The Choral Conductor and *Proportio Sesquialtera*

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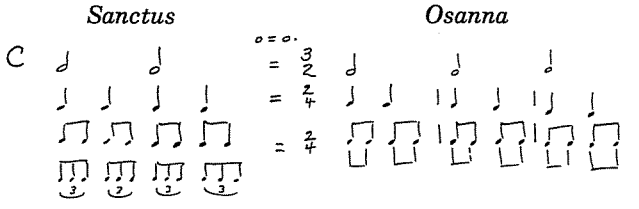
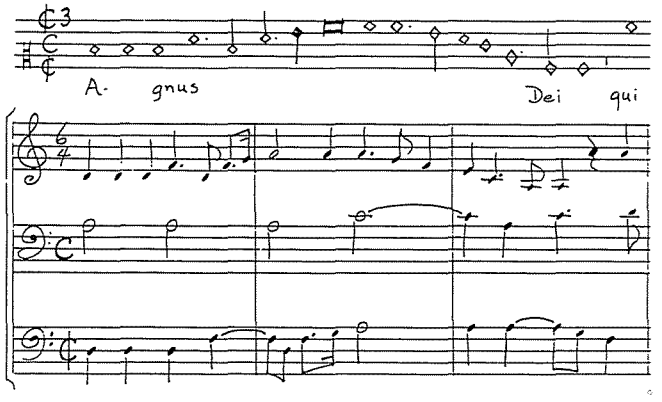
The *Sanctus* of Schubert's youthful *Mass* in G presents a distinct problem: the temporal relationship between the *Sanctus* marked *Allegro moderato* in common time and the *Osanna* in two-four time. Our first impulse may be to double the tempo; this, however, results in a ponderous motion, at best, in the *Sanctus* changing to a hectic motion in the *Osanna.* Examination of the fugal activity in the *Osanna* reveals five consecutive entrances at three-measure intervals thus creating in effect a "measure" of six beats which is maintained throughout with a single final "beat." If this "measure" is equated with the previous measure, the relationship is *proportio sesquialtera*[1] known to musicians since the advent of measured music.



Since three half notes in the *Osanna* occupy the same space as two in the *Sanctus* in a *proportio sesquialtera,* the duration value is reduced one third thus creating greater animation. If the quarter in the *Sanctus* is taken at M.M. 60, the quarter in the *Osanna* should be M.M. 90 (60 x 3/2 = 90). If this relationship is maintained, the two parts are practically the same length giving a balanced binary form.

Consideration of the second *Agnus Dei* from the *Missa L'Homme arme super voces musicales* by Josquin des Pres (1450-1521) will help clarify *proportio sesquialtera.* Apel reproduces the canon from the *Dodekachordon*[2] (1547) and provides the beginning of his transcription in his great work *The Notation of Polyphonic Music 900-1600*[3]; he includes the canon in the "original" notation and in transcription as number 89 in the *Historical Anthology of Music.*[4] Gustave Reese refers to *Agnus* II as "a riddle canon a3 . . . . the three voices are to be derived from the single notated part, by reading each part in a different mensuration."[5] The canon and my transcription begin as follows:



The middle sign C is the mensuration sign (indicating that the divisions and subdivisions of the beat are to be by two's). The upper and lower signs indicate *proportio tripla* and *dupla* respectively; i.e., the upper voice is to take the durations at one-third the value of the notation while the lower voice is to take them at one half the value. The outer voices then produce a vertical *sesquialtera.* The "original" notation appears much simpler than do either of Apel's transcriptions. In the *Historical Anthology of Music,* the original semibrevis is transcribed as a half note, a 1:2 reduction. In *The Notation of Polyphonic Music,* the reduction is 1:4 as Apel recommends in his text; this transcription seems to reflect more accurately the mensuration but has the disadvantage of more complicated rhythmic notation.

