In the winter of 1927–8, the Catalan composer Roberto Gerhard (1896–1970) completed a three-movement string quartet entitled *Quartetto No. 3*. This was apparently his final assignment while studying with Schoenberg. Shortly afterwards, Gerhard arranged the work for string orchestra and gave it the new title *Concertino*, by which the composition is better known today. A close analysis of the *Quartetto* indicates that the first movement is a direct homage to Schoenberg, akin to tributes paid by Berg, Eisler and other composers of Schoenberg’s circle in the first decades of the twentieth century. Gerhard finished the movement with a clearly identifiable allusion to the minor and major chords that close Schoenberg’s String Quartet in F\# minor, No. 2 Op. 10 (1907–8). Furthermore, he employed the four-pitch set resulting from the fusion of these chords as the movement’s main generative idea, expanding the set’s main structural properties, namely inversional symmetry and transpositional combination, to inform the movement’s large-scale sonata layout as well as a number of melodic and harmonic elements of key structural importance throughout the movement. Primarily in the development, Gerhard elaborated Schoenberg’s materials by implementing a compositional technique used extensively by Bartók at the time, namely the combination of dyads with one or more transpositions of themselves for generating larger (often octatonic) structures. The compositional method implemented by Gerhard in the first movement of the *Quartetto No. 3/Concertino* shows not only the decisive impact of Schoenberg’s principles, but also Gerhard’s indebtedness to the music of Bartók, to whom the work seems to pay as much tribute as to Schoenberg. This article utilises these perspectives to offer an analysis of the first movement of Gerhard’s final assignment under Schoenberg.

**Homage to the Master**

Gerhard studied composition with Schoenberg from late 1923 to mid-1928, first in Mödling (Vienna) and then from March 1926 at the Akademie der Künste in Berlin. Gerhard finished his studies with the composition of a multi-movement work for string quartet, as Schoenberg customarily required of his pupils. The three-movement *Quartetto No. 3* that he submitted is...
the most accomplished work Gerhard composed for Schoenberg (Gerhard may have begun the outstanding Wind Quintet under Schoenberg, but he certainly completed it after his studies ended). Schoenberg reported to the Akademie der Künste that Gerhard had been working on a string quartet during the summer semester of 1927, but not in the following winter semester of 1927–8, Gerhard’s last at the Akademie (Schoenberg 1927, p. 86). I thus infer that Gerhard composed the *Quartetto No. 3* over the course of 1927. The ‘No. 3’ in the title refers to two previous but apparently unfinished string quartets on which Gerhard worked in 1914–17 and the early 1920s respectively, of which no scores or sketches have survived (Alonso 2015, pp. 59–61).¹

The original version of the *Quartetto No. 3* was never premiered, or at least not outside Schoenberg’s class. Around 1929, following the example of Schoenberg, Berg and Webern, Gerhard arranged the work for string orchestra.² The orchestral version – the *Concertino* – was premiered in December 1929 in the all-Gerhard concert at the Palau de la Música Catalana in Barcelona. Apparently in that same year, an unknown publishing house from a German-speaking country produced a print proof of the string quartet version. Although the work was almost ready for publication (with most of the typos amended by some hand other than Gerhard’s), the *Quartetto* was never issued. Whether the overwhelmingly negative reviews of the *Concertino* after the Barcelona première played a role in the publication’s cancellation remains uncertain. In the early 1940s, after re-using the music in his *Violin Concerto*, Gerhard seems to have destroyed the original manuscripts of both the *Quartetto No. 3* and the *Concertino*. The print proof and the orchestral parts for the premiere, left behind in Barcelona, provided the main sources for Meirion Bowen’s 1997 edition of the version for string orchestra. My analysis considers exclusively the version for string quartet that Gerhard intended to publish around 1929. The examples below are drawn from the print proof.³

Gerhard’s tribute to Schoenberg in the *Quartetto’s* first movement has two facets: on the one hand, the movement closes with a clearly identifiable allusion to the final section from Schoenberg’s Op. 10, a work that Gerhard had known and praised since the early 1920s (Ex. 1).⁴ On the other hand, Gerhard reinterpreted Schoenberg’s final chords as a four-pitch configuration, which he used as the generative source for a number of important elements in the composition. In contrast to the recognisable allusion to Schoenberg’s triads at the end of the movement, the latter procedure is revealed as such only by detailed analysis.

