On the Grammar of Notre-Dame Notation[*]

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1. If the origin of Notre-Dame music in Medieval liturgical traditions is a matter of undoubted fact, the historical process that led to the birth of rhythm – or rather, the birth of that characteristic trait which seems least compatible with the centuries-old performance practice of *cantus planus* – is anything but clear to musicologists. It is generally assumed that rhythm was introduced into sacred music from the outside, that is, by means of a conscious and deliberate intervention on the part of musicians active around the middle of the twelfth century. According to this scenario, these musicians would have noticed the existence, in a context totally foreign to the art of discant, of a new and revolutionary style founded in the periodicity of accents; recognizing its musical possibilities, they imported it wholesale into the realm of sacred polyphony. If this reading of the evidence is indeed correct, then it should be quite feasible to trace the origins of rhythm back to the world outside liturgical traditions.

1.1. Musicological research has endeavored to explain the origin of rhythm by positing the existence, throughout the Middle Ages, of a hidden popular and rural musical tradition that was distinctly accentual – as might be typical, for instance, of dance genres – and altogether different from the music performed in the monastic cultural centres around which the life of the medieval villages gravitated. This *dance music*, or so the explanation goes, provided Parisian masters with the model to follow when they set out to breathe fresh air into the supposedly morose liturgical rites. Yet the emerging Gothic society could scarcely have felt a particular need for such music; it recognized itself perfectly well in the ceremonies that were already in place. Indeed, in the eyes of modern scholars the liturgy of the Gothic period compares quite favorably with the architectural beauty of the great cathedrals. The spirit of Notre-Dame must be defined as urban, exhibiting a mentality quite foreign to some putative attraction to the spirit of the countryside; indeed, the culture of the early thirteenth century was so refined as to render inconceivable the idea that a crude and popular art would have exercised particular appeal, let alone inspired decisive musical developments.[1]

1.2. Still more generally, it is assumed that Notre-Dame rhythm must have possessed the distinctive characteristics of a system of meter; that the musical values were organized in patterns that were recurrent, rigid, and repeated with unchanging

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[1] The theory of the popular origin of polyphonic rhythm was generally accepted by scholars until a few decades ago. Cfr. A. HUGHES, *Music in Fixed Rhythm*, in: *NOHM* 2 (Oxford University Press 1954), p. 318: "Modal rhythm is nothing more than the embodying in formal music of natural regular rhythms common to all mankind, of which the dance-rhythms stand foremost, because they are so intimately connected with music".

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regularity. The Parisian masters, having decided to renew and enrich the polyphonic tradition by introducing rhythm, would have realized, according to this view, how difficult it was to reconcile their compositions, and the legacy of the monophonic tradition as a whole, with this new accentual trend: once they had decided to complete the project of innovation, they supposedly sidestepped that difficulty by unanimously settling on a number of rhythmic formulas, and limiting their application to obsessive repetition. In reality, however, the idea that Notre-Dame rhythm was also a *modal* rhythm lacks clear proof in the medieval polyphonic repertory itself: in the oldest pieces the metric trend is, on the contrary, irregular and full of apparent exceptions, thus testifying to a contrapuntal technique that was light, flexible, and intricate; Notre-Dame musicians seem to have had no need of elementary schematizations in order to guarantee the regular rhythmic flow of their melodies. The musical notation, which is completely devoid of any kind of metric connotation, seems to bear this out: it does not even utilize barlines, which in those times were widely employed in many other types of vocal performance notation.

The attempt to reconcile polyphonic floridity with meter is neither recent nor accidental; on the contrary, the legitimacy of that connection was accepted in didactic traditions throughout the Middle Ages. Within the realm of the *quadrivium*, one of the most important chapters in the study of music lay precisely in the treatment of Greek and Latin poetic meter: it is not surprising that famous writers like Johannes de Garlandia[2] or Walter Odington,[3] proceeding from these premises, presented the theory of *modi ritmici* as best suited for explaining the mechanism of polyphonic rhythm. Yet the question is actually even more complex than that: viewed against the surviving musical sources, the writings of these authors seem decidedly confusing and contradictory. Their testimony, which is comparatively late in any event, does not hold up and in no way resolves all the questions raised by the rhythmic compositions; modern transcribers who take their inspiration from *modal theory* have not been able to achieve results that met with unanimous acceptance among their colleagues.

The genres of the hymn and sequence, cultivated and developed in the same centers that constituted the cradle of polyphony, confirm with supreme irony that a rhythmic tradition – one that was, moreover, exquisitely metric – had already been present for a long time in Medieval liturgical music. In this case, too, we are dealing with an exclusively literary tradition, made possible – and this is a very important point – by the categorically syllabic character of the music that clothed the text: this is not comparable at all, then, with the extended melismatic passages of the Notre-Dame compositions, which are often so expansive as to spin an entire musical piece out of the ornamentation of a single syllable. Polyphonic rhythm operates in a context very different from that of

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[2] *De mensurabili musica*, ed. E. Reimer (Wiesbaden, F. Steiner 1972).

[3] *Summa de speculatione musicae*, ed. F. Hammond = CSM 14 (American Institute of Musicology 1970).

monophony; the earliest examples of rhythmic polyphony are so far removed from syllabic style that it is hard to hypothesize their origin within the sphere of influence of the hymn, the sequence, or indeed any metric system borrowed from poetry; if the idea of meter came from a literary context, then its supposed insertion into the realm of polyphony can only be thought of as a self-conscious intervention, deliberately introduced from the outside, which, again, is contradicted by the musical sources.

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1.3. Without hope of being able to link rhythm, modal or otherwise, to an external source, musicological research has lastly tried to trace the generative idea back to a putative need imposed by polyphonic performance practice itself: as a consequence, the Notre-Dame school has often been credited with a fundamentally transitional and experimental historical role. This notion has been pushed well beyond the natural process of stylistic elaboration of which this school was the protagonist, it has placed undue emphasis on what was at bottom merely a normal progressive acquisition of a compositional technique that was continuously in the process of being perfected, and it has deliberately downplayed the significance of the vast knowledge of expressive and contrapuntal capabilities mastered by the masters of the Ars Antiqua. According to this view, rhythm would have been just a simple expedient, adopted of necessity for the prosaic purpose of making the voices "go together" when the polyphonic textures of Leoninus and Perotinus underwent their immense growth.[4]

