MUSICAL AND FORMAL INTERRELATIONSHIPS
IN MESSIAEN'S
CATALOGUE D'OISEAUX

by
Achilles Guy Calenti

A Thesis Submitted to the Faculty of the
SCHOOL OF MUSIC
In Partial Fulfillment of the Requirements
For the Degree of
MASTER OF MUSIC
WITH A MAJOR IN MUSIC THEORY
In the Graduate College
THE UNIVERSITY OF ARIZONA

1980
STATEMENT BY AUTHOR

This thesis has been submitted in partial fulfillment of requirements for an advanced degree at The University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this thesis are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED:

APPROVAL BY THE THESIS DIRECTOR

This thesis has been approved on the date shown below:

William P. Pfingerlalt
Lecturer in Music

Date
To Monica; Without whose love, example, and encouragement none of this would have been possible.
ACKNOWLEDGMENTS

The author wishes to express his sincere gratitude to the following:

Mr. William Pflugradt, for his invaluable assistance and advice in the planning, organization, and completion of this thesis.

Mr. Eugene Sweeney, for his generosity in the preparation of the final manuscript.

My parents, for their love, support, and subtle guidance through this endeavor, and through life itself.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF ILLUSTRATIONS</th>
<th>viii</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>xi</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>xii</td>
</tr>
</tbody>
</table>

## CHAPTER

### 1. THE COMPOSER: INTRODUCTION AND BACKGROUND

- The Influence of Catholicism and Debussy  
  - Pitch  
  - Rhythm  
  - Purpose of Study  
  - Methods and Terminology  

### 2. THE DEVELOPMENT OF BIRDSONG AND THE CATALOGUE D'OISEAUX

- The Early Birdsong Works  
  - Pitch  
  - Rhythm  
  - Form  
- The Later Birdsong Works  
  - Pitch  
  - Rhythm  
  - Form  
- The Catalogue d'Oiseaux  
  - Background and Introduction  
  - Use of the Piano  
  - Form
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3. &quot;LE CHOCARD DES ALPES&quot;</strong></td>
<td>32</td>
</tr>
<tr>
<td>Birdsong</td>
<td>32</td>
</tr>
<tr>
<td>Pitch</td>
<td>33</td>
</tr>
<tr>
<td>Rhythm</td>
<td>38</td>
</tr>
<tr>
<td>Non-Bird Material</td>
<td>38</td>
</tr>
<tr>
<td>Pitch</td>
<td>39</td>
</tr>
<tr>
<td>Rhythm</td>
<td>41</td>
</tr>
<tr>
<td>Bird-Related Material</td>
<td>46</td>
</tr>
<tr>
<td>Pitch</td>
<td>46</td>
</tr>
<tr>
<td>Rhythm and Tempo</td>
<td>48</td>
</tr>
<tr>
<td>Form in &quot;Le Chocard des Alpes&quot;</td>
<td>49</td>
</tr>
<tr>
<td>Summary</td>
<td>51</td>
</tr>
<tr>
<td>Birdsong</td>
<td>51</td>
</tr>
<tr>
<td>Non-Bird Material</td>
<td>52</td>
</tr>
<tr>
<td>Bird-Related Material</td>
<td>52</td>
</tr>
<tr>
<td>Form</td>
<td>52</td>
</tr>
<tr>
<td><strong>4. &quot;LA BOUSCARLE&quot;</strong></td>
<td>54</td>
</tr>
<tr>
<td>Birdsong</td>
<td>54</td>
</tr>
<tr>
<td>Pitch</td>
<td>55</td>
</tr>
<tr>
<td>Rhythm</td>
<td>64</td>
</tr>
<tr>
<td>Non-Bird Material</td>
<td>67</td>
</tr>
<tr>
<td>Pitch</td>
<td>67</td>
</tr>
<tr>
<td>Rhythm</td>
<td>72</td>
</tr>
<tr>
<td>Bird-Related Material</td>
<td>74</td>
</tr>
<tr>
<td>Pitch</td>
<td>74</td>
</tr>
<tr>
<td>Rhythm</td>
<td>76</td>
</tr>
<tr>
<td>Form in &quot;La Bouscarle&quot;</td>
<td>76</td>
</tr>
<tr>
<td>Birdsong Variation</td>
<td>80</td>
</tr>
<tr>
<td>Summary</td>
<td>84</td>
</tr>
<tr>
<td>Birdsong</td>
<td>84</td>
</tr>
<tr>
<td>Non-Bird and Bird-Related Material</td>
<td>85</td>
</tr>
<tr>
<td>Form</td>
<td>85</td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS—Continued

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. SUMMARY AND CONCLUSIONS</td>
<td>86</td>
</tr>
<tr>
<td>Birdsong</td>
<td>86</td>
</tr>
<tr>
<td>Pitch</td>
<td>86</td>
</tr>
<tr>
<td>Rhythm</td>
<td>91</td>
</tr>
<tr>
<td>Non-Bird Material</td>
<td>92</td>
</tr>
<tr>
<td>Pitch</td>
<td>92</td>
</tr>
<tr>
<td>Rhythm</td>
<td>93</td>
</tr>
<tr>
<td>Bird-Related Material</td>
<td>93</td>
</tr>
<tr>
<td>Pitch</td>
<td>94</td>
</tr>
<tr>
<td>Rhythm</td>
<td>94</td>
</tr>
<tr>
<td>Musical interrelationships</td>
<td>94</td>
</tr>
<tr>
<td>Pitch</td>
<td>95</td>
</tr>
<tr>
<td>Other Factors</td>
<td>98</td>
</tr>
<tr>
<td>Form</td>
<td>99</td>
</tr>
<tr>
<td>LIST OF REFERENCES</td>
<td>102</td>
</tr>
</tbody>
</table>
LIST OF ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Messiaen's Modes of Limited Transposition</td>
<td>5</td>
</tr>
<tr>
<td>2.1</td>
<td>Quartet, p.1, system 1</td>
<td>20</td>
</tr>
<tr>
<td>2.2</td>
<td>Visions de l'Amen, p.56, system 1</td>
<td>21</td>
</tr>
<tr>
<td>2.3</td>
<td>Visions de l'Amen, p.56, system 2</td>
<td>21</td>
</tr>
<tr>
<td>2.4</td>
<td>Oiseaux Exotiques, p. 3</td>
<td>26</td>
</tr>
<tr>
<td>3.1</td>
<td>&quot;Le Chocard des Alpes&quot;, p.2, system 3</td>
<td>33</td>
</tr>
<tr>
<td>3.2</td>
<td>&quot;Le Chocard des Alpes&quot;, p.2, system 4</td>
<td>34</td>
</tr>
<tr>
<td>3.3</td>
<td>&quot;Le Chocard des Alpes&quot;, p.3, system 5</td>
<td>35</td>
</tr>
<tr>
<td>3.4</td>
<td>&quot;Le Chocard des Alpes&quot;, p.9, system 2</td>
<td>36</td>
</tr>
<tr>
<td>3.5</td>
<td>&quot;Le Chocard des Alpes&quot;, p.3, system 1</td>
<td>37</td>
</tr>
<tr>
<td>3.6</td>
<td>&quot;Le Chocard des Alpes&quot;, p.1, system 1</td>
<td>39</td>
</tr>
<tr>
<td>3.7</td>
<td>&quot;Le Chocard des Alpes&quot;, p.4, system 4</td>
<td>40</td>
</tr>
<tr>
<td>3.8</td>
<td>Rhythmic scheme for first non-bird section, &quot;Le Chocard des Alpes&quot;, right hand</td>
<td>42</td>
</tr>
<tr>
<td>3.9</td>
<td>Rhythmic scheme for first non-bird section, &quot;Le Chocard des Alpes&quot;, left hand</td>
<td>43</td>
</tr>
<tr>
<td>3.10</td>
<td>Rhythmic scheme for last non-bird section, &quot;Le Chocard des Alpes&quot;, right hand</td>
<td>44</td>
</tr>
<tr>
<td>3.11</td>
<td>Rhythmic scheme for last non-bird section, &quot;Le Chocard des Alpes&quot;, left hand</td>
<td>45</td>
</tr>
<tr>
<td>3.12</td>
<td>&quot;Le Chocard des Alpes&quot;, p.3, system 1</td>
<td>47</td>
</tr>
<tr>
<td>3.13</td>
<td>&quot;Le Chocard des Alpes&quot;, p.9, system 5</td>
<td>47</td>
</tr>
<tr>
<td>3.14</td>
<td>Formal Chart, &quot;Le Chocard des Alpes&quot;</td>
<td>50</td>
</tr>
</tbody>
</table>

viii
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>&quot;La Bouscarle&quot;, p.4, system 2</td>
<td>56</td>
</tr>
<tr>
<td>4.2</td>
<td>&quot;La Bouscarle&quot;, p.6, system 2</td>
<td>56</td>
</tr>
<tr>
<td>4.3</td>
<td>&quot;La Bouscarle&quot;, p.12, system 2</td>
<td>57</td>
</tr>
<tr>
<td>4.4</td>
<td>&quot;La Bouscarle&quot;, p.1, system 1</td>
<td>58</td>
</tr>
<tr>
<td>4.5</td>
<td>Set similarities in Birdsong, &quot;La Bouscarle&quot;</td>
<td>59</td>
</tr>
<tr>
<td>4.6</td>
<td>Set structures of nine birds in &quot;La Bouscarle&quot;</td>
<td>60</td>
</tr>
<tr>
<td>4.7</td>
<td>Register indications for Birdsong in &quot;La Bouscarle&quot;</td>
<td>61</td>
</tr>
<tr>
<td>4.8</td>
<td>Dynamic levels of Birdsong in &quot;La Bouscarle&quot;</td>
<td>62</td>
</tr>
<tr>
<td>4.9</td>
<td>Textural makeup of Birdsong in &quot;La Bouscarle&quot;</td>
<td>63</td>
</tr>
<tr>
<td>4.10</td>
<td>Tempo chart for Birdsong in &quot;La Bouscarle&quot;</td>
<td>66</td>
</tr>
<tr>
<td>4.11</td>
<td>&quot;La Bouscarle&quot;, p.1, systems 3-4</td>
<td>68</td>
</tr>
<tr>
<td>4.12</td>
<td>&quot;La Bouscarle&quot;, p.2, system 3</td>
<td>69</td>
</tr>
<tr>
<td>4.13</td>
<td>&quot;La Bouscarle&quot;, p.4, system 4</td>
<td>70</td>
</tr>
<tr>
<td>4.14</td>
<td>&quot;La Bouscarle&quot;, p.13, system 2</td>
<td>70</td>
</tr>
<tr>
<td>4.15</td>
<td>&quot;La Bouscarle&quot;, p.21, system 4</td>
<td>72</td>
</tr>
<tr>
<td>4.16</td>
<td>Rhythmic canon, &quot;La Bouscarle&quot;, pp. 2-3</td>
<td>73</td>
</tr>
<tr>
<td>4.17</td>
<td>&quot;La Bouscarle&quot;, p.5, system 3</td>
<td>74</td>
</tr>
<tr>
<td>4.18</td>
<td>&quot;La Bouscarle&quot;, p.8, systems 4-5</td>
<td>75</td>
</tr>
</tbody>
</table>
## LIST OF ILLUSTRATIONS—Continued

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.19</td>
<td>Formal Chart, &quot;La Bouscarle&quot;</td>
<td>77</td>
</tr>
<tr>
<td>4.20</td>
<td>Second appearance of the warbler in &quot;La Bouscarle&quot;, p.2, system 2</td>
<td>82</td>
</tr>
<tr>
<td>4.21</td>
<td>Third appearance of the warbler in &quot;La Bouscarle&quot;, p.5, system 2</td>
<td>82</td>
</tr>
<tr>
<td>4.22</td>
<td>&quot;La Bouscarle&quot;, p.11, system 4</td>
<td>83</td>
</tr>
<tr>
<td>5.1</td>
<td>Set Interrelationships between different birds in the <em>Catalogue d'Oiseaux</em></td>
<td>89</td>
</tr>
<tr>
<td>5.2</td>
<td>Set Interrelationships between the same bird in different pieces in the <em>Catalogue d'Oiseaux</em></td>
<td>89</td>
</tr>
<tr>
<td>5.3</td>
<td>&quot;La Bouscarle&quot;, p.7, systems 3-4</td>
<td>90</td>
</tr>
<tr>
<td>5.4</td>
<td>&quot;Le Loriot&quot;, p.3, system 2</td>
<td>90</td>
</tr>
<tr>
<td>5.5</td>
<td>&quot;Le Merle Bleu&quot;, p.1, systems 1-2</td>
<td>96</td>
</tr>
<tr>
<td>5.6</td>
<td>&quot;La Bouscarle&quot;, p.2, system 3</td>
<td>97</td>
</tr>
<tr>
<td>5.7</td>
<td>Rhythmic unity in contrasting sections of &quot;La Bouscarle&quot;</td>
<td>98</td>
</tr>
</tbody>
</table>
### LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Formal Chart, <em>Catalogue d'Oiseaux</em></td>
<td>28</td>
</tr>
<tr>
<td>4.1</td>
<td>Recurrence and variation of warbler material</td>
<td>81</td>
</tr>
</tbody>
</table>
Olivier Messiaen (b. 1908) has long been considered a powerful force in contemporary music. His compositions, as well as his teachings, have influenced many of today's leading composers.

