

Birds in Messiaen's Organ Music

A case study on the accuracy in representation of birdsong in music

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Abstract

Research on the accuracy of birdsong representation in Olivier Messiaen's music has mainly been focused on birdsong within his piano and orchestra works. This accuracy issue has not been a topic within research on his organ pieces, even though these contain birdsong as well. This paper focuses on how accurately Messiaen worked during the incorporation of birdsong within the 'Messe de la Pentecôte' (1949-50) and what restrictions he had to overcome. This has been done by comparing Messiaen's 'musical' birds to their real-life counterparts. Four bird species within the 'Messe de la Pentecôte' have been investigated: the blackbird, cuckoo, nightingale and the skylark. First, Messiaen's birds were musically analyzed. Second, the same real-life birds were selected from recordings of Xeno-canto – an online bird sound catalogue – and analyzed through spectrograms. Results show that although Messiaen's birds are not completely accurate due to inevitable musical adaptations, he was able to incorporate a lot of identifiable bird characteristics in his music, such as (repetitive) motives, rhythmical patterns and sometimes even intervals.

Introduction

Composers have been fascinated by bird songs for centuries. During music history, a lot of compositions – from Clément Jannequin's *Le chant des oiseaux* (ca. 1528)¹ to the North-American birdsong elements of the Third Piano Concerto by Bela Bartók (1945)² – are based on the sounds of birds. For twentieth-century composer Olivier Messiaen, the incorporation of birdsong even became a major characteristic of his music. "Birds are the greatest

1 Richard d'A. Jensen, "Birdsong and the Imitation of Birdsong in the Music of the Middle Ages and the Renaissance," *Current Musicology*, no. 40 (1985): 50.

2 Maria Anna Harley, "Birds in Concert: North American Birdsong in Bartók's Piano Concerto No. 3," *Tempo* (1994).

musicians on our planet," he said in an interview with musicologist Claude Samuel.³ From his childhood onwards, the French composer was impressed by the sounds that these creatures produced. This interest remained the rest of his life and marked his composer's career. Especially from the 1940s onwards, the majority of his compositions is filled with countless songs of bird species from all over the world. All these sounds are based on recordings and transcriptions that Messiaen made himself during his travels. Beside a composer, musician and teacher at the conservatory of Paris, he was also an advanced amateur ornithologist, who travelled through forests all around the world to look for birds and, more specifically, their sounds. On such occasions Messiaen wore binoculars around his neck and carried pen and paper in his hands to notate as much bird sounds as he could. In the meantime, his wife Yvonne Loriod accompanied him with a recorder. Afterwards, Messiaen could listen to those recordings to check whether he notated everything in a representative way. In the documentary *Messiaen et les oiseaux* (1973) directed by Michel Fano and Denise Tual, Messiaen enthusiastically discusses his bird recordings and imitates characteristics of a specific bird species.⁴ One fragment shows that the explanation of Messiaen is accompanied by his spouse Yvonne Loriod who plays the translation of the mentioned bird sounds on the piano.⁵ His precise method of studying bird songs, however, does not mean that he truthfully copied the bird songs into his compositions.

The way that Messiaen incorporated the bird sounds into his music has been a major topic for musicologists, biographers and musical performers who studied his music.⁶ Especially the question concerning the degree of truthfulness or accuracy became relevant at an early stage: to what extent does the musical notation of Messiaen correspond to the real-life bird sounds?⁷ During the 1960s and 1970s, a debate occurred about the 'authenticity' of the musical bird notations by Messiaen. Both the term 'authenticity' and 'accuracy' are used to

3 Samuel and Olivier Messiaen, *Music and Color* (Portland: Amadeus Press, 1994), 85.

4 "Messiaen on Birds I," published by Straypixel, March 18th 2008, video, 1:16, <https://www.youtube.com/watch?v=9QdgUJss9BU>. "Messiaen on Birds II," published by Straypixel, March 18th 2008, video, 0:52, <https://www.youtube.com/watch?v=xkKrD9knBvU>.

5 "Messiaen on Birds II," published by Straypixel, March 18th 2008, video, 1:16, <https://www.youtube.com/watch?v=9QdgUJss9BU>.

6 Norman Demuth, "Messiaen's Early Birds," *The Musical Times* 101, no. 1412 (1960). Trevor Hold, "Messiaen's birds," *Music & Letters* 52, no. 2 (1971). Robert Sherlaw Johnson, *Messiaen* (London: JM Dent & Sons, 1975). Meri Kurenniemi, "Messiaen, the Ornithologist," *Music Review* 41, no. 2 (1980). Robert Fallon, "The Record of Realism in Messiaen's Bird Style," Chap. 8 In *Olivier Messiaen: Music, Art and Literature*, ed. Nigel Simeone Christopher Philip Dingle (Aldershot: Ashgate Publishing Ltd, 2007). Paul Griffiths, *Olivier Messiaen and the Music of Time* (London: Faber & Faber, 2012).

7 Johnson, *Messiaen*. Griffiths, *Olivier Messiaen and the Music of Time*. David Kraft, "Birdsong in the Music of Olivier Messiaen" (PhD diss., Middlesex University, 2000), http://eprints.mdx.ac.uk/6445/1/Kraft-Birdsong_in_the_music_of_Messiaen_VOL1.pdf.

indicate the same, namely how much Messiaen's birds coincide with real-life birds.⁸ According to musicologist Trevor Hold, there was a general assumption within the contemporary musicological literature that the birds of Messiaen were authentic in the sense that they sounded exactly the same as the real-life birds.⁹ Hold critiqued the contemporary musicologists – who thought that Messiaen's birds were exact imitations of real birds – by arguing that bird songs are too highly pitched and rhythmically too fast and complex. Consequently, it is impossible for any music instrument or human voice to copy this sound. The piccolo can achieve the nearest imitation of a real bird, but even then, the sound is not precisely the same.¹⁰ Instead of an imitation, one should consider Messiaen's birds as representations of real-life birds – in Hold's words “imaginative transmutations”.¹¹

Trevor Hold analysed Messiaen's *Réveil des oiseaux* (1953), a concerto piece for piano and orchestra. Beside analysing the musical score and showing which instrument represents which bird species, he investigated the accuracy of Messiaen's birds compared to real-life birds with sound spectrograms. Simultaneously, Hold bore in mind that a literal translation of the sound of a real bird into Western music notation is simply impossible due to rhythmical and pitch problems. Moreover, he was conscious of the fact that every bird species has a large song repertoire and that there are differences even between individual birds. Furthermore, Hold did not have the original recordings that Messiaen made of the birds. Despite all those restrictions, Hold knew that every bird has characteristics that are typical for his species.¹² Those characteristics – or what he called the “jizz” of a bird – make it easier to identify similarities between the spectrograph results and the musical score of Messiaen.¹³ Some decades later, in the 1980s, several musicologists countered the whole issue of accuracy by stressing the non-relevance of the topic. Meri Kurenniemi was not interested in the question of accuracy “because it rested on the subjective issue of the listener's perception.”¹⁴ A few years later, Paul Griffiths agreed with Kurenniemi by stating

8 Kraft, "Birdsong in the Music of Olivier Messiaen," i.

9 Hold, "Messiaen's Birds.", 115. Trevor Hold cites a couple of articles in which Messiaen is 'misinterpreted': Eric Salzman, *Twentieth-century Music: an Introduction* (Upper Sadle River: Prentice Hall, 1974). Norman Demuth, "Messiaen's Early Birds," *The Musical Times* 101, no. 1412 (1960). Claude Rostand, "Trends and Tendencies in Contemporary French Music," In *Twentieth-Century Music - A Symposium*, ed. Rollo Myers (New York: Orion Press, 1968).