The close of Schoenberg’s Op. 10 consists of long sustained pitches and two ascending motives played by the cello and the second violin. The sustained sonorities form a perfect fifth and a tritone over the bass D. They function as a cadential chord that leads to the closing sonority: an F♯ minor chord followed by the raising of the chord’s minor third by one semitone, transforming it to F♯ major. I have labelled set S the four-note pitch-class configuration generated by the union of these two chords (enclosed in broken-line box in

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Ex. 1). Schoenberg was particularly proud of the closing section of his work and stressed how the audience at the premiere had received the coda:

"At the end of this fourth movement a remarkable thing happened. After the singer ceases, there comes a long coda played by the string quartet alone. While, as before mentioned, the [extremely critical] audience failed to respect even a singing lady, this coda was accepted without any audible disturbance. Perhaps even my enemies and adversaries might have felt something here. (Schoenberg 1936–7)"

As Ex. 2 shows, the final section of Gerhard’s movement consists of sustained pitches in the bass followed by a G minor and a G major chord in root position. This is a direct and overt allusion to the closing bars of Schoenberg’s Op. 10.5

Schoenberg’s Set S as Generative Source

The four-note configuration resulting from the fusion of a major and a minor triad (pc set 4–17) is an interesting set for two reasons. On the one hand, its sonority is defined by the higher number of occurrences of interval classes 3 and 4 in its interval vector [102210] and by the fact that these interval classes are balanced (that is, there are the same number of ic3s as ic4s in the vector). On the other hand, it bears two structural properties which have proved particularly stimulating for a number of early post-tonal composers, most prominently Bartók: inversional symmetry and transpositional combination.6

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Homage to Schoenberg and Bartók

Ex. 2 Gerhard, Quartetto No. 3/i, bars 177–183

Fig. 1 shows the interval structure of pitch-class set 4–17. It can be represented as two minor thirds separated by a semitone. Pitches E♭ and E function in Fig. 1 as the axis of symmetry around which the thirds balance. Note that 4–17 can be generated either by transposing a minor third a major third higher (T4), or by transposing a major third a minor third higher (T3). The set can be understood as two minor thirds that are a major third apart and as two major thirds that are a minor third apart. The latter was Gerhard’s main understanding of the set in this movement.

Gerhard paid homage to Schoenberg by using the structural properties of set S to help articulate the large-scale form and a number of melodic and harmonic structures placed at crucial formal junctures within the form. The bi-thematic organisation of the movement’s outer sections and the inclusion of a contrasting central section, in which materials from the exposition are elaborated and textural complexity is increased, clearly evoke the sonata layout. The main deviation from the standard structure is that theme area B comes before theme area A in the recapitulation (Table 1).

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Table 1 Formal outline of Gerhard, Gerhard, *Quartetto No. 3/i*

<table>
<thead>
<tr>
<th>Section</th>
<th>Bar nos. (number of bars)</th>
<th>Theme areas</th>
<th>Subsection</th>
<th>Bars (vertical symmetrical 4–17 sets)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exposition</strong></td>
<td>1–78 (78)</td>
<td>A</td>
<td>a1</td>
<td>1–8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>a2</td>
<td>9–15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>a1′</td>
<td>16–23 S</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>transition</td>
<td>24–41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>b1</td>
<td>42–54 T–U</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>b2</td>
<td>55–60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>b1′</td>
<td>61–73</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>transition</td>
<td>74–78</td>
</tr>
<tr>
<td><strong>Development</strong></td>
<td>79–123 (44)</td>
<td></td>
<td>section 1</td>
<td>79–86</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>section 2</td>
<td>87–92</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>section 3</td>
<td>93–102</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>section 4</td>
<td>102–108</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>section 5</td>
<td>109–117</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>section 6</td>
<td>118–123</td>
</tr>
<tr>
<td><strong>Recapitulation</strong></td>
<td>125–183 (58)</td>
<td>B</td>
<td>b1</td>
<td>124–136 U–V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>b2</td>
<td>137–142</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>transition</td>
<td>143–154</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A</td>
<td>a1</td>
<td>155–162</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>a2</td>
<td>163–169</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>a1′ (coda)</td>
<td>170–183 S</td>
</tr>
</tbody>
</table>
The use of a retrograde symmetrical sonata form was relatively common amongst early twentieth-century post-tonal composers. A number of interwar works, including Stravinsky’s Octet (1923) and, most significant, Schoenberg’s twelve-tone String Quartet No. 3, Op. 30, were written in symmetrical sonata form. The latter was finished in the spring of 1927, premiered in Vienna in September 1927 and published by Universal Edition in December 1927. Since Gerhard apparently started work in Quartetto No. 3 in early 1927 and finished it in late 1927 (and as Schoenberg did not discuss his own works with his students), it is uncertain whether Gerhard had a chance to study Schoenberg’s Op. 30 during his work on the first movement of the Quartetto No. 3. In any case, I argue that the main reason for choosing a symmetrical sonata form for the movement might have been Gerhard’s attempt to create a parallel to the symmetrical structure of the generative 4–17.