In the 1950s Messiaen turned to birdsong as the essential material in his work. Birdsong practically monopolized his style for over ten years. The culmination of this birdsong period was the Catalogue d'Oiseaux (1958), for piano. The development of this birdsong, and its usage, along with other material in the Catalogue d'Oiseaux, is the subject of this thesis.

The Catalogue d'Oiseaux contains seven books and thirteen individual pieces. There are seventy-seven different birds depicted in the work. Birdsong is presented both homophonically and polyphonically, in both a tonal and atonal context.

Material other than birdsong which is contained in the work includes non-bird, and bird-related material. This material relies heavily on the Modes of Limited Transposition, the 12-note set, and rhythmic permutations for their derivation.
The two pieces analyzed in depth are "Le Chocard des Alpes", from Book I, and "La Bouscarle", from Book V.

Birdsong material in these pieces is analyzed according to interval set structures. Interrelationships based on these and other parametric criteria are studied. Non-bird and bird-related materials are discussed as separate entities as to their derivation from the Modes of Limited Transposition, rhythmic modes, and other sources. The relationships which exist between birdsong and the other material are studied with regards to similarities of pitch, tempo, dynamics, and rhythm.
CHAPTER 1

THE COMPOSER: INTRODUCTION AND BACKGROUND

Olivier Messiaen (b. 1908) is one of the most important French composers since Debussy, and has had both a direct influence on the development of twentieth-century compositional trends—as evidenced by the critical acclaim accorded his compositions—as well as an indirect influence through the writings and compositions of his many pupils, among them Pierre Boulez, Karlheinz Stockhausen, Luigi Nono, and Yannis Xenakis. Presently, Messiaen is living in Paris, where he is occasionally organist at the Church of the Trinity, a post he has held since 1931.

As a youth, Messiaen attended the Paris Conservatory, where his teachers included Paul Dukas in Composition, and Maurice Emmanuel and Marcel Dupre in Literature. Since his first composition in 1917, La Dame de Shalotte, Messiaen has written over 60 works, mostly for keyboard and/or orchestra, though there are many notable works in different media.¹

¹ For a discussion of the style periods of Messiaen, refer to: David Drew, "Messiaen--A Provisional Study" The Score, 13 (Sept. 1955)
The Influence of Catholicism and Debussy

In speaking of influences on the composer, it is necessary to mention first and foremost that Messiaen is a devout Catholic, and that most of his works reflect this devotion in some way.

A certain number of my works are destined therefore, to highlight the theological truths of the Catholic faith. This is the main aspect of my work, the most noble, without doubt the most useful, the most valid, the sole aspect which I will not perhaps regret at the hour of my death.²

In the program notes to the first London performance (1938) of La Nativité du Seigneur, Messiaen says Catholicism "...is the best subject, for it encompasses all subjects, and the abundance of technical means allows the heart to open up freely."³ Closely aligned with this devotion is his intense love of nature. It is also from nature that Messiaen drew his most productive inspirations. "Nature...an indistinguishable treasure house of sounds and colors, forms and rhythms, the unequaled model for total development and perpetual variation...nature is the supreme resource." ⁴ Messiaen found in fellow Frenchman Debussy a shared affinity for the beauties of nature and their possibilities in

---


musical composition. "We do not listen to the thousands of sounds with which nature surrounds us. We are not sufficiently on the alert to hear the varied music which she so generously offers . . . it envelopes us . . . . This, to my mind, is a new path, . . . much remains to be done, and he who does it will be a great man."5

It was in Debussy that Messiaen found a composer not rooted in the strict traditions of Germanic music. Debussy's music was more concerned with timbral variations than with "functional" harmonies. Rhythm was elusive, non-pulsatile, vague, concealed by syncopations and uneven divisions of the beat. Chords existed as separate sonorous units, complete in themselves. Messiaen identified readily with all of this. In his writings, he speaks of sonorities as color, a typically French idea, each sonority evoking thoughts of a certain color. He is very specific about these and incorporates them regularly in his music. In the selection of pitch materials, Messiaen borrows readily from Debussy. It was Debussy who exploited the whole-tone scale and pentatonic scales as melodic material.

The Musical Language of Messiaen

An illumination of the technical language of Messiaen's compositional style is beneficial in itself and

as a guide to the analysis of some of his works in the following chapters.  

Pitch

The music of Messiaen is essentially modal or polymodal. These modes were personally constructed by the composer and have no connection to the modes of the Middle Ages or the Greek modes. These "Modes of Limited Transposition" form the basis for some of his melodic, as well as harmonic ideas. The modes are chromatic and are based on the twelve notes of the equal tempered system. They are composed of a number of similar note groups, the last note of one group becoming the first note of the next. Each mode can be transposed only a certain number of times, after which it returns enharmonically to the original. The best known of these scales is the whole-tone scale (not invented by Messiaen). It can be transposed once before it repeats. When Messiaen uses this scale, it is usually concealed in a thick texture and is not readily identifiable.

The Modes of Limited Transposition are illustrated on the following page, in Figure 1.1.

6. In 1944, Messiaen wrote Technique of My Musical Language, (Paris: Leduc, 1944) 2 vols. trans by J. Satterfield, in which he outlines the basic vocabulary of his style up to that point. A thorough study of this book is essential to anyone wishing to gain insight into Messiaen's style.

7. Messiaen, Technique, p. 58.
Mode I is the whole-tone scale, already mentioned. Mode II is transposable twice, Mode III, three times, and Modes IV through VII are transposable five times. Messiaen's predilection with these modes stems from what he calls their "charm of impossibilities. . . . They are at once in an atmosphere of several tonalities without polytonality, the composer being free to give predominance to one of the tonalities or leave the tonal impression unsettled."  

8. Messiaen, Technique, p. 58
An examination of the following sonorities derived from Mode II,

![Musical notation](image)

will be beneficial in understanding this concept. This configuration, found in Messiaen's book, (vol.2, p.50) shows the use of the mode to generate different sonorities. Each voice realizes the entire mode, starting on a different degree of the scale. The resulting sonorities are major $6_4$ chords with an added augmented fourth, alternating with dominant seventh chords with an added augmented sixth. The different intervallic relationships between the voices of the first chord govern the subsequent sonorities. Messiaen exploits these relationships according to his needs in a particular situation.

Messiaen had a predisposition to the affinities of music and color. To him it was sometimes a literal analogy, certain sonorities suggesting to him certain colors. Musically speaking however, color implies timbre, and the chord of resonance was one of Messiaen's tools in controlling timbre. The $6_4$ chord with added augmented fourth mentioned above is one such resonance chord. In the resonance of a low C for instance, an acute ear can hear an F#. 
This F#, (11th. partial) is thus strongly attracted to the fundamental and naturally resolves to it. In Messiaen's conception of the chord of resonance the overtones of the fundamental cause subtle timbral changes in the principle sound. As timbre is contingent upon the strengths of the various overtones in the series, Messiaen controls timbre through the manipulation of these overtones. For example, in the C overtone series, a typical chord of resonance would be as follows:

All voicings of the chord are not so triadically oriented. All of the notes of the chord of resonance are contained in the third Mode of Limited Transposition. (See Figure 1.1). Thus, as has been pointed out, whereas traditionally harmony and timbre have been viewed as separate concepts, the use of added resonance brings the two together in a way which enables harmony to function as


timbre. This concept pervades much of Messiaen's thought. Certainly then, in much of Messiaen's music, harmony is more a consideration of timbral explorations than functionality.

Although all intervallic relationships are naturally used by Messiaen, certain ones are exploited and become characteristic in his music. The tritone, the minor 2nd. and the major 7th. are the most important and are found extensively in both a melodic and harmonic context. The minor 6th. is also heard frequently in most works.

Rhythm

One of the most important aspects of Messiaen's rhythmic language is the use of the Indian deṣṭālas, a table of 120 Indian rhythms. These ametrical rhythms coincide nicely with Messiaen's conception of rhythm as not based on beat groupings but on the smallest note value from which a rhythmic figure can be developed. Thus, Messiaen's music is also ametrical. Bar lines are added "to indicate periods and to make an end to the effect of accidentals. This notation is evidently best for the composer, since it is the exact representation of his musical conception." ¹²


¹². Messiaen, Technique, p. 28
Among the other rhythmic techniques employed by Messiaen are rhythms with added values. These are rhythms in which a short durational value has been added to any rhythmic group, thereby varying it slightly. Ametrical music is very conducive to this type of manipulation. In the rhythms

\[
a. \quad b. \\
\]

"a" is the original cell. "b" is the same cell with a sixteenth note value added to the second tone.

Another device is the use of augmented or diminished rhythms. As the name implies, a basic rhythmic cell is either augmented or diminished by a constant duration. In the following example,

\[
a. \quad b. \quad c. \\
\]

"a" is the basic cell. "b" is an augmentation of the "a" cell to twice its original value. "c" is the augmentation of "b" by a sixteenth beat.

Augmentation of a rhythm by the addition of a dot is another way Messiaen changes a rhythmic figure. The two rhythmic cells

\[
a. \quad b. \\
\]

illustrate this type of augmentation. The "a" cell is the original idea. In the "b" group, the entire "a" idea is
augmented by the addition of a dot after each note. Messiaen uses this device often in his earlier works.

"Personnages Rhythmic" is the term Messiaen gives to any rhythmic idea which is put through a permutational (gradual altering) process whereby the original rhythmic idea is both successively augmented and diminished in subsequent rhythmic cells.\textsuperscript{13}

A very important part of Messiaen's rhythmic vocabulary are what he calls non-retrogradable rhythms.\textsuperscript{14} Regardless if they are heard left to right or right to left, the rhythm remains the same.

Messiaen sees these non-retrogradable rhythms as intimately connected with the Modes of Limited Transposition. The various modes realize in a vertical direction what the non-retrogradable rhythms realize in a horizontal direction.\textsuperscript{15}

He also makes the following analogies: That the modes cannot be transposed beyond a certain point without repeating, just as it is impossible to retrograde the rhythms without

\textsuperscript{13} For a detailed discussion, and examples of this process, see Chapter III, under Rhythm, pp. 41-46.

\textsuperscript{14} Messiaen, \textit{Technique}, p. 20.

\textsuperscript{15} Ibid. p. 21.
repeating. An examination of the structure of the modes listed previously in Figure 1.1 also demonstrates that the modes are divisible into symmetrical groups, and that the last note in one group becomes the first note in the next group. The rhythm illustrated on page ten is also divisible into symmetrical groups, although in retrograde symmetry. Also, the rhythms frame a constant value common to both groups. Finally, the modes contain within themselves small transpositions while the rhythms contain small internal retrogradations. This musical vocabulary, says Messiaen, "will lead him to that sort of musical rainbow which the musical language . . . attempts to be." 16

Purpose of Study

While the incorporation of these materials in Messiaen's compositions shows a high level of musical unity, this has sometimes been overlooked in the studies done on his music. The purpose of this study is to ascertain, through a parametric analysis of the Catalogue d'Oiseaux, 17 (hereafter referred to as Catalogue) the compositional style of Messiaen, and the musical significance of the birdsong incorporated. This study will attempt to delve further into the musical style of Messiaen than have previous studies by

17. Olivier Messiaen, Catalogue d'Oiseaux, (Paris: Leduc, 1958)
examining sonorities and rhythmic and formal interrelationships in birdsong and other materials, drawing conclusions based purely on musical, and not programmatic grounds.

Methods and Terminology

This chapter has hopefully presented and clarified aspects of Messiaen's musical vocabulary and the techniques he employs in his works, particularly the Catalogue. An understanding of these techniques is essential for the analysis which follows.

Chapter 2 will deal with the evolution of birdsong from its first appearance, *(Quatuor pour le Ens du Temps, 1941)* up to and including the Catalogue. Chapters 3 and 4 will each deal with an in depth analysis of one of the pieces comprising the work. Chapter 5 will be a summary of, and conclusions regarding the musical significance of the birdsong depicted, and the musical interrelationships which exist in the work, as evidenced by the pieces studied.

Examples of the techniques illustrated in the first chapter will be discussed as they appear in the context of the composition. Parametric relationships will be examined throughout. A parameter is a distinctive attribute of sound, in terms of which one (elementary) sound or sound configuration may be distinguished from another.\(^{18}\)

---

Musical examples, charts, and diagrams will be presented as needed to clarify concepts.