10 Hold, "Messiaen's Birds," 115.

11 Ibidem, 122.

12 These are just a few examples of current ornithological literature in which one acknowledges that bird species always have characteristics that are typical for those species: Clive K Catchpole and Peter JB Slater, *Bird Song: Biological Themes and Variations* (Cambridge University Press, 2003). Diego Gil and Manfred Gahr, "The Honesty of Bird Song: multiple Constraints for multiple Traits," *Trends in Ecology & Evolution* 17, no. 3 (2002).

13 Hold, "Messiaen's Birds," 118.

14 Kurenniemi, "Messiaen, the Ornithologist," 122.

that the accuracy debate is useless, because Messiaen's compositions were so complex that it was the summit of accuracy.¹⁵

Despite those critics, the issue of the accuracy of Messiaen's bird songs persisted and it is nowadays still investigated. Peter Hill and Nigel Simeone recently investigated *Réveil des oiseaux* again. They argued that, despite Messiaen's comment in the preface that 'the bird singing are really found in nature [and that it is] a completely truthful work'¹⁶, the incorporation of the birdsongs has not happen without adaptations by the composer.¹⁷ Robert Fallon was convinced that researching the accuracy of Messiaen's birds was of critical significance, because a musical analysis could show the composer's 'aesthetics of representation' – that is the deformation of the original birdsong for the sake of the birdsong in his own music.¹⁸ He made an analysis of *Oiseaux exotiques* (1955-56), a work for piano and small orchestra. The personal audio recordings by Messiaen got lost, but for *Oiseaux exotiques*, Messiaen had used recordings he did not make himself. Instead, he used an already existing commercial set of 78 rpm-records that was published in 1942 by the American publisher Comstock Publishing.¹⁹ By listening to those recordings and by comparing them with Messiaen's musical examples through spectrograms, Fallon was able to see to what extent the birds of Messiaen conformed to the real-life birds and concluded that around two-thirds of the time Messiaen's birds conformed to the recordings.²⁰

In short, there has been a lot of discussion about the accuracy of Messiaen's birdsongs. A possible reason why there was so much confusion about this topic, is that the composer himself was not always clear about the authenticity of his birdsongs. In his early birdsong stage, he said that he was convinced that his own birdsongs were really close to reality – as shown in the preface of *Réveil des oiseaux* written in the 1950s. A decade later, during the interview with musicologist Claude Samuel, Messiaen had a more nuanced opinion. He explained that he was proud of the exactitude of his transcriptions, but this did not mean that his birds were exactly the same as real birds.²¹ As a composer, he could recognize the bird in his creations easily, but he admitted that a random listener of his music probably could not.

15 Griffiths, *Olivier Messiaen*, 168-69.

16 Hill and Simeone based their conclusions on Messiaen's observations from birdsong and other elements of nature in his *Cahiers de notations des chants d'oiseaux*, which is now available at the *Département de la musique* of the *Bibliothèque nationale de France*.

17 Peter Hill and Nigel Simeone, *Olivier Messiaen: Oiseaux Exotiques* (Farnham: Ashgate Publishing, 2007), 27.

18 Fallon, "The Record of Realism, 115.

19 Ibidem, 117. Fallon found the set of records as an imprint at Cornell University Press with ties to the Cornell Laboratory of Ornithology

20 Hold, "Messiaen's Birds," 122.

21 Samuel and Messiaen, *Music and Color*, 94.

For Messiaen, it was more important that his birds could create an atmosphere of nature than trying to translate the real-life birdsongs literally. To create this atmosphere, he consequently had to make adaptations in his own birdsongs in order to fit them into the tonal, well-tempered system to make them playable for human instruments.

This thesis builds upon the work of Trevor Hold and Robert Fallon who investigated the accuracy of Messiaen's birdsongs in his orchestral and piano work. However, the present investigation will examine organ works instead. Attention for the accuracy of birdsong in the organ music of Messiaen is missing in the debate so far. This is striking, because Messiaen is considered one of the most influential organ composers of the twentieth-century. He wrote a large amount of organ pieces that – especially from the 1950s onwards – were full of birdsongs. Musicologists seem to have overlooked this. Robert Sherlaw Johnson, for instance, made in his Messiaen biography an appendix with a list of all the bird names and the pieces where to find them. Thereby, he failed to mention major organ cycles like the *Messe de la Pentecôte* (1949-50), *Livre d'Orgue* (1951) and the *Livre du Saint-Sacrement* (1984).²² Messiaen wrote in those three pieces the species name of the birds when he cited them, the same as he did in *Réveil des oiseaux* and *Catalogue d'Oiseaux* that are mentioned by Johnson.

My thesis considering Messiaen's accuracy in bird representation will be limited to one organ piece as a case study. This will be the *Messe de la Pentecôte* (1949-50). During this stage of his composer's career, Messiaen was more preoccupied by birdsongs than ever before. From the *Quatuor pour la fin du temps* (1940-41) onwards, he started to name the bird species explicitly within the music scores. The *Messe de la Pentecôte* is relevant as a case study, because it is the first organ piece in which he mentions the birds by name. Moreover, the research is accessible due to the small quantity of bird species that he used. The six species are the blackbird, cuckoo, nightingale, robin, skylark and garden warbler. Another reason for choosing this piece, is that the aforementioned species are the ones that come back regularly in Messiaen's later (organ) compositions.

Methodology

Within this thesis, I will investigate the accuracy of Messiaen's birdsong through a combination of theoretical and practical research. The theoretical part consists of a musical analysis of the case study piece, *Messe de la Pentecôte*. This analysis will primarily focus on

²² Johnson, *Messiaen*, 199-208. The only organ work that Johnson mentions in the list, is the *Méditations sur le Mystère de la Sainte-Trinité* (1969).

the role of the used bird species within this piece. The analysis will also be limited to the three movements of the piece that consist of birdsong: the *Offertoire*, the *Communion* and the *Sortie*.²³ A major source of information on the *Messe de la Pentecôte* and the including birdsong, is the fourth *Tome* (volume) of his method book *Traité de rythme, de couleur et d'ornithologie* (1992). Within the fifth *Tome*, Messiaen extensively focuses on his observations and his use of birdsong in his music. Within the first volume of the fifth *Tome*, he paid attention to all the European bird species that he investigated, including their song repertoire, musical habits and some of the composer's translations of the particular birdsong. Within the *Messe de la Pentecôte*, Messiaen only used European bird species. For this reason, the second volume of the fifth *Tome* – that focuses on bird species outside Europe – is less important. Beside the composer's own notes, Messiaen's birdsongs within the *Messe de la Pentecôte* has been discussed in secondary literature such as the interviews with musicologist Claude Samuel and the books and articles by several former students of Messiaen, among them Almut Rössler and Jon Gillock. Those sources are valuable, because they give additive information about Messiaen's ideas about birdsong that the composer did not notate in his *Traité* books.

