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MESSIAEN'S STRUCTURAL AND FORMAL PROCEDURES IN
CHRONOCHROMIE AND COULEURS DE LA CITÉ CÉLESTE

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CHAPTER ONE

INTRODUCTION

Messiaen's music has, from its beginning, drawn a wide variety of responses, and not in the least has the form of his works had a part to play in this. Hodier (1961)\(^1\) would have us believe that in the domain of form, "Messiaen has proved completely - and, I fear, definitively impotent" while in 1965, Nicholas Armfelt finds that "Messiaen's peculiar excellence manifests itself in the form of his works".\(^2\) Such disparity of comments would seem to invite investigation; two of Messiaen's more recent works, Chronochromie (1960) and Couleurs de la Cité Céleste (1963) provide material suitable for such a study. Both incorporate birdsong, symmetrical permutations of durations and the representation of colour into their structures which, on the surface, are quite different: Chronochromie is articulated in seven distinct sections while Couleurs de la Cité Céleste is through-composed. However, it will be seen that Messiaen's rather unique approach to form is an integral part of both of these, and must be understood if the works are to be fully appreciated.

An appreciation of the form of any work presupposes a study of its various parameters, and an understanding of the way they do, or do not contribute to the shape of the whole. This is no less true for Messiaen's than for any other's music. In particular three elements of his music both have an important structural role to play, and single him out as a very individual composer. Rhythm has come to hold an increasingly important position in Messiaen's aesthetic over the past thirty years;
consequently he has devised, and applied to his works several innovations in this field. His fascination with birds and their songs is well known - "I'm an ornithologist..."\(^3\) - and has influenced him to such an extent that he has devoted lengthy works to representing birdsongs and their environments.

Thirdly, there is his approach to harmony which focuses, in the main, on his concept of colour. Messiaen has a rather personal brand of sound-colour associations; for him this is a very strong influence indeed, and it dictates much of his harmonic working.

The way in which Messiaen approaches these three parameters, and others in *Quatuor Pour la Fin du Temps* is most significant. Here, for the first time, appear some of the most characteristic features of his style, ones which hold important implications for many of his later works. For example, the structural method employed in the second and seventh movements forms the basis for the structure of many of his later works; Messiaen terms it "Variations of the First Theme, separated by Developments of the Second": the procedure is one of alternating the treatment of two different musical ideas such that a sense of growth and continuity across the contrasting sections is achieved. It is important to note that this is a procedure rather than a form, and, inherent in it are possibilities of wide and flexible applications, many of which Messiaen was to realise later.

*Quatuor Pour la Fin du Temps* marks the beginning of an increasing independence of pitch structure and rhythm from each other. This is illustrated well in the first movement which has as its basis a talea-color arrangement. In the piano part
a melodic ostinato of twenty-nine chords is superimposed on a rhythmic talea of seventeen values (made up, incidentally, of three Hindu rhythms in succession); the cello plays an ostinato of its own: a melodic color of five notes is repeated over a rhythmic pattern of fifteen durations, forming a continuous chain which is non-retrogradable from centre to centre as well as from end to end. There is, therefore, no true beginning or end to the rhythm.

Ex. 1.

The combined effect of the piano and cello ostinatos is one of timelessness. This results, in part, from the particular numbers chosen (all, but "fifteen" are prime numbers); in the piano part alone their interaction ensures constant variation within an ordered system, at the same time producing an effect of randomness. This, coupled with the non-retrogradable rhythm of the cello part, makes for a complex rhythmic basis which proceeds strictly according to a system but which lacks any formal shape whatsoever, a situation which is further intensified by an absolutely steady tempo and an unchanging dynamic level. Thus the passage of the ostinatos is cut off quite arbitrarily at the end of the movement when the birdsongs have come to their completion.

Such complex polyrhythmic structures depend on there being several instruments to execute the different strands. (The
Quatuor was, in fact, the first piece Messiaen had written for a group such as this; yet it is interesting to note that the rhythmic innovations of the work are as much in evidence in the sixth movement, which is for all instruments playing together in octaves, as they are in any other. Messiaen claims for this movement, "Danse de la fureur pour les sept trompettes", that it is rhythmically the most characteristic piece of the work and indeed, added values, augmented and diminished rhythms and non-retrogradable rhythms abound; bar-lines are no more than aids to performance. It is the distinctive rhythmic motives which are just as important in giving a shape to the movement as any other feature of the music; one particular application of the augmentation principle forms the basis of rhythmic procedures used much later. A small rhythmic unit (\[\frac{\text{Crotic foot}}{2}\], the Greek 'cretic' foot) is treated to a series of augmentations which are not restricted to be classical two-multiples; however the 2:1:2 proportion is always preserved.

\[\text{Ex. 2.}\]

This approach eventually leads to a type of rhythm which features progressively increasing or decreasing values. Examples of this "chromatic rhythm" as Messiaen termed it, appear from 1944 onwards, and in Cantéyodjayâ (1949) the composer actually labels those parts of the score where such a series is used.
5.

("Gamme chromatique des durées, droite et rétrograde"). In this case the scale consists of values ranging from a demisemiquaver to twenty-three times this unit, and on to it is imposed, in one part, a melodic ostinato of seven notes, and in the other, a chromatically rising series of pitches. Cantéyodjayâ has the distinction of being the first piece in which Messiaen works out a further extension of this principle: three chromatic scales of durations are simultaneously deployed by means of a modal system. The passage headed "Mode de durées, de hauteurs et d'intensités", starting on page 8, is set out on three staves, each of which is based on a separate mode. These modes are made up of combinations of durations, pitches and dynamics such that for each duration of a chromatic scale there is associated a particular pitch and dynamic level. So, for example, the mode of the middle stave is as follows:

\[
\begin{align*}
1 & \times = F \} \text{mf} \\
2 & \times = E \} \text{mf} \\
3 & \times = B \} \text{f} \\
4 & \times = B\flat \} \text{f} \\
5 & \times = A\flat \} \text{p} \\
6 & \times = D \} \text{p} \\
7 & \times = A \} \text{f} \\
8 & \times = E\flat \} \text{f}
\end{align*}
\]

(Note: each pitch always recurs in its original register)

Ex. 3.

The importance of this method for Messiaen was not so much in that it was a system in which predeterminism was extended to durations and dynamics, but rather, in what was not predetermined, i.e. the arrangement and juxtaposition of these ready-made elements. This modal approach meant that, working freely within the boundaries of each mode, he could manipulate the elements to create the effect he desired, and impose some kind of form on the whole, much as one works freely with the pitches of, say, a major or a minor mode.
Another method of distributing durations of a chromatic sequence appears, albeit rather discreetly, for the first time in *Cantýyodjayã*; this was to play an important role in later works, especially *Chronochromie*. One page 19 of the score a passage of continuous semiquavers in the right-hand part is given, by the other part, a rhythmic articulation which is determined by a series of permutations. A sequence of four durations (2, 3, 4 and 8 times unit semiquaver) is permuted six times to give in all twenty-eight durations in ever changing patterns:

\[
\begin{align*}
2 & 3 & 4 & 8 \\
8 & 4 & 2 & 3 \\
8 & 2 & 3 & 4 \\
4 & 8 & 2 & 3 \\
4 & 2 & 3 & 8 \\
2 & 3 & 8 & 4 \\
2 & 3 & 4 & 8 \\
\end{align*}
\]

Ex. 4.

Comparison can be made with the ostinato principle used earlier in the *Quatuor*. Both systems have, given appropriate quantities, the potential for almost limitless possibilities of continuous variation while still remaining within a strictly ordered framework. In fact later applications of this permutation principle were much more systematic and extended than this example in *Cantýyodjayã*.

There are still more rhythmic devices to be found in *Cantýyodjayã* not forgetting, of course, the use of Indian rhythmic patterns which occur frequently throughout the work, and at times are subjected to some of Messiaen's own particular treatments. The whole is presented as a series of sections, characterized as much by their rhythmic features as by any other, and given form by two different couplet-refrain procedures. In the first main section of the work, a refrain (Cantýyodjayã) alter-
nates with a variety of other material. Three refrains (labelled as such in the score) open the second part, and return, singly, after three extended passages which do have some interconnections but which also contain quite different material from each other. The work is ended by material taken directly from the opening section and shaped into a coda. The way in which Messiaen has bound these variously disparate elements together is derived from a procedure he used in the second and seventh movements of the *Quatuor*, a procedure he was to exploit and extend even further in later works.

It has been shown that polyrhythmic devices such as used in the first movement of the *Quatuor* contain within themselves little or no potential for generating form; in such cases this task must fall on other elements of the music. In the first movement of the *Quatuor*, birdsong is the only remaining material. *Quatuor Pour la Fin du Temps* is the first work in which Messiaen consciously used birdsong, and straightway he requires of it much more than a fleeting appearance or merely decorative function. Since there is little change in dynamics throughout, and the harmonic implications of the melodies are non-functional, the formal articulation can only come from the thematic construction of the songs. The violin part has the more immediately perceptible structure: it is based entirely on three motives each of which can be divided into two parts, which are then presented in various combinations and justapositions. In all but two brief instances the motives remain completely unchanged. The clarinet melody is more varied and extended, and includes much more development of its ideas. The whole song falls into a loose rondo form, with frequent cross-references of important motives binding the various sections.
Soon after the Quatuor thematic processes such as this, especially in the context of birdsong, began to disappear. In Catalogue D'oiseaux the work of Messiaen which deals most extensively with predominantly birdsong material, there are few exact repetitions of motives; in the majority of cases, particular songs are different at each appearance. So once again, some other formal criteria must be found.

Quatuor Pour la Fin du Temps was composed while Messiaen was in a Prisoner of War camp; he has related how "in the Stalag the lack of food made me dream of sound colours", so it is not surprising that he uses colours to describe parts of the music. But this was by no means the first time Messiaen had experienced such associations, nor was he, of course, the first composer to have associated colour and sound. However, it is quite evident from Messiaen's discussion of the matter that he perceives sound-colour relationships in a much more complex way than others have and for him they constitute a 'phenomenon' of great importance which has, from the beginning, influenced his music extensively. As early as 1932 Messiaen talked of the "colour chords" of one theme, and the juxtaposition of the colours of three different modes in another theme, in Hymne au St Sacrement. The modes he refers to here are, of course, his own "Modes of Limited Transposition". These are fully described by Messiaen in his "Technique de Mon Langage Musical" (1942) and are based on repeated interval patterns filling out an octave.
Messiaen's concept of colour was at first very much linked to these. "... I use them as colours. They are not harmonies in the classical sense of the term. They are not even recognized chords. They are colours and their power springs primarily from the impossibility of transpositions and also to the colour linked with this impossibility." In the second and seventh movements of the Quatuor colour is associated with two special chords derived from the modes. The Chord of Resonance (so called because it contains a fundamental note and all its odd harmonics up to the fifteenth) is derived from mode 3, and the Chord of Fourths (built up of alternating augmented and perfect fourths) consists of all the notes of mode 5. To represent "les harmonies impalpables du ciel" Messiaen uses groups of these two chords arranged in descending sequences - "cascades of soft chords of blue and mauve, gold and green, violet, red, blue, orange - all of them dominated by an icy-grey".
In works subsequent to the *Quatuor*, the modes of limited transposition are used less extensively, and are often blended or juxtaposed with passages of much freer pitch organisation. Messiaen always retains, however, a modal approach to his pitch organisation, and the harmonies of his later works are, as ever, conceived vertically, having a colouristic rather than functional role. Much more importantly, Messiaen's broader appreciation of sound-colour relationships continued to be a fundamental influence in his writing; indeed, in it he found a means by which he could give to his works a satisfactory formal articulation.
FOOTNOTES: Chapter One.


4. The term "chromatic rhythm" only applies when duration values appear in order, progressing as do pitches in a chromatic scale. Note that Messiaen's use of the term bears no resemblance to Stockhausen's, whose concept of chromatic time is rather more sophisticated.

5. Note on record cover. (ADS 2470)


7. COM* p. 23.

8. Messiaen lists these two chords and gives their derivation in "Technique de Mon Langage Musical" (1942).

9. Note on record cover.

* Abbreviation used throughout footnotes:

COM = Conversations with Olivier Messiaen - Samuel
CHAPTER TWO

RHYTHM

I'm (an ornithologist and) a rhythmician. I consider that rhythm is the primordial and perhaps essential part of music ... Schematically, rhythmic music is music that scorns repetition, straightforwardness and equal divisions. In short, it's music inspired by the movements of nature, movements of free and unequal durations.

Let us not forget that the first essential element in music is Rhythm, and that Rhythm is first and foremost the change of number and duration.²

In his notes accompanying the recording³ of Chronochromie Messiaen states that the musical material of the work is two-fold. Of first importance is the temporal, or rhythmic material; melodies and sonorities exist, in the main, to serve it. The particular rhythmic material to which Messiaen is referring is a set of thirty-six permutations of a series of durations ranging from a demisemiquaver value to that of a semibreve, and including all the multiples of the demisemiquaver unit in between, giving thirty-two durations in all, i.e. (See Table I, page 29)

\[
\begin{align*}
\text{Ex. 6.} \\
\text{Parts of this appear in all but one of the movements of Chronochromie. It will be remembered that Messiaen had used the principle of permutation as early as 1949 in Cantéyodjaye, though in this case it was applied to only four elements, which naturally limited the possible number of permutations to twenty-four and so a system of ordering or selecting them was not essential. Not so, however, with thirty-two elements. In extending the basic material thus far, Messiaen had indeed found a set of durations which had inherent in it structural possibilities and could be used to order a considerable passage of time, but at the same time, had}
\end{align*}
\]
to devise a way of limiting and systematizing the apparently infinite number of permutations possible from such a large number. He explains how he set about doing this: 4 (to make the description clearer, an illustrative example is inserted; for purposes of practicality, however, the number of elements is restricted to eight).

One must choose, therefore, and choose with the maximum chance of dissimilarity between one permutation and another. To arrive at this, I read my scale of chromatic values in a certain order, then, having written down the result, I number from 1 to 32 the succession of note-values obtained ...

<table>
<thead>
<tr>
<th>1 2 3 4 5 6 7 8</th>
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| 5 4 8 1 7 6 2 3  | = Permutation 1.

Ex. 7

... then I read my result thus numbered in the same order as the first time; I write down this result and again number from 1 to 32 the succession of numbers obtained ...

(Thus the first element of the second permutation is the fifth element of the original permutation, the second element is the fourth element of the original, and the third element is the eighth element of the original, and so on.)

<table>
<thead>
<tr>
<th>1 2 3 4 5 6 7 8</th>
</tr>
</thead>
</table>
| 5 4 8 1 7 6 2 3  | = Permutation 1
| 7 1 3 5 2 6 4 8  | = Permutation 2

Ex. 8

Then I read my second result in the same order as the first time \[\text{in the example given here, 5,4,8,1...}, \text{i.e. permutation 1}\], which gives yet a third result, then I read my third result in the same order as the first time: I do the same thing for the fourth result, and so on until I arrive at the chromatic scale of durations with which I began. This gives a reasonable number of permutations (not too far from the number of objects chosen), and also permutations sufficiently different to be juxtaposed and superimposed.

