

# **RHYTHMIC TECHNIQUES IN A SELECTION OF OLIVIER MESSIAEN'S PIANO WORKS**

by

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## ABSTRACT

Olivier Messiaen is regarded as one of the most significant composers of the 20<sup>th</sup> century. His compositions are performed regularly and his teachings have influenced many well-known composers like Boulez and Stockhausen. This study focussed on his use of rhythm in his piano compositions.

I supplied a short biography of the composer along with a brief discussion of his compositional techniques. Thereafter his rhythmic techniques were examined through relevant music examples from his piano repertoire. Particular attention was given to works from the *Vingt Regards sur L'Enfant-Jésus* along with *Cantéyodjayâ*, *Mode de valeurs et d'intensités* and *Neumes rythmiques* from his experimental period (1949-1951).

In *Mode de valeurs et d'intensités* he revolutionized the serial treatment of duration, pitch, intensity and attack. His other rhythmic techniques include Indian rhythms, Greek meter, added values, augmentation, diminution, non-retrogradable rhythms, polyrhythm, chromatic scales of duration, *personnages rythmiques*, symmetrical permutations, rhythmic neumes, rhythmic canon and prime numbers.



## LIST OF KEY TERMS

Indian rhythms

Greek meter

Added values

Augmentation

Diminution

Non-retrogradable rhythms

Polyrhythm

Chromatic scales of duration

*Personnages rythmiques*

Symmetrical permutations

Rhythmic neumes

Rhythmic canon

Prime numbers

Modes of limited transposition

Birdsong

Religion

Colour

*Catalogue d'Oiseaux*

*Cantéyodjayâ*

*Mode de valeurs et d'intensités*

*Neumes rythmiques*

*Ile de feu 2*

*Regards sur L'Enfant-Jésus*

# 1 INTRODUCTION

## 1.1 Motivation behind the study

I have performed a selection of Olivier Messiaen's piano compositions and found these pieces fascinating. After attending master classes by Messiaen's wife, Yvonne Loriod-Messiaen and Roger Muraro at the eminent *Centre Acanthes* in Avignon, France in 2002, I decided to study his compositional techniques. One of the most prominent aspects of Olivier Messiaen's compositions is his use of rhythm. Therefore, a detailed study of the rhythmic development in a selection of his piano works would prove invaluable to me. I consider such a study essential in order to interpret these works successfully.

## 1.2 Research Questions

The research questions therefore are:

- Which rhythmic techniques does Messiaen employ?
- Why are these techniques regarded as revolutionary for his time?
- How did Messiaen's rhythmic language develop from his earliest to his latest piano works?

## 1.3 Objective of the Study

The objective of the study is to illustrate Messiaen's rhythmic development by analysing a selection of his piano works. This selection will include piano works from his earliest to his latest period. Highlighting all the rhythmic techniques Messiaen applied in his piano works by means of music examples, the study will clarify his rhythmic development to the reader and performer. This study will be a guide to Messiaen's intricate rhythmic language and will be of great assistance to any reader wishing to study his compositions.

## 1.4 Method of Research

The study will be conducted by means of the scrutinising of:

- Literature
- Scores
- Recorded materials

With regards to the study of literature, relevant books and magazines have been consulted to establish a background to this study. Even though there is a variety of literature on the subject of Messiaen and his musical language, there is not a detailed study of his rhythmic development in his piano works.

The musical scores of his piano works will be analysed in detail to establish why certain works are of special interest. These works will then be discussed to ascertain the course Messiaen's rhythmic development followed.

Recorded materials will not only provide insight into Messiaen's musical language, but will also highlight the performance of certain rhythmic elements.

Messiaen's works for piano solo in chronological order are as follows:

### *Préludes (1929)*

1. *La Colombe*
2. *Chant d'extase dans un paysage triste*
3. *Le nomble léger*
4. *Instants défuncts*
5. *Les sons impalpable du rêve*
6. *Cloches d'angoisse et larmes d'adieu*
7. *Plainte calme*
8. *Un reflet dans le vent*

*Fantaisie burlesque* (1932)

*Pièce pour le Tombeau de Paul Dukas* (1935)

*Rondeau* (1943)

*Vingt Regards sur l'Enfant-Jésus* (1944)

*Cantéyodjayâ* (1949)

*Quatre études de rythme*

(1949-50)

1. *Neumes rythmiques*
2. *Mode de valeurs et d'intensités*
3. *Ile de feu 1*
4. *Ile de feu 2*

*Catalogue d'oiseaux* (1956-58)

- Book I    1. *Le Chocard des Alpes*  
            2. *Le Lorient*  
            3. *Le Merle bleu*
- Book II    4. *La Traquet Stapazin*
- Book III   5. *La Chouette Hulotte*  
            6. *L'Alouette-Lulu*
- Book IV   7. *La Rousserolle Effarvatte*
- Book V    8. *L'Alouette Calandrelle*  
            9. *La Bouscarle*
- Book VI   10. *Le Merle de roche*
- Book VII  11. *La Buse variable*  
            12. *Le Traquet rieur*  
            13. *Le Courlis cendré*

*La fauvette des jardins* (1972)

*Petites esquisses d'oiseaux* (1985)

Mainly works of rhythmic interest will be discussed. Messiaen's earliest works are mostly based on traditional rhythm and will therefore not be discussed in detail. Elements of rhythmic significance will be highlighted and compared to those from later works. I will illustrate his use of new and innovative rhythmic methods and will therefore consider works in which this is apparent. Selected pieces from the *Vingt Regards sur l'Enfant-Jésus* will be examined. *Cantéyodjayâ* as well as the *Quatre études de rythme* are of great rhythmic interest. These works represent his experimental period with regards to rhythm. Messiaen was the first composer who applied serial principles to durations, intensities and modes of attack in the *Mode de valeurs et d'intensités*.

The *Catalogue d'oiseaux* is limited in rhythmic novelties as Messiaen concentrated mainly on his “*style d'oiseaux*” (bird style) whilst integrating rhythmic and modal techniques from his earlier periods.

As the same rhythmic techniques are employed in a variety of his piano works, I will discuss key examples of each technique in detail and will subsequently only refer to other examples which coincide.

## **1.5 Delimitation of Study**

The study will be limited to Messiaen's use of rhythm in a selection of his piano works. His other compositional techniques will be discussed only briefly in order to establish a solid background to his music.

## 1.6 Structure of study

Chapter 1 serves as an introduction to the thesis. The research questions are established and the objective of the study is clarified. In addition to that, I explain the method of research and delimitation of the study.

I deem it necessary to provide a brief biographical outline as well as an introduction to Messiaen's other compositional techniques. Therefore, Chapters 2 and 3 are included.

During Messiaen's 1958 *Conférence de Bruxelles* (Lecture in Brussels) he proclaimed his rhythmic creed:

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. Suppose that there were a single beat in all the universe. One beat, with eternity before and eternity after it. A before and an after. That is the birth of time. Imagine then, almost immediately after it, a second beat. Since any beat is prolonged in the silence which follows it, the second beat will be longer than the first. Another number, another duration. That is the birth of Rhythm (Johnson 1989:32).

Chapter 4 serves as an introduction to Messiaen's rhythmic language by means of musical examples from selected pieces from his piano repertoire.

## 2 A SHORT BIOGRAPHY

Olivier Eugene Charles Prosper Messiaen was born on 10 December 1908 at Avignon, France. His mother, Cécile Sauvage, a well-known poetess, wrote a book of poetry during her pregnancy with Olivier, dedicated to her unborn son. Convinced that the child in her womb was a boy, this book, entitled *L'ame en bourgeon* ("The Burgeoning Soul") contains striking verses foretelling her unborn child's future excellence:

Je souffre d'un lointain musical que j'ignore.

(I suffer from an unknown, distant music.)

Voici tout l'Orient qui chante dans mon être  
avec ses oiseaux blues, avec ses papillons.

(All the Orient is singing here within me  
with its blue birds, with its butterflies.)

...je porte en moi l'amour  
des choses mystérieuses et merveilleuses.

(...I carry within me the love of  
mysterious and marvellous things.)

These astonishing premonitions convinced Messiaen that he owed his career to his mother's musical expectancy (Samuel 1986:15).

Messiaen's father, Pierre Messiaen, was an English teacher and celebrated translator of Shakespeare's works. As a child, Messiaen frequently recited Shakespeare's plays in French to his younger brother, Alain.

During the First World War, Messiaen taught himself to play the piano in Grenoble. In 1917 he attempted his first composition; a piece for piano entitled *La Dame de Shalott*. Messiaen regards this unpublished work as being ‘a very childish piece’ (Samuel 1986:19).

The young Messiaen requested music scores instead of toys for Christmas presents and soon familiarised himself with scores like Mozart’s *Don Giovanni* and *Magic Flute*, Gluck’s *Alceste* and *Orphée*, Berlioz’s *Damnation of Faust* and Wagner’s *Walküre* and *Siegfried* (Samuel 1986:109).

He met his first harmony teacher, Jehan de Gibon, when the family moved to Nantes after the war. Jehan de Gibon opened a new world to the ten-year old Messiaen by presenting him with a score of Debussy’s *Pelléas et Mélisande*.

For me, that score was a revelation, love at first sight; I sang it, played it, and sang it again and again. That was probably the most decisive influence I’ve received (Samuel 1986:110).

In 1919, Messiaen entered the Paris Conservatoire studying piano with Georges Falkenberg. He subsequently studied harmony with Jean Gallon; counterpoint and fugue with Georges Caussade; piano accompaniment with César Abel Estyle; organ and improvisation with Marcel Dupré; history of music with Maurice Emmanuel; composition with Paul Dukas; and timpani and percussion with Joseph Baggers. He also studied counterpoint and musical theory privately for ten years with Noël Gallon. Messiaen won several prizes at the Conservatoire between 1924 and 1929 including first prizes for counterpoint and fugue, piano accompaniment, organ and improvisation, history of music and composition (Griffiths 1985:25).

It was under his composition studies with Dukas that Messiaen’s first published work, the set of eight *Préludes* for solo piano, were composed in 1929. With their descriptive subtitles and atmospheric sonorities, these works certainly remind of Debussy’s own

*Préludes*. However, Messiaen points out that he was ‘rhythmically very far from Debussy’s divine freedom’ and through the use of his modes of limited transposition and sonata form the *Préludes* differ from the music of Debussy (Samuel 1986:111).

In 1931 the 22-year old Messiaen was appointed organist of the Church of the Holy Trinity (*Saint Trinité*) in Paris. This was a post he was to hold for more than six decades until his death in 1992. In 1932 he married violinist Claire Delbos and after five years of married life, they had a son named Pascal. Their marriage was tragically doomed as a result of Claire’s mental health problems. She died in a mental institution in 1959. Between 1934 and 1939 he taught piano sight reading at the *École Normale de Musique* and organ improvisation at the *Schola Cantorum*. In 1936 he founded *La Jeune France* with Jolivet (1905-1974), Daniel-Lesur (1908-2002) and Baudrier (1906-1988). Their manifesto implicitly condemned the frivolity predominant in contemporary Parisian music, rejecting Jean Cocteau's manifesto *Le coq et l'arlequin* of 1918 in favour of a "living music, having the impetus of sincerity, generosity and artistic conscientiousness" (Griffiths 1985:72).

In 1939 he was called up for military service after the outbreak of the Second World War. He was captured in May 1940 and was imprisoned in a Nazi Camp at Görlitz, Silesia. He composed one of his most highly acclaimed compositions, *Quatour pour la fin du temps* (Quartet for the end of time), in the prison camp and Messiaen on the piano and fellow prisoners premiered this work on 15 January 1941 to an audience of 5000 fellow-prisoners. Messiaen was released from the camp in 1941 due to ill-health.

Shortly after his return to Paris, he was appointed professor of Harmony at the Paris Conservatoire. This was to signify the beginning of a long teaching career at the Paris Conservatoire. He was subsequently appointed professor of Analysis in 1947 and finally professor of Composition in 1966. This was a post he held with great success and pride until his retirement in 1978. His classes influenced many young future composers including Pierre Boulez, Karlheinz Stockhausen, Iannis Xenakis, Betsy Jolas, Alexander

Goehr, and George Benjamin. Celebrated Greek composer Xenakis describes his encounter with Messiaen:

At last I found the man I had been searching for by the feeble glow of my dark lantern. And more than a man; this was a sort of sunshine which lit up music, of the past as well as the future, with the same generous and beatific light as in those stained-glass windows he so cherished. The most dazzling truth he revealed in his teaching and in his works was that everything is possible in music (as, of course, in all the arts and sciences) on one condition: that creation proceed from a rich, full inner necessity, untouched by aesthetic dogmas and ideologies, guided by a talent in which reason and intuition commingle (Boivin 1998:6).