In addition, the results of the practical research with spectrograms (tones) and oscillograms (loudness) will be discussed. An example of reading spectrograms and oscillograms can be found in Appendix Example 1. As mentioned before, the difficulty of researching the accuracy of birdsongs is that even between individual birds of the same species there are differences in repertoire. To eliminate those individual bird effects, I selected five recordings per bird species. These are found in the online bird sound database: www.xeno-canto.org. On this website, one can find recordings of bird species categorized per species, time, location and sound-type (calls and songs). I restricted my choices by selecting recordings birdsongs from the French countryside, because Messiaen based his birdsongs in the *Messe de la Pentecôte* on bird species that he investigated in France. In the 1940s – his early period of using birdsongs – he mostly travelled through the departments of France. Moreover, when Messiaen writes about the aforementioned bird species in his *Traité de rythme*, he only refers to recordings made in France.²⁴ The selected recordings will be put in the software program Praat, a digital audio editor in which audio-fragments can be

23 The other two movements, the *Entrée* and the *Consécration*, do not have references to birdsong. Within those movements, Messiaen is more focusing on the use of Ancient Greek and Hindu rhythms.

24 For information about the recordings of the blackbirds: Messiaen, *Traité de rythme, Tome V, 1er volume*, 484. Recordings of the robin: Ibidem, 151. Recordings of the nightingale: Ibidem, 427-29. Recordings of the skylark: Ibidem, 248. Recording of the garden warbler: Ibidem, 371-76.

transformed into spectrograms and oscillograms.²⁵ In this research, oscillograms are not discussed in depth, because the loudness of a real bird is not comparable to the loudness of an organ. Spectrograms will give a visual representation of the tones (in wavelength frequencies) of the birdsongs. Then, general specific characteristics of each bird species' song can be determined. I used the same method that Robert Fallon used in his research to the accuracy of birdsongs within the *Oiseaux exotiques*.²⁶ When the frequencies of the real bird sounds are determined, those frequencies are compared to the frequencies of the human piano key frequency system (A-natural' = 440 Hz).²⁷ The frequencies of real birds are not as fixed as the piano key pitches. For this reason, a plus (+) or minus (-) is added to show where the real bird is located in relation to the closest fixed human pitch (i.e., A-natural + is somewhat higher than A-natural).

The analysis will be limited to four out of six bird species of the *Messe de la Pentecôte*. At the time that Messiaen composed the piece (1949-50), he did his ornithological observations without the help of professional ornithologists – for instance, he met Jacques Delamain only in April 1952.²⁸ As a consequence of his lack of knowledge of specific birds, Messiaen was not always sure about his observations of some bird species. Within his analysis of the *Messe de la Pentecôte*, Messiaen named a bird motif that appears in the second movement – the *Offertoire* – that could be from 'a less delicate robin or a slow singing garden warbler' (Appendix 1).²⁹ Because there are no other references to a robin or garden warbler in the rest of the *Messe de la Pentecôte*, I will not focus on those bird species. Other cases that will not be investigated, are the so-called 'idealized' birds, sounds that are bird-like, but have no reference to any existing bird species. Those can be found in both the *Offertoire* and the *Communion*. The long unison melody in bar 11-20 of the *Offertoire* (Appendix 2) – recurring later with accompaniment in bar 48-56 and a short fragment in 124 – have been interpreted as birdsongs by later performers of Messiaen's music – Messiaen himself does not tell anything about this – , but a reference to a specific species is missing.³⁰ The *Communion*

25 Paul Boersma, 'Praat, a system for doing phonetics by computer,' *Glot International* 5, nr.9/10 (2001), 341-345.

26 For examples of Robert Fallon's spectrograms, see: Fallon, "The Record of Realism", 119-22.

27 After the piano key frequencies, I notated an apostrophe to show on which octave the tone is situated. The middle octave (with A=440 Hz) is indicated with one apostrophe. The higher the octave, the more apostrophes are added.

28 Hill and Simeone, *Oiseaux exotiques*, 26. Jacques Delamain became one of Messiaen's most helpful ornithologists. Together, they travelled through different regions of France worked to look for bird species. Other ornithologists Messiaen worked with were Robert-Daniel Etchécopar, president of the Ornithological Society of France, and Jacques Penot.

29 Olivier Messiaen, *Traité de rythme, de couleur et d'ornithologie* (1949-1992): en sept tomes. Tome IV (Paris: Alphonse Leduc, 1997), 100.

30 Ingrid Hohlfeld-Ufer and Almut Rössler, *Die musikalische Sprache Olivier Messiaens dargestellt an dem*

starts with a unison birdsong on an oboe-register (Appendix 3). In this case, Messiaen explained that it is 'a call of an ideal bird' that announces the start of the spring.³¹ Because there is no reference to a real bird species, it will not be part of this research. I will focus on the bird species that are clearly mentioned in either the music score or Messiaen's *Traité*, namely the blackbird, the cuckoo, the nightingale and the skylark.

Comparing Messiaen's birds to real-life bird species

Blackbird

The common blackbird – or *Turdus merula* in Latin – is one of the bird species that Messiaen used at an early stage in his composer's career.³² He listened to the species in the parks of his hometown Paris, but Messiaen also regularly went to smaller towns such as Zürich (Switzerland) or his holiday home in Petitet (Dauphiné) where he could listen more carefully and where he could make recordings without being disturbed by the city noise.³³ The



Common blackbird (male).

blackbird appeared for the first time in Messiaen's works of the 1940's.³⁴ However, those birds were not very accurately written compared to the blackbirds from the 1950s onwards.³⁵ He considered his own transcriptions of that time as 'very badly' and he was 'deeply mortified by [his] ignorance' of bird knowledge.³⁶ Due to this uncertainty, Messiaen did not refer to any blackbird in the works of the 1940s. The only bird indications are *comme un oiseau* or *comme un chant d'oiseau*.³⁷ In later commentaries, he was more sophisticated – probably due

³¹ *Orgelzyklus "Die Pfingstmesse"; Zur Interpretation der Orgelwerke Messiaens* (Gilles und Francke, 1978), 46.

³² Messiaen, *Traité de rythme, Tome IV*, 109.

³³ URL-link of the bird picture: <http://www.ukgardenbirds.com/wp-content/uploads/2017/02/Male-Blackbird-Singing.jpg>

³⁴ Olivier Messiaen, *Traité de rythme, de couleur, et d'ornithologie (1949–1992) en sept tomes. Tome V, 1er volume—Chants d'oiseaux d'Europe* (Paris: Alphonse Leduc, 1999), 483.

³⁵ The first works by Messiaen with blackbird passages were *Quatuor pour la fin du temps* (1940), *Visions de l'amen* (1943) and the *Turangalila symphonie* (1946-48).

³⁶ Peter Hill, *The Messiaen Companion* (Portland: Amadeus Press, 1994), 253. Johnson, *Messiaen*, 118. Griffiths, *Olivier Messiaen*, 166. The first works with blackbird passages were *Quatuor pour la fin du temps* (1940), *Visions de l'amen* (1943) and the *Turangalila symphonie* (1946-48).

³⁷ Samuel and Messiaen, *Music and Color*, 91.