(The above example worked through to its conclusion gives,
therefore, the following:

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</tr>
</tbody>
</table>

Perm. 1

Perm. 2

Perm. 3

Perm. 4

Perm. 5

Perm. 6

Perm. 7

Perm. 8

Perm. 9

Perm. 10

Ex. 9

Note that the "reasonable number" Messiaen obtains this way is, in fact, entirely dependent on the way the values are arranged in the original permutation (see permutation 1 in Table I, page 29). In this particular case, the elements fall into five groups:

1) 27 (note, it is in its numerical position) . . . . . (1 element)
2) 19, 20, 21. (these occupy 19th, 20th and 21st positions (3 elements)
3) 2, 8, 11, 28 . . . . . . . . . . . . . . . (4 elements)
4) 1, 3, 5, 7, 10, 26 . . . . . . . . . . . . . . (6 elements)
5) Remaining Values, 18 in all . . . . . . . . . . . . . . . . . . (18 elements)

This means that, according to the method of permutation applied, "27" will occupy the 27th position in all permutations, "19, 20, 21" will always fall into either the 19th, 20th, or 21st positions, "2, 8, 11, 28" will always occupy either the 2nd, 8th, 11th or 28th positions of any permutation, and so on. In other words, the particular values in each of the groups rotate cyclically amongst themselves, and this determines the total number of durations, which is equal to the lowest common multiple of the number of elements in each group (1, 3, 4, 6, 18; l.c.m. = 36).

Study of the permutations evolved this way shows that there is an even greater limitation than might at first appear. Compare, for instance, permutation 18, and permutation 36.
In fact all the permutations fall into pairs (1-19, 2-20, 3-21, etc.) whose only differences are in the order of the group (2, 8, 11, 28). This means that there are in effect, only eighteen completely different permutations; thus Messiaen uses, in all of *Chronochromie* one or other of each pair, but never both.

Having carefully derived and tabulated this extensive system of permutations, Messiaen "laisse, dans sa 'Chronochromie' persistir la féconde opposition entre la loi et la liberté", and he allows himself considerable freedom in his use of the table. Parts of the permutations appear in all but one of the movements, but only in the 'strophes' does he realize their structural possibilities. These movements are each based on the simultaneous unfolding of three complete permutations which means, incidentally, that each strophe has the same total duration. However, a paradox arises out of this situation, for the strictness of Messiaen's permutation system was so arranged as to create an apparent absence of system ("maximum dissimilarity between one permutation and another") and so when three permutations are superposed on each other, their culminating effect is one of a random succession of durations. This is relieved, to some extent, by the separate colourations given to each line of durations in the form of particular chords and timbres. These, Messiaen claims, make perceptible the durations and permutations of durations, while above them, various birdsongs continually preserve the sense of the unit value (the demisemiquaver), and thus constitute a third colouration; the total effect is "truly a Colour of Time". Note that the situation set up by the
permutations in the strophes is very similar to the one created by the complex ostinato patterns in the first movement of the Quatuor. In both cases, systems strictly applied give a structure for the whole movement, but fail to generate any formal shape, which therefore has to come from other elements of the music, and in both works this can only be birdsong.

In all the remaining movements of Chronochromie there are only three other permutations that are presented in their entirety. Permutations 13, 14 and 15 are unfolded simultaneously, as in the strophes, but the whole is split up into three separate sections, two in the Introduction and one in the Coda. In all cases, the sequence of each permutation is exactly maintained; in order to do this, some durations have to be divided between the end of one and the beginning of the next section, thus ensuring they all end exactly together by the close of the third section (see Table I).

Unlike the situation in the strophes, where the duration series form a basis for other material, Permutations 13, 14 and 15 constitute the entire rhythmic material of their sections. Permutations 14 and 15 are presented very simply, the one on pitched bells, the other on non-pitched metal percussion (sometimes trilled). It is Messiaen's unfolding of permutation 13, realised by means of a pseudo-birdsong on woodwind and pitched percussion which gives these sections their peculiar musical character. For example, the first five durations of the permutation are presented thus:

Ex. 11.
As the example above shows, each new duration is articulated by a new attack, or a new group, but these do not necessarily sound for the full length of the duration. Messiaen's approach to Permutation 13 here provides a further example of the freedom he allows himself in interpreting his own laws; in these sections he takes advantage of this to build up motive-associations from pitch, rhythmic and timbral factors. For example, the sextuplet motif on xylophone and marimba which realises, in part, duration '26' returns three times in the second section, for durations '17', '19' and '29' and once in the final section for duration '27'. These vary in the amount of time they each sound, but pitch content and instrumentation remains exactly the same every time. Durations '30' and '31' are both realised by solo triplet demisemiquaver passages on the glockenspiel, and triplet demisemiquavers are used again with different combinations of instruments to set up other connections. The overall textural density of these three related sections is quite open compared with most of the work. Although quite a variety of different birdsong-like motives appear during the course of the three sections, they sound almost always by themselves and not simultaneously as do the birdsongs of, for example, the strophes.

Permutation 35 is the other permutation which appears in both the Introduction and the Coda. Only fragments of it are used, and Messiaen seems to have selected those sequences of durations which best suit his particular purpose at the time. At Fig. 4, Japanese birds sing over three successive chords of the longest possible durations, in the order in which they appear in Permutation 35, (31, 32, 30) and soon after this, at Fig. 6, durations 15, 16, 17 are presented by quite a large section of the orchestra. Note that these two sets of durations,
which occur very near to each other in Permutation 35 form an approximate 2:1 ratio with each other. In the complementary section of the Coda, Messiaen sets a sequence of five durations (9, 7, 27, 2, 25) to sustained chords on trilled strings, each new duration being marked by an increase in the density of the chord. Again this serves as a basis for the songs of Japanese birds.

The remaining uses of permutation series are in corresponding sections of the two antistrophes. As in the strophes there is a simultaneous unfolding of three permutations, and it is interesting to compare the context within which they appear in each case. In both strophes and antistrophes, the permutations are played by the same group of metal percussion (bells, gongs, tam-tams and cymbals) but only in the former is each duration series doubled by thick chords on the strings. In a sense the roles of strings and woodwind are reversed from the strophes to the antistrophes: Mexican birds take over the string section of the orchestra in the antistrophes while in the strophes the superimposed birdsongs are heard from the woodwind section; woodwind, in the antistrophes, present an alternative to the string chord's colouring of the duration series of the strophes: continuous semiquavers are heard as a "melody of timbres", each new semiquaver is played by a new instrument or combination of instruments.

Although Messiaen's rhythmic preoccupations in Couleurs de la Cité Céleste (henceforth referred to as Couleurs) are somewhat different from those of Chronochromie, parts of the same series of permutations do appear in two sections of the work. Bells and gongs are once again entrusted with the simultaneous
unfolding of two permutations. (14 and 15) and at the same time sharp brass chords mark the beginning of each duration of Permutation 13. These three permutations have a very similar function to those of Chronochromie: they form an ordered but constantly varying rhythmic ground onto which small, quickly moving motives are superimposed. In Couleurs the rhythms of these are entirely determined by Greek and Indian rhythm patterns.

If all of the applications and treatments of the permutation series, in both Chronochromie and Couleurs are taken into account, it will be seen that Messiaen's approach to this strictly ordered collection of elements is very much a modal one. By deriving the table of durations in the first place, he has set himself very definite limits, and to some extent, predetermined the ordering of the elements. But at the same time he has created a system which allows considerable freedom, and he does, indeed, manipulate it to suit his purposes. Thus, he sometimes has three permutations unfolding simultaneously, but sometimes uses only one at a time. Certain permutations are presented, uninterrupted, in their entirety, others appear over the course of several separated sections, and some are only presented in part. The structural possibilities inherent in such an extended series of durations are realised several times in Chronochromie; in other places, special characteristics of only very small sequences within a permutation are exploited. Then too, Messiaen's particular concept of rhythm means that it is not necessary for durations to be heard as sustained sound; he does sometimes present them that way, but at other times, marks only the beginning of each duration, or fills it up with some kind of repeated unit.
However, it must be realised that in no instance does Messiaen attempt to give his music formal coherence through the use of the permutation series alone. Certainly, he does use parts of the series in all but one of the movements of Chronochromie, but because of their very nature (remember, they were arranged so as to appear unarranged), they cannot by themselves set up formal links, and the fact that they are presented in a number of different ways makes this even less possible. The structure set up by permutations in such movements as the strophes must not be confused with form. It is, in essence, (again because of the nature of the permutations) a shapeless ordering of elements, and must depend on other aspects of the music for formal articulation.

Important as the permutation series is, it does not account for the micro-rhythmic articulation in most of Chronochromie. For much of this, Messiaen again turns to a set of predetermined elements, albeit a rather subjective form of predeterminism, viz. the presentation of birdsong and other natural phenomena. Especially as in most cases several birdsongs are superposed, the resultant rhythms well fulfill Messiaen's requirements for rhythmic music, i.e. movements of free and unequal durations. These may be fitted into regular, metrical bars as is the case in the strophes, but the very complexity of the notation here indicates that this is no more than an aid to ensemble playing. 8

Rhythmic devices play a principal role in the representation of other natural phenomena in various sections of the Introduction and Coda. To represent a gust of wind, for example,
Messiaen employs "multi-speed string glissandi". Pairs of instruments subdivide equally the duration of a bar into 3, 4, 5... 8, 9, producing a suitably mixed and flurried sound. Much longer sections in both the Introduction and Coda are set aside for the mountain torrent, so complex rhythmic structures necessary to best represent this must also be capable of extension and variation. Rotating figures in the middle strings move in continuous demisemiquaver quintuplets, complemented by the bassoon part in semiquaver quintuplets. The factor '5' recurs in the fourth cello part in quite a different way: it has an ostinato whose duration value is five semiquavers. Immediately onto this is superimposed the part of the third cello which also has a recurring rhythm pattern, but it is only four semiquavers' length in value. Thus these two patterns, which start off exactly the same

![Music example](Ex. 12)

coincide only at every fifth repeat of the fourth cello part. The remaining low instruments have various short motives, some of which include triplet groupings; over and under all these parts on double-basses and second violins are sustained trills which, Messiaen notes in the score, "ne sont que vapeur et confusion". Thus Messiaen builds up from elements quite straightforward in themselves a complex, constantly varying sound with a special character of its own.

The 'rocks', some of the birdsongs, and the chorale-like sections of the antistrophes - all have fairly straightforward rhythmic constructions which are often just simple repetitions of a unit-value. Yet in such passages Messiaen is
always careful to avoid the setting up of any regular metrical groupings. For example, the chords depicting the rocks near the end of the Introduction all have the same duration, dynamic, stress and attack, so bar-lines are merely an aid to score-reading. This is, surely, rhythm in its most simple form—a completely unaccented regular pulse—and, as such, it gives those sections representing the rocks quite a unique character.

Only in two sections of Chronochromie does Messiaen make extended use of irrational values in the rhythmic structure. At Fig. 14 and later at Fig. 120 he superposes rhythms articulated in groups of three, four, five, six and seven and shapes the music into phrases based on Mozartian cadence principles of "anacrusis, accent and termination" accentuations. These brief sections with their long flowing phrases stand out in sharp relief against their immediate context and indeed, against the rest of the movements in which they appear—movements devoted almost entirely to the representation of aspects of nature.

Much of the rhythmic detail of Couleurs is also determined by birdsong, though in this work songs appear more often singly and juxtaposed than together and superposed; nevertheless Messiaen's overall approach to this material is very similar to that in Chronochromie. Plainsong in Couleurs constitutes an equally important source of rhythmic articulations, with four Alleluias providing yet another limited set of predetermined elements quite different from birisong or the permutation series. Messiaen was, no doubt, attracted by the non-metrical flow of plainsong and by the way it tends to fall into phrases of irregular lengths. Consider, for example, the three phrases of the Alleluia for the Eighth Sunday after Pentecost as they appear...
in the course of the section from Fig.12 to Fig.26. The first phrase of these three recurs the most often in the section: it is this one which has the most irregular total duration value.

Elsewhere in Couleurs the rhythms of this Alleluia are transformed (the other three Alleluias always retain their original rhythms); even so these transformations stay within the basic rhythmic character of the original plainsong, i.e. non-metrical and irregular. The most obvious kind of transformed rhythm is first seen at Fig.68: rhythmic patterns from an earlier section of the work (consisting almost entirely of Hindu and Greek rhythms) are applied to the first phrase of the Alleluia so that its total duration is extended to almost twice the original one.

The successful interaction of these seemingly disparate rhythms (plainsong with its predominantly even succession of values, and Hindu rhythms with their ever-changing patterns of durations) shows that they cannot be altogether incompatible. The number of separate attacks in an alleluia phrase (for example, there are eleven in the first phrase of the particular Alleluia under discussion) is suitable for the accommodation of the short Greek and Hindu phrases (the number of attacks in the separate patterns of these range from three to nine) while the actual values
of the individual durations of these patterns are not so large as to extend a plainsong phrase beyond the limits of recognizability. In fact, the total duration of the phrase at Fig. 68 (see Ex. 14) is quite regular; twenty-four units which are arranged within three bars of eight units each; nevertheless, the essentially non-metrical character of the plainsong is preserved by the irregular and non-repeating patterns imposed onto it.

When two-note fragments of the Alleluia are drawn out to long durations within an "infinitely slow" tempo, their rhythmic function is reduced to its simplest: two durations cannot establish a metre, they can only mark a division of time. The values of the long durations used in the passage from Fig. 73 to Fig. 76 are all slightly different (some are not notated accurately but are indicated only by pauses) so once again, the non-metrical and irregular qualities of plainsong rhythm are preserved, though in a completely different form. The other treatment of the rhythm of this Alleluia is applied at Fig. 81 and this one is essentially a modification process. The succession of values in each of the Alleluia phrases is evened out completely into groups of irrational values (always quintuplets). These groups are given no metrical articulation; and though the values are all even, they in fact interact with the patterns (Greek and Hindu) of the concerros to form a complex but structured rhythmic basis for the section.

Messiaen's interest in Greek and Hindu rhythms dates back to his student days; at the Paris Conservatoire he first received teaching on the ancient Greek rhythms, and about the same time discovered the table of 120 Indian "deçi-talas"; these constitute the third main source of rhythmic material in Couleurs. Like the permutations, birdsong and plainsong they do not fall easily
into metrical patterns; in fact the total durations of many of them are prime-number multiples (eg. 5, 11, 13, 17) of a unit-value. They have their major appearance in two central sections of the work. Messiaen selects eight rhythms in all, and arranges them successively to make up a "tala" which is superimposed on to parts of Permutations 13, 14 and 15 at Fig.42 and then at Fig.62. In its first appearance (Fig.42) the tala contains only seven of the rhythms; the eighth is inserted into its second appearance which starts at Fig.62, and as well one of the short patterns (the Greek cretic foot) is expanded to a greater length. (Only the two shortest patterns, one Hindu and one Greek are expanded or repeated; the rest occur only once within each tala).

\[
\begin{align*}
\text{trīṇya} & \quad \text{gojālā} & \quad \text{pratāpāṅkha} & \quad \text{vijaya} \\
\begin{array}{c|c|c|c|c|c}
\hline
\text{1} & \text{2} & \text{3} & \text{4} & \text{5} & \text{6} \\
\hline
\end{array}
\end{align*}
\]

1st time Cretic

\[
\begin{align*}
\begin{array}{c|c|c|c|c|c|c|c|c|c}
\hline
\text{1} & \text{2} & \text{3} & \text{4} & \text{5} & \text{6} & \text{7} & \text{8} & \text{9} & \text{10} \\
\hline
\end{array}
\end{align*}
\]

2nd time Cretic

\[
\begin{align*}
\begin{array}{c|c|c|c|c|c|c|c|c|c}
\hline
\text{1} & \text{2} & \text{3} & \text{4} & \text{5} & \text{6} & \text{7} & \text{8} & \text{9} & \text{10} \\
\hline
\end{array}
\end{align*}
\]

Aristophanecian

\[
\begin{align*}
\begin{array}{c|c|c|c|c|c|c|c|c|c}
\hline
\text{1} & \text{2} & \text{3} & \text{4} & \text{5} & \text{6} & \text{7} & \text{8} & \text{9} & \text{10} \\
\hline
\end{array}
\end{align*}
\]

Rāgavardhana

\[
\begin{align*}
\begin{array}{c|c|c|c|c|c|c|c|c|c}
\hline
\text{1} & \text{2} & \text{3} & \text{4} & \text{5} & \text{6} & \text{7} & \text{8} & \text{9} & \text{10} \\
\hline
\end{array}
\end{align*}
\]

Trīṇya

\[
\begin{align*}
\begin{array}{c|c|c|c|c|c|c|c|c|c}
\hline
\text{1} & \text{2} & \text{3} & \text{4} & \text{5} & \text{6} & \text{7} & \text{8} & \text{9} & \text{10} \\
\hline
\end{array}
\end{align*}
\]

*Last foot omitted.