Rhythm would have originated, according to this interpretation, as a makeshift solution; initially greeted with understandable scepticism, it would have become steadily more binding over time. In this way singers and composers would have ended up getting used to accents, and having systematic recourse to them, even in passages that were objectively without interpretive difficulties – and all this with the sole aim of successfully understanding one another. This hypothetical outline seems implausible, however, and is in any case of limited relevance to the development of vertical harmony in the Notre-Dame school: certainly it would seem more logical to hypothesize that the growth in the number of voice-parts, and in harmonic awareness, would have advanced in equal measure with the progressive clarification of rhythm. The relationship of cause and effect which seems to link polyphonic texture to rhythm is anything but rigid and irreversible: without doubt, it was only the new certainty offered by a regular accentual

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[4] This theory is generally accepted in modern non-specialist handbooks. Cfr. U. MICHELS, *Atlas zur Musik* 1, it. ed. *Atlante di musica* (Milan, Mondadori 1982), p. 223: "The realisation of ever more complex polyphonic structures forced musicians of the Notre-Dame school to introduce a notational system that allowed the duration of sounds to be established with precision and without ambiguity, thereby managing temporal relationships. On this occasion, just as previously with Gregorian chant, the musician had to return to the rules that governed literary meter, adopting these *tout court* as the basis of musical rhythm." A similar formulation is suggested also by theories that have posited a metric order in Gregorian chant, and which perceived in Leoninus a brilliant restorer of that old practice. Cfr. W. WAITE, *The Rhythm of Twelfth-Century Polyphony. Its Theory and Practice* (New Haven, Yale University Press 1954), p. 20–27.

lilt that allowed composers to push their compositions to levels of complexity that had been unthinkable only a few decades earlier.

The demands of vertical synchrony are naturally legitimate, and the scribe must. deal with them in the most resourceful way possible: through the subdivision of melismas into the *ordines* that will be typical of the more mature style, the Notre-Dame school learns to exploit the principle, so useful to singer and composer alike, of the parallel disposition of ligatures.[5] As we will see, division into *ordines*, on the one hand, and graphic parallelism, on the other, are two far more simple and effective solutions than the intricate sets of rules that would have been necessary if one wanted to perform or transcribe Ars Antiqua polyphony while adhering closely to the doctrine of the rhythmic modes.

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1.4. The theory of the external origin of rhythm is undermined not only by the lack of a plausible origin for rhythm itself. The musical documents at our disposal also force renewed reflection on this issue, reflection of a different kind than has been exercised so far, but that is of no less interest all the same.

If the new manner of singing had been developed single-handedly by some unknown innovator, then its extremely rapid and widespread dissemination to all cultural centres in Europe must surely appear perplexing: for it is hard to see how it would have been possible to teach singers throughout an entire continent to tackle the secrets of the new art, especially of an art so intricate and arcane as that of the rhythmic modes, objectively speaking, was. If, however, the new art must be thought of as the product of painstaking development within a restricted circle of innovators, then the difficulty of explaining its dissemination becomes even greater: for remote centers could only have been in possession of half-truths, of provisional solutions, of points proved and refuted – the exact opposite of the coherent and unified development to which the extant musical documents appear to testify.

As if this were not enough, all theories which presuppose an external origin for rhythm, whether modal or non-modal, must inevitably run into an even greater difficulty: the unbridgeable gap between it and the evidence of the notation itself. The square notation of the twelfth century was so smoothly and naturally adapted to rhythm, with only minimal modification, as to make it seem inconceivable that so complex a system as that of rhythm was imported from the outside. More than any other avenue of enquiry, the analysis of the script forces us to recognize that there is a basic continuity between the latest neumatic families, the writing of the first polyphonic forms, and the notation of the Notre-Dame school. Rhythmic notation, in short, appears

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[5] We are dealing here with the "rule of ligature agreement" already mentioned by W. Apel, who on the other hand attributes the origin of this idea to M. F. Bukofzer. Cfr. W. APEL, *Die Notation der polyphonen Musik* (Leipzig, B & H 1962), p. 260. This book contains reproductions in facsimile of some of the musical examples discussed in the present article.

to have been simply the natural continuation of previous methods of notation: it is hard to avoid the conclusion, in short, that the origin of rhythm itself should also be sought in the performative meanings which square notation was capable of expressing around the middle of the twelfth century.

1.5. Still, this deduction, which might seem nothing if not obvious, has recently run into a serious difficulty: the theory of Gregorian chant, for all the thorough investigation on which it is based, has never succeeded in offering clues to the process by which monophonic chant would have brought forth polyphonic rhythm. To modern scholars, Gregorian and modal rhythms appear as two genres that are totally distinct: Gregorian rhythm, whether read in mensural or Solesmes-style accentuation, seeks to be as respectful as possible of the written neumes and their original accentuation; modal theory, on the other hand, is exclusively dedicated to the formulation of rhythmic modules that must ultimately rob those same neumes of any accentual connotation. An unbridgeable gap separates these two conceptions.

The polyphonic rhythm of Notre-Dame cannot therefore have originated in the Gregorian tradition, for that hypothesis lacks support in the pertinent theoretical systems; neither could it have come from the outside, for the notation itself implies continuity precisely with that same tradition. Between pre-Notre Dame and Notre-Dame, Medieval musical practice seems to break the thread of this very continuity in inexplicable fashion; while the orthography remains substantially unaltered, the presuppositions that regulate performance seem to change all at once, with so sudden a move that the idea of the external origin of rhythm, however unsustainable in itself, has kept imposing itself on modern scholars.

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1.6. The connections between Notre-Dame style and later music are moreover just as hard to understand: the points of contact between the rhythmic modes and mensural theory, which ought to derive its own conceptual presuppositions from the same modes, are extremely weak. The case looks even stranger if one considers that both Johannes de Garlandia and Walter Odington already devoted a large portion of their treatises to single notes and to the theory of *ligatures*: it is apparent from the tone of their discussions that the old performance practice had almost completely disappeared, due surely to the emergence of the new system. Still more surprising is the fact that in the writings of both theorists the presentation of the argument is totally clear and practically devoid of inconsistency: the new theory seems to be another miraculous apparition, perfectly formed in all its particulars from its very first appearance, as if it had never required any kind of technical or conceptual development.[6]

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[6] *De mensurabili musica* cit., p. 44–51: Sequitur de repraesentatione figurarum sive notularum; Sequitur de regulis figurarum ad invicem ligatarum. *Summa de speculatione musicae* cit., p. 135–137, Pars Sexta, cap. 8–9: De ligaturis; De valore ligaturarum. Two treatments already perfectly equivalent, even in the order of their arguments, in the form

In this case, too, modern scholars been unable to escape the postulate of a sudden change in thirteenth-century performance practice, now coinciding with the decline of the Parisian school: a change which has not received particular attention, but which could very well have been more widespread, and perhaps even better documented, than the previous one. This second conclusion has had the effect of completing the historical isolation of Leoninus and Perotinus, depriving their art of contemporary ancestors and heirs. That art has thus been turned into a kind of curious island situated between two firm realities, monophonic and mensural, which could scarcely be more different from one another. The Gregorian singer knew neither meter nor rhythm nor the value of notes: the singer of the mid-thirteenth century had already moved beyond the secrets of the metrical art, and had mastered with ease both rhythm itself and the distinction between *longa* and *brevis*. The Notre-Dame singer, who occupies an intermediate historical position between the two, is generally credited with a secure command of meter, and thus with the very system that has no apparent relation with either its past or future. Scholars do, however, allow him at least a little familiarity with rhythm and the measuring of values, thereby seeking to qualify the second of the two ruptures that appear to isolate the Ars Antiqua; one still prefers to posit a bridge, however shaky, towards the more easy side of the thirteenth-century musical art.