It was also in his class at the Conservatoire where Messiaen met Yvonne Loriod, a gifted and brilliant young pianist who would have an immense influence on both his personal life and compositions in the years to come. One of his most performed works, the *Vingt Regards sur L'Enfant-Jésus*, composed in 1944 was dedicated to her. This set of 20 'Gazes on the infant Jesus', was composed with Loriod's remarkable technical facility in mind and requires immense technical and mental stamina from the performer. Messiaen married Loriod in 1961 after his wife's passing following a long illness.

Messiaen's lifetime as a composer spanned more than seven decades and his numerous compositions extend over various genres. He composed not only for organ, piano, and voice but also for orchestra, ensemble and culminating in the greatest challenge of all, opera. His opera, *Saint François d'Assise* based on the life of Saint Francis of Assisi boasts an exceptionally large orchestra and chorus comprising of about three hundred people.

Messiaen died on the 28<sup>th</sup> of April 1992 in Paris. Regarded as one of the most innovative and significant composers of the 20<sup>th</sup> century, the legacy of his music will live on.

### 3 MESSIAEN'S MUSICAL LANGUAGE

#### 3.1 Modality

Messiaen's first book, written in 1944, is entitled *Technique de mon langage musical* (The Technique of my Musical Language). Even though Messiaen's musical language has evolved vastly since the publication of this book, the roots of his musical language as explained in this book still stand firm.

The invention of his modes of limited transposition reflects Messiaen's fascination with the impossible. He explains this in the first chapter of *Technique de mon langage musical*:

The charm (of impossibilities), at once voluptuous and contemplative, resides particularly in certain mathematical impossibilities of the modal and rhythmic domains. Modes which cannot be transposed beyond a certain number of transpositions, because one always falls again into the same notes...(Messiaen 1956:8).

The Mode 1 of limited transposition, the whole tone scale, was used extensively by Debussy and Messiaen deliberately avoids using it 'unless it is concealed in a superposition of modes which renders it unrecognizable' (Messiaen 1956:87). As a result, examples of the whole tone scale are a rarity. In Example 2 from his organ work *Le Corps glorieux's L'Ange aux parfums*, he obscures the whole tone scale in the pedal part by employing Mode 2 and Mode 3, 3<sup>rd</sup> transposition in the right and left hand parts respectively. The whole tone scale has only two possible transpositions, with the original scale being regarded as the first transposition. The third transposition of the whole tone scale generates the original 1<sup>st</sup> transposition.

**Example 1:** Mode 1, 1st transposition (whole tone scale)



**Example 2:** *L'Ange aux Parfums* from *Le Corps glorieux*, bars 25-26

**Bien modéré**  
Pos. (quintaton 16 et cor de nuit 8)

25 *p stacc.*  
G. (flûte 8) *p stacc.*  
Péd. (flûte 4 et cymbale)  
*p legato*

26



Mode 2, first employed in the fifth prélude *Le sons impalpables du rêve*, can be transposed only three times and consists of four groups of three notes. In turn these groups can be divided into a semitone and a tone. The first transposition of Mode 2 is identical to the octatonic scale and was used by Rimsky-Korsakov, Liszt, Scriabin, Debussy, Ravel and Stravinsky (Healy, <http://www.musicteachers.co.uk/journal/index>).

**Example 3:** Mode 2, 1<sup>st</sup> transposition



**Example 4:** Mode 2, 2<sup>nd</sup> transposition



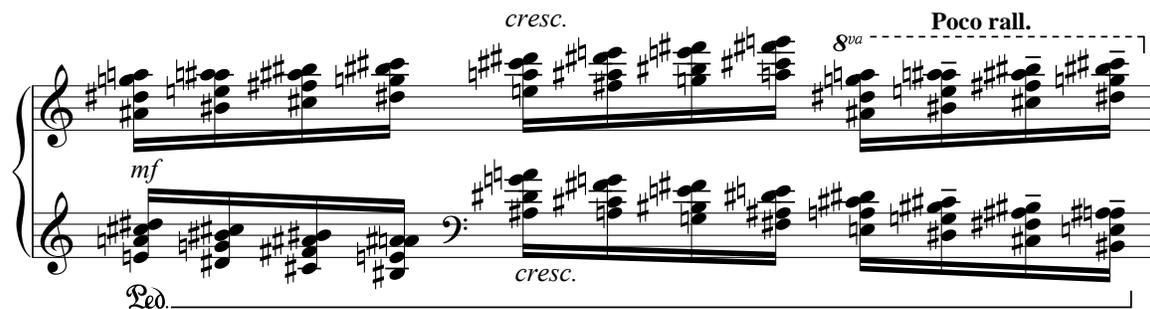
**Example 5:** Mode 2, 3<sup>rd</sup> transposition



The fourth transposition of Mode 2 will render exactly the same enharmonic notes as the first transposition.

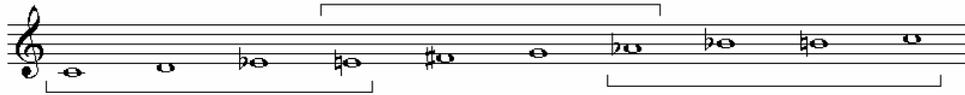
Example 6 exhibits the use of Mode 2, 1<sup>st</sup> transposition.

**Example 6:** *Le baiser de l'Enfant-Jésus* from *Vingt Regards sur L'Enfant-Jésus*, bar 78



Mode 3 can be transposed four times and divided into three groups of four notes. These groups consist of three intervals: a tone and two semitones.

**Example 7:** Mode 3, 1<sup>st</sup> transposition



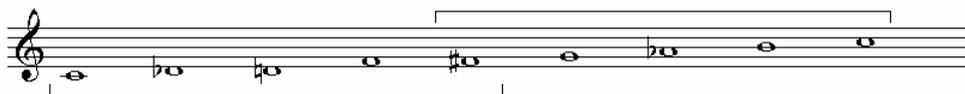
**Example 8:** Mode 3, 4<sup>th</sup> transposition



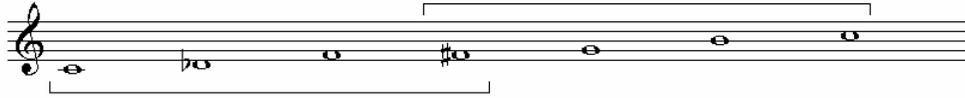
Correspondingly the fifth transposition of Mode 3 will contain the same notes as the first transposition.

Modes 4,5,6, and 7 are employed less frequently by Messiaen. All these modes can be transposed six times and divided into two groups. The octave is divided in each case by a tritone. C to F# and F# to C.

**Example 9:** Mode 4, 1<sup>st</sup> transposition



**Example 10:** Mode 5, 1<sup>st</sup> transposition



**Example 11:** Mode 6, 1<sup>st</sup> transposition



**Example 12:** Mode 7, 1<sup>st</sup> transposition



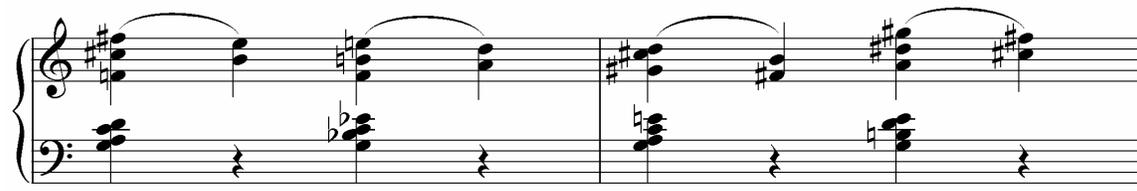
Messiaen often employs different modes simultaneously to create polymodality. The following example shows the use of Mode 3, 4<sup>th</sup> transposition in the top register superimposed over Mode 2, 2<sup>nd</sup> transposition in the left and right hand parts.

**Example 13:** *Noël* from *Vingt Regards sur L'Enfant-Jésus*, bars 36-37



The chord on the dominant, which consists of all the notes of the major scale, is frequently found with appoggiaturas to the added notes. He typically arranges the different inversions over a common bass note (Messiaen 1956:69).

**Example 16:** Chords on the dominant with inversions transposed to the same bass note (Messiaen 1956:69)



C:V13      Bb:V13      G:V13      D:V13

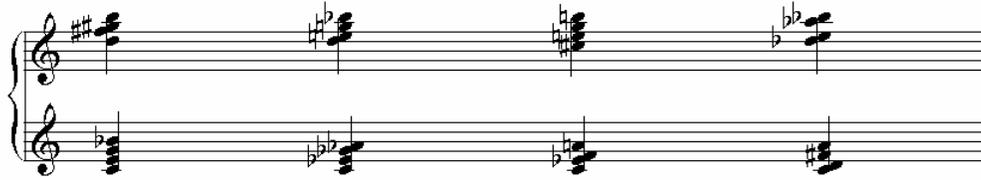
The following example shows Messiaen's use of chords on the dominant with appoggiaturas at the cross.

**Example 17:** *Le baiser de l'Enfant-Jésus* from *Vingt Regards sur L'Enfant-Jésus*, bar 77



The chord of resonance, with inversions transposed to the same bass notes, is commonly found in Messiaen's compositions (Messiaen 1956:70).

**Example 18:** Chord of resonance with inversions transposed to the same bass notes



Messiaen's compositions feature what Dukas termed 'effects of resonance'. There are two different 'effects of resonance', namely superior and inferior resonance (Messiaen 1956:71). According to Johnson (1989:17) this device of added resonance possibly had the most far-reaching implications for both Messiaen and younger composers resulting in a modification of timbre. These effects vary in form, but usually consist of a note or chord played quietly in the bass or upper register over louder principal material or a note or chord played loudly against other material. In the following example, the interval at A produces inferior resonance while the chord at B produces superior resonance.

**Example 19:** *Noël*, from *Vingt Regards sur L'Enfant-Jésus*, bars 8-9

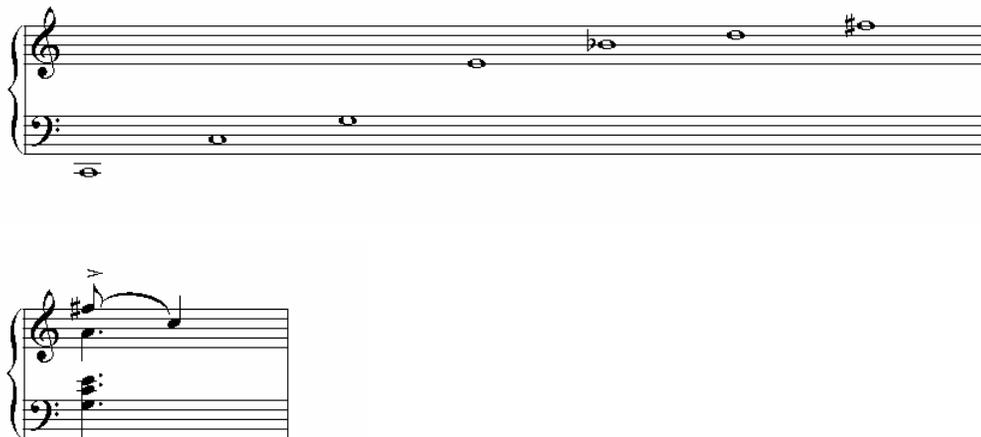
The image shows a musical score for a piano piece. The score is written for three staves: Treble, Middle, and Bass. The key signature has one sharp (F#) and the time signature is 3/4. The piece starts with a piano (*pp*) dynamic and a *f* dynamic. The score includes a melodic line in the treble staff and a bass line in the bass staff. A specific interval is labeled 'A' and a specific chord is labeled 'B'. The chord 'B' is marked with a dynamic of *mf* and is located in the upper register of the treble staff. The interval 'A' is marked with a dynamic of *p* and is located in the lower register of the bass staff.

### 3.3 Melody

‘Supremacy to melody! The noblest element of music, may melody be the principal aim of our investigations’ (Messiaen 1956:32).

In the chapter on melody in *The technique of my musical language*, Messiaen maintains that a sharp ear will perceive a F sharp with the resonance of a low C. He then continues that the normal resolution to this F sharp would be a tritone down to C. Johnson (1989:14) remarks rightly that this is indeed a very peculiar argument considering that the the F sharp does not create any sense of movement, tension or relaxation and questioning whether there is any necessity for it to resolve at all. However, he concludes that it fits well into the context of Messiaen’s harmonic language.