Ex. 15.

Messiaen once again treats this group of predetermined rhythmic material in a modal way, only this time he goes a step further than he did with, say, the permutation series. The tala section starting at Fig.62 constitutes a mode in itself: from it is drawn all the other Greek and Hindu rhythmic material of the work (the permutations which Messiaen uses in Chronochromie do not ever appear all together as a group). Parts of the tala are
applied to the colour chords quite early in *Couleurs*, and then to the Alleluia for the Eighth Sunday after Pentecost in sections towards the end. Note that in applying the rhythms to the Alleluia phrase Messiaen does not necessarily start at the beginning of a Greek or Hindu pattern but chooses a fragment from their tala sequence which gives him the kind of articulation he wants.

The complete tala sequence, though now divided into sections, is unfolded again in the coda of *Couleurs* (starting at Fig.81); however, its function here is quite different from that which it had at Fig.42 and Fig.62. It no longer forms the main body of rhythmic material; instead it interacts with the modified phrases of an Alleluia, and their combination provides a more slowly moving rhythmic basis for the complex of birdsong which appears above them. The kind of structure set up by the interaction of these two is similar to that provided by the superposed permutations in the strophes of *Chronochromie*. The two separate lines both follow an ordered sequence (that of the tala and that of the plainsong) throughout the course of the section, but at the same time their interaction results in a continually chang-
ing pattern of durations which contains no repetitions; nevertheless they do all fall into a distinct rhythmic character which is unique to the section.

If all the rhythms of Couleurs are arranged in order of complexity they in fact form a continuum with the predominantly equal values of plainsong and the colour chords at one end and the complex mixture of durations in the tala and the permutations at the other. Between these extremities are such rhythms as the short repeated motifs of birdsong and the cells of varying complexity which make up the polyphonic structure first occurring at Fig. 8.

That the nature of rhythm throughout both Chronochromie and Couleurs is clearly in keeping with Messiaen's most basic ideas about this parameter is not difficult to see: the permutation series, birdsong, plainsong and Greek and Hindu rhythms, though seemingly quite disparate are all essentially non-metric, and obey Messiaen's criterion for rhythm, viz. "movements of free and unequal durations". As well the latter three types of rhythms are all in their original forms articulated in short and
usually irregular phrases which nevertheless contain the potential to be drawn out into more extended structures.

The corollary to the extensive use of rhythm of this nature is the necessity of finding some appropriate method or procedure for giving articulation to large sections of music, and, in fact a whole work. Messiaen's music does not proceed in a measured, metrical continuity, nor even in phrases of antecedent and consequent and in parts of both works, there are tempo changes indicated for series of successive bars. The contrasting rhythms are presented in blocks, sometimes quite short, sometimes quite extended, which do derive in part from the short phrases of Messiaen's basic rhythmic material; however, they depend for their successful organisation into a complete work on an interaction of all the parameters of the music; in this, rhythm plays but one role.
TABLE I.

<table>
<thead>
<tr>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
<th>f</th>
<th>g</th>
<th>h</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
</tbody>
</table>

Note on Table I: The Table is divided into two halves; the permutations in each half of the Table pair off (1 corresponding to 19, 2 corresponding to 20 and so on) such that the order of values in each pair is the same except for those of group b (2, 8, 11, 28). Each pair of permutations is labelled A, B, C, D... up to R. The actual portion used of each set of permutations is bounded by a thick black line.
1. COM p. 33.

2. Johnson, R.S. *Messiaen*, p. 32.


4. COM p. 90.

5. A. Golea, quoted in Nichols, R., *Messiaen* p. 64.

6. COM p. 90.

7. COM p. 91.

8. Details of the rhythmic structure of birdsong are discussed in Chapter 4.

9. A detailed study of all aspects of plainsong is contained in Chapter 4.

10. This was originally listed by Sharngadeva in his treatise *Samgita-ratnakard*, and then reproduced in Lavignac's *Encyclopedia de la Musique* Vol.I (1924).

11. This table is taken from: Johnson, R.S., *Messiaen*, p.177.
CHAPTER THREE

HARMONY

My secret desire of enchanted gorgeousness in harmony has pushed me towards those swords of fire, those sudden stars, those flows of blue-orange lavas, those planets of turquoise, those violet shades, those garnets of long-haired arborescence, those wheelings of sounds and colours in a jumble of rainbows... Such a gushing out of chords should necessarily be filtered; it is the sacred instinct of the natural and true harmony which, alone, can so change itself. 1

When I hear music and equally when I read it, I see inwardly in the mind's eye, colours which move with the music, and I sense these colours in an extremely vivid manner and I've sometimes even precisely indicated these correspondences in my scores. One should be able to prove this relationship scientifically, but I'm incapable of it. 2

In his conversations with Claude Samuel, Messiaen makes it clear that colour, for him, is not linked to any one parameter of music; rather the correspondence is related to "melodies, chords and rhythms, complexes of sounds and durations". 3 As well, it is a phenomenon which he apparently experiences in all music, and not just in certain restricted passages. Nevertheless, Messiaen does specifically mention colour with regard to certain sets of chords, in both Chronochromie and Couleurs; and a study of their harmonic structures is imperative to an understanding of his total concept of colour.

The title of Chronochromie (meaning "The Colour of Time") is linked primarily with the two central movements, the strophes, where time, measured by simultaneous unfolding of permutations, is coloured in three different ways: by birdsong, by timbre (metal percussion) and by chordal streams, one for each permutation. The third colouration is, according to Messiaen, by far
the most effective; he gives each chordal stream a name: "accords tournant", "accords sur dominante", and "accords à resonance contractée", and each is presented by a group of seven or eight solo strings (violins or violas and cellos).

Eight violins play the first series of chords, "accords tournants" (turning chords) which is further described as "chord masses turning about a fixed centre". If the pitches of each of these chords are arranged in order, within the smallest possible range, it can be seen that they each fall into one of two categories: (in all the following examples, intervals are given in terms of semitones, i.e. 1=semitone, 2=tone, 3=minor third, 4=major third, and so on).

**CATEGORY I:** (e.g., first chord)

\[
\begin{array}{cccccc}
\text{Db} & \text{D} & \text{Eb} & \text{E} & \text{F} & \text{G} & \text{G}\# & \text{A} \\
1 & 1 & 1 & 2 & 1 & 1 & 1
\end{array}
\]

**CATEGORY II:** (e.g., second chord)

\[
\begin{array}{cccccc}
\text{C} & \text{D} & \text{Eb} & \text{E} & \text{F} & \text{G} & \text{G}\# & \text{A} \\
2 & 1 & 1 & 1 & 2 & 1 & 1
\end{array}
\]

Ex. 18.

Most chords belong to Category I, which exists in two forms corresponding to two different vertical intervallic patterns:

\[
\begin{array}{cccccc}
1 & 1 & 1 & 1 & 2 & 1 & 1 \\
1 & 2 & 1 & 1 & 1 & 1 & 1
\end{array}
\]

Ex. 19.

In both cases the pitches of the chords can be arranged within a minor sixth but the position of the only tone step within this pattern changes. For example, the first four occurrences of Category I chords are as follows:

\[
\begin{array}{ccccccc}
1 & 1 & 1 & 1 & 2 & 1 & 1 \\
1 & 2 & 1 & 1 & 1 & 1 & 1 \\
1 & 1 & 1 & 1 & 2 & 1 & 1 \\
1 & 2 & 1 & 1 & 1 & 1 & 1
\end{array}
\]

Ex. 20.
The ten chords which fall into Category II are all articulated in the same vertical intervallic pattern. As with those of the other category, the chords are presented in a variety of transpositions and some are repeated exactly so that a kind of overall arch form is set up:

Ex. 21.

This analysis of the chords does not seem to provide a very satisfactory reason for the name Messiaen gives them (only that the semitone steps rotate around the tone step in the different forms of Category I). The reason for Messiaen's description becomes much clearer if the progression of pitches from one chord to the next is analysed. There is, for every two successive chords at least four pitches common to both, and it is around this "fixed centre" that the changing pitches turn. Sometimes there are as many as seven pitches common to two successive chords, most often there are six. More importantly, however, an ascending chromatic pattern emerges if all these common pitches are laid out in sequence.
Note: Only those pitches of each chord which form part of the "fixed centre" are shown in this diagram.

Ex. 22.

"Accords sur dominante" constitute the second stream of chords, and are played by seven violins. Messiaen cites this chord and gives its derivation in "Technique de Mon Langage Musical"; in its complete version it contains nine different pitches:

Ex. 23.

For purposes of its use in Chronochromie however, Messiaen includes the appoggiatura notes, F♯ and C#, but not their resolutions (E, B). This leaves him with a seven-note chord, which gives the following pattern if its pitches are arranged in ascending order:

E.g. 1st chord: A A# B D D# E F#
As with the turning chords, Messiaen uses all possible transpositions of this pattern, but may give two identical sets of pitches quite different vertical arrangements. Nevertheless he does repeat each different chord form (except one) at least once, and in doing so, again creates an approximate arch form:

![Ex. 25.]

"Accords a resonance contractée" are presented by four violas and three cellos. The derivation of this term is rather unclear; neither of the two chord forms used seems to bear much resemblance to Messiaen's Chord of Resonance as given in his "Technique". The two patterns which all these chords can be reduced to are:

\[
\begin{align*}
1 & 1 & 1 & 1 & 2 & 1 & 2 \\
1 & 1 & 1 & 2 & 1 & 2
\end{align*}
\]

Ex. 26.

If these patterns are expressed in a different way, i.e. in terms of "pitch class sets" a most interesting correspondence between the two becomes clear -

\[
\begin{align*}
1 & 1 & 1 & 1 & 3 & 2 & \Rightarrow & (0, 1, 2, 3, 4, 5) & "pitch class sets" \\
1 & 1 & 1 & 2 & 1 & 2 & \Rightarrow & (0, 1, 2, 3, 5, 6) & "pitch class sets"
\end{align*}
\]

Ex. 27.

These two pitch class sets are, in fact, "Z-related": this means that the total array of intervals that can be formed by each set of pitches is exactly the same (they have the same interval vector). While this is indeed a very interesting relationship, it is very much a potential rather than realised one, and the
similarity of the two different vertical intervallic patterns used throughout this stream provides a much more tangible connection, for example

1st chord: E\(\text{-}2\)   2nd chord: B\(\text{-}4\)
D\(\text{-}2\)       G\(\text{-}2\)
C\(\text{-}3\)       F\(\text{-}4\)
A\(\text{-}2\)       D\(\text{-}3\)
G\(\text{-}4\)       B\(\text{-}2\)
E\(\text{-}2\)       A\(\text{-}2\)
D\(\text{b}\)       G\(\text{b}\)

Ex. 28.

The two chords both appear in eight different transpositions, and almost always alternately. As with the other streams of chords, there are exact repetitions placed in such a way that certain patterns are set up: in particular there are several separated chords which are from their exact repeats by six intermediary chords, and some which are separated by five. There are other small patterns of repetition within the series, but not really any that give shape to the whole sequence.

Repetition after six chords:

11 . . . 16 18 19 20 21 . 23 . . 26 27 28

Repetition after five chords:

2 3 . . . 8 9 . . . 24 . . . . . 30

Other patterns:

1 2 3 8 9 11 5 6 25 26

Ex. 29.

The pitch levels of these three groups of strings are
roughly an octave apart; however, they overlap continually, and would merge completely into each other if it were not for their individual chord structures and duration patterns. It has been shown how Messiaen sets up various patterns of alternation and/or repetition within each stream, but these are only approximate and not really extensive enough to impose any obvious form over the whole. The types of chords used in Strophe II correspond exactly to those of Strophe I; the way these are arranged is a variation rather than a development or a repetition of the pattern in Strophe I, just as the permutations they colour are a variation of the duration series used in the first Strophe.

The colours referred to in the title of Couleurs de la Cité Céleste are those of the precious stones and jewels described in Revelation 21: 19,20, and in the work, Messiaen seeks to represent each one of those by means of colour-chords, which are labelled according to the colours they portray. About this he says: "I've tried to express in my work the colours mentioned in Revelation, and I think I've never been so deep into the sound-colour relationship: certain sound combinations really correspond to certain colour combinations, and I've noted the names of these colours on the score in order to impress this vision on the conductor who will, in his turn, transmit this vision to the players he directs."? At Fig.13 is the first extended series of colour-chords (three of these appear briefly at Fig.10). In the space of eight bars, eight different colours are represented by as many different chords, three of which are repeated twice. The colours indicated here range from emerald green and amethyst violet, to red, orange and gold; analysis of the pitch content
of the chords alone seems to give little support for such obvious contrasts. Every chord contains twelve different pitches, and where there are doublings, they are always presented by the same instrumental combinations; for example, 2nd trumpet and 2nd horn consistently double each other as do 3rd trumpet and 1st horn. Such a passage demonstrates clearly that Messiaen's representation of colour does not rest exclusively on a harmonic basis. He himself has said, "Sometimes I've used successions of chords where twelve notes are heard simultaneously a great number of times, and nobody has noticed this. Perfect chords are heard and it is their arrangement which, placing one note on another in the limelight, changes its colour." A further study of this passage later will show how, in fact, a complex interaction of many factors is required to represent colour. Colour chords return again near the end of the work after quite a long absence. The chords at Fig.73 and Fig.74 contain as before all twelve pitches, but from Fig.75 the harmonic content of the colour chords changes. A series of chords depicting blue-violet all fall directly into Mode II (of the modes of limited transposition); this is followed immediately by a group of chords in Mode III, representing orange, gold and milky-white, and the whole section ends with an extended passage in Mode IV, depicting violet. This section is unique in Messiaen's later works for its straightforward and relatively extended use of the modes of limited transposition and it is significant that they should be associated directly with the representation of colours since this same association was very evident in earlier works.

Although Messiaen does not talk specifically of colouring the permutation series when they appear in other movements of
Chronochromie, his harmonic approach to them is nevertheless always colouristic, setting up static, self-contained blocks of sound which have no functional role. Throughout the work, all twelve pitches are used, with varying degrees of organization — sometimes with no apparent organization — and it is in the sections based on Permutations 13, 14 and 15, where the permutations provide the entire rhythmic material (there is no birdsong) that Messiaen comes closest to serial organization of the twelve pitches. The sense of continuity set up between these three separated sections by their rhythmic characteristics (e.g. structurally they are based on successive portions of the permutations) is reinforced by a pitch organization which is based on a twelve-note row, common to all three sections.

Ex. 30.

Messiaen's method of deploying the row is not a serial one, but essentially modal; nevertheless it is in such a way that characteristic patterns emerge across the three sections. As a general rule, the row is presented vertically, across all parts which, of course, gives rise to many simultaneities; this way of using the row immediately undercuts the importance of the row order, and in fact, the row order is not clearly established in any one of the sections alone. However, the identity of the two hexachords is preserved in all three sections. For example, they first appear at Fig. 8 in the bassoon and flute parts.
This figure leads into a passage for two flutes where the row order is maintained quite strictly:

<table>
<thead>
<tr>
<th>Pitches:</th>
<th>F♯ C♯ D A E B Eb A D G C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C Ab G Eb B♭ F B♭ E G♯ C♯ F♯</td>
</tr>
<tr>
<td>Row positions:</td>
<td>1 3 6 7 9 12 8 7 6 8 2</td>
</tr>
<tr>
<td></td>
<td>2 4 5 8 10 11 10 9 4 3 1</td>
</tr>
</tbody>
</table>

Ex. 31.

