THE MENSURAL STRUCTURES OF ANTOINE BUSNOYS'S *L'HOMME ARMÉ* MASS

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At Hampton Court Palace in February 2020, during rehearsals for an exploratory performance of the *L'homme armé* mass by Antoine Busnoys (c. 1430-92), I first began to develop an awareness of the presence of broader, deeper, and more complex relationships between the composition of the mass's Tenor and the large-scale mensural structures of the polyphony than I had previously recognized.[1] The principal goals of those rehearsals and the performance were to gain increased familiarity with Busnoys's mass and to explore how performing this particular work from published modern score notation might inform my editorial work on the mass, which preserves the music in its original mensural notation.[2] I had begun to prepare a digital critical edition of Busnoys's mass in mensural notation as part of

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[1] This performance took place as a lunchtime recital in Her Majesty's Chapel Royal, Hampton Court Palace on Sunday 23 February 2020. I am grateful to Karl Gietzmann (Discantus), Matthew Pochin (Contratenor), and Jack Granby (Tenor) for their participation in the rehearsals and performance, along with their helpful and insightful responses to the initial questions I had about our responses to Busnoys's music as performers. I also wish to express thanks to Rufus Frowde for enabling the performance to take place as part of the Chapel Royal's regular Sunday recital series and to Historic Royal Palaces for their support.

[2] For the performance at Hampton Court Palace, we sang from Richard Sherr's edition in *Masses for the Sistine Chapel: Vatican City, Biblioteca Apostolica Vaticana, Cappella Sistina, Ms 14* (Chicago, 2009), 400-33. Other published editions of Busnoys's mass appear in Albert Smijers, ed., *Van Ockeghem tot Sweelinck*, Nederlandse Muziekgeschiedenis in Voorbeelden, fasc. 1 (Amsterdam, 1939); Laurence Feininger, ed., *Antonius Busnois:* Missa super L'homme armé, Monumenta polyphoniae liturgicae Sanctae Ecclesiae Romanae, ser. I, tom. i, fasc. 2 (Rome, 1948); and Richard Taruskin, *Antoine Busnoys, Collected Works, Part 2: The Latin-Texted Works*, ed. with intro., Masters and Monuments of the Renaissance, 5 (New York, 1990), xiv.

the research project *Interpreting the Mensural Notation of Music* at Royal Birmingham Conservatoire.[3] Given the considerable amount of previous scholarly discussion concerning the original notation of Busnoys's *L'homme armé* mass, I intended to proceed with caution, but it struck me quite deeply during that rehearsal process that there were structural procedures at play in the mass that I could sense but not immediately explain either by reference to the manuscript sources, the modern score, or the secondary literature.

I had familiarized myself with Richard Taruskin's 1986 analytical proposition that the durations of the mass sections were purposefully aligned by Busnoys with Pythagorean proportions, along with the ensuing discussions in the *Journal of the American Musicological Society*. During these exchanges, Taruskin was challenged by Rob C. Wegman on the point at which he considered the mensural structure of Busnoys's 'Et incarnatus' to give way to ultramensural notes, his interpretation of the proportional relationships between the various mensuration signs in the mass, and his editorial selection of {C} rather than {O} as the mensuration governing Busnoys's 'Christe' and 'Benedictus'.[4] Thomas Brothers concurred

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[3] The research project *Interpreting the Mensural Notation of Music: an Expert System Based on the Theory of Johannes Tinctoris* (2017-22) is hosted by Royal Birmingham Conservatoire, Birmingham City University with funding from the Arts and Humanities Research Council (grant number AH/P013910/1). Publication of the edition is forthcoming on the *Early Music Theory* website <https://earlymusictheory.org/> in 2022. Thanks are due to project staff Jeffrey Dean (Principal Investigator), Anna Plaksin (Researcher, 2020-22), Ronald Woodley (Co-investigator, 2017-18), and David Lewis (Researcher, 2017-19) for their unfailing advice and assistance in the preparation of this research. I owe particular debts of gratitude to Jeffrey Dean and Ronald Woodley for their detailed guidance on many aspects of mensural music theory, without which this article could not have been written.

[4] Richard Taruskin, 'Antoine Busnoys and the *L'Homme armé* Tradition', *Journal of the American Musicological Society* 39 (1986), 255-93; followed by letters to the editor by Barbara Helen Haggh (*Journal of the American Musicological Society* 40 [1987], 139-43), Don Giller (ibid., pp. 143-46), David Fallows (ibid., 146-48), Richard Taruskin (ibid., pp. 148-153), Reinhardt Strohm (ibid., 576-79), and finally the important exchange between Rob C. Wegman (*Journal of the American Musicological Society* 42 [1989], 437-43) and Taruskin (ibid., 443-52).

with Wegman's criticism of Taruskin's approach to reckoning the 'Et incarnatus', and made a convincing case for {O}2 being the correct mensuration sign for the 'Christe' and 'Benedictus' on the basis of the entire mass being reckonable in perfect minor modus.[5] Brothers' general comments on the organization by minor modus of Busnoys's mass, and in particular the placement of rests as an indication thereof was my starting-point for the analysis that follows below.

The principal reason for which I am editing Busnoys's mass as part of the *Interpreting the Mensural Notation of Music* project is to create an MEI-compliant encoding of the work as part of a corpus intended to test and train the project's expert software, a logical implementation of the music theory of Johannes Tinctoris (*c.* 1435-1511), which is currently in development. Editions of Tinctoris's own compositions form the theoretically orthodox components of this corpus, while Busnoys's music is included to represent more unorthodox mensural practices. My analytical approach is therefore necessarily informed by Tinctoris's writings and it is for this reason that I shall now briefly set out what he said about modus, before offering some information about the surviving sources of Busnoys's mass and then advancing to the body of my analysis.

Tinctoris described in *De regulari valore notarum* the four 'quantities' of the fifteenth-century system of musical notation, 'namely major modus, minor modus, tempus, and prolation', which articulate the durational relationships between the maxima, the longa, the semibreve, and the breve. 'Every piece of music', he tells us, 'is composed out of these four quantities'.[6] He explains that major modus is 'made up of a certain number of longas with

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[5] Thomas Brothers, 'Vestiges of the Isorhythmic Tradition in Mass and Motet, ca. 1450–1475', in *Journal of the American Musicological Society* 44 (1991), 1-56 at 10-19.

[6] *De reg. val.* i.7-8, edited and translated in *Johannes Tinctoris: Complete Theoretical Works* at <https://earlymusictheory.org/Tinctoris/>, hereafter *JT:CTW*: '*Quattuor autem quantitates ab artis musice preceptoribus institutas accepimus, videlicet modum maiorem, modum minorem, tempus, et prolationem. Ex quibusquidem quattuor quantitatibus omnis cantus componitur. Non quod necessarium sit in quolibet cantu omnes concurrere.*' (We have received, however, four quantities, established by the teachers of the art of music, namely major modus, minor modus, tempus, and prolation. Every piece of music is composed out of these four quantities.)

respect to the maxima', and may be perfect, whereby 'three longas are counted for one maxima', or imperfect, whereby 'two longas are counted for one maxima'.[7] Similarly, minor modus is 'made up of a certain number of breves with respect to the longa', and may be perfect or imperfect, whereby three or two breves, respectively, are counted for one longa.[8]

It is the manner in which Busnoys organized his proportional Tenor and counterpoint according to these four quantities that forms the core of the present research, and I shall argue that on the broadest level, major modus in the proportional Tenor was the fundamental

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[7] *De reg. val.* ii.2 (*JT:CTW*): '*Modus maior est quantitas ex certis longis maximam respicientibus constituta. Et hic duplex est, videlicet perfectus et imperfectus. Modus maior perfectus est quantitas qua tres longe pro una maxima numerantur. Itaque in hoc modo maxima, que ei subicitur, regulariter valet tres longas ... Modus maior imperfectus est quantitas qua due longe pro una maxima numerantur. Et sic in hoc modo maxima, etiam ei subiecta, regulariter valet duas* longas.' ('Major modus is a quantity made up of a certain number of longas with respect to the maxima. And this is twofold, namely perfect and imperfect. Perfect major modus is the quantity by which three longas are counted for one maxima. ... Imperfect major modus is the quantity by which two longas are counted for one maxima. And so in this modus the maxima, likewise subject to it, is regularly worth two longas.')