[155]   1.7. The only escape from this seemingly impossible situation must lie in the complete reconsideration of the theoretical conceptions on which we have based our knowledge of twelfth-century music. The transition from Gregorian to rhythmic style, and from the latter to mensural style, must be imagined as a gradual and continuous one; it is vital to repair the ruptures that have broken, at two points, the continuity of Medieval performance practice.

First of all, it is necessary to withhold judgment as to the mensural nature of Notre-Dame rhythm: we should not uncritically accept the premise that singers in this period were already able to recognize the values of notes; for it is possible that they regulated the scansion of accents according to some other principle. This consideration opens the first avenue towards Gregorian chant, a genre notoriously indifferent to the precise and mechanical computation of durations; at the same time, however, it does force us to clarify the circumstances in which polyphonic rhythm could have been worked out, within a matter of decades, into a theory that was conceptually so different from mensural theory.

Neither is it possible to accept without demur the thesis that rhythm as such must already have existed as a preconceived organic system; there is no reason to assume that rhythm existed before melody, nor that a composer should have taken account of it from the moment he began to formulate his own musical ideas. Rather than being the

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that shall be adopted by Franco of Cologne. Cfr. *Ars cantus mensurabilis*, ed. G. Reaney – A. Gilles = CSM 18 (American Institute of Musicology 1974), p. 43–51, cap. 7: De ligaturis et earum proprietatibus.

regulating principle of the melismatic flow, Notre-Dame rhythm could very well have been a by-product, perhaps not even an intentional one, of a particular type of accentuation already implicit within the notation itself.

It is, in short, necessary to formulate the hypothesis that Notre-Dame rhythm, especially with regard to its conceptual foundations, did not contain any metric component; only under such conditions is it possible, at last, to conceive the possibility that the polyphonic style could have been derived from Gregorian neumatic writing. The first consequence of this consideration would be the definitive rejection of modal theory; and the inevitable corollary would be a provisional postponing of judgment on the equivocal testimonies offered by theoretical sources. A new explanation of the mechanisms that regulated Ars Antiqua notation should in any case permit a reexamination of those later reports, perhaps favoring their resituation in a more appropriate historical and cultural context.

1.8. The decisive step in formulating an answer to these questions involves the abandonment of some principles already deemed fundamental within the sphere of Gregorian interpretation. The very recent *semiology* of the school of Dom Cardine now offers scholars the opportunity to examine the panorama of Medieval music from a new and quite unexpected perspective: the last twenty years have brought an unanticipated broadening of the field of action of Solesmes research. Thanks to the results of Gregorianists,[7] the theoretical edifice of neumatic notation has extended its influence to previously unthinkable areas, freely drawing the elements in favor of either the oldest writings or the ones that are more evolved in a diastematic sense.[8] The chronological [156] confines of Gregorian theory are now very close to those of the first forms of discant; the data at our disposal finally permits us to suggest an original connection between sacred monophony and polyphonic rhythm, that is, to discover among the conclusions of the Gregorianists a key which allows us not only to explain the origin of polyphonic rhythm, but also to interpret its writing with greater ease.

2. After the ninth century, neumatic notation develops primarily toward the conquest of diastematia: the singer, attracted by new musical genres, no longer masters the traditional melodic legacy with the ease of former times, and needs a crutch to aid his memory. Writing becomes simplified, loses the letters and the episemata, no longer distinguishes interpretive niceties, and becomes more and more square and uniform; the melodic formulas are beginning to undergo increasing corruption. By the beginning of the twelfth century, notation was fully arranged on the stave; to be sure the performer was no longer able to express the nuances which had characterized the repertoire originally, but he had gained the ability to read any musical piece with ease,

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[7] Cfr. the preface to the *Liber Hymnarius* (Paris-Tournai, Desclée 1983), p. VII–XVI.

[8] Cfr. R. FISCHER, *Epiphonus oder Cephalicus?*, in: *Studi gregoriani* 3 (1987), p. 15–29; see also, in the same issue, the tables on p. 143–157 and 169–190.

even at first sight. Newly-composed music from this period shows that neume groupings tended to fracture in ever smaller units, yet it is apparent from the liturgical manuscripts that notators never felt any uncertainty when they translated the old neumes into *ligatures*: the principles which regulated rhythmic articulation thus remained those of the tradition. The key which allows us to understand the historical developments is contained in this conclusion, and still more in the principle – by now definitively established thanks to semiologic studies – of the original *terminal articulation* of any neume. We are not able to say wherein exactly might consist this articulation around the middle of the twelfth century, and to what degree it would have departed from the original value that had been legitimate within the Gregorian aesthetic; yet we can affirm with relative confidence that the frequent and regular repetition of this articulation, whatever its original significance, was bound to facilitate its transformation into rhythmic accent. The indispensable condition for accomplishing this historic transformation was the progressive breaking of the ligatures, or rather the process that ended in assigning the space of a single accent to every neume; from that moment, the principle of articulation had been modified without difficulty while acquiring a new accentual meaning. To put it briefly: *the final note of every ligature is accented; the notes of the preceding ligature must all be considered part of the upbeat, and they subtract part of the value from the preceding accent, and in some cases the entirety of that value.*

[157]   2.1. *Two-note ligatures*

The second note is accented; the first note takes away one-third from the preceding accent.

*Benedicamus Domino*
F f. 87v–88
Ordo 29

Leoninus
Alleluia *Pascha nostrum*
F f. 109r
Ordo 26
For the three-note ligature cfr. 2.2.

According to the theory of the rhythmic modes, this last figuration 3 2 2 2 . . . is the only one that correctly denotes the first mode; in reality the example before it belongs just as justifiably to that same category, as we will see later on (cfr. 5.1).