That the vertical intervals produced by these two flutes are all either perfect fourths, perfect fifths or tritones is, no doubt, not just a happy accident, and this probably accounts for the slight variations in the row order. The only completely horizontal incidence of the row in this first section comes two times in retrograde form at the end, on the glockenspiel, and once again the row order is not quite exact.

Ex. 32.

In the second main section based on the row the hexachordal division is again most clearly seen on clarinet and flute figures. This time, these are followed by a passage for woodwind where always four notes are heard simultaneously (an extension of the flute duet as in Ex. 32 above), and a very definite pattern arises out of the way Messiaen organizes the pitch content here.
Fig. 20 + 1 bar: (each set of numbers applies to a demisemiquaver triplet group)

a) 10 5 6  b) 11 10 6  c) 8 1 10  d) 2 8 4  e) 9 3 5  f) 8 10 3

12 11 4  12 4 5  6 3 11  9 11 3  10 11 4  6 12 11
1 2 8  1 4 8 3  5 4 12  12 10 5  8 12 6  7 1 2

Ex. 22.

This section furnishes a particularly good example of Messiaen's vertical approach to twelve-tone material; his working can be most clearly perceived if the above groups of numbers are re-written so that the vertical columns become horizontal rows and vice versa; since the columns in the groups above represent vertical simultaneities of pitches, it does not matter if the elements within each column are rearranged.

a) 9-10 12-1- b) 11-12-1-2  c) 8-7-6-5- d) 12-1-2-9- e) 7-8-9-10- f) 8-3-7-2-9-7-7-2-9

12 11 4  12 4 5  6 3 11  9 11 3  10 11 4  6 12 11
1 2 8  1 4 8 3  5 4 12  12 10 5  8 12 6  7 1 2

Ex. 24.

The pitch content follows the row order most strictly in the central group (c), while those groups at either end, (a) and (f) have the least occurrence of successive numbers in their rows. The arrangements of the remaining groups lie between these extremes of organization. As if to compensate for their comparative lack of organization, groups (a) and (f) have a unique correspondence: they are in fact permutations of each other.

Ex. 25.

On the two pages following this passage, Messiaen arranges the twelve elements of the row in quite a different way. The texture is much thinner here, and the pitches are spread amongst four groups for the entirety of the two pages.
(1) Rapidly repeated notes on the xylophone and marimba
(2) An irregular oscillation of two notes on the flute
(3) Brass Chords
(4) Long durations on the bells.

\[
\text{Row: } \begin{align*}
\text{E}_4 & \quad \text{C} & \quad \text{G} & \quad \text{D} & \quad \text{A} & \quad \text{F}_b & \quad \text{E} & \quad \text{B} \\
\text{E}_4 & \quad \text{G}_b & \quad \text{A}_b & \quad \text{D}_b & \quad \text{F}_b & \quad \text{E} & \quad \text{B} & \quad \text{F}
\end{align*}
\]

Ex. 36.

Hexachords appear in chordal form in the third section based on Permutations 13, 14, 15, and the row. Further, many of the chords contain all twelve notes, and a structure similar to those in the preceding two sections (see Ex.32 and Ex.33) is now presented with eight-note simultaneities. These features all illustrate the thicker homophonic densities of this final section.

\[
\begin{align*}
\text{Fig.131:} & \\
8 & \begin{array}{cccccc}
12 & 9 & 9 & 11 & 12 & 12 \\
8 & 5 & 6 & 5 & 6 & 2
\end{array} & \begin{array}{c}
4 \text{ brass chord}
\end{array} \\
3 & \begin{array}{cccccc}
11 & 3 & 5 & 2 & 8 & 5 \\
1 & 6 & 1 & 8 & 5 & 6
\end{array} & \begin{array}{c}
9, 1, 5, 11, 12
\end{array} \\
1 & \begin{array}{cccccc}
2 & 6 & 4 & 12 & 2 & 12 \\
9 & 2 & 1 & 1 & 1 & 6
\end{array} \\
5 & \begin{array}{cccccc}
1 & 8 & 6 & 1 & 5 & 2 \\
1 & 1 & 1 & 9 & 1 & 8
\end{array}
\end{align*}
\]

Ex. 37.

Note the close correspondence of the elements of the first column of each twelve-note group (and therefore the links between the second column of each group also). Messiaen has retained a quasi-hexachordal organization even though certain pitches are sustained throughout the passage.

Because they form a basis for birdsong, the duration sequences from Permutation 35 are subjected to a much more straightforward treatment. Note however, that all twelve pitches are still present. At Fig.4, a 7-note chord is followed by two identical 12-note chords (these chords for Durations 31, 32 and 30).
At Fig.6, 12-note chords of varying dispositions are played over a sustained 12-note cluster, trilled by the upper strings. A sequence of five durations from Permutation 35 is presented in the Coda by a series of chords, ever-increasing in density, and built up over the original 5-note chord till all the pitches are sounding.

Duration: 9: E B♭ F E♭ A♭
    7: E B♭ F E♭ G  A B G♭
    27: E B♭ F E♭ A♭ F♭ A B D
    2: E B♭ F E♭ F♭ A♭ C♭ G B♭
    5: E B♭ F E♭ A♭ F♭ A B C♭ D G B♭

Ex. 38.

The sequences from the permutations given out in the closing section of each Antistrophe are not treated homophonically at all, instead they "mingle with a melody of timbres and of various birdsong (all Mexican)". The twelve pitches appear freely distributed, and in several registers each, in this melody of timbres, but in the only melodic unfolding of the permutations (Permutation 29 in Antistrophe I, and Permutation 8 in Antistrophe II, both by pitched bells) a definite pitch order establishes a relationship between the two sections: the "row" of pitches in Antistrophe II is an extended transposed inversion of that in Antistrophe I. The extension follows the intervallic pattern of the second half of the inversion row, and in doing so it first of all completes a set of twelve pitches, and then repeats the first five notes of the inversion row.
The other passages of the Antistrophes not devoted entirely to birdsong are also based harmonically on a fairly even distribution of the twelve pitches. In the section from Fig.42 to Fig.44 (Antistrophe I) and in its corresponding one in Antistrophe II, the only extended and broadly-phrased slow melodies of the work appear, played by the majority of the strings. Small groups of violins, violas and cellos thicken this line so that in conjunction with the pitches of the melody a series of twelve-note chords is heard. It is one of these "harmonizing" groups which gives this whole section its clearest pitch structure. The four-note chords of the solo violas follow a rising pitch sequence, and the top note of each successive chord outlines a chromatic scale ranging, in Antistrophe I, from G to B over an octave above. The further harmonic intensification provided in these sections by five solo woodwinds lacks any such clear pitch organization, but instead gains coherence from very characteristic intervallic patterns. The intervals which the two flutes make with each other are, without exception, either seconds or thirds (major or minor) while those intervals arising out of the two clarinet parts are nearly all either seconds (major or minor) or fourths (perfect or augmented). There is yet another feature which, in the whole of the work, is peculiar
to this section; a low pedal note played by pizzicato double-basses, appearing only fragmentarily at the beginning of the section, but just about continuously by the end, adds depth to the already unique melodic line.

Messiaen describes the sections which immediately follow these in both antistrophes as powerful brass chorales. In fact most woodwind and strings are playing as well as brass and so despite extensive doublings, each chord of the chorale contains all twelve pitches, thus ensuring an even distribution of them over the whole passage.

So far the harmonic colouration of only abstract material (e.g. duration series, chorale melody) has been discussed. The representation of natural phenomena is an integral part of both Chronochromie and Couleurs and in sections depicting these Messiaen's harmonic working is determined solely by the sounds he wishes to achieve: these are the "raison d'être" of the resulting harmonic complexes rather than any system or method of organization. Such passages are necessarily of a complicated construction for, as Messiaen points out, the sounds of wind and water are extraordinarily complex and in his representations of them harmony, i.e. the arrangement of pitches, plays no more an important role than any other parameter. Birdsong which accounts for a large proportion of the 'nature' aspect of both works will be discussed in a later chapter.

At Fig.3 in Chronochromie Messiaen represents a gust of wind with two distinct figures, one on the woodwind, and the other on violins alone. The first of these is made up of a series of palindromic (and therefore non-retrogradable) melodic lines whose accumulation produces a rapid succession of chords.
Because the tempo is so fast these are not heard as separate entities; rather the two bars constitute a single sound event containing a rise and a fall in pitch and dynamic. Nevertheless the homogeneity of this sound depends on there being some kind of order in its internal arrangement. The horizontal intervallic patterns of each line are quite similar; nearly all fit into Mode VII and the three which do not are themselves very alike. For example, 2nd clarinet and 3rd bassoon double each other except at the highest points of their lines. Analysis of the vertical combinations shows that some intervals, namely perfect fourths then major seconds and tritones, recur much more frequently than others, producing an overall sound characteristic.

The pitch structure of the following string figure corresponds closely to its rhythmic organization. Seven intervallic patterns, each filling out a major seventh, are matched with seven rhythmic patterns each filling out the duration of a bar. The individual interval patterns are all presented in an ascending and a descending form, the lines having emerged out of two sustained pitch clusters at the beginning.

Fig. 3, + 3 bars:

First Violin 1 2 1 1 2 1 1 2 1 ... Mode III
" " 2 2 1 2 1 2 1 2 ... Mode II
" " 3 2 2 2 1 2 2 ... (Mode I)
" " 4 2 2 2 2 3 ... (Mode I)
" " 5 4 3 2 2 ... -
" " 6 5 2 4 ... Modes IV, V or VII
" " 7 7 4 ... Modes III, VI or VII

Second Violin 1 = First Violin 7, only ascending

2 = " " 6 " "
3 = " " 5 " " etc.

Ex. 40.

This string figure is used later in the Introduction and again in the Coda to represent wind; in the former case it is presented three times in succession, and to give variation, the ascending
melodic lines of the second violins are transposed up a certain interval with each repeat.

Massive chords representing Alpine rocks follow closely on the second section depicting the wind in the Introduction. As might be expected, all chords contain twelve pitches, many of which are doubled, sometimes by more than one instrument, but always at the same register. Messiaen employs the full force of the orchestra for these chords, but rather surprisingly, always in alternate groups - woodwind and brass opposing strings and percussion - and never as a tutti. All but one of the chords in the corresponding section of the Coda are taken directly from this passage (a rearrangement of the fifth to tenth chords).

Messiaen describes the passage from Fig.17 to Fig.19 as "a combination of rotating figures suggesting the complex sonority of the water in the falls and streams of the Alps". Here Messiaen uses a kind of "poly-tonality" with varying degrees of organization within an overall atonality, to complement the polyrhythmic construction of the section.

1) A free "Chromatic tonality" occurs in most of the lower parts, where there is a more or less equal distribution of pitches. Some parts use only ten or eleven pitches, others follow a strict chromatic sequence, as do the first and second double-bass parts of the Coda section: they present more or less simultaneously two complementary segments of a chromatic scale, F-C, and C-G; in the Introduction section these instruments play similarly chromatic parts, but the pitch order is not preserved. The sustained trills of the violins, the same in both sections, also present a segment of the chromatic scale: together they produce a cluster which covers all the pitches of a perfect fifth (E to B inclusive). In both the Introduction and Coda, the third cello part starts out as an ostinato based on three pitches;
however these undergo a gradual transformation so that all twelve pitches have been accounted for before it returns to its original pattern.

2) Tonality based on the first mode of limited transposition (whole-tonality) is presented most clearly by the second cello part which alternates the two possible transpositions of this mode. This means that all twelve pitches are used, but generally there are enough consecutive whole tone steps to establish this particular modal identity.

Other occurrences of this mode are only fragmentary. The tuba part in the Coda has consecutive tone steps, and the top notes of the third cello part in both sections outline whole tone sequences.

3) Other modalities: The remaining parts are the three ostinatos in the middle strings; each ostinato has an individual interval pattern made up of semitone, tone and minor third steps; these are, in fact, all truncated forms of Mode VII, for example:

Mode VII : Db D Eb E F G Ab A Bb C (transposed)
Mode II : C Db Eb E F G A Bb

Fig. 17, Viola 2 : C Eb F# G A Bb

Interval patterns of other ostinatos:
Viola 1 : 3 2 1 2 2 (Mode VII)
Cello 1 : 3 3 3 2 2 (Mode VII or Mode VI)

Patterns such as these rotating ostinatos, and the sustained trills of the violins are exactly the same in both Introduction and Coda sections. The other parts retain their essential character but also provide the variation necessary for a satisfactory representation of water.
The sections based on a specific idea or phenomenon in *Couleurs* deal not so much with natural objects as in *Chronochromie*, but rather with images suggested in the quotations from the Book of Revelation, which Messiaen cites at the beginning of the score. These sections are generally shorter than their counterparts in *Chronochromie*, but they do all appear at least twice, and the procedure used to represent the ideas is similar.

The section headed "l'étoile qui a la clé de l'abîme" at Fig.27 starts and finishes with twelve-note groups, but for the most part pitch distribution is quite free though there are small interval patterns set up (compare, for instance, the pitches of the oscillating figure of the pitched percussion just before Fig.29, with those of the repeated note figure played by the same three instruments just after Fig.30). Near the end of the work is a varied and extended representation of the star and the lightning. Some of the figures used on the piano to depict lightning are taken exactly from the previous representation of this, but more importantly it is the recurring interval patterns which give identity; for example, major seconds, either by themselves or in overlapping pairs, constitute a very large proportion of the simultaneities in the piano part.

Messiaen's representation of the abyss provides an excellent example of a device which he calls "added resonance". Careful instructions are repeated at the foot of each "abyss" section to make sure the players try to produce the effect Messiaen desires: the notes of the clarinets are to create an "upper resonance", a sound which should be absorbed as much as possible into that of the principal notes (very loud low brass), so that the device is essentially a modification of timbre, and the clarinet
notes should not be heard as harmony. The pattern of the clarinet pitches from chord to chord is quite different: the composer is obviously trying to create a unique timbre for each low note; however, the relationship of the clarinet pitches to their brass "fundamental" is always that of an odd harmonic, and never an even one. For example, the two appearances of low Db are given two different upper resonances as follows:

Ex. 43.

Harmony throughout Chronochromie and Couleurs can be summed up as atonal and colouristic; Messiaen draws freely from the whole range of pitches to create sound blocks, harmonies and chords in which voice-leading and functional progressions play no part. Within his total approach there can be seen two different procedures which overlap from time to time but which on the whole are associated one with "abstract" music, the other with "representational" music. It is in the former that Messiaen comes closest to serial procedure, though his way of deploying a note-row is always modal: the original order of pitches in a note-row serves only as a basis from which to start; its identity is often lost in constant vertical presentations, and out of it new patterns are formed to create the particular sound effects the composer wants. Other "abstract" sections of Chronochromie and Couleurs not based on note-rows as such are...
nevertheless structured by some sort of system whether it be based on a very even distribution of pitch material, a particular set of chords, or a rising chromatic sequence. In representational sections Messiaen does not work within particular systems of pitch organization; the notes he uses are determined solely by the unique sound he wishes to create for each instant. The sections do, of course, achieve their individual identities partly through repeated patterns of pitch relationships, but these do not establish extended structures, and in most cases the particularities of the pitch organization are only of secondary importance to building up the total sound complexes.
FOOTNOTES - Chapter 3.


2. COM pp. 16-17.

3. COM p. 17.


5. Terminology and method of analysis as in: Forte, Allen The Structure of Atonal Music "Pitch-class sets" are based on an integer notation where 0 is always assigned to C
   1 is always assigned to C#
   2 is always assigned to D, and so on.
   A "pitch-class set" is a set of distinct integers (i.e. no duplicates) representing pitch classes. The form of a pitch-class set such that it is in normal order and the first integer is 0 is called a "prime form". This is the form used to draw comparisons between different collections of pitches.