³⁸ Rebecca Rischin, *For the End of Time: the Story of the Messiaen Quartet* (New York: Cornell University Press, 2006), 59. Within the *Quatuor*, the blackbird appeared in *Liturgie de Cristal*, the first movement of the piece. Olivier Messiaen, *Visions de l'amen pour deux pianos*. Paris, Alphonse Leduc, 1950. Within the

to the knowledge that he gained from professional ornithologists – and explained that those *oiseaux* in his early bird stage mainly referred to blackbirds or nightingales.³⁸

In case of the blackbirds within the *Messe de la Pentecôte*, it can be determined that Messiaen is somewhat more convinced than during the composition of earlier pieces, because he wrote the blackbird's name within the score once.³⁹ Within bar 20-27 of the *Communion*, he named the upper voice *chant de merle* (Appendix 4). The other examples of blackbirds within the *Messe de la Pentecôte* are not specified in the score, but were mentioned years after the premiere of the piece by the composer himself or by some of his conservatory students. Messiaen wrote three times *oiseau(x)* in the score while he was in fact referring to a blackbird. The first time was under the demisemiquaver motif in bar 103, 106 and 127 (Appendix 5) of the *Offertoire* – that is later marked as 'calls' rather than 'songs' – and secondly under the short phrase in bar 113-114 (Appendix 6) also in the *Offertoire*.⁴⁰ The reference to the blackbird came later in his *Traité* by stating that those aforementioned motifs/phrases were parts of strophes or calls of a blackbird.⁴¹ Another reference was made by the American organist Jon Gillock, who once attended a masterclass by Messiaen whereby the *Messe de la Pentecôte* was extensively discussed.⁴² The third blackbird reference is in bar 14-20 of the *Communion* (Appendix 7). In this case, there is a dialogue between on the one hand, a blackbird that sings ornamentations and joyful and quick whistles and, on the other hand, a cuckoo that calls from a distance.⁴³

Notwithstanding the fact that Messiaen was uncertain about his references to blackbirds, he was aware of some general characteristics of its birdsong. Within *Traité de rythme* and the interviews with Samuel, he extensively talked about the blackbird's main characteristics. Here, blackbird song characteristics are analysed and compared to the music score.

score of *Visions de l'amen*, Messiaen mentioned to play 'comme un oiseau' in the fifth part *Amen des anges, des saints, du chant des oiseaux*. Within the *Turangalila symphony*, the words 'comme un oiseau' can be found in the piano score of the sixth part *Jardin du sommeil d'amour*.

38 Rischin, 59. The later references on blackbirds in *Visions sur l'amen* and the *Turangalila symphony* came in the fifth volume of *Traité de rythme*: Messiaen, *Traité de Rythme, Tome V, 2ème volume*, 632.

39 Hill, *Messiaen Companion*, 252. Messiaen wrote in the preface of *Quatuor pour la fin du temps* that he did use a blackbird, warbler, chaffinch, goldfinch, Cetti's warbler and serin, but he did not mention them in the musical score. The only exception is the nightingale. This is the first specific bird species that is written in the score by Messiaen.

40 Hohlfeld-Ufer and Rössler, *Musikalische Sprache Olivier Messiaens*, 48. Almut Rössler was a German organist who made wrote a couple of books and articles about Messiaen. Besides, she made several recordings of his music. In her analysis of the *Messe de la Pentecôte*, she described the blackbird motifs in bar 103, 106 and 127 of the *Offertoire* as 'Vogelrufe'. The blackbird passages in the *Communion* are indicated as 'Vogelgesänge'.

41 Messiaen, *Traité de rythme. Tome IV*, 100.

42 Jon Gillock, *Performing Messiaen's Organ Music: 66 Masterclasses* (Bloomington: Indiana University Press, 2010) 150.

43 Messiaen, *Traité de rythme, Tome IV*, 100.

Individual Variation among Blackbirds. At first, every male blackbird – female blackbirds never sing – develops his personal collection of song themes during his life.⁴⁴ During spring time, he is constantly improving his repertoire through the addition of new motifs and varying on themes that he invented during previous spring times. Thus, because there is a lot variation between individual blackbirds, Messiaen's transcriptions varied a lot as well. Even within his compositions – such as within the *Messe de la Pentecôte* – every blackbird passage is different from the other. For instance, they vary in length, rhythm, speed, melodic development, ornamentations and timing of breaks. Only the demisemiquaver motifs in bar 103, 106 and 127 of the *Offertoire* have the same structure, rhythmic patterns and pitches (Appendix 5).

Regular Intervals. A second general characteristic that Messiaen noticed at an early stage, is that blackbirds regularly sing a limited amount of intervals: major thirds, perfect fourths, major sixths and augmented fourths (Appendix 8 and 9).⁴⁵ When analysing the *chant de merle* of the *Communion* (bar 20-27; Appendix 10), it can be concluded that Messiaen incorporated most of those intervals in his music. Three out of four aforementioned intervals regularly appear. The major sixth interval can be found several times in the previous blackbird passage in bar 14-19 (Appendix 11).

Song Structure. A third general characteristic is that beside the consistent use of specific intervals, real blackbird songs often have a similar structure. For example, the songs can be considered as fragmented due to the frequent breaks in their song (Appendix 9). As a consequence, Messiaen's blackbirds are also characterized by regular rests that cut the songs of the blackbirds into several pieces. Furthermore, the songs of the real blackbirds have in common that those fragments often have a similar structure. This structure consists of a beginning at a relatively low frequency, where every individual tone is audible. After this, the song makes a sudden big jump upwards and ends on an extremely high pitch (between 5000 and 8000 Hz) (Appendix 12). Within the ornithological science, this phenomenon is characterized as a 'regular advertisement song'.⁴⁶ It is doubtful whether Messiaen was aware of this term, but when he defined the blackbird's song during the interview by Claude

44 Ibidem, 483.

45 Samuel and Messiaen, *Music and Color*, 88.

46 Torben Dabelsteen and Simon Boel Pedersen, "Correspondence between messages in the full song of the blackbird *Turdus merula* and meanings to territorial males, as inferred from responses to computerized modifications of natural song," *Ethology* 69, no. 2 (1985): 150. Erwin AP Ripmeester, Anne M De Vries, and Hans Slabbekoorn, "Do blackbirds signal motivation to fight with their song?" *Ethology* 113, no. 11 (2007): 1022.

Samuel, he spoke in comparable terms about 'formulae always rising to a high pitch'.⁴⁷

The blackbirds of the *Messe de la Pentecôte* are also developing their songs towards high notes. However, the highest note that Messiaen's blackbird can reach – a D-natural" in bar 21 of the *Communion* on a Flute 4-feet stop (Appendix 13; top right) – is lower compared to the highest pitch of real blackbirds. The note of Messiaen's blackbird is 2349 Hz, while the real blackbird can reach, as mentioned before, 5000 to 8000 Hz. Another structural characteristic that real blackbirds and Messiaen's blackbirds have in common, is that they often repeat motifs during their songs. Within the *Messe de la Pentecôte*, every blackbird passage has at least one motive that comes back. For instance, within the *Communion*, the rising hemidemisemiquaver motif in the upper voice, followed by a jump towards a B-natural" appears twice (bar 14 and 19) (Appendix 13; top left). Within the *chant de merle*, one motif is repeated within the same bar (25). The repetition of motifs meant that Messiaen used exactly the same notes and rhythmical structure. In other words, the height of the pitch did not change. Considering repeated motifs within real blackbird songs, its pitches are different every time, even though a human ear cannot distinguish those different pitches. Moreover, real blackbirds never sing pitches of fixed musical tones like music instruments do. As can be seen in Appendix 14, the pitches are always somewhat higher or lower than the fixed tones of the Western musical system (e.g. A-natural+; A-natural -). Despite those differences, a human ear does hear the same 'tones' in this motif and consequently, a composer like Messiaen incorporated these motifs as similar forms in his music.