A generation later, Ordo 26 of Leoninus's Alleluia would be turned into a syllabic motet; comparison between the two different manners of notation offers an interesting opportunity to identify the modifications which the notation underwent in the meantime. Important detail: the notator of the motet adds a two-note ligature at the end

of this ordo, but one that is articulated in erroneous manner, shifting back the accent to the first note. The concept of final-note articulation was thus already lost by the time the motet was elaborated, which was only a few decades after the appearance of the original: this proves that the decisive break in performance practice, the break that divides the Middle Ages from all modern musical systems, comes after and not before the Notre-Dame school. It is to be noted that only completely syllabic writing could have inspired theorists – who by now were quite incapable of providing a convincing explanation of the musical process[9] – to offer their formulation of the trochaic mode:[10]
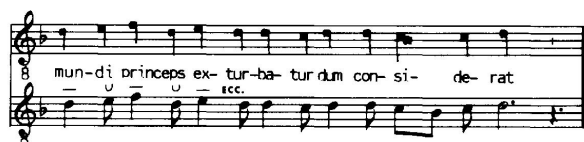
Motet *Gaudeat devotio fidelium*
W2 f. 148*r–v*, Ordo 7

The sixth note is a D instead of the original E.

Here, the new notation based uniquely on the isolated *punctum* has caused the loss of the idea of neumatic articulation; the process that will soon lead to the distinction of [158] note-values in the mensural system results from the irremediable decay of this idea, which had reigned undisputed in musical writing throughout the Middle Ages.[11]

The freestanding two-note ligature receives additional emphasis on the first note.

Organum *Viderunt omnes*
W1 f. 21*r* (F f. 99)
Ordines 9 & 24

Similar examples of the long appoggiatura are found quite frequently in organum of the oldest type.[12]

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[9] It takes only a few decades to encounter, in the writings of university professors, a sense of the irremediable otherness of the old performance practice. Cfr. E. Reimer in: *De mensurabili musica* cit. p. 91: *Unde modus . . . potest dupliciter sumi: aut communiter aut proprie. Modus communis est qui versatur circa omnem longitudinem et brevitatem omnium sonorum. Modus proprius est qui versatur circa VI modos antiquos.*

[10] From the first exposition of modal theory, syllabic writing is frequently mentioned in the treatise of Walter Odington (*op. cit.*, p. 131). Compared to Johannes de Garlandia (*op. cit.*, p. 52–56), Odington's chapter on the *ligatures* in modal writing (Pars Sexta, cap. 10: Quomodo singuli modi habent notari in ligaturis; *op. cit.*, p. 137–139) already comes across as considerably more obscure.

[11] The mensural system will in any case retain, for a long time, traces of the final articulation of the neume; the accentual meaning in the Notre-Dame school will end up changing, crystallizing in a series of rhythmic patterns which assign specific values to the various forms of the *ligatura*. The change in viewpoint is evident already in the first testimonies of mensural theorists: cfr. AMERUS, *Practica artis musicae*, ed. C. Ruini = CSM 25 (American Institute of Musicology 1977), p. 98. In the two-note ligature *prima duarum est brevis, et altera longa.*

[12] Cfr. ANONIMOUS IV, *De mensuris et discantu*, ed. F. Reckow (*Der Musiktraktat des Anonymus 4* (Wiesbaden, F. Steiner 1967), p. 86: *Item omnis punctus ultimus erit longus et concordans. Item omnis punctus paenultimus ante longam pausationem sicut in fine puncti vel clausulae est longus. Item omnis punctus paenultimus similitudinarie perceptus longus per modum, sive fuerit concordans sive non.*

Organum *Descendit de celis*
W2 f. *7v–8r*
Ordines 9 & 26

Clausula *Preciosus*
F f. *32v*
Ordo 12

For the four-note ligature cfr. 2.3.

This additional emphasis reveals itself as a very important characteristic in Notre-Dame writing. Its presence may also be observed whenever a two-note ligature occurs at the beginning of an ordo.[13]

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Organum
*Athleta
Domini*
F f. *33r*
Ordines
25–29

For the other
ligatures and
details cfr. 2.2,
2.3, 2.6, 3.2,
5.3.2.

The binary ligature with first-note articulation often introduces the cadential formulas that are typical of two- and three-voice organum.

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[13] It is not always easy to make apparent of the seemingly quite chaotic remarks of Anonymous IV: however, it does seem possible to recognize in them a hint towards the initial articulation of the two-note ligature: *Item omnis punctus duorum: primus, si fuerit in concordantia, longus; si fuerit in discordantia, brevis.* The consonant quality of the first note must appear at the beginning of the ordo, while the dissonant condition would be normal within its continuation (*op. cit.*, p. 86).

Benedicamus Domino cit.
Ordines (45)–46

Clausula *Do*
F f. 88*v* righe 3–4
Ordines (8)–9
Cfr. 2.2, 4.2.1.

Clausula *Go*
F f. 11*v*
Ordines (9)–10
Cfr. 2.2, 2.6.

Such formulas are often wrongly assigned to the so-called second mode: here we find the second mode in its classic guise and in a precise transcription. We cannot rule out that some particular performative accentuation may have produced the sense of a iambic progression in listeners; this hypothesis could perhaps help to situate the various discourses surrounding the rhythmic modes in their proper historical context. It goes without saying that theorists have led modern musicologists astray, by elevating to the status of an organic system something that was probably nothing more than a simple type of spoken diction.

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Organum
Descendit de celis cit.
Ordo (9)–10
Cfr. 2.2, 4.2.2.

In fact, apart from the first ligature, there is no difference, either conceptual or performative, between the first and second modes.

2.2. *Three-note ligatures*

The third note is accented; the two preceding notes each subtract one-third from the preceding accent.[14]

Clausula *Do*
F f. 88*v* staves 1–2
Ordo 3

In modal theory this rhythmic formula is customarily construed as characteristic of the third mode; consequently it receives a quite peculiar mensural guise.

Benedicamus Domino cit.
Ordo 4

This rhythmic formula, which is identical to the previous one if one excludes the four-note ligature at the beginning, may however be classified as sixth mode, and tends to be interpreted according to a completely different pattern. Cfr. 2.3, 2.6, 3.1.

The figuration 2+3 (two-note ligature followed by a three-note ligature) is completely distorted in transcriptions that are inspired by the trochaic mode; mark particularly the third example below, where we may already find the melodic and rhythmic germ of the future *Landini cadence*. Other examples of articulated initial two-note ligatures followed by a three-note ligature have already appeared in 2.1, Organum *Athleta Domini* ordines 25–29.