   The interval vector of both (0,1,2,3,4,7,9) and (0,1,2,3,5,6,8) is 444342. This means that out of each set of pitches can be formed:
   - 4 semitone or major 7th intervals
   - 4 tone or minor 7th intervals
   - 4 minor third or major 6th intervals
   - 3 major third or minor 6th intervals
   - 4 perfect 4th or perfect 5th intervals
   - 2 tritone intervals.
   The fact that these two prime forms (listed as 7-Z12 and 7-Z36 in Appendix I) have the same interval vector gives them a very special relationship which does not often occur between two prime forms.

7. COM pp. 95-96.

8. COM. p. 23.

9. Refer to Chapter 1 for definition of these modes.

10. Notes with recording.

11. Notes with recording.
CHAPTER FOUR

BIRDSONG AND PLAINSONG.

It's probable that in the artistic hierarchy birds are the greatest musicians on our planet... the greatest of all [their] marvels, the most precious for a composer of music, is obviously bird song.¹

Birdsong is the one aspect of nature which is represented in both Chronochromie and Couleurs, and in each work it constitutes the basis of considerable portions of the music. There is a simple reason for this predominance over other aspects of nature; Messiaen explains: "I've tried, i.e. to reproduce the sounds of nature and I've addressed myself to birdsong, because that finally, is the most musical, the nearest to us, and the easiest to reproduce."² His concept of "reproduce" is quite literal; he has himself notated by ear numerous birdsongs from throughout France and many other countries; however, he has found it necessary to make certain modifications:³

A bird... sings in extremely brisk tempi, absolutely impossible for our instruments; so I'm obliged to transcribe the birdsong into a slower tempo. Moreover, this speed is linked to an extremely high pitch, the bird being able to sing in extremely high registers, inaccessible to our instruments; so I write one, two, three or even four octaves lower. And that's not all: for the same reasons I'm obliged to suppress very small intervals which our instruments can't play. I replace these intervals, which are of the order of one or two commas by semitones, but I respect the scale of values between the different intervals, that's to say that if a few commas correspond to a semitone, a real semitone will correspond to a whole tone or a third; all is enlarged but the relationships remain identical and, in consequence, what I restore is nevertheless exact.

Once Messiaen has processed the songs in this way their inclusion into his music is quite straightforward, so that his melodic writing is, in a sense, completely predetermined. The reproduction of the timbres of birdsong is not, however, quite so simple:
It's the major problem ... in order to translate these timbres, harmonic combinations are absolutely necessary; now, even in very fast movements, when I reproduce birdsong, whether on the orchestra or on the piano, each note is provided with a chord, not a listed chord but a complex of sounds intended to give the timbre of this note. So many notes, so many invented chords; that's to say, for a bird piece comprising one or two thousand notes, one or two thousand invented chords.

Birdsong in Chronochromie and Couleurs is treated as malleable material: "It is submitted to all sorts of manipulations in the manner of the composers of electronic music and 'musique concrete'." Messiaen's treatments fall into two broad categories: first, the presentation of songs one at a time with fully realized timbres; usually in such cases two or more birdsongs are alternated or juxtaposed, and they constitute the entire musical material of their sections; secondly, the presentation of several different songs simultaneously; in places where only two are sounding at once each has a limited timbre representation, but in passages where many birdsongs are superimposed on each other, each is presented as a single melodic line coloured only by the timbre of the instrument playing it. However, except in the Épôde of Chronochromie such sections are always supported by a harmonic basis independent of the birdsong and generally quite slow-moving. Although the timbre representation has no more importance than other aspects of Messiaen's birdsong, it does provide a convenient basis by which it can be categorized for study purposes.

A number of different birds in both works have the timbre of their songs simulated by twelve-note homophony. These are usually calls, or very short cries with little or no melodic or rhythmic patterning, and each attack is harmonized by a chord
containing all twelve pitches. Since several birdsongs fall into this category, the individuality of timbres cannot come from pitch content alone, as the three following examples clearly show:

1) Both the Introduction and Coda of Chronochromie are closed by the dense, dissonant cry of the Pygargue, presented by the whole orchestra over a very wide range. In each chord any one of the twelve pitches may be played by several different instruments in different registers and all notes are given equal stress. The chords progress in predominantly even durations, all having the same dynamic and same approximate range, thus they are essentially all variations of each other.

2) One twelve-note chord in the song of the Oropendola de Montezuma alternates with unison passages of triplet demisemiquavers outlining wide leaps. The twelve pitches of the chord are divided between three groups of violins, each of which plays a broken chord made up of superposed major sixths.

```
\begin{verbatim}
\text{Ex. 44.}
\end{verbatim}
```

This unique intervallic construction, along with the limited span of the chord (two and a half octaves) and the particular method of execution guarantees it recognition every time it is heard.

3) The Araponga (Fig. 33) of Chronochromie like the Oropendola depends, in part, on exact repetition for its identity. Its brief cry consists of a two-note figure, repeated after a short silence and once again the disposition of the pitches in the
accompanying chords is of prime importance, the most immediate feature being the clusters of the piano part.

Most of the birdsong in *Couleurs* and much of that in the Introduction and Coda of *Chronochromie* is characterized by a medium-density harmonization, with considerable variation possible within each individual song. *Couleurs* opens with a section in which four different birdsongs are juxtaposed in short rapid phrases. At first glance there seems to be little in this whole section to suggest four separate identities. Limited instrumentation is employed throughout (three clarinets as a homophonic group, xylophone, xylorimba and marimba as a homophonic group, and piano form three main divisions) and demisemi-, and semiquaver values are prominent in the rhythms of all four birds. Nevertheless identity is achieved: it results from an interaction of differences (which may by themselves be fairly insignificant) in all parameters. Consider for example, the particular rhythmic and instrumental groupings which do arise in this opening section:

<table>
<thead>
<tr>
<th>Tui</th>
<th>Beni:veo</th>
<th>Troglodyte barré</th>
<th>Mohoua</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternation of clarinet group piano xylophone grp. All three together at end of its sections.</td>
<td>Above rhythmic pattern always played by clarinet and xylophone groups together.</td>
<td>Piano solo</td>
<td>Alternation of piano and xylophone group; brief appearance of clarinets with xylophone group at end.</td>
</tr>
</tbody>
</table>

Ex. 45.
This entire passage up to Fig. 8 illustrates well a method of articulation which Messiaen applies to other kinds of material elsewhere. Four different birdsongs are presented—some twice, some only once—all within a section which, because of general textural, rhythmic, instrumental and dynamic characteristics has identity as one distinct unit within the broader context of the whole work. In other words he uses birdsongs which are in some respects similar to, in other ways different from, each other, to give structure and shape to a section.

When Messiaen sets two different birdsongs both for piano solo, both in the upper registers of the instrument, and both with alternating density groups, he takes care that they are clearly differentiated in other ways. The Troglodyte barre and the Stournelle each appear quite briefly, and only two times, in Couleurs, but their separate identities are well enough established to be recognizable across widely separated occurrences. The intervallic structure of their chords accounts for a large part of this, as the following example shows:

```
\begin{verbatim}
\begin{figure}[h]
\hspace{-1cm}
\includegraphics{example.png}
\end{figure}
\end{verbatim}
```

Ex. 46.
The opening sections of the Antistrophes of Chronochromie contain the most extended treatment of any two birdsongs in either of the works. The reason for this particular choice Messiaen reveals when talking about these two birds in his conversations with Samuel and at the same time he accounts for much of the musical material of his representations:

... two are brilliantly gifted, the song thrush and the skylark... To know the song of the skylark one must have heard thousands of them for hours, days ... so you will understand that a record is an incomplete tool, for it gives us only a portion of a song. Its song, divided between a high note and a low one... comes constantly to beat against this high note which serves as a ceiling with swift motifs always returning to the high note and, in brief moments of gliding flight, the song descends to the lower registers with long notes. The total song is swift, extremely jubilatory and alleluia-like .... Although each song thrush has its own invention, the song is nevertheless quite recognisable; it's a song of incantatory nature with strophes generally twice repeated. But wait! These strophes are never the same, that is to say, the bird invents a strophe, repeats it three times, then it invents another which it also repeats three times ... Moreover, within these strophes, the rhythms are extremely marked and varied and accompanied by melodies of timbres.... It's all extremely varied and complex, but of great power thanks to rhythms and the three repetitions. Elsewhere, Messiaen comments that a thrush will sometimes produce twenty different timbres during the course of the same phrase.

The most immediate opposition of the two songs is provided by their instrumentation: the full woodwind section presenting the phrases of the song thrush (Grive musicienne) contrasts strongly with the gamelin effect of pitched metal percussion surrounded by sustained trills on strings and a cymbal. Allied to this is a basic difference in the texture of the two songs, the former consisting of straightforward homophonic chords, the latter being made up of two distinct strands. Most of the notes in the chords providing the ever-changing timbre of the song-thrush are played at the same pitch by two instruments.
The pitch material of the vertical combinations does, in fact, bear marked resemblance to that of the chords colouring the duration series in the preceding strophes (remember, however, that these latter are played by strings). For example, the chords used at Fig.30 can be categorized according to their pitch groups as follows:

Type a: \[1 \ 1 \ 1 \ 1 \ 2 \ 1 \ 1\] ("Turning chord" of the Strophes)
Type b: \[1 \ 1 \ 3 \ 1 \ 1 \ 2\] ("Chord or the Dominant" as in the Strophes)
Type c: \[1 \ 1 \ 1 \ 1 \ 3 \ 2\] ("Chord of Contracted Resonance" of the Strophes)
(also: \[1 \ 1 \ 1 \ 3 \ 1 \ 2\] (Permutations of type c)
\[1 \ 1 \ 2 \ 3 \ 1 \ 1\])
Type d: \[1 \ 1 \ 1 \ 2 \ 1 \ 1\]
Type e: \[1 \ 1 \ 1 \ 1 \ 3 \ 1 \ 1\] (a "filled-in" variation of type c, e.g.
\[\text{type c: } 1 \ 1 \ 1 \ 1 \ 3 \ 2\]
\[\text{type e: } 1 \ 1 \ 1 \ 1 \ 3 \ 1 \ 1\])

Ex. 47.

These pitch-group types appear in the following arrangement:

First phrase: \[a \ b \ b \ b \ a\]
Second phrase: \[a \ b \ b \ b \ a\]
Third phrase: \[(c \ c) \text{ three times}\]
Fourth phrase: \[d \ e \ c\]
Fifth phrase: \[e \ e \ e \ e \ c\]

Ex. 48.

The timbral representation of the lark (Alouette des champs) provided by the string section constitutes a complex pedal which is exactly the same at each recurrence. Sustained harmonies on the lower strings, and trills on the upper strings together account for all the pitches between G (above Middle C) and the B over an octave above this. All blend into a very soft cluster which is heard, not as a sound in itself, but as a resonance, an integral part of the metal percussion figures.

There is one other category of timbre-representation found in both Chronochromie and Couleurs. Some birdsongs
appear in conjunction with other material and often simultaneously with one or two other birdsongs as well. In such cases they are characterized by two or three part homophony. The details of the context in which they occur may be different but the resulting overall textural density and quality is much the same.

<table>
<thead>
<tr>
<th>Chronochromie</th>
<th>Fig.4 : Gobe-mouches ... 2-part ) simultaneously Merle Japonais ... 3-part ) simultaneously Other material: full chords over large section of orchestra (pp) colouring part of a permutation.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Chronochromie</th>
<th>Fig.42 : Ani ... 2-part ) successively Atilla ... 2-part ) successively Other material: A melody harmonized by twelve-note homophony in the strings and accompanied by 5-part semiquaver figures in the upper woodwind.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Couleurs</th>
<th>Fig.81 : Grive à ventre roux } successively, piano solo, Troglodyte à long bec } mainly 2-, 3-part, with Saltador cendré } some more dense chords. Hâle Takahe 3-par: } successively, but sometimes Hornero 3-par: } simultaneous with piano. Other material: Slower rhythms on bells (plainsong) and cencerros (tala)</th>
</tr>
</thead>
</table>

Ex. 49.

In all of these two- and three-part homophonies the parallel movement of the individual lines is always very evident though always, of course, only approximate, and always in conjunction with characteristic interval patterns which differentiate each birdsong.

Ex. 50.
Some of the birdsongs have homophony densities contributing to their timbres. The cry of the Balbuzard, for example, at the opening of Chronochromie consists of a series of chords ranging from simple two-part ones, to others which are presented over half of the orchestra. Two contrasting groups of sound make up the song of the Bouscarle (Fig. 13, Chronochromie). A sustained chord played by lower woodwind, brass and bells, and gradually increasing in dynamic intensity is followed by a rapid figure on upper woodwind and pitched percussion which is unique in all of the birdsong of Chronochromie and Couleurs for its rhythmic construction. It is composed of quintuplet, sextuplet and septuplet divisions of a duration and is the only instance of non-homophonic representation of birdsong.

In Chronochromie especially there are extensive passages of birdsong which have no timbre representation apart from that of the particular instrument which plays each song. The procedure which first appears in the strophes where seven songs are presented simultaneously by woodwind and pitched percussion is extended to account for the entire material of the Épôde. Eighteen songs are played by eighteen string instruments. In his notes for the recording Messiaen describes this music as no longer having any sense of colour or harmony, but consisting of free counterpoint where all voices are crossed and interwoven in a medley of melodic lines of extraordinary complexity. This effect is heightened by the fact that Messiaen chose to reproduce the songs with the string section, the timbre-quality of which is more homogeneous than that of other instrumental groups.
The eighteen birdsongs can be categorized to some extent by their complexity and associated dynamic patterns. In effect there is a continuum, with the perpetually varying songs at one end, and an almost ostinato-like repetition of motifs at the other. For example, the songs of the blackbirds (merles noires) - there are six of them - contain no exact repetitions of material; they depend for their continuity on a kind of evolutive variation process based on the predominant recurrence of certain intervals. The song of the fourth blackbird, for instance, is characterized by intervallic leaps of sevenths, fifths, fourths and tritones. The song of the Fauvette babillarde lies at the opposite end of the scale of complexity; it consists, essentially, of a high E which is reiterated in rapid demisemiquaver sextuplets; this figure is preceded at each appearance by various patterns covering several pitches; there are six of these patterns and they are distributed over fourteen repetitions of the sextuplet figure, in such a way that a palindrome is formed.

Ex. 51.

This method of structure recurs in the song of the Verdier; its basic motif is much more complex than that of the Fauvette, and the pattern which arises out of the small variations of each appearance extends over the whole movement (the song of the Fauvette lasts for only half of the work). The motif of the Verdier appears only eight times in the course of the whole movement, and each time the pitch of the first part of the motif changes, outlining a rising then falling chromatic sequence. In between the
extremes of the complex blackbird songs, and the simple pattern of the Fauvette babillarde there are songs made up of short motifs repeated, varied, juxtaposed, and rearranged so as to approximate a structure for each individual part. The song of the first Pinson (chaffinch) is made up of four motifs which are always repeated exactly up till Fig. 105 (here is the only break in the texture of the whole movement). The following motivic pattern results:

\[ \text{a a b a a c d c b b a a} \]

Only at the end of the whole movement do any of these motifs come back in their original form. By way of contrast, the entire song of the second Pinson is built up slightly varied versions of three distinct ideas, and this results in quite a different overall structure:

\[
\begin{array}{c|c|c}
\text{a a a a} & \text{b b b} & \text{c c c} \\
\text{A B A A} & \text{B B A A} & \text{A B A A}
\end{array}
\]

Ex. 52.

Messiaen says of the two Loriot songs that one is an echo of the other. This is essentially a dynamic echo (the song of the second is predominantly quiet, to very quiet) for although both songs use the same type of rhythmic values and include glissandi over various intervals, there are no real motivic cross-references at all.