**Example 20:** Natural resonance of low C with proposed resolution

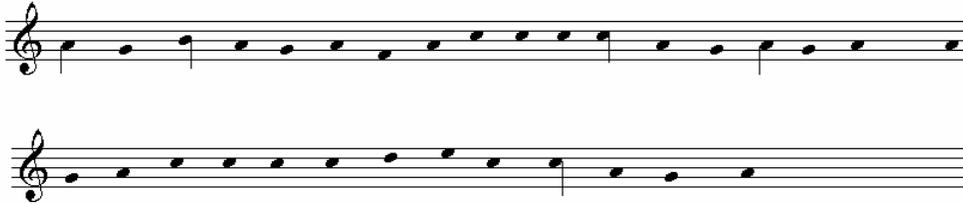


Messiaen discloses his preference for the melodic intervals of the descending augmented fourth and major sixth (Messiaen 1956:32).

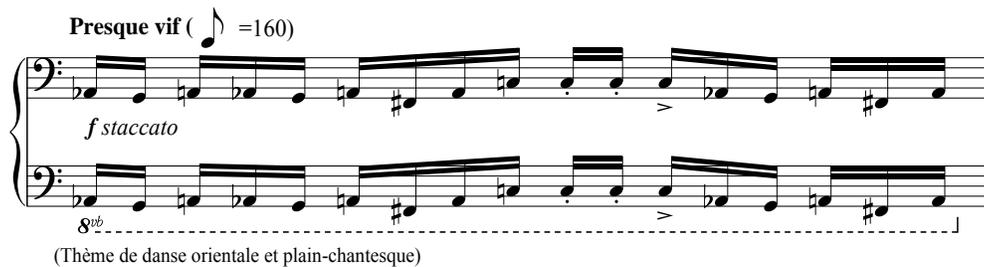
Plainchant plays an important role in Messiaen’s melodic language. Messiaen alters the intervals in plainchant to correspond with his modes of limited transposition whilst retaining the fundamental melodic shape and rhythmical character of the original hymn.

A striking example of his use of plainchant is the opening of the *Regard de l'Esprit de Joie*, based on the Gradual *Haec dies* for Easter Sunday (Johnson 1989:21).

**Example 21:** *Haec dies*



**Example 22:** *Regard de l'Esprit de Joie* from *Vingt Regards sur L'Enfant-Jésus*, bar 1



Johnson (1989:190) remarks that in earlier works, melody is treated as an all-pervasive, all-important element whilst in later works, it becomes one of many elements which can combine to make the total collage of a piece of music.

### 3.4 Dynamics

Messiaen's compositions require that the performer explore dynamic domains beyond the realms of Classical Western music of the time. With regard to his piano music, striking examples can be found in the *Vingt Regards sur L'Enfant-Jésus*. It is not uncommon to find a multitude of wide ranging dynamics such as *pppp* and *ffff* in Messiaen's writing.

One must endeavour to adhere to all the accents and dynamic levels he requests as they play an important role in the sound colours he wishes to achieve. When a performer plays only selected movements from a monumental work like the *Vingt Regards sur L'Enfant-Jésus*, he or she must bear in mind that it was composed as part of a set and that the dynamic range must be treated as such.

One of Messiaen's most significant works is the etude for piano, *Mode de valeurs et d'intensités*. He takes the principle of serialism and goes beyond the norm by applying serial principles to duration, forms of attack and dynamics. This work will be discussed in detail in Chapter 4.

### **3.5 Birdsong**

'Listen to the birds! They are great teachers' (Griffiths 1985:166). Messiaen certainly took this advice from his teacher Dukas to heart. Known to have despised life in the city and to be inspired by the beauty of nature, Messiaen regarded birds to be 'the greatest musicians on our planet'. Determined to accumulate all the knowledge he could about these extraordinary creatures, he set off to the country, with a pair of binoculars, a guidebook, some music paper and a pencil before sunrise, to transcribe the song of numerous birds (Samuel 1986:85). On rare occasions, his wife Yvonne Loriod, accompanied him and brought her tape recorder with his. With the help of fellow ornithologists, he transcribed the song of birds not only from the French countryside, but also from Israel, America, New Caledonia and Japan.

There are various dilemmas when one attempts to transcribe birdsong. Messiaen explains his method thus:

Birds sing in exceedingly fast tempos, which are absolutely impossible for our instruments, and so I have to transcribe the song in a slower tempo. Moreover, this speed is bound up with an extreme sharpness, birds being able to sing in exceedingly high registers that are inaccessible to our instruments, and so I notate them one, two, three or four octaves lower. And that is not all: for the

same reason I have to suppress very small intervals that our instruments cannot execute. I replace these intervals of the order of a comma or two by semitones, but I keep the same scale of values between different intervals, which is to say that if a few commas correspond to a semitone, a true semitone will correspond to a whole tone or a third. Everything is enlarged, but the relationships stay the same, so that my version is still exact. It is the transposition of what I have heard on to a more human scale (Samuel 1976:113).

He included some elements of birdsong in his compositions as early as 1935 in *La Nativité du Seigneur*. Between 1956 and 1958 Messiaen composed the *Catalogue d'oiseaux*, four books of thirteen solo piano pieces dedicated to various bird species. One of his most impressive feats is *La Rousserolle Effarvate*, an enormous piece lasting about half an hour. The structure of this masterpiece is built on the songs of reed and pond birds within 24 hours between three o'clock in the morning to three o'clock the next morning. This space of time is compressed and even intervals of silence are incorporated (Samuel 1986:92).

The following examples illustrate a few of Messiaen's transcriptions of birdsong from *La Rousserolle Effarvate*.

**Example 23:** *Rousserolle Effarvate* (Reed Warbler) from *La Rousserolle Effarvate*, *Catalogue d'Oiseaux*, bars 19 – 26

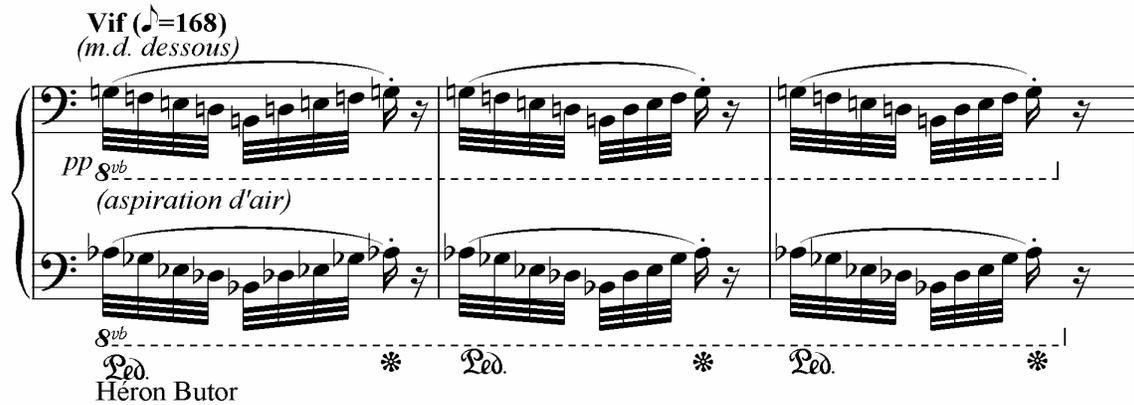


19  $8^{va}$   
 (avec volubilité, et une grande diversité d'attaques)  
 p les notes piquées: sèches et rebondissantes  
 $8^{va}$   
 (sans pédale)  $2^{do}$   $2^{do}$   $2^{do}$

23 (8)  
 (8)

**Example 24:** *Héron Butor* (Bittern), from *La Rousserolle Effarvate*, *Catalogue d'Oiseaux*, bars 14-16

**Vif** (♩=168)  
(*m.d. dessous*)

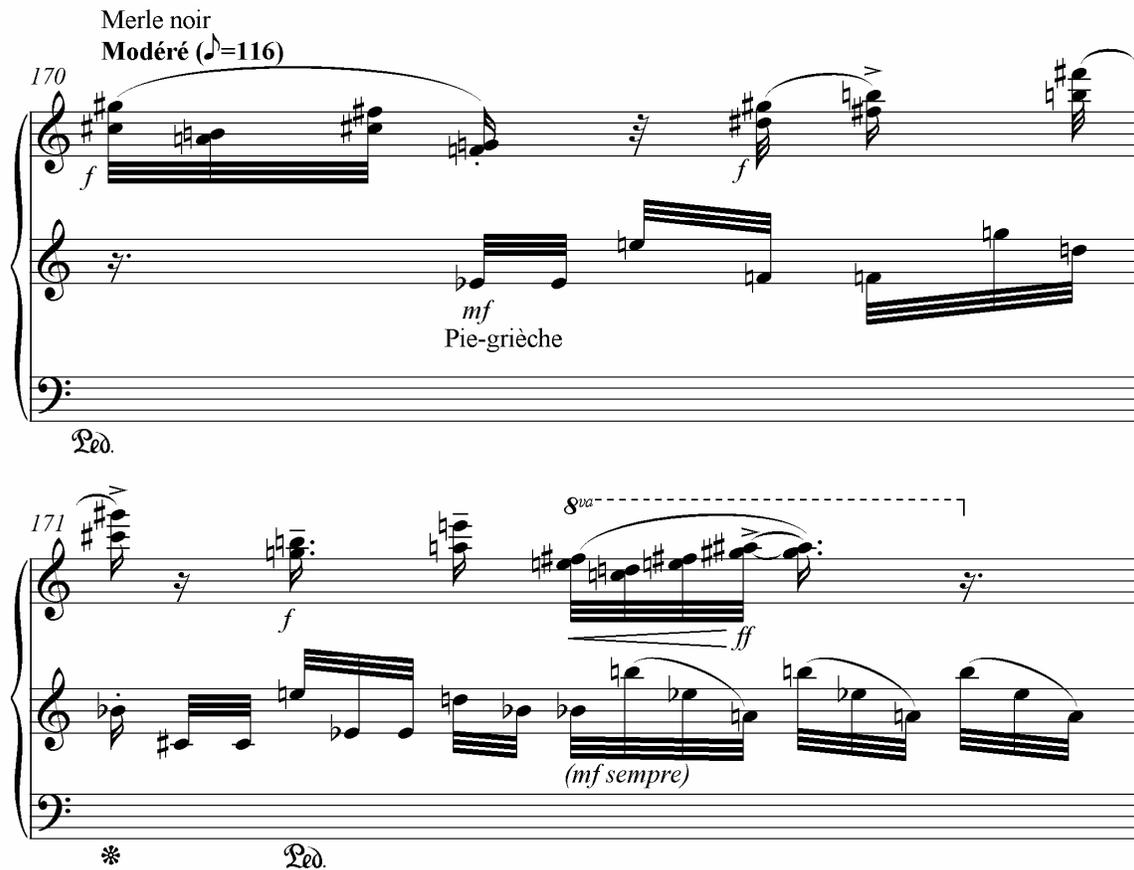


*pp* 8<sup>vb</sup>  
(*aspiration d'air*)

8<sup>vb</sup>  
Ped. Héron Butor \* Ped. \* Ped. \*

**Example 25:** *Merle noir* (Blackbird) and *Pie-grièche* (Red-backed Shrike) from *La Rousserolle Effarvate*, *Catalogue d'Oiseaux*, bars 170-171

**Merle noir**  
**Modéré** (♩=116)



170  
*f*

*mf*  
Pie-grièche

Ped.

171  
*f* *ff*  
(*mf sempre*)

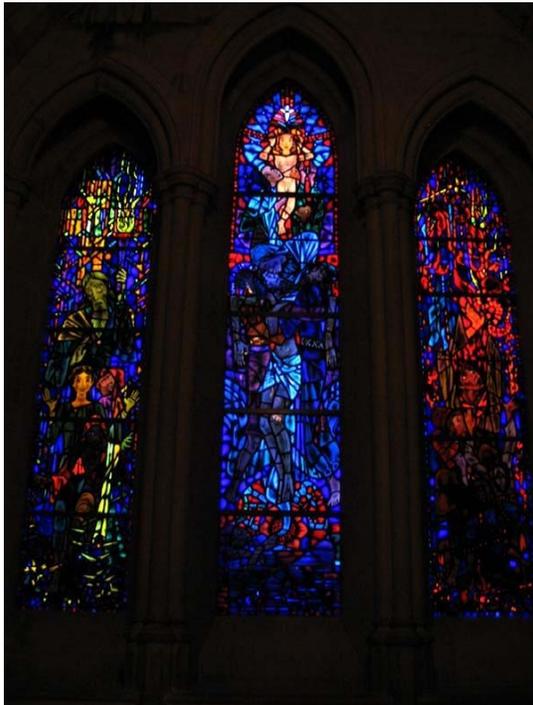
\* Ped.