[8] *De reg. val.* ii.3 (*JT:CTW*): '*Modus minor est quantitas ex certis brevibus longam respicientibus constituta. Quiquidem duplex est, nam alius est modus minor perfectus, alius modus minor imperfectus. Modus minor perfectus est quantitas qua tres breves pro una longa numerantur. Itaque hoc in modo longa, que ei subicitur, regulariter valet tres breves ... Modus minor imperfectus est quantitas qua due breves pro una longa numerantur. Et sic in hoc modo longa, etiam ei subiecta, regulariter valet duas breves*.' ('Minor modus is a quantity made up of a certain number of breves with respect to the longa. This is twofold, for one is perfect minor modus, the other imperfect minor modus. Perfect minor modus is the quantity by which three breves are counted for one longa. And so in this modus the longa, which is subject to it, is regularly worth three breves. ... Imperfect minor modus is the quantity by which two breves are counted for one longa. And so in this modus the longa, likewise subject to it, is regularly worth two breves'.)

building-block of Busnoys's, allied with the structural variety offered by differing combinations of major with minor modus.

Tinctoris continues to explain in *De regulari valore notarum* how we are to recognize modus: 'The sign of perfect major modus is the placement of three longa rests together', while 'the sign of imperfect major modus is the placement of two longa rests immediately before or after the tempus sign, or of only one after that tempus sign, or even of none'.[9] This placement 'together' might be more clearly expressed as 'in horizontal alignment'. Furthermore, 'the sign of perfect minor modus is a longa rest occupying three spaces' and 'the sign of imperfect minor modus is a longa rest occupying two spaces'. Finally, 'if no longa rest at all should follow or precede the tempus sign in this way, it likewise designates the imperfect by its absence'. It follows that for Tinctoris, at least, both major and minor modus were intrinsically imperfect in the absence of definite indications of perfection.

There is, as ever, a complex relationship between Tinctoris's absolutist and totalizing theoretical codification and real-world compositional practice. Even in his own music, Tinctoris organized rests according to the prevailing mensural structure not only at the very beginning of a section or subsection, but also elsewhere in the course of the polyphony. Busnoys, as shall be seen later, organized his rests accordingly, and additionally, as I shall argue, used modus of both kinds as not only an abstract quality governing the application of imperfection and alteration, but as a creative compositional tool. Key to the relationship between the proportional Tenor and the non-proportional parts in Busnoys's mass is that the former is related to the latter by way of implicit subduple proportion, so major modus in the Tenor governs the non-proportional polyphony in a manner which cannot be explicitly notated within the latter itself. My methodology here is therefore to look for evidence of organization by modus of both kinds not only in the placement of rests, as directed by Tinctoris, but also in the counterpoint, where cadential structure and phrase length can give expression to such underlying structure. As shall be seen, however, in Busnoys's *L'homme armé* mass the relationship between macro-mensural structure and such contrapuntal features is far from simple.[10]

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[9] *De reg. val.* ii.7-8. (*JT:CTW*)

[10] For useful examples of the analysis of mensural structure according to contrapuntal features, see Sean Gallagher, *Johannes Regis* (Turnhout, 2010), 98-114, 156, 166, and 181.

In the course of my analysis, I shall make reference to the manuscript sources of Busnoys's mass, all of whose readings will be included in my forthcoming digital edition. Details of each source are given in **Table 1**:

< **Table 1. The Sources of Busnoys's *L'homme armé* Mass.**>

<Insert Table 1 here>

The canonic Tenor of Busnoys's *L'homme armé* consists principally of six complete statements of the melody in the form 1 2 3 4 | 5 5 9 | 1 2 3, the same iteration of the melody that is used in the sixth 'Naples' *L'homme armé* mass, which has been accorded a certain archetypal authority in the secondary literature, and Okeghem's setting.[11] The ternary rhythm of the melody is notated in semibreves and minims in major prolation. Busnoys's mass is bookended by the 'Kyrie' and 'Agnus Dei' in terms of the disposition of the Tenor melody. In each of these two sections of the mass, ten melodic phrases are distributed equally across the first and last of the three subsections, with the Tenor remaining silent in the middle subsections ('Christe' and 'Agnus Dei' II):

'Kyrie' 1	1 2 3 4 5	'Agnus Dei' 1	1 2 3 4 5
'Christe'	tacet	'Agnus Dei' 2	tacet
'Kyrie' 2	5 9 1 2 3	'Agnus Dei' 3	5 9 1 2 3

The second and third complete statements of the *L'homme armé* melody are presented in the Gloria. The first of these is distributed across the 'Et in terra' and the 'Qui tollis', though

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[11] I have adopted Jeffrey J. Dean's schema of the parts and phrases of the *L'homme armé* melody. This key was first presented as Example 1 in Jeffrey J. Dean, 'Towards a Restoration of Tinctoris's *L'homme armé* Mass: Coherence, Mensuration, Varietas', *Journal of the Alamire Foundation* 5 (2013), 11-40 at 18, and a revised version is included in the present issue as Example 1 in Jeffrey J. Dean, 'Tinctoris's L'homme armé mass Restored', *Journal of the Alamire Foundation* {insert issue no.} (2022?), {insert page ref}. It is to the revised version that I refer. Taruskin noted the correspondence between Busnoys's recension of the *L'homme armé* melody and that of the sixth 'Naples' mass in 'Antoine Busnoys and the L'Homme armé Tradition', 255-57.

unlike in the Kyrie and Agnus, the repetition of phrase 5 begins in the earlier subsection and concludes in the next. This is one of several structural aspects of the mass that may be read as disruptive to the symmetries that may otherwise often be observed, e.g. the mirroring of the distribution of the melody in the Kyrie and Agnus. I shall return several times during this article to such disruptions. The 'Tu solus' features the third complete statement of the melody.

'Et in terra'	1 2 3 4 5 5
'Qui tollis'	(5) 9 1 2 3
'Tu solus'	1 2 3 4 5 5 9 1 2 3

Busnoys further varies his disposition of the tune in the Credo. Here, the fourth complete statement is split evenly across the 'Patrem omnipotentem' (the same melodic content as 'Kyrie' I and 'Agnus' I) and 'Et incarnatus' (the same melodic content as 'Kyrie' II and 'Agnus' II), while a compressed statement is given in the 'Confiteor'.

'Patrem'	1 2 3 4 5
'Et incarnatus'	5 9 1 2 3
'Confiteor'	1 4 5 5 9 1

Like the 'Et in terra', the 'Sanctus' includes the first six phrases of the melody, though in this case the repetition of phrase 5 is completed. The fifth complete statement is finished with the presentation of the final four phrases in the 'Osanna'.