Messiaen notes at the beginning of the Épôde that the "nuances" should be well observed, and in fact, dynamic features are of utmost importance. Their interaction with the general complexity of the songs and with the extent to which each voice is heard, sets apart eight principal voices. Certain phrases
of these eight are at various times surrounded by square brackets which indicates that they should then "shoot into the limelight"; thus these favoured songs act as a landmark for the listener and provide for him "a path in the forest of sound". These are not landmarks which stand out in sharp contrast to their surroundings; indeed there are often several parts highlighted at once, or overlapping considerably, and the actual dynamic indications of the phrases vary considerably over quite a range. However, generally speaking, those songs which are more complex have a louder dynamic intensity, and a continually changing dynamic articulation, while those more straightforward songs are predominantly at a lower level of intensity, with dynamic articulation complementary to their motivic structure. For example, the dynamic pattern of the Fauvette babillarde is exactly the same at each appearance of its motif.

Couleurs draws from plainsong sources more than any other work before it. The four Alleluias used were chosen for the particular relevance of their verse texts to the symbolic content of the work; however, it was not for their associations alone that they were included. Messiaen says of the plainsong in Couleurs: "I took up this idea again because plainsong conceals some marvellous melodies." Like birdsong, plainsong exists for Messiaen as a large body of predetermined melodic material articulated in generally short, irregular and ametrical phrases. However, here the comparison with birdsong must end. Whereas Messiaen seeks usually to faithfully represent birdsong in its melodic, rhythmic and timbral entirety, plainsong he views primarily as material for manipulation, transformation, and inter-
action with other elements. It is, by nature, largely devoid of timbre and harmonic associations, so Messiaen is free to impose these onto the original material as he wishes, but as well he sometimes transforms the intervallic structure and the internal rhythmic articulation so that only the melodic contours and phrasing of the original Plainsong are retained. Messiaen combines together elements of imposed, transformed and original material in a number of different ways in *Couleurs*, so that their interaction clearly distinguishes the individual sections:

1. original rhythm, original melody, homophony (e.g. Fig. 32)
2. original rhythm, transformed melody, homophony (" Fig. 12)
3. transformed rhythm, transformed melody, homophony (" Fig. 68)
4. transformed rhythm, transformed melody, monody (" Fig. 81)
5. original rhythm, transformed melody, monody (" Fig. 41)
6. original rhythm, transformed melody, in polyphony (" Fig. 8)
7. Super-position of (1) and (2) (" Fig. 69)
8. transformed rhythm, fragments of melody, homophony (" Fig. 73)

Ex. 53.

Of the four Alleluias in *Couleurs*, the Alleluia for the Eighth Sunday After Pentecost (A-P8) is used the most extensively and consequently is submitted to quite a variety of manipulations in its different appearances. Always its melodic detail is transformed, but only sometimes is a new rhythmic articulation imposed onto it. (See Ex. 54.)
As the examples above indicate, the intervallic pattern of the first phrase of the Alleluia is always the same, but the patterns of the other phrases vary according to their context. A comparison of the intervallic patterns with that of the original shows that Messiaen retains some of the characteristic details as well as the general contours of the plainsong, for example, the prevalence of tone steps in the second phrase. Note that Messiaen applies both extremes of his rhythmic continuum (see chapter on rhythm) to this Alleluia: the uneven, irregular
succession of tala patterns at Fig.68 transforms its rhythm completely while the steady sequences of irrational values at Fig.81 are essentially just modifications of the original.

The first and last appearances of A-P8 are both as monody within a polyphonic texture, nevertheless the total sound characteristics of the respective sections are quite different. At Fig.8, the plainsong melody is given out by the small trumpet whose timbre is modified by the parallelism of the cencerros a seventh above; the melody is surrounded by lines of varying rhythmic complexity (see Ex.17) played by the brass section. One of them depicts "les 7 Anges aux 7 trompettes" and its fairly even succession of comparatively longer durations provides a basis for the rest of the polyphony. Only the first phrase of the plainsong melody is presented at Fig.8; the unfolding of the Alleluia is continued in a similar section at Fig.67 where two versions of the second phrase, and part of the third are set; in the longest and final occurrence of this particular polyphonic texture, the first phrase returns and is followed by extended versions of the second and first phrases. The polyphony surrounding the version of A-P8 at Fig.81 is provided mainly by birdsong; here the relatively slow-moving and even succession of values played by the bells and given melodic contour and phrasing by the Alleluia serves as a basis for the widely varied rhythms of the tala and the birdsong which are superimposed on it.

In all its other appearances, A-P8 is fully harmonized. Although the Alleluia sections between Fig.12 and Fig.26 are all very brief their identity is clearly maintained from one to the next. Details of timbre and harmonic organization making
up the texture of these sections contribute considerably to this. For example, the use of percussion alone characterizes them immediately: the whole percussion section except for the tam-tams (but including the piano) is always deployed in the same horizontal arrangement of timbres, in a construction which complements the harmonic layering of sections. The melodic phrases of the Alleluia are paralleled (sometimes exactly, sometimes approximately) by all the other parts except that of the piano. In the section at Fig.12, for instance, the melody given out by the xylophone is paralleled exactly by lines of the cencerros and the bells, and approximately by the lines of the xylorimba and marimba; these latter, along with the piano part, introduce important elements of variation into the resulting homophony without detracting from the general textural characteristic. In the succeeding plainsong sections up to Fig.26 there is not always such a high proportion of exact parallelisms as in this one, though the cencerros and bells do double each other at the minor thirteenth every time.

After Fig.25, A-P8 does not reappear until considerably later in the work; when it does return it forms the basis of the whole section from Fig.67 to Fig.80, in the course of which it occurs in four distinct guises.

1) The opening and closing passages comprise the first form of the Alleluia in these sections and these are made up of the polyphonic texture that has been discussed earlier.

2) The second, and perhaps most important form of A-P8 in this section comes first at Fig.68: the first phrase only of the Alleluia is given out by cencerros and bells doubling each other at a major fourteenth and provided with further homophony by chords on the piano; rhythmic articulation is given by a section from the tala. The subsequent appearances of this form
of the Alleluia are in fact so similar that they take on the function of a refrain. Each time, the first phrase of A-P8 is presented by the same instrumental group, always with cencerros and bells doubling each other at the same interval and always with some section of the tala imposed on it. However, within this refrain-like construction elements of variation are present so that no two passages are exactly the same. Different sections of the tala are applied in each case (see Ex. 16.) and the homophony of the piano, though always of a similar density and intervallic structure contains few exact repetitions from section to section.

3) The third treatment of A-P8 appears in conjunction with another alleluia. In these sections sometimes only part of one of the Alleluia phrases is taken and expanded into slightly changing patterns; for example, at Fig. 69 (see Ex. 54) such a melodic treatment is based on perfect fourths (the first interval of the original plainsong) and tritones (the first interval of Messiaen's version). As in the refrains the melody is provided with homophony by piano and cencerros, but it is distinguished from the former by being much thinner in texture and more obviously based on parallel movement of the constituent parts.

4) The remaining treatment of A-P8 occurs at Fig. 73. The two intervals which were prevalent at Fig. 69 (the perfect fourth and the tritone) are now presented over extremely long durations which are given full harmonic treatment by superimposed colour chords ranging over the complete instrumental group. Then at Fig. 76 the complete second phrase of the Alleluia is given out, still very slowly, but in its original rhythm; here the homophony provided by full brass and woodwind sections, depicting the colour violet, is based entirely on Mode IV.

The presentations of the Alleluia for the Fourth Sunday after Easter constitute the only extended passages of monody in Couleurs; even so, they are not very long, and their most outstanding features are timbral as much as textural. The pitches of the Alleluia, transformed from the original, are given out by
unison clarinets, unison horns, bells, and the piano in a melody of timbres (Messiaen applied this term also to certain sections of *Chronochromie*). The continually varying nature of these two sections is given a limited kind of general characteristic by the percussive *sferrzando* attacks which are applied to all the notes.

Both the Alleluia for the Feast of the Dedication of a Church (A-D) and the Alleluia for Corpus Christi retain their original plainsong melodies and rhythms and are provided with homophony by woodwind and brass in all their appearances. Nevertheless the two do have quite distinctive individual characteristics. Two consecutive phrases of A-D appear towards the end of *Couleurs* in two alternate sections, both times as part of a texture which also includes A-P8. Because of the context in which it occurs, the homophonic treatment of A-D is quite simple; in fact it consists entirely of parallelisms: the melody itself is presented in three different registers and three different timbres (clarinet, trumpet, horn) and the other lines making up the homophony have exactly the same intervallic pattern as that of the melody. The vertical intervallic and timbral structure established in the first appearance of A-D is retained exactly in the second.
The Alleluia for Corpus Christi (A-C) constitutes, in its appearances, the entire material of the sections; consequently its homophony is much more complex, and is realized by a larger group of instruments. Almost all elements of parallelism have disappeared and there is, in fact, a changing pattern of pitch densities (i.e. the number of different pitches making up each chord) throughout both sections. The separate lines of each instrumental part all move within fairly restricted ranges but there is quite a lot of interweaving between the parts. This effect is heightened by the complicated patterns of doubling between the various instruments; these arise from an interaction of a constant instrumental density with a changing pitch density. Thus for instance, two trumpets combine together throughout the first section to give strength to the melody of the Alleluia, but the line of the 1st horn doubles notes sometimes of the 2nd trumpet, sometimes of the 3rd trumpet, and sometimes of the 2nd horn.

Ex. 56.
In the first phrase of the Alleluia Messiaen sets up relationships between the notes of the melody and their corresponding harmonies so that, for example, every time an 'A' appears in the melody it is harmonized by the same chord. This correspondence is not maintained in the middle phrases of the section — there are, for example, as many different harmonizations of the pitch E as there are occurrences of it — but it does return at the end. In the second part of A-C at Fig.98 nearly all of the chords harmonizing the melody have appeared in the previous section (Fig.32), and those which are not exact repeats are nevertheless very similar. A characteristic feature of the harmony especially evident at Fig.98 is the predominance of the perfect fourth interval between the lowest two parts. This occurs in only nine of the twenty-five chords in the first section of the Alleluia, but in twelve of the eighteen chords in the final section. This is the only reference in the homophony of this Alleluia to the parallelism which is so prevalent in the harmonies of other alleluias.

The plainsong Alleluias used in Couleurs constitute a homogeneous body of material if compared to the extremities contained within the other main source of melodic material, bird-song. However, Messiaen has not let this be a limiting factor in his music but rather has used it as a basis from which to build up widely varied sections of music. All parameters play an essential role in this, and the distinctive sounds of the various treatments depend on the interaction of them all. Nevertheless, the Alleluia sections do retain a certain flavour which sets them apart from the rest of Couleurs; this is due principally to the melodic contours, and also to their phrasing for these characteristics of plainsong are retained in every appearance.
FOOTNOTES - Chapter 4.

1. _COM_ p. 51.
3. All the following quotations about birdsong in this chapter are from _COM_, chapter on birdsong, pp. 51-65.
4. _COM_ p. 29.
5. _COM_ p. 96.
CHAPTER FIVE

STRUCTURE

The studies of Chronochromie and Couleurs have dealt so far with the details of Messiaen's language, the materials of his music which are determined by his fundamental approach to the various parameters and which are basic to all of his later works, especially those since 1960. Messiaen's way of giving form to these elements, of arranging them to create a whole is, to a large extent, determined by their very nature: both Chronochromie and Couleurs, are essentially sectional, built up from contrasting blocks of sound; however the way smaller units are organized and arranged into larger groups is quite different in each case.

Chronochromie is divided clearly into seven sections which are separated from each other by exactly measured silences, and each given titles derived from classical Greek poetic forms. Corresponding movements are arranged such that the outside ones frame an overlapping sequence which culminates in a single movement, the Épôde.

\[
\text{Introduction Strophe I Antistrophe I Strophe II Antistrophe II Épôde Coda}
\]

Ex. 57.

The way in which Messiaen uses these titles bears little resemblance to their function in Greek irama where each strophe has a strict rhythmic correspondence with its antistrophe and where the Introduction and Coda bear little, if any relation to each other. Nevertheless he does retain, more or less exactly the function of the Épôde: a summing up, or crowning of the two pairs which have preceded it.
The Introduction and Coda have by far the most broken-up textures of all the movements. Sections of variously contrasting instrumental combinations depicting different elements of nature are delineated by exactly measured pauses, and highlighted by rapidly juxtaposed changes of tempi. The duration value of the unit semiquaver in the section with the slowest tempo (the Pygargue, at the end of both the Introduction and the Coda) is over five times that of the semiquaver in passages of the fastest tempo (part of the 'wind' sections) and in between these extremes are many degrees of tempi. Sometimes even, several tempi are used within one section, to represent, for example, a particular birdsong, or the changing patterns of the wind. Only a few sections appear twice within one of the movements, and these are not exact repeats. In the Introduction there are two sections (one at the beginning, one about the middle) representing the Balbuzard, two sections (one near the middle, the other just before the end) devoted to Permutations 13, 14 and 15, and two representations of wind (the latter of these is based on the second part only of the former section).

Some of the relationships between corresponding sections in the Introduction and Coda have already been discussed: the structural connections established by the use of permutation series and note-rows, the motivic associations set up by an interaction of pitch, timbre and rhythm in the sections based on Permutations 13, 14 and 15; the rearrangement of part of the sequence of chords depicting the Alpine rocks to make up the corresponding section in the Coda, and the repetition of ostinato patterns in the passages representing water. Very strong connections are also set up by the birdsong sections, and in fact parts of them are repeated exactly from the Introduction.
to the Coda. For example, the song of the Bouscarle as presented at Fig.13 returns exactly at Fig.119 in the Coda, and is followed by a phrase which is the same except for the internal arrangement of pitches. Similarly parts of the sections depicting the birdsong of the Kibitaki and the Balbuzard are repeated later, though in a slightly different context. Note that these relationships between the Introduction and the Coda are all set up by either vertical or horizontal connections: the exactly, or slightly transformed repeats of whole blocks of sound as is the case with some birdsong and the 'rock' sections, as compared with the use of a similar structural device throughout the length of a section, such as the permutations, a note-row or an ostinato pattern.

The ordering of the sections within the Introduction and the Coda is not the same; however, related sections are of approximately the same comparative length in both movements and some of the groupings of sections are retained; for example, the 'rocks' sections are both times followed by ones depicting the waterfalls and streams, and both movements are concluded with sections devoted to Permutations 13, 14 and 15 followed by representations of the cry of the Pygargue. Thus there are sufficient similarities in the organization of the movements to give rise to strong links while at the same time quite a lot of variety is included. (See Table II page 90)

The third and fifth movements of Chronochromie, the antistrophes, are the most similar to the Introduction and the Coda in the extent to which they are organized on a sectional basis. However there are fewer and longer sections in the antistrophes, and each is opened by prolonged representations of the
songs of the Grive musicienne and the Alouette des Champs in alternate sections which themselves give rise to a small self-contained form:

\[ A \quad B \quad A' \quad B' \quad A'' \]

This constitutes, on a small scale, an example of the procedure used in the second and the seventh movements of *Quatuor pour la Fin du Temps* which Messiaen describes as "Variations of the First Theme, separated by Developments of the Second". Birdsong, especially that of the two particular birds used in this case, constitutes ideal material for a formal procedure such as this since it is essentially non-repetitive, yet nevertheless has clear, identifiable characteristics.

