONES 1934; JONES 1943; STROBEL 1977; STROBEL 1984), studies on the calendar and the cycles of time have recently attracted significant attention from scholars. (See the overview in WARNTJES 2011a, 2017) The renewed interest towards manuscripts such as the Munich computus (BSB Clm 14456) and the Cologne Computus (Kölm Dom- und Stadtbibliothek Hs. II-83) brought scholars in contact with the treasure of calendric knowledge and spurred the appearance of a large number of publications (WARNTJES 2012). The first works that addressed this subject in the late 20th century after a long break still operated within the dichotomy of the educated and mathematical notions of counting time versus the legendary and mythological representations thereof. (STEVENS 1985). They insisted on the fact that these works contained truthful representations of the concepts that were available to the science of Late Antiquity, and thus vindicated early medieval scholars (STEVENS 1972, 1979, 1993, 1995b,a; BERGMANN 1991; WARNTJES 2016). This need to prove the aptitude of the latter in the matters of natural philosophy had been deemed unnecessary by the works that appeared at the turn of the millennium (SPRINGSFELD 2002, 2004, 2010). These works showed the extent of the interest that scholars of the early medieval age exhibited to the matters of time reckoning and

proposed that their calendric science needs no vindication since it was believed to represent a true reform. These works argued that in the Carolingian period a breakthrough was made in the matters of producing a uniform table for calendric calculations. Its creation, and then the wide expansion of it in the large number of manuscripts seemed to suggest that in the Carolingian age the significant advance was made in the algorithms of counting time, in their simplification and in their spread among the wide array of regions of Europe (BORST 1998). Other works, critical of the idea that the Carolingian age represented a novelty in the matters of natural philosophy and of time reckoning, brought to the attention the breakthroughs of the previous ages, pointing out to the fact that the tables used by “Carolingian calendars” were in fact from the circle of Bede (MEYVAERT 2002). Many other works have shown that the Carolingian advances were made on the solid foundation of the methods and calendars that had been developed by Victorius of Aquitaine, Dionisius Exiguus, Venerable Bede and many other nameless scholars of their age (PALMER 2018). These works put the emphasis on the fact that time reckoning had become so developed in the V–VIII centuries that the “Carolingian advances” were in many ways a reshaping and reconsideration in the new circumstances of the algorithms and methods that were well known to those interested in construction of the calendars. Digging even deeper, these scholars escaped the simplistic idea of dividing the calendars by schools (the Roman, Alexandrian or Irish tradition) and showed instead that the matter was not so much in these labels, but rather in the cycles used in these calendric systems, the 19-year and the 84-year cycles, and in the ways the Easter limits were employed in them. The discussion of the “Roman” and “Irish” Easters was significantly reshaped by these studies and the understanding began to take hold of the simultaneous awareness of early medieval scholars of these different systems of counting time and of calculating the date of Easter (WARNTJES 2010b, 2011b, 2005-2006, 2011a, 2013, 2007, 2010c, 2015). The number of recent studies has grown significantly and they suggested that the cycles that were considered different and

opposite by scholars of the 20th century in fact coexisted on the manuscript level. In particular, it was shown that the cycle of Victorius of Aquitaine had been popular until the 8th century, that it coexisted with the cycle of Dionysius Exiguus, and that it was only replaced by the latter in the times of Bede. It was moreover suggested that this replacement took place because all cycles that had been calculated in the 5th and 6th centuries ended and the tables needed to be updated. These recent studies suggested that one needs to stay away from employing simplistic labels like “Irish”, “Roman” or others, and to face the mathematical, or rather computational complexities of these calendars that far transcended simple labeling practices. The most important conclusions of these works lay in underlying

1. that the so-called “Irish” practices were in fact a collection of time reckoning systems that included those of Victorius’ of Aquitaine, Dionysius Exiguus, and some other variations;
2. that Irish monasteries might be divided into the Northern group (with a preference for the “Dionysian”, “Roman” practice) and the Southern group (with a preference for the Victorius’ methods of calculating the Easter);
3. that European scholars did not so clearly distinguish between the different methods as the scholars of the 20th century might have imagined, and were in fact aware of all of them;
4. that calendar scholars thought in terms of employing various cycles, on their coordination and conjunction, rather than in terms of putting labels on them.

These were important breakthroughs, but what was missing in these discussions was the importance of calendric cycles for interpreting how the theological postulates of Christianity were involved in these calculations during the early Medieval Europe and for providing the basic for further exegesis. The pages of calendars such as those of the Munich Computus (BSB Clm 14456) have no connection to Christian concepts of history or terms of exegetical practice. One needs to keep in mind that Christianity’s worldview was built on using the temporal frameworks that scholars of the 20th century like Arnaldo Momigliano believed to be linear, and thus different, from the traditional Ancient world’s time perception, usually cyclical in its

organization and character. But this was only one aspect of the calendars that had some relation to the system of categories that the believers operated in the interpretation of the sacred texts. The interest in theology by Irish calendar scholars, of one of the critical persons in the field of time reckoning, Bede, and of the Carolingian scholars, needs to be examined against their own background as a specialists in practical time reckoning. One needs to be aware that due to restrictions on the article's length the subject of the Irish monks' contribution to the field and to the thinking of Bede is only acknowledged, but not developed in detail (CORNING 2016; MAC CARRON 2015, 2014). If we limit the discussion here to Bede as the tip of the iceberg of Insular scholarship on the matter of calendars, we will be able to assess and appreciate the ways in which the answers to eschatological concerns given by Augustine were reworked, rethought, incorporated into the educated lexicon and adapted to the cultural context of early medieval Europe.

Bede established his viewpoint on the writings of Augustine and used his "apparatus" to talk about the end of times. He relied on Augustine's main contribution to the eschatological narrative, the main point of which was in describing the preconditions for the end of times to take place. The basis for all medieval discussions concerning the Last Judgment was to be found in *De civitate*, 20.30. Augustine proposed the following order of the Last Judgment events: the return of prophet Elijah, the conversion of the Jews, and persecution by the Antichrist (DARBY 2014, p. 119). This was obviously a metaphor of some sequence of historical events from the first millennium BCE that underlay the Bible and constituted the core of the sacred text's narrative. Augustine's main strength as a theologian and the "doctor of the church" was in incorporating into a single narrative the Egyptian, Mesopotamian, Persian empires and the Hellenistic kingdoms. The whole point of his discussing the sequence of events leading up to the last judgment was in sorting the matrix that had worked for Africa, Asia [Mesopotamia], and Europe (as a metaphor of Hellenistic kingdoms) during the Late Roman empire of Augustine that

was still a unified civilization. Bede was significantly influenced by Augustine and devoted to this subject in chapters 61–71 of his *De temporum ratione* (AUGUSTINE s.d., 20.30; WALLIS 2013, p. 76; DARBY 2014, p. 118–119; THACKER 2006). Bede added the following series of events to the scheme proposed by Augustine: in addition to Elijah, Enoch will also come to preach for three and a half years (DARBY 2014, p. 119). This was due to the fact that Enoch 1 was one of the critical texts that set the rituals and the calendars of Jewish communities (BECKWITH 2005, p. 8–10). Scholars showed how developed the exegesis had become in the works of Bede, who significantly adapted Late Antique readings in the Bible to the early medieval context (PALMER 2014, p. 139). But most importantly, these modern studies showed how the discussion of the end of times became part of scholarly textbooks like those of Bede. When discussing the Carolingian explorations in the exegesis of eschatological events, one needs to keep in mind that Bede scholars operated within a clear framework of knowledge that allowed to put the complex matter of counting time till the end of the world on a solid foundation of symbols that allowed to construct schemes and narratives. In the works of Bede the exegesis and the sacred calendar were joined in such a manner that set the foundation for the Carolingian and medieval scholarship.

