

The Mass as the Liturgical Calendar and Computus

IRÈNE GULETSKY

During the second half of the 1990s, I had the good fortune to work on my doctoral thesis at the Hebrew University of Jerusalem under the supervision of two amazing scholars, professors Judith Cohen and Dalia Cohen (of blessed memory).¹ I remember with pleasure this time spent in intensely creative work, our meetings, fascinating discussions, and occasional heated debates on various issues to do with the philosophical and theoretical views of the Renaissance, the form of the Mass and methods of its analysis. Our opinions did not always coincide—a consequence of different schools and scientific traditions.

Judith was a disciple of Kurt von Fischer, and she, like her mentor, regarded the Mass primarily from the standpoint of the embodiment of the original source and the features of the counterpoint (a completely justified view).² This strictly academic approach favored by Judith, accounted for her rather cautious, even skeptical attitude to my ideas of analyzing the cycle form as a kind of structure and a crystal, which characterize this genre as a whole. Admittedly, Judith had sufficiently valid reasons for being skeptical. After all, it is a known fact that the Mass—the five-part Ordinary—was not performed as a single separate composition, but had been distributed through the liturgy, and thus, as many scholars would have it, could hardly be defined as a form.³ Judith would bring the flight of my ideas firmly back to earth, dampening my fervor by demanding proof for every assertion, making me perform meticulous work on the text and bibliography.

It was only after completing my PhD and continuing my work in this direction that I created a computer program based on the entered mathematical parameters of the cycle (the scale of its movements, expressed as the number of longs), that yielded a graphic depiction of its overall structure, i.e. the visual outline of its form.⁴ I described the findings of these studies (more than three hundred cycles of the fourteenth–sixteenth centuries) in my article “Manus Mysterialis: The Symbolism of Form in the Renaissance Mass.” It turned out that every single mass, rather

¹ I would like to thank Bonnie Blackburn, Leofranc Holford-Strevens, Elena Abramov-van Rijk, and Tanya Vendrov for their reading of this essay and their valuable comments.

² A wonderful example of this method, combined with thorough analysis of the style of masses, the historical background, and the manuscript itself may be found in Judith’s study “The Six Anonymous *L’Homme armé* Masses in Naples” (Biblioteca Nazionale, MS VI E 40, 1968, 1981). I must also note the brilliant edition of these masses published in 1981 under her editorship, including scholarly commentary and reconstruction of missing fragments from the last mass.

³ Discussion on this question is presented in my article “Manus Mysterialis: The Symbolism of Form in the Renaissance Mass,” *Music in Art* XXXIII/ 1-2 (2008): 70.

⁴ The program *Mamys*, © Irene Guletsky 2005.

than being some abstract form, constituted a recognizable sacral symbol—the symbol of the hand⁵ (Figure 1).



Figure 1. Computer pictures of the overall design in the 15th century masses:
a – J. Ockeghem *Caput*; b – A. Busnois *L'Homme armé*.

Before submitting my article to the journal, I naturally asked Judith to read it, awaiting her comments with hope and trepidation. Her reply did not come as a surprise. It was brief and

⁵ “Manus Mysterialis...,” 74-80.

crystal-clear: “It is impressive but I do not believe it.” (Almost à la Stanislavsky— “Do not believe!”⁶). The computer charts of 315 masses were not enough to convince Judith. She needed historical evidence—treatises, documents proving that the cycles were actually composed with that symbol in mind. Alas, I had no such evidence—not then, and not now, after fifteen years of research. They do not exist, for the simple reason that they probably never existed in the first place. However, I did manage to discover certain sound facts indicating that, in all likelihood, the Ordinary did represent the shape of a hand, as well as the possible reasons for the emergence of this unique form. The proposed article is a brief depiction of these discoveries. Thank you, Judith.

1. The Uniqueness of the Ordinary Form and some Relevant Questions

One of the great mysteries of the Renaissance Mass resides in its unusual (for musical genres), formal structure.⁷ The peculiarity and uniqueness of this form consists of its being not so much musical in our usual understanding, but rather musical-visual. Actually, it is a kind of a form-symbol.

This discovery immediately brings up a number of questions, particularly: why did the Ordinary get this form? What does it mean? How and when did it come about? Did this take place with the birth of the first polyphonic cycle—the Mass of Tournai—at the beginning of the fourteenth century?⁸ Was it perhaps in the mid-thirteenth century, with the emergence of the Franciscan and Dominican graduals, in which, for the first time, the movements were arranged in the order of their sequence from Kyrie to Agnus Dei?⁹ Or should it be dated to the twelfth century, the time of the earlier manuscripts, which contain movements of the Ordinary but still arrange them in a free fashion?¹⁰

In this case, we are facing quite a rare situation, when the existence of a highly significant artifact—if we consider the Mass to be a genre of the fourteenth–sixteenth centuries—finds no

⁶ The famous phrase used by renowned Russian theater director Konstantin S. Stanislavsky (1863-1938), whenever he found an actor’s performance unconvincing.

⁷ As is known, the Roman liturgy has a rather peculiar structure: it consists of two major parts—Proprium (particular, proper) and Ordinarium (regular, ordinary), which intertwine with one another as their sections constantly alternate within liturgy. The fundamental difference between these two parts is that the Proper is closely tied to the holidays and certain saints’ days of the Church calendar, constantly renewing its material. The Ordinary, on the other hand, represents a kind of antipode, as its movements are fixed and are repeated in their entirety in each service on Sundays and holidays throughout the year, and in a shortened version on weekdays. (See J.W. McKinnon, “Mass,” in *The New Grove Dictionary of Music and Musicians*, Vol. 16 [London: Macmillan, 2000], 58-65; and R. Steiner, “Mass,” in *The New Grove Dictionary of Music and Musicians*, Vol. 11 [London: Macmillan, 1980], 769).