The outer sections are punctuated by six structurally significant uses of pc set 4–17, scored as vertical chords. In each instance, these chords are emphasised by different rhetorical means, including extreme register, loud dynamics, accented articulation, melodic contour and contrasting texture. Their scoring makes use of two types of intervallic symmetry. In the first instance, quasi-pitch-symmetrical deployments of pc set 4–17 are pitch symmetrical after octave equivalence of one outer pitch (one of the chord’s outer pitches is displaced by one octave from its pitch symmetrical level). In the second instance, perfectly pitch-symmetrical instances of 4–17 do not require octave transposition to be pitch symmetrical. These are reserved for the recapitulation. I hypothesise that this is a strategy for achieving resolution and reconciliation after the development.

The first statement of a quasi-pitch-symmetrical 4–17 occurs at the beginning of section a1’ in the exposition (Ex. 3 and Table 1). Its realisation has the same pitch-class content as Schoenberg’s set S. I have thus labelled it ‘chord S’. Gerhard weights this chord emphatically: the preceding B minor ascending scale (bar 15) does not finish, as expected, on B, but rather a semitone lower, on A. This, in turn, is a displacement by one octave of where it would need to be to create a perfectly pitch-symmetrical chord. Chord S is found again, with identical pitch arrangement, but in a different instrumentation, at the beginning of the corresponding section a1’ in the recapitulation (bar 170). This second chord S is the loudest sonority in the recapitulation.

Four further symmetrical instantiations of 4–17 – labelled T, U, U’ and V – are the most distinctive sonorities in theme area B in the exposition and recapitulation. Chord T opens theme area B in the exposition (Ex. 4). It is stated twice (bars 42 and 44). The chord stands out rhythmically, texturally and timbrally owing to the reiteration, the loud dynamics, the accented articulation and the homophonic texture, which greatly contrasts with the linear texture of the preceding section. The next phrase begins with another emphasised 4–17: chord U, a transposition of chord T by a minor third.

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(bar 49). Both T and U are pitch-class symmetrical after octave transposition of the bass.

Two new scorings of 4–17 – labelled U’ and V – are stated at the corresponding position in the recapitulation (i.e. at the beginning of theme area B, in bars 124 and 131). Both are perfectly pitch symmetrical. U’ has the same pitch-class content as U, hence the same label. Fig. 2 shows all symmetrical 4–17 sets in the movement and their interval content (presented in number of semitones). An asterisk stands for displacement by one octave from the pitch-symmetrical level.
Fig. 2 Chords’ pitch-class content and voice leading between chords. Operations that map each 4–17 onto each other. Arrows (below) indicate a transposition by ic3.

<table>
<thead>
<tr>
<th>Theme area:</th>
<th>A</th>
<th>B</th>
<th>RECAPITULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bar:</td>
<td>16</td>
<td>42</td>
<td>124</td>
</tr>
</tbody>
</table>

The voice leading for each chord is also symmetrically organised. As Fig. 2 shows, all voices in the chords of the inner pairs (T–U and U′–V) move up three semitones. (An arrow indicates a move by T₃.) The voices from the chords of the outer pairs S–T and V–S also move three semitones higher, not to the corresponding voice but to the symmetrical transformational voice. Each chord shares two pitch classes with the chord that follows in the progression. Two is the maximum number of tones held in common by any transposition of 4–17. This happens only when the set is transposed by interval classes 3 and 4. As Fig. 2 shows, Gerhard exploits this property in theme area B by transposing the chords a minor third higher. Two tones are also held in common between a form of 4–17 and its mapping at T₁₀I, T₄I, T₁₀I or T₁₁I.⁷ Gerhard explores this property by inverting 4–17 by T₁₀I in the exposition and by T₄I in the recapitulation. This common-tone relationship is a prominent source for musical continuity, in particular between the chords in the pairs T–U and U′–V (much closer to each other than the members of pairs S–T and V–S).

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As Richard Cohn has explained, ‘[T]he mere appearance of constructions with symmetrical properties is not sufficient to entail their force as structural determinants. Frequently, inversional symmetry is best explained as a by-product of transpositional combination’ (1988, p. 20). From this perspective, chords S through to V can be analysed more readily. Their pitch-class content is arranged so that not only is the inversional symmetry (IS) property made explicit and apparent in pitch space, but also the closely related transpositional combination (TC) property.  

Fig. 2 analyses the TC property of chord S through to V. In all cases the TC property is realised in a vertical format, where interval class 4 is the generating set class and interval class 3 is the transpositional interval class class (4 ∗ 3 = 4–17 with the format V₄, V₃).  

Note that in theme area B, interval class 3 controls not only the vertical transpositional path of the 4–17 sets but also their horizontal format; ic₃ is employed as the transpositional force both vertically and horizontally.  