The approach of Bede to the matters of calculating time needs to be examined against the fundamental fact that he was not only a theologian or computist in theory, but might have also been an author of the Easter tables (MEYVAERT 2002; BULLOUGH, 2004, p. 285). The importance of other significant scholars of the 8th and 9th centuries like Alcuin, Hildebald of Cologne and Hraban Maur for the merging of the Christian time scale with the practical outlook on contemporary events of history has also been well-studied (For example, one may note STORY 2017; GASKOIN 1966; LOHRMANN 1993; BULLOUGH 1983, p. 37; O CRÓINÍN 1993; BULLOUGH 2004; WARNTJES 2012, 2017, 2016). Bede's example suggests how the discussion of universal sacred history built on the interpretation of texts from the Old Testament not only had an immediate connection

to calculating the sequence of events leading to the end of times but also used the yearly cycle to describe the day-by-day approach of the Millennial kingdom. The “long-duration” time of sacred history became both the distant future that was to come in the end of times whose exact date nobody was supposed to know and the foreseeable sequence of days that could be calculated with the help of one of the *computi*. Further in this article an attempt will be made to find and elucidate the points of connection between the theology of time and the actual excerpt in the historical work of Einhard that addressed the events of much shorter length than the eras of Creation and of the Incarnation.

Bede's *De temporum ratione* employed standard reference points from the Old Testament to talk about the end of times. It employed excerpts from the books of Daniel and Isaiah, the Synoptic Gospels and the Revelation, and relied on the works of the early Christian exegetes Augustine, Jerome and Gregory the Great. The *De temporibus* ended with a passage stating that the end of the 6th age was known only to God, the idea that Bede had earlier developed in the *Expositio actuum apostolorum* (De temporibus 22, line 80, Expositio Actuum Apostolorum, 1, 68-73; DARBY 2016, p. 96). In the *Epistola ad Ecgbertum* (November 5th, 734), he mentioned that the day of the last Judgment was unknown (Epistola ad Ecgbertum, 2; DARBY 2016, p. 96). In his commentary on the Gospel of Luke, he reiterated that the calculations and predictions concerning the end of times were heretical and futile (In Lucae evangelium expositio, 5, lines 810-822; DARBY 2016, p. 96). In chapter 68 of the *De temporum ratione* he developed the idea whose origin he acknowledged to be that of Augustine, namely the idea that expectations for the coming of the day of judgment should never be espoused. He cited as an example the servant in Matthew 24.48-51, who was diligently waiting for his master even though he did not know whether he would return. The importance of the signs of the end of times was reinforced by Bede in a number of treatises (DARBY 2016, p. 102-103). In general, Bede paid great reverence to Augustine's definition

of allegory because it allowed to treat the Apocalypse as a discussion point rather than a statement of fact (THACKER 2006, p. 15, 17). In his letter to Pleguin he made a note of the fact that some heresiarch he had read in his early days claimed that there had been 5500 years since the Creation to the Incarnation, and that 300 years had passed after that, leaving only 200 years to the end of times, the year 6000 AM (PALMER 2014, p. 144–145). He argued the computistical ‘first book’, the chronicle, and the apocalypse chapters each corrected different errors of his opponents, like Victorius of Aquitaine or those in Lindisfarne, on different fronts (PALMER 2014, p. 159). Their studies in the recent period have paid much attention to the importance of exegesis for the self-identification of rulers and their retinues in the Carolingian period. Having recognized that, scholars of the calendric science have devoted attention to one of the critical aspects of Christian time reckoning, the idea of the end of times that was critical for the belief in Creation, for setting the framework for the Incarnation of Jesus, for determining the importance of his Reincarnation, and for defining the needs of the Christian community in its wake and in the expectations for his second coming (PALMER 2011, 2014; WARNTJES 2018).

The Carolingian developments need to be examined against Bede’s work, which allows one to pick up both on the former’s novelty and traditional character. Why did there exist such interest towards the year 6000 in the Carolingian age that had not been seen for quite some time? It was highlighted how in the 8th century the manuscripts with the countdown to the end of the 6th millenium appeared (WARNTJES 2018). This was a realization of the idea that history was the unfolding of God’s plan (CROUCH 1997, p. 17; GOFFART 1988, p. 153). Biblical history became “now” at the court of Charlemagne where he was “David” and was not just metaphorically represented as such. Carolingian scholars used a great number of Biblical images to describe their kings, although the angle of their outlook was significantly different in each case. The image of Solomon figured prominently in the *Epitaphium Arsenii* as the symbol for

the group of elite thinkers who sought to imagine the authority without referring to the traditional scheme by Tacitus (JONG 2017, p. 112–113). An investigation of the main works of the Carolingian exegesis illustrates how the themes from the Old Testament were used in significant ways for defining not only the discourse of power, but also the historical narrative and its time frame where this discourse was deployed.

Scholars have emphasized the importance of biblical imagery in the construction of the discourse of power in the Carolingian Frankish kingdom. It has been shown how scholars like Hraban Maur, Ratbertus or Dhuoda extensively used metaphors from the Bible to construct the ideal image of kingship. Manipulations with the images from the Scripture were done in the context of courtly exchange where performativity, as it was shown, was the key element of scholarly discussion and every symbol acquired importance within the oral and written argument (NELSON 2003, p. 52; SCHALLER 1970; MURRAY 1990, p. 14; KNIGHT 2012, p. 7, 47). In their treatises they employed a whole slew of biblical characters and stories that were meant to express, by communication in the competition-riddled setting of the educated court, Carolingian authority in its glory and limitations. Charlemagne was not a metaphor of David, he was David for those who knew the meaning of this name. The pervasive recurrence of the pastoral motif in the Latin poetry of the period shows that the cultural milieu of the Carolingian court was built on the imagery of pastoral society that, in addition to Virgil and other Latin poets, also owed its origin in this particular setting to imagery from the Old Testament (MURRAY 1990, p. 14; KNIGHT 2012, p. 47). Thus, the court culture was predicated on the matters that helped construct the discourse of power with the help of stories from the Old Testament.