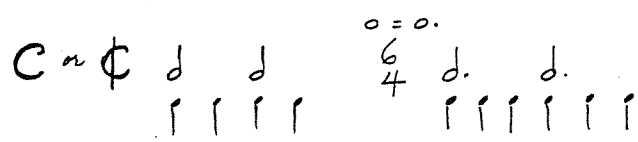
The motet *Tu pauperum refugium*[6] generally attributed to Josquin des Pres displays *proportio sesquialtera* in a traditional appearance. The mensuration sign (¢ in Smijers, C in Apel) of the first part of the motet indicates imperfect *tempus* and minor prolation (i.e., division and subdivision by two). At "bar" 34 appears the proportional indication (3 in Smijers, $\frac{3}{2}$ in Apel). Although Apel indicates that the Smijers edition is his source for the motet, he does not mention that the version he gives has different signatures and durations.

> During and after the Josquin period the sign ¢ was universally adopted as a time signature, to the almost complete exclusion of the signs of *integer valor* [the normal value of the various durations], C and O. We now find under this sign exactly the same note values, breve to fusia, which formerly were used under the sign C . . . . Obviously, a real *diminutio dupla* of the temporal values, i.e., semibrevis = M.M. 96, leads to a tempo which is much too quick. The fact that the same note values appear here . . . suggests the theory that there really was no change in tempo, the semibrevis having approximately the same value now under ¢ as it had formerly under C.[7]

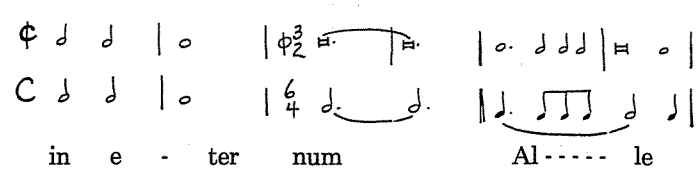
Apel replaced the 3 indicating *proportio tripla* in relation to the *integer valor* with the currently more comprehensible $\frac{3}{2}$ which means that the number of durations represented by the figure on the bottom will, in the forthcoming section, be replaced by the upper figure thus indicating that three durations are to occupy the same space as the preceding two. The composer emphasizes the second sentence of his text by this intensification of the rhythmic activity. The original mensuration is restored with ¢ in Smijers and $\frac{2}{2}$ in Apel. The extension of the final cadence makes the part of the motet from the change of porportion ("bar" 34) to the end three "bars" longer than the first part thus dividing the motet into two analogous parts. "Structural analysis reveals that the second section is an imaginative variation of the first."[8]

The motet *Super flumina*[9] by Nikolaus Gombert (died c. 1560), a pupil of Josquin, also displays *proportio sesquialtera.* In his transcription Schmidt-Gorg also replaced the original ¢ with the mensuration sign C. Near the end of *Super flumina* $\frac{3}{4}$ appears in both the Schmidt-Gorg and the Apel[10] transcriptions. Recalling the Josquin *Agnus* II canon clarifies the proportion: the *proportio tripla* here is in regard to the *integer valor* and thus creates *proportion sesquialtera* with the semibrevis in the preceding *alla breve* measure. Thus in the transcriptions the three quarters in the $\frac{3}{4}$ section equal two quarters in the preceding and following sections.

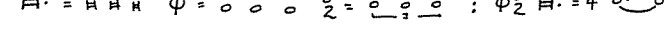
(Obviously, the "O = O· at the beginning of the $\frac{3}{4}$ section in HAM p. 120 is correct; the following "𝅗𝅥. = O" being an error.) If we accept Apel's theories expounded in *NPM,* we will choose approximately these tempos: 𝅗𝅥 = M.M. 48 and 𝅗𝅥. = 48 in the $\frac{3}{4}$ section; thus, we see that Apel's transcription makes the performance of the *sesquialtera* very simple since the beat remains constant with the division changing from 2 to 3. At the return of the initial time signature, Gombert gives a vertical *sesquialtera* very simple since the beat remains constant with the division changing from 2 to 3. At the return of the initial time signature, Gombert gives a vertical *sesquialtera* between the bass and the upper voices; the bass continues in the *proportio tripla* after the other voices have returned to the initial motion. This is clearly an example of *proportio sesquialtera* as it occurs later in Baroque music:



