Title

The impossible charm of Messiaen's Chronochromie

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The Impossible Charm of Messiaen's *Chronochromie*

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Chronochromie occupies a seminal position in Messiaen's œuvre, as both a culmination of the *style oiseau* from 1953 onwards, dominated by transcriptions of bird song, and as a template for the preoccupation with colour and rhythmic complexity that would mark his later music.[1] At the behest of Heinrich Ströbel, Messiaen wrote *Chronochromie* on commission for the 1960 Donauschingen festival for full orchestra with no keyboards. It premiered to less than universal acclaim, as its riot of 21 simultaneous birdsongs in the penultimate movement was apparently more than the audience could bear.[2]

As the composer states in his extensive notes on the work, *Chronochromie* exploits the 'power of impossibility' latent in the colours of the full orchestra; the name stems from the integration of dense seven- and eight-note harmonies with a rhythmic scheme of symmetrical permutations based on 32 values in movements 2 and 4 (*Strophes* I and II).[3] These symmetrical permutations, along with the singular harmonies most often called simply 'colour' chords in the scholarly literature,[4] would appear later in *Sept Haïkaï* (1962), *Couleurs de la Cité Céleste* (1963), and *Éclairs sur l'au delà…* (1988-92). Yet it can be argued that, aside from *Éclairs* and St Francis's 'Sermon to the birds' (Tableau Six of his opera *St François d'Assise)*, *Chronochromie* represents the peak of composed and audible complexity in Messiaen's music, for within it three compositional techniques are juxtaposed in their most arcane forms. *Strophe* I integrates for the first time Messiaen's first fully-fledged symmetrical permutation scheme with birdsong from two continents, and three types of 'colour' chords.

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[1] The author would like to thank Robert Sholl for his invaluable help in shaping and refining this chapter.

[2] Antoine Goléa, 'Olivier Messiaen, Chronochromie,' *Melos*, vol. 29 (1962), p. 10; Bernard Gavoty, under the pen name 'Clarendon,' wrote 'An excess of brilliance turned everything to grey. So many durations, subtly entwined, ended by obliterating all sense of rhythm.' 'Turangalîla d'Olivier Messiaen', *Le Figaro* (13 Oct 1961), quoted in Peter Hill and Nigel Simeone, *Messiaen* (New Haven: Yale University Press, 2005), p. 237.

[3] *Traité de Rythme, de Couleur, et d'Ornithologie*, Tome III (Paris: Leduc, 1996), 7–38. *Chronochromie* is analysed in pp. 79-101 of the same tome.

[4] See a discussion of this in fn 13.

In this paper, I will dissect the harmonic and rhythmic details of *Strophe* I. But I want to address a more universal question: the implacable difficulty of moving beyond simple description to a hermeneutic understanding of Messiaen's music, much less to say anything of its perception and cognition. For as John Milsom notes, 'Relatively easy as it is to define and describe the technique of Messiaen's 'musical language,' the extent to which it genuinely operates as a musical 'language,' expressive both of the concrete and the spiritual, and independent of the verbal exegeses that Messiaen provided, remains a moot point.'[5]

Chronochromie's impenetrability is in a very real sense the sum as well as measure of the 'power of impossibilities' Messiaen locates in its rhythmic palindromes and towering chromatic chords.[6] The latter three chord types–the so-called turning chords, chords of transposed inversion over the same bass note, and the chords of contracted resonance (all discussed below), appear in but nine distinct but unvaried chord voicings. Although these chords are theoretically available at all transpositional levels, Messiaen further limits himself to 65 of the possible 108 forms. The careful presentation and selection of harmonic materials serves as but one example of the theme of limits, or as Roberto Fabbi calls it, the 'idea of restriction,' that informs Messiaen's music at both surface and underlying levels of structure.[7] The composer finds a certain freedom within these restrictive 'impossibilities,' be they formal, harmonic or rhythmic:

> It will be noticed that in the 'symmetrical permutations' as in the 'non-retrogradable rhythms,' we find ourselves confronted with an impossibility. A retrograde is impossible, because the rhythm is symmetrical within itself.

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[5] John Milsom, Organ Music I,' *The Messiaen Companion*, ed. Peter Hill (London: Faber and Faber, 1995), p. 62.

[6] Messiaen quoted in Almut Rößler, *Contributions to the Spiritual World of Olivier Messiaen*, *with Original Texts by the Composer,* trans. Barbara Dagg, Nancy Poland, and Timothy Tikker (Duisberg: Gilles & Francke, 1986), p. 41. Messiaen spoke of the 'charm of impossibilities' as early as the *Technique of my Musical Language,* in reference to the modes of limited transposition and the non-retrogradable rhythms; Olivier Messiaen, *Technique de mon langage musical,* vol. 1 and 2 (Paris: Leduc, 1944), translated by John Satterfield as *The Technique of My Musical Language* (Paris: Leduc, 1956-66) [*TMLM*], and republished in 2001 in one volume.

[7] See Roberto Fabbi, 'Theological Implications of Restrictions in Messiaen's Compositional Processes', *Messiaen's language of mystical love,* edited by Siglind Bruhn (NY: Garland, 1998), pp. 55-84.

> Further permutations are impossible, because the order in which we read the rhythm–invariably the same one–brings us relentlessly back to the starting-point. These impossibilities endow the rhythm with great power, a kind of explosive force, I would say, a magical strength.[8]

In *Chronochromie*, where nine non-symmetrical sonorities and a 32-member durational series operate in combination, these restrictive impossibilities are neither as limited nor as easily grasped as they were in earlier works such as the *Quatre Etudes de rythme* (1949-50; see discussion below). Yet through an ingenious series of additional limits on his materials, the composer increases the tension between the inherent restrictions of his cyclic materials and their variation.

Analysing *Chronochromie*

The *Strophes* of *Chronochromie* combined for the first time three layers of three different types of non-modal sonorities; each permutation marches asymmetrically beneath percussion accents and French birds (illustrated by winds and keyed percussion) to saturate chromatic, registral and timbral space. The first permutation is given to the first violins, accompanied by three gongs marked *pianissimo* throughout. Tuned bells marked *forte* accompany a second permutation in second violins, while violas and cellos take the third permutation, along with suspended cymbal and tam-tam. The juxtaposition of birdsong adds yet another layer of 'charm' to the whole, a dense combination that would not appear again until the fourth movement of *Éclairs*. That the *Strophes* contain one continuous isorhythm, if permuted and juxtaposed, correlates with their role in Greek lyric poetry: metric movements constructed on the model of

[8] Messiaen quoted in Rößler, *Contributions to the Spiritual World of Olivier Messiaen*, p. 42.

Ancient Greek choral song, culminated in a 'polymetric' *Épôde* and were book ended with a free *Introduction* and *Coda*.

We might question the use of a classical humanist model for such non-teleological, transcendentally expressive music. Is there a musically purposive conflict between those avatars of the 'impossible' – symmetrical rhythms, static harmonies and juxtaposed patterns – and those that represent natural and classical elements? For *Chronochromie* bears more than a passing resemblance to the function as well as the form of Greek choral songs. Early Greek lyric poetry did not distinguish between poetry and song,[9] and featured a great variety of metrical pattern and line length.[10] The most elaborate meters were found in choral songs; these were less intimate than other forms of lyric poetry, and included hymns specifically addressed to the gods, and often extolling the virtues of nature.[11] The earliest surviving choral works of the poet Alcman wrote, 'I know the tunes of all birds,' likely referring to the Greek legend that all music originated in imitation of bird songs.[12] In *De Rerum Natura*, Lucretius writes

> But by the mouth
>
> To imitate the liquid notes of birds
>
> Was earlier far 'mongst men than power to make,
>
> By measured song, melodious verse and give
>
> Delight to ears. And whistlings of the wind[13]

Chronochromie aligns 'measured song' with the 'liquid notes of birds' until the sixth movement (*Épôde*), when man somewhat artificially surrenders to nature. In *Strophe* I the songs

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[9] David Mulroy, *Early Greek Lyric Poetry* (Ann Arbor: University of Michigan Press, 1999), p. 9.

[10] Ibid., Mulroy, p. 10

[11] C. M. Bowra, *Greek Lyric Poetry,* (Oxford: Oxford University Press, 2001), p. 6.

[12] Cited in Bowra, Ibid., pp. 29-30.

[13] Lucretius, *De Rerum Natura (On the Nature of Things),* trans. William Ellery Leonard (E. P. Dutton), 1916, v. 1379-83.

of four different French birds in eight different instruments provide a model for the melodic structure, but also serve to colour and highlight the slower moving symmetrical permutation scheme. Through a process Messiaen terms 'minting' *(le monnayage)* the faster-moving bird songs emphasise the demisemiquaver units inside the longer, additive durations in the rhythmic series.[14] Both *Strophes* are based on the same rhythmic cycle, one Messiaen abandons – as did the Greek choral song – after the second Antistrophe. In *Chronochromie's* culminating *Épôde*, the free rhythm of twenty-one different bird songs supplants the symmetrical permutations and chord cycles of earlier movements.