'Sanctus'	1 2 3 4 5 5
'Pleni'	tacet
'Osanna'	9 1 2 3
'Benedictus'	tacet

From this it may be observed that there are structural symmetries and asymmetries concurrently at play in the disposition of the tune across the Tenor of the mass. The 'Kyrie' and 'Agnus' are equivalent in this limited sense, and hence symmetrical. The Gloria and Credo are connected by being the only sections of the mass in which two statements of the melody are presented, though the second statement is made in full in the 'Tu solus' and in compressed form in the 'Confiteor'. The first two subsections of the Gloria ('Et in terra' and

‘Qui tollis’) are similar to the ‘Sanctus’ and ‘Osanna’ in that they each present a complete statement of the melody, yet the segmentation traverses the subsectional boundary in the Gloria where it does not in the ‘Sanctus’. From a broader perspective, it might be wondered how many statements of the melody Busnoys understood himself to be making in the mass. The entire Tenor could be read as consisting of six complete statements of the melody plus one parenthetical compressed and hence incomplete statement in the ‘Confiteor’, or alternatively as seven statements, six of which are complete. It is not insignificant that the ‘Confiteor’ could be understood to have some structural significance, since scholars, notably Richard Taruskin, have made analytical claims about it that will be addressed below. As I hope to demonstrate, however, many structural aspects of Busnoys’s mass appear to invite analytical reduction to a schema while at once being distinctively and somewhat alluringly resistant to such attempts.

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In VatS 14, the mensural structure of the Tenor of ‘Kyrie’ 1 consists of six units of perfect tempus with major prolation ({O.}). Melodic phrase 1 begins at the start of tempus 2, and its final note falls on the initium of tempus 3. Melodic phrase 2 is wholly contained within tempus 3, and the first two notes of melodic phrase 3 are treated as anacruses to the beginning of tempus 4, wherein the said melodic phrase is completed. Melodic phrase 4 begins simultaneously with tempus 5. Rather than aligning the first statement of melodic phrase 5 with the beginning of tempus 6, Busnoys brings it in one unit of prolation earlier, with the effect that the melodic phrase is completed within tempus 6. An additional final and extramensural breve rest was included here by the scribe of VatS 14, and was accordingly copied into that source’s apographs, VerBC 761 and VatS 63, while remaining absent from BarcBC 454, VatC 234, and VatSM 26. This rest was added presumably to insure against the tenor singer(s) holding the final note of the Tenor into the final chord of the polyphony, even though holding the final Tenor note in this way would not result in an unacceptable dissonance. The patterning of the Tenor’s melodic content suggests organization in three units of imperfect minor modus within a single unit of perfect major modus. Once the tenor is read in implicit subduple proportion in order to fit with the other three parts, the three units of imperfect minor modus and six tempora of the Tenor correspond with three units of imperfect major modus and six units of perfect minor modus in the polyphony, which is notated in {O}.

The presence of perfect minor modus in the polyphony in 'Kyrie' I is indicated by the perfect longa rest at the beginning of the Bassus in VatS 14, VerBC 761, VatS 63, and BarcBC 454, followed by the voice's entry with the Tenor on the initium (b. 4) of unit 2 of perfect minor modus (bb. 4-6).[12] Patterning in groups of three tempora is further indicated by the presence of strong cadences on *G* between units 2-3, 3-4, and 4-5 of perfect minor modus (at bb. 6-7, 9-10, and 12-13).[13] While the earlier sources and BarcBC 454 have a perfect longa rest at the beginning of the Bassus, VatC 234 and VatSM 26 transmit an imperfect longa rest followed by a single breve rest, which would indicate imperfect minor modus; this is rejected as a faulty reading on the basis of the contrapuntal patterning just described.

The 'Christe', in which only the three non-tenor parts participate, is notated in {O}2 in VatS 14, VatS 63 and VerBC 761, which indicates perfect minor modus with imperfect tempus (three breves in a long and two semibreves in a breve). It is composed of twenty-four tempora organized into eight units of perfect minor modus.

The scribe of VatS 14 wrote three perfect long rests in tempora 8-17 (corresponding with the second breve of b. 22 to the first breve of b. 25, inclusive) of the Contratenor, with the first two vertically paired and the third vertically separated, suggesting imperfect major modus with perfect minor modus. However, the manner in which these rests are placed does not properly respect the implied mensural structure. If the scribe had wished to do this then they could have written a two-space longa rest in tempora 8 and 9 (breves two and three of b. 22), representing a regularly perfect longa imperfected from ahead by the breve *G* and thereby completing the third unit of perfect minor modus (b. 22). This would then be followed by two perfect longa rests filling the fourth and fifth units of perfect minor modus (bb. 24 and 25), and finally a single breve rest in tempus 16, completing the sixth unit of perfect minor modus (b. 25). If imperfect major modus is active in this mensural structure, then the first perfect longa rest would occupy the second half (b. 23) of the second unit of

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[12] Bar numbers are here offered as a courtesy to the reader, and refer to Sherr's edition in *Masses for the Sistine Chapel*, 400-33.

[13] By 'strong cadence' I refer to a contrapuntal dyad moving from a sixth outwards to an octave, such as is usually subject to chromatic inflection in one of the voices. See Margaret Bent, 'The Grammar of Early Music: Preconditions for Analysis', in *Tonal Structures in Early Music*, ed. Cristle Collins Judd (Garland, 1998), 15-59.

imperfect major modus (b. 22-23), and the second longa the first half (b. 24) of the third (bb. 24-25), on which basis the two rests need to be separated vertically, since a pair of longa rests ought properly to fill a single unit of major modus completely.

That Busnoys himself took care to reflect the mensural structure of his music in his notation of rests may be observed in *Anthoni usque limina* as transmitted in BrusBR 5557, fol. 49^{v}, which is thought to be either an autograph or a highly authoritative copy.[14] The composer here notates an imperfect longa rest on the lowest two spaces of the stave, followed by a perfect longa rest on the lowest three spaces, then an imperfect longa rest on the middle two spaces, evidently using vertical positioning to clarify the position of each rest within the mensural structure. Following this example, in the Contratenor of Busnoys's 'Christe' the proposed two-space rest in tempora 8-9 and breve rest in tempus 16 ought to be placed respectively lower and higher on the stave.

The 'Christe' is ostensibly notated in {C} (imperfect tempus with minor prolation: two semibreves per breve and two minims per semibreve) in VatC 234, VatSM 26, and BarcBC 454. The rests at the beginning of the Bassus in VatC 234 – a pair of two-space longa rests followed by single two-space longa rest - are placed correctly if imperfect major modus with imperfect minor modus is active; however, the scribe wrote two pairs of imperfect longa rests followed by a single breve rest in the Contratenor (corresponding to the second breve of b. 22 to the first breve of b. 25, inclusive) If reckoned in imperfect major modus with imperfect minor modus then this series of rests would begin midway through the fourth unit of imperfect minor modus and hence would need to begin with a single breve rest in order to complete the mensural unit. This would then be followed by the two pairs of imperfect longa rests filling the third and fourth units of imperfect minor modus.