⁸ On the Mass of Tournai see my article: “The Four 14th Century Anonymous Masses: Their Form; the Restoration of Incomplete Cycles; and the Identification of Some Authors,” *Acta Musicologica* 81/2 (2009): 167-80.

⁹ Willi Apel, *Gregorian Chant* (Bloomington: Indiana University Press, 1958), 420 n. 28; also Geoffrey Chew, “The Early Cyclic Mass as an Expression of Royal and Papal Supremacy,” *Music and Letters* 53 (1972): 254.

¹⁰ Dom Dominique Gatta, “Aux origines du Kyriale,” *Revue gregorienne* 34 (1955): 175. In these cycles, the Credo was still frequently assigned a separate place, which, according to Richard H. Hoppin, was probably due to practical considerations (“Reflections on the Origin of the Cyclic Mass,” *Liber Amicorum Charles van den Borren* [Antwerp, 1964], 86-87).

support in historical documents, since no medieval or Renaissance treatise or author has left any evidence regarding the graphic design of the Mass, or any questions related to it.

Here, I would like to address a number of facts that, I believe, have a connection with the appearance of this sign in the Mass. First, it is necessary to note the ritual-theological aspect: as is known, the symbol of the hand is a major biblical symbol,¹¹ which also plays a very significant role in the liturgical act and in the church interior as a gesture of blessing and a symbol of “glad tidings.”

In addition, despite the absence of any direct documentary reference to the hand sign in the form of the Mass, there exists abundant written evidence of the use of this graphic image in many other areas, from the Carolingian period and even earlier. The picture of the hand was quite common and served as a kind of cognitive map and one of the most popular mnemonic devices in most of the medieval sciences: from the school disciplines—grammar, rhetoric and arithmetic—and up to medicine, architecture, and jurisprudence.¹²

From the eleventh and, especially the thirteenth and fourteenth centuries, this graphic chart was widely used in the solmization theory (the so-called “Guido’s Hand”), as evidenced by the numerous authors and anonymous musical-theoretical writings of the time.¹³ However, no mention of any embodiment of this structure in the Mass has survived. The question of why the authors of the medieval treatises so thoroughly avoided any clarifications or even a hint of this topic is important and intriguing not only in itself. In fact, it contains a clue to the abyssal mysteries of the Mass—its hidden essence and methods of development of its mighty potential.

2. The Proper and the Ordinary: Some Features of their Connection with the Liturgical Calendar and Computus

The study of the first origins of the Ordinary, the early stages of the formation and evolution of its primary structures, and, above all, a thorough analysis of its textual proto-form is, in my opinion, the most fruitful and promising approach, and the one I have chosen to solve the issues at hand. Getting ahead of myself, I can say that the absence of documented historical references to the structure of the Mass is largely compensated for by the information that is contained in the textual proto-form itself, which, as we are about to see, constitutes the innermost essence of this genre.

However, before we proceed to analyze the text of the Ordinary, let us turn to medieval liturgical manuscripts containing the Antiphony (or a section of it—Gradual). As a rule, these manuscripts, apart from plainsong collections, consist of a series of books arranged in a certain sequence intended for the liturgical service. Such a series usually would incorporate a calendar, computus, the Gradual, including the Kyriale and books of liturgical texts—sacramentary and breviary. This, for example, is the content of eight St. Gallen, Stiftsbibliothek codices, Sang. 338-342, 376 and Kantonsbibliothek Vadiana, Vad. Slg. Mss. 292, 295, dating to the ninth–eleventh

¹¹ In kabbalistic interpretation, the hand of God is one of the names for the Almighty, referring to His will and various manifestations of His power. See also “Manus Mysterialis ...,” 89.

¹² Cf. Susan Forscher Weiss, “Disce Manum Tuam Si Vis Bene Discere Cantum: Symbols of Learning Music in Early Modern Europe,” *Music in Art* 30/1-2 (2005): 38-41, 71-72 n. 17.

¹³ Concerning this question see, for example, Karol Berger, “The Guidonian Hand,” in *The Medieval Craft of Memory*, ed. Mary Carruthers & Jan M. Ziolkowski (Philadelphia: University of Pennsylvania Press, 2002), 71-82; and also mentioned above, Forscher Weiss, “Disce Manum...”

centuries; Porrentruy, Bibliothèque cantonale jurassienne, Ms.18 (from the Abbey of Bellelay)—the first half of the twelfth century, and many others.

The content and structure of these manuscripts show that the calendar and the computus always appear in the opening section of the folio, preceding all other books. This is due to the primary importance of the specific day and festival date in the canon's choice of musical and non-musical texts for every church service. In this respect, the primary role of the calendar is perfectly obvious. As for the computus, its function is no less important, since the annual liturgical calendar simply could not have been composed without it. The computus is a special system of calculation, and specific tables that were used to determine the date of Easter, which, as we know, is not fixed but varies from year to year, since it was originally linked to the lunar-solar Jewish calendar. Consequently, the date of Easter depends on the lunar calendar and the computations of the solar-lunar cycles. This festival, in turn, determines the start of Lent and the preceding period (from Septuagesima Sunday), as well as the dating of the so-called "movable feasts" (Eastertide) that are dependent on the date of Easter.¹⁴ Essentially, therefore, the computus made it possible to define the festival dates of the rather long spring–summer period, being a fundamental, vital tool for designing the yearly liturgical cycle.