The analysis necessitates the use of terminology with which the reader may be unfamiliar. This terminology is listed below.

**Ametrical**: Music which has no stated meter. Bar lines are used to indicate periods and cancel accidentals. The number of pulses may vary between measures.

**Bird-related Material**: A musical depiction of any event other than song perpetrated by a bird, i.e., flight.

**Birdsong**: A musical depiction or interpretation of the sounds produced by a bird.

**Cohesive Parameters**: Those parameters which create inter-, or intra-sectional connections. ¹⁹

**Differential Parameters**: Those parameters which create sectionalization. ²⁰

**Duration Complement**: The total number of durations in a work or a fragment of one. ²¹

**Interpolation**: An abrupt change of elements in a composition, followed by an almost immediate continuation of the first idea.

---


²⁰. Ibid. p. 25.

Interval Class: An interval class (IC) consists of an interval (only simple intervals are considered) and its complement. There are six interval classes.
1. (m2, M7), 2. (M2, m7), 3. (m3, M6), 4. (M3, m6), 5. (P4, P5), 6. (aug. 4, dim. 5). 22

Interval Set Structure: A convenient abstraction for symbolizing generic collections of intervals. To determine a set structure, the pitch class members are assembled so that there is the least possible interval distance between the first and last notes. They are then numbered in semitone distances above the first element, 0.

Juxtaposition: The abrupt change of parametric elements in a composition.

Non-bird Material: That material which depicts any aspect of the birds environment, i.e., wind, a river, mountains.

23. Ibid. p. 475.
CHAPTER 2

THE DEVELOPMENT OF BIRDSONG
AND THE
CATALOGUE D'OISEAUX

Probably the most important aspect of Messiaen's style from the 1940s to 1958 is the use of birdsong as the essential material in his works.

Although Messiaen had been notating birdsong since his early teens, it did not appear in his music until 1941, when Messiaen was a prisoner of war. Inspired in part by the birds freedom as compared to his own plight, the sounds of a bird are the first sounds heard in the piece, Quatuor pour le Fins du Temps, (hereafter referred to as Quartet). "If you want symbols, let us go on to say that the bird is the symbol of freedom. We talk, he flies. We make war, he sings."¹ The inclusion of birdsong in the technique of Messiaen was just one more extension of his love of God, and the endless possibilities of nature as material for composition.

Messiaen's birdsong related works can be divided into two periods: 1) Early Works, (1941-1952), which contain birdsong but are not dominated by it; 2) Later Works, (1953-1958), which are much larger in scope and use birdsong and other materials as a basis for a major part of the work. Compositions of the Early Works period include:

Quatuor pour le Fins du Temps, (1941)---Clarinet, violin cello and piano

Visions de l'Amen, (1943)---Two pianos

Vingt Regards sur l'Infant Jesus, (1944)--Piano

Harawi, (1945)---Soprano, piano

Turangalila Symphonie, (1948)---Orchestra

Ile de Feu, (1950)---Piano

Messa de la Pentecote, (1950)---Organ

Livre d'Orgue, (1951)---Organ

Merle Noir, (1951)---Flute, piano

Compositions of the Later Works period include:

Reveil des Oiseaux, (1956)---Piano and Orchestra

Oiseaux Exotiques, (1956)---Piano and Orchestra

Catalogue d'Oiseaux, (1958)---Piano
Important historically among these works is *Vingt Regards sur l'Infant Jesus*, in being the first piece to name a specific bird in the score. The *Turangalila Symphonie* is also important historically. The massive work of ten movements is Messiaen's first large orchestral work to include birdsong. Regarding birdsong development, the symphonie offers no new innovations, and in relation to the immensity of the work, the bird sections are quite brief.

Much has been written regarding the accuracy and authenticity of Messiaen's birds.

The latest works of Messiaen, (*Reveil des Oiseaux, Oiseaux Exotiques*, and *Catalogue d'Oiseaux* are again of a rather special nature and are based entirely on birdsong taken down from nature with the most meticulous rhythmic and melodic exactitude. Eric Salzman adds: "primary sources of Messiaen's inspiration are bird calls. He is an expert ornithologist and his bird songs are authentic." This belief in the accurate nature of the birdsong is countered by other opinions.

From a musical point of view, the grand tutti is a remarkable moment... but it is nothing like a dawn chorus. Nor does the piano sound like a nightingale, or the Eb clarinet like Cetti's warbler, or the glockenspiel like a whitethroat. They

---


sound like piano, $E_b$ clarinet, and glockenspiel. The overall sound created by *Reveil* is not of a dawn chorus but of a cageful of mechanical birds. And why not? The music is enjoyable as music.\(^4\)

What is obvious about birdsong is that it is not exact imitation. Birds sing at extremely fast tempi, and in a very high range, both of which are impossible to reproduce on conventional instruments. Also, birds do not sing in well defined, tempered intervals, and adjustments must be made for this aspect of the transcription.

The basic contention of this study is that the birdsong of Messiaen is not some haphazard, inaccurate exercise in transcription, nor are they absolutely "authentic", but they are a thorough and comprehensive integration of all the techniques of composition which Messiaen had at his disposal.

**The Early Birdsong Works**

All of Messiaen's earliest explorations of birdsong show similar basic tendencies. Birdsong is presented simply, with an almost exclusive emphasis on the melodic aspect of the song. A study of the parametric manipulations which occur during this embryonic stage of development will assist us in determining the evolutionary process of this type of material.

---

Pitch

In its earliest stages, (1940s), pitch was the most important element in defining birdsong material. The naturally melodic nature of birdsong material drew Messiaen to consider intervallic relationships and melodic contour first and foremost. Birdsong was presented almost exclusively as a single melodic line, with no harmonization. Before discussing intervallic relationships however, a determination of the method of selecting pitch materials is necessary.

There are a few instances in early birdsong where pitch material is derived from modal sources. In Harawi, (1945), Messiaen draws pitch material from a combination of Modes II and III of the Modes of Limited Transposition. Inclusion of scalar material is rare in birdsong of any period. More often Messiaen dispenses with scales and employs pitches which best capture the intended sound. Pitch material is generally restricted for each bird, and not chromatic, but not based on any of the established scalar patterns. Intervallic relationships which exist in the melodic line are more important than scalar patterns. In Messiaen's earliest works, he emphasizes intervals that remain important in all subsequent works.

Figure 2.1, on the following page, illustrates the very first appearance of birdsong in Messiaen's music, the Quartet, written in 1941. Interval Class (IC) 1 immediately establishes itself as an interval of prime importance. It
is heard at the beginning, middle, and end of the first measure. IC4 is also heard in the first measure and is important both in an ascending and descending manner in later works, particularly in its minor 6th form. Finally, IC6 is an important idea in the second measure and continues to be throughout the work.

Figure 2.1. Quartet, p. 1, system 1.

The first birdsong theme of the fifth movement of Visions de l'Amen, (1943) is shown in Figure 2.2, on the following page. The material is Messiaen's first attempt to depict birdsong in any way other than single line melody, and the idea is repeated throughout the movement. The pitch material in both voices is identical, though interverted. The interval class which results on the important downbeats are IC4. Melodic ideas are subject to expansion or contraction. These ideas vary from long melodic lines to short phrases with staccato leaps.
Although vertical simultaneities occur in most types of music, the accompaniment to the early birdsong works is generally quite independent of the birdsong itself. There doesn't seem to be a conscious effort to affect or alter the timbre of the birdsong, at least not to the extent found in later works. In *Visions de l'Amen*, for two pianos, each piano has its own defining character, Piano I playing the bird melodies and Piano II providing the accompaniment. See Figure 2.3.
The sonorities in Figure 2.3, on the preceding page, are part of an ostinato pattern, that is, a number of recurring sonorities which provide the accompaniment to most of the birdsong in this section. The chords are triadically oriented, with added notes. The effect is one of poly-tonality, with both B and A being emphasized.

Factors of dynamics, register and range all vary considerably in early birdsong material. Figure 2.1, from the Quartet, is not typical either in terms of dynamics or register. More often than not, birdsong is presented in a high tessitura at a high dynamic level. Figure 2.2 is much more indicative of the register and dynamic level of birdsong.

Rhythm

Definitive rhythmic aspects of birdsong are presented in the earliest works. Rhythm in the third movement of the Quartet for instance, is ametrical. Although some works of Messiaen are written in a metrical framework, this results from performance necessities more than anything else. The most characteristic techniques of the early period are single pitch repetitions, (usually in a high tessitura), short, abrupt lines with many rests, and long lyrical lines. An important factor in the early birdsong works is that there are no instances of use of the Greek and Indian rhythmic modes, which are to be used extensively in later works.
A clear indication of Messiaen's style concerning form is seen in the third movement of the Quartet. The birdsong is interspersed and juxtaposed with non-bird material. The sudden parametric changes which occur between this material become form defining elements in this and later works. The juxtaposition of these ideas becomes indispensible in Messiaen's conception of form, and is the basis for formal structure in all birdsong related works. Return of material can either be in a varied form, or exact. In the fifth movement of Visions de l'Amen, for example, the main birdsong theme appears throughout the entire section, interspersed between other material. At each entrance it returns exactly as the original appearance, with no parametric changes.

**The Later Birdsong Works**

Messiaen's later works, (1953-1958) illustrate the prominence which birdsong gained in his compositional procedures. The main developments of this period are the extension of birdsong to become the most important aspect of the composition, and the manipulation of timbre in the depiction of the birdsong.5

5. All the aspects of parametric manipulation discussed in this chapter concerning the later birdsong works will be further elucidated through the study of sections of the Catalogue, in the chapters to follow.
The *Reveil des Oiseaux* (1953) for piano and orchestra can almost be considered a concerto because of the extensive piano cadenzas. It is Messiaen's only work to make exclusive use of the piano for all its materials, both melodic and rhythmic. There are no other types of materials in *Reveil des Oiseaux* other than birdsong. Rhythms are not based on any of the Greek or Indian modes as they are in later works. Rhythms are generated from the depiction of the natural song style of the birds.

**Pitch**

In all works of the later period, pitch material is derived both from scalar and non-scalar sources. In the example following, Figure 2.4, from *Oiseaux Exotiques*, there is no use of scalar material. The pitch inventory for the entire aggregate of sound encompasses the entire chromatic scale, but each instrument plays only four different pitches.

As in the early works, intervallic relationships and structure define bird material more clearly than do other pitch criteria. A linear examination of the eight different voices heard in Figure 2.4 (the Eb clarinet doubles the piano) reveals a set structure of (0, 1, 2, 7) in three of them. This emphasis on IC1 and IC6 as contained in the (0, 1, 2, 7) is consistent with earlier birdsong. Because of melodic repetition, there are actually only four different sonorities in the example. An examination of their set
structure reveals internal relationships between them. The first sonority is a \((0,1,2,3,4,5,6,7)\) cluster. The second sonority is \((0,1,2,3,4,6,7,8)\), and the third is \((0,1,2,3,5,7,8,10)\). These same pitches and sonorities then repeat. The final chord (the end repetitions) consist of an \((0,1,2,4,5,6,7,9)\) set. All sonorities contain eight different pitches, resulting in a rich, complex, timbral sound. Each sonority varies slightly in set structure, thereby varying timbre. The first two sonorities differ only by one interval. Both share \((0,1,2,3,6,7)\) subsets. The third sonority shares a \((0,1,2,3,7,8)\) subset with the second, and the fourth shares a \((0,1,2,3,7)\) subset with the third.

This example is innovative for two reasons. First, birdsong is presented in a thick, complex manner, and not single line melody. Second, the complex sonorities show strong internal relationships by virtue of set structure. See Figure 2.4.
Figure 2.4. Oiseaux Exotiques, p. 3.
Rhythm

In the later birdsong works, rhythm plays a much more important role in the depiction of both birdsong and non-bird material. Greek and Indian rhythms are used frequently, especially in the depiction of non-bird material. Other rhythmic techniques such as added rhythms, "personnages rhythmic" and palindromic rhythms are also found in these birdsong works.

Form

The form of the later birdsong works depends entirely on the underlying program of the work. Symmetry and form are established by relationships of timbre, texture, pitch, dynamics, and rhythm. Common to all later works, formal sections are arranged symmetrically. The Reveil des Oiseaux is concerto like, with piano cadenzas framing the central tutti's. Oiseaux Exotiques and the Catalogue are much more sectionalized in form. This sectionalization is the basic and most important aspect in Messiaen's conception of form and is the basis for the entire Catalogue.

The Catalogue d'Oiseaux

Background and Introduction

Messiaen's most ambitious work for solo piano and the culmination of his work with birdsong is the Catalogue d'Oiseaux. The work was begun in October 1956, and finished in September 1958. It is dedicated to Yvonne Loriod,
whom he married the following year. The Catalogue 
"integrates birdsong in its fully developed form with the 
rhythmic and modal techniques of the post-war period, while 
incorporating some of the earlier Modes of Limited Trans-
position, and rhythmic devices."