Emotional Contrasts. According to Messiaen, the character of a blackbird song is full of emotional contrasts. On the one hand, it can be 'mocking, ironic and exuberantly joyful'.⁴⁸ This is best shown by the fast *rubato* passages within the *Communion* (Appendix 10) that consist of fast, often staccato notes, polyrhythm – for instance 9 (*pour* 8); "nine in the space of eight" in bar 17 – and a large amount of "before-the-beat" acciaccaturas. Both irregular rhythms and acciaccaturas are very common in real blackbird songs (Appendix 15). A blackbird never sticks to any particular regular rhythm that is ordinary in human music. On the other hand, blackbird can sing sometimes in a 'calm, peaceful and solemn' way.⁴⁹ Within the *Communion*, this tranquillity is best represented by bar 15 and the second half of bar 17, in which the blackbird sings long notes with short breaks in between (Appendix 16).

Conclusion. The blackbirds of the *Messe de la Pentecôte* have been composed with a

47 Samuel and Messiaen, *Music and Color*, 88.

48 Ibidem, 88. Messiaen, *Traité de rythme. Tome V, 1er volume*, 484.

49 Messiaen, *Traité de rythme. Tome V, 1er volume*, 484.

lot of musical compromises. For Messiaen, the enormous repertoire variety of the real-life blackbird made it complicated to capture a unifying sound of the blackbird song. As a consequence, Messiaen made each blackbird song different from the other, both structurally, harmonically and rhythmically. On the other hand, Messiaen recognized several characteristics in all the blackbird songs, such as regular repetition of motifs, standard intervals and the change between calm and restless passages. As a consequence, he incorporated those common characteristics in his own “Pentecost blackbirds”. Considering the musical notes, it was impossible for Messiaen to capture specific tones from blackbirds, because of the speed of singing. Consequently, he adapted the blackbird transcriptions to his own harmonic thinking. Thus, a complete accurate transcription of real blackbird songs is not possible, but Messiaen tried to be as accurate as possible.

Cuckoo

The common cuckoo⁵⁰ – or *Cuculus canorus* in Latin – has been often represented in Western music.⁵¹ The reason for this enormous interest in the cuckoo, is due to its very simple sound. A cuckoo has only two notes in its repertoire that form a major third. This lack of variety has the consequence that it is very easy to recognize. The simple harmonic pattern can be incorporated in music without much difficulty. Olivier



Common cuckoo.

Messiaen did so in his compositions.⁵² The cuckoos within the *Messe de la Pentecôte* are the earliest examples. At the same time, these are the only examples of cuckoos by Messiaen in his whole organ oeuvre.⁵³ Within the *Messe de la Pentecôte* – as well as in Messiaen's oeuvre in general – the cuckoo has a very marginal role. The call of the cuckoo only appears a seven times within the *Communion*. In bar 7-8 and again in bar 31-32, one can hear a very clear

50 URL-link of the cuckoo picture:

http://www.biodiversityexplorer.org/birds/cuculidae/images/352039316_1dcc70_327w.jpg

51 Famous cuckoo examples can be found in the second movement of Ludwig von Beethoven's Sixth Symphony and within *Le Carnaval des animaux* by Camille Saint-Saëns. Some composers even completely based their compositions on the cuckoo's sound, such as Claude Daquin (*Le Coucou* from *Pièce de clavecin*, 1735).

52 Beside the incorporation of the common European cuckoo in his music, Messiaen also made translations of exotic cuckoo species such as the *Coucou à eventail* (Fan-tailed Brush Cuckoo) from New-Caledonia and the *Petit Coucou à tête jaune* (Little Cuckoo) from Japan.

53 Other examples of cuckoos in Messiaen's repertoire can be found in *Réveil des oiseaux* (1953) – in which the cuckoo is represented by Chinese wood blocks – and within the second act of the opera *Saint-François d'Assise* (1975-1983).

double call of the cuckoo that can be considered as two consecutive heavy (*louré*) tones (Appendix 17). Furthermore, another cuckoo appears three times, namely in bar 14, 19-20 and 27 (Appendix 18). Contrary to complex birdsongs of blackbirds for instance, the calls of Messiaen's cuckoos are mostly easy to recognize due to simple harmonic structures. During the following comparison of real cuckoos and Messiaen's cuckoos will show that in both cases there is more variety in harmonic structure. Furthermore, attention will be paid to the timbre of both cuckoos as well as the differences in tempo.

Harmonic Differences Due to Distance. Harmonically, the cuckoo of bar 7-8 and bar 31-21 (Appendix 17) is a very obvious example. It is based on a descending major triad and is very audible for the listener. The cuckoo of bar 14, 19-20 and 24 (Appendix 18) is far less evident than the aforementioned example. Instead of the common major third, one does hear two similar tones preceded by an acciaccatura. Messiaen explained in his analysis of the *Communion* in *Traité IV* that the call of this cuckoo is coming from a very distant place and that the change of interval is the consequence of an 'auditive illusion'.⁵⁴ In other words, Messiaen once heard the cuckoo's call and recognized it, but due to the distance between him and the bird, the tones of the cuckoo that form a descending triad could not be distinguished. The difficulty of properly hearing the interval of a distant cuckoo is probably the reason why Messiaen used different intervals between the acciaccatura note and the next note. The call in bar 14 is a descending major second (from D-sharp to C-sharp). The other cases in bar 19-20 and 27 consist of a descending minor third. As such, Messiaen created a certain harmonic variety in his cuckoo passages despite the standard interval pattern. Another possibility is that cuckoos produces three tones with first two similar notes, followed by a descending augmented fourth. According to Messiaen, this happens when the cuckoo is 'disrupted, upset [or] angry'.⁵⁵ Within the *Messe de la Pentecôte*, he does not use this.

Considering the calls of the selected recordings from Xeno-canto, four out of five real-life cuckoos produces descending major thirds, as can be seen in the following table (Appendix 19). The only exception is XC242024 recorded by Yoann Blanchon. On average, this cuckoo rather sings descending minor thirds rather than major ones. The mean pitch of the first tone (630,4 Hz) is nearest to the pitch of E-flat" of the piano key pitch table (622 Hz), while the second tone (535,3 Hz) is closest to the pitch of C-natural" (523 Hz). To conclude, both Messiaen's cuckoos and real-life cuckoos often have a descending major third between the two tones, but the minor third intervals within the score show that there is more variety in

⁵⁴ Messiaen, *Traité de rythme. Tome IV*, 111.

⁵⁵ Messiaen, *Traité de rythme, Tome V, 1er volume*, 219.

intervals.

Similar Registrations. Furthermore, it strikes that Messiaen's cuckoos are often represented through soft instrument or, in case of the organ, through a single registration, namely a *bourdon* 8. On Cavaillé-Coll organs, the bourdon-stop has a very soft, but profound and broad sound that can easily be distinguished in combination with other stops. The choice for the *bourdon* as representation of the cuckoo seems logical, because a call of a real cuckoo can also be penetrating and can be heard throughout other sounds of the forest. In case of bar 7-8 and bar 31-32 of the *Communion* (Appendix 17), the other sounds are represented by the floating *gambes* and *voix céleste* stops. The more distant cuckoo in bar 14-15 and 19-20 (Appendix 18) is accompanied by the registration of the water drops (*bourdon* 16' and *octavin* 2'). The cuckoo in bar 27 (Appendix 17; bottom) has a solo role.