Philippe de Thaon discusses the importance of the computus for clerics in his treatise *Comput* (1113-19), dedicated to Honfroi de Thaon, chaplain to the royal steward Eudo Dapifer. The author lists various liturgical books in use during his time—psalters, antiphonaries, grahels, hymners, messels, tropers and leçuners, and wonders how the clergymen are able to use them without understanding computus—"the key to the liturgical year."¹⁵

At first glance, the church calendar, and more indirectly the computus, is connected to the Proper, since the choice of chants from the antiphony is determined directly by the specific date and festival. In this respect, the Ordinary actually appears to be completely independent of both the former and the latter, since its parts are constant¹⁶ and it is performed throughout the year.

Nevertheless, there are good reasons to assume that the relationship is quite close in this instance as well, although it is of a somewhat different sort. The Ordinary itself may very well be a particular type of the calendar and computus. This idea is based on the unusual concurrence between a series of numerical parameters of its text and some key astronomical and calendar data, concurrences that stand out even under a cursory analysis. Specifically, this refers to the following parameters:

The central movement of the Mass—the Credo—has 366 syllables. At the same time, it is virtually identical in length to the other four movements of the cycle—Kyrie + Gloria + Sanctus + Agnus Dei, which comprise 365 syllables.¹⁷ These numbers, as we can see, correspond to the astronomical solar year (both leap and regular), while the complete Mass of 731 syllables

¹⁴ For additional detail on the question of the liturgical calendar, computus and movable Christian feasts, see Bonnie Blackburn & Leofranc Holford-Strevens, *The Oxford Companion to the Year* (New York: Oxford University Press, 1999), 597-634; 801- 20.

¹⁵ Christopher Page, *Discarding Images: Reflections on Music and Culture in Medieval France* (Oxford: Clarendon Press, 1993), 129.

¹⁶ The Ordinary chants located in the Gradual section named *Kyriale*.

¹⁷ I have used the number of syllables of the full Ordinary text (intended for the *Missa solemnis*) cited by Marianne Henze in her book *Studien zu den Messenkompositionen J. Ockeghems* (Berlin: Merseburger, 1968), 34. Cf. this text in the article by Richard Sherr, "Mass," *The Harvard Dictionary of Music*, ed. Don Michael Randel, 4th edn. (Cambridge, Massachusetts, and London: The Belknap Press of Harvard University Press, 2003), 489-90.

corresponds to the zodiac year of Mars.¹⁸ Such concurrences, particularly when we are dealing with three-digit numbers, are unlikely to be accidental. Rather, they suggest that the Ordinary had a double or even triple function: externally, it represented an established sequence of sacred texts for the liturgical service; while internally it served as a sort of numerological code containing concealed information.¹⁹ Detailed analysis of the full text of the Ordinary corroborates this hypothesis. As we will see further on, the proto-form of the Mass constitutes a precise numerological system that unfolds in a strictly hierarchical order. This system is based on the principle of exact correspondence between the numerical values of the number of syllables in each part, as well as their total, and the main periods and festivals in the liturgical year, with particular focus on the period of Easter (Eastertide), including the most important numerical reference points for determining its date. Furthermore, the numerical values of the Ordinary (the aforementioned values of the Credo and the other four movements, their sum total and the full cycle) contain a significant amount of computus data. According to Pliny's astronomical system, they also correspond to the rotation periods along the zodiac circle by the Sun, the Moon, Mars, and the other planets of the Septener, which are associated with the vernal equinox, the start of the astrological year, and consequently the festival of Easter. Thus it appears that the Ordinary not only played the role of a calendar-computus, containing as it did a certain amount of important numerical information, but at the same time served as a *mnemonic device* used to compute and memorize this information.²⁰ Below, I offer a detailed analysis of the textual proto-form of the Mass, its structure and numerical values related to the liturgical calendar and computus.

3. The Liturgical Year and the Structure of the Proto-form of the Ordinary, Displayed by the Quantity of Syllables

3.1 The Liturgical Year

The Church year starts with Advent,²¹ and focuses on two major Christian feasts—Christmas and Easter. The annual cycle is divided into seasons, the main ones being Christmastide and Eastertide—the periods when Christmas and Easter, and the feasts associated with them, are

¹⁸ For information on the zodiacal period of planets see Bede, *The Reckoning of Time*, translated, with introduction, notes and comments by Faith Wallis (Liverpool: University Press, 1999), 34.

The day of the vernal equinox—21 March (sometimes 20 March)—is a reference point where the Sun ends its annual zodiac cycle in the Pisces constellation and begins a new cycle. As for Mars, it is the patron of Aries, which marks the start of this cycle.

¹⁹ The first time I expressed the assumption regarding this hidden function of the Ordinary was in the article “The Four 14th Century Anonymous Masses ...,” 170.

²⁰ Due to the enormous importance of memorization during the Middle Ages, every level and every sphere of the educational process, including clerical training, made wide use of mnemonic systems, both visual-graphic (tables, ladders, trees, rounds, houses, and hand graphs) and textual-poetic. Didactic songs and poems containing all kinds of scientific and scholarly information enjoyed considerable popularity (for example, the famous treatises by Alexander de Villa Dei devoted to algorism and computus (ca.1200). On this question see Mary Carruthers, *The Book of Memory. A Study of Memory in Medieval Culture*, 2nd edn. (Cambridge University Press, 2008); and also Anna Maria Busse Berger, *Medieval Music and Art of Memory* (Berkeley, Los Angeles and London: University of California Press, 2005).