The Catalogue is a massive work comprising seven 
books and requiring approximately two and one half hours 
for performance. The thirteen individual pieces are 
arranged symmetrically as shown in Table 2.1. Relative per-
formance times have been added for comparisons of length.

Table 1. Formal Chart, Catalogue d'Oiseaux

<table>
<thead>
<tr>
<th>Book</th>
<th>Piece</th>
<th>Title</th>
<th>Performance Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>I</td>
<td>&quot;Le Chocard des Alpes&quot;</td>
<td>10'25''</td>
</tr>
<tr>
<td>II</td>
<td>II</td>
<td>&quot;Le Loriot&quot;</td>
<td>9'20''</td>
</tr>
<tr>
<td>III</td>
<td>III</td>
<td>&quot;Le Merle Bleu&quot;</td>
<td>13'30''</td>
</tr>
<tr>
<td>II</td>
<td>IV</td>
<td>&quot;Le Traquet Stapazin&quot;</td>
<td>15'50''</td>
</tr>
<tr>
<td>III</td>
<td>V</td>
<td>&quot;La Chouette Hulotte&quot;</td>
<td>8'10''</td>
</tr>
<tr>
<td></td>
<td>VI</td>
<td>&quot;L'Alouette Lulu&quot;</td>
<td>8'55''</td>
</tr>
<tr>
<td>IV</td>
<td>VII</td>
<td>&quot;La Rousserolle Effarvatte&quot;</td>
<td>30'20''</td>
</tr>
<tr>
<td>V</td>
<td>VIII</td>
<td>&quot;L'Alouette Calandrelle&quot;</td>
<td>5'25''</td>
</tr>
<tr>
<td></td>
<td>IX</td>
<td>&quot;La Bouscarle&quot;</td>
<td>11'20''</td>
</tr>
<tr>
<td>VI</td>
<td>X</td>
<td>&quot;Le Merle de Roche&quot;</td>
<td>18'45''</td>
</tr>
<tr>
<td>VII</td>
<td>XI</td>
<td>&quot;La Buse Variable&quot;</td>
<td>9'30''</td>
</tr>
<tr>
<td></td>
<td>XII</td>
<td>&quot;La Traquet Rieur&quot;</td>
<td>7'25''</td>
</tr>
<tr>
<td></td>
<td>XIII</td>
<td>&quot;Le Courlis Cendre&quot;</td>
<td>11'00''</td>
</tr>
</tbody>
</table>

As can be seen, there are three pieces in each of the first and last books. There is one piece each in books II and IV, and two pieces each in book III and V. The middle book, number IV, contains one piece, by far the largest individual piece in the entire work. The palindromic symmetry first seen here continues to be an important concept in the technique of Messiaen. The brackets in the table on the preceding page,(Table 2.1.) indicate that the pieces can be divided into groups of three, with the exception of the middle piece, and all groups require roughly the same amount of time for performance, one half hour.

The title of each piece reflects the dominant bird in that particular piece. No programmatic explanation can be found for the ordering of the particular birds in the work. Although some pieces proceed chronologically in a particular day, for example from sunrise to sunset, with certain birds heard at specific times of the day, the entire work does not proceed in this fashion. There is a short preface before each piece describing its programmatic implications.

Use of the Piano

The piano would seem at first to be hardly conducive to the authentic reproduction of bird sounds. It is unable, for example, to produce crescendos on a single tone. Narrow range glissandi between tones, very important
and common in birdsong cannot be produced with great effect on the piano. The ability to vary timbre is extremely limited in comparison to the potentialities of the full orchestra. Why then, did Messiaen employ the piano as the medium for such a large work? Messiaen explains.

The rendition of timbre is particularly difficult, especially on the piano. Everyone knows that timbre represents more or less a great number of harmonics. It is therefore necessary to look for unexpected combinations of sounds, reinvented for each bird.

On the other hand, by the extension of its register and the immediacy of its attack, it is the only instrument capable of combatting the speed, tempo, and placement of high sounds of certain (bird) virtuosos.

To this Johnson adds:

His desire to treat each bird in a more individual way demanded an instrumental medium more homogenous than the orchestra. The use of the piano was ideal for this purpose because the performer had at his disposal an instrument of great flexibility, dynamic range, and expression. Indeed, because he is the only performer, he can give greater individual interpretation of each birdsong.

Form

A large scale formal structure does not exist in the Catalogue, except for the layout of the books into symmetrical units, however, interrelationships between

7. Messiaen, Liner Notes, Vega recording of the Catalogue d'Oiseaux, trans. by Carmine Calenti
books, and between pieces in a book exist, dependent on the following factors.

1. All pieces in the book have a formal structure based on the process of segmentation and return. This segmentation interposes and juxtaposes birdsong with other material in the piece.

2. There are seventy seven different birds depicted in the Catalogue. A number of these birds are heard in more than one piece. At each appearance of a particular bird, cohesive parameters make it readily identifiable and related to material previously heard. Exact repetition between pieces is rare, though it does occur. More common are parametric similarities based on tempo, dynamics, mode, register, and rhythm.

Pitch and rhythmic characteristics of birdsong in this massive work vary greatly. In order to gain insight into the specific nature of birdsong and other materials in the Catalogue, an in depth study of two of the pieces in the work, "Le Chocard des Alpes" from Book I, and "La Bouscarle" from Book V will be presented in the following chapters.
CHAPTER 3

"LE CHOCARD DES ALPES"

"Le Chocard des Alpes" is the first piece in the Catalogue. Programmatically, it is set in the mountains of the Dauphiny region of France. The piece depicts the songs of two birds found in the region, the chocard des alpes, (alpine chough) and the grand corbeau, (raven). In addition to the birdsong, there are musical depictions of non-bird and bird-related material, including bird flight, mountains, glaciers, lakes, and other factors comprising the total environment of the birds.

The piece is an alternation between birdsong and non-bird material. As this process of segmentation and eventual return is the formal basis for the entire Catalogue, a parametric analysis of both types of materials presented, as well as their function in the delineation of formal structure, will aid in the total understanding of the piece.

Birdsong

The essential characteristics of birdsong result from the interactions of the various musical parameters. An elucidation of these parameters is therefore indispensable in determining the musical significance of the material.
Pitch

Pitch material for birdsong in this piece is not derived from any of the Modes of Limited Transposition or any other modal pattern whatsoever. All twelve notes of the chromatic scale are used in the depiction of birdsong. Intervallic relationships define bird material more readily than does actual pitch inventory.

Figure 3.1, shows the first appearance of birdsong in the piece, (the chough). The first sonority of this material consists of an (0, 1, 2, 5, 6, 7) set. The second sonority is a subset, (0, 1, 5, 6, 7) with octave transposition of three of the original notes. These are both important sonorities and generate further subsets as the piece progresses. There is an emphasis on IC6 in the first sonority.

Chocard des Alpes

Bien modéré (♩=112)

(long

(un Chocard traverse le précipice en criant)

Figure 3.1. "Le Chocard des Alpes" p. 2, system 3.
The Figure below continues this material. Sonorities are $(0,1,4,8)$, $(0,1,5,6)$, and $(0,1,5,6)$ sets. These $(0,1,5,6)$ sets are also subsets of the original sonority. Between the second and third sonorities of this example, pitches are identical, but switch registers. The first sonority of the second measure has the same pitch and set structure as the original sonority (Figure 3.1) in the right hand only. The sonority following this is an $(0,3,5,6)$ set. Finally, the $(0,1,6,7)$ sonority that ends the material is a subset of the very first bird sound heard. Again, there is an emphasis on IC1 and IC6 in the final two measures. See Figure 3.2, below.

Figure 3.2. "Le Chocard des Alpes" p. 2, system 4.
Figures 3.3 and 3.4 show Messiaen’s method of subtle timbral manipulation in birdsong. The first right hand sonority in Figure 3.3, below, is heard three times in the measure. Each time however, it is harmonized differently, the resultant set structures being (0, 2, 5, 8, 9), (0, 1, 5, 6, 7), and (0, 1, 3, 5, 8). In addition to the timbral changes, the section brings back important sonorities. The (0, 1, 5, 6, 7) sonority is the same as the second chord in Figure 3.1. The second sonority in Figure 3.3, (0, 1, 2, 5, 6) is a subset of the first sonority in Figure 3.1. Thus we see unity of material through interrelationships of set structure.

Figure 3.3. "Le Chocard des Alpes" p. 3, system 5.
In Figure 3.4, the soprano line of each of the three fragments remains intact, but the harmonies beneath it change. The "a" fragment shows structures of (0,1,4,8), (0,3,4,7), and (0,3,5,7). The "b" fragment remains constant at (0,1,5,7), and the "c" fragment has set structures of (0,1,2,7), (0,2,3,7), and (0,2,5,7). Thus, the material is being changed slightly in each fragment while maintaining its basic morphological shape. In addition, the resulting sonorities cause a stronger unity of the entire material. The (0,1,5,7) is a subset of the original bird sonority, Figure 3.1. Also, the (0,1,2,7) set will be important in the birdsong of the raven, the only other birdsong in the piece.

Figure 3.4. "Le Chocard des Alpes" p. 9, system 2.
In comparison with the chough, the raven material is restricted and repetitive. Set structures occasionally return at different pitch levels, but are secondary to the repetitive, rhythmic drive of the material. Figure 3.5, below, shows a typical entrance of the raven. The set is (0, 1, 2, 7), thereby linking it with the chough material.

Figure 3.5. "Le Chocard des Alpes" p. 3, system 1.

Range is an important factor in birdsong material. The range of the chough material is quite extensive, extending from F#/F#/ to f#. The raven material, on the other hand, is very restricted in range and in a very low register. It lies between G#/G# and g1. These differences in range and register are important defining factors in the birdsong, and act along with other factors to differentiate birdsong material.
Rhythm

The essential character of birdsong in "Le Chocard des Alpes" is rhythmic and percussive in nature. There are no long, lyrical bird melodies in this piece. Short rhythmic cells dominate the entire birdsong material. The most important unifying rhythm is the \( \begin{array}{c} \hline \hline \end{array} \), found in all of the previous examples (see Figs. 3.2-3.5). Rhythmic cells longer than this are rare and are left to the bird-related materials.

Although at times the chough material is marked at other tempi, the main bulk of this bird material is heard at \( \text{j}=112 \), and \( \text{j}=132 \). The ravens tempi are constant at \( \text{j}=132 \), and \( \text{j}=144 \). This sharing of the same \( \text{j}=132 \) tempo is another important unifying factor between the birdsong materials.

Non-Bird Material

The non-bird material in "Le Chocard des Alpes" is homogenous in its content and differs significantly from birdsong in almost all areas. There are three large sections of non-bird material in the piece, and all are closely related. Factors of pitch and rhythm are most important in each appearance of the non-bird material.
Pitch

Pitch material used in the first section of non-bird material consists of overlapped 12-note aggregates. Although it is difficult if not impossible to determine exactly where one set ends and the next begins, the features of the set remain: all the notes of the chromatic scale are treated equally, with none predominating. See Figure 3.6.

![Figure 3.6. "Le Chocard des Alpes" p. 1, system 1.](image)

The second non-bird section also uses the 12-note aggregate, as does the third. The sets in the second section however, are clearly discernible due to the strict three and four voice homophonic texture. See Figure 3.7.

---

Sonorities and Intervals. A look at the first five sonorities in Figure 3.6 reveals the following sets.

\( (0,2,6,7) \), \( (0,3,5,6) \), \( (0,1,5,7) \), \( (0,1,2,7) \), and \( (0,1,4,5,7) \).

Immediately set structures act as unifying elements between bird and non-bird material. The \( (0,2,6,7) \) is a subset of the original bird sonority, as are the \( (0,1,5,7) \) and \( (0,1,2,7) \) sets. (See Figure 3.1). This \( (0,1,2,7) \) set is also contained in the "c" fragment in Figure 3.4. Finally, the \( (0,3,5,6) \) set is heard exactly in the bird material shown in Figure 3.2.

The set structures for sonorities in Figure 3.7 are as follows: \( (0,1,5,7) \), \( (0,4,6,7) \), \( (0,2,5,6) \), \( (0,1,2,5) \), \( (0,3,4,6) \), \( (0,4,6,7) \), \( (0,1,6,7) \), \( (0,1,4,6) \), and \( (0,2,5,6) \). The only set in common with the first non-bird section is the \( (0,1,5,7) \). This set is the important subset to
the very first bird sonority, (Figure 3.1). In addition, the \(0, 1, 6, 7\) set heard here is the last sonority of the bird material in Figure 3.2.