### 3.6 Colour

Messiaen is said to have suffered from a condition called Synaesthesia. Even though there are various forms of this harmless condition, one of the main symptoms is the ability to see colours while hearing sounds. Synaesthesia is often described as a joining of the senses. Sensations in one modality (e.g. hearing) produce sensations in another modality (e.g. colour) as well as its own (<http://www.uksynaesthesia.com/whatis.html>). In Messiaen's case, he inwardly sensed vividly moving colours whilst hearing music.

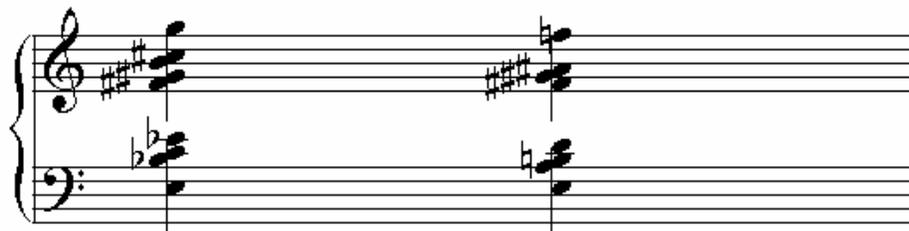
As a child he created stage sets for his Shakespeare performances in which coloured cellophane candy wrappings in front of the windowpanes magically caught the sunlight (Samuel 1986:41). This foregoes his fascination with stained glass windows. He often described the awe of his first visit to the *Sainte-Chapelle* in Paris, where the exquisite stained glass windows left the young boy mesmerized.

**Example 26:** Stained glass windows of *Sainte-Chapelle*, Paris  
(<http://ionarts.blogspot.com/2005/07/21st-century-consort.html> )



In his conversations with Samuel (1986:43) Messiaen revealed his favourite and least favourite colours: violet and yellow. Blue violet is also incidentally the colour which he associates with the first transposition of his second mode of limited transpositions. He clarifies the colours that he associates with his modes and the special chords that he uses in the *Traité de Rythme, de Couleur et d'Ornithologie*. These sound colour relationships must have had an immense influence on Messiaen's writing due to his inability to separate sounds from colours. The creation of the modes of limited transposition and the special resonance chords that he employs, bear a direct relation to their timbre and colour. Johnson (1989:19) remarks that 'however consonant or dissonant the harmony, Messiaen always thinks in terms of timbre and colour'. He experiences the two chords based on the *theme d'accords* from the *Vingt Regards sur L'Enfant-Jésus* in the following colours:

**Example 27:** *Theme d'accords* from *Vingt Regards sur L'Enfant-Jésus*



Colours: bluish steel grey  
red and orange

mauve violet  
leather brown  
purple violet

This aspect of Messiaen's works is probably the most difficult for the performer to interpret because of its subjectivity. Every person experiences colours in an individual way and even sufferers of synaesthesia disagree violently over their colour associations. Nonetheless, it is valuable to be aware of the colour palette Messiaen envisions in his works.

### 3.7 Religion

Upon Jaques Samuel's question, 'What "expressions" do you want to champion by writing music, and what impressions would you communicate to your listeners?' Messiaen's response was:

The first idea I wanted to express, the most important, is the existence of the truths of the Catholic faith. I have the good fortune to be a Catholic. I was a born believer, and the Scriptures impressed me even as a child. The illumination of the theological truths of the Catholic faith is the first aspect of my work, the noblest, and no doubt the most useful and most valuable – perhaps the only one I won't regret at the hour of my death (Samuel 1986:20).

It is remarkable that Messiaen, a composer recognized for his devout catholic religiousness, did not grow up in a religious home. Neither of his parents were believers. His intent to 'illuminate the theological truths of the Catholic faith' is evident in the titles of many of his works. Perhaps due to his longstanding relationship with the *Saint Trinité* in Paris, and the instrument's association with the church, his organ compositions display a multitude of theological references, from the very early *Le banquet céleste* to his final work for organ, *Livre du Saint Sacrement*. The cycle for solo piano, *Vingt Regards sur L'Enfant-Jésus* (20 Gazes on the Infant Jesus), exhibit theological references to the Son, the Father, the Holy Spirit and the Virgin Mary. The opera *Saint François d'Assise*, which took him eight years to complete, is unique in this genre because of its holy theme; the life of Saint Francis of Assisi.

Messiaen has admitted to using the same language in both his secular and liturgical works and maintains that 'it seems ridiculous and detrimental to contradict one's style, to adopt different aesthetics under the pretext that the subject and the idea expressed have changed' (Samuel 1986:21). Messiaen requires that a performer of his liturgical works thoroughly study the biblical quotations and liturgical background of the works. He even goes so far as to implore the performer to 'believe in them to a certain extent, in order to be able to convey them to the listener' (Rössler 1986:28).

## 4 MESSIAEN'S RHYTHMIC LANGUAGE

### 4.1 Introduction

Messiaen is considered to be one of the pioneering composers with regards to innovation in rhythm.

I feel that rhythm is the primordial and perhaps essential part of music; I think it most likely existed before melody and harmony, and in fact I have a secret preference for this element. I cherish this preference all the more because I feel it distinguished my entry into contemporary music (Samuel 1986:67).

I believe that we remain very ignorant from the point of view of rhythm, and that it will need several centuries before our ears have been completely educated (Hill and Simeone 2005:177).

Describing Mozart as an 'extraordinary rhythmician' and the music of Bach and Prokofiev as having no rhythm, Messiaen redefines rhythmic music as being 'music that scorns repetition, squareness and equal divisions' (Samuel 1986:67-68). Messiaen also admired Debussy and Stravinsky greatly for their rhythmic skill, the latter, predominantly for his rhythmic innovation in the *Rite of Spring*.

According to Pople (1995:35), the most fundamental feature of Messiaen's rhythms is that they are ametrical. This is reinforced by the absence of a time signature. Contrary to classical Western music his rhythms are developed through multiples of a basic unit, mostly a semiquaver. In general, the basic unit is faster than the sequence of notes that we hear. Conversely, in classical Western music, the position of the notes is approximate to the pulse.

Messiaen took inspiration from Indian music and Greek metres and he employs a range of different rhythmic techniques.

## 4.2 Indian rhythms

Messiaen encountered Indian rhythm for the first time as a student after Lavignac published the table of 120 *deçî-tâlas* in his *Encyclopédie de la musique et dictionnaire du conservatoire* as part of an article on Indian music in 1924. Śārṅgadeva, a thirteenth century Indian musician, listed these rhythms in his treatise *Saṅgītaratnākara* entitled “Ocean of Music”. The word *deçî-tāla* is derived from *tāla* (rhythm) and *deçî* (regional), in other words, rhythms from different regions. The *deçî-tālas* are each named in Sanskrit and range from the basic number 1 (*aditāla*), consisting of a single value, to the longest number 35 (*simharanadana*) (Johnson 1998:122). Upon intensive study of these rhythms, their rhythmic rules led Messiaen to discover the principles of addition of the dot, increase and decrease of one value out of two, inexact augmentation and non-retrogradable rhythms (Samuel 1986:76).

Fabbi (1998:65) notes that Messiaen arranges the *lakskmîça* rhythm

( = 2 – 3 – 4 - 8), into the following principles of rhythm:

- Rhythmic chromaticism (2 – 3 – 4);
- The inexact augmentation (4 – 8 in relation to 2 – 3);
- Addition of the values (2 + 3 + 4 + 8 = 17) corresponds to a prime number, which in turn causes irregularity.

According to Johnson (1998:123) Messiaen employs three *deçî-tālas* most commonly; number 93 (*râgavardhana*), number 105 (*candrakalâ*) and number 88 (*lakskmîça*).

**Example 28:** *râgavardhana*



*candrakalâ*



*lakskmîça*



Messiaen often reverses the *râgavardhana* subsequently dividing the dotted minim into three crotchets. This results in the second part of the rhythm (B) being an irregular diminution of the first (A). B is also a non-retrogradable rhythm.

**Example 29:** Modified version of the *râgavardhana*



One of the most striking examples of his use of the *deçî-tâlas* occurs in *Regard du Fils sur le Fils*, the fifth piece from the *Vingt Regards sur L'Enfant-Jésus*. The top part consists of the modified version of the *râgavardhana*, followed by the *candrakalâ*, and the *laksmîça* rhythms. This is also an excellent example of his use of rhythmic canon and polymodality. The top part is written in Mode 6, 3<sup>rd</sup> transposition, the middle part in Mode 4, 4<sup>th</sup> transposition and the bottom part in Mode 2, 1<sup>st</sup> transposition.

Example 30: *Regard du Fils sur le Fils*, bars 1-7

Très lent (♩=76)  
(Polymodalité et canon rythmique par ajout du point)  
*sw*

*m.dr.* Modified *rāgavardhana* *candrakalā*  
*pp*  
*m.g.*  
*ppp* (doux et mystérieux)  
*m.g.*  
*P* lumineux et solomel  
(Thème de Dieu)

4 *laksmiṣa*

6 *v*

### 4.3 Greek meter

Messiaen's first encounter with Greek meter was through his organ professor Marcel Dupré and his music history professor Maurice Emmanuel during his studies at the *Paris Conservatoire*. Whilst Dupré encouraged him to improvise on Greek rhythms, Emmanuel's year-long course on Greek meter awakened an eagerness to study the subject thoroughly. Messiaen's *The Technique of my Musical Language* bears no reference whatsoever to Greek meter whereas his later treatise *Traité de Rythme, de Couleur et d'Ornithologie* contains an extensive chapter on the subject.

The metric accents in ancient Greek music and poetry follow a quantitative principle. They are made up of short and long values. The short value is the time unit or *chronos protos* and the long value equals two short values (Huston-Bell 1984:4). These long (*longa*) and short (*brevis*) values are combined to form a 'foot', with meter referring to the grouping of these 'feet' (Di Bisceglie 1987:42).

In Volume 1 of the *Traité de Rythme, de Couleur et d'Ornithologie*, he categorizes a table of Greek rhythms according to the amount of 'metrons' they have. The duration of a short syllable will contain one metron and a long syllable two metrons. He also notates the conventional signs for long and short durations.

**long:** —

**short:** ˘

In the following examples, a short duration will be indicated by a crotchet and a long duration by a minim.

˘ = 

— = 

**Example 31: Table of Greek rhythms**

<b>At two metrons</b>	<i>Pyrrhic</i>	˘ ˘	♪ ♪
<b>At three metrons</b>	<i>Trochee</i>	— ˘	♪ ♪
	<i>Iamb</i>	˘ —	♪ ♪
	<i>Tribach</i>	˘ ˘ ˘	♪ ♪ ♪
<b>At four metrons</b>	<i>Spondee</i>	— —	♪ ♪
	<i>Dactyl</i>	— ˘ ˘	♪ ♪ ♪
	<i>Anapest</i>	˘ ˘ —	♪ ♪ ♪
	<i>Procleusmatic</i>	˘ ˘ ˘ ˘	♪ ♪ ♪ ♪
	<i>Amphibrach</i>	˘ — ˘	♪ ♪ ♪
<b>At five metrons</b>	<i>Bacchius</i>	˘ — —	♪ ♪ ♪
	<i>Amphimacer</i>	— ˘ —	♪ ♪ ♪
	<i>Antibacchius</i>	— — ˘	♪ ♪ ♪
	<i>Peon I</i>	— ˘ ˘ ˘	♪ ♪ ♪ ♪
	<i>Peon II</i>	˘ — ˘ ˘	♪ ♪ ♪ ♪
	<i>Peon III</i>	˘ ˘ — ˘	♪ ♪ ♪ ♪
	<i>Peon IV</i>	˘ ˘ ˘ —	♪ ♪ ♪ ♪
<b>At six metrons</b>	<i>Ionic Major</i>	— — ˘ ˘	♪ ♪ ♪ ♪
	<i>Ionic Minor</i>	˘ ˘ — —	♪ ♪ ♪ ♪
	<i>Molossus</i>	— — —	♪ ♪ ♪
<b>At seven metrons</b>	<i>Epitrite I</i>	˘ — — —	♪ ♪ ♪ ♪
	<i>Epitrite II</i>	— ˘ — —	♪ ♪ ♪ ♪
	<i>Epitrite III</i>	— — ˘ —	♪ ♪ ♪ ♪
	<i>Epitrite IV</i>	— — — ˘	♪ ♪ ♪ ♪

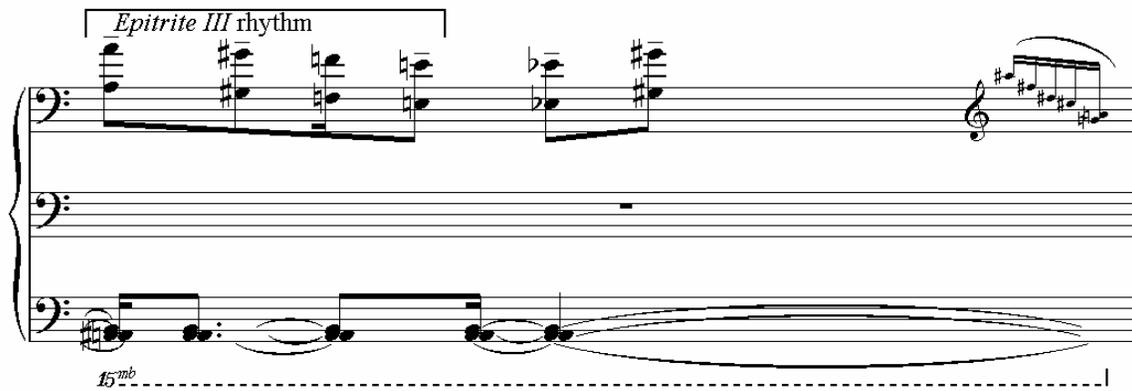
*La parole toute-puissante* from *Vingt Regards sur L'Enfant-Jésus* displays numerous examples of Messiaen's use of Greek rhythms. The following examples show the use of *Bacchius* (at five metrons) and *Epitrite III* (at seven metrons) and *Epitrite IV* (at seven metrons).