As with any other four-note subset of the octatonic collection, the combination of 4–17 either with a transposition of itself at T₆ or with two transpositions of itself at T₃ generates the octatonic collection. The three statements of symmetrical 4–17 on each side of the development form pc set 8–28. The same is true for the two pairs of pc set 4–17 in theme area B. The combination of chords S with their T₆ transposition (the emphasised chords U/U’) also generates the octatonic collection. Significantly, Gerhard introduces in bar 57 a fortissimo chord with the same pitch-class content as chords U and U’ but, unlike them, not symmetrically organised in pitch space. This chord is the loudest in the exposition and generates the section’s climax. Its introduction is a further strategy for emphasising the tritone transposition of set S, which, together with set S itself, generates the octatonic c₀,1 collection.

**Dyadic Cells and Major/Minor-Third Structures**

The structural significance of the major and minor thirds in the interval structure of 4–17 is mirrored in the exposition and recapitulation in a number of melodic and harmonic configurations other than chords S to V. Gerhard achieves this by stressing both thirds over the opening centric pitch B/C, by prioritising ic₃ as the transpositional interval class of a number of elements and by marking the beginnings of three important sections with chords characterised by having either the highest number of ic₃ or of ic₄ in their interval vectors.

The opening section displays a faint, intermittent tendency towards being heard in B₃ minor. After the statement of the conspicuous opening folk-like violin melody (bars 1–8), Gerhard emphasises in bars 9–11 both the major and minor third over B₃ by introducing four dyads built on D₃/D₃–D₃/C. These dyads, enclosed in the broken-line box in 5, are stressed by articulation and register (they are the lowest tones in theme area A). As I show, the five dyads are elaborated by means of transpositional combination in sections 1 and 5 of...
the development. We find a similar juxtaposition of D♭ and D in the undulating violin melody which finishes with the aforementioned B♭ minor ascending scale (bar 15) that leads to chord S, built upon B♭ (this melody is shown in part in Ex. 3).

In addition to chords S to V, a number of structurally important elements are subjected to transposition by ic3 in the exposition and recapitulation. In the transition from theme area A to B (bars 22–26), even and odd whole-tone scales are employed, always in pairs, both vertically and horizontally (Ex. 6). The members of each pair are at a distance of either ic1 or ic3 from each other. Gerhard reverts two more times to these aggregate formations generated by
superimposed transpositions of the whole-tone scale by $\text{i}c \, 1$ or $\text{i}c \, 3$ to mark the end of a section (bars 54 and 136).

The expositional theme area A finishes with six-note semiquaver motives and sustained pianissimo sonorities (Ex. 7) derived from the final bars of Schoenberg’s Op. 10 (see again Ex. 1). Gerhard reintroduces these elements to signal closure and resolution of theme area B (bars 74–78), of the development (bars 117–123) and of the movement as a whole (bars 170–183; see again Ex. 2). Note that the sustained pitches E and E$\flat$ are a minor third higher than the outer voices of chord T. This is a further instance of Gerhard’s use of transpositions by $\text{i}c \, 3$ for marking crucial formal junctures in the large-scale form.

The statements of chords U and V in theme area B are linked by a C$\sharp$-centred Mixolydian melody (in the first violin). An elaboration of this melody, a minor third higher (bars 49–53), leads to a new combination of the whole-tone scale with itself at $\text{i}c \, 3$ distance (bar 54). A fortissimo accented chord, enclosed in the box around beat 1 of bar 55 in Ex. 8, opens the six-bar climax section of theme area B (section b2, bars 55–60). This is one of two four-note sets with the maximal number of $\text{i}c \, 4$ (three) in its interval vector $[101310]$. The recapitulation of the symmetrical sonata form opens with the restatement of theme area B (bars 124–136). Except for the last four bars, section b1 is a transposition of the exposition’s section b1 by a minor third (compare bars 42–48 and 124–136). Only one pitch in the upper voice, A$\sharp$ in bar 125, is displaced by one semitone from its corresponding $T_3$ level. This change transforms the original Mixolydian melody into a Lydian$^{17}$ one. This change is significant because, as I explain below, Gerhard employs this mode again at the very end of the composition, which may have been intended as an overt allusion to Bartók’s music.
Section b1 closes with the combination of the whole-tone collection with itself, now at the distance of ic4. This is the only significant instance in the movement of the use of ic4 as a transpositional interval class. As in the corresponding section in the exposition, the ascending whole-tone scales lead to a fortissimo accented chord. This is now a member of 4–24, the other tetrachord with the maximal number of ic4s in its interval vector [020301]. A hypothesis for this exceptional use of ic4 as a transpositional interval class is that Gerhard mirrored the dominance of ic4 in the intervallic structure of 4–24 in the transpositional relationship of the whole-tone scales that precede it. A new transpositional combination of the whole-tone scale with itself, now again at ic3, marks the transition to the recapitulating theme area A (bars 148–153). This area begins with the octatonic pentachord 5–31 (bar 155), the only pentachord with the highest possible number of ic3 (four) in its interval vector [114112].