Set structure then, is used to unite not only bird material with one another in a piece, but also to unite birdsong with non-bird material. This is the first example of an extremely important concept in the formal thinking of Messiaen, strong parametric links between otherwise diverse materials.

Rhythm

As important as pitch in this non-bird material is the aspect of rhythm. In each non-bird section, Messiaen puts a group of rhythmic "cells" through a permutational process he calls "personnages rhythmic". Figure 3.8, on the following page, outlines the rhythmic scheme for the first non-bird section in the piece, right hand only. The three cells either remain the same or are augmented or diminished by a constant value. These cells can be found either fully or with some variation, in the Indian deśi-tālas.²

². See footnote 13, Chapter 1.
Cell "a" is the simhavikrama with an added sixteenth note value. Cell "b" is the râjamârtanda rhythm, and cell "c", minus the half note, is the hamsa rhythm. In the "a" group, the rhythm is progressively diminished by a sixteenth note. In the "b" group there is an augmentation by that same value. The "c" group remains unchanged. See Figure 3.8.

Figure 3.8. Rhythmic scheme for first non-bird section, "Le Chocard des Alpes", right hand.
The left hand, displaying rhythmic independence from the right, consists of four rhythmic groups which go through corresponding permutations. Cell "a" is augmented by a sixteenth note. Cell "b" is diminished by that same value. Cell "c" is also augmented by a sixteenth note, and cell "d" remains unchanged. Thus we see that while parameters of dynamics and tempo remain static, there is an inward continuity based on rhythmic permutation which provides forward movement to the section. See Figure 3.9.

Figure 3.9. Rhythmic scheme for first non-bird section, "Le Chocard des Alpes", left hand.
Although the next non-bird section also features rhythmic manipulation, it is of a much less strict type. Large rhythmic patterns return with some variation, but there is no evidence of the "personnages rhythmic" technique.

The last non-bird section also displays rhythmic permutations. Like the first non-bird section, there is rhythmic independence between hands. A schematic diagram, (Figure 3.10) of the rhythm shows the patterns and permutations which evolve. The "a" pattern is repeated as shown. The "b" cell is broken into patterns which are either diminished (dim.), augmented (aug.), or remain the same within the larger framework of the pattern.

![Rhythmic Scheme](image)

**Figure 3.10.** Rhythmic scheme for last non-bird section, "Le Chocard des Alpes", right hand.
The following example illustrates the left hand rhythm for the final non-bird section. The "a" pattern remains unchanged. The "b" pattern is augmented by a constant value, a sixteenth note, with the two sixteenth notes in the center remaining the same. The beginning of the section reveals no apparent pattern similarities with the rest of the section. See Figure 3.11.

Figure 3.11. Rhythmic scheme for last non-bird section, "Le Chocard des Alpes", left hand.
The existence of rhythmic permutations and the "personnages rhythmic" technique throughout the non-bird sections of the piece attest to the fact that it was in this type of material that Messiaen exploited his rhythmic language. Free from the constraints of bird rhythms, which he tried to depict accurately, Messiaen was able to use all of the rhythmic techniques at his disposal. Especially important are the Indian rhythms of the deći-tālas.

**Bird-Related Material**

Bird-related material plays an important part in formal structure and segmentation in "Le Chocard des Alpes". There are two main bird-related ideas, which are in stark parametric contrast to the material which precedes or follows them. The two ideas are differentiated mainly by tempo, and will be referred to in this respect.

**Pitch**

Scalar patterns are not used in the slow bird-related sections. All 12 notes of the chromatic scale are heard, though in no definite sequential order. (The beginning of the first slow section is a 12-note aggregate, but this breaks down quickly). On the other hand, the fast bird-related sections all employ the 12-note aggregates in the deployment of pitch material. Figure 3.12, on the following page, shows the first appearance of the fast flight material in the piece, and the aggregates which result.
Although the first 12 notes are in mutually exclusive hexachordal groupings, this breaks down in subsequent passages. Figure 3.13, which follows, shows bird-related material again. This material presents the 12-note aggregate in a linear fashion, each hand projecting the entire scale before it is repeated.
Intervals in the slow sections are quite restricted and range from IC3 to IC6. (m3 to aug. 4). In the fast sections all interval classes are exploited and none predominates.

All material is presented in a polyphonic texture, usually note against note counterpoint. The contour of the slow section is ascending throughout, with parallel movement of voices, while that of the fast sections is quite angular and disjunct.

Rhythm and Tempo

Tempo is an extremely important parameter in this material, both in terms of separating it from the rest of the material in the piece and in separating the two types of bird-related material. The tempo of the slow section is \( \frac{3}{8} \) = 52, while that of the fast section is \( \frac{6}{8} \) = 160. The aural effect of this diversity in tempo is stark. The slow, determined ascent of the first material is contrasted with the blur of sound from the fast section. Tempo then, is an important differential parameter in this material.

Rhythmically, the bird-related sections are flowing and uninterrupted by rests. The expansiveness of the ideas is illustrated by the fact that they run for as many as three systems without being interrupted by a bar line. There are instances of the \( \frac{3}{8} \) rhythm which was so important in the depiction of the birdsong. Thus, rhythm also serves to unify birdsong with bird-related material.
Form in "Le Chocard des Alpes"

Form results from an integration of musical events which forms a cohesive whole when combined with factors of return. This segmented approach, with stark juxtapositions of material, is basic to Messiaen's conception of form, at least in birdsong works. "Le Chocard des Alpes" is shaped by contrasts, often between brief parts, and the whole is unified by a larger pattern of relationships of the smaller portions which develop. Blocks of sound, composed of specific parametric units, are juxtaposed and interpolated throughout the piece. These materials are the birdsong, non-bird, and bird-related sections which have been analyzed. The only other type of material in the piece which has not been discussed is the "lent" interpolations heard at strategic points in the piece. These short interpolations are thick blocks of sound which are separated from adjacent materials by long silences. Formally, they are important because they unite the piece through exact recall of material. They also significantly affect the flow of the piece because of the decrease in tempo and the decay effect of the sonority.

Figure 3.14, is a diagram of the formal structure of the piece. All the "A" sections depict non-bird material and are homogenous in terms of dynamics and tempo, as well as pitch deployment and rhythmic manipulation. The precise
ordering of segments in the "B" section shows the type
of logical order imposed by Messiaen in his conception
of form.

<table>
<thead>
<tr>
<th>Section A</th>
<th>Section B</th>
<th>Section A¹</th>
<th>Section B¹</th>
<th>Section A²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-bird material</td>
<td>page 1, sys. 1, to page 2, sys. 3</td>
<td>Chough</td>
<td>page 2, sys. 3-4</td>
<td>&quot;lent interpolation&quot;</td>
</tr>
<tr>
<td>Flight of eagle</td>
<td>2, sys. 5</td>
<td>to page 3, sys. 1</td>
<td>Raven</td>
<td>3, sys. 1-4</td>
</tr>
<tr>
<td>Flight of chough</td>
<td>3, sys. 4</td>
<td></td>
<td>Chough</td>
<td>3, sys. 1-5</td>
</tr>
<tr>
<td>&quot;lent interpolation&quot;</td>
<td>4, sys. 1-2</td>
<td>to page 4, sys. 1</td>
<td>Flight of chough</td>
<td>4, sys. 2</td>
</tr>
<tr>
<td>Flight of chough</td>
<td>4, sys. 3</td>
<td></td>
<td>&quot;lent interpolation&quot;</td>
<td>4, sys. 3</td>
</tr>
</tbody>
</table>

**Figure 3.14. Formal Chart, "Le Chocard des Alpes"**
Summary

"Le Chocard des Alpes" presents three types of musical materials, each with certain identifiable characteristics and parameters. The three types, and the methods of integrating them, are discussed below.

Birdsong

Pitch material in birdsong in this piece is not based on any modal or tonal scalar patterns. Intervals and sonorities better define and interrelate material than does actual pitch inventory.

The homophonic sonorities are important generative sources for other birdsong sonorities in the piece. Messiaen's method of timbral manipulation to vary material is evidenced in Figure 3.3 and Figure 3.4. The different harmonizations under the same soprano line produce subtle changes in timbre, an important concept throughout the Catalogue.

Rhythm is an important defining characteristic of birdsong in the piece. Birdsong is presented as rhythmic and percussive, with both birds exploiting the rhythm throughout. Messiaen's older rhythmic concepts such as non-retrogradable and added rhythms are also found in the birdsong.
Non-bird Material

The homogeneity of the non-bird sections is apparent not only through the constancy of parameters such as tempo, dynamics, and register, but also in the areas of pitch order and rhythm. All non-bird material in the piece uses 12-note aggregates in the arrangement of pitches. The loosely ordered aggregates are manipulated to produce sonorities which strongly relate this material to birdsong in the piece. Thus, programmatically diverse sections are strongly related, and these interrelationships are crucial in the study of Messiaen's style.

All non-bird material goes through rhythmic permutations. The process of "personnages rhythmic" as well as the incorporation of the Indian décitālas are all indicative of Messiaen's rhythmic language.

Bird-related Material

Like the non-bird material, pitches for bird-related material are derived from the 12-note aggregate. Rhythm, texture, and tempo all serve to differentiate this material from the other types. Lines are very long and texture is polyphonic throughout.

Form

Form results from an integration of these three types of materials. For Messiaen, this segmentation process does not mean haphazard repetitions, or exact
reappearances of material, but an integrated structure based on an orderly return of a substantial number of subsections. Diverse materials, such as birdsong and non-bird sections have been shown to be linked by sonority sets, thus strengthening formal cohesion.
"La Bouscarle", the ninth piece of the Catalogue, is contained in Book V. Programmatically, the piece deals with birds and related materials along the Charente river in France. As opposed to "Le Chocard des Alpes", it features the songs of fourteen different birds. In addition to birdsong, non-bird and bird-related materials are also present in the piece. The continual juxtaposition and interpolation of this material necessitates the imposition of some type of logical continuity not based on traditional considerations of thematic development, but on segmentation and return. In spite of its greater length, twenty-one pages as compared to eleven for "Le Chocard des Alpes", "La Bouscarle" requires only one minute longer to perform. (11:20 vs. 10:25).

Birdsong

Of the fourteen birds depicted, nine appear more than once, with the warbler appearing a total of ten times. General characteristics of birdsong, as evidenced in

1. For a complete list of the birds presented in the piece, refer to tempo chart, Figure 4.10, p. 66.
"La Bouscarle" can be clarified through a study of the parameters affecting the material. This will aid in determining the musical significance of the bird material, as well as subsequently elucidating Messiaen's variational processes regarding birdsong.

Pitch

Eleven of the birds presented exhibit pitch manipulation not based on any of the Modes of Limited Transposition, or tonal scales. This is a general characteristic of birdsong throughout the Catalogue. Actual pitch inventory varies with each bird. In the first appearance of the warbler, pitch inventory reveals the use of only eight pitches, which are not oriented in any tonal or modal direction. The pitch inventory for the moorhen is even more restricted, with only seven pitches used. The chaffinch and the nightingale, on the other hand, make use of the entire chromatic scale. This diversity of pitch selection for each birdsong becomes a defining characteristic for that bird in later appearances, because in most cases pitch inventory remains the same for successive appearances of the bird.

The three birds that derive their pitch material from tonal or modal scales are the blackbird, robin, and blackcap. The blackbird material, shown in Figure 4.1, gests an A major tonal framework. A separation of the hands
shows the left hand is strongly based in A major, while the right hand plays notes usually resulting in IC4. A tertian chord (minor, minor $\frac{4}{2}$) is the underlying foundation for the melodic material.

Figure 4.2 shows material associated with the robin. Pentatonic scales are projected horizontally in each hand. The resulting coincidences are allIC1.
The blackcap is perhaps most vicariously rooted in tonality. The strong feature is the \((0,2,4,6,9)\) sonority, an E major, minor, major \(7\) chord below the melodic material, strengthening the tonal notes (circled) when they return. See Figure 4.3.

![Fauvette à tête noire](image)

Figure 4.3. "La Bouscarle" p. 12, system 2.

At times in returning material, pitches return exactly, though more often there are slight deletions or additions to the original pitch inventory.

More important than actual inventory in the homomorphic material are the sonority relationships which evolve within each bird material and between them. Figure 4.4 shows the song of the warbler, the most predominant bird in the piece. Warbler sonorities include \((0,1,2,6)\), \((0,1,6,7)\) sets in the first section, and \((0,1,5)\), and \((0,1,5,7)\) sets in the second.
Figure 4.4. "La Bouscarle" p.1, system 1.

Figure 4.5, on the following page, shows the \((0, 1, 5, 7)\) sonority heard in the warbler material as it is presented later in the song of the chaffinch,"a". The \((0, 1, 6, 7)\) set is heard again in the songs of the thrush,"b", and the sand martin,"c". The \((0, 1, 5)\) set appears again in the nightingale material,"d". Set structures are also duplicated among the other birds. The nightingale and the hoopoe share \((0, 1, 2, 6, 7)\) sets. The moorhen and the kingfisher both have \((0, 1, 6)\) sets.