The symmetrical permutation series

Messiaen first employed symmetrical permutations of a twelve-note series in Mode *de valeurs et d'intensitiés* (1949), the first of the *Quatre Etudes de rythme,* but they return in a more systematic form in the fourth étude *Île de feu* II (1950).[15] Messiaen begins with a chromatic scale of durations in which order and duration are equivalent, then re-orders the durations according to a pattern that begins in the middle and works outwards. This pattern is used as an algorithm to generate succeeding permutations (or *interversion,* in his nomenclature) by mapping each new series (re-numbered from 1-12) according to the permutation. As in the modes of limited transposition or the non-retrogradable rhythms, Messiaen locates the 'charm of impossibilities' in the inherent limitations his algorithm affords. The cycle in *Île de feu* II generates only ten individual duration series (rather than 12) because the values 5 and 10 map onto one another.[16] This technique takes on great importance when larger cycles are employed, as explained in

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[14] According to Messiaen, the durations of *Strophe* I are 'coloured' in three ways: through timbre, harmonic chord type, and through melodic counterpoint 'qui monnayent plus our moins chaque durées.' *TRCO*, Tome III, 84-5; cf. *Musique et couleur: nouveaux entretiens* (Paris: Belfond, 1986), trans, by E. Thomas Glasow as *Music and Color: Conversations with Claude Samuel* (Portland, OR: Amadeus Press, 1994), p. 135.

[15] In the last couplet of *Cantéyodjaya* Messiaen used a limited serial arrangement; three groups of eight different notes are each assigned a fixed duration, register and intensity, yet employed freely within a three-part texture, cf. Robert Sherlaw Johnson, *Messiaen* (Berkeley: University of California Press, 1975), pp. 103-04.

[16] Messiaen, *Technique de mon langage musical,* cited in Johnson pp. 108-09.

exquisite detail at the beginning of Tome III of the *Traité*. Here Messiaen describes how his chosen permutation tames the chromatic cycle that forms the foundation of *Chronochromie,* which otherwise could produce 2.63131 x 10^{35} permutations. This nine-part formula employs as many transformations as the composer can squeeze out of a 32-note series based on additive durations of a demisemiquaver (Figure 1):[17]

1) the beginning and ends of the series overlap, both right to left (pattern a) and in retrograde (patterns b, c and f);

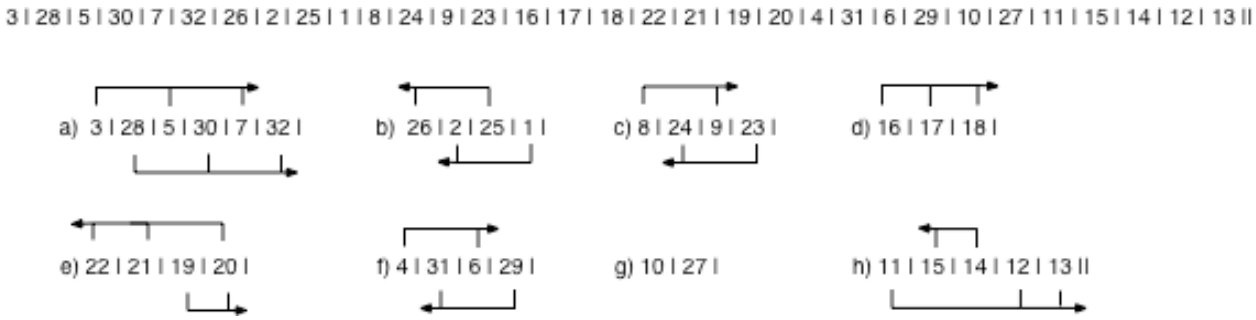
2) one chromatic segment is retained (pattern d);

3) one chromatic segment is reshuffled internally (patterns e and h); and

4) one large jump (pattern g) from the crotchet tied to a semiquaver that lands on the central node of the formula:

5) the 27th duration whose order remains commensurate with its length because it will always map onto itself.

Figure 1 The symmetrical permutation series and its partitions



As with the permutation scheme itself, each individual permutation will contain a continuum of variation from the specific to the general. Within the first three permutations, certain durations will be reordered, while others will retain fixed relations of contiguity or order. For instance, the values 19, 20 and 21 will always occupy order numbers 19-21, although each

[17] *TRCO*, Tome III, 7-37. The list of 36 permutations is succeeded by 12 superpositions of each three successive generations in series: permutations 1, 2, and 3; permutations 4, 5, and 6, etc., with examples of how portions of these appear in *Couleurs de la Cité Céleste* and the fourth movement of *Éclairs sure l'au-delà…,* pp. 39-73.

successive permutation of the series will map duration 19, 20 and 21 to a different number of the three-note series. Yet duration 22 will always succeed duration 18, at varying order numbers, while the pairs 14, 13 and 7, 26 will always appear in succession at one duration removed (14-12-13, 14-26-13, etc.) As a recurring feature of the algorithm two numbers in succession will part at the next generation, to be 'reunited' at a different order number in the following series (in permutations 1-3 these pairs are 11, 15 and 31, 6). And finally, at a more general level of 'repetition,' values 3 and 6 will always either precede or follow a duration at least 9 times or 4 times its size, respectively (in permutations 1-3 the patterns produced are l3-28, 29-3 and 3-27 and 6-25, 6-25 and 31-6-29).

Messiaen's control of the permutation series assures a mathematical balance between repetition and variation, with a 'quilting point' approximately four-fifths of the way through the cycle, where order and duration merge in a dotted minim tied to a dotted semiquaver.[18] This point of unity among all possible permutations is prepared for by subtle variations on order numbers 19-26, in which the same durations always occupy order numbers 19-21, followed by a five-note segment that continually interlaces durations from opposite ends of the spectrum. Yet the 'charm' of these variations remains largely impossible to hear, and surfaces only briefly at four points within the juxtaposed cycles, during which chords in different layers simultaneously attack (I will return to this point below).

Messiaen has thus chosen his permutational algorithm to achieve a balance between repetition and variety: small and large durations are interwoven throughout each permutation. Each rhythmic cycle has a similar durational arc which peaks approximately two-thirds of the way through with a series of longer durations which in effect 'slow down' the cycle. Yet when three different permutations are juxtaposed, the combined effect generates a slower-moving

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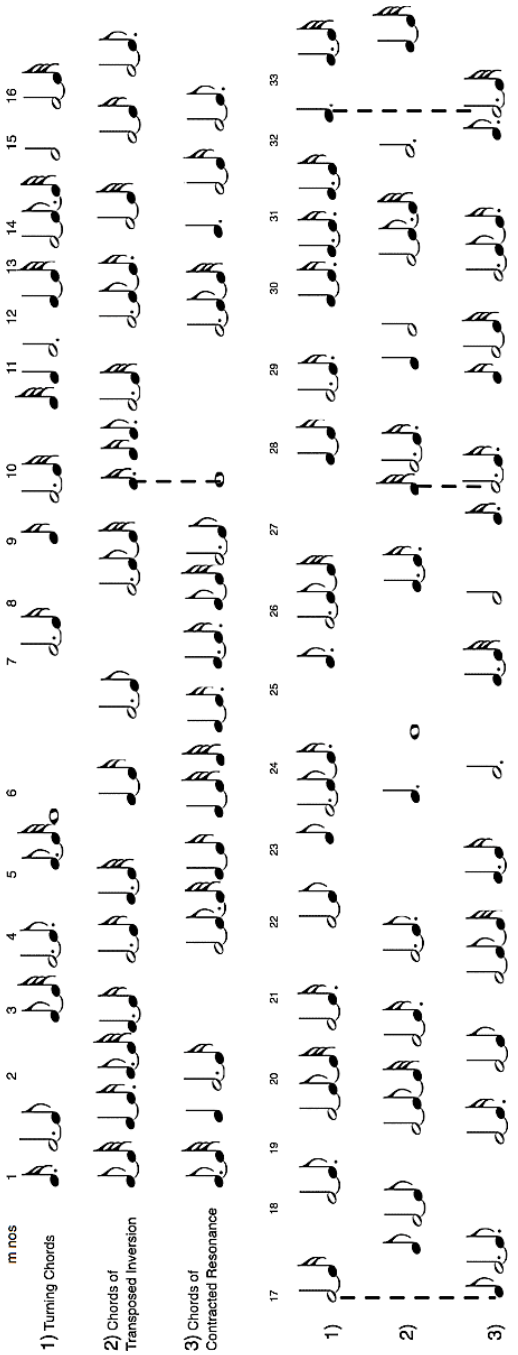
[18] The term 'quilting point' is a translation of Jacques Lacan's concept of *point de caption,* that place in language when the unruly signifier is 'stitched' to the signified to produce meaning, creating a suture in the realm of the symbolic. By using this term to describe Messiaen's permutation series I mean to invoke a double metaphor. As a feature of the series, order and duration are knit together in one central value that serves as a constant through all possible permutations of the duration series. In a larger sense, by assigning a uniform value to the same order number in each permutation, what seems like an arbitrary and contingent pattern proves anything but: the universal recurrence of duration 27 as the 27th member of the series assigns *meaning* to the permutational algorithm.

rhythm, marked off by those points where two of three cycles attack simultaneously, as shown by dotted lines between layers in Figure 2.