Section a2 is a literal repetition of the corresponding section in the exposition (compare bars 9–15 and 163–169). It ends with chord S followed by the head of the opening folk-like melody (Ex. 9, bars 170–171, viola) and an octatonic ascending heptachord in scalar form (bar 172). The two elements function as a short transition to the movement’s coda, in which the opening folk-like melody is stated for the last time, now centred on G♭, like Schoenberg’s triads (bars 173–183). As shown in Ex. 9, the first verticality in this section (bar 173) has the same pitch-class content as set S and chord S (but is non-symmetrically arranged). The goal of Gerhard’s movement – that is, the recapitulation’s a1’ section – is framed by three closely related sonorities, all with the same pitch-class content as Schoenberg’s triads: the two chords enclosed in boxes in Ex. 9 and the final G♭ minor and G♭ major triads (see again Ex. 2, bars 182–183).
A Homage to Bartók

In the development, Gerhard elaborates pc set 4–17 by subjecting a number of dyads to operations of transpositional combination, which frequently generate octatonic supersets. These operations are clearly realised in pitch space. Ic 4 is almost always the generating interval class and ic3 the horizontal transpositional interval class. This method of combining dyads with themselves to generate larger, mostly octatonic sets was most likely inspired by Bartók's compositional technique, which Gerhard studied in detail starting in the early 1920s and praised as pointing the way towards the future. Bartók often generated pc sets with both IS and TC properties by the transpositional combination of dyadic cells and arranged their pitch-class content so that both properties are explicit in pitch space. He then combined these sets with themselves to generate larger octatonic structures (Cohn 1987, 1988 and 1991a). Amongst the IS/TC sets particularly favoured by Bartók, pc set 4–17 (or the ‘major-minor chord’, as Ernő Lendvai termed it) features prominently in his music (Lendvai 1971, p. 9 and 1983, pp. 353–68; and Cohn 1988, p. 25).

In section 1 of the development (bars 79–86), Gerhard restates the aforementioned dyads from bars 9–12 (enclosed in the broken-line box in Ex. 5) now emphasised by sforzando markings, accents, forte dynamics and a distinguishing timbre (double stops). These five dyads, framed in the example below, are members of ic3 and ic5 (the constituent interval classes of the minor triad). Gerhard divides them into two groups, differently articulated and separated by rests (Ex. 10, X1 and X2). The pitch-class content of X1 generates pc set 4–9, one of the most emblematic post-tonal sonorities (and, like 4–17, a subset of the octatonic collection bearing both the IS and the TC properties). X2 is a member of pc set 5–22, another inversionally symmetrical set. The
The five-dyad motive is stated first by the cello (bar 79), then by the first violin at a $T_9$ transposition (bar 81) and then by the viola at the original pitch level (bar 83). $Ic_3$ is the horizontal transpositional force also in this operation.\textsuperscript{13}

The transpositional combination of motive $X_1$ generates the octatonic collection ($4\rightarrow 9^*3 = 8\rightarrow 28$). This operation is analogous to the operation in theme area B that mapped chord T onto U and chord $U'$ onto V to generate the octatonic collection ($4\rightarrow 17^*3^*3 = 8\rightarrow 28$). The TC operation of motive $X_2$ produces pc set 8–17, the complementary set of 4–17.\textsuperscript{14} Table 2 summarises the supersets generated by transpositional combination of the dyad motive that opens the development. The generation of the complementary set of 4–17 and the octatonic collection by $T_3$ provides structural cohesion and continuity with the preceding theme area B as well as with the subsequent sections of the development, in which pc set 4–17 is also central and interval class 3 the main transpositional interval class.

In section 2 of the development (bars 87–92), the outer voices (first violin and cello) play accentuated melodies employing double stops. The melody of the first

\begin{ex}
Ex. 10 Gerhard, Quartetto No. 3/i, bars 79–84
\end{ex}
Table 2 Transpositional combination of motive X

<table>
<thead>
<tr>
<th>Motive</th>
<th>Pc set</th>
<th>TC operations</th>
<th>Generated superset</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>4–9</td>
<td>4–9 * 3 = 8–28</td>
<td>Octatonic collection</td>
</tr>
<tr>
<td>X2</td>
<td>5–22</td>
<td>5–22 * 3 = 8–17</td>
<td>Complementary set of 4–17</td>
</tr>
<tr>
<td>X1 + X2</td>
<td>6–Z17</td>
<td>6–Z17 * 3 = 10–3</td>
<td>Complementary set of the minor third (the transpositional interval class)</td>
</tr>
</tbody>
</table>

Ex. 11 Gerhard, Quartetto No. 3/i, bars 88–90

4-17*2=8-10

violin is doubled at the distance of a major sixth (ic3) and the cello melody at a minor sixth (ic4). The melodic lines reach a climax on the second beat of bar 88 with two *fortissimo* 4–17 sets (enclosed in the broken-line boxes in Ex. 11). These chords are related to each other by T2. The transpositional combination of these 4–17 sets generates pc set 8–10, the complement of set 4–10. The latter set is of central importance in the following section of the development.