**Example 32:** *Bacchius* rhythm in *La parole toute-puissante*, bar 29



The musical score for Example 32 shows a piano accompaniment for bar 29. It features three staves: a treble clef staff at the top, a bass clef staff in the middle, and a lower bass clef staff at the bottom. The treble staff contains a melodic line with a circled section labeled 'm.g.' (mezzo-giusto). The middle bass staff contains a rhythmic pattern labeled 'Bacchius rhythm' and 'm.dr.' (mezzo-drone). The lower bass staff contains a bass line with a dynamic marking of 'ff' and a tempo marking of '15mb'.

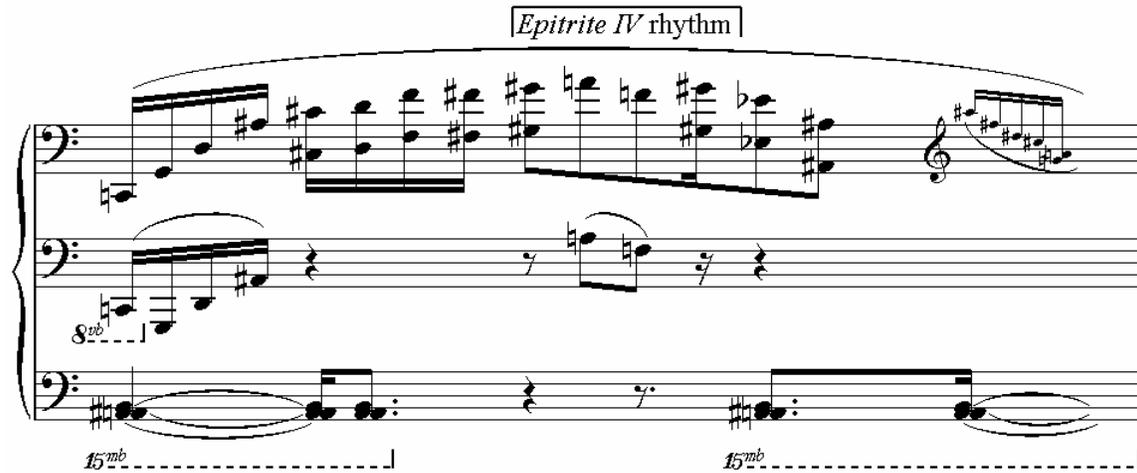
**Example 33:** *Epitrite III* rhythm in *La parole toute-puissante*, bar 42



The musical score for Example 33 shows a piano accompaniment for bar 42. It features three staves: a treble clef staff at the top, a middle bass clef staff, and a lower bass clef staff. The middle bass staff contains a rhythmic pattern labeled 'Epitrite III rhythm'. The lower bass staff contains a bass line with a dynamic marking of 'ff' and a tempo marking of '15mb'. The treble staff contains a melodic line with a circled section.

**Example 34:** *Epitrite IV* rhythm in *La parole toute-puissante*, bar 47

[Epitrite IV rhythm]



The image shows a musical score for three staves. The top staff is in treble clef and contains a complex rhythmic pattern with many notes and accidentals. The middle staff is in bass clef and contains a simpler rhythmic pattern with some rests. The bottom staff is in bass clef and contains a rhythmic pattern with some notes and rests. There are markings '8<sup>mb</sup>' and '15<sup>mb</sup>' at the bottom of the staves, indicating specific rhythmic values or measures.

**4.4 Added values**

The concept of added values is essentially a simple one. It is a short value which is added to a rhythm by a note, a rest or a dot. In Chapter III of *The Technique of my Musical Language*, Messiaen illustrates this concept by means of the following examples. The added values transform these three straightforward rhythms into ametrical rhythms which no longer conform to classical Western pulse.

**Example 35:** Addition of a note at the cross



The image shows a musical notation for Example 35. It consists of two measures of music on a single staff. The first measure contains four quarter notes. The second measure contains four quarter notes, with a plus sign (+) above the fourth note, indicating the addition of a note at the cross.

**Example 36:** Addition of a rest at the cross



The image shows a musical notation for Example 36. It consists of two measures of music on a single staff. The first measure contains four quarter notes. The second measure contains four quarter notes, with a plus sign (+) above the third note, indicating the addition of a rest at the cross.



#### 4.5 Augmentation and diminution of rhythm

Augmentation and diminution of rhythm commonly involves either doubling or halving the note values in question. In the earlier music of Messiaen we come across another more complex type of augmentation and diminution; the addition or withdrawal of the dot.

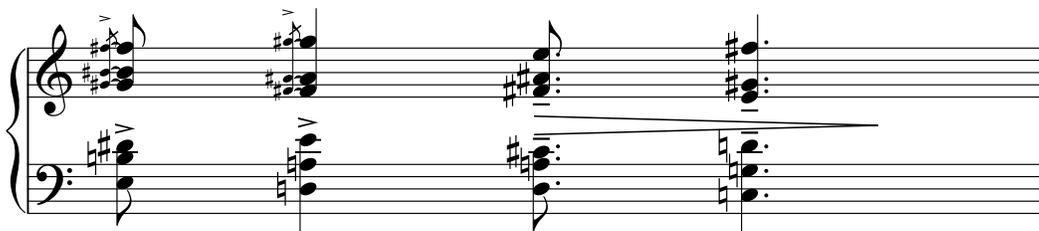
**Example 40:** Common augmentation in *Regard de la Vierge* from *Vingt Regards sur L'Enfant-Jésus*, bar 1



*pp* *tendre et naïf*

(la pureté) Red. Red. \*

**Example 41:** Augmentation by dot or half the value in *Regard des Anges* from *Vingt Regards sur L'Enfant-Jésus* bar 6



*pp* *tendre et naïf*

Red. Aug. \*

A very useful table is presented in *The Technique of my Musical Language* which illustrates the different forms of augmentation or diminution of a rhythm (Messiaen 1956:3).

**Example 42:** Tables of augmentation and diminution

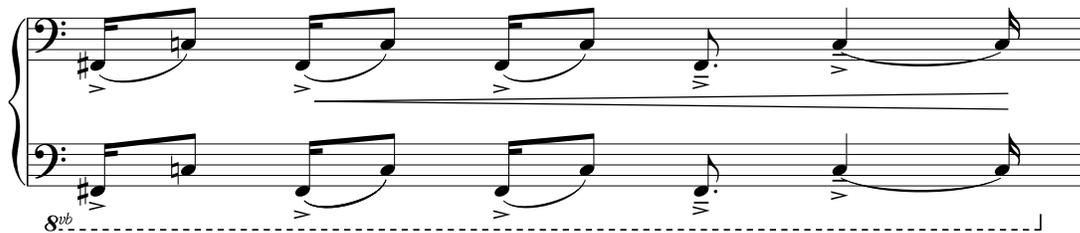
<b>Augmentation</b>	
Addition of a quarter of the values:	
Addition of a third of the values:	
Addition of the dot (addition of half the values):	
Classic augmentation (addition of the values to themselves):	
Addition of twice the values:	
Addition of three times the values:	
Addition of four times the values:	

<b>Diminution</b>	
Withdrawal of a fifth of the values:	
Withdrawal of a quarter of the values:	
Withdrawal of the dot (withdrawal of a third of the values):	

Classic diminution (withdrawal of half the values):	
Withdrawal of two-thirds of the values:	
Withdrawal of three-quarters of the values:	
Withdrawal of four-fifths of the values:	

Messiaen further develops this concept by using inexact augmentations. This creates a swaying rhythmic effect in the following example.

**Example 43:** Inexact augmentation in *Regard de l'Esprit de joie* from *Vingt Regards sur L'Enfant-Jésus*, bar 31



#### 4.6 Non-retrogradable rhythms

As in the modes of limited transposition, Messiaen's fascination with the 'charm of impossibility' is apparent in his use of non-retrogradable rhythms. Non-retrogradable rhythms remain unchanged when read from right to left. The most common and simple example of a non-retrogradable rhythm consists of three notes; the outer two note values identical with a free middle value.

**Example 44:** Non-retrogradable rhythm



The ancient Greek rhythm, *Amphimacer*, based on the number five, is of extreme importance to Messiaen. He draws a parallel between this rhythm and the *denkhî* rhythm, nr 58 of Śārṅgadeva table of 120 *deçî-tâlas*. Both these rhythms are non-retrogradable.

**Example 45:** *Denkhî*

*Amphimacer*



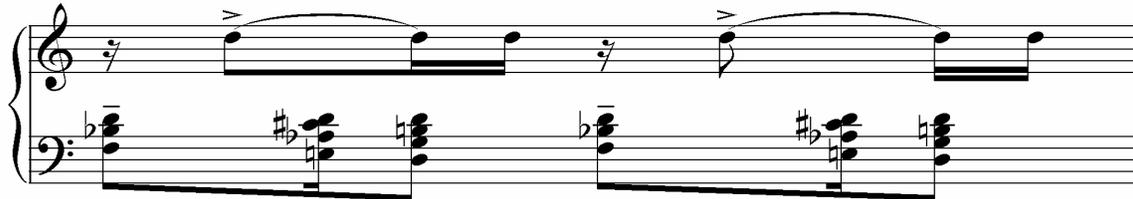
According to Messiaen the Amphimacer is the oldest, the simplest and the most natural of the Greek non-retrogradable rhythms and it is found in classical music in the corrupted form:  which annihilate the retrogration (Baggech 1998:96) . He steers clear from

this altered form by always using the original rhythm with diminution: .

*Denkhî* is a Bengali word for a device used for the shelling of rice. This device is generally controlled by two women, standing on either side of it. The *denkhî* rhythm is without a doubt very old, like all the rhythms based on the number five, the number of fingers of the hand (Baggech 1998: 321).

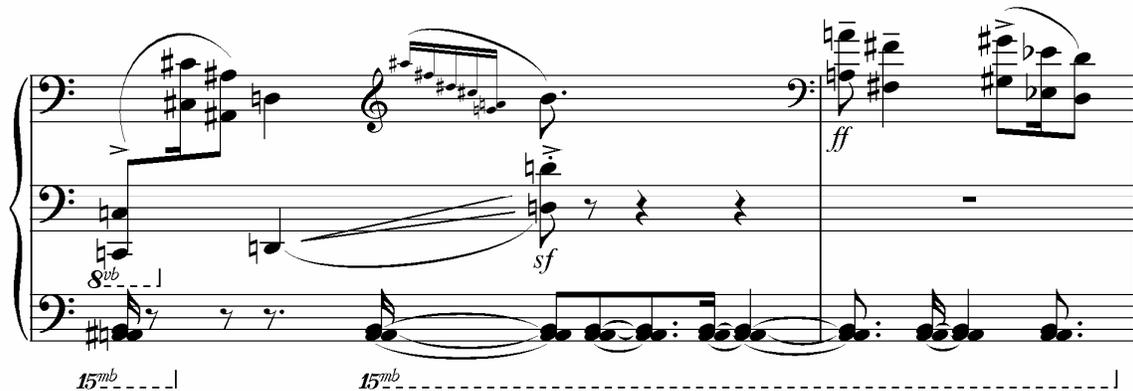
Numerous examples of non-retrogradable rhythms can be found in Messiaen's music. The following example illustrates his use of the Greek *Amphimacer* or Indian *Denkhî* rhythm.

**Example 46:** Non-retrogradable rhythm in *Première communion de la Vierge*, from *Vingt Regards sur L’Enfant-Jésus*, bar 23



Non-retrogradable rhythms can also be extended to rhythms consisting of more than three notes. In the following example, the ostinato in the bass, is based on a non-retrogradable rhythm consisting 3:5:8:5:3 semi-quavers.