Figure 2 Simultaneous attacks between juxtaposed symmetrical permutations, *Strophe I*



Messiaen's chords of many colours

Messiaen scholars have largely ignored the so-called colour chords that dominate Messiaen's later music in favour of exhaustive description and analysis of his modal harmonies, and those chords that can be easily related to diatonic harmonies.[19] In recent years Vincent Benitez and Cheong Wai-Ling have published studies of these harmonies commensurate with the publication of Tomes III to VII of the *Traité de Rythme, de Couleur, et d'Ornithologie*, clarifying their use and equivalence to earlier harmonies (when that can be determined).[20] No doubt *Chronochromie's* difficulty is enhanced by the fact that its three permutations (permutation 1 in first violin, permutation 2 in second violin, and permutation 3 in viola and cello) are composed of three of these chord types: the turning chord (TC), the chord of transposed inversion on the same bass note (CTI) and the chord of contracted resonance (CCR).[21]

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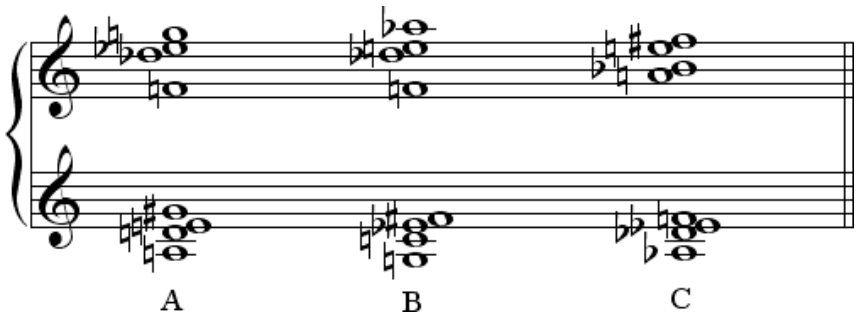
[19] The three chord types discussed in this paper were discussed in Claude Samuel, *Entretiens avec Olivier Messiaen* (Paris, Belfond, 1967), trans. by Felix Aprahamian as *Conversation with Olivier Messiaen* (London: Stainer & Bell, 1976), and repeated with more clarity in *Music and Color: Conversations with Claude Samuel* (1994). Yet there are few discussions of them in the literature before the publication of the *TRCO's* first three tomes in 1994-96. Anthony Pople discusses only modal, 'bimodal' and tonal harmonies in 'Messiaen's Musical Language: an Introduction,' *The Messiaen Companion,* ed. Peter Hill (Portland, OR: Amadeus Press, 1995), pp. 15-50, while Sherlaw Johnson lumps all non-modal chords into the vague category 'colour-chords' (*Messiaen,* pp. 19, 129, 136-7, 168-70, 175). Jonathan Bernard states: 'None of these is ever defined', with regard to turning chords, chords of contracted resonance and chords of inverted transposition, continuing, 'all that is really clear about them is that they are non-modal.' ('Colour', *The Messiaen Companion,* pp. 211-12.) Most attempts at a broader analysis of Messiaen's harmonic language concern themselves only with the modes of limited transposition; see especially Christoph Neidhöfer, 'A Theory of Harmony and Voice Leading for the Music of Olivier Messiaen', *Music Theory Spectrum*, vol. 27, no. 1 (2002), pp. 1-34.

[20] Vincent P. Benitez, 'Aspects of Harmony in Messiaen's Later Music: An Examination of the Chords of Transposed Inversions on the Same Bass Note', *Journal of Musicological Research* 23 (2004), pp. 187–226; Cheong Wai-Ling, 'Rediscovering Messiaen's Invented Chords', *Acta Musicologica* 75/1 (2003), pp. 85-105, 'Messiaen's Chord Tables', *Tempo* 57/226 (2003), pp. 2–10, and 'Composing with pre-composed chords in the finale of *Et exspecto resurrectionem mortuorum*', *Revue de Musicologie* 90/1 (2004), pp. 115-132; Messiaen, *TRCO,* Tomes I-VII (Paris: Leduc, 1994-2002).

[21] Wai-Ling identifies two forms of the chord of contracted resonance that she dubs the 1st and 2nd CCR. My use of the term CCR in this paper is equivalent to Wai-ling's 1st CCR. 'Rediscovering Messiaen's Invented

As Wai-Ling notes, the third tome of the *Traité* contains everything we need to construct the latter chord tables of the seventh tome, yet little in the way of explanation regarding their use or derivation.[22] The three TC in the eighth table (figure 3) are simply presented as A, B and C, eight-note verticalities separated into two tetrachords by pitch content and registration.

Figure 3 Messiaen's eighth table of the Turning Chords from *TRCO* Tomes III and VII



These chords in various transpositions generate the first permutation, given to the first violins. The three octachords as presented in *Traité* III share 5 pitch-classes among them, yet maintenance of a strict vertical spacing between adjacent voices suggests that their connection relies more on pitch and interval-specific connections. Our aural attention is drawn less to the those pitch-classes held in common (1, 3, 4, 5, 8) than to the minor sixth (F4 - Db5) held invariant between chords A and B, and the augmented octave (Eb4-E5) held invariant between chords B and C.[23] The extreme chromaticism of the TC (set-classes 8-4, 8-5 and 8-14 respectively) is offset by their intervallic arrangement, in which chords A and B share not only the fourth but also a major seventh and compound tritone over the bass.[24] Chords A and C share

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Chords,' 88ff. She locates TC-like progressions in Messiaen's *TMLM*, using the common perfect fourth in the lowest register as a guide, but does not find the chord described as such prior to the third tome of the *TRCO*; 'Messiaen's Chord Tables,' p. 3.

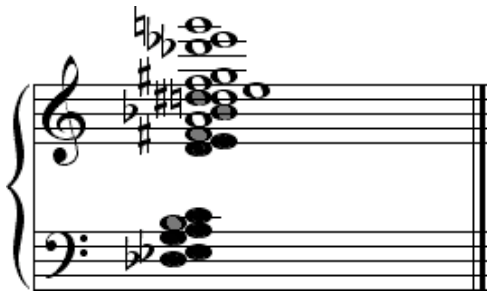
[22] *TRCO,* Tome III, pp. 85-88.

[23] Throughout the text I use scientific pitch notation, in which, e.g., octave 2 represents the pitches C2 to B2 inclusive.

[24] Throughout this paper, I use Forte labels for pitch-class sets, as defined in Allen Forte, *The Structure of Atonal Music* (New Haven: Yale University Press, 1973). These are used for comparison only, as Messiaen's chord types are further defined by voicing and registration.

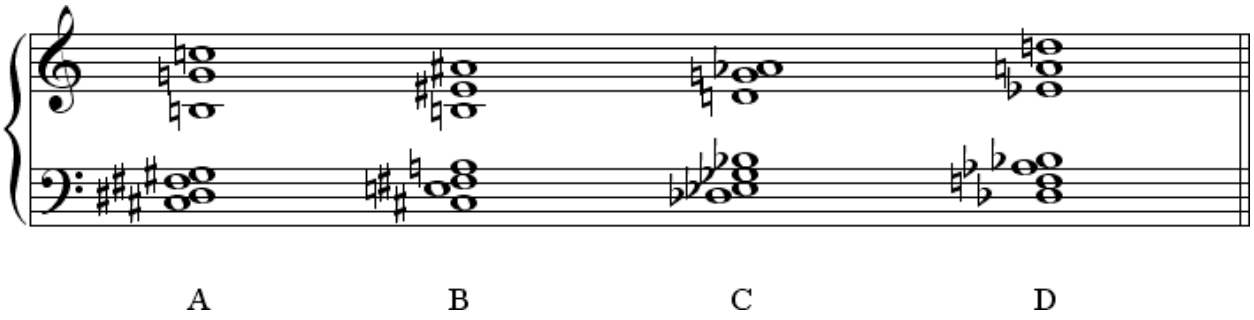
a fifth over the bass, but the latter has a much more open and expansive sound than the first two chords of the cycle (Set 8-14 intersects with the diatonic collection to produce an equal saturation of fourths/fifths). Because of their extreme chromaticism, it is difficult to derive the TC from an extended dominant chord, as Messiaen does with other 'colour chords.' The turning chords occupy the highest register in *Strophe* I; they seem therefore, by virtue of their register to represent the upper partials of the chords that occupy the lower strata in viola and 'cello. For instance, Figure 4 is a harmonic reduction of the first sonority in *Strophe* I in which each note of the TC (represented by the grey notehead F#4 [shared with the CTI] and the white noteheads A4, D5, E5, G#5, Db6, Eb6 and G6) can be explained as one of the first 7 harmonics of Db2 or Eb3, or as the first harmonic of A3, D4 and E4 (members of the CCR chord in low strings represented by the 7 black noteheads).

Figure 4 The first sonority in *Strophe* I



The four CTI populate the second permutation of *Strophe* I (Figure 5). Unlike their counterparts above and below, all four CTI represent the same set class (7-20). Yet, as their name implies, they appear inverted in the *Traité's* chord tables over a common bass note.

Figure 5 The Chords of Transposed Inversion on the same bass note



Messiaen describes the genesis of the CTI in detail: the third of a dominant ninth chord built on C#3 is replaced with its note of resolution a semitone above (F#3). The ninth is displaced down an octave (D#3), while two appoggiaturas are placed at a compound tritone and compound major seventh over the root (Figure 5, A). These resonance elements, as Vincent Benitez describes G4 and C5, are held fast while the chord below is transposed in first, second and fourth inversions (Figure 5, B, C and D respectively).[25] The 'virtual' tonic appears as a fourth over the bass in root position, stressing – as in the TC – the foundational interval of a fourth, which characterises both 'root' position, first, and second inversion CTI chords.

The bottom pentachord of the chord pair A and B, and the bottom tetrachord of the chord pair C and D, are related by inversion at T_0I and $T_{11}I$ respectively. As members of set-class 7-20 (characterised by an emphasis on ic5), the four inversions turn the second layer of permutations into a kind of midrange harmonic ostinato that mediates between the resonant turning chords in octaves 5-7, and the dense chords of contracted resonance in (primarily) octaves 2-4.[26] If we take the content of the 'root' position A chord as representative of the set-class, B appears as chord A transposed at T_{10} or $(A)T_{10}$, C as $(A)T_7$ and D as $(A)T_2$: transpositions of the first chord in the table by intervals with strong functional associations, the major second/minor tenth and perfect fifth. Yet permutation 2 does not begin with four chords built on the same bass note, as in the table. Messiaen instead chooses CTI(C) on A3 and follows it with three chords related by T_6, T_4, and T_1.