In the preface to his *Chronicle*, Hraban Maur wrote that he fashioned his history from divine history, from a large number of works from other historians such as Justinus, Sulpicius Severus, Eusebius' *Ecclesiastical history*, the

Chronicon of Eusebius/Rufinus and the Chronicon of Bede, and the writings of Josephus (MAUR 1899, no. 19, p. 424-425, l. 30-32; JONG 2000, p. 217). Pippin III, Charlemagne and the other Carolingians were perceived in terms that were highly imbued with theology as the founder of the dynasty, the first Arnulfing/Pippinid king of the Franks was equaled to Moses, as were others (GARRISON 2000, p. 125). The comparison of Charlemagne issuing the "Admonitio generalis" to Josiah (Kings 4:23) reminded of the ruler who not only established cultic uniformity, but also demolished other cults (JONG 2015, p. 88). The offering of the commentary on the Maccabees to Louis the German reminded of the king battered in the course of the struggle within the family in 840-843 and the ruler who was meant to restore the cultic unity by his uprising (JONG 2000, p. 216). Later on, Robert the Strong was imagined as a Maccabee (JONG 2000, p. 216, n. 101). Carolingian scholars looked for the entire spectrum of the patristic writings in addition to the Bible to provide a reference framework for the envisaged Christian society (JONG 2015, p. 88). The imagery was not static, but dynamic, reminding not only of cultic unity, but of suppression of extraneous cults. These cases speak of how the images of particular biblical figures were used for narrating contemporary history by way of making the Old Testament stories the Franks' own history (JONG 2000, p. 216).

However, in addition to that imagery, the theological musings of Alcuin and the commentaries on the books of the Old Testament by Hraban Maur, I argue, possessed a number of highlights that showed their authors' interest not only towards the matters of dogma, but also to calculating time and to setting the chronological framework properly for history, both biblical and secular. It has been shown that Hraban employed historical criticism on the plots from the Old Testament (JONG 2000, p. 218). At times he was dissatisfied with the Old Testament narrative, concluding that the facts were omitted. The beginning of the first book of the Maccabees was incongruous, he argued, because it started with "et factum est", which meant a subjunctive clause. The narrative was for him the one where

the author descended directly *in medias res*, which suggests the knowledge of classical texts like the “Iliad” of Homer. The second book of the Maccabees was much shorter, but it did not preclude this book from being as historically important as the first one (JONG 2000, p. 219). Historical considerations immediately emerged from exegesis and in fact were its critical element. The choice of Old Testament books for commentaries always focused on the biblical rulers; this was done to help create the appropriate image for the kings and legitimize their place in history (JONG 2000, 2015; CONTRENI 2015). These biblical images highlighted these stories of contemporary Carolingian rulers with all their approaches to what it meant to have the “beginning and end” of time in the system of historical coordinates. Narratives of this type, the intertwining of imagery from the Old Testament and recent history, which required calendrical awareness, were being constantly deployed to support, in educated ways, the Carolingians’ legitimacy as the rulers of the Christian Frankish kingdom and of the Empire. This interest towards Old Testament stories as “current” or “recent” history seems a bit more pronounced among the scholars of the Carolingian age than it is in Bede’s works.

The “time of reckoning” and its traditional recurrence in the history of Late Antiquity and the early Middle Ages

In this section, I show how the interest in the correlation between the universal moment of Christian history and the current moment of short-term political events during the times of Bede and the Carolingian period was predicated on the longer time-scales that had their roots in the cycles of visible astronomical phenomena. To highlight these cycles and their importance I would like to propose as a hypothesis a scheme that would allow to place the periods when the interest in universal history and its beginning and end surged within the parameters of visible celestial events. I suggest that the surge of interest towards universal Christian history and biblical

events as those having relevance to the 8th or 9th-century “now” can be related to one cycle that astronomers have long been aware of. In imagining their place in universal Christian history scholars in Europe went through three periods when their interest towards the matters of the beginning and the end of times seemed to fuel the development of biblical exegesis and its application in their contemporary matters. During these periods the calculations necessary for the construction of the calendars and timelines brought up questions related to the foundations of Christian theology and led to concerns about the end of history and the “end of times” to appear (MARKUS 2001; PALMER 2014; LANDES 2000).

Scholars who in the early Middle Ages paid attention to the eschatological meaning of the year 6000, the date when the Thousand Years’ kingdom was to begin, relied on the scheme of history that had originated in hellenistic times with the educated people like Eupolemos (mid-2nd century BCE) and Alexander Polyhistor (active 85-35 BCE) and that found its development in the Late Antique Christian environment with scholars like Theophilus (CE 115-181) and Julius Africanus (CE 200-245) (WACHOLDER 1968, p. 451–452; BICKERMAN 1980, p. 73). Already since the times of Augustine scholars began to adjust the year of the Creation era so as to move the coming of Last Judgment to a later date that was significantly more distant from their present (LANDES 1988; LANDES 1992, p. 377). Augustine warned against reading too much into the signs that people began to notice after the sack of Rome in 410 and thus sought to tone down any coincidence with the year 6000 that could have originated from the era that attributed the Incarnation to the year c. 5500 of Creation (Aug. no. 199, 36; LANDES 1992, p. 364). In his disbelief in eschatological schemes, he differed from his contemporaries: just several years later Hesychius wrote about the year 418-419 as the miraculous year (Hesychius Letter 198; LANDES, 1992, p. 365); The chronicles did the same. (Consularia constantinopolitana (c. 448 CE). MGH AA 9:246. Hydatius (468 CE) 9:19-20; ROUCHE 1977, p. 405–9). Hippolyte, Eusebius and Jerome

agreed on the year of the Incarnation as the year 5900 since the Creation. Then Augustine moved the date back to 5600, Julian of Toledo took the middle way and ascribed it to the date 5850, Bede also followed Hippolyte, Eusebius and Jerome, and used the year 5950, Beatus of Liébana went with the similar date of 5990, and Abbon of Fleury used the year 6000. Only Boniface chose the date that was closer to the considerations of Augustine rather than to the ideas of the three doctors of the church. It was the year 5750, which meant that he saw a large break between the coming of Christ and the coming of the Thousand Year kingdom. This was an approach different from that of Hippolytus, Eusebius and Jerome, because it was more adequate for those Christians who from Late Antiquity on provided for some time for the world to benefit from the Incarnation (LANDES 1993, p. 8).

During the push of the Mediterranean civilization towards the North in Late Antiquity, in the 4th and 5th centuries it was the first time when scholars like Jerome and Augustine had to address the ending of the universal sacred history calendar that the Christians inherited from the Old Testament (MARKUS 1970, 1988; LANDES 2014). In this case, the main issue was reconciling one calendar that had originated in the Ancient society to the challenges of the Mediterranean civilization that had to address the problem of open corridors leading into wide open spaces in Europe and Eurasia (to the North Sea and, via the Balkans, to the world of the steppes) (HEATHER 2006). During this period, the foundations for the era of Incarnation were laid by scholars like Dionysius Exiguus in the early 5th century who were building upon the works of the previous scholars and who were followed in the early Middle Ages by Bede. (DECLERCQ 2000, p. 116).

The second “time of reckoning” came when Eusebius’ date of the Incarnation in Anno Mundi 5199 prompted scholars to reconsider the meaning of the rule of the Carolingians around the year 801, that is, the Anno Mundi 6000 (LANDES 2000; HEIL 2000, p. 100–103; PALMER 2014, p. 130;

REIMITZ 2004, p. 198; BORST 1972, 1992; WARNTJES 2018, p. 51; NELSON 2019, p. 381). Biblical history became “now” at the court of Charlemagne where he WAS “David” and was not just metaphorically represented as such. And the third period when time reckoning had again raised such concerns about the end of times was around the year one thousand, when the theological construct of the thousand-year kingdom suddenly became a reality (LANDES 1988, 1995, 2000). In each case, the cause for concern was the date 6000 Anno Mundi, which brought up the immediate association with the thousand-year kingdom, but the actual construction of the time scales was different. These cases have been well studied by scholars and they have a considerable historiography.