**Example 47:** Non-retrogradable rhythm in *La parole toute-puissante* from *Vingt Regards sur L’Enfant-Jésus*, bar 5-6



The above example relates to the so-called ‘Golden section’ and golden number phi ( $\Phi$ ), commonly found in nature, architecture and Bartók’s compositions. The golden section is a line segment divided into two parts where point C is positioned such that the ratio of the small part to the large part is equal to the ratio of the long part to the whole segment.



A

C

B

$$AB/AC = AC/CB$$

This occurs only where  $AB = 1.618... \times AC$  and  $AC = 1.618... \times CB$

The numbers of the Fibonacci series is named after Italian mathematician Leonardo Fibonacci (1170-1250) who discovered a simple numerical series that is the foundation of an incredible mathematical relationship behind the number phi

$$\text{phi} = 1.618033988749895...$$

(<http://goldennumber.net/fibonser.htm>).

Starting with 0 and 1, the next number in the Fibonacci series is simply the sum of the previous two numbers.

0,1,1,2,3,5,8,13,21,34,55,89,.....

The ratio of each successive pair of numbers approximates the number phi. In other words:

$$5/3 = 1.666...$$

$$8/5 = 1.6$$

$$13/8 = 1.625$$

$$21/13 = 1.6153...$$

$$34/21 = 1.6190...$$

It is difficult to assess whether Messiaen used this sequence of note values intentionally.

## 4.7 Polyrhythm

Polyrhythm can be defined as the superposition of two or more different rhythms upon each other. Messiaen describes the perils of using of polyrhythm in his *Traite de Rythme, de Couleur, et d'Ornithologie* as follows:

As soon as a composer tries to superimpose several rhythms, he comes up against neutralizing forces that hinder a clear perception of them. These are the *factors of cohesion*. André Souris recognizes four principles therein: *the resemblance of timbres, isochronality (equality of duration), tonality, and unity of register* – to which I add *unity of tempo, unison durations, unity of intensity, and perhaps unity of attack* (Baggech 1998: 40).

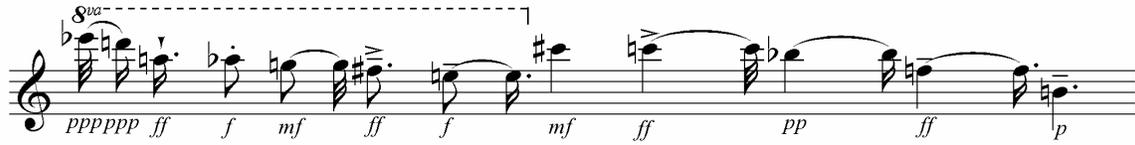
Messiaen recommends that when using polyrhythm, the superimposed rhythms should display varying timbres as this will aid the listener in differentiating between the rhythms. He maintains that it ‘would be preferable for polyrhythm to go along with polytonality, polymodality, or a deliberate measured mix of tone’. He further mentions that the modes of limited transpositions pose a real threat to the clarity of polyrhythm as a result of their singular colour and therefore a different mode is necessitated for each rhythm.

The experimental etude *Mode de valeurs et d'intensités* (1949) probably displays the most effective example of polyrhythm in Messiaen's piano works. His aim was to destroy dynamic unity of intensity, unity of attack and unity of tempo by separating the polyrhythm into three divisions with registral differentiation, dynamic diversity and variation of attack (Baggech 1998:41). Even though *Mode de valeurs et d'intensités* may not necessarily be accessible to every listener, it is widely regarded as one of Messiaen's most important works paving the way for works like Pierre Boulez's *Structures I* for two pianos, founded upon the same set of principles. Stockhausen's *Kreuzspiel* was also strongly influenced by *Mode de valeurs* in its pointillistic use of serial elements (Johnson

1989:194). Nonetheless, Messiaen told Peter Hill that the importance of the *Quatre Études de rythme* (1949-1950), has been disproportionately exaggerated (Hill and Simeone 2005:190).

In 1944, Messiaen criticized the tendency of the second Viennese school to experiment exclusively with pitch structures while adhering to traditional concepts of rhythm and form (Johnson 1989:105). The second etude from *Quatre études de rythme, Mode de valeurs et d'intensités*, was the first work to utilise total serialism. According to Brindle (1987: 23) *Mode de valeurs et d'intensités* is not serial music in the Schoenbergian sense, as the work is not based on a single twelve-note series, but on a 'mode' which comprises three 'divisions' of twelve notes ordered freely. The top stave contains Division I with note values accumulating from 1 x  to 12 x . Similarly Division II corresponds to the middle stave with values ranging from 1 x  to 12 x  and Division III, the lower stave ranging from 1 x  to 12 x . From Example 51 it can be seen that Messiaen preserves the original note order to some extent in the first two divisions, leading one to expect conventional serial music. However, the music soon deviates from this order as it is based on the free ordering of the mode. Each duration in the divisions is assigned a specified pitch, intensity and attack. Messiaen utilises 24 different durations, seven different intensities and twelve different forms of attack in total. Corresponding pitches in the divisions will always have different intensities and attacks. For instance E flat in the top stave is played legato with an intensity of *ppp* whilst E flat in the middle stave is played with a normal attack but an intensity of *p* and E flat in the bottom stave is played with a staccato accent and an intensity of *ff*. The middle stave offers the least variation in terms of dynamics and attack. Interestingly the shortest durations of each stave will be the highest note on that stave and the values grow progressively as the pitch descends. That would be due to the fact that sound decays more rapidly in the higher register of the piano than in the lower register. In addition to that, the intensities in Division III are predominantly louder than the intensities in the other two Divisions.

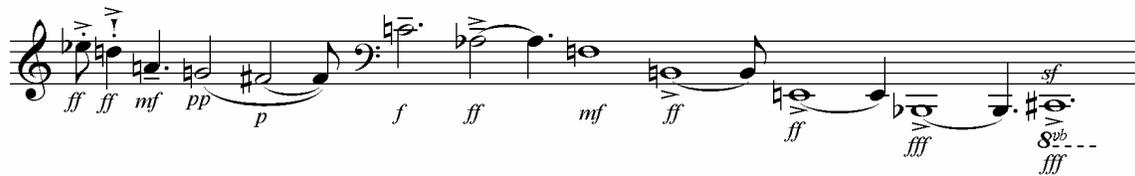
**Example 48:** *Mode de valeurs et d'intensités* from *Quatre études de rythme*, Division I



**Example 49:** *Mode de valeurs et d'intensités* from *Quatre études de rythme*, Division II



**Example 50:** *Mode de valeurs et d'intensités* from *Quatre études de rythme*, Division III



**Example 51:** *Mode de valeurs et d'intensités* from *Quatre études de rythme*, bars 1-8

Modère  
Division I



Division II

Division III

5

Fabbi's (1998: 67) description of *Mode de valeurs et d'intensités* is remarkably apt:

What is obtained is a simultaneity of polyrhythm, polyphony, polydynamics, and poly-agogics, an irretrievable loss of sense of the vertical and horizontal dimensions, whereby the sound entities appear as suspended in an oblique and fluctuating space-time dimension.

New research uncovered that the date on Messiaen's manuscript of *Cantéyodjayâ*, one of his rhythmically experimental compositions, is inaccurate. According to Messiaen's manuscript *Cantéyodjayâ* was composed in Tanglewood in 1948. Hill and Simeone (2005:180) discovered that Messiaen incorrectly remembered his first visit to Tanglewood as being in 1948 whilst in fact he visited Tanglewood for the first time in July and August of 1949. There is still relative uncertainty as to whether *Cantéyodjayâ* or *Mode de valeurs et d'intensités* was completed first. The technique employed in *Mode de*

*valeurs et d'intensités* (1949) also transpire in a section of *Cantéyodjayâ* albeit on a significantly smaller scale. In the latter Messiaen uses a mode of durations, pitches and of intensities. Three groups of eight different notes are chosen, each being assigned a fixed register, duration and intensity (Johnson 1989: 103).

**Example 52:** *Cantéyodjayâ*, Division I



**Example 53:** *Cantéyodjayâ*, Division II



**Example 54:** *Cantéyodjayâ*, Division III



**Example 55:** *Cantéyodjayâ*, bars 64-79

Modéré (*mode de durées, de hauteurs et d'intensités*)

Division I

64

pp ff ff pp

Division II

dr

p mf f p

Division III

ff

69

ff pp ff pp

f g

ff pp

74

ff dr pp ff pp dr ff ff

f g mf p g g mf

ff ff pp



#### 4.8 Chromatic scale of duration

One of Messiaen's earlier rhythmical techniques, derived from Balinese music, can be found in two of the *Vingt Regards sur L'Enfant-Jésus*. In both *Regard des prophètes, des bergers et des Mages* and *Regard de l'Onction terrible* he frames the works with descending and ascending scales of duration. I will focus on *Regard des prophètes, des bergers et des Mages* (The adoration of the prophets, the shepherds and the magi) to illustrate this technique. In the introductory section the bass note values become

progressively smaller, diminishing chromatically from a duration of a  to the duration of a . The opposite occurs in die coda section where the bass note values enlarge progressively from a  to a .

The rhythmical chromaticism in the ascending scale of duration generates the illusion of an *accelerando* whilst in the descending scale of duration, a *rallentando* is perceived. According to Fabbi (1998:61) this process intrinsically annuls any possibility of equal pulsation. Di Bisceglie (1987:211) raises the possibility that the illusionary change of pace in the introductory section may symbolise the approach of the magi to Jerusalem, whilst the coda may well represent their retreat from Jerusalem. The chromatic scales of duration also relate to the *personnages rythmiques* and lay the cornerstones of his technique of symmetrical permutation.

**Example 56:** Descending scale of duration in *Regard des prophètes, des bergers et des Mages*, from *Vingt Regards sur L'Enfant-Jésus*, bars 1-17

**Modéré** (♩ = 72)



*mf*  
*(laissez résonner)*  
*sff*

*mf*  
*ff*

*dim.*  
*dim.*

*p*  
*f*  
*dim.*  
*dim.*

*Ped.*

(comme un Tam-tam) (Valeurs progressivement accélérées)

5

9

13

16

(8)

(8)

(8)

(8)

#### 4.9 *Personnages rythmiques*

During a conversation with Claude Samuel (1994:71) Messiaen likens his use of *personages rythmiques* (rhythmic characters) to three actors on a stage:

Let's imagine a scene in a play in which we place three characters: the first one acts, behaving in a brutal manner by striking the second; the second character is acted upon, his actions dominated by those of the first; finally the third character is simply present at the conflict and remains inactive. If we transport this parable into the field of rhythm, we obtain three rhythmic groups: the first, whose note-values are ever increasing, is the character who attacks, the second, whose note-values decrease, is the character who is attacked; and the third, whose note values never change, is the character who doesn't move.

Messiaen also explains that Beethoven's treatment of thematic development and Stravinsky's manipulation of rhythmic cells, particularly in *The Rite of Spring*, foreshadowed his own, more systematic use of rhythmic characters. According to Fabbi (1998:65), the Indian rhythm, *tāla simhavikrīdita*  with its alternating fixed durations () that first increase and then decrease in value, is an embryonic manifestation of *personnages rythmiques*.

Messiaen employs rhythmic characters in various ways with the first example in the piano repertoire that fits the description above, found in *Visions de l'Amen* (1943) for two pianos. The second piece from this monumental work boasts the rare superimposed form of *personnages rythmiques*. The right hand of the first piano, personifies the character that is being attacked. The phrase-lengths in bird-song style, contract in duration over a series of 12-12-12-11-7-5-6 crotchet beats. Both hands of the second piano, personifies the attacking character with the right hand's phrase-lengths increasing over a series of 5-5-5-7.5-12.5-5-25 crotchet beats and the left hand expanding over a series of 10-13-17-26 crotchet beats. The left hand of the first piano, represent the character that does not move. The phrase, repeated five times, is made up of the juxtaposed modified

*râgavardhana*, *candrakalâ* and *lakshmîça* rhythms from Śārṅgadeva's table of 120 *deçî-tâla* (Johnson 1989:66).

**Example 57:** modified *râgavardhana*      *candrakalâ*      *lakshmîça*



The image shows three rhythmic patterns. The first, 'modified râgavardhana', consists of three quarter notes followed by a dotted quarter note and an eighth note. The second, 'candrakalâ', consists of a quarter note, an eighth note, a quarter note, a dotted quarter note, and an eighth note. The third, 'lakshmîça', consists of a quarter note, a dotted quarter note, and a quarter note.

The following example exhibits the first 19 bars of the *personnages rythmiques*.