Different Time Durations. Within the score, Messiaen's cuckoos are all represented by notes with a relatively long duration. In case of bar 7-8 and 31-32 (Appendix 17), the length is indicated by a slow tempo (*lent*) and by the heaviness (*louré*) of the individual notes of the call. The longer notes can be found in the distant cuckoo passages in the middle part of the *Communion*. For instance in bar 19-20 (Appendix 18, top right), the first note is a syncopated crotchet, followed by a second note that lasts two crotchets. The use of broad and long notes by Messiaen differs from the way how real cuckoos are calling. In the first place, the spectrograms show that real cuckoos make their calls faster than Messiaen's ones. For instance, the cuckoo XC144003 produces eight calls within about ten seconds (Appendix 20). To compare this with Messiaen's cuckoo, a CD-recording of the *Messe de la Pentecôte* made by the composer himself in 1957 on his Cavaillé-Coll organ of the Parisian Trinity Church has been selected.⁵⁶ Messiaen plays the cuckoo calls of bar 7-8 very slow: the two calls last no less than 13,46 seconds (Appendix 21). Thus, Messiaen adapted his cuckoo by reducing the tempo to a slow tempo. Consequently, it led to an augmentation of its tones. Moreover, the second call in bar 8 (Appendix 17) is even more augmented through the addition of a short-note value, namely a dot on the quaver. This so-called *valeur ajoutée* also appears in the calls of bar 14, 19-20 and 27 (Appendix 18). In each case, the notes are lengthened through a dot or an extra note with a shorter value. This rhythmical irregularity is different from real cuckoos, whose calls are produced in a more steady way. This can be seen in for instance the spectrogram of XC 144003. All calls as well as the breaks between the calls are

⁵⁶ Messiaen, Olivier. *Messiaen par lui-même*. Performed by: Olivier Messiaen. Recorded 1957. EMI Classics CZS 7674002, 1992. 4 compact discs. The recording of the *Messe de la Pentecôte* can be found on the fourth CD.

more or less equal in length.

Pitch. The birds that Messiaen created in his music have mostly a pitch that is far lower than the pitch of real-life birds, because those latter pitches are often impossible to copy. In case of the cuckoo, the average pitches of real cuckoos vary between approximately 500 to 700 Hz as shown in the table of Appendix 19. Consequently, Messiaen's cuckoos are not always lower than real-life cuckoos. It is the case considering the cuckoo of bar 14, 19-20 and 27 (Appendix 18) with pitches between 261,6 (C-natural') and 311,1 Hz (E-flat'/D-sharp'). However, the cuckoo in bar 7-8 or 31-32 (Appendix 17) has pitches that are higher – respectively 987,8 Hz (B-natural") and 830,6 Hz (G-sharp").⁵⁷ Besides the differences in pitch, there are also similarities. Both the calls of the cuckoos from Xeno-canto and Messiaen's cuckoos are characterized by tonal stability. Within the music score, this is reflected by the use of similar notes (with a fixed pitch). Of course, the pitches of the Xeno-canto cuckoos differ per call, but the differences in pitch are always relatively small. The differences between the highest and lowest pitch (652 versus 635 Hz) of the first call is less than 20 Hz. The second call is mostly between 531 and 538 Hz (Appendix 22).⁵⁸

Conclusion. Despite the simple interval structure of a cuckoo's call, Messiaen incorporated it in some of his works. In case of the *Communion* of the *Messe de la Pentecôte*, the cuckoos have more variety than the standardized descending major third interval. Due to the distance between himself and the cuckoo, Messiaen also recognized other intervals. For this reason, he also incorporated minor thirds in his music. The frequencies within the spectrograms have shown that this interval can also be found in the repertoire of real cuckoos. Furthermore, both real cuckoos and Messiaen's cuckoos are making profound and far-reaching sounds due to their timbre. Ostensibly, the cuckoo is a bird species that is easy to translate into the music and Messiaen's cuckoos show that they are to a large extent accurately transcribed. However, Messiaen made some adaptations in his favour. A major difference is that real cuckoos have a structurally and rhythmically more consistent way of making calls. Messiaen's cuckoos are adapted to a slower tempo and to the composer's personal techniques such as the *valeurs ajoutées*.

57 Those frequencies are based on the piano key frequency system. The cuckoo sound is produced by a *Bourdon* 8'-foot stop. The stops of 8'-foot pipes are equal in pitch height to the piano keys (e.g. A' = 440 Hz).

58 Some second calls of the cuckoo of XC78110 are higher than 538 Hz, because the cuckoo is making hiccup sounds. This is the case in the fifth and thirteenth, which can be seen in the spectrogram of Appendix 20.

Nightingale

Together with the cuckoo's call, the song of the nightingale⁵⁹ – or *Luscinia Megarhynchos* in Latin – is one of the most frequently used bird sounds in Western music compositions.⁶⁰ Within the oeuvre of Messiaen, the nightingale already appears in his works of the 1940s – mostly in combination with a blackbird.⁶¹ At this early birdsong stage, as been said before, Messiaen was mostly very cautious in mentioning the bird



Common nightingale.

species by name in the scores due to his uncertainty. In case of the nightingale, however, he seemed to be less hesitant given the fact that the bird was already mentioned within *Vingt Regards sur l'enfant Jésus* (1944).⁶² During the next years, Messiaen realized that a nightingale has not much variety in its repertoire. Every nightingale has only five or six stereotyped formulae.⁶³ As a consequence, Messiaen tried to standardize the nightingale song in his compositions. For instance, the nightingale at the beginning of the sixth part of the *Turangalîla symphony* has – in terms of form and motifs – a lot in common with the nightingale of the *Messe de la Pentecôte* (Appendix 23). Within the *Messe de la Pentecôte*, the nightingale appears three times during the *Communion*. From bar 9 to 13, one sings different phrases without interruption of other birds or nature sounds (Appendix 23; bottom musical fragment). The second and third appearances (bar 33 and 47) are much shorter and represent only a fragment of the first passage, a fast slur upwards of arpeggio demisemiquavers (Appendix 24). During the following comparison with real nightingales, attention will be paid to voice volume, voice colours and rhythmical structures.

Dominance. Within *Traité*, Messiaen explains that the nightingale song can be so

59 URL-link of the nightingale picture: <http://www.nationalpedia.com/nightingale-national-bird-of-iran/>

60 Examples of nightingales within Western music can be found within music by Händel, Beethoven, Respighi and Ravel. Within the second movement of Beethoven's sixth symphony, the nightingale has a dialogue with the quail and the cuckoo. Each bird species is represented by a specific reed instrument. The nightingale is represented by one flute. The quail is performed by one oboe and the cuckoo part – as mentioned before in footnote 49 – is played by two clarinets. For a complete overview of the use of nightingales in Western music, see: Bruce Campbell and Elizabeth Lack, *A Dictionary of Birds* (London: A&C Black, 2013), 369-372.

61 Examples of the combination of blackbird and nightingale songs in Messiaen's works of the early 1940s can be found within the first movement of the *Quatuor (Liturgie de Cristal)* and the *Visions de l'amen*.

62 Johnson, *Messiaen*, 118. Beside the nightingale, the skylark is mentioned in the score of *Regard des hauteurs*. In general, this was the first time that Messiaen mentioned bird species in the musical score.