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[25] Benitez, 'Aspects of Harmony in Messiaen's Later Music: An Examination of the Chords of Transposed Inversions on the Same Bass Note', pp. 187–226.

[26] Interval class (ic) 5 represents both the perfect fourth and fifth; set-class 7-20 contains 5 potential fourths/fifths.

As with the TC, Messiaen doesn't say much about the chords of contracted resonance. He presents their genesis as a dominant-ninth chord built on Eb, whose third has been replaced with a fourth above the root: Ab (one assumes, as with the chords of TI, the 'leading-tone' has been replaced with its note of resolution).[27] This chord is then shown in second inversion, preceded by a quintuple appoggiatura chord that approaches the seventh and ninth (F5 and Db5) from above by whole step, and the remaining tones (Bb, Eb and Ab) from below by major third, whole step and half-step respectively (Gb, Db, A). The goal chord becomes the second chord of contracted resonance, while the appoggiatura notes are 'frozen' as CCR(A). Both chords are then supported by a major 9th from D1-E2, an'inferior resonance' (*résonance infériure)* over which the initial chord rings (Figure 6a). The ninth 'contracts' to the fourth octave and is placed under both the appoggiatura chord and the E-flat chord in second inversion to produce the first category of chords of contracted resonance (Figure 6b).[28] With only two CCR, this chord type dominates the texture (chord B appears once more than chord A). Both chords share a major seventh and minor ninth over the bass, and, as z-related septachords, CCR(A) and CCR(B) have the same interval vector, <444342>.[29]

Figure 6 The Chords of Contracted Resonance

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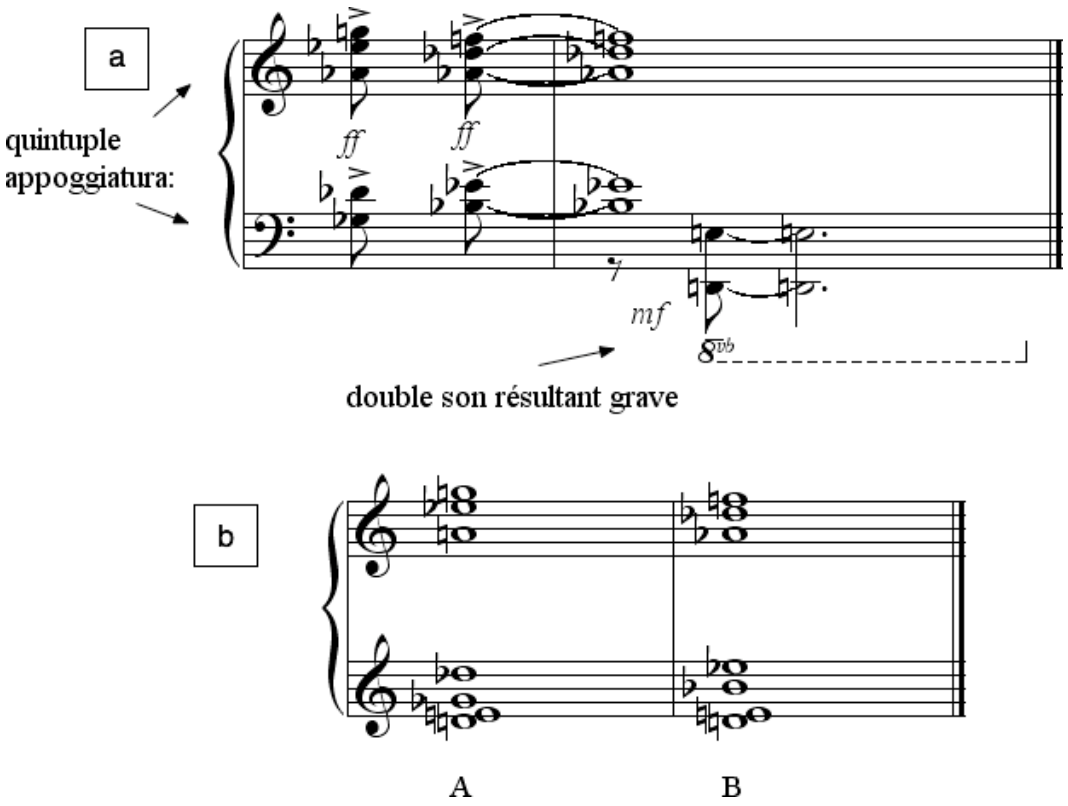
[27] *TRCO,* Tome III, p. 87.

[28] Wai-Ling clarifies Messiaen's scattered references to this chord, and identifies first and second CCR in *Quatuor* and *Visions*, 'Rediscovering Messiaen's Invented Chords', 87, 89ff. Although Tome III offers a full description of the symmetrical permutations, the complete tables of Messiaen's colour-chords as they appear in *Chronochromie* do not appear until Tome VII. These tables are referenced in the abstract in Wai-Ling, 'Rediscovering Messiaen's Invented Chords', pp. 103-05.

[29] Z-related chords are two different set-classes of the same cardinality that share the same interval vector (i.e., neither set can generate the other through transposition or inversion, but each contains the same interval classes in equal number).



All three chord types share several features of utmost importance to Messiaen's later works: they are neither transpositionally nor inversionally symmetrical, and appear only in transposition at specific pitch levels (transpositional levels that occupy a common register). Symmetrical chords, such as those drawn from Messiaen's modes of limited transposition, will duplicate their pitch content at 1 or more levels of transposition or inversion, but the 'colour chords' offer a maximum of pitch variety: 36 possible TC, 48 possible CTI and 24 possible CCR, with no obvious indication that any particular transposition was favoured over another. At the same time Messiaen exploits chord contrasts by restricting the number of transpositions employed, to feature different chord types over the same bass note (as in the 4 CTI on C#3 and 2 CCR on D4 in Figures 5 and 6, and the simultaneous use of TC(A) on A4 (white noteheads, Figure 4) and CTI(C) on A3 (grey noteheads, Figure 4). Although each chord has at times appeared as a dominant-type chord in Messiaen's *œuvre*, in *Chronochromie* these chords are divorced from any harmonic function, and form merely an associational network of relations.[30]

[30] See Benitez for illustrations of the CTI in both functional and atonal contexts, pp. 213ff.

Their autonomy is underlined by Messiaen's careful attribution of precise colours for each chord in *Traité* Tome III, a quality tied to its intervallic arrangement and, in some cases, its register.[31] Although all six set-classes represented by the chords in *Strophe* I (7-20, 7z12, 7-z36, 8-4, 8-5 and 8-14) share 3 pentachords (only one of which is diatonic, 5-29) and 13 tetrachords, the only inclusion relation among them is 7-20/8-14 (8-4 and 8-5 do not contain any of the septads). The chords CTI(A), CTI(C), CCR(A) and CCR(B) all feature a major second as the lowest interval. Yet all six set classes feature a relatively even distribution of intervals, which make the aural identification of any distinct chord type particularly difficult (ic5 slightly dominates the interval vectors for 7-z12/7-z36 and 8-14, while ic1 dominates in 8-4 and 8-5).

Messiaen presents the complete transposition tables of all three chord types in Tome VII of the *Traité*, without any apparent link to the pattern of transpositions in *Strophe* I. The transposition of chords within each permutation follows no evident functional or serial scheme. In the same way that the durational permutations include a few segments that retain the order of the original series (Figure 1, segments d, e and h), so there are two spots in which the series of chords follows that of the original chord tables (permutation 2 cycles through all four CTI from table 8 and table 3 at order numbers 10-13 and 19-22 respectively). Figure 7 represents the 'figured bass' of all three permutations: an ordered series of bass notes harmonised by chords drawn from their respective chord tables (Figures 3, 5 and 6). The combined 19-note sonority in Figure 4 is here represented by TC(A) on A4 in permutation 1, CTI(C) on A3 in permutation 2, and CCR(B) on Db3 in permutation 3. After this simultaneous attack, the rhythmic permutations pull away from one another (the vertical alignment of bass notes indicates chord order sans duration); successive notes indicate a transposition of the initial chords, taken directly from the tables in the *Traité,* Tome VII. The dotted lines indicate those four points at which any two of the three permutations attack together.

Figure 7 The three symmetrical permutations in *Strophe* I represented as an ordered series of bass notes harmonised with chords drawn from the tables in Figures 3, 5 and 6.