**Example 58:** *Visions de l'Amen, Amen des étoiles, de la planète à l'anneau*, bars 107-125



107 Moins vif (♩=60) Character being attacked, 12 x ♩  
*p* *8va*

Unchanging character 10

*Red.* Moins vif (♩=60) Attacking character, 5 x ♩  
*mf quasi legato*

Attacking character, 10 x ♩

*ff*

108 (8)

10

(dessus)

109 (8)

5

*mf*

5 x ♩

*cresc.*

*8vb*



(8)

111 *mf*  
*piu f*  
6  
5 x  
13 x  
*ff*

(8).1  
*8va*  
12 x  
*p*  
10  
*d.r*  
*m.g*  
(*dessus*)

(8)  
114 *mf*  
10 10 5  
7.5 x  
*8va*

Detailed description: This page contains three systems of musical notation for a piano piece. The first system, starting at measure 111, features a treble clef with a melodic line of eighth notes, a middle staff with chords, and a bass clef with a bass line. Dynamics include *mf*, *piu f*, *f*, and *ff*. Rehearsal marks '6', '5 x', and '13 x' are present. The second system, starting at measure 113, has a treble clef with a melodic line, a middle staff with chords, and a bass clef with a bass line. Dynamics include *p*. Rehearsal marks '12 x' and '10' are present. The third system, starting at measure 114, has a treble clef with a melodic line, a middle staff with chords, and a bass clef with a bass line. Dynamics include *mf*. Rehearsal marks '10', '10', '5', and '7.5 x' are present. The notation includes various articulations like accents and slurs, and dynamic markings like *8va* and *dessus*.



116 *mf* *piu f* 6

118 *mf* *p* 12 x 10 12.5 x 17 x *ff* (*dessus*) *8<sup>va</sup>* *8<sup>va</sup>* (*dessous*) *martelé*

120 10 10



Another example, where he applies the rhythmic characters to entire sections of a work, is the fourth Prelude, *Instants défunts*. In the simple ABABA-Coda form, the A sections decrease and the B sections increase in duration whilst the Coda, appearing only once, is completely unrelated to the other material (Johnson 1998:128). This juxtaposing of rhythmic characters is more commonly found in Messiaen's works. There is no clear example of rhythmic characters in the *Vingt Regards sur L'Enfant-Jésus*, though the influence of this can be seen in *Regard de l'Onction terrible*. The subsequent example exhibit two superimposed rhythmic strands, (or characters) one of which is decreasing and the other increasing in note value.

**Example 59:** *Regard de l'Onction terrible* from *Vingt Regards sur L'Enfant-Jésus*, bars 3-17



(Valeurs progressivement ralenties)

3

(Valeurs progressivement accélérées)

cresc.

8vb

8

sempre

(8)

13

cresc. molto

(8)

Johnson (1989:128) relates a scene from *La Buse variable* (buzzard) from the *Catalogue d'oiseaux* to *personages rythmiques*. Messiaen sets the scene beside Lake Laffrey employing several bird songs, arranged into couplets, followed by a refrain from the mistle thrush. A skirmish arises between the buzzard and some crows. In this instance, the crows (*corneilles*) are the attackers, the buzzard (*buse*) the one being attacked, and the red-backed shrike (*pie-grièche écorcheur*), the passive onlooker.

#### 4.10 Symmetrical Permutations

A series of numbers will normally have a set number of permutations. For instance the series 1, 2, 3 can be permuted in 6 (3 factorial =  $1 \times 2 \times 3$ ) different ways.

1	2	3
1	3	2
2	1	3
2	3	1
3	2	1
3	1	2

Correspondingly, the series 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 can be permuted in 479,001,600 different ways. Messiaen's fascination with the 'charm of impossibilities' led him to experiment with methods in order to reduce the number of permutations possible. This led him to an organisational procedure he coined 'symmetrical permutation'. By applying a permutational rule to each subsequent series, the symmetry drastically reduces the number of permutations, restoring the original series after a number of permutations. The series 1, 2, 3, 4, 5 would normally lead to 96 different permutations. However, when applying for example, the permutational rule of 1, 3, 5, 2, 4 to each successive series, the number of permutations is reduced to only 4.

1	2	3	4	5
---	---	---	---	---

1	3	5	2	4
1	5	4	3	2
1	4	2	5	3
1	2	3	4	5

Messiaen experimented with symmetrical permutation in *Mode de valeurs et d'intensités* but first employed true symmetrical permutation in *Ile de feu 2*, the fourth etude of the *Quatre Études de rythme*. His most extensive use of this technique can be found in *Chronochromie* (Colour of Time) for orchestra, which he regarded as his most successful attempt at this procedure (Wu 1998: 107).

In *Ile de feu 2*, Messiaen labels each permutation of the series; an 'Interversion'. This most likely relates to the English word 'inversion'. For the sake of uniformity, I will refer to the term 'interversion' as is marked in Messiaen's compositions. The chromatic scale of durations is once again taken as a foundation for symmetrical permutation and in this instance, he employs a mode of durations ranging from 1 x  to 12 x , 12 sounds, 4 attacks and 5 intensities. It differs however from *Mode de valeurs et d'intensités* and *Cantéyodjayâ* as only one strand of pitches in octaves, an octave apart in two registers are used. The 'Interversions' are superimposed over each other in episodes with 'Interversion I' being played with 'Interversion II', 'Interversion III' with 'Interversion IV' and so on.



**Example 60:** *Ile de feu 2*, from *Quatre Études de rythme*, bars 8 – 27

(intersion, 10 fois intervertie par elle-même, sur 12 valeurs, 12 sons, 4 attaques, 5 intensité

8  
intersion I  
ff ff p mf p mf f f  
f mf f p f mf ff p  
intersion II

14  
f ff ff sfff ff mf  
ff ff sfff ff p f  
intersion III  
intersion IV

20  
p f ff p ff f sfff  
ff sfff f mf p

24  
mf ff f  
ff mf

The following table illustrates the complete series of symmetrical permutations in *Ile de feu 2*:

**Example 61:** Table of symmetrical permutations in *Ile de feu 2*

Original series	12	11	<b>10</b>	9	8	7	6	<b>5</b>	4	3	2	1
Interversion I	6	7	<b>5</b>	8	4	9	3	<b>10</b>	2	11	1	12
Interversion II	3	9	<b>10</b>	4	2	8	11	<b>5</b>	1	7	12	6
Interversion III	11	8	<b>5</b>	2	1	4	7	<b>10</b>	12	9	6	3
Interversion IV	7	4	<b>10</b>	1	12	2	9	<b>5</b>	6	8	3	11
Interversion V	9	2	<b>5</b>	12	6	1	8	<b>10</b>	3	4	11	7
Interversion VI	8	1	<b>10</b>	6	3	12	4	<b>5</b>	11	2	7	9
Interversion VII	4	12	<b>5</b>	3	11	6	2	<b>10</b>	7	1	9	8
Interversion VIII	2	6	<b>10</b>	11	7	3	1	<b>5</b>	9	12	8	4
Interversion IX	1	3	<b>5</b>	7	9	11	12	<b>10</b>	8	6	4	2
Interversion X	12	11	<b>10</b>	9	8	7	6	<b>5</b>	4	3	2	1

One would expect that when a series of 12 numbers are permuted cyclically, the result would produce a complete cyclic series of twelve permutations. However, due to the fact that the numbers 1 and 5 alternate each other throughout the cycle, the consequence is that only 10 permutations are generated.

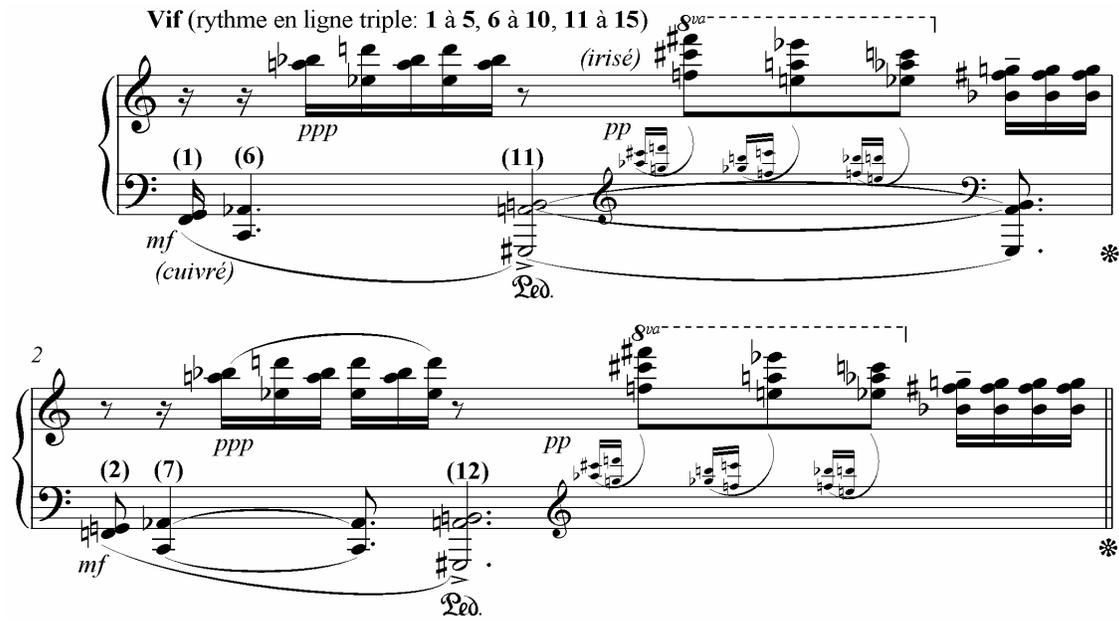
Wu (1998:112) suggests that ‘The symmetrical permutations are another non-progressive way to experience time, revealing Messiaen’s search for an understanding of temporal limitations that reaches to the eternity of everlasting life. Contained in the symmetrical permutations is a symbol of eternity, where there is no progression of time and in an infinitely continuous sense, one is always at the beginning.’

#### **4.11 Rhythmic neumes**

Neumes are the basic elements of musical notation used in Gregorian chant to indicate pitch, prior to the invention of the five-line staff notation. Even though they do not generally indicate rhythm, additional symbols are at times added to the neumes to indicate changes in articulation, duration or tempo. The title of Messiaen’s third etude, *Neumes rythmiques*, is in that sense contradictory. In *Neumes rythmiques* Messiaen employs three different types of material which he orders and develops systematically. He labels them as follows: *Rythme en ligne triple*, *Neumes rythmiques, avec resonances, et entensités fixes* and *Nombre premier en rythme non rétrogradable*.

**Example 62:** *Neumes rythmiques*, from *Quatre Études de rythme*, *Rythme en ligne triple*, bars 1-2

**Vif** (rythme en ligne triple: 1 à 5, 6 à 10, 11 à 15)



(1) (6) (11)

*mf* (cuivré) *ppp* *pp*

*Ped.* *8va*

2

(2) (7) (12)

*mf* *ppp* *pp*

*Ped.* *8va*

**Example 63:** *Neumes rythmiques*, *Neumes rythmiques, avec résonances, et intensités fixes*, bars 3-11

**Bien modéré** (neumes rythmiques, avec résonances, et intensités fixes)



3

*ff* *p* *p* *mf* *f* *ff* *p*

*dr.* *g.* *g.*

*8vb*

8

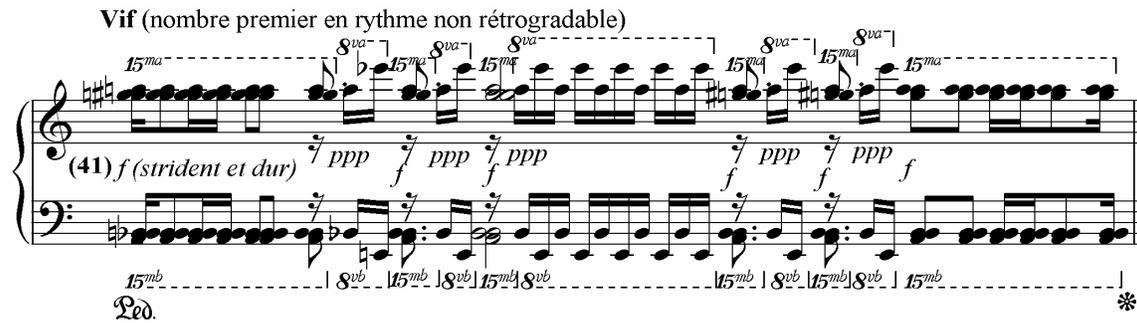
*f* *sf* *p* *pp* *dr.* *ppp*

*p dr.* *f dr.* *g. piú f* *mf* *g. pp*

*8vb* *p* *p* *pp* *p*

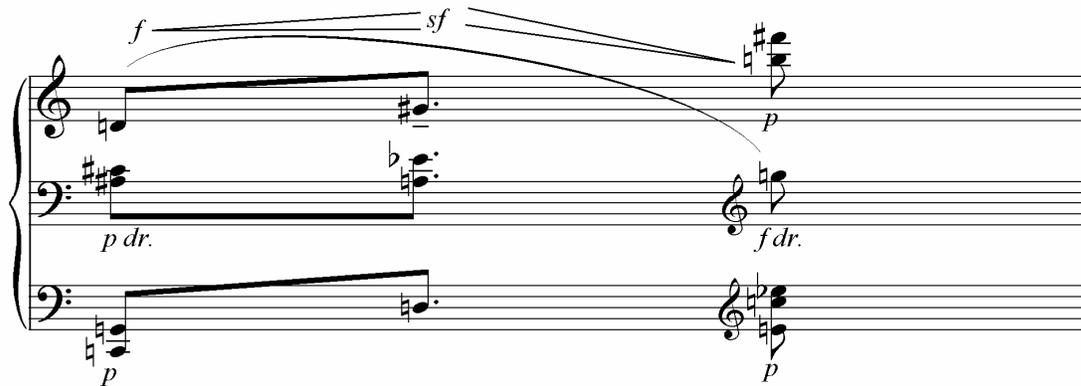
**Example 64:** *Neumes rythmiques, Nombre premier en rythme non rétrogradable*, bar 12