63 Samuel and Messiaen, *Music and Color*, 88.

dominant that other birds feel intimidated and stop singing.⁶⁴ To make this dominance clear in the music, the nightingale parts within the *Messe de la Pentecôte* are always presented as unison parts without accompaniment – contrary to the other bird species in the piece. The dominance is also reflected by the long rests that follows after the second and third appearance of the nightingale motif (bar 34 and 48) – as if nature sounds have stopped for a moment (Appendix 25). The recordings of real nightingales from Xeno-canto show this sound supremacy as well. Each nightingale has a very powerful and penetrating sound. For instance, the example of XC380492 is so predominant that other birds at the background are hardly audible.⁶⁵ As shown in the following table (Appendix 26), real nightingales can reach more than 8000 Hz. The nightingales of Messiaen never reach those frequencies. The highest note of the Pentecost nightingales is a D-natural⁶⁶ with a frequency of 1180 Hz (Appendix 27).⁶⁷ Again, Messiaen did not adapt the real bird sound to make it audible for the audience.

Songs Full of Contrasts. According to Messiaen, the nightingale is a ‘volte-face’ performer.⁶⁸ He can quickly switch his way of singing: from slow to fast tempo, from pianissimo to fortissimo, from long notes to virtuosic passages. Within the *Communion*, Messiaen tried to represent common nightingale themes that are rich in contrast. The first theme in bar 9 (Appendix 28) has three long quavers followed by a sudden arpeggio jump upwards with quick notes. Ornithologists gave it the onomatopoeic formula: tio, tio, tio, tiolaborix – ‘the most easy to recognize’ according to Messiaen.⁶⁹ This theme can be found in the repertoire of real nightingales as well, as shown in the spectrograms of Appendix 28. Another theme can be found in both Messiaen’s music and real nightingale songs is a pattern of two staccato disjointed tones with the following onomatopoeic formula: tikotikotikotikotiko (Appendix 29). Both themes show that Messiaen was more inspired by the structure and rhythm of the nightingale passages rather than imitate the exact intervals or tone frequencies of real nightingales. The other themes are in bar 10 (‘diogdiogdiogdiog, slow and sentimental’) and bar 11-12 (‘a new prelude [similar to the theme of bar 9] [followed by] a mocking and humoristic passage’).⁷⁰

Different Registrations. To represent the nightingale in the *Communion*, Messiaen used registration combinations on the Trinité-organ that are different in volume, intensity and

64 Messiaen, *Traité de rythme, Tome V, 1er volume*, 422.

65 The recording of XC380492, made by Timo Tschentscher, can be found in the audio-appendix.

66 The D-natural⁶⁶ can be found in bar 9, 11, 12, 33 and 47.

67 Samuel and Messiaen, *Music and Color*, 88-89.

68 Messiaen, *Traité de rythme, Tome V, 1er volume*, 424.

69 Messiaen, *Traité de rythme, Tome IV*, 110-111.

colour. He prescribed that every combination had to be played on a different manual.⁷⁰ Each combination includes a character of the real nightingale song. The themes of bar 9 and 11-12 are formed by high-pitched stops (*flûte 4, piccolo 1, tierce 1 3/5; flûte 4, cymbale*) and symbolize the clarity and height of the nightingale song. Contrastingly, a nightingale can also sing on a low register, and therefore Messiaen used a much lower stop, the *bourdon 8* in bar 10 and 13 (Appendix 30). The frequencies of the notes by Messiaen come close to the minimum frequencies of the Xeno-canto nightingales, as shown in Appendix 29. Within the score, the diversity in volume is indicated by different dynamics (*piu forte, mezzo-forte* and *piano*). Because his organ had three manuals and the large amount of registration possibilities, Messiaen could quickly switch from the one timbre to the other. As such, he tried to represent the real nightingale that can make those quick sound changes as well (Appendix 28).

Conclusion. Comparable to the reminiscent motifs – *Erinnerungsmotive* – that Richard Wagner used within his operas, Messiaen incorporated nightingale-reminiscent themes in his *Communion* that he used in earlier compositions. He probably did this, because the general amount of real nightingale themes is relatively limited. Moreover, nightingale themes are easy to recognize, because of the clear structures of their themes. Overall, it can be concluded that Messiaen's representations are mainly based on those structures and rhythmical patterns. Onomatopoeic formulae such as tio, tio, tio, tiolaborix can also be found in real nightingale repertoire. Both Messiaen's nightingales and real ones have a repertoire that is full of intentional and colourful contrasts. On the other hand, Messiaen's birds never reach the highest frequencies of the real species. Besides, Messiaen did not pay much attention to typical intervals of real nightingales. He rather incorporated real nightingale themes into his own harmonies and timbres.

70 The three manuals are indicated in the score as G. (*Grand Orgue*), Pos. (*Positif*) and R. (*Récit*). The registrations for each manual are the following: G: *bourdon 8*; Pos: *flûte 4, piccolo 1, tierce 1 3/5*; R: *flûte 4, cymbale*. The complete disposition of the Cavaillé-Coll organ (1868) of the Saint-Trinité of Paris can be found on: <http://www.orgbase.nl/scripts/rgb.exe?database=ob2&%250=2000225&LGE=NL&LIJST=lang>.

Skylark

The *Sortie*, the final part of the *Messe de la Pentecôte*, is based on the biblical words of the Apostolic Acts that the Holy Spirit returns to the earth accompanied by a sudden ‘sound like the blowing of a wind [that filled the whole house of the apostles]’.⁷¹ To represent this quote, Messiaen was mainly inspired by two phenomena of nature: the wind (*le vent*) and a chorus of skylarks (*choeur des alouettes*). The fact that he incorporated a group of skylarks – *Alauda arvensis* in Latin – has to do with early experiences during walks in the rural Aube district.⁷² There, Messiaen heard the singing of a skylark flock that lasted for hours. According to the composer, those skylark sounds were not simply joyful and virtuous, but they symbolized ‘the alleluia, spirituality and the joy of the Holy Spirit.’⁷³ Due to this arresting experience, the skylark became a popular bird species in lots of his compositions.⁷⁴ Within the *Messe de la Pentecôte*, its role is however restricted to one passage in the middle of the *Sortie* (bar 18-40). Because it concerns a large group of singing skylarks, Messiaen prescribed *fortissimo* with loud and high-pitched stops – mixtures, cornets and piccolo⁷⁵ – to give it a ‘luminous, magnificent [and] glorious’ character.⁷⁶ During the following comparison with real skylarks, attention will be paid to structure and motifs.



Eurasian skylark.

Lengthy structure. According to Messiaen, individual skylarks can sing for three, five or even ten minutes, hardly without interruption.⁷⁷ In case of the skylark flock that Messiaen heard during his walk, the sound started in the early morning and persisted till about eleven o’clock.⁷⁸ This incessancy of birdsong was something Messiaen bore in mind during the incorporation of the skylark chorus within the *Sortie*. Between bar 18 and 40, the skylarks sing their song without any musical rest. During the CD-recording by Messiaen

71 2 Acts. 2:2 NIV. URL-link: <https://www.biblica.com/bible/niv/acts/2/>

72 URL-link of the skylark picture: <https://www.audubon.org/field-guide/bird/eurasian-skylark>

73 Messiaen, *Traité de rythme, Tome IV*, 118. The experience with the skylark group resulted in a large amount of skylark sounds in Messiaen’s compositions.

74 The experience with the skylark group resulted in a large amount of skylark sounds in Messiaen’s compositions. They already appeared in his works of the 1940s (*Trois petites liturgies*; *Vingt regards*) and kept reappearing till his final works (e.g. several times in his opera *Saint François d’Assise*).