Neither the VatS 14 nor the VatC 234 scribe has therefore made it straightforward to reckon the mensuration of this subsection through their placement of rests. The counterpoint is, however, quite clear in its delineation of perfect minor modus through the cadences between units 2-3, 6-7, and 8-9 thereof (at bb. 21-22, 25-26, and 26-27). These cadences

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[14] See Rob C. Wegman, 'Mensural Intertextuality in the Sacred Music of Antoine', in *Antoine Busnoys: Method, Meaning, and Context in Late Medieval Music*, ed. Paula Higgins (Oxford, 1999), 175-204 at 181. Digital images of BrusBR 5557 at <https://idemdatabase.org/items/show/199>.

would also mark the boundaries between the first and second (beginning of b. 22), third and fourth units (beginning of b. 26), and the end of the final unit (end of b. 27) of imperfect major modus, which lends weight to the validity of such a reckoning, as does the entry of the Bassus at the beginning (b. 22) of the second unit of imperfect major modus. It would therefore seem most likely that Busnoys composed his 'Christe' of four units of imperfect major modus with perfect minor modus, imperfect tempus, and minor prolation. This might seem to support Thomas Brothers's interpretation of the mensural structure of this subsection: 'The chances of a scribe successfully applying the sign {O}2 to a section that was originally written in {C} are far less than the reverse, for {C} can always be substituted for music that is written in {O}2.'[15] Rachel Carpentier has, however, recently made the convincing point in this journal that while the sign {O}2 does make perfect minor modus explicit, it is not the only sign under which it can occur.[16] As will be explained below, I find Brothers's opinion that the entire mass ought to be read in perfect minor modus difficult to support.

The Tenor of the 'Kyrie' 2 is notated in imperfect tempus with major prolation ({C.}) under which phrases 5 9 1 2 and 3 of the *L'homme armé* melody are presented in a manner that suggests the presence of one unit of perfect major modus and three units of perfect minor modus. Since tempus in the canonic tenor translates to minor modus in the proportional realization and non-proportional parts, it ought to be expected that the breve rest in tempus 5 of the canonic Tenor (on which all sources agree) should be proportionally equivalent to the fifth unit of minor modus in the polyphony (bb. 37-38), which is notated in {O}. To explain it another way, the imperfect tempus notated in the {C.} mensuration signature in the canonic Tenor translates to imperfect minor modus in the polyphony after having applied implicit subduple proportion. On this basis, the proper reckoning of 'Kyrie' 2 must be three units of perfect major modus with nine units of imperfect minor modus. This interpretation is borne out by the strong cadences between units 4-5, 5-6, 6-7, 7-8, 8-9, and at the end of unit 9 of

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[15] See Thomas Brothers, 'Vestiges of the Isorhythmic Tradition, 18. This view was advanced earlier by Rob C. Wegman in his letter to the editor of the *Journal of the American Musicological Society*, 42 (1989): 437–443 at 440. Gallagher later wrote, 'there are no clear examples of C being replaced with O2', in *Johannes Regis*, 104–7.

[16] Rachel Carpentier, 'Modus and Mensuration in Busnoys's *Missa L'homme armé*', *Journal of the Alamire Foundation* {insert issue no.} (2021?), {insert page ref}.

imperfect minor modus (at bb. 36-37, 38-39, 40-41, 42-43, 44-45, and 46-47), which observation is contradictory to Brothers's assertion that the whole mass should be read in perfect minor modus.[17] My experience of performing the mass does not accord with Ruth DeFord's claim that the cadences in the Kyrie are 'too far apart to provide a clear sense of the binary grouping of the perfect breves'.[18]

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The Tenor of Busnoys's 'Et in terra' is notated in all sources in perfect tempus with major prolation ({O.}), and opens with a pair of three-space longa rests, signalling that it ought ostensibly to be reckoned in perfect minor modus. The melodic phrases of the tenor, however, are more logically reckoned in *pairs* of tempora. Reckoning the tenor in nine units of imperfect minor modus, accordingly, melodic phrase 1 begins and ends respectively on the initia of tempora 7 and 8, thereby occupying unit 4 of imperfect minor modus. Melodic phrases 2 and 3 completely occupy unit 5 of imperfect minor modus, and melodic phrase 4 likewise fills the second half of unit 6. The first statement of melodic phrase 5 begins on tempus 14, half-way through unit 7 of imperfect minor modus, and ends on the initium of unit 15 of imperfect minor modus. Finally, the second statement of melodic phrase 5, which concludes at the beginning of the 'Qui tollis', occupies the first half of the ninth and final unit of imperfect minor modus, the second half being completed with a breve rest. It is plain that an attempt to parse the Tenor of this subsection in perfect minor modus would be far less successful, hence the opening rests properly ought to have been notated as three two-space longa rests.

The scribe of VatS 14—or whoever composed the *ad longum* Tenor resolution therein—evidently also recognized the notational deficiency of the opening rests in the proportional tenor, notating three pairs (rather than two triplets) of three-space longa rests, indicating imperfect major modus with perfect minor modus. However, it seems most likely that the original notation of the opening rests in the proportional tenor was in fact a *triplet* of two-space longa rests, indicating perfect major modus and imperfect minor modus. Under this

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[17] Brothers, 'Vestiges of the Isorhythmic Tradition', 18–22.

[18] Ruth I. DeFord, Tactus, *Mensuration and Rhythm in Renaissance Music* (Cambridge, 2015), 276.

reckoning, the proportional 'Et in terra' Tenor is composed of three units of perfect major modus, neatly encompassing three distinct sections each comprising three imperfect longas: the opening rests, the first half of the tune, and the second half of the tune. After augmentation, the Tenor's major modus cannot be notationally reflected in the other three unaugmented parts, which may have confused the VatS 14 scribe, quite apart from to the general rarity of perfect major modus. The structural integrity lent to this subsection by the mensural organization of the proportional Tenor at the level of active perfect major modus is, I suggest, even more perceptible when singing than when listening to the mass.

After augmentation, the reckoning of the Tenor in three units of perfect major modus, nine units of imperfect minor modus and eighteen tempora corresponds to nine units of imperfect major modus and eighteen units of perfect minor modus in the polyphony. This is borne out in the counterpoint of the three non-proportional parts, wherein imperfect major modus is articulated by strong cadences (at bb. 6-7, 18-19, 24-25, 48-49, and 54-55) marking the boundaries between units 1-2, 3-4, 4-5, 8-9, and at the end of unit 9, in addition to the entries of the Bassus (with anacrusis) at unit 2 (beginning at b. 7), and Tenor at units 4, 5, 7, and 9 of imperfect major modus (bb. 19, 25, 40, and 49). By placing rests equal to a full unit of perfect major modus at the beginning of the proportional Tenor, Busnoys ensures that a full third of the polyphonic subsection is filled with the introitus, before the Tenor's first entry.

Having established the basic mensural structure of the 'Et in terra', it becomes easier to gain purchase on the manner in which Busnoys builds the tension between rhythmic and contrapuntal articulation in groups of 2 and 3 that reaches its climax in the 'Confiteor'. The following contrapuntal features subvert the periodicity of the underlying mensural structure in the 'Et in terra':

1. In the introitus, it is the *leading* voice of the fuga at the distance of three semibreves between the Bassus and Contratenor that marks (having taken into account the anacrusis) the initium of unit 2 of imperfect major modus (beginning of b. 7), while conversely it is the *following* voice of the fuga at the same distance between the Discantus and Bassus that marks the initium of unit 3 (beginning of b. 13). For good measure, the Discantus's offset entry is marked with a strong cadence between tempora 11 and 12 (bb. 11 and 12). Busnoys here toys with the inherent ambiguity of fuga technique as to where the 'event' actually happens in relation to the underlying mensural structure.

2. The strong cadences between tempora 25-26 (bb. 25-26, one tempus after the initium of unit 5 of imperfect major modus) and tempora 43-44 (bb. 43-44, one tempus before the initium of unit 8 of imperfect major modus), each of which is additionally marked by the re-entry of the Discantus.

3. The strong cadences between tempora 28-29 (bb. 28-29, two tempora before the initium of unit 6 of imperfect major modus) and 34-35 (bb. 34-35, two tempora before the initium of unit 7 of imperfect major modus). These cadences are of particular structural significance and interest since they are made with the Tenor, whose melodic and mensural structures in the 'Et in terra' are more complex than elsewhere in the mass.