Vif (nombre premier en rythme non rétrogradable)

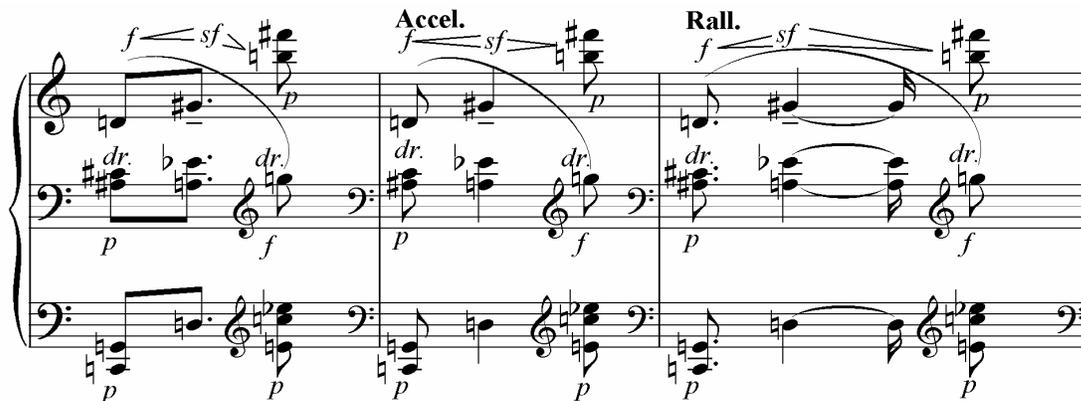


The material of the first section (*Rythme en ligne triple*) is heard twice on each appearance, with each fragment being expanded by means of regular addition of a semiquaver. The material of the third section (*Nombre premier en rythme non rétrogradable*) is treated in a similar manner; on each appearance the total duration expands in prime numbers measured in semiquavers. Importantly, each varied appearance of the third section is based on a non-retrogradable rhythm. The above two sections acts as refrains to frame the second section (*Neumes rythmiques, avec resonances, et intensités fixes*); seven verses, made up of fragments or ‘neumes’. The ‘neumes’ are developed in two different ways: firstly through rhythmic development and secondly through preserving the ‘neumes’ in their original form, but ordering them into new groups (Hill 1995:315). The following two examples illustrate the rhythmic development of the ‘neumes’. The first of the two excerpts shows the initial appearance of the fragment in question. The second example, from the second verse, shows how the ‘neume’ is altered rhythmically through irregular augmentation.

**Example 65:** *Neumes rythmiques*, bar 9



**Example 66:** *Neumes rythmiques*, bars 18-20



#### 4.12 Rhythmic canon

Messiaen revolutionises the traditional concept of a canon by using it in a purely rhythmic sense. In his *Technique of my Musical Language* he discusses examples of rhythmic canons by augmentation and diminution and rhythmic canons of non-retrogradable rhythms. An example of a rhythmic canon by augmentation can be seen in the opening of *Regard du Fils sur le Fils*, where the middle part is augmented by half the value of the top part. Interestingly the top and middle parts enter simultaneously producing two strands of music moving at different tempi with the top part repeated three times and the middle part twice (Di Bisceglie 1987:78). The left hand part enters after

three crotchet beats with the *Thème de Dieu* appearing five times with a slight variation in rhythm at the end.

**Example 67:** *Regard du Fils sur le Fils* from *Vingt Regards sur L'Enfant-Jésus*, bars 1-7

**Très lent** (♩ = 76)  
(Polymodalité et canon rythmique par ajout du point)



*m.dr.* 8<sup>va</sup>-  
*pp*  
8<sup>va</sup>-  
*m.g.*  
*ppp* (*doux et mystérieux*)  
*m.g.*  
*p* (*Thème de Dieu*) *lumineux et solennel*

4 (8)

6 (8)



The addition of values regularly generates prime number durations. In Example 69, the added note creates a unit of five semi-quavers whilst the addition of the dot, result in a unit of seven semi-quavers (Pople 1995:36).

**Example 69:** Added values resulting in prime number units



In a similar manner, irregular augmentation gives rise to prime number durations in the following example. The accentuated first chord of every bar progressively enlarges in prime number durations (2, 3, 5, 7, 11) whilst the subsequent crotchet durations remain unchanged.

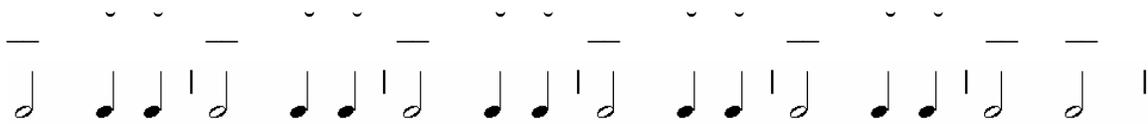
**Example 70:** *Première communion de la Vierge*, from the *Vingt Regards sur L'Enfant-Jésus*, bars 49-53



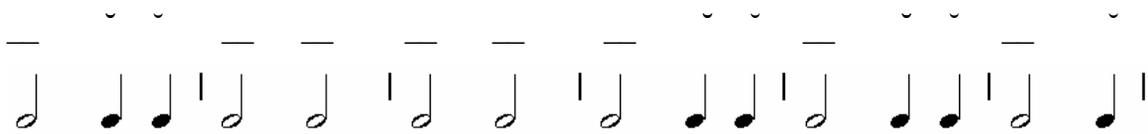
During a conversation with Claude Samuel (1986: 74), Messiaen explains that in Greek metre, one regularly encounters prime numbers. When grouping several identical feet together, one would be allowed substitutes. These substitutes often create prime numbers. An example of this is dactylic hexameter which consists of six feet, made up of four

dactyls (for which spondees can be substituted), a fifth dactyl and a last foot, substituted with either a spondee or trochee. In its pure form, with a spondee as substitute, it results in 24 values. However, when a trochee is substituted, it generates the prime number of 23 values (Baggech 1998:105).

**Example 71:** Dactylic hexameter in its pure form, 24 values



**Example 72:** Dactylic hexameter with trochee substituted in final foot, 23 values



In the final movement of *Vingt Regards sur L'Enfant-Jésus*, Messiaen applies non-retrogradable rhythms and prime numbers in a dramatic manner. After the striking opening flourish, the *denkhî* rhythm, equaling five semi-quavers, enters in the bass. Thereafter, in the fourth bar, he expands this rhythm by adding two quavers in the beginning and at the end, thus creating another non-retrogradable rhythm, totalling the value of thirteen semi-quavers. The final expansion of this non-retrogradable rhythm, in bar 6, produces a rhythm with a total duration of nineteen semi-quavers. The durations of all these non-retrogradable rhythms are prime numbers (5, 13 and 19). Messiaen maintains that prime numbers represent an occult force, due to the simple fact of not being divisible into equal fractions. Similarly, divinity is indivisible (Samuel 1986:79).

**Example 73:** *Regard de l'Eglise d'amour* from the *Vingt Regards sur L'Enfant-Jésus*, bars 1-6

Presque vif ( $\text{♩}=132$ )

*S<sup>va</sup>*

*f* ————— *ff* ————— *f*

*Ped.*  
(en gerbe rapide)

3 *S<sup>va</sup>* (amplifié à gauche) (et à droite)

*f* ————— *ff* ————— *f* *ff*

*Ped.*

5 *S<sup>va</sup>* (amplifié à gauche) (et à droite)

*f* ————— *ff* ————— *f*

*Ped.*

## CONCLUSION

Olivier Messiaen's mammoth contribution to the development of rhythm becomes apparent upon the study of his oeuvre. His opus is vast and even though this particular study focussed on his piano works, his organ, orchestral, choral, chamber and operatic works teem with innovation in the field of rhythm. Huston-Bell (1984:136) maintains that it is likely that Messiaen has been responsible for the most significant development in rhythmic practice in the last three hundred years. Messiaen considered his rhythmic innovations, his 'most far-reaching contribution of Western music' (Pople 1995:31). His curiosity led him to venture outside the realms of the Classical tradition to the ancient rhythms of Indian music and Greek meter. This in turn directed him to the addition of the dot, inexact augmentation and non-retrogradable rhythms. His unconventional ametrical rhythms, developed through the multiples of a basic unit, generated music without time signatures. This resulted in the chromatic scales of duration which lay the foundation for symmetrical permutations as seen in *Ile de feu 2*. Stravinsky's manipulation of rhythmic cells in *Le Sacre du Printemps* paved the way for Messiaen's unique *personnages rythmiques*. The piano works from his experimental period (1949-1951) produced his most controversial and influential rhythmic techniques. Challenging the conventional Viennese school of serialism, Messiaen was the first to experiment with total serialism in *Cantéyodjayâ* and *Mode de valeurs et d'intensités* by applying the concept of serialism to duration, pitch, intensity and attack. Another work from this period is *Neumes rythmiques*, the first piece from his *Études de rythme*. Scorning the traditional application of the canon, Messiaen surprises the listener with his rhythmic canon in the opening of *Regard du Fils sur le Fils* and in *La Bouscarle*. His fascination with the charm of impossibility, fuelled experiments with prime numbers, non-retrogradable rhythms, modes of limited transposition and symmetrical permutations.

The unique sound world of Messiaen is immediately recognizable to the music-lover. His work remains his own, so highly individualistic that it defies imitation. On the other hand, many of his ground-breaking innovations and concepts were taken up by his students and developed further in their own works (Huston-Bell 1984: 136). Messiaen's

vast musical language has encouraged many scholars alike to investigate the origin of his music's individuality. Already during his life-time, his works frequented concert programmes throughout the world. It is unsurprising then, that his popularity as composer is ever-increasing.

The legacy of his music will grace our ears, hearts and minds for many years to come.

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## SUMMARY

Olivier Messiaen is regarded as one of the most significant composers of the 20<sup>th</sup> century. His compositions are performed regularly and his teachings have influenced many well-known composers like Boulez and Stockhausen. This study focussed on his use of rhythm in his piano compositions.

I supplied a short biography of the composer along with a brief discussion of his compositional techniques. Thereafter his rhythmic techniques were examined through relevant music examples from his piano repertoire. Particular attention was given to works from the *Vingt Regards sur L'Enfant-Jésus* along with *Cantéyodjayâ*, *Mode de valeurs et d'intensités* and *Neumes rythmiques* from his experimental period (1949-1951).

In *Mode de valeurs et d'intensités* he revolutionized the serial treatment of duration, pitch, intensity and attack. His other rhythmic techniques include Indian rhythms, Greek meter, added values, augmentation, diminution, non-retrogradable rhythms, polyrhythm, chromatic scales of duration, *personnages rythmiques*, symmetrical permutations, rhythmic neumes, rhythmic canon and prime numbers.



## LIST OF KEY TERMS

Indian rhythms

Greek meter

Added values

Augmentation

Diminution

Non-retrogradable rhythms

Polyrhythm

Chromatic scales of duration

*Personnages rythmiques*

Symmetrical permutations

Rhythmic neumes

Rhythmic canon

Prime numbers

Modes of limited transposition

Birdsong

Religion

Colour

*Catalogue d'Oiseaux*

*Cantéyodjayâ*

*Mode de valeurs et d'intensités*

*Neumes rythmiques*

*Ile de feu 2*

*Regards sur L'Enfant-Jésus*