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Clausula *Do* cit. (F f. 88*v* staves 5–8)
Ordines 4 e 6
Cfr. 3.1.

Alleluia *Pascha nostrum* cit.
Ordines 15–17
Cfr. 3.1, 4.3.

The three-note ligature placed by itself or at the beginning of an ordo receives additional articulation on the first note.[15]

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[14] The mensural system retains the memory of this rhythmic realisation in the pattern brevis-brevis-longa ascribed to the three-note ligature; in the terminology of Amerus (*op. cit.*, p. 99), *Quando tres coniuncte sequuntur unam longam vel plures scilicet longas, aut duas coniunctas sive tres aut quatuor, due prime note trium coniunctarum breviantur.*

Alleluia *Pascha nostrum* cit.
Ordines (9)–10

The chain of three-note ligatures is classified as fourth mode; its rhythmic guise is still different from the two preceding ones. Cfr. in 2.1, Alleluia *Pascha nostrum* for the classic intonation of the first mode.

Exceptionally, in certain melodic contexts the three-note ligature may receive initial articulation even when it appears within the course of an ordo. Cfr. the example that follows in 2.3 ordo 7.

2.3. *Four-note ligatures*

The final note is accented; the other three notes fill out the entire preceding foot.[16] Cfr. the examples already shown in 2.1 (Clausula *Preciosus* ordo 12; Organum *Athleta Domini* ordo 25) and in 2.2 (*Benedicamus Domino* ordo 4).

Instrumental piece
London
Har. 978
righe 8–9
Ordines 7–8

Thanks to its particular shape, the four-note ligature may be placed indifferently at the beginning of an ordo or within it, without requiring any initial articulation.[17]   [162]

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[15] The precise confirmation in the treatise of Amerus (*op. cit.*, p. 98, with emended punctuation): in the three-note ligature *prima et tercia coniunctarum, per se, in principio vel post brevem (?) aut pausas stantes, sunt longe; media brevis*. The theory of three-note ligatures is already summarized effectively by the theorists closest to the Notre-Dame epoch; cfr. *Discantus positio vulgaris*, ed. E. Coussemaker, *Scriptorum de musica medii aevi* (Paris, Durand 1864), I (hereafter abbreviated *CoussS* I), p. 94–97: *Quando autem tres, si pausa precedit, prima est longa, secunda brevis, tertia longa. Si nota longa precedit, prime due sunt breves, tertia longa; quam si nota longa sequitur, tertia erit longior longa* (p. 95). Cfr. also the corresponding passage in Anonymous IV: *Item omnis punctus trium: primum longus, si fuerit in concordantia; si non, non* (op. cit., p. 87).

[16] Cfr. *Discantus positio vulgaris* (*CoussS* I, p. 95): *Si vero quatuor ligata fuerint, omnes sunt breves*. In Amerus (op. cit., p. 98): *Prima, secunda et tercia quatuor coniunctarum sunt breves, quarta longa*. These two testimonies do not contradict one another: the first refers to the context of the sixth mode, the second is stated in more general terms.

[17] It appears to be Anonymous IV who sums up, better than anyone else, the properties of the three ligatures that involve a single articulation; another brief passage (*op. cit.*, p. 86) in the seventh chapter of his treatise seems to confirm the legitimacy of the initial articulation, including the case – specified even though irrelevant from the rhythmic point of view – of the four-note ligature: *In puro autem organo multiplici via et modo longae et breves cognoscuntur. Uno modo sic: omnis punctus primus, sive fuerit concordans in aliqua concordantia predictarum sive non, aut erit longa parva* (ligatura quaternaria) *vel longa tarda* (ligatura binaria) *vel media* (ligatura ternaria)*, et hoc in quacumque ligatura, sive fuerit duum vel trium etc.*

2.4. *Five-note ligatures*

The fifth note is accented; the fourth, third and second fill out the preceding foot; the first note occupies the last third of the foot prior to that, but frequently receives an initial articulation that causes to be extended to full duration.

Clausula *Do*
F f. 87*r*
Ordo 14
Cfr. 3.1.

The same piece, Ordines 3-5
Note especially Ordo 3, which
cannot be transcribed in the
so-called first mode (—∪—∪—).

Since the five-note ligatures cover the space of two articulations, they become quite rare in Notre-Dame notation: the scribes of this period prefer to divide them, if at all possible, into two smaller groupings.[18] It is this process which is responsible for the many graphic variants that occur between the notation of F, the oldest of the Notre-Dame codices, and the two more recent collections W1 and W2. The correct reading of the five-note ligature is confirmed by the examination of such variants: the F reading, when construed according to the rhythmic modes (five-note ligature = —∪—∪—) does not allow us to explain the genesis of the W1 and W2 readings.[19]

F

W 1

W 2   (Example A)

[163]   F

                                                 (Example B)
W 1   Cfr. 2.5.

W 2

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[18] From the general statements by contemporary theorists we understand that ligatures of more than four notes were considered, already in the Notre-Dame period, as characteristic of an older style. Cfr. *Discantus positio vulgaris* (*CoussS* I, p. 95): *Quod si plures quam quatuor fuerint, tunc quasi regulis non subjacent, sed ad placitum proferuntur; que etiam ad organum et conductum pertinet singulariter.*

[19] Musical examples taken from A. HUGHES, *Worcester Mediaeval Harmony of the Thirteenth and Fourteenth Century* (New York 1961), p. 101.

2.5. *Ligatures containing more than five notes*

The final note is accented; the notes before it distribute themselves in groups of threes over the preceding feet.

Alleluia *Pascha nostrum* cit.
Ordo 9
Cfr. 3.1.

Such rhythmic groupings are extremely rare in Notre-Dame notation and will gradually disappear. We cannot rule out the possibility that the first note was marked by an initial articulation, but since groupings of this kind tend to be found only in compositions written in a more archaic style (organum), the chances of proving the existence of this rhythmic particularity must depend on parallel sources where the same ligature is subdivided into smaller groups. Cfr. what happens in the two previous examples in 2.4: in the first, W1 confirms the articulation of the second note in F, whereas W2 confirms the initial articulation of both; in the second, W2 again confirms the initial articulation of F and W1, now through the addition of a few ornamental notes.

2.6. *Single notes*

The single figures in Notre-Dame notation are ⌐ and ▪ , along with their occasional graphic variants ▪⌐ ▪⌐ . Apel identifies a third form ▪ as a brevis, but this hypothesis (cfr. 5.5) cannot be sustained. Aside from what happens in very rare cases, there is no explicit difference between longa and brevis.