Thus we see that while pitch material varies with each bird, repetitions of set structure bind and unite bird material. This is an extremely important concept in determining the logical cohesiveness of the Catalogue.
In addition to set duplications already mentioned, relationships based on subsets also exist. The chart on the following page (Figure 4.6) shows the important sonority groups of each homophonic bird section. Subsets of the \((0,1,2,6,7)\) sonority of the nightingale occur in the warbler, \((0,1,2,6)\) and \((0,1,6,7)\), the song thrush, \((0,1,6,7)\), the moorhen, \((0,1,6)\), the sand martin, \((0,1,6,7)\), and the kingfisher.

Pitch then, serves as a unifying parameter through set interrelationships of homophonic bird material.
<table>
<thead>
<tr>
<th>Warbler</th>
<th>Nightingale</th>
<th>Chaffinch</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0, 1, 2, 6)</td>
<td>(0, 1, 5)</td>
<td>(0, 1, 5, 6)</td>
</tr>
<tr>
<td>(0, 1, 6, 7)</td>
<td>(0, 2, 6)</td>
<td>(0, 1, 4, 6)</td>
</tr>
<tr>
<td>(0, 1, 5, 7)</td>
<td>(0, 1, 2, 6, 7)</td>
<td>(0, 1, 5, 7)</td>
</tr>
<tr>
<td>(0, 1, 5)</td>
<td>(0, 1, 2, 5, 6, 8)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Song Thrush</th>
<th>Kingfisher</th>
<th>Moorhen</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0, 1, 6, 7)</td>
<td>(0, 1, 5, 6)</td>
<td>(0, 1, 6)</td>
</tr>
<tr>
<td>(0, 1, 3, 7)</td>
<td>(0, 1, 3, 4)</td>
<td>(0, 3, 7)</td>
</tr>
<tr>
<td>(0, 3, 6)</td>
<td>(0, 1, 3, 7)</td>
<td></td>
</tr>
<tr>
<td>(0, 4, 6)</td>
<td>(0, 1, 5)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sand Martin</th>
<th>Yellow Wagtail</th>
<th>Hoopoe</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0, 1, 6, 7)</td>
<td>(0, 4, 7)</td>
<td>(0, 1, 2, 6, 7)</td>
</tr>
</tbody>
</table>

Figure 4.6. Set structures of nine birds in "La Bouscarle"

Harmonic intervals in the polyphonic sections of both the tonally oriented and non-tonally oriented birdsong vary. However, strong unifying intervals are IC1 and IC4. IC6, the tritone, is also heard frequently.

Birdsong is depicted in all registers of the piano. A chart of the general registral characteristics of birdsong, (Figure 4.7), shows that most birdsong remains in its own particular register. Only the warbler and the nightingale fluctuate between registers. Most material is presented in a high tessitura, as would be characteristic of accurate
birdsong transcription. There are however, notable exceptions, the corncrake and the hoopoe. Registral similarities thus unite material, while wide registral gaps are important differential factors.

<table>
<thead>
<tr>
<th>Birdsong with fluctuating register:</th>
<th>Birdsong with constant registers:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warbler—medium to high</td>
<td>Blackbird</td>
</tr>
<tr>
<td>Nightingale—low to high</td>
<td>Robin</td>
</tr>
<tr>
<td></td>
<td>Wren</td>
</tr>
<tr>
<td></td>
<td>Chaffinch</td>
</tr>
<tr>
<td></td>
<td>Yellow Wagtail</td>
</tr>
<tr>
<td></td>
<td>Blackcap</td>
</tr>
<tr>
<td></td>
<td>Kingfisher</td>
</tr>
<tr>
<td></td>
<td>Sand Martin</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>High register</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium register</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Low register</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 4.7.** Register indications for birdsong in "La Bouscarle"
The dynamic range of birdsong in "La Bouscarle" is from the triple piano of the robin and nightingale, to the triple forte of the warbler. The intensity with which material is heard generally reflects its importance as much as its character. The warbler material therefore, through dynamic level, asserts its importance in the piece as a whole.

More often than not, birdsong fluctuates in dynamic range, as is seen in Figure 4.8, below. Most birdsong is presented at a high or medium high dynamic level, with the exception of the robin, whose dynamic level remains low throughout.

Birdsong with fluctuating dynamic level:

- Moorhen— p-f
- Blackbird— p-f
- Chaffinch— p-mf
- Nightingale— ppp-ff
- Sand Martin— pp-mf
- Yellow Wagtail— pp-mf
- Thrush— mf-fff
- Blackcap— mf-ff

Birdsong with constant dynamic level:

- Warbler— fff
- Corncrake— f
- Wren— f
- Kingfisher— mf
- Hoopoe— mf
- Robin— pp-ppp

Figure 4.8. Dynamic levels of birdsong in "La Bouscarle"
The alternation of chordal and contrapuntal textures in "La Bouscarle" is basic to the organization of the piece. Although some birdsong varies in its textural fabric, most remains homogenous. All tonally oriented birdsong is presented contrapuntally. (See Figures 4.1, 4.2, and 4.3). The texture of the blackcap and blackbird differs from the others in that there is a chordal pedal heard throughout the material. (See Figure 4.1 and Figure 4.3). Polyphonic material is more lyrical and flowing, while homophonic material tends toward short, concise groupings. The density of the homophonic material ranges from two to six voices, while the polyphonic material remains thin throughout, generally two voices. Figure 4.9 shows the textural makeup of the bird material in "La Bouscarle". Since the nightingale exhibits both types of texture, it is not included in the chart.

<table>
<thead>
<tr>
<th>Birdsong with polyphonic texture: all two-voice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackbird</td>
</tr>
<tr>
<td>Robin</td>
</tr>
<tr>
<td>Corncrake</td>
</tr>
<tr>
<td>Wren</td>
</tr>
<tr>
<td>Blackcap</td>
</tr>
<tr>
<td>Sand Martin</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Birdsong with homophonic texture:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warbler-- four voice</td>
</tr>
<tr>
<td>Kingfisher-- four voice</td>
</tr>
<tr>
<td>Thrush-- two to six voice</td>
</tr>
<tr>
<td>Moorhen-- three voice</td>
</tr>
<tr>
<td>Chaffinch-- four voice</td>
</tr>
<tr>
<td>Yellow Wagtail-- three voice</td>
</tr>
</tbody>
</table>

Figure 4.9. Textural makeup of birdsong in "La Bouscarle"
Rhythm

Rhythm is the most difficult parameter to categorize because of its variation within a single birdsong. The entire Catalogue is written in an ametrical framework. A study of the bird material shows Messiaen uses a very small durational complement, or number of different durations. A study of the duration complement can facilitate performance of the piece. Because of the ametrical framework of the piece, the basic durational value is the guideline by which all other durations are considered. In "La Bouscarle", durational values range from the eighth note, which occurs infrequently, to the one hundred twenty-eighth note, an important value for the corncrake, although heard at a slow tempo. The basic duration of the piece is the thirty-second note, and slightly less common, but still important, is the sixteenth note.

The piece is unified in part by certain rhythmic ideas which act as referential guidelines in the piece. The most important of these rhythms is the $\frac{3}{8}$, heard in the second half of the warbler material. (See Figure 4.4, p.58). This rhythm appears in the material of eight of the fourteen birds in the piece. Besides the warbler, the rhythm is heard in the songs of the blackbird, robin, (slightly augmented), wren, thrush, blackcap, nightingale, and yellow wagtail. Rhythmic ideas also dominate certain
birdsongs. The three rhythmic cells which dominate the thrush material are \( \text{\textit{\textbf{\textbackslash m}}}, \text{\textit{\textbf{n}}}, \text{\textit{\textbf{\textbackslash m} \textbackslash m}}} \). The first rhythm is the important rhythm for the birdsong in the piece. The second rhythm is the important rhythm from "Le Chocard des Alpes". Thus, interrelationships exist between pieces based on rhythmic similarities of bird material. The interplay of sound and silence, of sonorities separated by rests, and of long, lyrical polyphonic lines are all characteristic of birdsong material in "La Bouscarlé".

Tempo indications for all materials in the Catalogue are very specific. For birdsong in "La Bouscarlé", tempi range from \( \text{\textit{\textbf{\textbackslash m}}} \text{\textbf{\textbackslash m}}} = 46 \) for the hoopoe, through \( \text{\textit{\textbf{\textbackslash m}}} \text{\textbf{\textbackslash m}}} = 160 \) for the wren, kingfisher, and chaffinch. Figure 4.10, (on following page) gives tempo markings for all birdsong in the piece. The figure shows the interrelationships of tempo in the birdsong material on the piece. The \( \text{\textit{\textbf{\textbackslash m}}} \text{\textbf{\textbackslash m}}} = 108 \) tempo of the warbler is shared by the blackcap and the yellow wagtail. Its \( \text{\textit{\textbf{\textbackslash m}}} \text{\textbf{\textbackslash m}}} = 138 \) tempo is heard in the kingfisher and blackbird sections. The \( \text{\textit{\textbf{\textbackslash m}}} \text{\textbf{\textbackslash m}}} = 160 \) tempo is shared by the moorhen, chaffinch, wren, and kingfisher. The extremely slow tempi of the hoopoe and corncrake are the exception rather than the rule in birdsong. An examination of their appearances in the score shows the corncrake following the warbler three out of the four times the corncrake is presented. The hoopoe, in its only appearance, also follows the warbler.
Birdsong with fluctuating tempi:

- Warbler—$\text{J} = 108, \text{J} = 138$
- Moorhen—$\text{J} = 126, \text{J} = 160$
- Chaffinch—$\text{J} = 144, \text{J} = 160$
- Blackcap—$\text{J} = 132, \text{J} = 108$
- Kingfisher—$\text{J} = 126, \text{J} = 138, \text{J} = 160$
- Nightingale—$\text{J} = 152, \text{J} = 72, \text{J} = 100, \text{J} = 66$

Birdsong with constant tempi:

- Wren—$\text{J} = 160$
- Thrush—$\text{J} = 144$
- Sand Martin—$\text{J} = 144$

- Blackbird—$\text{J} = 138$
- Robin—$\text{J} = 126$
- Yellow Wagtail—$\text{J} = 108$

- Corncrake—$\text{J} = 52$
- Hoopoe—$\text{J} = 46$

Figure 4.10. Tempo chart for birdsong in "La Bouscarle"

Morphological similarities of tempo (and register) between the two birds is not coincidental, but is based on formal, architectonic considerations of parametric differentiation between adjacent material.

As well as interrelating birdsong, tempo serves to separate and identify birdsong. In "La Bouscarle", adjacent bird material with identical tempi is found in only one instance in the entire piece.\(^2\)

---

\(^2\) page 14, system 2, Messiaen, op. cit.
Non-Bird Material

Programmatically, non-birdsong material in "La Bouscarlé" consists of water "reflections", ("l'eau reflète les saules et peupliers"). The blue-green feathers of the kingfisher, ("fleche bleue-verte du martin-pêcher"), and the river, ("la rivière"). Exact and inexact recurrences of this material at certain points act to unify the entire piece.

Pitch

The first appearance of non-bird material in "La Bouscarle" demonstrates Messiaen's technique for manipulating the Modes of Limited Transposition to produce varying sonorities. The flurry of chords in Figure 4.11, on the following page consist entirely of pitch material derived from the third Mode of Limited Transposition. Each voice of the sonority is projected horizontally and realizes the scale in that direction. The original intervallic relationships govern the subsequent sonorities, and in this case Messiaen uses triadic harmonies interspersed with non-triads to produce a feeling of unresolved tension.
(flèche bleue-verte du Martin-pêcheur)

Très vif ($d = 200$)

Figure 4.11. "La Bouscarle" p. 1, systems 3-4.
The distribution of the pitch material for the "reflections" material differs at each appearance, but pitches are derived from the 12-note set. The set is arranged in loosely connected 12-note aggregates. See Figure 4.12.

![Musical notation]

Figure 4.12. "La Bouscarle" p.2, system 3.

The "river" material is not so predictable in its use of modes. In the next example, Figure 4.13, Messiaen projects the third Mode of Limited Transposition in a linear fashion, transposition II. At the change in register, Messiaen discards the modes and substitutes added sixth chords.3

3. These sonorities, with a descending fourth in the soprano line, recall the love theme from the Turangalila Symphonie. (Johnson, 1975), p.130.
At the third appearance of the material, the use of the mode fluctuates. There is no strict modal use until the beginning of the three staved music, shown below. The material takes on a tonal character in that there is a V-I chord movement in E in the third staff. The pitch material for the top two staves comes from Mode III. See Figure 4.14.