The three remaining sections of each antistrophe correspond very closely in every case; the songs of the same birds are presented in similar contexts and the very notable chord which punctuates the song of the Oropendola de Montezuma is always retained exactly. The melody played by the strings in the section from Fig.82 to Fig.85 starts out as a transposition of that in the related section of Antistrophe I. The details of interval and contour vary from the original towards the middle, but the last part of the melody is an exact repeat, at pitch, of the final phrase, except for the insertion of an extra figure. The harmonies surrounding the melodies, both those of the strings and those of the woodwind intensify these similarities: an ascending chromatic scale is unfolded in the sequences of the string chords, and the characteristic intervals of the woodwind parts are equally present in both sections. The relationship between the pitch sequences colouring the permutations which appear in the antistrophes has already been noted. There is no such correspondence
between the "melodies of timbres" which accompany these sections; this is because the actual identity of each pitch is relatively unimportant: it is the particular texture and the unique sonority resulting from the blending of timbres, the uninterrupted succession of equal values, and the extremities of register that play the important roles in colouring the durations, and these features do correspond very closely from one section to the other. Much the same situation exists in the chorales; twelve pitches are present in every chord and it is the characteristic sound resulting from an interaction of rhythm, dynamic level, stress and timbre which identifies the sections rather than the details of pitch organization.

The two strophes and the Épode differ very basically from the other movements of Chronochromie in that they each exist as one section which cannot be further sub-divided. It has been shown that the measure of time by means of superposed duration series belies its own inherent structure, and produces instead an effect of randomness, and although some patterns arise out of the organization of the separate strands of chords which colour the durations, these do not coincide sufficiently to give any sense of shape to the whole. The birdsong material of the strophes is similar to that of the Epode: individual songs comply to varying degrees of structure arising out of ostinato-like restatement of a single motif at one extreme, and perpetual variation with no repetition at the other. But what structures there are obvious in the individual lines do not coincide in their superposition, and so no clear formal articulation over the length of the movement is apparent. This effect is heightened by the horizontal layering of dynamics, register and timbre. The strains of chords are presented always by the same groups of
strings, are always doubled by the same metal percussion timbres, and each birdsong is given out by the same instrument or group of instruments throughout the length of each strophe (in cases where a group of instruments is used for one birdsong the timbres are always deployed successively, and never simultaneously). The dynamic levels of the strands which directly unfold the permutations are set at the very beginning of the strophes and remain constant thereafter until the end of the movement. Both strophes have the same total duration as defined by the duration series, and apart from the inclusion of different birdsong, the material of Strophe II is essentially a rearrangement of the elements of Strophe I.

The Épôde stands alone in Chronochromie; it is set apart, first because it does not contain any portions of the permutation series at all, and then because it is totally polyphonic in structure. The songs of twenty-one different birds constitute the entire material of the movement; at the most, eighteen are heard at once, generally there are from ten to seventeen voices sounding simultaneously, and where some birdsongs are completed and new ones introduced to replace them at Fig.105, there is the only real break in the texture; even so it is very brief (see Table III, page 91). Here, as in the strophes, the variously structured voices do not interact to generate a form over the whole movement. Their various degrees of organization derive, of course, from Messiaen's true representation of the birdsongs as they occur in nature, and as such they provide a very valuable aid to the composer in his task of building up and sustaining a movement of considerable length from birdsong alone. However, in the final analysis, the inherent structure of the movement is
evident only in the way that the organization of the permutations is in the strophes: the total effect, the end result of the simultaneities is one of randomness, perhaps even chaos. (Messiaen does stipulate that certain phrases should "shoot into the limelight" from time to time throughout the movement: these do certainly provide an essential relief in the texture, slight though it may be, but they do not give rise to any structure or form.)

Both the strophes and the Épôde are characterized by their essentially polyphonic, layered textures. Certainly there are the colouristic chords in the strophes but these, like all the other material, are organized into horizontal strands which are superimposed on each other. The organization of a whole movement by such a method may at first appear contradictory to Messiaen's basically vertical, non-functional approach to music. But this is not so: the continually changing patterns of the layers, complex in their simultaneity, provide a means by which one vertical sound characteristic can be drawn out and sustained well beyond the normal limits of duration for a single event. Just as a short duration can be defined by one sound, so in these movements much longer durations are defined by many sounds of the same texture and timbre. These are closely related to each other in terms of the other parameters also. As such, these movements suspend time, or draw it out to new proportions rather than shape it or structure its passage. In the strophes the permutations do, to an extent, measure time, but this is an on-going process only; in the Épôde Messiaen has sought to reproduce a cacophony of sound such as might be heard in nature and so has imposed no external devices or colourations on to the natural material apart from the actual timbres necessary to give out the sounds.
The nature of the music of the Épôde can be seen as the culmination of a gradual refining process which takes place in the various movements of Chronochromie. Short juxtaposed sound blocks are eventually replaced by one single event; this is possible because the procedure which Messiaen uses to form the smaller units is capable of being extended to give articulation to much longer durations, and also because the nature of birdsong lends itself well to this purpose: in its natural state birdsong can exist in short isolated bursts or in long drawn out monologues; either way it can be heard as a single sound, or blended together with other songs and sounds, and always it includes a wealth of rhythms, melodies and timbres. Birdsong is present in all the movements of Chronochromie, and the Épôde represents a distillation of what has gone before; the birdsong element of the strophes is isolated and magnified to such proportions that it is sufficient to provide the whole material of the movement.

The seven movements are arranged within Chronochromie so that the more disjunct, broken-textured ones begin and end the work, and the more integrated movements form a sequence in the middle. This procedure, opposite to that of the classical symphonic tradition, was foreshadowed much earlier in Messiaen's output by a tendency for organization of material in a "development-exposition" form where a more complex, varied treatment of a theme preceded its statement which, in fact, concluded the work. This form he used in four works written between 1929 and 1939: these include 'Le Verbe' from La Nativite du Seigneur (1935) and 'Combat de la Mort et de la Vie' from Les Corps Glorieux (1939). Occasionally this approach to structure shows itself
in the micro-organization of Chronochromie. See, for example, the ordering of the pitches from a note-row into groups as in Ex. 34.

Couleurs, like Chronochromie can be divided into seven main sections; these are not clearly delineated as in the latter work, but rather arise out of groups of sections all based on the same material, or with repeating sequences of ideas. The matching pairs of movements in Chronochromie are replaced by a complex network of inter-relationships linking together small sections in various ways throughout the work so that it exists essentially as a one-movement piece made up of many small sound-blocks rather than as a collection of several larger units. The following diagram shows the main divisions of the work, and the arrows give some idea of the cross-references and correspondence of sections.

<table>
<thead>
<tr>
<th>Intro</th>
<th>1st Section</th>
<th>Refrain</th>
<th>2nd Section</th>
<th>3rd Section</th>
<th>Coda</th>
<th>Refrain</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.S. →</td>
<td>CC →</td>
<td>'The Star' ← B.S.</td>
<td>← A-P8 →</td>
<td>← B.S.</td>
<td>← A-P8</td>
<td>'THE Star'</td>
</tr>
<tr>
<td>A-P8 →</td>
<td>BB →</td>
<td>B.S.</td>
<td>← Tala→</td>
<td>AD</td>
<td>← A-P8</td>
<td>B.B.</td>
</tr>
<tr>
<td>(Tala)→</td>
<td>A-C</td>
<td>A-E4</td>
<td>← (CC)</td>
<td>← TALA</td>
<td>(A-C)</td>
<td>ABYS</td>
</tr>
</tbody>
</table>

B.S. = birdsong
B.B. = Bellbird
C C = Colour
A-C = Alleluia for Corpus Christi
chords.
A-E4 = Alleluia for the Fourth Sunday after Easter
A-D = Alleluia for the Dedication of a Church

Ex. 58.

The introductory section of Couleurs begins with a series of rapidly juxtaposed birdsongs (for details, see chapter on birdsong) some of which appear, isolated, and in a varied form later in the work. This is followed by the first presentation of the Alleluia for the Eighth Sunday after Pentecost (A-P8), here it is a polyphonic setting of the first phrase of the Alleluia.
In the first major section of the work passages of bell-bird song alternate with symmetrical arrangements of colour chords and A-P8 (homophonically treated). These sections are arranged in an interweaving pattern, a kind of overlapping variation, which is made clearer by the inclusion of some exact repetitions.

<table>
<thead>
<tr>
<th>BB</th>
<th>CC</th>
<th>A-P8</th>
<th>CC</th>
<th>BB</th>
<th>A-P8</th>
<th>CC</th>
<th>A-P8</th>
<th>BB</th>
<th>CC</th>
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<th>CC</th>
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<tbody>
<tr>
<td>i</td>
<td>tala</td>
<td>i</td>
<td>ii</td>
<td>ii</td>
<td>iii</td>
<td>tala</td>
<td>i</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: i, ii, iii refer to the three phrases of A-P8. Lines joining sections show only exact correspondences.

Ex. 59.

In the successive appearances of A-P8 there is a progression through three phrases of the Alleluia, with a return to the original one at the end. A very similar organization is applied to the colour-chord sections; a sequence of chords is presented gradually in overlapping groups so that by the end, thirteen colours in all have been represented.

<table>
<thead>
<tr>
<th>Fig.11</th>
<th>Fig.13</th>
<th>Fig.18</th>
<th>Fig.24</th>
<th>Fig.26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topaz jaune</td>
<td>Topaz jaune</td>
<td>Topaz jaune</td>
<td>Sardine rouge</td>
<td>Sardine rouge</td>
</tr>
<tr>
<td>Chrysoprase vert</td>
<td>Chrysoprase vert</td>
<td>Chrysoprase vert</td>
<td>Bleu saphir</td>
<td>Rose mauve</td>
</tr>
<tr>
<td>Cristal</td>
<td>Cristal</td>
<td>Cristal</td>
<td>or</td>
<td>ou</td>
</tr>
<tr>
<td>Emeraude verte violet</td>
<td>Améthyste violet</td>
<td>Emeraude verte vert</td>
<td>Rouge</td>
<td>Rose mauve</td>
</tr>
<tr>
<td>Orange</td>
<td>or</td>
<td>Emeraude verte bleu</td>
<td>Saphir bleu</td>
<td>ou</td>
</tr>
<tr>
<td>or Topaz jaune</td>
<td>or</td>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chrysoprase vert</td>
<td>or</td>
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Note: square brackets show groups by which Messiaen has indicated the colours in the score.

Ex. 60.
The refrain is so called because it retains its sequence of ideas in its widely separated sections and although the details of the corresponding units of each are different, their essential character is clearly preserved. The Star section is distinguished especially by its collection of varied motivic ideas; this contrasts with the homogeneity of the Alleluia that is contained in the refrain; this is reinforced by the close correspondence of the harmonies given to the successive Alleluia phrases in the two sections.

The second main section of Couleurs consists of a sequence of four sound-blocks which is then repeated with some interval variation. Most of the birdsongs in the first part of this section appear again in the repeat of the sequence; particularly distinctive is the cry of the Araponga, made up of exact repeats of a brief, dissonant figure. One of the birds represented in this section is the Benteveo which in fact has already appeared in the opening bars of the work; now it is given a more extended, and uninterrupted treatment. The slight variations in rhythm in the two presentations of the tala sequence (see Chapter 2) are more evident in the pitch structure; some melodic and harmonic patterns are repeated exactly from tala to tala; most have very close correspondences in intervallic structure.

The third section is characterized by the presence of A-P8 in all of its sub-divisions. Various treatments of the Alleluia are juxtaposed in nine sections; the two outside ones which relate back to the beginning of the first main section, frame a couplet-refrain sequence which reaches a climax in the "infinitely slow" interaction of the Alleluia and the colour chords.
The Coda is, in a sense, a summary of the work: it contains birdsong, plainsong material and the tala (all interacting together in one section) and as well a representation of the Abyss; but it does not constitute a conclusion. Quite apart from the fact that it is followed by the refrain, it does include some completely new material which has its only appearance in this section.

The opening and closing birdsong sections of the Coda both refer back to corresponding passages quite early in the work. While the original presentation of the song of the Troglodyte barré was only fleeting, recurring bellbird strophes played an important role in the first main section; however, neither of these two songs have reappeared until the Coda. Both the tala and A-P8 which are part of the second sub-division of the Coda are familiar material by this stage of the work, but they are here presented in quite new guises, playing, for the first time, structural roles, and the texture of which they are a part is unique in all of Couleurs. At Fig.81 there occurs the only
instance of a simultaneous presentation of several birdsongs and consequently the only occurrence of birdsong as monody in Couleurs. The horizontal complexity of the texture of this section is unmatched in the rest of the work, and the particular birdsongs of the section appear nowhere else in Couleurs. Similarly, the following section is devoted entirely to the representation of a birdsong which has its single occurrence here. Contrasted with this and the closing bellbird passage is a short section depicting the Abyss which refers back to two previous appearances; though the details of its pitch arrangement are different the very distinctive character of the section, resulting especially from the combination of low brass and woodwind resonance, guarantees it easy recognition.

The complex system of cross-references which links the separate blocks of Couleurs gains its particular effectiveness from the co-existence of the different types of interconnections between sections. Birdsong sections, representations of specific ideas (e.g. the abyss) and certain plainsong presentations (A-C, A-E4, A-D) provide elements of stability by retaining their whole section characteristic at each appearance. They do undergo rearrangements of pitch structures and small variations in other parameters but they remain essentially the same and always immediately recognizable. On the other hand those sections dealing mainly with plainsong (in particular A-P8), tala rhythms and colour chords are constantly being manipulated and changed: they interact with each other so that characteristics of one are allowed to transform or modify another. The tala, for instance, does not remain a separate entity but is broken up and applied to A-P8 towards the end of the work and to the colour chords (which do
not imply any particular rhythm) even before its main appearance. Colour chords are applied to A-P8 in one section and very similar homophonic textures not actually labelled as colour chords are imposed on Alleluias elsewhere. The passage from Fig.73 to Fig.77 stands as a culmination of this interaction process: colour chords melody, phrase and rhythm of plainsong, and tala rhythms are all present and integrated into the one structure. These two different types of inter-section relationships therefore complement each other; the one setting up immediately recognizable repeats of sound-blocks, the other providing continual variety by a complex system of interaction.

Another helpful way of overviewing the material of Couleurs is to arrange the separate parameters into continuums. A rhythmic continuum has already been discussed (see Chapter 2). Timbre varies from the essentially non-percussive but sustained quality of the woodwind and brass, then the comparatively sustained and percussive sound of the gongs and tam-tams, the more percussive and less sustained quality of piano and bells, and finally the very percussive and dry xylophone group. Although the wind instruments are not by nature percussive, they are used, in some passages, in a way which brings them closer to the quality of the less sustained percussion (e.g. Fig.41, the Alleluia for the Fourth Sunday after Easter). The texture of the work varies from thick monody to thick homophony, but this is at the same time affected by timbre and the degree to which chords are sustained. The impression of homophonic density is much greater when wood instruments are involved than when only percussion is used.
Messiaen exploits the individuality of these parameters to establish connections or set up links between juxtaposed sections of the work. Certainly, within each section the parameters do, to a large extent, lose their individuality: they are all blended together to create one unique sound-block, a particular sonority. However, between successive sections, certain parameters may be used to set up continuity while at the same time others provide a contrast. Consider for example, the successive presentations of the A-P8 phrases from Fig.68 to Fig. 73. Messiaen reinforces the continuity inherent in the homogeneity of the melodic material but always presenting the Alleluia phrases on the same group of instruments (piano, cencerros and bells) deployed in the same way throughout. At the same time he uses rhythmic and harmonic features to set the various sections apart: tala sections are juxtaposed with the original rhythm of the Alleluia and in the piano part, thick homophony contrasts with more open-textured quasi-parallelisms.