The discussion of these subjects thus becomes deeper if one considers all cases where the matter of the “end of times”, of “now” as the period of uncertainty arose in a different and much larger context of the Christian and Old Testament time reckoning when, in addition to considering the times of the beginning of times and the end of the 6th millenium, the questions of how to envision their change “now” within the peculiar context of a Christian community living in the particular historical Late Antique or early medieval environment arose. It was the question of how to adjust the historical descriptions and predictions that originated from the historical tables of the Eusebius-Jerome Chronicle to the pressing matters of everyday history that were wrought with the events that went against the temporary schemes of the Old Testament. The “triumphant” imperial church that was to be the representation of heavenly Jerusalem started to take shape in the times of maximum barbarian onslaught (MARKUS 1988, p. 104–105). This problem had been overcome after Augustine, his “students” Orosius and Prosper of Aquitaine, and his distant intellectual heirs Hydatius, Sulpicius Severus and Gregory of Tours, managed to channel the realities of the Roman imperial church with the barbarians at or even within the Empire’s borders into the narrative constructed according to the biblical paradigm (For example GOFFART 1988, p. 153). In a sense, the musings and attempts

to overcome these discrepancies produced a stable paradigm of history by the Carolingian period, wherein historians did not flounder in matters of eschatological nature as they had become immune to the appearance among dates such as 6000 Anno Mundi, which were reminiscent of Apocalypse and implied the coming of the Last Judgment.

Since the early modern age, astronomers began to pay attention to changes in nodes of the Moon in addition to those known by scholars of the Ancient world. They got accustomed, by means of observation, to the idea of an inherent verifiability of the mathematical formulae that describe the movement of the planets and thus began to measure the position of stars against those of the planets, in contrast to what had been normal practice in astronomy since the Ancient period (WŁODARZYK 2019, p. 152). A significant breakthrough in the understanding of the principles that lay at the foundation of celestial bodies movement was made by Pierre-Simon de Laplace (1749-1827). The matter of lunar motions and the precession of its nodes was developed in the controversies between several European scholars of the 18th century. These cycles relative to the precession of nodes were calculated with great precision, but with a number of assumptions potentially attributed to approximations by Clairaut (CLAIRAUT 1752). His calculations and formulae were based on Newton's law of gravitation and were another proof of its validity, but he overestimated the value of the precession of the Moon's perigee by a factor of about two (CALINGER 2007, p. 33). He later had to concede to using the small parameters (the quadratic members of the sequence in addition to the square ones) to define the *perigee's* precession (FITZPATRICK 2011). But it is not clear what cycles of precession his formulae could cover since Clairaut limited himself to proving the Newton law's unique precedence. He never aspired to going beyond the first formulae to calculate the implications. In the course of this controversy, Euler's idea of imagining the orbit of the Moon as a rotating ellipse was questioned and tested. Euler's contribution to the discussion of the Moon's orbit may be found

in drawing attention to the need to including, theoretically, the electromagnetic interaction between both celestial bodies (CALINGER 2007, p. 33–34). Euler's works on the problem showed the underlying precession of the Earth's own equinoxes with greater mathematical precision, and they were shown to be about 19 years long (EULER 1751). The longer precession was first mathematically calculated by Leonard Euler (using the formulae and the coefficients of Clairaut) in the mid-18th century, and it was found to produce a shift of one degree of the Moon's apogee or perigee against a specific position on Earth in 276,92 years (EULER 1934). This was a breakthrough in contrast to the traditional views of the Moon's motion because, while the 8- and 19-year cycles had been observed and were well-known, the 276,92-year cycle was not evident or in any way known to the educated people. His calculations for the Moon clearly picked up on the longer-term cycles.

Although one degree does not account for much, in the periods of *saltus lunae* and in some cases when this *saltus* fell on an eclipse, it could make a difference in observation. Considering that the calendar that scholars from the Carolingian age used was one degree behind the Moon's positions in around 525, when scholars began to reset the Easter tables, this needs to be accounted for. In the 520s Dionisius Exiguus sought various textbooks and information about the calculation of Easter, which later let him compile a meaningful algorithm for reconciling the Solar and Lunar cycles (DECLERCQ 2000, p. 98, 116, 152; WARNTJES 2013, p. 50–52). Dionysius only compiled the cycle for 95 years even though he had reconciled the two cycles for 532 years (DECLERCQ 2000, p. 152; WARNTJES 2013, p. 56). The Easter tables run out in 616, 95 years after they had been set by Dionisius Exiguus, and this required Felix of Squillace to produce a new one. The same had to be done around the year 700. The *Victorian prologue* of 699 synchronized the forthcoming year 703 with the year AM 5203 (LIBER DE COMPUTO s.d., Ch. 83, at col. 1314; WARNTJES 2010a, p. 271–273). This suggests that Late Antique scholars who based their knowledge on the Ancient

world's experience were aware of the possible discrepancies further on and did not venture into the unknown. The surge in the interest to the calculations of the lunar calendar in the letter exchange between Alcuin and Charlemagne might be considered the illustration of the knowledge that early medieval scholars possessed about the need to adjust the calendar to the Moon's actual movements that they could have sensed but were unable to calculate precisely (ALCUIN 1895, Epp. 126, 143, 145). For the turn of the 9th century almost precisely coincided with one period of lunar precession from the time when Dionysius was making his tables. This suggests that they must have posited that after a period of 95 years, for which, as the scholars might have known, the calendar of the Moon's motions could be calculated precisely, there came the times when the tables needed to be updated based on the actual observations. The search of various scholars for the correct methods including the works of Bede were a response to those dark times. Interestingly, the period, as was to be calculated by Euler later, ended about the time when Alcuin was explaining to Charlemagne the complexities of the calendar and the need to put on November 25th, 797, *luna* 1st and not *luna* 30th (even though one need not impute that he need to subtract one day was in this case caused by the precession of the Moon (ALCUIN 1895, Ep. 126). All this suggests that there was more correlation between astronomical cycles and the bookish knowledge than expected at the time. Interestingly, when there came the time of the "end" of the standard moon cycle, the questions of the beginning and the end of time emerged and in some cases prompted a reconsideration of the current calendar in relation to the age of the world and to its end. I suggest, therefore, that one needs to notice how the same themes reappeared at exactly the periods determined by the astronomical phenomena and how Augustine became relevant in approximately 276.92 years for Bede and how the Easter table of Dionysius Exiguus prompted people again to think about the end of time and utilize both Augustine and Bede to find answers on how to counter this problem.