Figure 4.13. "La Bouscarle" p. 4, system 4.

Figure 4.14. "La Bouscarle" p. 13, system 2.
Because the Modes of Limited Transposition contain internal transpositional subsets, set structure repetition results when the modes are projected in a linear fashion, as in Figure 4.11. Sonorities include (0,1,3,4,5,8), (0,1,2,4,5,8), and (0,2,4,5,6,8), followed by a repetition of these sounds, though at different pitch levels. The "river" material also exploits the third Mode in such a way that resulting set structures are identical. The sonorities of this material, (Figure 4.13) are (0,1,3,4,7), (0,1,3,4,5,8) and (0,2,4,5,6,8) sets. The same basic structures are heard throughout the "river" material.

Material not derived from the Modes is not so predictable in set structure. Sonorities for the non-bird material in Figure 4.12 are (0,1,2,6,8), (0,3,4,6,9), (0,1,4,6), (0,1,2,5), (0,1,2,4,6,8), and (0,1,3,5,7). These have no counterpart in the other material. Intervallic relationships however, unite it with both bird and non-bird material throughout the work. The important intervals, IC1 and IC6, are heard many times in this material.

The "tres modere" sonorities in Figure 4.15, on the following page, are not derived from any modal source. The two halves have different pitch inventory, but exact intervallic set structure. The first sonority of each is (0,1,2,3,5,6,8), and the second is (0,1,2,3,4,7,9).
Texture for all non-bird material is homophonic and relatively thick, between four and six voices. Each of the three types of non-bird material has its own register and dynamic level, which remains constant at subsequent appearances, thus acting as unifying factors.

Rhythm

Figure 4.16, on the next page, shows the rhythmic scheme for the "reflections" material on page two of the score. The material is presented as a rhythmic canon, the bottom line entering at a distance of a sixteenth note and augmented by a sixteenth note, from the top line. When the material returns later, there is no canonic treatment.
The "river" material exhibits rhythmic homogeneity throughout. Phrasing is smooth, lines are uninterrupted by rests. The rhythm \( \overbrace{\ddots} \), which is an augmentation of the \( \ddots \) so important in the birdsong material, is heard at each appearance.

Tempo remains generally constant with each of the three different non-bird materials. It varies only in the second appearance of the "reflections" material, where it decreases from \( \text{no rhythmic counterpart} \)
Bird-Related Material

The "flight" of the kingfisher is the only bird-related material in "La Bouscarle". It appears four times in the course of the piece. Although formally the material differs at each appearance with the addition of new elements, the same basic parametric manipulations occur throughout.

Pitch

Figure 4.17 illustrates the first appearance of the flight material. The sonorities of the right hand are based on pentatonic scales projected horizontally for each voice. The single notes between each sonority form pentatonic scales of their own. Meanwhile, the left hand plays the notes in an A major triad. At the second appearance of the material however, pitches are not derived from any modal source.

Extrêmement vif ($d' = 184$)

Figure 4.17. "La Bouscarle" p. 5, system 3.
The vertical set structures resulting from the scalar motion in Figure 4.17 are (0,1,5,8), (0,1,4,7), (0,5,7), and (0,1,5,7). They serve to unify flight material when it reappears, but not to interrelate it with the other types of materials, birdsong and non-bird material. Figure 4.18 is the second appearance of the material.

\[ \text{Tres vif (}\text{}\dot{\text{m}}=144) \]

\[ \text{mf (vol nuptial du Martin-pêcheur)} \]

Figure 4.18. "La Bouscarle" p.8, systems 4-5.

Sonorities of the right hand consist of alternating major and minor harmonies over an A\textsuperscript{b}, E\textsuperscript{b}, ostinato. This ostinato pattern relates strongly to the one in Figure 4.17.
Factors of contour and register are important in defining this material. Sonorities are arranged in an arch form, and at the second appearance, (Figure 4.18) the sonorities of the arch form are palindromic, a favorite device of Messiaen. Playing the passage in retrograde from the first sonority in the second measure would be the same as playing it forward to that point.

Rhythm

Rhythm is homogenous throughout the flight material and consists of the triple groupings shown in Figures 4.17 and 4.18, with some double groupings interspersed. Lines are long and uninterrupted by rests. Tempi are very fast for this material, being $\frac{\text{j}}{\text{s}} = 184$, $\frac{\text{j}}{\text{s}} = 144$, and $\frac{\text{j}}{\text{s}} = 152$.

Form in "La Bouscarle"

The musical materials featured in "La Bouscarle" have been discussed at length. Their mode of presentation in the piece illustrates Messiaen's segmented approach to form. Because of the large number of birds involved, and the constant intra-sectional juxtaposition of non-bird and bird-related with birdsong material, formal structure is based on an orderly return of a substantial group of materials. The chart on the following pages shows the large scale formal structure of "La Bouscarle", as well as subsectional groupings (Figure 4.19).
**Introduction**

<table>
<thead>
<tr>
<th>Bird</th>
<th>Page</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warbler</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Moorhen</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Kingfisher</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>&quot;Blue green Feathers&quot;</td>
<td>1</td>
<td>3-4</td>
</tr>
<tr>
<td>Kingfisher</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Warbler</td>
<td>2</td>
<td>2-3</td>
</tr>
</tbody>
</table>

**Interlude**

"Reflections" 2, sys. 3, to page 4, sys. 1

**Strophe I**

**Part A.**

<table>
<thead>
<tr>
<th>Scene</th>
<th>Page</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>River, Blackbird</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Warbler</td>
<td>5</td>
<td>3-4</td>
</tr>
<tr>
<td>Kingfisher Flight</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>River, Robin</td>
<td>5</td>
<td>to page 6, sys. 2</td>
</tr>
</tbody>
</table>

**Part B.**

<table>
<thead>
<tr>
<th>Bird</th>
<th>Page</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warbler</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Corncrake</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Thrush</td>
<td>7</td>
<td>2-3</td>
</tr>
<tr>
<td>Wren</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

**Strophe II**

**Part A.**

<table>
<thead>
<tr>
<th>Scene</th>
<th>Page</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>River, Blackbird</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Warbler</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Kingfisher Flight</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>River, Robin</td>
<td>9</td>
<td>3</td>
</tr>
</tbody>
</table>

**Part B.**

<table>
<thead>
<tr>
<th>Bird</th>
<th>Page</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warbler</td>
<td>10</td>
<td>2-3</td>
</tr>
<tr>
<td>Corncrake</td>
<td>10</td>
<td>3-4</td>
</tr>
<tr>
<td>Thrush</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Chaffinch</td>
<td>11</td>
<td>3-5</td>
</tr>
<tr>
<td>Warbler</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Corncrake</td>
<td>11</td>
<td>5</td>
</tr>
</tbody>
</table>

Figure 4.19. Formal Chart, "La Bouscarle"
### Strophe III

**Part A.**

River, Blackcap | page 12, sys. 1, to page 14, sys. 2  
---|---  
Warbler | 14  
Hoopoe | 14  
Wren | 14  

**Interpolation 1**

Nightingale | page 15, sys. 1-5  

**Strophe III (cont.)**

Kingfisher Flight | 16, sys. 1, to page 17, sys. 2  

**Interpolation 2**

"Reflections" | page 17, sys. 3, to page 18, sys. 3  
Sand Martin | 18, 4, to page 19, sys. 1  
Moorhen | 19  
Warbler | 19  

**Strophe III (cont.)**

**Part B.**

River, Robin | page 19, sys. 3, to page 20, sys. 4  
---|---  
Corncrake | 20  
Yellow Wagtail | 20  

**Coda**

Kingfisher Flight | page 21, sys. 1-2  
Kingfisher | 21  
"Blue green Feathers" | 21  
Warbler | 21  

---

Figure 4.19. Continued
The introduction is so termed because although it presents important material, especially the song of the warbler, most of the material here does not return until the Coda. The exact return of both the "blue-green feathers" material and the song of the kingfisher, and a variation of the warbler material in the Coda, produces a symmetrical framework into which the remaining material is set.

The homogeneity of the non-bird material in the interlude readily separates it from the other material.

The three strophes are delineated by a logical return of sub-sectional materials. All three strophes begin with the "river" material interspersed with a particular birdsong. Though the actual birds may differ, the three used in this respect all suggest tonal implications. Part "A" in Strophes I and II use the same ordering of sub-sectional groupings. Exact repetition of material is avoided through the variational processes to be discussed on the following pages. Part "B" of the first two strophes also have the same ordering, though there is additional material in the second strophe. Strophe III maintains a general relationship with the first two strophes through return of previously heard material. Entirely new material is added here also. This material includes the songs of the hoopoe and yellow wagtail. In addition, there are two interpolations in this section, so named because they interrupt the logical established sequence of the strophes.
Large formal sections are separated by silence, an important device in this respect for Messiaen. Each intra-sectional group has an identifiable composite of parameters which returns at various points, thus uniting the work logically.

**Birdsong Variation**

In order to maintain interest in a formal structure so repetitive, Messiaen often varies material at each successive appearance. A study of the metamorphosis, or lack of it, in the successive appearances of a birdsong gives us valuable insight into Messiaen's style, particularly as regards variation. Parametric cohesiveness is achieved in a variety of ways, which range from exact repetition to broad, general relationships of texture and contour.

Tempo, register, dynamics, and texture are the strongest cohesive factors in recurring birdsong. All return exactly when the particular bird reappears, with the exception of the blackbird, whose dynamic level differs slightly the second time it is heard. Variation then, is achieved through pitch manipulation, and the addition of entirely new material. Most recurring material combines both these factors.

The warbler material, heard ten times in the piece, illustrates both these methods. Of the ten appearances of the birdsong, only four employ variations
of the original statement. The other six are a repetition of one of the variants, or the original. See Table 4.1.

Table 4.1. Recurrence and Variation of Warbler material

<table>
<thead>
<tr>
<th>Material</th>
<th>Appearance</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>original</td>
<td># 1</td>
<td>1</td>
</tr>
<tr>
<td>variation of original</td>
<td># 2</td>
<td>2</td>
</tr>
<tr>
<td>variation of original</td>
<td># 3</td>
<td>5</td>
</tr>
<tr>
<td>same as # 3</td>
<td># 4</td>
<td>6</td>
</tr>
<tr>
<td>same as # 2</td>
<td># 5</td>
<td>8</td>
</tr>
<tr>
<td>same as # 1</td>
<td># 6</td>
<td>10</td>
</tr>
<tr>
<td>variation of original</td>
<td># 7</td>
<td>11</td>
</tr>
<tr>
<td>same as # 3, with extension</td>
<td># 8</td>
<td>14</td>
</tr>
<tr>
<td>same as # 7</td>
<td>#10</td>
<td>21</td>
</tr>
</tbody>
</table>

Pitch inventory for successive appearances vary, as do resulting sonorities. In Figure 4.20, following, the IC6 relates strongly to the corresponding section in the original statement, (Figure 4.4).

At other times, both sonorities and pitches return. Figure 4.21 illustrates the third appearance of the warbler. The second sonority has the same pitch material as the original in the right hand, only inverted. The left hand of the third sonority of both have the same set structure,
Figure 4.20. Second appearance of the warbler in "La Bouscarle" p.2, system 2.

(0, 1, 2, 7). The second sections of Figures 4.4, and 4.21 show pitch similarities. The G# and C# in the right hand, for instance. In the original example, IC6 appears in the right hand, and IC5 is heard on the bottom. In the third appearance, Figure 4.21, below, this is reversed, with the IC5 heard in the right hand and the IC6 heard on the bottom.

Figure 4.21. Third appearance of the warbler in "La Bouscarle" p.5, system 2.
Also, entirely new material is heard in the second appearance, which contrasts it with the original. Although not shown in Figure 4.20, the sonorities of the extension are \((0, 1, 5, 7)\) sets. This \((0, 1, 5, 7)\) sound is heard in the original statement. Thus, while it is different material, it relates to material already heard. When this extension reappears on page 19 of the score, pitch material differs, but the resultant sonorities do not.

The final sonority of the third statement, (Figure 4.21) is an \((0, 1, 6, 7)\) set, and has the same pitch and interval structure as the third sonority in the original.

Figure 4.22, below, is the seventh appearance of the material. A comparison of overall set structure shows no similarities with previous examples. However, if the hands are separated, the characteristic interval classes, IC1 and IC6 are present.

![Musical notation](image)

**Figure 4.22.** "La Bouscarle" p.11, system 4.
A study of other recurring birdsong will reveal the same general results. Variation is achieved through the rearrangement of pitch material. Registral displacement alters the timbre of the sound slightly, but internal relationships based on intervallic similarities, as well as set repetition, unite the material. The addition of entirely new material naturally varies the total picture of the birdsong.

Summary

"La Bouscarle" is an integration of birdsong, non-bird, and bird-related materials into a logical cohesive whole. Through a study of the piece, the following conclusions can be drawn for each type of material.