²¹ From the Latin *Adventus*—coming, forthcoming. The beginning of Advent takes place at the end of November—close to the St. Andrew's day (30 November). The earliest date for the Advent is November 27th. This period lasts until Christmas.

celebrated.²² Located between them are the periods that are referred to as *tempus per annum* (or *per annum*), which means “through the year” or “throughout the year”.²³

During this time, the Sundays are simply numbered with the addition of the last feast from which they are counted (for instance, the third Sunday after Pentecost, or the second Sunday after Epiphany, and so on). In the event that the Sundays fall during a special season, for example during Advent or Lent, then alongside the Sunday number the specific period is also indicated (first Sunday of Advent, second Sunday of Lent).

Christmas and the holidays of the winter season are linked to the solar calendar, and therefore have fixed dates, while Easter, as mentioned above, depends on the lunar calendar, due to which its date is not fixed and has to be calculated for each year. Accordingly, the dates of all the other feasts during the given season are likewise mobile, hence their name—“movable” feasts. Thus, this combination of fixed and mobile dates reflects one of the most important features of the liturgical calendar. Highly significant for our further exposition is the length of each given season. We will therefore explore this subject in greater detail.

Advent—this period lasts for about three and a half to four weeks.

Christmastide—from the Eve of Nativity (24 December) until Epiphany (6 January)—12 days.

Per annum I – used to begin straight after Epiphany and lasted up to Septuagesima Sunday, having the length of two to eight weeks.

Easter tide (including Lent and the period of transition to it)²⁴—used to begin two and a half weeks before Lent—from Septuagesima Sunday, and concluded with Pentecost Sunday or with a Sunday that follows Pentecost—Octave of Pentecost²⁵ (the length of this period is shown in Table 1).

Table 1 Spring–Summer period of the “movable” feasts (related to Easter)

Special days and feasts preceding Easter	Days before Easter	Festival days that follow Easter	Days after Easter
Septuagesima	63	Rogation Sunday	35
Quinquagesima	49	Ascension	39
Ash Wednesday	46	Pentecost	49
Palm Sunday	7	Octave of Pentecost (Trinity)	56
Maundy Thursday	3	Corpus Christi ²⁶	60

²² The annual liturgical calendar (Western church year) discussed in the article, as presented in the *Book of Common Prayer*, is in fact the Roman Rite that retained its basic medieval form up until modern time. Certain changes, mostly to do with the numbering of Sundays, were introduced in the course of the reforms of 1962-69 undertaken by the Second Vatican Council. A detailed review of this material may be found in the book by Blackburn & Holford-Strevens, *The Oxford Companion ...*, 597-634.

²³ After 1969, these periods *per annum* are officially referred to as *Ordinary time*—a name possibly derived from the Latin *ordinale*, which means “ordinal/serial” or, in our case, “numbered.”

²⁴ As we can see, this period included not only Easter and the holidays that were dependent on it, but the entire period of Lent and prior transitional time, since the dates throughout this whole period were mobile.

²⁵ From 1334, the feast of Trinity began to be celebrated on Octave of Pentecost.

²⁶ This feast was initiated in around 1230, and was officially established by the Church in 1264.

Per annum II—used to begin straight after Pentecost (Whit Monday) or from Octave of Pentecost (more precisely, the day before, on Saturday evening, from Vespers), lasting all the way through to the first Sunday of Advent, embracing 21-27 weeks.

The continuity of the main periods, Advent—Christmastide—Eastertide, equals 23 weeks (28+12+119 = 159 days, i.e. nearly 23 weeks); therefore, 29 weeks remain for both *per annum* periods, as there are 52 weeks in a year.²⁷

In order to compose a basic calendar, an average quantity of numbered weeks was taken for both *per annum* periods, i.e. 5 weeks for the first and 24 weeks for the second. (Figure 2).



Figure 2 Liturgical year²⁸

3.2 Unfolding the Proto-form of the Ordinary

Let us now consider the textual proto-form of the Ordinary and its relationship to the liturgical year. The scheme outlined below shows the number of syllables in each movement, as well as the total number of syllables in some combinations of movements and the entire cycle.

<i>K</i>	<i>G</i>	<i>C</i>	<i>S</i>	<i>A</i>	<i>SA</i>	<i>KSA</i>	<i>KGSA</i>	<i>KGCSA</i> ²⁹
60	196	366	55	54	109	169	365	731

As we can see, the full text of the Mass has a total of 731 syllables. Furthermore, the structure of the complete text, as mentioned above, is divided into two halves as follows:

²⁷ The year may contain 53 Sundays but the Ordinary, as we shall see, was planned as an averaged model of the liturgical year.

²⁸ This figure is quoted from the Wikipedia article:

http://en.wikipedia.org/wiki/Liturgical_year#Western_liturgical_calendar In this figure, all the feasts that follow Easter are united under one yellow section of Easter. The periods *per annum* are marked as Ordinary time—as has been the custom since 1969.

²⁹ For complete cycle and reduced structures of the Ordinary, the following denotations are adopted onward: the complete Mass – M; KGSA – M4; KSA – M3; SA – M2.