Conclusion

The Carolingian efforts in reimagining the calendar of universal history and making it part of the educated communication in regards to the current events and recent history at the time of the coronation of Charlemagne at the year 5999 since the Creation and 800 since the Incarnation of Christ were successful. They were the result of the significant adaptation of the framework created by Augustine and made available by Irish scholars, Bede and his students not so much to the conditions of Europe as opposed to those of the Mediterranean, but to the situation in the universal calendar when the count of years started to reach the maximum number imagined by the scholars of the Ancient world. Carolingian attempts at constructing the calendar of the historical epoch themselves originated in the tradition of eschatological thinking exemplified in the works of Augustine, practiced by the Irish and continental European scholars in re-calculating the Easter calendar, and in the works of historians, like Gregory of Tours and then Einhard to connect the history since the Creation to the historical narrative of the recent kings' achievements. The knowledge of how to work with and manipulate critical dates from the sacred history and from the Easter calculations was made meaningful in two periods of time, in the 520s and the ca. 800, determined partly by the effects of the precession of the Moon on the calendar, when the "final reckoning" became a pressing need. One thing was novel in the development of the ways to represent the long-term cycles of universal history in the everyday ritual exchange of information among scholars in the Carolingian age. Unlike Bede, whose writings reminded more of textbooks, Carolingian scholars used the stories related to measuring and imagining biblical chronology in their exchanges, the primary aim of which was to confirm their status and the status of the king within the group of educated and knowledgeable people that measured up in knowledge and their historical significance to the figures of the Old Testament. This was not only mathematical knowledge but also knowledge in terms of the "exegesis of numbers". Studies

have indicated that the calculations of the *Anno Domini* and of the Easter date often contained assumptions which might be considered as extraneous or erroneous, but which make sense as the tools of approaching the correct understanding of one or another time reckoning scheme. In other words, I argue for the importance of combinatorics with the lengths of historical periods and the dates of events. The knowledge of history in the Carolingian period was increasingly built on the skills to manipulate numbers in ways that turned historical and biblical narratives they represented into the descriptive and simultaneously hierarchical mental constructs. This was due to the fact that observable astronomic phenomena, which might have also been known from the symbolism of numbers in the Old Testament, made the need to adjust the book knowledge and numbers to the real calendar. Not only the specific calendric chronological schemes of universal history and the Easter tables were reconsidered at this time: in fact, the rethinking of the ways to connect chronology to the political project took place because of the significant rethinking of universal history's periodization that was aided by the attention towards the observable or known breaks in the regularity of the flow of time.

REFERENCE

ALCUIN. Ep. 126. *In*: DÜMMLER, E. (ed.). **Epistolae Karolini aevi**. Berlin: Weidmann, 1895. v. 2. (MGH Epistolae, 4). p. 185–187.

ALCUIN. Ep. 143. *In*: DÜMMLER, E. (ed.). **Epistolae Karolini aevi**. Berlin: Weidmann, 1895. v. 2. (MGH Epistolae, 4). p. 224–227.

ALCUIN. Ep. 145. *In*: DÜMMLER, E. (ed.). **Epistolae Karolini aevi**. Berlin: Weidmann, 1895. v. 2. (MGH Epistolae, 4). p. 231–235.

ALCUIN. Vita Vedasti. *In*: MIGNE, J.-P. (ed.). **PL**. [S.l.: s.n.], 1844. v. 101.

ASTRONOMUS. Vita Hludowici imperatoris. *In*: TREMP, Ernst (Ed.). **Theganus, Gesta Hludowici imperatoris** – Astronomus, Vita Hludowici imperatoris. Hannover: Hahn, 1995. (MGH Scriptores rerum germanicarum, 64). p. 280–555.

AUGUSTINE. **De civitate Dei**. Edição: B. Dombart e A. Kalb. [S.l.: s.n.]. (CCSL, 47, 48).

BARNWELL, Paul S. Einhard, Louis the Pious and Childeric III. **Historical Research**, v. 78, n. 200, p. 129–139, 2005.

BECHT-JÖRDENS, Gereon. Biographie als Heilsgeschichte. Ein Paradigmenwechsel in der Gattungsentwicklung: Prolegomena zu einer formgeschichtlichen Interpretation von Einharts Vita Karoli. *In*: JÖRDENS, Andrea (Ed.). **Quaerite faciem eius semper**. Studien zu den geistesgeschichtlichen Beziehungen zwischen Antike und Christentum. Dankesgabe für Albrecht Dihle zum 85. Geburtstag aus dem Heidelberger „Kirchenväterkolloquium“. Hamburg: Kovac, 2008. (Studien zur Kirchengeschichte, 8). p. 1–21.

BECKWITH, Roger T. **Calendar, Chronology and Worship**: Studies in Judaism and Early Christianity. Leiden: Brill, 2005.

BERGMANN, Werner. Easter and the Calendar: The Mathematics of Determining a Formula for the Easter Festival to Medieval Computing. Versão alemã. **Journal for General Philosophy of Science** / Zeitschrift für allgemeine Wissenschaftstheorie, v. 22, n. 1, p. 15–41, 1991.

BICKERMAN, Elias. **Chronology of the Ancient World**. 2. ed. Ithaca: Cornell University Press, 1980.

Admonitio generalis. *In*: BORETIUS, Alfred (Ed.). **Capitularia regum francorum**. Hannover: [s.n.], 1883. V. 1. (MGH Leges in quarto, Legum sectio II). P. 54–62.

BORST, Arno. **Die karolingische Kalenderreform**. Hannover: [s.n.], 1998. (Schriften der Monumenta Germaniae Historica, 46).

BORST, Arno. Kaisertum und Namentheorie im Jahre 800. *In*: WOLFF, Gunther (ed.). **Zum Kaisertum Karls des Grossen**: Beiträge und Aufsätze. Darmstadt: [s.n.], 1972. p. 216–39.

BORST, Arno. Karl der Grosse und die Zeit. *In*: RÖTTGEN, Herwarth (ed.). **Beiträge zur Zeit**. Stuttgart: [s.n.], 1992.V. 42. p. 9–21.

BRUNNER, Karl. Auf die Spuren verlorener Traditionen. Versão alemã. **Peritia**, v. 2, p. 1–22, 1983.

BRUNNER, Karl. **Oppositionelle Gruppen im Karolingerreich**. Wien: Böhlau, 1979.

BULLOUGH, Donald. Alcuin and the Kingdom of Heaven: Liturgy, theology and the Carolingian age. *In*: BLUMENTHAL, Ute-Renate (ed.). **Carolingian essays**: Andrew W. Mellon lectures in early Christian studies. Washington DC: The Catholic University of America Press, 1983. p. 161–240.

BULLOUGH, Donald. **Alcuin**: achievement and reputation: being part of the Ford lectures delivered in Oxford in Hilary Term 1980. Leiden: Brill, 2004.

CALINGER, Ronald S. Leonard Euler: Life and Thought. *In*: SANDIFER, C. Edward; BRADLEY, Robert E. (ed.). **Leonard Euler**: Life, Work and Legacy. Amsterdam; Boston: Elsevier, 2007. p. 5–60.

CLAIRAUT, Alexis. **Theorie de la Lune deduite du seul principedel'attractionreciproquementproportionelle aux quarrés des distances**. St. Petersburg: Imprimerie de l'Academie Imperiale des Sciences, 1752.

COLLINS, Roger. Deception and misrepresentation in early eighth-century Frankish historiography: two case studies. *In*: JARNUT, J.; RICHTER M.; NONN, U. (ed.). **Karl Martell in seiner Zeit**. Sigmaringen: [s.n.], 1994. V. 37. (Beihefte der Francia). p. 227–247.

CONTRENI, John. The Patristic legacy to c. 1000. *In*: MARSDEN, Richard; MATTER, E. Ann (ed.). **New Cambridge History of the Bible**. Cambridge: Cambridge University Press, 2015. P. 505–535.