Every single note is accented, that is, falls on the beat of a foot. See:

in 2.1 *Benedicamus Domino* ordo 29
        Alleluia *Pascha nostrum* ordo 26
        Organum *Athleta Domini* ordines 25 and 26
        Clausula *Go* ordo 10
in 2.2 Clausula *Do* ordo 3
        Benedicamus Domino ordo 4
        Clausula *Do* ordines 4 and 6
        Alleluia *Pascha nostrum* ordo 10
in 2.3 Instrumental piece, ordines 7 and 8
in 2.5 Alleluia *Pascha nostrum* ordo 9

[164]

Clausula
Do cit.
(F f. 88*v*
staves 5–8)
Ordines
7–8

2.6.1 When two or more single notes are written at the same pitch, they may behave as if they were written as a group of the same number of notes. This can be seen especially when there is close parallelism between the two voice-parts, that is, when a particular ligature in one part is made to correspond to an equivalent ligature in the other.[20]

Clausula *Go* cit., Ordines 5–7. Cfr. 4.1.

2.6.2. In the style of older organum there is no shortage of examples of single successive notes at the same pitch; these are probably to be interpreted as breves.

Benedicamus Domino cit.
Ordines 20–23

3. As has already been demonstrated,[21] the *conjunctura*, a group formed by the sign of the longa followed by two or more rhomb-shaped *currentes*, is a particular type of ligature that is completely equivalent, at least with respect to its rhythmic guise, to the corresponding normal ligatures. It differs from them with respect to the greater number of notes that may be included and by other special values.

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[20] This procedure is illustrated with exemplary clarity, in the context of the first mode, by the musical examples given by Johannes de Garlandia (*op. cit.*, p. 52).

[21] Cfr. W. APEL, *op. cit.*, p. 264.

3.1 The ternary conjunctura is perfectly equivalent to the ternary ligature. See: [165]

in 2.2   *Benedicamus Domino* ordo 4
            Clausula *Do* (lines 5–8) ordo 6
            Alleluia *Pascha nostrum* ordo 17
in 2.4   Example B in the notation of F and W2
in 2.5   Alleluia *Pascha nostrum* ordo 9
in 2.6.1   Clausula *Go* ordo 5 Tenor

   If the rhythmic and accentual identity between ligature and conjunctura is indisputable, we do nevertheless find passages that are arranged in such a manner as to raise the suspicion that there may exist a certain interpretive difference between the two manners of notating.

Clausula *Preciosus* cit.
Ordo 16
Cfr. also 5.3.1.

Two examples of quaternary conjuncturae have already been seen in 2.4, Clausula *Do* ordo 14.

   3.2. The conjunctura may comprise a considerable number of notes; this feature makes it very difficult for the singer to calculate the durations in the conjunctura, for it is not always easy to tell the exact number of *currentes* at first sight. To make up for the inconvenience, the conjunctura has developed a notational capability unknown in regular ligatures: the configuration in which the initial articulation is indicated expressly on the second or third note. The figuration in question appears to be composed of a two-note or three-note ligature, which preserves the proper natural accentuation, followed by a group of *currentes*.

Alleluia *Pascha nostrum* cit.
Ordo 39

Benedicamus Domino cit.
Ordo 16

Clausula *Do* cit. (F f. 88*v* staves 1–2)
Ordo 1

[166]   Still more extensively used and – as we will see – more illuminating to our understanding of the Notre-Dame aesthetic, is the power, peculiar to the *conjunctura*, to indicate explicitly the final articulation by placing a ligature at the bottom of the series of *currentes*. The Gregorian tradition provides with its *resupini* neumes an excellent precedent for this new graphic solution; older polyphonic practice exemplifies the realization thereof.
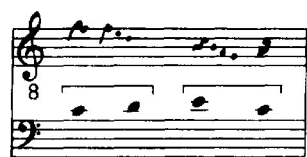
Magister Ato
Misit Herodes
Codex Calixtinus f. 189*r–v*
Measure 21

Cfr. in 2.1, Organum *Athleta Domini* ordines 28 and 29. We are dealing with two groups of six-note ligatures with initial articulation; still, the notation is quite imprecise, comparable to the notation of the Codex Calixtinus.

Organum *Descendit de celis* cit., Ordines 8 e 17

Here, on the other hand, we are dealing with two *copulae*, cadential sections characterized by a type of rather archaising notation. In ordo 17, two single notes of the lower Cantus are treated as *breves*; the penultimate note is moreover articulated in

irregular manner (*plica* on the third subdivision). The writing is perfectly capable of illustrating these anomalies,[22] just as happens with the *maxima* of the Superius in ordo 8. Ordo 17 also presents a noteworthy imitation between the two voices of the central melodic entity.

Clausula *Do* cit. (F f. 88*v* righe 1–2)
Ordo 6

The example presents a case of initial
and conclusive articulation.

4. It is generally assumed that the *plica* sign was derived from the Gregorian liquescent neume; this hypothesis seems plausible, yet the mensural context in which the plica finds its justification is decidedly different from the medieval monophonic context. The first and most fundamental difference is that the Notre-Dame plica is not linked to the pronunciation of the literary text; on the contrary, it appears very frequently in completely melismatic passages.

4.1. The first explanation of the mechanism of the plica derives precisely from the idea that inspires all Notre-Dame notation: the plica is nothing but a note placed in an anomalous position, that is, after the articulation which ends the ligature. It is evident that this appended sound cannot have the same square form as the others: if it were like that, in fact, the two-note ligature could be replaced by a three-note one, the three-note one by a four-note one, and so on. The extra note will necessarily have to be written in such a way that the singer will have no doubt whatsoever as to which note is the one that should receive the accent – in our case the penultimate. The final note thus takes the form of a simple line, placed to the right of the final note, and pointing either up or down. The use of the plica is appropriate in contexts where the greatest possible linearity in the ligature chain is to be preferred. Cfr. in 2.6.1, Clausula *Go* ordo 6: the plica maintains the rhythmic scheme within the framework of the first mode (3 2 2 2 2 2) in both parts, that is, it preserves the principle of parallel writing which is fundamental to the style of the time. If the expedient of the plica had not been available, composer and scribe would have been constrained to resort to a notation that was decisively less clear and immediate, using the so-called *fractio modi* and alternating two- and three-note ligatures in disorderly fashion.

[167]

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[22] Cfr. *Discantus positio vulgaris* (*CoussS*, I, p. 94): *Quecumque due note ligantur in discantu, prima est brevis, secunda longa, nisi prima grossior sit secunda, ut hic:* ◢ .