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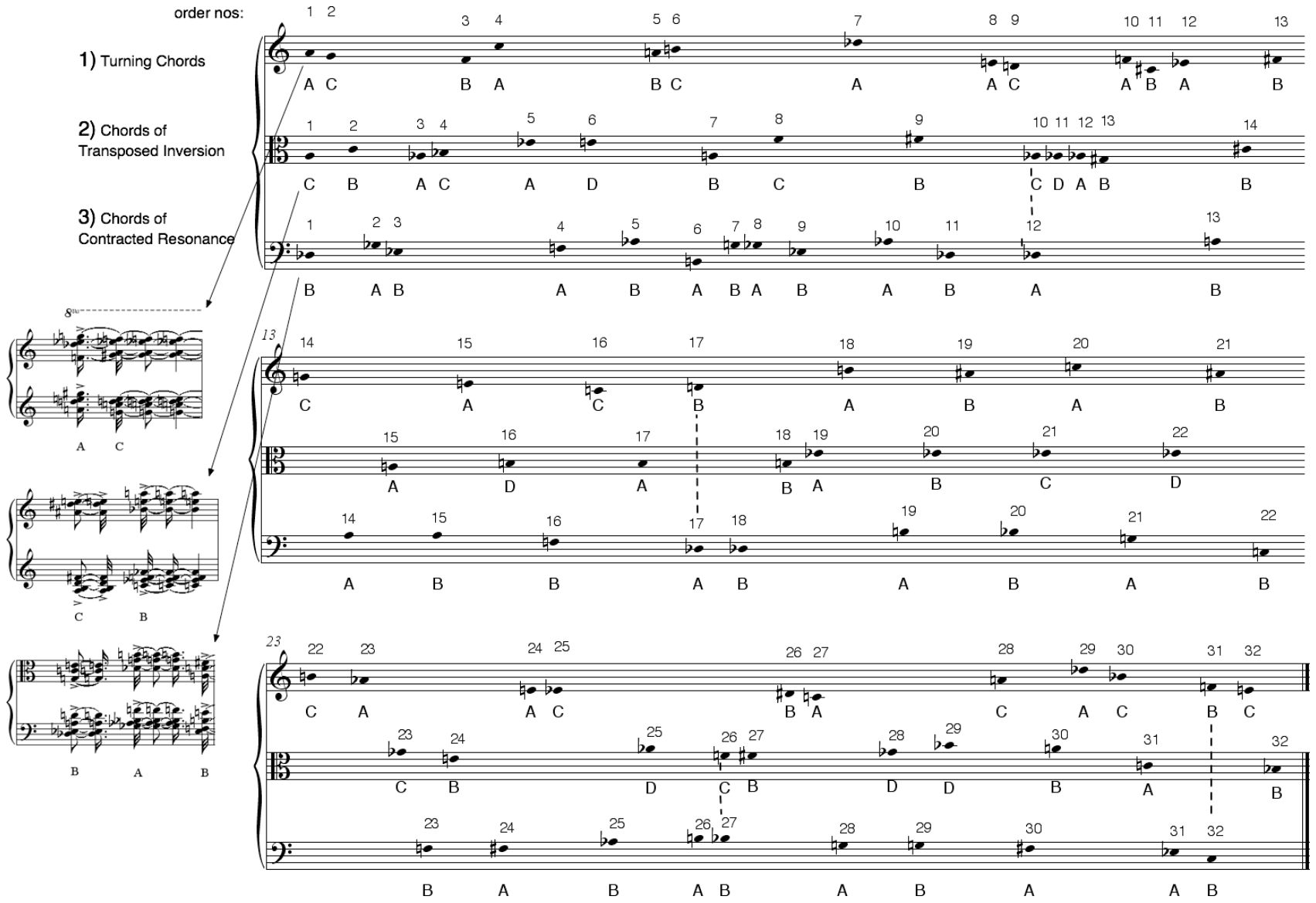
[31] For instance, the three TC have a 'global' effect of 'pale yellow, streaked with while, black and grey, with green spots.' Yet chord A is described as 'pale yellow, mauve, – pinkish copper, pearl grey.' *TRCO,* Tome III, p. 85.


order nos:
1) Turning Chords
2) Chords of Transposed Inversion
3) Chords of Contracted Resonance
8va
13
23

The three permutations of 32 chords form a resultant series of 96 individual chords distinguished by similar movement from each member to a related chord.[32] Within the registral band occupied by each permutation, bass motions up or down by perfect fifth/fourth (e.g. permutation 1, chords 3-4), or by semitone (e.g. permutation 3, chords 7-8), stand out in this succession. But without a repeated pattern, or a perceptible teleology (beyond completion of the series), the overall scheme is dominated by harmonic stasis and rigidity.

Yet *Strophe* I is the very picture of change: the three permutation cycles meet only at the movement's outset, and the chord types and pitch levels are in constant flux. A range graph of the first 9 1/2 measures of *Strophe* I (Figure 8) displays permutations 1, 2 and 3 as a sequence of vertical sonorities. The horizontal axis of the graph represents time as an ordered series of attacks, while the vertical axis indicates pitch height in semitones. Varied shades of grey tied to register illustrate the separate yet overlapping range of each permutation (the TC in 1st violins appear in the 3 lightest shades of grey, while the CTI in 2nd violins appear in the 4 medium shades, and the CCR in low strings are marked in dark grey and black). As the graph implies, the homogenous timbre and disjunct spacing of each chord strand blur the identity of simultaneous layers. The confusion between successive and simultaneous shades of grey serves as a visual analogue to Messiaen's emphasis on individual chord 'colour' and resonance at the expense of voice-leading or harmonic connections between chords.

Although 55 different chords appear in *Strophe* I, Messiaen restricts the register and number of transpositional levels allotted to each chord type. Out of 36 possible chords, he uses but 23; TC(A) built on E4 (taken from the first table of the *Traité*) and TC(A) built on C4 and C5 (taken from the fifth) each appear three times, while the following chord types each appear twice (TC(A) from the fourth table, TC(B) from the fifth and tenth tables, and TC(C) from the fifth and ninth tables). Slightly more than half (26) of 48 possible CTI appear, including all the chords in the third and eighth tables, and three chords each from tables 6, 9, 10 and 11. Each of the twelve possible transpositions of set-class 7-20 is represented, but there is a proportional scale that regulates their appearance: four occurrences each of four sets, three occurrences each of two

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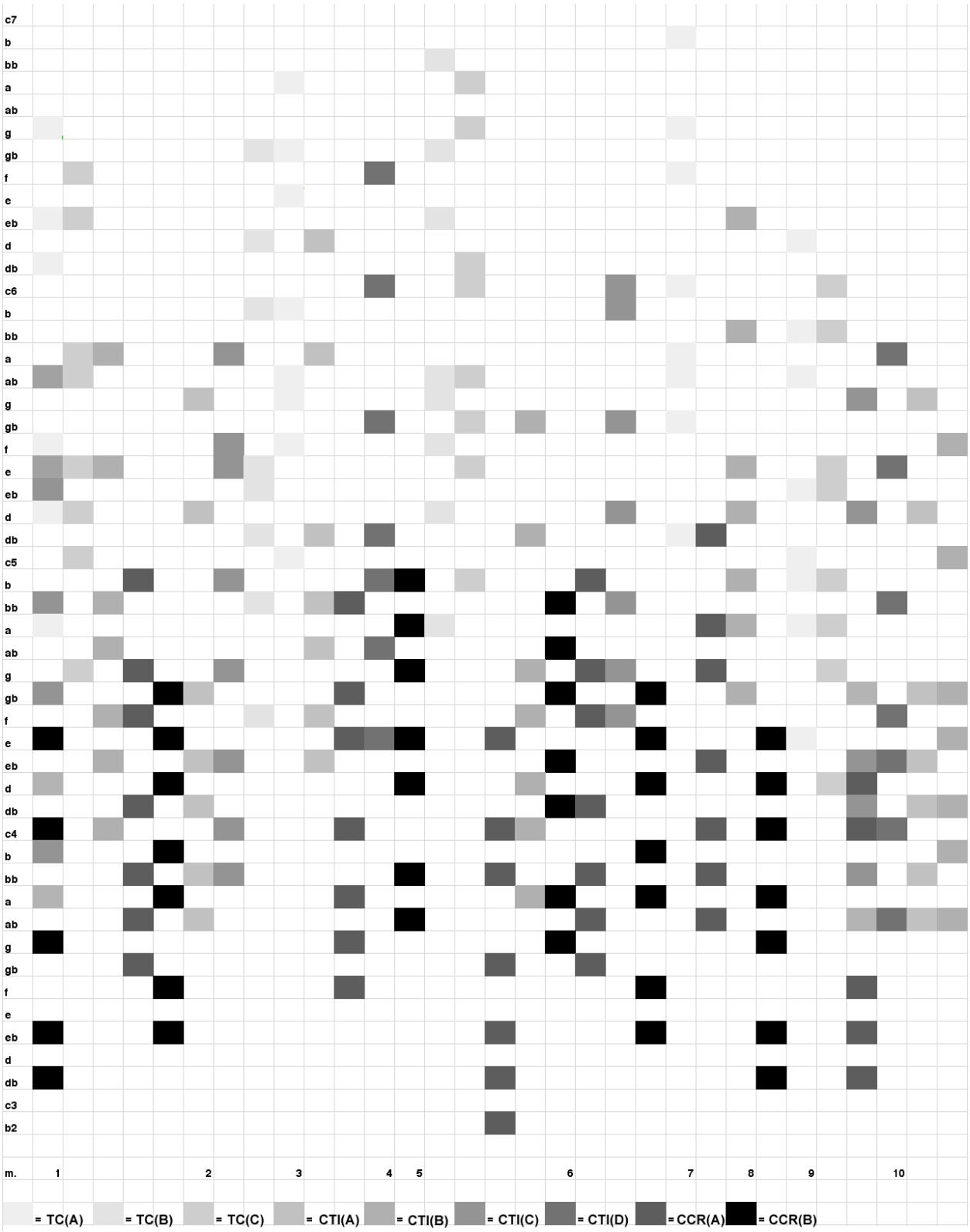
[32] Parallel motion between two instances of the same chord type occurs five times: twice in permutation 2, between chords 13 and 14 (CTI(B) from G#3-C#4) and chords 28 and 29, (CTI(D) from Gb4-Bb4), and thrice in permutation 3, between chords 15 and 16 (CCR(B) m A3-F3), chords 22 and 23 (CCR(B) from C3-F3), and chords 30-31 (CCR(A) from F#3-Eb3).