Busnoys demonstrates a beguiling interest in experimenting with the combinative effects of contrapuntal phrases of varying length, and their complex relationships with the underlying mensural and melodic structures of the Tenor, such that the counterpoint is much more than simply a corollary of the Tenor.

The Tenor of the 'Qui tollis' is notated in all sources in imperfect tempus with major prolation ({C.}). All sources transmit an initial three-space longa rest indicating perfect minor modus, in four units of which the Tenor may therefore be reckoned, excluding the final longa. The tenor is therefore composed of twelve imperfect tempora and twenty-four units of major prolation worth forty-eight minims. The *L'homme armé* tune is evidently mapped according to this framework, since the opening longa rest completely fills the first unit of perfect minor modus, while the completion of the second statement of melodic phrase 5 (begun in the ninth unit of imperfect minor modus of the 'Et in terra') and the entirety of melodic phrase 9 neatly occupy the second unit of perfect minor modus. Units 3 and 4 of perfect minor modus each begin with a breve rest and are completed by melodic phrases 1, 2, and 3, whose final note fills unit 5 of perfect minor modus. Busnoys evidently composed this Tenor in two units of imperfect major modus.

Just as in previous subsections, the Tenor of the 'Qui tollis' is notated in implicit subduple proportion, while the other parts are notated in {O}2, i.e., explicitly in duple proportion. This therefore creates a quadruple relationship between the Tenor and the other three parts where every Tenor minim is implicitly worth a breve in the Discantus, Contratenor, and Bassus. The twenty-four units of major prolation in the proportional tenor are therefore equivalent to twenty-four units of perfect minor modus in the non-proportional

parts, while the twelve units of imperfect tempus in the proportional Tenor translate to twelve units of imperfect major modus.

Sufficient aspects of Busnoys's counterpoint appear to support this theoretical extrapolation of imperfect major modus from the imperfect tempus of the proportional Tenor. Namely, the entries of the non-proportional parts appear to mark the boundary (beginning of b. 61) between units 2 (bb. 59-60) and 3 (bb. 61-62) of imperfect major modus, there are strong cadences between units 3-4, 4-5, 6-7, and 7-8 of imperfect major modus (at bb. 62-63, 64-65, 68-69, and 70-71), and there is a strong move to *Bb* marking the initium of unit 11 of imperfect major modus (beginning of b. 77). However, there are much more subtle organizational strategies at play as Busnoys again subverts the underlying mensural structure of the subsection. It is impossible not to hear structural significance in the counterpoint at the boundary (beginning of b. 66) between units 9 and 10 of perfect minor modus, where the Discantus has an extended cadential figure in sesquialtera, and the Bassus begins its most extraordinary phrase of the whole mass, spanning a full minor 10th. It is almost as if Busnoys is implying simultaneous perfect major modus here, in marking the end of nine units of perfect major modus. A further observation is the apparent organization of the tempora in this first span into groups of ten, ten, and seven, marked by strong cadences between tempora 10-11, 20-21, and 27-28 (respectively at b. 61, breves 1-2; b. 63, breves 2-3; and bb.65-66), filling what could be seen as three implied superimposed units of perfect major modus. Ruth DeFord has made the astute observation that both here and in the 'Et incarnatus', 'the introductory duos feature imitation at the interval of three semibreves, as if the *tempus* were perfect, rather than imperfect'.[19] It is apparent that Busnoys is creating multiple durational relationships and structures that operate in tension with the principal mensural structure articulated in his proportional Tenor. Perhaps this level of structural sophistication accounts for the explicitly ungrouped perfect longa rests in the *ad longum* tenor resolution in VatS 14, though to describe major modus as simply inactive in this subsection would seem to miss the point of Busnoys's somewhat dizzying superimposition of implied mensural structures.

[19] DeFord, Tactus, *Mensuration, and Rhythm*, 277. It is worth noting that this particular mensural conceit necessitated the double-checking of sources early in the rehearsal process described at the beginning of the present article.

The Tenor of Busnoys's 'Tu solus' is notated in {C}3, indicating imperfect tempus and major prolation, as well as probably a sesquialtera relationship at the minim level with subsections in {O}.[20] The other three parts are also notated in {C}3, therefore this is the only subsection in the mass where the relationship between the Tenor and the non-tenor parts is non-proportional. The Tenor is organized in three units of imperfect major modus and six units of perfect minor modus. Each of the first four units of perfect minor modus begins with a rest of different duration that results in a syncopated relationship between the Tenor melody and its mensural structure. This is further articulated by cadences that are non-coincident with the mensural structure on the level of tempus, e.g. in tempus 5 (b. 86) and minor modus, e.g. at tempora 7-8 (bb. 88-89), thereby creating a contrapuntal distinction between the first two units of imperfect major modus (bb. 82-87 and 88-93), and the third (bb. 94-99) within which latter passage each component unit of perfect minor modus is by contrast marked by a Tenor note on its initium.

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The Tenor of Busnoys's 'Patrem omnipotentem' is notated in all sources but BarcBC 454 in perfect tempus with major prolation ({O.}), like the 'Et in terra'.[21] It opens with three ungrouped perfect longa rests, ostensibly indicating inactive major modus with perfect minor modus. The fact that the Tenor is composed of nine tempora of rest followed by nine tempora of melody, though, can surely be no accident, and hence I suggest that Busnoys's original notation would have been a triplet of three-space longa rests. Overall, therefore, the Tenor is reckoned as two units of perfect major modus with six of perfect minor modus.[22] As before, the general scarcity of major modus of either kind, in addition to the impossibility of

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[20] On the sign {C}3, see DeFord, Tactus, *Mensuration, and Rhythm*, 275; and Anna Maria Busse Berger, *Mensuration and Proportion Signs: Origins and Evolution* (New York, 1993), 148-54.

[21] The omission of the dot in BarcBC 454 must be a scribal error.

[22] BarcBC 454 indicates imperfect major modus here, notating a pair of perfect longa rests followed with a single separate perfect longa rest. This cannot be the correct reckoning since it would not coincide with the clear structural division of the Tenor into two with the voice's entry after nine breve rests.

reflecting Tenor major modus notationally in non-proportional parts may have confused the VatS 14 scribe. This all-perfect mensuration across both species of modus as well as tempus and prolation was the largest mensural structure available to Busnoys, representing an expansion of the mensural structure of the 'Et in terra' Tenor through the change from imperfect to perfect minor modus. The six units of perfect minor modus in the 'Patrem' Tenor correspond with six units of perfect major modus in the non-proportional voices, which are notated in perfect tempus with minor prolation ({O}). There is a strong structural division exactly at the midpoint: three perfect longs of rest followed by melody of equivalent duration.

Whoever originated the *ad longum* Tenor resolution in VatS 14, however, was evidently trying to reckon the music in imperfect major modus, opening with four pairs of perfect longa rests followed by a single perfect longa rest, constituting the first half of the fifth unit of ostensible imperfect major modus, half-way through which would fall the significant midpoint of the mensural structure as properly reckoned in perfect major modus.[23] The scribe of the *ad longum* Tenor resolution ought to have notated three triplets of three-space longa rests. There are two further problems with the notation of the rests in the VatS 14 Tenor resolution. First, the imperfect longa rest at tempora 45-46 is incorrectly notated, since it does not respect the division between units 15 and 16 of perfect minor modus, which is certainly operative. The scribe ought to have written a breve rest on the lowest space, completing the fifteenth unit of perfect minor modus, and followed it with a separate breve rest on the next space up, showing the beginning of the sixteenth unit of perfect minor modus. Secondly, the final three breves' worth of rest given in the VatS 14 Tenor resolution are notated as an imperfect longa followed by a single breve. Since, reckoned together, they fully constitute the eighteenth unit of perfect minor modus, they ought to be grouped into a perfect longa rest. These two notational errors are equally problematic whether perfect, imperfect, or no major modus is operative.