Claudio Monteverdi (1567-1643) published his first works *Sacrae Cantiunculae,* a collection of twenty-six motets for three voices, in 1582. Only two time signatures are used, C and ¢; ten of the motets contain the proportional sign ϕ_2^3. In the Malipiero edition[11], the eleven works marked C are barred into $\frac{4}{2}$ measures while eleven of those marked ¢ are barred into $\frac{4}{2}$ measures and four into $\frac{2}{2}$ measures. The proportional signature ϕ_2^3 appears in only two of the works with the C signature, in five of those marked ¢ = $\frac{4}{2}$, and in four of those marked ¢ = $\frac{2}{2}$. In all cases the ϕ_2^3 is used to indicate first a diminution of the triple *tempus* by the line through the circle and secondly a further diminution in the proportion of 3:2, i.e., *sesquialtera.*[12]. The second motet *Veni in hortum meum* concludes with repetitions of *Alleluia* in the quicker motion. A clear transcription would indicate a change to $\frac{6}{4}$ time with the note values reduced as follows:



This idea is further clarified by the dotted longa in the final measure:



Perusal of these motets leads one to conclude that Monteverdi intended to have the same *tactus* after the proportion sign with "triplets appearing where there had been duplets."[13] *Surgens Ieusus*[14] provides an interesting example of *sesquialtera* without the change of signature; since it is so short, Malipiero simply marks the three measures as triplets instead of using the proportional signature $\frac{3}{2}$ followed by ¢ after the three measures to cancel the change of proportion.

In Monteverdi's *Vespro della Beata Vergine*[15] published in 1610, all the items have C as the time signature. Only the first item *Domine ad adiuvandum* is barred into $\frac{2}{2}$ measures; all the others are barred into $\frac{4}{2}$ measures. Most of the items contain sections in *proportio sesquialtera* which Malipiero marks $\frac{3}{2}$ regardless of the durations. Denis Stevens[16] generally renders these passages in $\frac{6}{4}$ (as explained above); but in the first item he changes the time signature to $\frac{2}{2}$ at bar 8 and then gives the *sesquialtera* passage in triplets of quarters. H. F. Redlich[17] indicates in the first item that the quarter remains unchanged in the $\frac{6}{4}$ bars while in the following items he invariably indicates the reduction in values dictated by *proportio sesquialtera.* Of the thirteen separate items provided by

Redlich, nine of them contain passages in *proportio sesquialtera* which is obviously a means of providing the variety of motion exploited by Monteverdi. Stevens gives the *Magnificat* beginning in $\frac{3}{2}$; he provides no explanation for his deviating from Monteverdi's mensuration (presumably, he desired a metric accent for the second syllable). Although Monteverdi consistently used the proportion sign $C\frac{3}{2}$ or $\Phi\frac{3}{2}$ throughout the *Magnificat,* Stevens transcribed those sections in $\frac{3}{4}$ and indicated on pages 114 and 129 that the quarter is constant thus depriving the work of one of its principal means of variety.

Henry Purcell (1659-1695) composed his festive *Te Deum Laudamus* in D for St. Cecilia's Day, 1694. Unfortunately the only edition currently available to me is Sir Frederick Bridge's Bi-Centenary edition[18] (1859). The preface to Purcell's *A Choice Collection of Lessons for the Harpsichord or Spinnet,* London, 1696, contains Purcell's views on meter and tempo. Since C and not $\frac{4}{4}$ is discussed, one is led to suspect that the initial time signature has been "updated" and that the *tactus* should be the half and not the quarter. The suggested tempo of ♩ = 96 may be a little slow. After eight pages of the vocal score, the meter is changed to $\frac{3}{2}$; the editor indicates that the ♩ = ♩. Surely he means that the new half equals the previous quarter and the tempo is the same but measured in threes rather than fours. If this is the case, the general idea of acceleration with the change from duple to triple is lost; surely Purcell intended acceleration in the ratio of 3:2 — *sesquialtera* — as the basic variety of motion in this composition. After a four-measure codetta, Purcell returns to his initial time signature and full chorus. If Purcell wrote the "Allegro con spirito," is the ♩ = 104 a bit slow? The bass-alto duet is marked "Slow. ♩ = 60." Then "$\frac{3}{2}$ Allegro. ♩ = 96." recurs; this marking is almost in *proportio sesquialtera* with the previous duet. The following trio is marked "$\frac{4}{4}$ Adagio. ♩ = 54" and is followed by a $\frac{3}{2}$ section marked as before. At "0" where Purcell has composed a retard, the editor reduces the tempo to ♩ = 72; surely the motion requires no further slackening than Purcell composed. The conductor is abjured to maintain a constant motion throughout the $\frac{3}{2}$ section. According to the preface of the above mentioned *Lessons:*