sets, two occurrences each of five sets, and one occurrence of one set.[33] Of 24 possible chords of contracted resonance, 16 different forms appear on only 10 different pitch-classes, but these represent all but two of the chord tables sketched out in Tome VII of the *Traité.*

Figure 8 Registral graph of the first 9½ measures of the three symmetrical permutations as they appear in *Strophe* I

[33] In normal form these would be the collections [1,2,3,6,7,8,10], [3,4,5,8,9,10,0], [5,6,7,10,11,0,2] and [6,7,8,11,0,1,3], 4x each; [8,9,10,1,2,3,5] and [9,10,11,2,3,4,6]. 3x each; [0,1,2,5,6,7,9], [2,3,4,7,8,9,11], [3,4,5,8,9,10,0], [4,5,6,9,10,11,1] and [11,0,1,4,5,6,8], 3x each, and [7,8,9,0,1,2,4] once.


c7
b
bb
a
ab
g
gb
f
e
eb
d
db
c6
b
bb
a
ab
g
gb
f
e
eb
d
db
c5
b
bb
a
ab
g
gb
f
e
eb
d
db
c4
b
bb
a
ab
g
gb
f
e
eb
d
db
c3
b2
m.
1
2
3
4
5
6
7
8
9
10
= TC(A)
= TC(B)
= TC(C)
= CTI(A)
= CTI(B)
= CTI(C)
= CTI(D)
= CCR(A)
= CCR(B)

The harmonic language of *Chronochromie* is steeped in the 'charm of impossibilities': six set-classes, in but nine arrangements, are employed at a limited but evenly graded number of transpositional levels. The chromatic saturation of pitch-space defies us to hear individual chord successions, yet we are conscious of the 'colour of time' as separate strands of percussion highlight each individual chord layer, analogous to the birds in reeds and keyed percussion, whose diminuted songs colour the relentless march of the rhythmic cycle.[34] The shaded registral graph in Figure 8 implies that the relative ambitus of each permutation– although it may overlap with its neighbours – is the most audible signifier of each individual cycle; e.g., as only two chord types populate the lowest register, the CCR take on the function of a ground bass, while the midrange CTI bear the characteristics of a tenor line. The chords of contracted resonance function as a foundation for the shifting chords above, and impart their own subtle harmonic rhythm, as 90% of the time CCR(A) moves to CCR(B) and vice versa. The minting of the permutations through birdcalls, and the perception of a 'passacaglia' bass formed of two chords of contracted resonance are but shadows of the underlying complexities woven into the harmonic and rhythmic fabric, whose overall substance seems beyond our conscious apprehension. Yet we are also aware, at some unconscious level, that *Chronochromie* offers both freedom and limitation as more than simply a metaphorical representation of the 'charm of impossibilities'.

Understanding *Chronochromie*

Given the evident difficulties composed into *Chronochromie,* we might ask several questions of Messiaen. First and foremost is how we are to understand the 'power' exercised by the mathematical impossibilities inherent in the symmetrical permutations, especially when their overall effect appears to be relatively anodyne. Roberto Fabbi and Jean Marie Wu attempt to deal with the intractable but unavoidable paradoxes inherent in Messiaen's fascination with this power, beginning with the music itself. Why combine symmetrical permutations and schematic chord patterns in such a manner that they are 'probably better understood mentally and felt

[34] Ian Darbyshire suggests that Messiaen chose the term 'colour' in his commentary to suggest that the function of the birdsongs in obscuring the rhythmic series, as the root of the word colour means to hide or cover; Ian Darbyshire, 'Messiaen and the Representation of the Theological Illusion of Time,' *Messiaen's Language of Mystical Love*, pp. 33-54; p. 50, fn 42.

subliminally than consciously perceived aurally'?[35] Indeed, although (relatively) 'easily seen and understood in the abstract', Messiaen's presentation of both the symmetrical permutations and their accompanying harmonies suggests that their power extends beyond the virtual; that the instantiation in music of non-retrogradable rhythms, modal harmonies, and symmetrical permutations have an impact that exceeds their intellectual contemplation as abstract pattern.[36] As Fabbi notes:

> It must be admitted that there is something odd about this 'phenomenon'. Although the expression describing it appears at the beginning of an essay on compositional technique, [the phrase 'charm of impossibilities'] is utterly foreign to specialist jargon, conceptually opaque, paradoxical, and attempts to classify precise technical elements with works of almost poetical resonance. It calls into play types of experience that one normally considers to be of an opposite nature: the sensual and emotional experience of 'charm' and the intellectual, rational experience of 'impossibilities'. It invites us to project technical information onto a wider plane.[37]

If such restrictions are at the philosophical heart of Messiaen's music, we may indeed project them beyond the parameters of rhythm and harmony, to questions of form and genre. History (in the form of Greek poetics), and nature (in the form of birdsong) place *a priori* limits on the form and melodic scope of *Chronochromie,* as paradigms with strong and timeless associations. And both Greek lyric and the songs of the birds serve as easily available references for the scholar of Messiaen's music. As if to duplicate the transparency and universality of these models, Messiaen lays bare the artifice of his harmonic and rhythmic language in the *Traité.* The third tome records, in paraphrastic detail, every detail of not only *Chronochromie's* composition but also its wider context, as a specific representation of a circumscribed but expressively rich world of possibilities. Over the span of 66 pages (!) we are presented with all 36 possible

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[35] Jean Marie Wu, 'Mystical Symbols of Faith: Olivier Messiaen's Charm of Impossibilities', *Messiaen's language of mystical love,* pp. 85-120; p. 108.

[36] Ibid., Wu, p. 108.

[37] Fabbi, p. 55.

inversions of Messiaen's original 32 member durational pattern, followed by the juxtaposition of each three successive permutations (*interversions* 1-3, 4-6, etc).[38] The same tome includes a detailed list of birds and their characteristics as found in each movement, along with, as noted above, a description of each chord type represented in *Strophe* I.

Lest we wonder why harmony receives less attention than rhythm, the final tome of the *Traité* details every possible transposition of each of five categories of colour chords (to produce 60 in total), including the three types that populate *Strophe* I of *Chronochromie*: the chords of transposed inversions, the chords of contracted resonance, and the turning chords. Yet Messiaen rarely links the chord to its effect, or compositional purpose.

If we ask why a composer so invested in the mysterious and transcendent would so obsessively document his own work, we are reminded that, as Ian Darbyshire notes, Messiaen writes theological, as opposed to mystical, music.[39] There is a pedagogical insistency to his work, one that seeks to deepen the music's mystery even as he lays bare his materials. Yet how can such utterly personal music, chords that shimmer with a colour only the composer can see, communicate with an audience for whom the 'colour of time' must remain a metaphor, if a very powerful one? Chromesthesia such as that evinced by Messiaen is not only rare but also utterly unique.[40] The composer answers:

> When I hear music – and it was already like that when I was a child –I see colours. Chords are expressed in terms of colours for me–for example, a yellowish orange with a reddish tinge. I'm convinced that one can convey this to the listening public.[41]

But by comparing his symbolic language to the secret language forged by the early Christians, Messiaen implies that only the initiate can truly grasp his meaning.[42] The composer's

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[38] *TRCO,* Tome III, pp. 7–38.

[39] Darbyshire, *Messiaen's language of mystical love*, p. 33.

[40] Discussed in Greta Berman, 'Synesthasia and the Arts', *Leonardo*, 32/1 (1999), pp. 15–22.

[41] Messiaen quoted in Rößler, *Contributions to the Spiritual World of Olivier Messiaen*, p. 54.

[42] 'I've written my theme into the notes, into the music itself, so that future generations will be able to recognise this theme again. I'm like the first Christians who'd invented a secret written language which could be read from top to bottom and the other way around, from right to left and the other way around, from all

own analyses demonstrate this paradox *a fortiori*. Once the symmetrical rhythms and coloured harmonies are described, and their limitations multiplied by the expansion or juxtaposition of materials, one is left to surrender to a rather opaque, all-inclusive notion of spirituality: 'And so, the symmetrical permutations of *Chronochromie* illustrate the mystical experience of eternity that was behind Messiaen's exploration of time.'[43] But how does one begin to grasp the expression of 'everything super-terrestrial, everything that's supernatural'?[44]

The impossible ear

The French empiricist philosopher Deleuze conceived music as that which materially, in an open system of difference in conjunction with nature, territorialises the world it inhabits. In the form of the ritornello, music is a powerful means of staking out a territory, a region that, as Ronald Bogue defines it, composed of 'irregular patterns of differential relations that have a certain autonomy in respect to the heterogeneous elements they combine'.[45] Messiaen's concept of music as an expression of the eternal divine may seem a far cry from this definition, yet for Deleuze, Messiaen's music represented the joyful engagement of cosmic forces. Deleuze was concerned with immanence, the empirical real, a philosophical stance that eschews universal essence for analysis of the relations between and among things. An object does not belong to a transcendental category (table, for instance), but has existence in a field or territory; the meaning of a table arises from its interaction with other objects, its social function, and the productive relations of which it is a part (e.g., the family sitting down to a meal at home). When one sings a tune, a 'ritornello,' one may be marking time while working, or expressing a strong emotion, or

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angles and in every direction, and which always produced a cross-shape with alpha and omega. . . they wrote these cryptograms on the walls of the catacombs to make themselves known to each other and, at the same time, to protect themselves from their persecutors.' Messiaen quoted in Rößler, pp. 54-55.