Birdsong

Birdsong is the primary type of material in the piece. Pitch usage is at times derived from modal or tonal scales, though not often. Through an examination of the sonorities of each bird, it has been shown that apparently dissimilar materials are united by intervallic set structures and subsets. This is an important concept in understanding Messiaen's style. Factors of tempo, register, texture, and dynamics also serve to identify birdsong.

Rhythm is a crucial unifying parameter in birdsong in "La Bouscarle". The rhythm, as has been pointed out, appears often and interrelates otherwise diverse musical materials.
Non-Bird and Bird-Related Material

These types of materials rely much more on the Modes of Limited Transposition and the 12-note mode in the generation of material. The manipulation of these modes is important in all of Messiaen's music. Non-bird material relies on the 12-note aggregate frequently, either divided into hexachords on separate staves, or projected horizontally.

The interrelationship of these three types of materials is achieved mainly through internal intervallic similarities. The important intervals are IC1, and IC6, and are presented and exploited in all types of materials.

Form

Form is based on the presentation and eventual recall of material, usually with some type of variation. This segmentation is achieved through the juxtaposition of small intra-sectional groups throughout the piece, as well as the formulation, on a higher architectonic level, of large sections combining a number of these smaller groups. Sections are not ordered illogically, but are based on considerations of tempo, register, dynamics, texture, and pitch. Interest and movement in the piece depend on stark contrasts of all these factors.
In a work as massive as the *Catalogue*, any conclusions drawn would have to be based on an analysis of certain portions of the work, and a projection of the findings within these portions on the work as a whole. From the parametric analysis contained in the preceding chapters then, we may gain insight into Messiaen's conception of form, as well as the musical factors at work in the depiction of birdsong, non-bird, and bird-related materials.

**Birdsong**

Because it is the subject of the programmatic theme of the work, birdsong is naturally the most important material considered. All musical parameters come into play in its depiction. Conclusions regarding Messiaen's birdsong style can be postulated from a study of all these factors.

**Pitch**

Although it has been shown that tonal and pentatonic scales are used to generate birdsong occasionally, as evidenced by the blackbird, blackcap, and robin
material in "La Bouscarle, most birdsong is not derived this way. Actual pitch inventory varies with each particular birdsong, but important factors of sonority and intervallic relationships exist and unite both the variations of one particular bird, and the songs of different birds.

Definitive sonorities are presented early in birdsong and generate subsequent birdsong sonorities. The first bird sound in "Le Chocard", for example, the \((0,1,2,5,6,7)\) set, generates the second, \((0,1,2,6,7)\).

Subset relationships continue to be generated throughout the material in this piece. In "La Bouscarle", set structure relationships are not only generated by the warbler, but by other birdsong in the piece as well. Exact repetition of set structures are an important means of unifying material in the Catalogue. Set structures also serve to unify material between piece. The two sonorities in "Le Chocard", \((0,1,2,5,6,7)\) and \((0,1,2,6,7)\), find counterparts in "La Bouscarle". The hoopoe and the nightingale from "La Bouscarle" each have the \((0,1,2,6,7)\) sound. All the sonorities of the warbler are subsets of this chough sound. Subsets are also found in the chaffinch, thrush, kingfisher, moorhen, and sandmartin in "La Bouscarle".

Other brief examples of set interrelationships between the pieces studied are shown on the following
The example shows a sonority associated with the raven, heard in "Le Chocard". The set is (0,1,2,7). That same set can be heard in the song of the chough, "b" from the same piece, the song thrush, "c", from "Le Loriot", piece number II, and the swift, "d", from "Le Merle Bleu", piece number III.

Birds that have been included in the two pieces studied also occur in other pieces of the Catalogue. Messiaen generally interrelates these through set structures, intervallic relationships, and exact repetition. Figure 5.2 on the following page, shows the song of the raven. The set structure is (0,1,2,7). The same bird is heard in "Le Traquet Stapazin", piece number IV, and although pitches are different, sonority structure is identical.

As with its homophonic sonorities, intervals serve to unite material between pieces, even though pitches may be different. Figure 5.3, and Figure 5.4 show the song of the wren as it was heard in "La Bouscarle", (piece IX, Book V), and as it's heard in "Le Loriot", (piece II, Book I). The IC1 trill is heard in both examples. This, along with other parametric factors, serves to unite birdsong throughout the work. See the examples on the following pages.
Figure 5.1. Set interrelationships between different birds in the Catalogue d'Oiseaux.

Figure 5.2. Set interrelationships between the same bird in different pieces in the Catalogue d'Oiseaux.
Figure 5.3. "La Bouscarle", p. 7, systems 3-4.

Figure 5.4. "Le Loriot", p. 3, system 2.
Factors of register, dynamics, and texture take on added significance in the music of Messiaen and must be viewed as important cohesive and/or differential parameters.

Birdsong encompasses the entire range of the piano and is heard at all dynamic levels. Texture is presented both homophonically and polyphonically in the Catalogue. The important consideration here is that once a set of parameters are established for a birdsong, those parameters remain intact throughout subsequent appearances of the material. In Figure 5.3, and Figure 5.4, factors of tempo, register, and dynamics bind material even though they are not contained in the same book.

Rhythm

Because of the ametrical character of the Catalogue, rhythmic aspects of birdsong are very diverse. Each bird-song has an established rhythmic character which identifies it. Rhythmic "cells" unite material through entire pieces. The \( \frac{1}{2} \) rhythm from "La Bouscarle", and the \( \frac{1}{4} \) rhythm in "Le Chocard" are examples of this.

Birdsong is depicted at diverse tempi in the Catalogue, and acts to separate material as well as unite it. The sharing of tempo between birds is one of Messiaen's methods of relating these birds to one another. In "La Bouscarle", the warbler tempo is \( J = 108 \). This is shared by
two other birds in the piece, the blackcap and the yellow
wagtail, which otherwise have completely different
characters. Tempo unites material between books also.
In Figure 5.2, the ravens tempi are identical. Tempo
is thus a strong cohesive parameter in this case.

**Non-Bird Material**

Non-bird material is heard extensively throughout
the Catalogue, though not in every piece. The main features
of this material, as evidenced by the pieces studied, are
as follows:

**Pitch**

Messiaen relies heavily on the 12-note mode and the
Modes of Limited Transposition in the depiction of non-
bird material. Use of either of these modes is found
frequently in the two pieces studied. The 12-note mode
is the basis for the long non-bird sections in "Le Chocard",
and the third Mode of Limited Transposition is used to
depict the "river" and "feather" material in "La Bouscarle".

Set structures in the non-bird sections form
interrelationships to bird material and are important in
interrelating the two. The \((0,1,5,7)\) and the \((0,1,6,7)\) are
two important sonorities in this respect found in "Le
Chocard".
Parameters of dynamics and register are homogenous in non-bird material. Once their characteristics are established, they remain relatively constant and become strong identifying elements.

Rhythm

In the non-bird sections of "Le Chocard" and "La Bouscarle", pitch and rhythm are closely related. That is, sections incorporating the 12-note mode are very important in their rhythmic treatment also. The rhythmic permutations which abound in "Le Chocard", and the rhythmic canon presented in "La Bouscarle" are two examples of Messiaen's rhythmic language. The progressive augmentation or diminution of rhythmic values, known as "personnages rhythmic" are important in Messiaen's language and have been pointed out in sections of "Le Chocard". The use of rhythms of the Indian deći-tālas affirms Messiaen's intense interest in Eastern rhythms, and have been discussed in regards to the rhythmic permutations in the non-bird sections of "Le Chocard".

Bird-Related Material

Bird-related material is used less in the Catalogue than the other two types of material. Nonetheless, it has important parametric characteristics which define its uniqueness in the total context of the work.
Pitch

Pitch selection for this material is derived from the 12-note mode, pentatonic scales, and non-scalar sources. The "flight" sections in "La Bouscarle" are the only instances where pentatonic scales are used to depict material other than birdsong. Intervals and sonorities vary greatly in this material, as does texture. Messiaen's conception of palindromic structures is further extended in bird-related material to include palindromic passages of sonorities in "La Bouscarle".

Rhythm

Since bird-related material depicts the "flight" of certain birds, rhythm tends toward long, smooth phrases, uninterrupted by rests. Tempo is an extremely important cohesive parameter in this material. Although some bird-related material is presented in a slow tempo, most of it is heard at extremely fast tempi, an important unifying factor within the material itself, and also an important differential parameter between other types of material.

Musical Interrelationships

Musical interrelationships of birdsong in both a single piece and between pieces have already been discussed under pitch aspects of birdsong. Musical interrelationships
also exist between birdsong and other material in a piece. This is important in understanding Messiaen's formal conception of a piece within a work. Internal relationships exist between these different types of materials which form cohesive bonds between otherwise diverse sections. All parameters serve to relate material, pitch and rhythm being two of the most important.

Pitch

Pitch is the most important cohesive parameter between birdsong and other material. In Chapter III, set structure relationships were discussed between these materials. (See Chapter 3, Figure 3.6). Although pitches were derived from different sources, (12-note aggregate for the non-bird vs. non-scalar for the birdsong), the resultant sonorities were closely connected. Subset relationships existed throughout the material.

Another method of integration for Messiaen is modal continuity between non-bird, and birdsong sections. An example of this can be found in "Le Merle Bleu", the third piece in the Catalogue. (See the Figure on next page). The beginning is non-bird material using 12-note aggregates. The song of the swifts partially continue this mode, but then it discontinues. The non-bird material returns, and when the swift follows, it completes the 12-note aggregate
Figure 5.5. "Le Merle Bleu", p. 1, systems 1-2.
left unfinished by the non-bird material. Although only the first sonority of the birdsong is affected, it is still significant as a means of connecting the two materials.

Intervallic similarities also unite bird and non-bird sections. In "La Bouscarle" for example, the songs of the first three birds heard, the warbler, moorhen, and kingfisher, all contain the IC6 as a predominant interval. The presence of this interval in the first four sonorities of the non-bird material that follows provides cohesion between sections. See Figure 5.6, below.

![Figure 5.6. "La Bouscarle" p.2, system 3.](image-url)
Other Factors

Many factors are involved in the formation of cohesive bonds between birdsong and other material. Figures 5.7A and 5.7B are two of the many examples existing in the Catalogue in which material other than pitch unifies material. The examples are taken from "La Bouscarle", Book V.

Figure 5.7. Rhythmic unity in contrasting sections of "La Bouscarle"
The birdsong material, "A", and the non-bird material, "B", contrast greatly in areas of tempo, register, and texture. Unifying factors however, are the dynamic level, and rhythm. The common rhythm is augmented in the non-bird section to become \( \text{\textbullet\textbullet\textbullet\textbullet} \). Durational relationships remain intact. Both rhythms are important in their respective material.

Form

Perhaps the strongest criticism to date of Messiaen's music has been in the area of form. "Messiaen's passion for categorizing is reflected in his essentially static forms. True development comes to him only with great difficulty... Form consists only of repetitious juxtapositions of material, and actual development takes a terribly long time to arrive."\(^1\)

It has been shown through an analysis of "Le Chocard" and "La Bouscarle" that form in the Catalogue is anything but static and repetitious. Form in the Catalogue is based on the process of segmentation. These segments consist of separate sound units of varying length, each with a recognizable composite of parameters, and present musical substance of varying degrees of relationship.

---

Blocks of sound, composed of specific parametric characteristics, return throughout the piece, sometimes literally, though more often with some variation. Although traditional considerations of thematic development are incompatible with the basic nature of birdsong, development of an idea does occur through timbral changes caused by pitch rearrangement, and rhythmic permutation. This segmentation process occurs throughout the work and is the unifying factor which gives logic and continuity to the entire work. Sectionalization is not the result of some weakness in Messiaen's formal process, but is his own approach to the formal process as regards birdsong. It would be an injustice to the composer to criticize him for disregarding a formal scheme which he deems irrelevant for this particular type of music. It is not a traditional approach to form and cannot be viewed in that manner.

This study has been an attempt to determine and explain the musical significance of birdsong in the Catalogue d'Oiseaux, the various interrelationships which exist in the work, and formal processes at work in the composition. Messiaen's birdsong, while attempting to depict accurately the song of a particular bird, nevertheless contains the personal style and technique of Messiaen, and are not mere transcriptions of materials.
Messiaen has expanded the musical thought of his predecessor, Debussy. The coloristic rather than functional concept of harmony has led Messiaen to evaluate the importance of all parameters in the total musical product.

The diversity of materials in birdsong works necessitated for Messiaen an entirely different approach to form. This study has shown how the formal structure is derived, and the interrelationships which exist in the materials presented.
LIST OF REFERENCES


Messiaen, O. *Catalogue d'Oiseaux*, Vega Recording, issue number VAL-11, Yvonne Loriod, pianist.