From bar 89 on, the TC property of 4–17 is made fully explicit in the inner voices. The second violin and viola play for the first time a four-note motive of key structural importance in sections 2 to 5 of the development (shown in Fig. 3). This motive consists of a central pitch with lower and upper passing notes which I refer to as ‘motive Y’. As Fig. 3 shows, motive Y is doubled at the distance of a minor sixth (ic4) and transposed by a minor third a number of times. The format of this TC operation is V4, H3. As in chords S to V, ic 4 is also here the generating interval class and ic3 the horizontal transpositional interval class. The combination of one ic4 with three or more transpositions of itself at ic3 generates the octatonic collection.
In section 3 of the development (bars 93–102), the first violin and the cello play the main melody. The central part of the violin melody (bars 96–100), imitated by the cello in canon, consists of two presentations of pc set 4–10 at the distance of a tritone (Ex. 12). This TC operation generates again the octatonic collection. Here pc set 4–10 assumes a clear melodic function.

Establishing a clear continuity with the preceding section, the second violin and viola accompany the octatonic melody of the violin and cello with a TC elaboration of motive Y. As Ex. 13 shows, the boundary pitches of the motive form different members of 4–17 with the format $V_4, H_3$. But now, each 4–17 is transposed two semitones higher and separated from the preceding one by rests. This TC operation generates pc set 8–10, the complementary set of the melodic
set 4–10. Pc set 8–10 was also a significant sonority in the precedent section (see again Ex. 11).

In the passage shown in Ex. 13, interval class 4 once again dominates the vertical dimension of the TC operations. But now the horizontal dimension is controlled not only by interval class 3 but also by interval class 2. When transpositionally combined, these interval classes generate pc set 4–10, the melodic set in the section \( (3^*2 = 4–10) \). By choosing these interval classes as transpositional forces of motive Y, Gerhard integrates the octatonic melody of the first violin and cello (controlled by 4–10) with the accompaniment (controlled by 8–10), and both elements with the precedent and subsequent sections, in which motive Y is subjected to related TC operations (compare Exs 12, 13 and 15, 16).

Section 4 (bars 102–108) opens with a unison, fortissimo, ‘stringendo, impetuoso’ variation of motive Y, enclosed in broken-line boxes in Ex. 14. This is the climax of the development. It consists of two statements of 5–33, repeated a number of times, preceded and followed by different TC chains of motive Y, again with the format \( V_4, H_3 \). The whole tone (or ic2) is the structural interval class in this passage. Note that pc set 5–33 is a subset of the whole-tone collection and that the intervals between the chord’s pitches are
i8 and i6 (at the distance of a whole tone). Moreover, the framed motive is transposed two semitones lower (T-2) two bars later, and the initial 5–33 and its T-2 transposition (framed in the example) generate the whole-tone collection (6–35). The next chord marked forte (bar 106, not in the example) is also an instance of WT0. This emphasis on interval class 2 and the whole-tone collection provides continuity with the preceding area, dominated by transpositions of 4–17 by whole tones.

Section 5 (bars 109–117) is the last section of the development in which transpositional combination is employed as an elaboration technique. As in sections 2 to 4, the second violin and viola generate pc set 4–17 by TC of motive Y with the format V4, H3 (Ex. 15, bars 112–113). The first violin plays an elaboration of motive Y in ostinato and the cello plays a new form of motive.
Ex. 16 Recurrent folk-like melody, in G\textsubscript{b} Lydian\textsuperscript{7} mode

X\textsubscript{1} consisting of two fifths at the distance of a tritone (C–G and F–C\textsubscript{7}). As in section 1, their transpositional combination generates pc set 4–9. After section 5, long sustained notes and six-note motives (from Schoenberg’s Op. 10) signal the end of the development (bars 118–123).