> Triple time consists of either 3 or 6 Crotchets in a barr, & is to be known by this $\frac{3}{2}$, this 3 [3 - 1], this 3 or this $\frac{6}{4}$ marke, to the first there is 3 Minums in a barr, & is commonly play'd very slow, the second has 3 Crotchets in a bar, & they are to be play'd slow, the third has ye same as ye former but is played faster, ye last has six Crotchets in a barr & is Commonly to brisk tunes as Jiggs & Paspys [passepieds].

J. S. Bach's early cantata[19] *Gottes Zeit ist die allerbeste Zeit*[20] contains a change of meter in the first chorus. Since the change is from C to $\frac{3}{4}$, the *sesquialtera* is between the quarters; thus two measures of the $\frac{3}{4}$ section equal one of the preceding C. The return to C at the end of the movement marked *Adagio assai* relates to the opening Sinfonia while the harmonic activity leads to the following movement. The third number has a change from C *Lento* to $\frac{3}{8}$the *sesquialtera* is between the eights with the pulse remaining constant. The modulation to F minor is effected in the *Vivace* section and leads to the following fugal movement which should have the same pulse.[21].

The alto aria "Est ist vollbracht" in the *Johannes-Passion*[22] marked C *Molt-adagio* contains a change of meter to $\frac{3}{4}$ *vivace* with a return to C *adagio* for the final section. Since the framing sections have such a slow tempo with the beat divided, the *sesquialtera* is between the slow beat and the very fast $\frac{3}{4}$ measure: thus the beat remains constant (♩ = ♩).

In the *Matthaus-Passion*[23], Bach changes the meter from C to $\frac{6}{4}$ when he sets Jesus' words "Nehmet, esset, dass ist mein Leib" and "Trinket alle daraus . . ."; the first change occurs in the middle of measure 19 of number 11. The *sesquialtera* is between the quarters with the C measure and the $\frac{6}{4}$ measure being equal.

In the *Messe in h-Moll*[24] the *Gloria* Begins in $\frac{3}{8}$ and has a change of meter to C at the beginning of *Et in terra pax.* This is an interesting example of *sesquialtera* with the faster motion first; the one pulse per bar of the $\frac{3}{8}$ should be maintained in the gently moving C. *Domine Deus* in C is followed without break by *Qui tollis* in $\frac{3}{4}$; the *sesquialtera* between the quarters gives a subtle contrast of motion.

The second act of Handel's last oratorio *Jephtha*[25] (1752) concludes with the large chorus "How dark, O Lord, are thy decrees." The beginning of the movement is marked C *Largo.* After twenty-four measures, Handel changes the meter to $\frac{3}{4}$ *Larghetto;* this acceleration of motion in *proportio sesquialtera* leads logically to the next section in C marked "A tempo ordinario." Another $\frac{3}{4}$ *Larghetto* (*Larghetto, ma non adagio* [!] above Chrysander's piano accompaniment) section concludes the Act; surely the conductor must consider another acceleration in *proportio sesquialtera.* Conceivably the following tempos are appropriate:

Largo	Larghetto	A tempo ordinario	Larghetto
C	$\frac{3}{4}$	C	$\frac{3}{4}$
M.M. ♩ = 48-56	♩ = 72-84	♩ = 72-84	♩ = 108-126

The early masses[26] of Mozart contain numerous changes from duple to triple time within the various movements; e.g., *Missa* in C KV 66 (1769): 7 changes in the *Gloria* and 6 in the *Credo.* As Mozart perfects his compositional technique, he has fewer changes of motion within the movements; but, the variety offered by changes in *proportio sesquialtera* is common to his Masses. The *Coronation Mass*[27], KV 317, March, 1779, contains an interesting example of *sesquialtera* in its *Benedictus.* Mozart creates a structure by alternating sections in duple and triple time. The movement begins in $\frac{2}{4}$ *Allegretto;* at bar 60 the meter is $\frac{3}{4}$ *Allegro assai* for a recall of the first eight measures of the *Osanna* with a four-measure extension of the cadence; then the initial ten measures (the choral statement) of the *Benedictus* recurs followed by the last sixteen measures of the *Osanna:*

bar 1	*60*	*72*	*83*
Allegretto	*Allegro assai*	*Allegretto*	*Allegro assai*
$\frac{2}{4}$	$\frac{3}{4}$	$\frac{2}{4}$	$\frac{3}{4}$
	♩ = ♩ =	♩ =	♩.