In tempora 10-17 (bb. 10-17), the Discantus is required to rest for the equivalent of twenty-two semibreves. All sources give two semibreve rests in each of tempora 10 and 17,

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[23] The VatS 14 Tenor resolution was copied verbatim into VatS 63. In VatSM 26, the opening rests of a Tenor resolution were copied, but are followed by no notes. The scribe of VatSM 26 notated the ninth perfect long as divided breve rests, which is clearly incorrect since perfect minor modus is demonstrably operative.

correctly completing each respective unit of tempus. The remaining six breves' worth of rest are notated in three ways: VatSM 26 has a pair of imperfect longa rests on the two middle spaces of the stave (tempora 11-14 at bb. 11-14) followed by a single imperfect longa rest on the top two spaces (tempora 15-16 at bb. 15-16). This notation implies operative imperfect major modus and operative imperfect minor modus, with a new unit of imperfect major modus beginning on tempus 15 (b. 15). This cannot be correct, since if imperfect major modus with imperfect minor modus were present, the fourth unit of major modus would begin on tempus 13 (b. 13), precisely in the middle of the paired longa rests using which the scribe has implied a mensural structure. The polyphony at this early point in the 'Patrem' is plainly patterned in units of three tempora, each usually marked by a clear cadence at the boundaries. This is strong evidence that perfect minor modus is operative, even though the contrapuntal patterning becomes more complex later on.

The scribes of the other sources (VatS 14, VerBC 761, VatS 63, VatC 234, and BarcBC 454) all correctly recognize the presence of perfect minor modus, notating two perfect longa rests. However, as notated they are aligned with neither the fourth, fifth, nor the sixth units of perfect minor modus (tempora 10-12, 13-15, 16-18 at bb. 10-12, 13-15, 16-18). In all sources, therefore, the disposition of longa rests at this point in the music would be considered deficient according to Busnoys's practice. The rests ought be written as an imperfect longa on the two middle spaces, followed by a perfect longa on the top three spaces, and finally a breve on the top space, if they are to coincide with the mensural structure of the music.

Central to Taruskin's analysis of this mass was his opinion that Busnoys's 'Et incarnatus' was composed of thirty-one tempora, which was proposed as a number symbolic of *L'homme armé* since it equals the total number of statutory members of the Order of the Golden Fleece in the period 1431-1517 and the number of semibreves in the tune.[24] I concur with Rob C. Wegman that if 'the final long is a *nota ultra mensuram*, of indefinite duration, and is therefore to be excluded from the total duration of a composition or section' then the terminal point in the mensural structure must be that indicated by the Tenor, since, as I am seeking to demonstrate, it is from the Tenor that the mensural structure of the whole is

[24] Taruskin, 'Antoine Busnoys and the *L'Homme armé* Tradition', 271-73.

derived.[25] One could go slightly further than Wegman, who described the polyphonic extension beyond the Tenor final as an 'imitative continuation' and a 'cadential flourish', and offer the interpretation that Busnoys had the confidence to transcend the mensural structure he had established, these final tempora of the 'Et incarnatus' representing the apotheosis of his ability to weave a seemingly endlessly inventive, organic web of intricate complexity and subtlety over the surest of structural foundations.

Like the Tenor of the 'Qui tollis', that of the 'Et incarnatus' is notated in all sources in imperfect tempus with major prolation ({C.}). All sources transmit an initial three-space longa rest indicating perfect minor modus, in five units of which the Tenor may therefore be reckoned, excluding the final longa. It follows from this that the Tenor cannot have major modus since five is divisible by neither two nor three. Just as in the 'Qui tollis', again, the 'Et incarnatus' Tenor is notated in implicit subduple proportion, while the other parts are notated in {O}2, again creating a quadruple relationship between the Tenor and the other three parts where every Tenor minim is worth a breve in the Discantus, Contratenor, and Bassus. The thirty units of perfect prolation in the Tenor are therefore equivalent to thirty units of perfect minor modus in the other parts, while the fifteen units of imperfect tempus in the Tenor correspond to fifteen units of imperfect major modus.

The mensuration sign of Busnoys's 'Confiteor' Tenor was given incorrectly by the VatS 14 scribe as {C.}, while the original sign {C/.} (imperfect tempus with major prolation with a faster tactus or *acceleratio mensure*) is correctly supplied in VatC 234 and VatSM 26.[26] All sources transmit a perfect longa rest at the beginning of the Tenor, indicating that the eighteen units of imperfect tempus are structured in six units of perfect minor modus, the first of which is filled completely with the perfect longa rest. Melodic phrase 1 and the first three notes of melodic phrase 4 fill unit 2 of perfect minor modus, while unit 3 of perfect minor modus begins with the last note of melodic phrase 4 and is completed by melodic phrase 5. The repetition of melodic phrase 5 marks this important mid-point in the Tenor's structure, filling unit 4 of perfect minor modus, while unit 5 of perfect minor modus is begun with

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[25] Rob C. Wegman, letter to the *Journal of the American Musicological Society* 42 (1989), 437-43; see also Taruskin's reply in the same issue, 443-52.

[26] On the changing meaning of {C/.} in the fifteenth century, see Busse Berger, *Mensuration and Proportion Signs*, 144 n. 88.

melodic phrase 9 and completed with rests. At the end of the structure, melodic phrase 1 opens unit 6 of perfect minor modus. On this basis, it seems most likely that Busnoys composed the Tenor in two units of perfect major modus, the midpoint of the structure being articulated by the repetition of melodic phrase 5. It is noteworthy that tempus 18 is fully occupied by a breve rest, which must be reckoned as part of the Tenor's mensural structure; the implications of this will be discussed further below.

The Tenor of the 'Confiteor' (notated in {C/.}) is, like most of the tenors in the mass, presented in implicit subduple proportion, while the Discantus, Contratenor and Bassus are notated in {rev. C/}, indicating a sesquitertial relationship with the non-tenor parts on the minim level. The relationship between these signs caused some confusion in the sources. The *ad longum* Tenor resolution in VatS 14 renotates the canonic tenor in breves and semibreves under C3, which according to Richard Sherr 'renders the V functionally meaningless, making it the equivalent of C', though, he continues, this 'makes no difference in performance if one considers the tactus not as the minim of the tenor but as the breve of V'.[27] Ruth DeFord suggests that Busnoys's selection of {rev. C/} rather than {rev. C} was motivated by a desire to 'match the cut sign of the tenor with a cut version of the proportion sign.'[28] It should be added that the implicit subduple proportion between the Tenor and the non-tenor parts operates in this subsection at the level of the semibreve or breve and not the minim, whereas elsewhere in the mass the doubled minim of major prolation governs the proportion, rather than the doubling of the semibreve or breve. The stroke through both mensural signs must therefore indicate *acceleratio mensure* rather than proportion. From a performance perspective, it is therefore vital to note that the increase in tempo should be made from the Tenor of the 'Et incarnatus' to that of the 'Confiteor', and the sesquitertia of the non-tenor parts in the 'Confiteor' is relative only to the accelerated Tenor tempo and not to the preceding {O}2. The six units of perfect minor modus and eighteen imperfect tempora of

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[27] Sherr, *Cappella Sistina, Ms 14*, 39.