The technique of transpositional combination is not the only feature in Gerhard’s movement that relates back to Bartók’s music. Immediately before the quotation of Schoenberg’s triads at the end of the movement, Gerhard introduces two melodic configurations possibly intended as direct references to Bartók’s music: the utterance in bar 172 of the octatonic scale – highlighted by the solo texture and the slower tempo (see again Ex. 9) – and the final statement of the recurrent folk-like melody, now significantly in G\textsubscript{b} Lydian with variable seventh degree: major in the four-bar antecedent (bars 173–176) and minor in the four-bar consequent (Exs 2 and 16, bars 177–181). From a structural point of view, the introduction of the Lydian\textsuperscript{7} mode at the very end of the movement might have been based on the fact that it contains large scalar subsets belonging to the three collections that are referential in the movement: diatonic, whole tone and octatonic. On a more symbolic level, the use of this mode conceivably alludes to Bartók’s music, in which it featured in a particularly prominent manner (Lendvai 1983, pp. 393–400).

By raising set S to the rank of generative source of the movement, Gerhard conferred symbolic meaning on his tribute, much deeper than the mere overt allusion to Schoenberg’s chords at the end of his movement. The emblematic character of 4–17 as a reinterpretation of the conspicuous chords that close Schoenberg’s Op. 10 was certainly an important reason for Gerhard’s employment of that tetrachord as the movement’s generative idea. However, the set’s IS and TC properties and its remarkable potential for generating octatonic structures by means of transpositional combination seem to have played an equally significant role in his decision. These properties allowed the composer
to generate a number of structurally important octatonic structures within the movement and to elaborate Schoenberg’s materials by intensively combining dyadic cells (primarily ic4) with one or more transpositions of themselves (primarily by ic3) to generate larger octatonic structures, a technique most likely learned from Bartók’s music. This was apparently the first time that Gerhard used this technique (at least, in so intensive a way). Further research might explore whether (and if so, how) he continued implementing transpositional combinations in his later music.

The abundant compositional tributes paid to Schoenberg in the early twentieth century by his students and admirers were usually understood – particularly within Schoenberg’s circle – as evidence of commitment and loyalty to the master, and by extension to the neue Musik he championed. In Gerhard’s case, the prominence of the octatonic collection, and the structural importance of operations involving transpositional combination, reveal a similar sense of debt towards the music of Bartók, to whom the first movement of Quartetto No. 3/Concertino seems intended as an homage just as much as it was to Schoenberg.

NOTES

1. On Schoenberg’s requirements of his Berlin students, see Holtmeier (2000). On Gerhard’s progress and compositional work under Schoenberg, see Alonso (2015 and 2017).


3. The print proof of the quartet is held by the Institut d’Estudis Vallencs, cat. no. 08.01.03. Since some typos are amended by writing the correct pitches with German notation (‘as’ for A, ‘h’ for B, etc.) I infer that the copy was made by or for an (undetermined) German publishing house. This is the latest version produced by Gerhard. It differs minimally from the previous versions (primarily in terms of phrasing, articulation and dynamics). On the composition history and different versions of Quartetto No. 3/Concertino see Alonso (2015, 105–19). The orchestral version was recorded in 2002 by the Kammersymphonie Berlin, conducted by Jürgen Bruns (EDA Edition Abseits 018-2).

4. In a letter from 22 April 1923 to his friend the composer Josep Barberà, Gerhard refers to Schoenberg’s early quartets and the Chamber Symphony as interesting examples of modern harmonies deriving from Wagner’s Tristan und Isolde (Gerhard 1923). In 1932 Gerhard introduced the Catalan
soprano Conxita Badía to the Kolisch quartet, which planned to play the quartet with her, most likely in Spain (Gerhard 1932).

5. The final section of Alexander von Zemlinsky’s String Quartet No. 2, Op. 15 (1913–15) also offers closing bars strikingly similar to Schoenberg’s Op. 10. Zemlinsky also finishes with an ascending internal melody (in the second violin) and long, sustained notes in *pianissimo* over harmonies rooted on D; unlike Gerhard’s, however, it does not offer any foreground elements which would remind listeners of Schoenberg’s triads. It is uncertain whether the end of Zemlinsky’s Op. 15 inspired Gerhard later to devise a similar tribute as Schoenberg’s student. Vande Moortele (2009) discusses other parallels between Schoenberg’s Op. 10 and Zemlinsky’s Op. 15.

6. Transpositional combination is the combination of a set with one or more transpositions of itself to generate a larger set. Transpositional combination is thus borne by sets that may be disunited into two (or more) transpositionally related subsets. This property is reasonably common: about half of all pc sets bear it. Sets bearing both the IS and the TC properties – such as 4–17 – are rarer (72 out of all 223 set classes). They usually operate distinctively as structural determinants in post-tonal music.

7. The index vector of 4–17 is 101220141022. This vector shows the number of tones that remain invariant under inversion followed by transposition by any interval.