The *Sanctus* in the *Requiem*[28] (Sussmayr?) in C *Adagio* has a change to $\frac{3}{4}$ *Allegro* at the *Osanna;* the $\frac{3}{4}$ measure equals the previous beat with the *sesquialtera* being between the eighths in the *Sanctus* and the quarters in the *Osanna.*

The traditional use of *sesquialtera* is found in the masses of Haydn and Beethoven. In the *Missa Solemnis*[29] the *Kyrie* in ¢ is marked *Assai sostenuto,* the *Christe* in $\frac{3}{2}$ marked *Andante assai ben marcato,* and the second *Kyrie* in ¢ is marked *Tempo I;* surely this is a classic example of *sesquialtera* being used to provide variety of motion in the central section of the movement. Will the *Gloria* in $\frac{3}{4}$ marked *Allegro vivace* be sufficiently fast if it is performed as a *sesquialtera* with the previous pulse (*Kyrie* ♩ = Gloria ♩.)? With the change of meter to $\frac{2}{4}$ *Larghetto,* will the new pulse equal the previous measure (♩. = ♩)? Next Beethoven changes the meter to $\frac{3}{4}$ *Allegro maestoso;* with an increase of tempo in *proportio sesquialtera* (♩ = ♩.) be sufficient and provide sufficient contrast with the initial motion of the movement? Beethoven marks the following fugal section in C *Allegro, ma non troppo e ben*

marcato; is this another *sesquialtera* (♩ = 𝅗𝅥.)? Beethoven marks his change of meter to 𝔠 *Poco piu Allegro* which seems to negate the degree of acceleration suggested by the change of meter signature. The final section $\frac{3}{4}$ *Presto* could be another *sesquialtera* (𝅗𝅥 = 𝅗𝅥.). And so on throughout the work.

Let us bring this survey of *proportio sesquialtera* to a close with consideration of Brahm's *Requiem.*[30] The editor of the Schirmer edition (reprinted by Kalmus) gave the first movement a tempo of ♩ = 80 and the second movement ♩ = 60 — an exact *sesquialtera* (♩=40=♩=60). The triplets in the orchestra against the duplets in the chorus (bars 55 ff.) produce a vertical *sesquialtera*—one of Brahm's favorite rhythmic devices. At bar 206 in the second movement, Brahms changes the meter to C *Allegro, ma non troppo;* would a simple *proportio dupla* be more appropriate (♩=♩) than the precious ♩ = 56 = ♩= 108? In the third movement 𝔠 *Andante moderato,* Brahms effects the *sesquialtera* by marking triplets rather than by changing the meter to $\frac{6}{4}$; when he changes the meter to $\frac{3}{2}$ at bar 105, he produces a *hemiola* (C ♩♩♩ ♩♩♩ = $\frac{3}{2}$ ♩ ♩ ♩ ♩ ♩ ♩) with the previous triplets and a *sesquialtera* with the previous meter (𝅗𝅥 = 𝅗𝅥.; thus ♩ = 52 = ♩= 78). At bar 173, Brahms changes the meter to C for the closing fugato. Could he mean a literal interpretation of the *alla breve* with the measure remaining constant (𝅗𝅥. = 𝅜)? Brahms provides a similar metrical organization in the sixth movement; C *Andante,* $\frac{3}{4}$ *Vivace,* and 𝔠 *Allegro* for the closing fugato; if the initial tempo is ♩ = 92 as indicated by the editor, the tempo of the middle section should be ♩= 138 with the final section being 𝅗𝅥 = 92. In the final movement, Brahms again provides vertical *sesquialteras* between the voices and the orchestra and between the voices in measures 131-140.