CORNING, Caitlin. Columbanus and the Easter controversy: theological, social and political contexts. *In*: FLECHNER, Roy; MEEDER, Swen (ed.). **The Irish in early medieval Europe**: identity, culture and religion. London: Palgrave, 2016. p. 101–115.

CROUCH, Jace T. **Isidore of Seville on Time, Eternity, Events, and History: The Unfolding of Salvation History.** 1997. Tese (Doutorado) – Michigan State University.

DARBY, Peter. **Bede and the End of Time.** Farnham: Ashgate, 2016.

DARBY, Peter. Bede's history of the future. *In*: DARBY, Peter; WALLIS, Faith (ed.). **Bede and the Future.** Farnham: Ashgate, 2014. p. 115–138.

DECLERCQ, Georges. **Anno Domini: The origins of the Christian era.** Turnhout: Brepols, 2000.

ENGLISCH, Brigitte. Karolingische Reformkalender und die Fixierung der christlichen Zeitrechnung. *In*: WARNTJES, Immo; Ó CRÓINÍN, Dáibhí (ed.). **Computus and its cultural context in the Latin West AD 300-1200..** Turnhout: Brepols, 2010. V. 5, p. 238–258.

EULER, Johannis Albertus. **Theoria motuum Lunae.** Nova methodo pertractata una cum tabulis astronomicis unde ad quodvis tempus loca Lunae expedite computari possunt. Edição: Wolfgang Ludovicus Krafft e Johannis Andreas Lexell. Leningrad: Typis et impensis academiae scientiarum URSS, 1934.

EULER, Leonard. Recherches sur la precession des equinoxes et sur la nutation de l'axe de la terre. Versão francesa. **Mémoires de l'Académie des Sciences et des Belles-Lettres de Berlin**, v. 5, p. 289–325, 1751.

FITZPATRICK, Richard. **Newtonian Dynamics.** [S.l.]: Lulu, 2011.

GANSHOF, F. L. The last period of Charlemagne's reign: A study in decomposition. *In*: GANSHOF, F. L. **The Carolingians and the Frankish monarchy.** Ithaca: [s.n.], 1971. p. 240–54.

GANZ, David. Einhard's Charlemagne: The characterisation of greatness. *In*: STORY, Joanna (ed.). **Charlemagne: Empire and Society**. Manchester: Manchester University Press, 2005. p. 38–51.

GANZ, David. Einhardus peccator. *In*: WORMALD, Patrick; NELSON, Janet L. (ed.). **Lay intellectuals in the Carolingian world**. Cambridge: Cambridge University Press, 2007. p. 37–51.

GANZ, David. The Astronomer's Life of Louis the Pious. *In*: GARVER, Valerie L.; PHELAN, Owen M. (ed.). **Rome and religion in the medieval world: Studies in honor of Thomas F. X. Noble**. London: Routledge, 2014. P. 129–148.

GARRISON, Mary. The Franks as New Israel? Education for an identity from Pippin to Charlemagne. *In*: HEN, Yitzhak; INNES, Matthew (ed.). **The uses of the past in the early Middle Ages**. Cambridge: Cambridge University Press, 2000. p. 114–161.

GASKOIN, C. J. B. **Alcuin; his life and his work**. New York: Russell & Russell, 1966.

GLENN, Jason Kahn. Between Two Empires. Einhard and His Charles the Great. *In*: **The Middle Ages in text and Texture**. Toronto: Toronto University Press, 2011. p. 105–118.

GOFFART, Walter. **The narrators of barbarian history (AD 550-800)**: Jordanes, Gregory of Tours, Bede, and Paul the Deacon. Princeton: Princeton University Press, 1988. 491 p.

HEATHER, P. **The Fall of the Roman Empire: A new history of Rome and the barbarians**. Oxford: Oxford University Press, 2006.

HEIL, Johannes. *Nos nescientes de hoc velle manere* - "We wish to remain ignorant about this": Timeless end, or: Approaches to reconceptualizing eschatology after A.D. 800 (AM 6000). **Traditio**, v. 55, p. 73–103, 2000.

HOLDER-EGGER, Oswald. Zur Überlieferung von Einhard's Vita Karoli Magni. In: NEUES Archiv der Gesellschaft für Ältere Deutsche Geschichtskunde zur Beförderung einer Gesamtausgabe der Quellenschriften deutscher Geschichten des Mittelalters. Hannover: Hahn, 1912. V. 37. p. 393–414.

INNES, Matthew. Teutons or Trojans? The Carolingian and the Germanic past. In: HEN, Yitzhak; INNES, Matthew (ed.). **The uses of the past in the early Middle Ages**. Cambridge: Cambridge University Press, 2000. p. 227–249.

JAMES, Dominic. The world and its past as Christian allegory in the early Middle Ages. In: INNES, Matthew; HEN, Yitzhak (ed.). **The uses of the past in the early Middle Ages**. Cambridge: Cambridge University Press, 2000. p. 102–113.

JONES, Charles W. The victorian and dionysiac paschal tables in the West. **Speculum**, v. 9, n. 4, p. 408–421, 1934.

JONES, Charles Williams. **Bedae opera de temporibus**. Cambridge, MA: Medieval Academy of America, 1943.

JONG, M. de. Carolingian political discourse and the biblical past: Hraban, Dhuoda, Radbert. In: GANTNER, Clemens; MCKITTERICK, Rosamond; MEEDER, Sven (Ed.). **The Resources of the Past in Early Medieval Europe**. Cambridge: Cambridge University Press, 2015. p. 87–102.

JONG, M. de. For God, king and country: the personal and the public in the epitaphium Arsenii. **Early Medieval Europe**, v. 25, n. 1, p. 102–113, 2017.

JONG, M. de. The empire as ecclesia: Hrabanus Maurus and biblical historia for rulers. *In*: INNES, Matthew; HEN, Yitzhak (ed.). **The uses of the past in the early Middle Ages**. Cambridge: Cambridge University Press, 2000. p. 191–226.

KNIGHT, Gillian R. Talking Letter, Singing Pipe: Modalities of Performance at the Carolingian Court. Versão francesa. **Archives d'histoire doctrinale et littéraire du Moyen Age**, v. 79, p. 7–47, 2012.

LANDES, R. Lest the Millennium Be Fulfilled: Apocalyptic Expectations and the Pattern of Western Chronography, 100-800 C. E. *In*: VERBEKE, W. (ed.). **The Use and Abuse of Eschatology in the Middle Ages**. Louvain: Katholieke Universiteit te Leuven, 1988. p. 141–211.

LANDES, R. Sur la traces du Millenium: la «via negativa». Versão francesa. **Le Moyen Age**, v. 99, n. 1, p. 5–26, 1993.

LANDES, Richard. «Millenarismus absconditus»: L'historiographie augustinienne et le millénarisme du haut Moyen Age jusqu'à l'an Mil. Versão francesa. **Le Moyen Age**, v. 98, n. 3-4, p. 355–377, 1992.

LANDES, Richard. In the Fear of an Apocalyptic Year 1000: Augustinian Historiography, Medieval and Modern. **Speculum**, v. 75, p. 97–145, 2000.

LANDES, Richard. **Relics, apocalypse, and the deceits of history**: Ademar of Chabannes, 989-1034. Cambridge Mass.: Harvard University Press, 1995. P. 404.