1. The central, and the larger, movement contains 366 syllables, and is almost equal to the sum of all the remaining movements—Kyrie, Gloria, Sanctus, Agnus Dei—365 syllables. What follows is that the cycle as a whole may be represented as a structure:

$$1 + 4, \text{ i.e. } \textit{Credo} = \textit{Kyrie} + \textit{Gloria} + \textit{Sanctus} + \textit{Agnus Dei}$$

In this pattern, the Credo is a unit equal to the solar leap year. It apparently symbolizes the Sun, since it corresponds to the period of the Sun's journey around the entire Zodiac, while the sum of the other four movements corresponds to the regular solar year and—as we will see later—symbolizes the cycle of the liturgical year. This structure is unique in the fact that, while both halves have the same numerical value, they perform different functions, representing the annual period as an integral astronomical unit of time (the Credo), and as the same but earthly period, divided internally into increasingly smaller units of time (the other four movements of the Ordinary)—which is essentially the distinguishing feature of the calendar. Therefore, if the numerical value of each of the four movements (KGS A), as well as their sum, symbolizes specific times of the year, the Credo symbolizes the entire year. Indeed, the Credo, being the quintessence of the evangelical narrative, is performed once a week at every Sunday service throughout the year. Taking into account the semantics of this movement (the symbol of the Trinity and Christ), and the semantics of the other movements (the Kyrie and the Agnus—a prayer, the Gloria and the Sanctus—glorification and blessing), such a cyclical structure may be interpreted as the union of God and man, the bond between Heaven and Earth (the heavenly and the earthly years), world harmony—the union of the spiritual and physical worlds. As we will see further on, the principle of isolating the movement with the highest number of syllables from the whole, and then from each of the structure's remaining components, is the fundamental mathematical principle in the unfolding of the cycle, revealing its content in the strictly hierarchical unity.

2. If the first stage in the unfolding of the cycle contrasts to the same time unit—the annual period—in its heavenly and earthly definitions as it were, the next level of the structure focuses exclusively on the composition of the liturgical year, i.e. it depicts the overall structure of the calendar, accentuating two main seasons. Like the complete Ordinary, the remaining four-part cycle (without the Credo) is divided into two—but in this case unequal—parts. This time, it is the Gloria (the largest movement) that accordingly is being withdrawn—196 syllables, while the other movements—a group of three—KSA total 169 syllables. The resulting structure:

$$1+3; \text{ i.e. } \textit{Gloria} (196) - \textit{Kyrie} + \textit{Sanctus} + \textit{Agnus Dei} (169)$$

We cannot ignore the distinctive correspondence of the two resulting numbers—196 and 169—which consist of the same digits arranged in a different order.³⁰ This level depicts the division of

³⁰ Leofranc Holford-Strevens made a very interesting observation regarding these two numbers. As he wrote to me: “Writers on music use them in discussing durational proportions, once these become important, but retain Roman numerals for the generative ratios of intervals (learnt from Boethius). Of course, the relation you point out might have been more obvious in words, *centum nonaginta sex* and *centum sexaginta novem*. But to me they at once stood out as the respective squares of 14 and 13.”

the church calendar into two major periods: The Gloria—196 syllables—corresponds to a period of 196 days (28 weeks) from the beginning of the liturgical year (the first Sunday of Advent) until the end of Eastertide (Octave of Pentecost), while the sum of the KSA movements, made up of 169 syllables, represents the remaining part of the year, comprised of 169 days (24 weeks) between Octave of Pentecost Sunday and the beginning of Advent. Thus:

GLORIA 196—Advent—(Christmastide—per annum I—Eastertide)—Oct. of Pent.
KSA 169—Octave of Pentecost—(per annum II)—Advent

The above pattern shows that the first and longest period (196 days) includes the most important Christian festivals and events, such as (in chronological order)—Christmastide, Lent, Easter and its related feasts (Eastertide). This period accentuates the Gloria in terms of both numerical value and semantics, since, on the one hand, this movement is performed on Sundays and holidays, which are more significant during this period, and, on the other hand, it is carried out during both fasts (Advent, Lent) and even the weeks preceding Lent, starting from Septuagesima. The season “covered” by the Gloria begins with the Advent, and is associated primarily with the cycle of winter holidays—Christmastide. The Nativity story described in the second chapter of Luke is also related to the text of the Gloria (Angelic Hymn), as it provides the opening phrases of this movement (*Gloria in excelsis*).³¹

The second, smaller period (169 days)—*per annum II*, falls during the second half of summer and the autumn. Unlike the first one, it offers no major festivals. In this instance, too, the semantic correspondence between the isolated group of movements and the particular season is maintained, since this small cycle (KSA), as it were, underscores the more ordinary nature of the service and the season.

3. The third stage in the unfolding of the Ordinary is the division of the small three-movement KSA cycle, with the Kyrie isolated. This movement is slightly larger than the other two, and is, moreover, set at a distance from them in its location. Consequently, the resulting structure will be expressed as:

1+2, i.e. Kyrie (60) – Sanctus + Agnus Dei (109)

This level represents a further breakdown of the Church calendar, with the focus on the most important liturgical season of Lent, Easter and the following movable feasts. It shows a division into smaller periods, starting from Septuagesima Sunday up until the end of Easter. The Kyrie has 60 syllables, and corresponds to a time span of 60 days between Septuagesima Sunday and Maundy Thursday, i.e. until the start of Triduum³² (see Table 1).

The 60 “days” of the Kyrie is the period of Lent and the preceding two and a half weeks— the time of preparation for purification and atonement.

The numerical agreement between the number of syllables in the Kyrie and the given period is supported further by the text of this movement—a prayer *Kyrie eleison* that reflects the worshipper’s spiritual state and is the most important prayer during that time.