[28] DeFord, Tactus, *Mensuration, and Rhythm*, 280.

which the Tenor is composed correspond with six units of imperfect major modus and eighteen units of perfect minor modus in the Discantus, Contratenor and Bassus.[29]

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The 'Sanctus' Tenor is notated in all sources in {O.} and is composed of twelve perfect tempora. VatS 14 etc.,[30] VatC 234, and VatSM 26 open with a three-space longa rest followed by a single breve rest, signalling perfect minor modus, while BarcBC 454 uniquely transmits a pair of two-space longa rests, suggesting imperfect minor modus with imperfect major modus. Given that Busnoys begins with a full major-modus unit of rest in the proportional Tenor in the opening subsections of the Gloria and Credo, I suggest that BarcBC 454's reckoning is correct here: The 'Sanctus' Tenor opens with rests equal to a full unit of imperfect major modus, accounting for exactly a third of the subsection's mensural structure. This Tenor is therefore reckoned as three units of imperfect major modus with six units of imperfect minor modus, which correspond to six units of imperfect major modus and twelve units of perfect minor modus in the non-proportional parts, which are notated in {O}.[31] This is confirmed by the two pairs of three-space longa rests at the beginning of the Bassus in VatS 14 etc., VatC 234; the three pairs of two-space longa rests in BarcBC 454 and VatSM 26 are rejected as faulty readings.

The Tenor does not participate in the 'Pleni sunt celi', which is notated in {O}. The Bassus opens with two pairs of triple-space longa rests in VatS 14 etc. and VatC 234, suggesting imperfect major modus with perfect minor modus.[32] At the level of imperfect

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[29] For an extended discussion of the 'Confiteor', see Emily Zazulia, 'Composing in Theory: Busnoys, Tinctoris, and the *L'homme armé* Tradition', *Journal of the American Musicological Society*, 71 (2018): 1–73.

[30] Here and later, 'VatS 14 etc.' is used to refer to that manuscript and its apographs VerBC 761 and VatS 63.

[31] The VatS 14 scribe inserts a terminal maxima and the BarcBC 454 scribe adds, somewhat curiously, a terminal semibreve. Neither of these can have featured in Busnoys's original notation and are correctly omitted in VatC 234.

[32] In BarcBC 454 and VatSM 26, the Bassus opens with three pairs of two-space longa rests, suggesting imperfect major and minor modus.

major modus, this reading is supported by the strong cadences at the junctures of (a) units 2 (bb. 44-49) and 3 (bb. 50-55) of imperfect major modus (in addition to the first entry of the Bassus); and (b) units 3 (bb. 50-55) and 4 (bb. 56-61). Busnoys then apparently adds a final half-unit of imperfect major modus to the end of the mensural structure. The Pleni' is therefore reckoned in nine units of perfect minor modus, governed by four and a half units of imperfect major modus

The 'Osanna' Tenor is notated in {C.} and is composed of nine tempora organized in three units of perfect minor modus, each of which begins with one or more rests. The entire mensural structure of the Tenor is therefore encompassed within one unit of perfect major modus. Since the non-Tenor parts are notated in {O}2, the nine imperfect tempora and eighteen units of perfect prolation correspond with nine units of imperfect major modus and eighteen units of perfect minor modus. Only the non-Tenor parts participate in the Benedictus, wherein paired three-space longa rests in the Bassus of all sources confirm the correct reckoning as six units of imperfect major modus with twelve units of perfect minor modus.

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Before moving on to analyse the mensural structure of the Agnus Dei, it is necessary to divert attention briefly to Busnoys's verbal canon, which is given only in 'Agnus Dei' 3, but which also applies to 'Agnus Dei' 1: '*Ubi thesis assint sceptra* / *Ibi arsis et e contra*'. This is formed of a rhythmical couplet in rhyming eight-syllable lines, not of metrical verse, and translates literally as 'Where the sceptres of descent are present / There [they are] of ascent and vice versa', and requires the Tenor to be inverted and consequently to lie at the bottom of the texture. One might possibly attempt to interpret 'sceptra' as referring to the notated minims, which with their long stem leading to a diamond or round head take the approximate form of a royal sceptre. However, this cannot be correct since the canon applies equally to the (stemless) semibreves as to the minims.[33] Yet should 'sceptra' have a concrete sense, it must

[33] The translation 'Where there are sceptres [vertical lines?] by the theses, there should be the arsis and vice versa', is given by Bonnie Blackburn, suggesting that 'sceptra' might refer to 'vertical lines'. This would make some sense as a reference to those notes that have vertical stems, which are affected by the canon, but would not make sense if the meaning were applied to rests, whose value could potentially be affected through inversion. See Bonnie

in some way be understood to mean either ‘notes’ or ‘melodic intervals’. I am grateful to Jeffrey Dean for his suggestion that Busnoys probably included the word ‘sceptra’ primarily to make the rhyme work, since a straightforward prose version could otherwise easily have been written. As it stands, ‘sceptra’ takes the abstract poetic sense as a metonymy for ‘rule, dominion’, hence an alternative translation could be ‘Where the rule of descent is present / There [it is] of ascent and vice versa’.

The Tenor of the ‘Agnus Dei’ I is notated in {O.} in all sources and is composed of twelve perfect tempora. All sources transmit an opening three-space longa rest followed by a single breve rest, signifying perfect minor modus, of which the Tenor may therefore be reckoned in four units with two units of imperfect major modus. The disposition of the Tenor’s melodic phrases makes good sense according to this structure. Since it is notated in implicit subduple proportion, the Tenor’s four units of perfect minor modus and twelve perfect tempora correspond with four units of perfect major modus and twelve units of perfect minor modus in the non-proportional parts, which are notated in {O}. This mensural structure is confirmed by paired perfect longa rests at the beginning of the Bassus part, and is reflected in the resultant polyphony by the cadence between tempora 9 and 10 (bb. 9-10), which marks the boundary between the first and second units of major modus (bb. 1-9 and 10-18).

At the beginning of each of the central sections of the mass (Gloria, Credo, Sanctus), Busnoys designed introitus passages whose length was determined by the rests placed at the beginning of the proportional Tenor. The ‘Et in terra’ Tenor is composed of three units of perfect major modus, the first of which is filled entirely with rests, meaning that the polyphonic introitus lasts for exactly one third of the subsection. The ‘Patrem’ Tenor is composed of two units of perfect major modus, the first of which is filled entirely with rests, meaning that that subsection’s polyphonic introitus lasts for exactly half of the subsection. Likewise, the Sanctus is composed of three units of imperfect major modus, the first of which is filled entirely with rests, meaning that the polyphonic introitus lasts for exactly one third of the subsection. From this we might expect a similarly large and integral block of mensural structure to be occupied by the introitus at the beginning of ‘Agnus Dei’ 1. Busnoys,

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Blackburn, ‘Catalogue of Enigmatic Canonic Inscriptions’, in Katelijne Schiltz, *Music and Riddle Culture in the Renaissance* (Cambridge, 2015), 367-477 at 454.

however, having placed rests equal to a full unit of perfect major modus (which adds up to one-third of the whole subsection), added a further breve and a semibreve rest to the proportional Tenor.[34] This has the masterful effect in the polyphony of delaying the Tenor's entry by four tempora (bb. 10-13) from the initium of the second unit of perfect minor modus. Busnoys fills these four tempora with a *fuga ad minimam* between the Discantus and Contratenor. That the ictus in each part is out of phase with the other, and that the four-minim sequence module runs across the six-minim tempus, is highly disorientating. This has the consequence of greatly intensifying the steadying effect of the structural Tenor at its (delayed) entry.