Summary

An understanding of the system of metrical proportions enables the conductor to understand the exact, theoretical relationships which influenced compositional practice from the advent of measured music. Since music is an art as well as a science, the conductor may well alter the tempos from the exact proportional relationships if he deems such alteration necessary for aesthetic considerations.

Footnotes

[1] David Hiley, *"Sesquialtera,"* in *The New Grove Dictionary of Music and Musicians,* edited by Stanley Sadie (London: Macmillian Publishers Limited, 1980) p. 192 f.

[2] Heinrich Glarean, *Dodecachordon* (American Institute of Musicology, 1965), II, p. 272 f, 522.

[3] Willi Apel, *The Notation of Polyphonic Music* 900-1600 (Cambridge: The Mediaeval Academy of America, 1961), p. 181.

[4] Archibald T. Davison and Willi Apel, *Historical Anthology of Music* (Cambridge: Harvard University Press, 1946), p. 92.

[5] Gustave Reese, *Music in the Renaissance* (New York: W. W. Norton & Co., Inc., 1954), p. 237.

[6] Josquin des Pres, *Motetten,* edited by A. Smigers (Amsterdam: Nederlandsche Muzickgeschiedenis, 1924), p. 93 F.

[7] Willi Apel, *The Notation of Polyphonic Music,* p. 192.

[8] Felix Salzer and Carl Schachter, *Counterpoint in Composition* (New York: McGraw-Hill, 1969), p. 402.

[9] Joseph Schmidt-Gorg, *N. Gombert Opera Omnia* (American Institute of Musicology, 1961), V, pp. 66-70.

[10] Willi Apel, *Historical Anthology of Music,* pp. 118-120.

[11] G. Francesco Malipiero, *Tutte le opere di Claudio Monteverdi* (Universal Edition), XIV/I.

[12] Apel, *The Notation of Polyphonic Music,* p. 158 f.

[13] Curt Sachs, *Rhythm and Tempo* (New York: W. W. Norton & Co., Inc., 1953), p. 229.

[14] Malipiero, p. 47.
[15] Malipiero, pp. 123 ff.
[16] Claudio Monteverdi, *Vespers* edited by Denis Stevens (Novello & Co., Limited, 1961).
[17] Claudia Monteverdi, *Vespro della Beata Vergine,* edited by H. F. Redlich, 1955.
[18] Henry Purcell, *Te Deum Laudamus,* editged by Frederick Bridge (Kent: Novello & Co., Ltd., 1902).
[19] J. S. Bach, Cantata 140 *Wachet auf, ruft uns die Stimme,* edited by Gerhard Herz (New York: W. W. Norton & Co., 1972), pp. 3-50 contains "The New Chronology of Bach's Vocal Music" and dates *Gottes Zeit* as 1707.
[20] J. S. Bach, *Gottes Zeit ist die allerbeste Zeit,* Bach-Gesellschaft, Band 11, pp. 149 ff.
[21] Recommended tempos: Sinfonia ♪ = 72-84; Chorus C ♩ = 72-84 3/4 ♩ = 108-126; Tenor solo C ♩ = 54-64 3/8 ♩· = 54-64.
[22] J. S. Bach *Johannes-Passion,* edited by Arthur Mendel (Basel: Barenreiter, 1973), pp. 132-134.
[23] J. S. Bach, *Matthaus-Passion,* edited by Alfred Durr (Basel: Barenreiter, 1972), pp. 51-52.
[24] J. S. Bach, *Missa,* edited by Friedrich Smend (Basel: Barenreiter, 1954) p. 48, pp. 83-96.
[25] G. F. Handel, *Jephtha,* edited by Friedrich Chrysander, 1886.
[26] W. A. Mozart, *Geistliche Gesangswerke* (Basel: Barenreiter, 1968).
[27] W. A. Mozart, *Coronation Mass,* K317 (Melville, N.Y.: Belwin Mills).
[28] W. A. Mozart, *Geistliche Gesangswerke, Requiem.*
[29] Ludwig Beethoven, *Missa Solemnis* in Werke, Serie 19, no. 203 (Ann Arbor: J. W. Edwards, 1949).
[30] Johannes Brahms, *Ein Deutsches Requiem* in Werke, Band 17 (Leipzig: Breitkopf & Hartel).