³¹ Luke 2:14. It is important to note that Gloria initially appeared specifically as a part of the Christmas service, and only later was adopted as a “fully-fledged” movement of the Ordinary (McKinnon, “Mass,” 62).

³² Triduum—the two concluding days before Easter and Easter itself.

The 109 syllables of the Sanctus–Agnus pair come close to the period of 106 days between Quinquagesima Sunday and Octave of Pentecost. Here it should be noted that in the thirteenth century, following the introduction of the Corpus Christi festival into the calendar, this small discrepancy disappeared. The 109 syllables of the Sanctus + Agnus became identical to the 109-day period between Quinquagesima and Corpus Christi.

Furthermore, in light of the fact that prior to the ninth century the Sanctus had 48 rather than 55 syllables, since the Hosanna at the end of its first section was only added in the ninth century,³³ the syllables in the Sanctus–Agnus pair accordingly numbered 102 (48+54) up until that time. This number was identical to the 102-day interval between the start of Lent (Ash Wednesday) and Octave of Pentecost, as well as the period between Septuagesima and Ascension.

KYRIE—60—Septuagesima—Maundy Thursday
SANCTUS—AGNUS—109—Quinquagesima—Octave of Pentecost (Corpus Christi from thirteenth century)
SANCTUS—AGNUS (prior to ninth century)—102—Ash Wednesday—Octave of Pentecost; Septuagesima—Ascension

4. The fourth level of structure is the division of the Sanctus–Agnus pair into two units:

1 – 1, i.e. Sanctus (55)—Agnus (54)

The movements are almost identical. These values display the same period of the church year as the preceding level, but in a more detailed fashion, accentuating the time gap between the festivals directly within Eastertide, namely:

The 55 syllables of Sanctus correspond to the 56 (55) days between Septuagesima Sunday and Palm Sunday³⁴ (the start of Holy Week); while the 54 syllables of Agnus Dei coincide with the 54 days between Maundy Thursday (the next celebrated date after Palm Sunday) and Pentecost. Moreover, the numerical values of both movements also mirror the 55-day period³⁵ between Easter and Octave of Pentecost. The shorter Sanctus, which contains 48 syllables, corresponded to the interval between Quinquagesima (the last Sunday before the start of Lent) and Easter, as well as between Easter and Pentecost.

SANCTUS—55—Septuagesima—Palm Sunday
AGNUS—54—Maundy Thursday—Pentecost
SAN (or AG) 55—Easter—Octave of Pentecost
SAN—48—Quinquagesima—Easter—Pentecost

The content of both movements—the glorification of God the Father and the Son (the paschal sacrifice), the blessing and the prayer—is exactly appropriate to the paschal period in the calendar and the location of both movements in the liturgy. Both are performed in the Eucharist: the first as the final doxology of the Preface, the second during the Communion (Fraction in the

³³ Pfaff, “Mass,” 773.

³⁴ If the Sunday itself is not included—as is sometimes the custom—it is 55 days.

³⁵ In the event that one of the Sundays is not counted.

early Middle Ages)—the holy Sacrament of the host and wine, symbolizing Christ’s body and blood, consecrated and shared by the congregation.³⁶

5. The next level of structure, focusing directly on Easter (the culmination of the liturgical year), consists of the division of the Sanctus into its two components: the first section of Sanctus (SI) and the Benedictus. This structure may be expressed tentatively as the division of the whole into two unequal sections that are interrelated as the golden ratio: 34:21.

Sanctus 1—a large section of 34 syllables—apparently represents the 35-day period on which Easter always falls, between 22 March and 25 April. Furthermore, the same number of days (35) is found between Easter and Rogation Sunday.

The Benedictus has 21 syllables, and is divided into two strophes: *Benedictus qui venit in nomine Domini*—14 syllables; and *Hosanna in excelsis*—7 syllables.

These three numbers of the Benedictus – 21, 14 and 7—form the quintessence of the entire calendar-computus, as they point directly at the date of Easter, namely, the Sunday immediately following the full moon—the 14th day of the lunar month (14 Nisan),³⁷ which comes after the day of the vernal equinox, 21 March.³⁸ The number 7 represents Palm Sunday (the start of Holy Week), which comes 7 days before Easter—the week during which the key events of the mystery of Christ unfold, and on which the first full moon after the equinox actually falls.

SANCTUS—34-35 days (22 March – 25 April)—the period of Easter

BENEDICTUS—21 (14+7)—Vernal Equinox (21 March)—Full Moon (14 Nisan)—Easter

HOSANNA—7—Palm Sunday—(Holy Week)—Easter

The text of Benedictus is related to Palm Sunday—the passage from Matthew (21:9)³⁹ that describes Jesus’ triumphant entry into Jerusalem, accompanied by the cheering of the crowd: *Hosanna in excelsis*.

6. The final stanza of the Benedictus—Hosanna—is, in turn, also divided into two parts—*Hosanna / in excelsis*, i.e. 3+4 syllables, providing a more specific depiction of the content of the Holy Week. Here, the last phrase—*in ex-cel-sis*—is accentuated in both the number of syllables and the degree of significance. Its four syllables correspond to the final four, most dramatic days of Jesus, and to the most emotional days of the liturgical year.

7. Further, the final phrase loses the preposition “in,” leaving only the word *ex-cel-sis*, made up of three syllables corresponding to the three days of the Triduum—Good Friday, Holy Saturday and Easter.