Cantus Sup. 3 3 2 2 2 2 3
Cantus Inf. 3 2 2 2 2 3 2

Analysis of the graphic documents of the period points up the strong preference of Notre-Dame masters for this simple system of notation, which has the advantage of allowing an orderly arrangement of the ligatures; expedients such as *fractio modi* were probably considered exceptional and were utilized only when a unison or some melodic particularity (cfr. in 2.1, Organum *Descendit de celis*, ordo 10, the final figuration) made it impossible to use plicated writing. From all this it may be readily concluded that the plica is always located on the second subdivision of the accent; since every accent contains three subdivisions, it follows that the plica is normally followed by a two-note ligature.

Organum *Descendit de celis* cit.
Ordines 12–14

[168]

Alleluia Pascha nostrum cit., Ordines 27 e 45–46

The notation of motets derived from this Alleluia shows again that, at a distance of one generation, the scribe is already totally in the dark about the significance of ligature articulation and the correct use of the plica.

Motet
Gaudeat devotio fidelium cit.
Ordo 3

Motet *Ave Maria fons leticie*, W2 f. 156r–v, Ordines 8–9

4.2. Notre-Dame notation presents numerous cases of plicas located in anomalous positions, for example at the beginning of a three-note ligature. In these cases the notator does not intend to write a plica at all, but merely indicates particular articulations with the sign of the longa.

4.2.1. The notational forms ◥, ◢ and others like them may simply be variants of ▪ and ◢ necessitated by lack of space in the stave.[23] Cfr. in 2.1, Clausula *Do* (F f. 88*v* staves 3–4) ordo 9.

4.2.2. Notre-Dame notation moreover prefers to clarify articulation by using the longa in contexts that tend to be unclear: frequent cases are those of wide melodic leaps or of repeated unisons.[24]
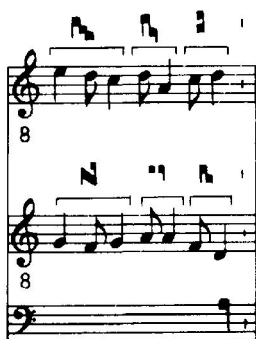
Organum *Descendit de celis* cit.
Ordo 24
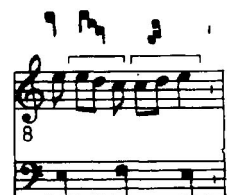
Scio cui credidi
Paris, Bibl. Nat., Lat. 15139 f. 285*v*
Ordo 7

[169]

4.3. The plica often appears on the note which ends an ordo, even in this case where it lends itself to an ambiguous interpretation. There are plenty of cases in which the subsequent note finds itself effectively at the distance of a third (cfr. in 4.1 Alleluia

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[23] Cfr. W. Odington (*op. cit.*, p. 136): *Raro ligatura ascendens sine perfectione plicatur sic, tam ascendendo quam descendendo, sed in talibus plica facit de imperfectis perfectas secundum quosdam.*

[24] The idea is expression in unequivocal fashion by Johannes de Garlandia: speaking of the *figura cum plica*, which would be *cum proprietate et perfecta*, he says that *ultima cum plica valet longam, quia plica non aliud est quam signum dividens sonum in sono diverso* (*op. cit.*, p. 51).

Pascha nostrum ordo 46, and the Motet *Ave Maria fons leticie* ordo 9), but the more probable hypothesis is that the notation was solely intended to underline the articulation that concludes the ordo. Cfr. in 2.3, Instrumental piece ordo 7.

4.4. A single plicated note placed within the course of an ordo is deprived of rhythmic support, or configures itself as a breve.

Scio cui credidi cit.
Ordo 11

This manner of writing the plica is the oldest one, close to that of the Gregorian *epiphonus*. In this case its presence is still tied to the pronunciation of the text syllable; in the same spirit is positioned the redundant articulation, not necessarily a plica, on the syllable *-si-*.

5. All the material presented up to this point is really no more than a simple introduction to Notre-Dame notation: the study of notation enters its most lively and important discussion only when we cease to consider each individual ligature as a self-contained organism, and when we begin to focus on the connections that bring together the ligatures themselves. As we have seen, Notre-Dame can be viewed as a direct application of the old Gregorian tradition, but it also carries to completion a worldly process, or radical simplification of the notation: it is necessary to keep in mind that with Notre-Dame notation the vast majority of ligatures, previously composed of very long organisms, are in practice reduced to the models of the two- and three-note ligatures. The procedure has already been exemplified in 2.4, example A, in the passage comparing the notation of F to that of W1: the internal articulations of extended neumatic groups end up emancipating themselves and determining the separation of the group itself into a series of smaller ligatures. The writing that results from this is without doubt more accessible to the singer, and more user-friendly to the composer himself.

The aim of the second part of our study is therefore to analyse ligature groupings: an original long series of notes is translated, in Notre-Dame notation, into two or more limited groups, each anchored on a single accent and correctly articulated according to the models of the *binaria* or *ternaria*.

[170]   Such analysis turns out to be of fundamental importance to a full understanding of Notre-Dame notation, because the original series often makes its influence felt in the collective of ligatures into which it has been cut up, by imposing the proper articulations and the proper rhythmic behavior. These considerations are reflected in

the first place in the figurations examined here, allowing the formulation of a new analysis which departs from a different, and more complete, point of view.

5.1. Two different figurations separated by a unison may be interpreted as the divided version of a single neumatic group. This occurs:

– when between the two figurations there is no solution of rhythmic continuity. See:

in 2.2   Clausula *Do* ordo 3: the entire ordo is in reality a single melodic organism;
           Benedicamus Domino ordo 4: the group of seven notes; cfr. 5.2;
           Alleluia *Pascha nostrum* ordo 10: the second and third ligatures constitute a single group of seven notes;

in 2.5   Alleluia *Pascha nostrum* ordo 9: the ordo is divided in two neumatic groupings;

in 2.6   Clausula *Do* ordo 7: the initial single note is followed by a four-note ligature; the same grouping 1+3 appears towards the end of the ordo;

in 3.2   Clausula *Do* ordo 6;

in 4.1   Alleluia *Pascha nostrum* ordines 45 and 46: the two figurations of the Tenor are two normal three-note ligatures;

in 4.2.2 *Scio cui credidi* ordo 7: another melodic grouping which coincides with the extension of the same ordo;

– when the notation follows the fundamental criterion of the *parallelism* between the voices: an equal ligature must correspond to an equal ligature or a corresponding group of ligatures. This rule is valid especially with regard to the figuration 1+2 placed at the beginning of the normal three-note ligature. See:

in 2.1   Organum *Athleta Domini* ordo 26: the first figuration is a two-note ligature with initial articulation for both voices;

in 2.6.1 Clausula *Go* ordines 5–7: the rhythmic scheme remains that of the first mode (3 2 2 2 . . .) up to the cadence;

in 3.1   Clausula *Preciosus* ordo 16.