8. Cohn (1987, 1988, 1991a, 1991b and 1992) developed the theory behind this property. A continuation and expansion of Cohn’s investigation of the relationship between the IS and the TC properties can be found in Traut (2009). Following Cohn, the operation of transpositional combination can be expressed mathematically as follows: \( A \ast B = C \), where \( A \) and \( B \) are set-class operands and \( C \) is the set-class product. The asterisk stands for ‘transposed by’. In the expression \( 3 \ast 4 = 4–17 \), the operands 3 and 4 stand for the interval classes 3 and 4. The expression \( 3 \ast 4 = 4–17 \) indicates that *any interval* which is a member of interval class 3, when combined with a transposition of itself by *any interval* that is a member of interval class 4 will yield pitch class set 4–17.

9. There are two dimensions in a TC operation: the melodic or horizontal (H) and the harmonic or vertical (V). The particular combination of horizontal and vertical dimensions is called a ‘format’.

10. The profusion of upper-neighbour-tone semiquaver triplets in the opening main melody (first violin, bars 1–16 in Ex. 1; second violin, bars 17–23) provide a strong link to Spanish and Catalan folksong. However, no specific
folk material has been determined as the main source of this conspicuous melody. As Russ has noted, this melody seems to have appealed particularly to Gerhard; he reutilised this material in varied form at the opening of the twelve-tone Capriccio for solo flute in 1949 (Russ 2013, p. 135).

11. Gerhard (1923) counted Bartók among the three living composers who would become ‘the classics’ of the future; the others were Schoenberg and Stravinsky. These three were again the only twentieth-century composers that Gerhard included in a relatively long list, made shortly before his death, of his all-time favourite composers (Gerhard, undated [mid-1960s], p. 39).

12. Interestingly, in the third movement of Bartók’s String Quartet No. 2 (1915–17) – the last one published at the time Gerhard penned his own – we find a TC operation which is central to Gerhard’s composition, namely the transposition of a major third by a minor third for the generation of pc set 4–17 in tandem with the transposition of the resulting 4–17 by a minor third twice for generating the octatonic collection (4–17∗3∗3 = 8–28). Although Gerhard almost certainly knew this quartet in 1927, whether he modelled the TC structures of his own movement on those found in Bartók’s Quartet remains inconclusive.

13. I represent the operation of pitch-class transposition as T_n, where T stands for transposition and n is the ordered pitch-class interval of transposition (the number of semitones between two pitch classes), in this case 9. The TC operations are expressed (following Cohn) as follows: A∗n = C, where n is the unordered pitch-class interval (or interval class) of transposition, in this case interval class 3.

14. Complement-related sets have similar interval-class content and therefore a similar sound. In the case of 8–17 and 4–17, pitch classes 3 and 4 are those with a higher number of occurrences in their interval vector, both sets bear the TC and the IS properties, and both have the same degree of symmetry.

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DIEGO ALONSO TOMÁS studied musicology at Complutensian University in Madrid. He received his PhD in 2015 from La Rioja University with a dissertation on the influence of Schoenberg’s music and aesthetics on Roberto Gerhard. In 2014 he was awarded a research scholarship by the Staatliches Institut für Musikforschung (Berlin) for studying the reception of Schoenberg’s music in Catalonia. He works at Humboldt University as a postdoctoral researcher in the project ‘Hanns Eisler in Republican Spain’ and is the founder and leader (Sprecher) of the Deutsch-Ibero-Amerikanische Musikbeziehungen Fachgruppe of the German Musicological Society. He contributed to The Roberto Gerhard Companion (Ashgate, 2013) and has published in leading musicology journals such as Acta musicologica, Twentieth-Century Music and Musicologica Austriaca, for which last article he won the Best Paper Award in 2019.

ABSTRACT

The first movement of Roberto Gerhard’s Quartetto No. 3 (ca. 1927), his final assignment under Schoenberg, represents a direct homage to the teacher. Gerhard finished the movement with a clearly identifiable allusion to the minor and major chords that close Schoenberg’s String Quartet in F#/c35 minor No. 2, Op. 10 (1907–8). Furthermore, he employed the four-note set resulting from the fusion of these chords (pc set 4–17) as the movement's generative idea, expanding its main structural properties, namely inversional symmetry and transpositional combination, to inform the movement’s large-scale sonata layout and a number of configurations of key structural importance throughout the movement. In the development, he elaborated Schoenberg’s materials by implementing a technique used extensively by Bartók at the time, namely the combination of dyads with one or more transpositions of themselves for generating larger (often octatonic) structures. Gerhard’s compositional method in the movement shows not only the decisive impact of Schoenberg’s principles but also his indebtedness to the music of Bartók, to whom the composition seems to pay tribute as equally as to Schoenberg. This article utilises these perspectives to offer an analysis of the first movement of Gerhard’s Quartetto No. 3/Concertino.