8. And finally, the very word *excelsis* may also be broken up into syllables, as:

2 + 1, i.e. ex-cel/ sis

³⁶ The origins of the texts of the first section of Sanctus are: Isaiah (6:3) and Revelation (4:8); Agnus Dei—John (1:29).

³⁷ Nisan (Heb.)—is the first spring month and the first month of the year in the Jewish calendar. 14 Nisan is the full moon on the first night of the Jewish Passover, to which Christian Easter was originally linked.

³⁸ The day of the vernal equinox usually falls on 20 March, and on 21 March only in leap years. During the Middle Ages, however, according to the Julian calendar, the equinox fell on 21 March. The practice of determining the date of Easter based on the above days was started after the Council of Nicaea. (See Sachiko Kusukawa, “A Manual Computer for Reckoning Time,” *Writing on Hands: Memory and Knowledge in Early Modern Europe*, ed. Claire Richter Sherman & Peter M. Lukehart [Washington: The Trout Gallery, Dickinson College and The Folger Shakespeare Library, 2000], 30.)

³⁹ Matthew, in turn, quotes here a verse from Psalms 117:26 (originally 118:26) that mentions the coming of the Messiah. It is important to note that this Psalm is performed on Easter.

This accentuates the last syllable⁴⁰—the concluding unit—and delineates the border between the grief of the final days of the Lent, and the joy of the paschal Sunday, which connects man to heavens (*excelsis*). This border, as it were, sets the festival apart from the entire yearly calendar, in which Easter is in fact its focal point.

Moreover, it is necessary to add another two symmetrical combinations that, even though unrelated to the aforementioned principle of the unfolding of the Ordinary, still introduce additional meanings to the calendar. These are:

Kyrie—Agnus and Gloria—Sanctus

The extreme movements of the Mass – Kyrie–Agnus, comprise 114 syllables in total, which correspond to the outermost points of Eastertide—the interval between Septuagesima Sunday and Pentecost (114 days, if we include both Sundays). The middle movements—Gloria–Sanctus—total 251 syllables, representing the period between Pentecost and Septuagesima Sunday.

As we can see, both pairs divide the liturgical year into two periods in a way that highlights Eastertide. This division offers an alternative to the division of the calendar cycle as featured in the structure examined above: *Gloria—M3*. Here, the calendar cycle is represented from the start of the year to its end, with both festival periods accentuated:

Advent—Octave of Pentecost / Octave of Pentecost—Advent (per annum II)

Therefore, the Ordinary calendar shows the possibility of two different approaches to the division of the yearly cycle: one of them sequential, the other accentuating the main festive season. Table 2 presented below demonstrates all the data of the Ordinary calendar (liturgical year) obtained above.

Table 2 The Ordinary as the liturgical year

No. of struct.	Name of the movement	Syllables - days	Calendar period
1	The full Ordinary (M)	731	2 solar years
2	Credo	366	A solar year
3	KGSA (M4)	365	A calendar year
4	Gloria	196	Advent—Octave of Pentecost
5	KSA (M3)	169	Octave of Pentecost—Advent (per annum II)
6	Kyrie – Agnus	114	Septuagesima – Pentecost
7	Gloria – Sanctus	251	Pentecost – Septuagesima
8	Kyrie	60	Septuagesima – Maundy Thursday
9	Sanctus – Agnus	109	Quinquagesima – Octave of Pentecost or Corpus Christi (from the thirteenth century on)

⁴⁰ The last syllable, which concludes a movement, is always more significant. In the musical manifestation of the Ordinary, it usually is highlighted by the concluding (double) long.

10	Sanctus – Agnus (prior to the ninth century)	102	Ash Wednesday—Octave of Pentecost or Septuagesima— Ascension
11	Sanctus	55	Septuagesima – Palm Sunday; Easter – Octave of Pentecost
12	Sanctus (prior to the ninth century)	48-49	Quinquagesima—Easter; Easter—Pentecost
13	Agnus Dei	54	Maundy Thursday—Pentecost
14	Sanctus I	34-35	Paschal period—35 days: 22 March – 25 April; Easter—Rogation Sunday
15	Benedictus	21	Vernal equinox—21 March
16	Bened. qui venit	14	The day of the Full Moon—14 Nisan
17	Hosanna	7	Palm Sunday—7 days before Easter
18	in excelsis	4	Maundy Thursday—Easter Sunday
19	Excelsis	3	Triduum (Good Friday—Easter)
20	excel -	2	Good Friday, Holy Saturday
21	Sis	1	Easter Sunday

Let us therefore pinpoint the main highlights of this table/calendar:

1. The full Ordinary (M)—731 syllables

Two solar years (the leap year and the regular one).

2. Credo—KGSA (C-M4)

366 365

The juxtaposition of the astronomical and the calendar solar year.

3. Gloria—KSA (G-M3)

196 169

The two main periods into which the liturgical year is divided: Advent—Octave of Pentecost (the period containing the main Christian festivals); Octave of Pentecost—Advent (*per annum II*).

4. Kyrie—SA (K-M2)

60 109

The periods of Lent and Eastertide.

4.1 Kyrie – Agnus; Gloria – Sanctus (symmetrical structures)

114 251

The period of Eastertide (KA)—the most important season of the liturgical year, in contrast to the remaining portion of the calendar (GS) from Pentecost to Septuagesima.

5. Sanctus – Agnus Dei (S – A)

55 (48) 54

Further breakdown of the paschal period: from Septuagesima until Palm Sunday, and from Easter until Octave of Pentecost.