LANDES, Richard. The Silenced Millenium and the Fall of Rome: Augustine and the Year 6000 AM I. *In*: DOODY, John; KLOOS, Kari; PAFFENROTH, Kim (Ed.). **Augustine and Apocalyptic and the Fall of Rome**: Augustine and the Year 6000. Lanham: Lexington Books, 2014. p. 151–176.

LIBER DE COMPUTO. In: **PL.** [S.l.: s.n.]. V. 129. p. 1273–1372.

LOHRMANN, Dietrich. Alcuins Korrespondenz mit Karls dem Grossen über Kalender und Astronomie. In: BUTZER, Paul Leo; LOHRMANN, Dietrich (ed.). **Science in Western and Eastern civilization in Carolingian times.** Basel: Birkhäuser, 1993. p. 79–114.

LÖWE, Heinz. Die Entstehungszeit der Vita Karoli Einhards. Versão alemã. **Deutsches Archiv für Erforschung des Mittelalters**, v. 39, p. 85–103, 1983.

MAC CARRON, Máirín. Bede, Irish computistica and Annus Mundi. **Early Medieval Europe**, v. 23, n. 3, p. 290–307, 2015.

MAC CARRON, Máirín. Christology and the future in Bede's Annus Domini. In: DARBY, Peter; Wallis, Faith (Ed.). **Bede and the Future.** Burlington: Ashgate, 2014. p. 161–179.

MARKUS, R. A. Living within sight of the end. In: HUMPHREY, Chris; ORMROD, W. M. (Ed.). **Time in the Medieval World.** Rochester, N.Y.: York Medieval Press, 2001. p. 23–34.

MARKUS, R. **Saeculum:** History and Society in the Theology of St Augustine. Cambridge: Cambridge University Press, 1970.

MARKUS, R. The Latin Fathers. In: BURNS, J. H. (Ed.). **The Cambridge History of Medieval Political Thought, c. 350 - c. 1450.** Cambridge: Cambridge University Press, 1988. p. 92–122.

Maur, Hraban. Epistolae. In: DÜMMLER, E. (Ed.). **MGH Epistolae.** Berlin: Weidmann, 1899. V. 3. p. 379–516.

MCKITTERICK, Rosamond. **History and memory in the Carolingian world.** Cambridge: Cambridge University Press, 2004.

MCKITTERICK, Rosamond. Political ideology in Carolingian historiography. *In*: HEN, Yitzhak; INNES, Matthew (ed.). **The uses of the past in the early Middle Ages**. Cambridge: [s.n.], 2000b. p. 162–174.

MCKITTERICK, Rosamond. The illusion of royal power in the Carolingian annals. **English Historical Review**, v. 115, n. 460, p. 1–20, 2000a.

MEEDER, Swen. The Irish and Carolingian learning. *In*: FLECHNER, Roy; MEEDER, Swen (ed.). **The Irish in early medieval Europe: identity, culture and religion**. London: Palgrave, 2016. p. 179–194.

MEYVAERT, Paul. Discovering the Calendar (Annalis Libellus) Attached to Bede's own Copy of De temporun ratione. **Analecta Bollandiana**, v. 120, p. 1–159, 2002.

MURRAY, O. The Idea of the Shepherd King from Cyrus to Charlemagne. *In*: **Latin Poetry and the Classical Tradition**. Essays in Medieval and Renaissance Literature. Oxford: [s.n.], 1990. p. 1–14.

NELSON, Janet. **King and Emperor: A New Life of Charlemagne**. Berkeley: University of California Press, 2019.

NELSON, Janet. Was Charlemagne's court a courtly society? *In*: CUBITT, C. (Ed.). **Court Culture in the Early Middle Ages: the proceedings of the first Alcuin conference**. Turnhout: [s.n.], 2003. p. 39–57.

NOBLE, Thomas F. X. (ed. and trad.). **Charlemagne and Louis the Pious: the lives by Einhard, Notker, Ermoldus, Thegan, and the Astronomer**. University Park, Pa.: Pennsylvania State University Press, 2009.

Ó CRÓINÍN, Dáibhí. The Irish as mediators of Antique culture on the continent. *In*: BUTZER, Paul Leo; LOHRMANN, Dietrich (ed.). **Science in Western and Eastern civilization in Carolingian times**. Basel: [s.n.], 1993. p. 41–52.

PALMER, James. Calculating time and the end of time in the Carolingian world, c.740-820. **English Historical Review**, v. 126, n. 523, p. 1307–1331, 2011.

PALMER, James. **The Apocalypse in the early Middle Ages**. Cambridge: Cambridge University Press, 2014.

PALMER, James. The adoption of the Dionysian Easter in the Frankish kingdoms (c. 670-c. 800). **Peritia**, v. 28, p. 135–154, mar., 2018.

PALMER, James. The ends and futures of Bede's *De temporum ratione*. *In*: DARBY, Peter; WALLIS, Faith (Ed.). **Bede and the Future**. Burlington: Ashgate, 2014. p. 139–160.

PATZOLD, S. Einhards erste Leser: Zu Kontext und Darstellungsabsicht der „Vita Karoli“. **Viator**, v. 42, p. 33–55, 3, 2011.

REIMITZ, Helmut. Die Konkurrenz der Ursprünge in der fränkischen Historiographie. *In*: POHL, Walter (ed.). **Die Suche nach Ursprüngen: Von der Bedeutung des frühen Mittelalters**. Wien: Osterreichische Akademie der Wissenschaften, 2004. p. 191–210.

REIMITZ, Helmut. The Providential Past: Visions of Frankish Identity in the Transmission of Gregory of Tours' *Historiae* (Sixth to Ninth Century). *In*: GANTNER, Clemens; PAYNE, Richard; POHL, Walter (Ed.). **Visions of community: Ethnicity, religion and power in the early medieval West, Byzantium and the Islamic world**. Farnham: Ashgate, 2012. p. 109–36.

REUTER, Timothy. The end of the Carolingian military expansion. *In*: GODMAN, Peter; COLLINS, Roger (ed.). **Charlemagne's heir**: New perspectives on the reign of Louis the Pious (814-840). Oxford: Clarendon, 1990. P. 391-405.

ROUCHE, M. **L'Aquitaine des Wisigoths aux Arabes (418-781)**. 1977. Dissertation – Université Lille, Lille. 1977.

SCHALLER, D. Vortrags- und Zirkulargedichtung am Hof Karls des Grossen. Versão alemã. **Mittellateinisches Jahrbuch**, v. 6, p. 14-36, 1970.

SCHERBERICH, K. Zur Suetonimitatio in Einhards vita Karoli Magni. *In*: KÉRY, L. (ed.). **Eloquentia copiosus**. Festschrift für Max Kerner zum 65. Geburtstag. Aachen: Thouet, 2006. p. 17-28.

SPRINGSFELD, K. **Alkuins Einfluss auf die Komputistik zur Zeit Karls des Grossen**. Stuttgart: F. Steiner, 2002.

SPRINGSFELD, Kerstin. Eine Beschreibung der Handschrift St. Gallen, Stiftsbibliothek, 225. *In*: Ó CRÓINÍN, Dáibhí; WARNTJES, Immo (ed.). **Computus and its Cultural Context in the Latin West, AD 300-1200**: Proceedings of the 1st International Conference on the Science of Computus in Ireland and Europe, Galway, 14-16 July, 2006. Turnhout: Brepols, 2010.