The 'Agnus Dei' 2 is written for Discantus, Contratenor, and Bassus only, and does not involve the Tenor. It is notated in {O} and composed of twenty-seven tempora. Two ungrouped perfect longa rests are notated in in tempora 10-15 (bb. 47-52) of the Discantus and two ungrouped perfect longa rests (bb. 38-45) are given at the opening of the Bassus in VatS 14 etc. This suggests that the VatS 14 scribe failed properly to reckon the mensural structure as three units of perfect major modus with nine units of perfect minor modus. Here, it is valuable to have the witness of ModAS 221, since this is the earliest source to transmit the notationally correct reading of a pair of three-space rests in the Discantus (followed by VatC 234 and VatSM 26). Both sets of rests are notated correctly in VatC 234 and VatSM 26.

The mensural structure at the level of tempus in the 'Agnus Dei' 2 is reinforced by the opening Contratenor-Discantus imitation at the distance of three semibreves, and is subverted at the minor modus level by the cadences between tempora 8-9, 11-12, and 16-17 (bb 45-46, 48-49, and 52-53), and by the remarkable duo in tempora 17-24 (bb. 54-62), wherein the Discantus and Bassus engage in an extended passage of sequential syncopation that obfuscates while still being governed by the underlying mensural framework. Like the duo in 'Agnus Dei' I, that in tempora 17-24 derives much of its effect from being a fuga at the distance of three minims, whereas the sequence module consists of six minims (one tempus), so again the two parts are out of phase.

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[34] It is possible that the added breve rest after the longa rest at the beginning of the Tenor of 'Agnus Dei' I might refer back to the single breve rest at the beginning of the Tenor of 'Kyrie' I.

The Tenor of the ‘Agnus Dei’ 3 is notated in all sources in {C.} and is composed of nine imperfect tempora, which must therefore correspond with one unit of perfect major modus and three units of perfect minor modus. The Tenor’s eighteen units of perfect prolation and nine imperfect tempora correspond with eighteen units of perfect minor modus and nine units of imperfect minor modus in the Discantus, Contratenor, and Bassus.

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< **Table 2. The Mensural Structure of Busnoys’s *L’homme armé* Mass.**>

<Insert Table 2 here>

In the preceding analysis, I have shown that Busnoys’s *L’homme armé* mass may have been planned as a large-scale exposition of, and commentary on the rhythmic organization of mensural music notation and its fundamental divisions into units of two and three. The results of this analysis are summarized in **Table 2**. It seems that Busnoys planned his Tenor at the level of major and minor modus, ensuring a variety of combinations of perfect and imperfect units of major and minor modus grouped by number, falling into the following four categories:

1. The Tenors of ‘Kyrie’ 1, the ‘Osanna’, and ‘Agnus Dei’ 3 are all composed of a single unit of perfect major modus and three units of minor modus (two perfect and one imperfect). These are examples of simpler design and construction that provide a point of comparison for the more sophisticated subsections of the mass. That two of these subsections bookend the mass underlines their function within the formal plan.

2. The Tenors of the ‘Patrem’, ‘Confiteor’, and ‘Agnus Dei’ 1 are all composed of two units of major modus (two perfect and one imperfect), while all three have perfect minor modus—four units in the ‘Agnus Dei’ I and six each in the other two.

3. The Tenors of ‘Et in terra’, ‘Tu Solus’, and ‘Sanctus’ are all composed of three units of major modus, each consisting respectively of six, six, and nine units of minor modus—imperfect in one of the subsections and perfect in the remaining two.

The six subsections in groups two and three exemplify and are discursive of rhythmic patterning in groups of two and three. In the counterpoint, aperiodic phrases and cadence points overlay the Tenor’s structure in endlessly varied and creative ways, forming an intricate and seemingly organic web over the structural framework of the Tenor.

In the ‘Tu solus’ and ‘Confiteor’, Busnoys demonstrates two opposing methods of achieving unity between the Tenor and the other parts. In the ‘Tu solus’ he composed them in the same mensuration while not omitting to subvert that unity though obsessively syncopated imitation. In the ‘Tu solus’ and ‘Confiteor’, he imposed a highly complex mensural relationship that he could manipulate through the use of coloration in order to pitch rhythmic disunity against resolution.

4. The ‘Qui tollis’ and the ‘Et incarnatus’ are special cases, and are otherwise linked as the middle subsections of each of the Gloria and Credo sections of the mass. The ‘Qui tollis’ Tenor is composed of two units of imperfect major modus and four of perfect minor modus, which quantities are indivisible by three, while the ‘Et incarnatus’ Tenor is composed of five units of perfect minor modus, which quantity is divisible by neither two nor three. Within these mensural structures, Busnoys develops the most eloquent and arresting counterpoint in the whole mass. In addition to the features already noted above, attention might be drawn in the ‘Qui tollis’ to the contrast between the momentum of the extended energetic and climactic Bassus phrase in the tenth and eleventh units of perfect minor modus (bb. 66-67) and that momentum’s reversal in the half-speed cadential figures in the Contratenor and Bassus (bb. 68-69) that mark the beginning of the sixth unit of imperfect major modus—tellingly, the exact midpoint of the subsection.

Jeffrey Dean has written that ‘Busnoys’s method was to build on a rigorously patterned foundation a superstructure of the utmost freedom’.[35] Accordingly, we find in his *L’homme armé* mass a rigorous patterning in the construction of the Tenor, yet this patterning is much more subtle than the establishment of, for example, an overtly symmetrical or a purely additive numerical structure. Rather, Busnoys planned an array of mensural structures that use most of the available configurations of major and minor modus in the Tenor, allowing him to place the *L’homme armé* melody in a variety of mensural contexts that expose in different ways its inherent rhythmical qualities. The beguiling contrapuntal superstructure that he wove over the Tenor certainly sounds ‘free’, but only by virtue of carefully

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[35] Jeffrey J. Dean, ‘Verona 755 and the *Incomprehensibilia* composer’, in *Manoscritti di polifonia nel Quattrocento europeo: atti del Convegno internazionale di studi, Trento – Castello del Buonconsiglio, 18–19 ottobre 2002*, ed. Marco Gozzi (Trent, 2004), 93-108 at 99.

constructed microstructures made of interlocking phrases of differing length and using augmented and diminished note values. These interact with the underlying mensural structure, and melodic and rhythmic content of the Tenor in an endlessly imaginative manner that is at once rewarding of and resistant to summary analysis. Emily Zazulia has written perceptively of the idea of Busnoys's mass functioning as a theoretical text.[36] Busnoys's agenda might profitably be seen, however, as one of aesthetic theory rather than music theory at the technical level. In the *L'homme armé* mass, he demonstrates how the mensural system of music notation could indeed provide a firm basis for the generation of artful musical edifices, but also could be developed, extended, and even tested in order to create one of the most iconic musical compositions of the fifteenth century.

The above analytical observations would seem to corroborate my (and my singer colleagues') awareness of complex interplay in Busnoys's mass between patterns of two and three, and between the establishment and evasion of musical expectations at all structural levels from the minim to the largest units of modus. In preparing this article, I have learned that I have the ability to account in writing for only a very small fraction of the extraordinary musical procedures at play in this most beguiling of masses. That it is possible to experience these effects of Busnoys's music simply through singing and listening—in a comparatively short space of time—has therefore for me taken on a new significance and value.

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[36] Zazulia, 'Composing in Theory, 1–73.