43 Wu, *Messiaen's language of mystical love*, p. 112.

44 Rößler, *Contributions to the Spiritual World of Olivier Messiaen*, p. 54.

45 Ronald Bogue, *Deleuze on Music, Painting and the Arts* (London: Routledge, 2003), p. 13; Gilles Deleuze and Felix Guattari, *A Thousand Plateaux: Capitalism and Schizophrenia,* trans Brian Massumi (University of Minnesota Press 1987), p. 299.

travelling from one place to another.[46] Music is thus an active agent in defining and establishing territory, an active field of relations that connects history, nation and sound with individuals.

Those three fundamental elements that appear on the surface to co-exist in *Chronochromie* as radical contingencies–birdsong, the symmetrical permutations, and the 'colour' chords–occupy related roles in Messiaen's music. Deleuze's musical aesthetics likewise revolve around birdsong, rhythm, and the role of formal considerations as they relate to temporality. Birdsong establishes continuity among human and nonhuman species in 'their modes of occupying space and establishing interspecific and conspecific relationships': the way they territorialise their environment and interact with other birds and humans.[47] The autonomous elements that compose a bird's song are a combination of its innate proclivity towards song as shaped by its environment, distinguishing that bird in that place with what can only be called its own 'style'.[48] Likewise the Hindu deçi-talas favoured by Messiaen in his earlier compositions were once associated with a region, mood and character, but have been 'deterritorialised' within his music.[49]

The territorialisation through song, involves a particular relation to time. Time, as divided into *Chronos* and *Aion*, relates sonority, form and rhythm to one another, the first marking off time linearly into units and the second representing a reversible, ametric kind of "timeless" time. For the Stoics, *Chronos* was a time of bodies, while *Aion* represented the incorporeal. *Chronos* is therefore pulsed time, but, as Deleuze stresses, not periodic time:

> [You] have a pulsed time when you find yourself always before three coordinates. It suffices that there be only one of the three. A pulsed time is always a territorialized time; regular or not, it's the number of the movement of the step that marks a territory: I cover [*parcours*] my territory! I can cover it in a thousand ways, not necessarily in a regular rhythm. Each time that I cover or haunt a

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[46] Deleuze, speaking to Claire Parnet in the documentary by Pierre-André Boutang, *L'Abécédaire de Gilles Deleuze,* "O comme Opéra", transcribed by Charles Stivale, *Summary of 'Gilles Deleuze's ABC Primer' (L'Abécédaire de Gilles Deleuze, 1988/1995),* http://www.langlab.wayne.edu/CStivale/D-G/ABC3.html.

[47] Ibid., Bogue, p. 13.

[48] Ibid., Bogue, p. 22, Deleuze and Guattari, *A Thousand Plateaux: Capitalism and Schizophrenia,* p. 319.

[49] Deleuze and Guattari, *A Thousand Plateaux: Capitalism and Schizophrenia*, p. 300.

territory, each time that I claim a territory as mine, I appropriate a pulsed time, or I beat [pulse] a time.[50]

There are are three general forms of time, with radically different scale. The simplest form of pulsed time is the refrain [*ritournelle*], which occupies a space that is not yet musical: an inchoate musical form with the intent to mark out a musical territory. The second characteristic of pulsed time is 'a time which marks the temporality of a form in development'. There exists a third form, what the Germans call *Bildung*, or what post-structuralists would call 'subject formation'.[51]

On the level of musical structure, the refrain both marks and groups a 'territory', correlating internal impulses with external circumstances, as the autonomous chord structures within *Strophe* I of *Chronochromie* are ordered by the symmetrical permutations, and the permutations in turn are constrained by the 7-part formal design.[52] It is the job of great composers to deterritorialise the refrain in general; that is, to unsettle conventions and invent 'a sort of diagonal between the harmonic vertical and the melodic horizon'.[53] With Messiaen this deterritorialization of the refrain is even more personal than the calculated juxtaposition of received and natural elements, for it is filtered through his own 'coloured' hearing and his personal experience with birds in the wild. Messiaen deterritorialises the temporal realm by identifying not only a quantitative but also a dynamic and phonetic order of rhythm, as in his analysis of Stravinsky's *Le Sacre du Printemps,* and his well-developed notion of *personnages rythmiques*.[54]

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[50] Gilles Deleuze, 'Vincennes Seminar Session of May 3, 1977: On Music', trans. by Timothy S. Murphy, *Discourse: Journal for Theoretical Studies in Media and Culture* Vol. 20, No. 3 (1998), pp. 208-09.

[51] Ibid., Deleuze, 1977.

[52] Bogue, pp. 19-22. I have left out the sticky but perhaps necessary notion of *milieu* as well as the definition of territorialization as defined by Deleuze and Guattari. They define a milieu as, 'a coded block of space-time, a code being defined by 'periodic repetition', and describe territorializaiton in terms of 'rhythm that has become expressive, ' and 'milieu components that have become qualitative.' Deleuze and Guattari, pp. 313, 315.

[53] Ibid., Deleuze and Guattari, 296.

[54] *TRCO,* Tome II, 97-147. Cf. Gareth Healey, 'Messiaen and the Concept of 'Personnages' ', *Tempo*, Vol. 58, no. 230 (Oct 2004), 10-19.

A movement of deterritorialisation is at the same time the release [*dégagement*] of a non-pulsed time, in a movement toward becoming something other. Deleuze's prime example of such a 'deterritorialization' was in fact Messiaen's transcriptions of birdsong, through which 'the bird becomes something other than music, at the same time that the music becomes bird.'[55] Messiaen's birds no longer mark a specific territory out there in the world but become 'in sound something other, something absolute, night, death, joy–certainly not a generality or a simplification, but a haeccity, *this* death, that night.'[56] The notion of this becoming is neither imitative, nor figurative. In much the same way Messiaen's rhythmic innovations involve a time of heterogeneous durations, no longer pulsed time, and no longer dependent on a unifying metrical form.[57] As the composer states:

> The musician possesses a mysterious power: by means of this rhythms, he can chop up Time here and there, and can even put it together again in the reverse order, a little as though he were going for a walk through different points of time, or as though he were amassing the future by turning to the past, in the process of which, his memory of the past becomes transformed into a memory of the future.[58]

This non-pulsed time represents the same kind of freedom attained by generalised chromaticism (the free use of all twelve-tones) in twentieth-century musical modernism. The notions of sonorous landscape, audible colours, and rhythmic characters all represent a process

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[55] Deleuze, 'Vincennes Seminar Session, May 3, 1977: On Music', Translated by Timothy S. Murphy, *Discourse* 20:3 (fall 1998), pp. 210-11.

[56] Deleuze and Guattari's notion of *haeccity* is an attempt to defeat the static and stratifying effect of nouns within language, to remind the reader of the uniqueness of every thing as it is born in the moment. The thing thus disappears, to be replaced by the event, and the thing-as-becoming. Deleuze and Guattari, *A Thousand Plateaux: Capitalism and Schizophrenia*, 304.

[57] Gilles Deleuze, 'Conference Presentation on Musical Time, IRCAM, 1978', trans. by Timothy S. Murphy, archived at http://www.webdeleuze.com/php/texte.php?cle=113&groupe=Conf%E9rences&langue=2.

[58] Rößler, *Contributions to the Spiritual World of Olivier Messiaen*, p. 41.

of individuation, part of the floating time that marks becoming: the time of *Aion*, made only of lines, not points.[59]

> [We] might consider the sound-color relation as a simple association, or a synaesthesia, but we can consider the durations or rhythms to be colors in themselves, specifically sonorous colors which are superimposed on visible colors.[60]

Virtually any bar in *Chronochromie* illustrates this musical becoming that results from the blurring of previously segregated musical parameters. The symmetrical permutation series slows down in b. 22 of *Strophe* I, as the musical texture expands to admit 13 simultaneous voices in winds and percussion. The permutation series features TC(B) at T5 in first violins, with an attack of duration 20, CTI(D) at T11, in the midst of duration 30, and CCR(A) at T1 near the end of duration 21. A chorus of no less than ten birds soar overhead, each with its own unique call, defined by the motivic reiteration of a rhythmic and melodic pattern. Figure 9 illustrates the rhythmic and contrapuntal interaction of seven birdsongs with the harmonic/rhythmic 'ground'. The piccolo plays the role of great titmouse, with demisemiquaver triplet divisions shared by 1st flute, 2nd clarinet and glockenspiel, against the 2nd flute which moves at half speed (in semiquaver triplets). The remaining voices ornament the slow-moving cycle in strings with demisemiquaver and semiquaver overlapping patterns.