SPRINGSFELD, Kerstin. Karl der Große, Alkuin und die Zeitrechnung. Versão alemã. **Berichte zur Wissenschaftsgeschichte**, WILEY-VCH Verlag, v. 27, n. 1, p. 53-66, 2004.

STANSBURY, Mark. Irish biblical exegesis. *In*: FLECHNER, Roy; MEEDER, Swen (ed.). **The Irish in early medieval Europe**: identity, culture and religion. London: Palgrave, 2016. p. 116-130.

STEVENS, Wesley M. **Bede's scientific achievement.** Jarrow: [s.n.], 1985. p. 44.

STEVENS, Wesley M. Compotistica et astronomica in the Fulda school. *In*: KING, M. H.; W. STEVENS, M. (ed.). **Saints, scholars and heroes: Studies in medieval culture.** Collegeville: Hill Monastic Manuscript Library, Saint John's Abbey and University, 1979. p. 27–63.

STEVENS, Wesley M. Computus-Handschriften Walahfrid Strabos. *In*: BUTZER, Paul Leo; LOHRMANN, Dietrich (ed.). **Science in Western and Eastern civilization in Carolingian times.** Basel: [s.n.], 1993. P. 363–81.

STEVENS, Wesley M. **Cycles of time and scientific learning in medieval Europe.** Aldershot, Hampshire, Great Britain; Brookfield, Vt., USA: Variorum, 1995a.

STEVENS, Wesley M. Sidereal time in Anglo-Saxon England. *In*: **Cycles of time and scientific learning in medieval Europe.** Aldershot: Ashgate, 1995b. p. 125–152.

STEVENS, Wesley M. Walahfrid Strabo - A student at Fulda. **Historical papers 1971 of the Canadian historical association**, p. 13–20, 1972.

STORY, Joanna. **Carolingian Connections: Anglo-Saxon England and Carolingian Francia, c. 750–870.** London: Routledge, 2017.

STROBEL, August. **Texte zur Geschichte des frühchristlichen Osterkalenders.** München: Aschendorff, 1984.

STROBEL, August. **Ursprung und Geschichte des frühchristlichen Osterkalenders.** Berlin: Akademie-Verlag, 1977.

THACKER, Alan. **Bede and Augustine of Hippo: history and figure in sacred text.** Jarrow: St. Paul's Church, 2006.

THEGANUS. *Gesta Hludowici imperatoris*. In: TREMP, Ernst (ed.). **Theganus, Gesta Hludowici imperatoris** – Astronomus, *Vita Hludowici imperatoris*. Hannover: Hahnsche Buchhandlung, 1995. p. 168–277.

WACHOLDER, Ben Zion. Biblical Chronology in the Hellenistic World Chronicles. **The Harvard Theological Review**, v. 61, n. 3, p. 451–452, 1968.

WALLIS, F. **Bede**: Commentary on Revelation. Liverpool: Liverpool University Press, 2013.

WALLIS, Faith. **Why Did Bede Write A commentary on Revelation?** Edição: Peter Darby e Faith Wallis. Farnham: Ashgate, 2016. p. 23–45.

WARNTJES, Immo. A newly discovered Irish Computus: 'Computus Einsidlensis'. **Peritia**, v. 19-20, p. 61–64, 2005-2006.

WARNTJES, Immo. A newly discovered prologue of AD 699 to the Easter table of Victorius of Aquitaine in an unknown Sirmond manuscript. **Peritia**, v. 21, p. 254–283, 2010a.

WARNTJES, Immo. Computus as scientific thought in Ireland and the early medieval West. In: FLECHNER, Roy; MEEDER, Swen (ed.). **The Irish in early medieval Europe**: identity, culture and religion. London: Palgrave, 2016. p. 158–178.

WARNTJES, Immo. Introduction: state of research on late antique and early medieval computus. In: WARNTJES, Immo; Ó CRÓINÍN, Dáibhí (Ed.). **Late Antique Calendrical Thought and its Reception in the Early Middle Ages**. Proceedings of the 3rd International Confererece on the Science of Computus in Ireland and Europe. Turnhout: Brepols, 2017. p. 1–42.

WARNTJES, Immo. Irische Komputistik zwischen Isidor von Sevilla und Beda Venerabilis: Ursprung, karolingische Rezeption und Forschungsperspektiven. **Viator**, v. 42, p. 1–32, 2011.

WARNTJES, Immo. Köln als naturwissenschaftliches Zentrum in der Karolingerzeit: Die frühmittelalterliche Kölner Schule und der Beginn der fränkischen Komputistik. In: FINGER, Heinz; HORS, Harald (ed.). **Mittelalterliche Handschriften der Kölner Dombibliothek**. Edição: Köln: Erzbischöfliche Diözesan- und Dombibliothek, 2012. V. 38. p. 41–96.

WARNTJES, Immo. Seventh-century Ireland: the cradle of medieval science? In: KELLY, Mary; DOHERTY, Charles (ed.). **Music and the stars**. Mathematics in medieval Ireland. Dublin: Four Courts Press, 2013. p. 44–72.

WARNTJES, Immo. The argumenta of Dionysius Exiguus and their early recensions. In: Ó CRÓINÍN, Dáibhí; WARNTJES, Immo (ed.). **Computus and its Cultural Context in the Latin West, AD 300-1200**: Proceedings of the 1st International Conference on the Science of Computus in Ireland and Europe, Galway, 14-16 July, 2006. Turnhout: Brepols, 2010b. p. 40–111.

WARNTJES, Immo. The Computus Cottonianus of AD 689: A computistical formulary written for Willibrord's Frisian mission. In: WARNTJES, Immo; Ó CRÓINÍN, Dáibhí (ed.). **The Easter Controversy of Late Antiquity and the Early Middle Ages**: its manuscripts, texts, and tables. Proceedings of the 2nd International Conference on the Science of Computus in Ireland and Europe, Galway, 18-20 July 2008. Turnhout: Brepols, 2011. p. 173–212.

WARNTJES, Immo. The Final Countdown and the Reform of the Liturgical Calendar in the early Middle Ages. In: GABRIELE, Matthew; PALMER, James T. (ed.). **Apocalypse and Reform from Late Antiquity to the Middle Ages**. Abingdon, Oxon: Routledge, 2018. P. 51–75.

WARNTJES, Immo. The Munich Computus and the 84 (14)-year Easter reckoning. **Proceedings of the Royal Irish Academy**, v. 107C, p. 31–85, 2007.

WARNTJES, Immo. **The Munich Computus: Text and Translation.** Irish computistics between Isidore of Seville and the Venerable Bede and its reception in Carolingian times. Stuttgart: Steiner, 2010c.

WARNTJES, Immo. Victorius vs. Dionysius: the Irish Easter controversy of AD 689. *In*: MORAN, P'adraig; WARNTJES, Immo (ed.). **Early medieval Ireland and Europe: chronology, contacts, scholarship.** Turnhout: [s.n.], 2015. p. 40–96.

WŁODARZYK, Jarosław. Peripheral astronomy in the Correspondence of Johannes Hevelius: A Case Study of Maria Cunitia and Elias von Löwen. Versão polonesa. **Kwartalnik historii nauki i techniki**, v. 64, n. 1, p. 147–155, 2019.

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