By extension, the initial figuration 1+2 may always be assimilated to the three-note ligature, even when there is no second voice which renders the rhythmic groupings explicit. See:

in 2.1   *Benedicamus Domino* ordo 29: we are dealing once again with the classical intonation of the first mode;

in 2.6   Clausula *Do* ordo 8.

5.2. Conjuncturae followed by a three-note ligature may be interpreted as a single *resupino* neume. See:

in 2.2   *Benedicamus Domino* ordo 4: the group comprises therefore ten notes and not just seven;

[171]   in 3.2   Alleluia *Pascha nostrum* ordo 39: first and last articulations;

Organum *Descendit de celis* ordo 8: in the second grouping of the lower voice-part, first and last articulations.

5.3. To read the individual ligatures as elements of complex melodic organisms is important above all from a historical point of view, for it allows us to reconnect Notre-Dame notation with Gregorian notation and that of early polyphony; it may also be useful for the clarification of particular rhythmic and melodic contexts.

Organum *Athleta Domini* cit.
Ordo 17

In version A every ligature of the Superius is taken as free-standing: as a consequence there are two passing dissonances on the second and third octave of the first foot and an isolated single note deprived of an accent. Version B resolves the incongruities, but a transcription that would be truly faithful to the spirit of the notation move even further ahead. When we interpret the initial group 1+3 of B as a single four-note ligature, it is possible to call attention to the parallelism (four-note then two-note) in the writing of the upper and lower voices.

5.3.1. The groupings of conjuncturae and ligatures may be significant even for the musical interpretation; without wishing to suggest solutions, we invite a reconsideration in 3.1 of ordo 16 of the Clausula *Preciosus*.

5.3.2. The presence of a text syllable may prompt irregular divisions in the ligature; in this case the notation forces the clearest possible rendering of the rhythmic figuration. Cfr. in 2.1 Organum *Athleta Domini* ordo 25.

5.4. The phenomenon of the subdivision of neumatic groups allows us to add new considerations to our first, partial, explanation of the plica furnished in 4.

Organum *Descendit de celis* cit.[25]
Ordo 5

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[25] Cfr. W. APEL, *op. cit.*, p. 259.

The scribe of W2 divides the neumatic group of F into two distinct ligatures; he could have utilized a two-note ligature followed by a three-note one (⬛ ⬛), but because of the the usual reasons of graphical efficacy, he prefers a plicated two-note ligature followed by another two-note ligature. One could easily imagine that this procedure was absolutely habitual in the Notre-Dame period: the plica configures itself, in our eyes, as a kind of living fossil, the trace left by the division of a ligature. This new interpretive key creates the possibility to resolve many ambiguous passages, especially the rich but complex *copule*.

[172]

Clausula *Go* cit.
Ordo 9

The initial figuration of the Superius is quite rare, not to say irregular or downright erroneous: it testifies in all probability to the scribe's confusion in dividing the original configuration * ⬛. By separating the final four-note ligature he has achieved the somewhat unorthodox effect of a plica on the third fraction of the first accent; the first ligature is moreover transformed into a two-note ligature bereft of final articulation, a figure inconceivable from the point of view of contemporary notation. At this point only indications external to the notation, for example knowledge of the particular melodic formula or the awareness that one is dealing with a copula, could suggest the correct reading to the performer. Equally interesting, still in the Superius, is the third figuration, a direct descendant of the scales of *currentes* (* ⬛) that are so frequent in the older copulas. The fifth is important, a grouping that would last one more accent if its three neumes are considered separately: one notes how the parallelism with the lower voice-part is once again decisive in arriving at the correct interpretation. The initial figuration of the lower part also draws attention to the parallelism between the two discanting voices; the plica is placed here, correctly, in congruence with the point of division of the group. The manuscript does not provide any *suspirium* before the second figuration, but the *porrectus* is spaced with particular emphasis on the staff. The central *torculus* of the last and richest group in the lower voice-part must be regarded as an

articulation, exceptionally but indisputably, whose number forces the whole figuration to behave like a resupino neume.

[173]

Clausula *Do* cit. (F f. 88*v* staves 3–4)
Ordo 8

The beginning of the Superius presents another irregular plica placed on the third subdivision of the accent; this time, however, the initial two-note ligature remains clearly comprehensible to the singer.

5.5. The combination of plica followed by currentes makes up a large number of different groupings.

Organum *Athleta Domini* cit.
Ordines 4–5

The *suspirium* that precedes the final note of the lower voice-part has the sole function of underlining the articulation of the text.

Instrumental piece cit. (London Har. 978, righe 10–11)
Ordo 9

With regard to this passage, W. Apel[26] mistakenly assumes that the rhomboid figure is a particular type of brevis.

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[26] *Op. cit.*, p. 267.

We are not dealing with two plicas, but with two explicitly indicated articulations. Since the notator, in order to obtain the same values, had the notations ▪▬ and ▮▬ at his disposal, it is necessary to suppose that his choice indicates to the performer a precise interpretive direction: Notre-Dame notation thus seems capable of usefully undergoing a method of a semiological type.

6. The conclusions of this study must necessarily be provisional,[27] yet it does seem possible to affirm that the idea of final articulation of the neume is capable of supporting the entire edifice of Notre-Dame notation. The writing of Notre-Dame represents the last exponent of the secular dynasty of the medieval neumatic families; it is the last notation which does not recognize the *value* of notes, the last to be founded exclusively on the disposition and combinations of proper figurations; the last to have been graphically conceived *in levare*, that is, with the accent placed at the apex of the series of unstressed notes.

[174]

With the loss of the idea of neumatic articulation, musical notation will move decisively in the opposite direction, and begins to distinguish between the *figures* and above all to place the weak notes down from the accent. It will be Gregorian chant, heading inexorably toward flat and undifferentiated *cantus planus*, that will suffer the most striking consequences of this radical change.[28]

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[27] Many of the questions that srill remain open shall have to be resolved through a attentive critical examination of the rhythmic and melodic formulas; sometimes the writing leaves room for one or more alternative versions of the same passage, sometimes it seems possible to recognize an error on the part of the scribe or the composer. W. Apel gives at least two musical examples that resist transcription to some degree: cfr. Clausula *Flos filius e* (*op. cit.*, p. 253) and Instrumental piece on p. 263, staves 4–5 ordo 3 (a tentative but not very satisfactory solution is presented on p. 262).

[28] Musical artwork: RES Musica Antiqua – Castelfranco Veneto (Treviso).