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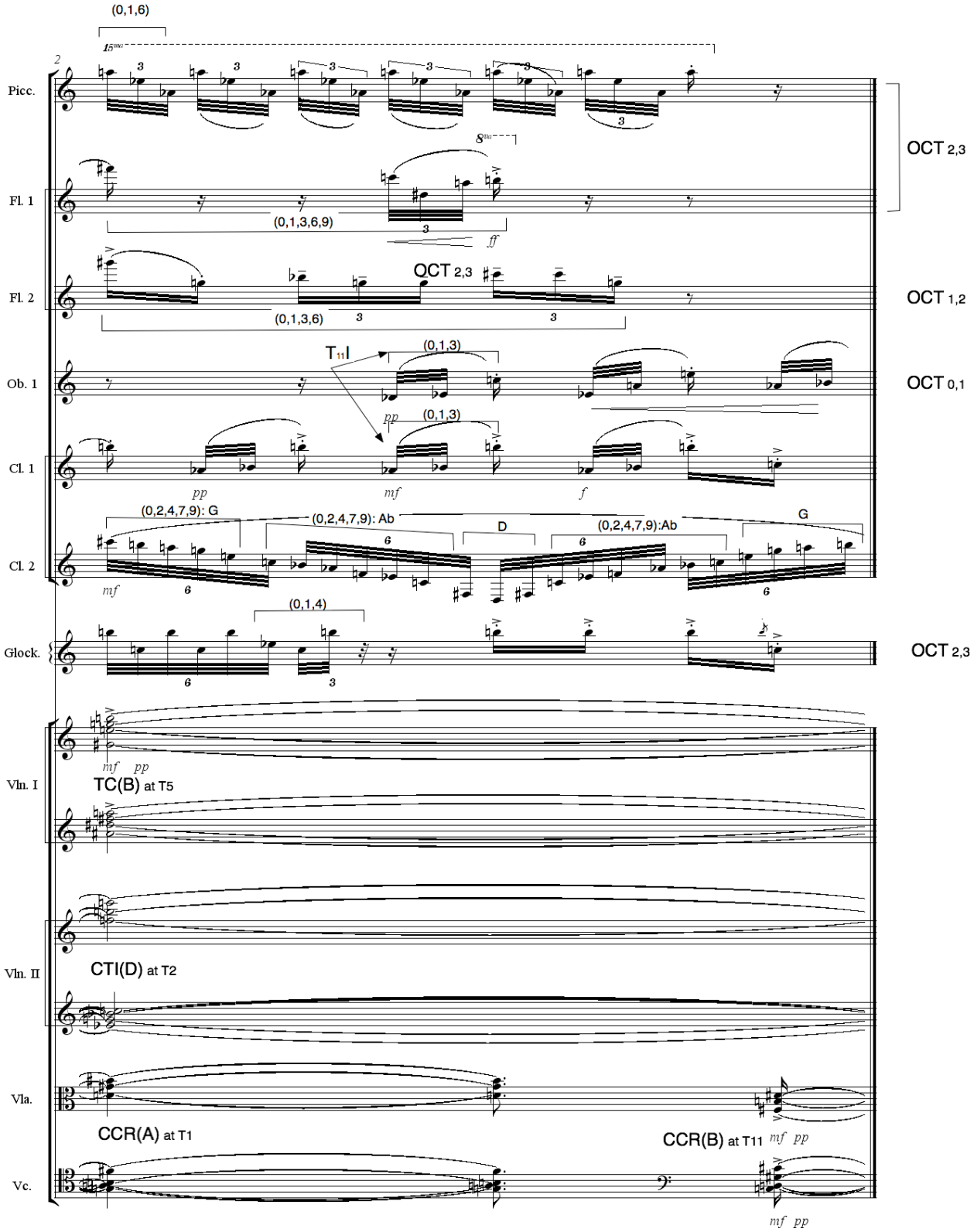
[59] Bogue, *Deleuze on Music, Painting and the Arts*, 54.

[60] Deleuze, 'Conference Presentation on Musical Time, IRCAM, 1978'.

Figure 9 The rhythmic and contrapuntal interaction of seven birdsongs with the harmonic/rhythmic 'ground' in b. 22 of *Strophe* I



At an octave above, the piccolo's (0,1,6) trichord underlines select notes from permutation 1 while emphasising the interval of a minor ninth (the augmented octave Ab6 to Ab7). Each of the black caps in flute has its own unique octatonic collection, and their motives highlight different intervals while cutting across the harmonic field of all three permutations. The oboe's icterine warbler echoes the piccolo's (0,1,6) at T_0I, and the 1st clarinet's repeating (0,1,3) trichord at $T_{11}I$, which features a minor ninth echo of its higher neighbour. Yet the second marsh warbler in clarinet 2 moves through two and a half octaves and the total chromatic with a scalar passage that shifts from one diatonic pentad to another. The glockenspiel's wren emphasises the same major 7th from C6 to B6 as that of the 1st clarinet, in the context of a (0,1,4) trichord that resonates with permutation 3 in low strings. But the only wind to actually venture into this range is the 2nd clarinet; the remaining voices accent specific pitches within permutations 1 and 2.

Time most obviously 'becomes' colour in the rhythmic 'minting' of subdivisions smaller than the demisemiquaver, which affect the timbre of underlying harmonies in much the same way the irrational rhythmic values in Ligeti's canons affect timbre in his works such as *Lontano* (1967).[61] More significant is how the rendezvous and dispersal of avian voices affects our perception of the rigid permutation scheme. As motives converge and diverge the changing density of rhythmic attack renders time elastic, while each slowly shifting harmony in strings shimmers as various pitches and intervals are doubled in winds and percussion.

Deleuze, as did Messiaen, looked to the late nineteenth-century for the liberation of rhythm from the constraints of pulsed time. Wagner's leitmotifs transcended an external character to take on an autonomous life, 'in a floating non-pulsed time in which they themselves

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[61] The first section of *Lontano* begins quietly on a unison Ab *(pppp),* a focal point of clarity joined by clarinet and bassoon (b. 1-5), followed by oboe, French horn, and trombone (b. 3-8). The minute rhythmic subdivisions of each canonic strand (each line follows a different pattern), and the prescription to *enter with an imperceptible attack* combine to deny any recognisable rhythmic punctuation or periodicity. The ametric entrance of canonic strands in different instrumental bodies causes a pronounced waver in pitch. This effect– when added to the implied vibrato of the expressive marking (*dolcissimo, sempre expressivo)*—causes acoustic beats that add resonance, and shift the overtone structure of the canon. There is no harmonic progression in *Lontano;* rather, triads, octave doublings, and stable intervals rise out of the texture and gradually submerge.

became internal characters'.[62] At the end of the nineteenth century music brought to audibility what it had always contained: 'non-sonorous forces like Time, the organization of Time, silent intensities, rhythms of every nature.'[63] Messiaen took the lead in rendering sonorous those forces that aren't sonorous – which are not even audible – in themselves, making the 'reality of the invisible' palpable to listeners.[64] The aforementioned concept of *personnages* is an example of Messiaen's modernist refashioning of the past. The composer traced *personnages rythmiques* all the way back to Beethoven, who engaged in a 'development by elimination' when he foreshortened the initial cell of the Fifth Symphony.[65] Stravinsky then extended this technique to three simultaneously presented rhythmic figures in which one 'dominates' through expansion, a second 'submits' through contraction, and a third remains immobile throughout, to create a living and breathing musical texture. Having discovered a 'purely rhythmic theme' in Stravinsky, Messiaen himself then extended the concept of *personnages* to melody and harmony in the *Turangalîla-Symphonie*.[66]

Thus a rhythmic technique that was inspired but not fully realised in Beethoven later blossomed in Stravinsky, and was seized on by Messiaen to realise the theatrical potential of rhythm, melody and harmony.[67] By 1960 Messiaen had moved on to a new 'resurrection',[68] reflected by changing his latest work's title from *Postlude* to *Chronochromie*.[69] As Deleuze notes, when the contemporary musician becomes a philosopher, music similarly is no longer a

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[62] Compare Messiaen's observations on the leitmotif: 'There's someone who preceded me in the search for such possibilities of expression: Richard Wagner with his leitmotif. Later generations have watered down the idea behind the leitmotif by attaching labels to it. This leitmotif's an extraordinary medium of speech and expression, making it possible to depict the past, present and future, all at the same time. This has nothing to do with classical music, or with modern music either, but stands entirely for itself. I owe a great deal to this idea.' Quoted in Rößler, *Contributions to the Spiritual World of Olivier Messiaen*, p. 53.

[63] Deleuze, 'Conference Presentation on Musical Time, IRCAM, 1978'.

[64] 'In my religion, we believe in the reality of the invisible and we believe in the resurrection of the flesh, the resurrection of the dead.' Messiaen speaking in *Olivier Messiaen: A Music of Faith*, London Weekend Television (LWT). First Broadcast on 5 April 1985, transcript - 1986, p. 10.

[65] *TRCO,* Tome II, pp. 401-4.

[66] *TRCO,* Tome II, p. 99.

[67] *TRCO,* Tome II, p. 112.

[68] Messiaen quoted in Antoine Goléa, 'Olivier Messiaen, Chronochromie,' p. 279.

[69] Hill and Simeone, *Messiaen*, p. 233.

matter not solely for musicians. Neither philosopher nor musician retains interest in simple hierarchy, categorical forms of thought, and pure concepts.

> In music, it's no longer a matter of an absolute ear but rather an impossible ear that can alight on someone, arise briefly in someone. In philosophy it's no longer a matter of an absolute thought such as classical philosophy wanted to embody, but rather an impossible thought, that is to say the elaboration of a material that renders thinkable those forces that are not thinkable by themselves.[70]

Messiaen exploration of the charm of impossibilities in *Chronochromie* renders those abstract charms palpable. Here birds become music, ideas taken on audible form, colours become duration and time becomes colour. If we cannot yet grasp his music as a whole, perhaps it is simply because it is always in the process of becoming, of rendering– through his impossible ear–those forces sonorous, audible, that were not audible in themselves. For the composer, faith in the power of what can't be heard or seen drives that which can, witnessed by the preface to *Un Vitrail et des Oiseaux:*

> But the birds are more important than the tempi, and the colours more important than the birds. More important than all the rest is the aspect of the invisible.[71]

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[70] Deleuze, 'Conference Presentation on Musical Time, IRCAM, 1978'.

[71] Preface to *Un Vitrail et des Oiseaux* (Paris: Leduc, 1986).