6. Sanctus 1—Benedictus (S1 – B)

34 21 (14+7)

identifying the festival. The flawless logic of this pattern—the movement from the general to the particular—represents the combination of a scientific-philosophical and purely practical, didactic method of thought that characterizes medieval treatises devoted to the computus.

The term “Ordinary” itself probably derives from the Latin adjective *ordinale*—orderly, regular, as well as numbered—or the word that is similar in meaning, *ordo*—order. In any case, within the given context, the second meaning of the term “Ordinary”—numbered—could easily have been taken to mean a calendar, since during the *per annum* periods the weeks were simply numbered.

The principle of cyclical recurrence that forms the core of the liturgical calendar also provides the foundation for the Ordinary of the Mass. It is this very principle that was the determining factor in the future evolution of this genre in the direction of unity and integrity of composition.

4. The Origin of the Manus-symbol of the Mass (instead of Conclusion)

As we can see, the Ordinary of the Mass represented nothing more than an unfolded numerical code of the calendar-computus, whose essential structure resembled mnemonic tables for retaining information. Since this information was vital for the daily activity of the clerics, it is no wonder that such a flexible and convenient device was created for its memorization. From its inception—in the period of late antiquity—the computus was connected to the calendar in the most direct fashion. Both of these spheres, in turn, were closely related to astronomy, since knowledge of the location and periods of planetary movement and of lunar-solar cycles served as the actual basis for the composition of computus tables. All three disciplines were an essential part of the curriculum in the senior grades of monastery schools, as well as universities, and used one of the most common mnemonic icons in the Middle Ages—the diagram of a hand, which was first utilized for this purpose in Bede’s treatise *The Reckoning of Time (De Temporum Ratione)* in 725.

In chapter 55 of this treatise, entitled “*The cycle of both epacts, and how to calculate them using fingers,*” Bede explains how to compute the lunar and solar epacts with the help of the left hand or of both hands. He does not illustrate his text with a drawing of a hand, probably on the assumption that this “visual aid” was readily available to everyone. The hand diagram itself made its first appearance later: it was inserted by a scribe into the margins of this chapter in an eleventh-century manuscript *Oxford St John’s College 17*, fol. 98r-v (Figure 3).

Shortly after it was introduced, the treatise gained enormous popularity, becoming an essential textbook and practical manual, as well as a scholarly text for many generations of students, theologians, and clerics.⁴³

⁴³ The popularity of this work is evidenced, among other things, by the fact that during the period from 795 to 825 alone (i.e. 70-100 years after its appearance), there were no fewer than 45 copies in circulation (see J. Hilton Turner, “Roman Elementary Mathematics: The Operations,” in *The Classical Journal* 47, 2 (Nov. 1951): 63.



Figure 3. The first appearance of the Bede's hand. The pictures of hands were added into the chapter of the Bede's treatise by a scribe in the 11th or beginning of the 12th century. Oxford. St John's College. MS 17; fol. 98v. Bede, *De Temporum Ratione*: Oxford, St John's College MS 17. 2007. McGill University Library. Digital Collections Program. <http://digital.library.mcgill.ca/ms-17/folio.php?p=98v> (accessed August 15, 2015).

It was during this period, following the appearance of the treatise—from the end of eighth to the beginning of ninth century—that the proto-form of the Mass, its text, crystallizes into its final shape.⁴⁴ Thus it is quite logical and understandable that the Ordinary, being a textual and mathematical *computus mnemonic*, was designed, at Bede's suggestion, in the shape of the left hand, while its five movements accordingly mirrored the five fingers with their numerical calendar meanings. That is to say: the thumb corresponds to the Kyrie and to Lent, or, more strictly, to the period between Septuagesima Sunday and Maundy Thursday (60 syl./days); the index finger—to the Gloria and to the calendar period from Advent to Octave of Pentecost (196 syl./days); the middle finger—to the Credo and to the solar year (366 syl./days); the ring and the little finger—to the Sanctus and Agnus Dei and to the corresponding periods of Eastertide (55,54 syl./days) – before Easter (from Septuagesima until Palm Sunday) and after it (Easter – Octave of Pentecost); the joints of the ring finger—to the Sanctus I, Benedictus, and Hosanna and their meanings—35-day Easter period, the vernal equinox, and Palm Sunday⁴⁵; and, finally, the palm represents the whole Mass, two solar years, the zodiacal period of Mars, and the calendar-computus mnemonic device as well. Therefore, to achieve both its didactic and practical purposes, the proto-form of the Mass merged the liturgy, theology, the calendar, and the computus with the quadrivial disciplines— arithmetic, astronomy, and music into a single unified sacral-mnemonic system, using one and the same image, which essentially became the symbol of its form. This symbiosis played a crucial role in both the establishment and the future evolution of the genre for the next 800 years of its history. This same symbiosis, which marked the Mass as a transcendental and occult genre, also accounted for the complete silence maintained by musical theorists in respect of its form.

⁴⁴ Some movements, namely, the Sanctus and the Gloria (in the Latin translation), possessing calendar and computus numbers, had been already introduced into the Mass by the eighth century, but the process was completed only a century later. On the history of the Mass and the formation of its text see Maurus Pfaff, "Mass" (New Grove, 1980), 773; McKinnon, "Mass," 61-62.

⁴⁵ It might be that not only joints but also the tip of the ring finger were used to represent four (instead of three) Sanctus divisions and, respectively, four crucial computus numbers, namely: SI, Benedictus, BI and Hosanna, which meant a 35-day Paschal period, the day of the equinox, the 14th day of Moon (14 Nisan) and Palm Sunday.