A similar sort of procedure takes place in the first main section of the work where bellbird and Alleluia phrases are juxtaposed. Again, continuity is provided between sections by a similarity of timbre: the group of instruments used for presenting the Alleluia is retained with the addition of clarinets for the representation of the bellbird. However, the deployment of instruments and resultant texture clearly distinguishes the sections, quite apart from the dissimilarities of musical ideas. In Chronochromie there is a very obvious example of timbre playing an opposite role to what it does in these sections of Couleurs. The representations of the rocks, and of the Pygargue in the Introduction and Coda of Chronochromie are alike in many respects:
both are based on a fairly even succession of semiquaver durations in relatively slow tempi, given out as thick homophonic chords. However, whereas in the Pygargue sections the orchestra always plays as a tutti, the rocks are represented throughout by two opposing groups of instruments. Thus it is the particularity of the timbre organization which is crucial in giving these sections their most obvious separate identities.
<table>
<thead>
<tr>
<th>Pygargue</th>
<th>Permutations 13, 14, 15</th>
<th>Water</th>
<th>Rocks</th>
<th>Wind</th>
<th>Bouscault</th>
<th>Kibitaki</th>
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**TABLE II**

Sections in the Introduction and Coda of Chrestomie
Table III

Number of parts sounding in each bar of bridge.
CHAPTER SIX

CONCLUSION - FORM IN MESSIAEN'S MUSIC

Messiaen's earliest formal procedures arose from a view of melody as the most important element of music. There are three basic forms which he cites at the beginning of Chapter XI of his "Technique": the binary sentence, the ternary sentence and the song sentence. The first of these, for instance, has as the essential ingredients of each of the sections, a theme, a commentary and a cadence. The commentary Messiaen defines as a melodic development of a theme in which fragments are varied rhythmically, melodically and harmonically, and into which elements foreign to, but similar in style to the theme may be introduced. Messiaen derived more complex forms from sonata form; initially these were also melodically orientated. The most important was the "development-exposition" form: a development of a theme followed by its statement; however, Messiaen's developments in this form were only parody developments in that they used a process of motivic fragmentation and were tonally undefined. In fact Messiaen's whole view of sonata form was based on its sectional rather than organic characteristics; he found that the most useful aspects of the sonata form were for him the central development, with its continual modulation and feeling of unrest, and the terminal development (the coda) (Chapter XII of "Technique"). Thus the forms he derived from it had little to do with the elements of organic growth and development essential to its real spirit.

From this sectional concept of the sonata evolved a form which held much significance for the formal procedures of many of Messiaen's later works, that which he describes as "Variations
of the First Theme, separated by Developments of the Second."

This appeared for the first time in the seventh movement of the Quatuor and was to form the basis of couplet-refrain and other strophic forms in subsequent works; because it was a compositional procedure rather than a fixed form it allowed a great deal of flexibility and variation in its application.

At the same time as Messiaen's formal procedures were gradually evolving, the micro-structures and materials were also undergoing a kind of transformation. This process which was based on his attitude to harmony as a static element eventually led Messiaen to a position analogous to that of Eastern music.

Dissonances or foreign notes, they are all the same. With our complicated chords, is a dissonance possible? And, in this multitude of added notes, what becomes of the old foreign notes: pedal, passing note, embellishment, appoggiatura? They are indispensable to the expressive and contrapuntal life of music; let us preserve them by enlarging them. The pedal will become the pedal group; the passing note, the passing group; the embellishment, the embellishment group. Each of these groups will contain several foreign notes, forming a complete 'whole music' (rhythm, harmony, melody) and being analyzed as: a single pedal, a single passing note, a single embellishment.

Though Messiaen saw these groups as essentially an extension of the single sounds of the classical tradition, the effect of the music resulting from the two concepts was quite different in each case.

Because the procedure of identification and variation involves not single notes but groups, the means by which progress, variety, and movement are achieved will seem audibly more limited; the listener will identify at best but a few of them. The composition will seem elaborately colorful but static and dramatically limited for lack of identifiable variety; dramatic events will require larger contrasts because they will not clearly register in detail.
No longer do harmony and rhythm draw attention to the individual note; rather, Messiaen avoids bringing to prominence any one sound.

Instead of one sustained note, foreign to the chords which surround it, we shall have a repeated music (repetition and sustaining are equivalent), foreign to another music situated above or below it; each of these musics will have its own rhythm, melody, harmony. ... 3

Whereas traditionally such groups play a role subsidiary to a basic harmonic structure which gives rise to form, in Messiaen's music they come to provide the very substance of his works, and since no individual notes are prominent or emphasised, there is no formal articulation arising out of pitch structures alone.

Thus there exist side by side in Messiaen's later music features which are essentially derived from the great symphonic tradition (formal procedures), and features which are more Eastern than Western in their conception (micro-structure and materials). In this situation lies the difficulty of appreciating Messiaen's form. It is because Hodier, for instance, cannot accept the 'ultra-static' character of the music that he finds Messiaen's form quite unsuccessful. 4 He compares the 'evolutive contemplation' found in the "highest forms of expression in the greatest Western music" with the 'frozen contemplation' of Messiaen's music. Failure to understand the nature of Messiaen's materials and internal structures prevents him appreciating the broader general articulation of the music.

The internal organization and structuring of individual parameters in both Chronochromie and Couleurs depends on a modal procedure. Messiaen's application of such a procedure to all
elements of music is especially evident in later works, and derives from an appreciation of the most fundamental concept embodied in the term "mode": the prescription of limits within which the music may move freely. (Note this is an idea quite distinct from that of series which determines the order of the treatment.) *Mode de Valeurs et d'Intensités* (1948) which constitutes an extension of the procedure first used in sections of *Cantéyodjayâ*, played a decisive role in formulating this approach: here, detailed consideration was given to individual parameters, and Messiaen arranged the materials of his music into modes. Never again was he to use such a strict system so extensively as he did in *Mode de Valeurs*, but the principle behind the technique was retained to play a major role in the articulation of subsequent works.

Thus in *Chronochromie* and *Couleurs* Messiaen is dependent on his ear for the regulation of his harmony: he works freely within the limits of a twelve-note mode, selecting and arranging the elements to establish characteristic pitch structures. Occasionally he limits himself to less than twelve notes, as, for example, when he uses his modes of limited transposition; sometimes he bases his deployment of the twelve pitches on a row order, but always he submits a row to a modal rather than a serial procedure. Much of the rhythmic material of both works is drawn from four main sources: the permutation series, Hindu and Greek rhythms, birdsong, and plainsong. Messiaen treats these as modes, choosing elements from them sometimes to give a structural basis to a section, sometimes to provide more detailed articulation, often juxtaposing and superposing material from different modes. However the particular characteristic
of each mode is always retained; its identity is preserved in each appearance though the contexts and treatments may vary quite widely. In the case of birdsong and, to a lesser extent, plainsong, melody is almost inseparably linked to rhythm, in fact Messiaen's approach to birdsong is often such that the song of each individual bird constitutes a distinct mode with a particular set of predetermined melodic-rhythmic-timbral (harmonic) relationships. In the non-birdsong sections of music, other parameters are treated in a modal way: elements from a continuum of timbre, dynamics, or texture are selected and arranged at the will of the composer.

Messiaen's concept of mode in these works is closely linked to his ideas about "the charm of impossibilities" - a term which appears frequently in his Technique. In these works it is presented as the limiting of the number of permutations of the duration series to only thirty-six, or the limits set up by the nature of birdsong or plainsong material, or by the sound-qualities of the phenomena the composer wishes to represent. The consequence of this "impossibility" is that Messiaen is not free to develop his music any further than these limits (which he himself) allow; because of this, tension and variation must occur internally, within the limits.

This modal procedure, as Messiaen applies it, calls for an individual consideration of each parameter, yet in his music there is a complete interdependence of all elements. Messiaen creates blocks of sound which depend for their distinctive identities on an interaction of rhythmic, timbral, textural and pitch structure characteristics; herein lies the clue to appreciating his concept of sound-colour associations. Messiaen's original
colouristic concept of harmony, led him to rethink relationships between pitch structure, rhythm, timbre and other parameters, and by the time of Chronochromie and Couleurs colour-associations arise from a complex mixing and blending together of many elements. A study of the colour chords early in Couleurs demonstrates this well. In the section starting at Fig. 13, eight colours are represented by as many chords. Each chord contains all twelve pitches in approximately the same proportions, so colour does not come from harmony alone. The same combination of instruments is used throughout the passage, therefore colour is not associated only with timbre. There is but one change of dynamic in the whole passage: for the representation of one particular group of colours, the clarinets play a secondary role to that of brass and so are relatively quieter. However, for the rest of the colour chords they assume equal importance with the other instruments. This is essentially a change of emphasis within the vertical structure; in fact the overall dynamic level of the whole section is constant, thus colour does not depend on the nature of intensity. The texture of the passage is similarly homogeneous: instruments play consistently soloistically or in pairs (e.g. three trumpets always have separate parts, while two trombones play in unison throughout); each part moves within a fairly limited range (the piano chords are entirely in the upper registers of the instrument), and certain intervallic characteristics are retained throughout the section (e.g. except for one case, the two horns play in thirds or seconds, and the four pitches played by the piano in each chord are always disposed in similar vertical combinations). Colour, therefore is not a direct result of texture.
It is, in fact, the interaction of all these parameters resulting in a continuous series of changes which gives rise to the colour characteristics of each chord. For example, the individual pitch-timbre associations of each simultaneity set up a unique combination of overtones: a trumpet playing a B together with a clarinet playing a G will result in a completely different set of overtones from that given by the trumpet playing the G and the clarinet playing the B. Similarly, pitches occur in different registers, sometimes doubled, sometimes not, and the pattern of instrumental doublings changes from chord to chord. Thus, although a listener may not be able to experience the sound-colour associations as Messiaen has indicated them on the score, he can appreciate the corresponding changes of sonority. This is, indeed, how Messiaen's representation of colour is to be understood: throughout Chronochromie and Couleurs it is directly linked to sonority, i.e. the complex interaction of all parameters which gives rise to distinctive sound complexes. Messiaen's realization of sound-colour relationships is not restricted to those passages where he specifically mentions colour, nor to certain chords; in fact it is most times linked to sections of quite varying durations, which are then juxtaposed. The composer himself explains this at the beginning of the score of Couleurs: "The form of the work depends entirely on colours. The melodic or rhythmic themes, the complexes of sounds and of timbres, change in the manner of colours". He expresses a similar idea when he talks of colouring durations in the strophes of Chronochromie by means of harmony, timbre and rhythm. (Note that some of the chords used to colour the durations here recur again in the opening sections of the antistrophes, as part of the timbre-
representation of a birdsong: nevertheless they have quite separate identities because of timbre, texture, rhythm, and context differences.) Messiaen's blocks of colour are always static: they do not progress, nor do they often develop from appearance to appearance; however they do contain elements with potential for perpetual internal variation which makes it possible for them to be extended over considerable durations.

The pervasiveness of Messiaen's colouristic approach in all his music results in a levelling of the hierarchy of parameters. No longer does any one element of a section of music, such as pitch structure or rhythm, assume prime importance in establishing its characteristic features or in the setting up of its internal structures; consequently no one parameter can be responsible for the formal articulation of a whole work since none is consistently prominent or extended enough in its treatment. This condition is inextricably linked to the basic nature of Messiaen's musical language: both his pitch-structures and his rhythmical material are essentially non-progressive; the former is based on the free deployment of all twelve pitches, the latter on the juxtaposition of short, unconnected phrases, or on a seemingly random progression of widely varying durations. Thus the processes and language of Messiaen's musical thought in these later works demands a sectional treatment and their formal articulation depends on the juxtaposition of the static blocks of contrasting sonorities resulting from the interaction of all parameters. The dynamic cross-relationships of varying sections provided by couplet-refrain forms, the interaction of material such that one idea can be modified by the characteristics of another, and the degree to which sections
resemble or differ from one another, have all been discussed in Chapter Five, and it is the working together of these features of Messiaen's organization which provides the unique formal articulation of his works.

The non-Western features of Messiaen's style are evident at this level of organization as they are at the level of his most detailed articulation. Messiaen's music constitutes a statement, not a question and answer dialogue nor an argument. The non-linear aspect of his broadest articulation is the final consequence of the non-progressive, non-functional nature of his language. Messiaen expresses his own realization of this in a note at the beginning of *Couleurs*: "... however the work does not finish - having never really started: it turns on itself, interlacing its temporal blocks like a Rose-window of a cathedral..." It is not difficult to detect the features of organization in *Couleurs* which contribute to the composer's view of the work's form. The first main section after the introduction (see Ex.58) is closed by passages which refer to its opening, some exactly. The second main section includes a complete repeat of itself, and the main part of it, the tala, relates both backwards and forwards to the rest of the work. (Sections of the tala are applied to other material before it is even given a complete presentation.) The third section (see Ex.61) is opened by a polyphonic passage followed by the Alleluia refrain, and is closed by these same two groups, only now in reverse order. The coda is made up of quite diverse elements: it contains a summation of the three main groups of material in the work (birdsong, plainsong, and the tala) in a new type of interaction, direct references back to passages
which first appeared quite early in the work, and beside these, some completely new material which has its only appearance in this coda section. The fact that there are only two appearances of the Refrain, and the positioning of these in the complete sequence of ideas, prevents them from establishing any definitive shape over the whole work. The culmination of these structural features, intensified by the extensive network of inter-relationships reaching across all the main sub-divisions, is a non-directional succession of ideas: the final sections of the work bring with them no sense of eminent conclusion; the ending, and indeed the beginning of the music seem quite arbitrary.

The approach to form is applied in a less complex way in Chronochromie; it is nevertheless non-directional in its complete sequence of ideas. The inner movements of the work succeed each other in a limited kind of progression, but the outside sections counteract this, setting up instead an overall arch shape. As in Couleurs no strong sense of finality is established at the end of the work, in this case because of the relatively disparate nature of the Coda.

Formal procedures and their significance in Messiaen's later works are not easy to detect; they must be approached through an appreciation of the principle of juxtaposition. Juxtaposition, as applied in Messiaen's works depends on the gradual evolution of a sense of form which is unique in every work. There are no expectations set up at the beginning of the work, no patterns or broad structures immediately established. Blocks of sonority appear at first to be quite unrelated to each other; nevertheless, as the work progresses, connect-
ions are set up between various sections, and it is the sum, and diversity of these which provides a valid formal articulation. Messiaen's is a sophisticated kind of juxtaposition; it bears little relation, for example, to procedures used by Ives, rather it arises entirely out of his own musical language, and gains strength from the series of dynamic cross-relationships contained in it.

The overall shape which emerges out of Messiaen's juxtaposition procedures is essentially circular and not linear. This latter derives its coherence from development within and across sections; Messiaen's sections, when they recur, are very seldom exact repeats of micro-structure, nor do they constitute a development of any previous section. Rather, the variation of internal details, along with the completely unique context of each section gives a new perspective to each successive sonority, and so a reason for its being. This is, in essence, what development and musical structure are all about in Messiaen's music; in fact, form based on a collection of 'views' arranged in a circular sequence can be seen as an expression of his basic underlying attitude to life. It is the realization of this that allows Armfelt (the other commentator quoted at the beginning of Chapter One) to draw the conclusions he does; he accepts the fact that Messiaen's music is often disparate and asymmetrical, and goes on to evaluate his formal procedures in the light of this: "More and more he uses the 'catalogue principle', where unrelated material is juxtaposed or superimposed. The success depends on taste and dramatic sense, above all on proportion, with effective contrasts and unexpected
correlations." In the final analysis, Messiaen's ideas and materials are perhaps not as disparate or unrelated as they might at first appear; in fact they all find their place in a broad underlying unity of thought. Comments to this effect about such works as Cantéyodjayâ and La Rousserolle Effarvatte apply equally well to later works, not in the least Chronochromie and Couleurs de la Cité Céleste.

They are a poetic music in the strict sense of the word in that they are the product of a continuing thought process which produces a series of images related not by a background of musical logic which can be precisely demonstrated ... but simply by the fact that they were generated by the same thought process.
FOOTNOTES - Chapter 6.

5. See the composer's own note in the score.
7. Smalley, R., Debussy and Messiaen, p. 129.
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