75 The exact stop indication by Messiaen is the following: *Récit*: fonds 16,8,4, mixtures; *Positif*: pristant 4, flute 4, cornet, mixtures and piccolo; *Grand Orgue*: 16,8,4, plein-jeu; *Pédale*: tirasse Positif.

76 Messiaen, *Traité de rythme, Tome IV*, 118.

77 Messiaen, *Traité de rythme, Tome V, 1^{er} volume*, 245.

78 Messiaen, *Traité de rythme, Tome IV*, 118.

himself (1957), the chorus lasts for almost two minutes.⁷⁹ The spectrograms of real skylarks show this tirelessness singing as well. For instance, the skylark of XC270410 sings no less than 115 seconds without breathing (Appendix 31).

Flying habits. According to Messiaen, the structure of the skylark chorus passage is based on the way skylarks fly.⁸⁰ The speed of the movement of their wings is reflected by lively semiquavers. In between, skylarks make small breaks in their waving and let themselves fall for a moment before rising again to even higher points. This phenomenon is reflected by larger note values (quavers or crotchets) and sudden jumps up- and downwards – with intervals sometimes even more than an octave as shown in bar 21 (Appendix 33; bottom fragment). Those big leaps can also be found in real skylarks songs. For instance, XC374306 shows motifs that mostly start on a high point before making a jump downwards of 2000-3000 Hz difference (Appendix 32). Another flying aspect Messiaen took into account, was that the skylark is constantly flying higher and higher. This is reflected in the music through the constant ascending note line of the skylark chorus. As the chorus song develops, the amount of big jumps downwards decreases, while the notes are getting higher. In the final bar 40, only one tone – G-flat” – remains. According to Messiaen, this has to do with the height of the skylark group. It is at more than 100 metres height and therefore, one could not distinguish its different tones anymore.⁸¹ Only one tone keeps audible for the human ear.

Repetitive motifs. Within the skylark passages of the *Sortie*, motifs are constantly developed and redeveloped. On the one hand, the skylarks are looking for new motifs, but on the other hand, they often return to previous motifs which they repeat – sometimes with a rhythmical variation or an extension (Appendix 34). Repeating motifs are also common in real skylark songs. Appendix 35 shows that skylarks – despite small differences in frequencies – can produce structurally and rhythmically almost equal motifs after each other.

Conclusion. With almost twenty bars, the skylark is the bird species of the *Messe de la Pentecôte* with the longest continuing birdsong passage of the whole piece. Again, Messiaen’s bird representation was not accurate in the sense that he transcribed every tone of the real skylarks were put on paper. Similar to previous bird species, the skylark produces tones at such high speed and height that no human instrument could imitate this exactly. Moreover, the transcription became more complicated, because the sounds Messiaen heard

79 Messiaen, Olivier. *Messiaen par lui-même*. Performed by: Olivier Messiaen. Recorded 1957. EMI Classics CZS 7674002, 1992. 4 compact discs. During Messiaen’s own recording of the *Sortie*, the chorus of skylarks starts at 1:11 and ends at 2:56.

80 Messiaen, *Traité de rythme, Tome IV*, 118-119.

81 Ibidem, 118.

during his walk came not from an individual skylark, but from a large group. Instead of trying to listen to individual tones, he rather focused on the rhythmical structures and the way how skylarks worked with their motifs within the group. Furthermore, he paid attention to the flying habits of the skylarks, because it affects their way of singing. Like with the cuckoo, he took into account the distance between himself and the skylark.

Discussion

This study on the birdsongs within the *Messe de la Pentecôte* sought to understand how accurately Messiaen worked during the incorporation of birdsong elements in his music and which restrictions he had to overcome. The comparison between real-life birdsongs and the transcribed equivalents shows that Messiaen could not exactly transfer the bird songs to the musical notational system. Two aspects distinguish Messiaen's birds from their real-life peers. First, repertoire of real blackbirds, skylarks and nightingales are so fast and virtuoso that it is not playable for the organ or any other human instrument. Therefore, Messiaen had to reduce the speed of his own birds. Second, real birdsongs have no fixed tones contrary to the well-tempered system. As a consequence, Messiaen had to embed its own birdsongs into the Western tone system by lowering the frequencies to the level of human instruments such as the organ. The only exception is the cuckoo which pitch are lower than the aforementioned species and come closer to the pitch level of human instruments. Thus, Messiaen had to be pragmatic in cases of speed and pitch to make its birds suitable for representation. On the other hand, he was able to incorporate identifiable characteristics from real birds without many musical compromises such as (repetitive) motifs, rhythmical patterns and sometimes even intervals. Overall, he created "Messiaenic bird species" that are a mix of real bird essentials and musical translations. As such, this study is in line with the research by Trevor Hold and Robert Fallon. Both emphasize the preciseness of Messiaen's transcriptions, but bear in mind that there were always musical adaptations needed to fit the birds in the scores. Musicologists like Paul Griffiths and Meri Kurenniemi have debated whether it is relevant to study the accuracy of Messiaen's birds, because birdsongs are too intricate to transcribe accurately. While that may be true, the relevance of researching this topic comes from Messiaen's profound fascination with birds. For him, birdsong is one of the major inspirations. 'It's sad perhaps, but I believe I'm the first composer to have taken interest in birdsongs.'⁸² Not only musically but also personally, he took a large interest in birds and their

82 Samuel and Messiaen, *Music and Color*, 97.

songs. As an amateur ornithologist, he could listen for hours to the sounds of birds during his walks and he made a lot of recordings to listen to them again and again. Moreover, the fifth volume of *Traité* shows that he was not only interested in the musical aspects of birds, but also their behaviour and habits. This all shows how important birdsong is in Messiaen's works. Thus, to understand his oeuvre, one must understand his interest in birds and their songs. Therefore, research on the accuracy is of importance for scholars to understand his way of composing and for musicians to perform his music accurately.

Considering the methods used in this thesis, a limitation was that bird recordings of the Xeno-canto database were used instead of original bird recordings by Messiaen himself, which unfortunately could not be recovered. Original recordings probably resemble more closely the bird transcriptions by Messiaen. However, bird species have general characteristics – Messiaen wrote on this in his method books as well – that are retraceable in both the Xeno-canto examples and Messiaen's birds. As such, using the Xeno-canto recordings will not alter my conclusion compared to having used the original Messiaen recordings. Another limitation is that the scope of this research is only restricted to one organ work dating from Messiaen's early stage of birdsong incorporation. The *Messe de la Pentecôte* is the first organ piece in which he makes references to real bird species. At this stage of his composer's career – around 1950 – his birdsongs were still limited to a couple of European (rather French) bird species. Moreover, the bird representations of this period were rather simple and still in development. Two years after the *Messe de la Pentecôte*, Messiaen came into contact with professional ornithologists and consequently, his birdsong transcriptions became more extended and appeared in almost every composition. He incorporated more bird species and travelled to various continents to search ‘exotic’ birdsongs. This shift marked his later organ works as well. Future studies could investigate the accuracy of birdsong in works such as the *Méditations sur le mystère de la Sainte-Trinité* (1969) or the *Livre du Saint-Sacrement* (1984) that contain more different bird species, including non-European species. Through comparing those with the birds from earlier works such as the *Messe de la Pentecôte* and *Livre d'Orgue* (1951), one can investigate the development of Messiaen's bird representations throughout his organ oeuvre.

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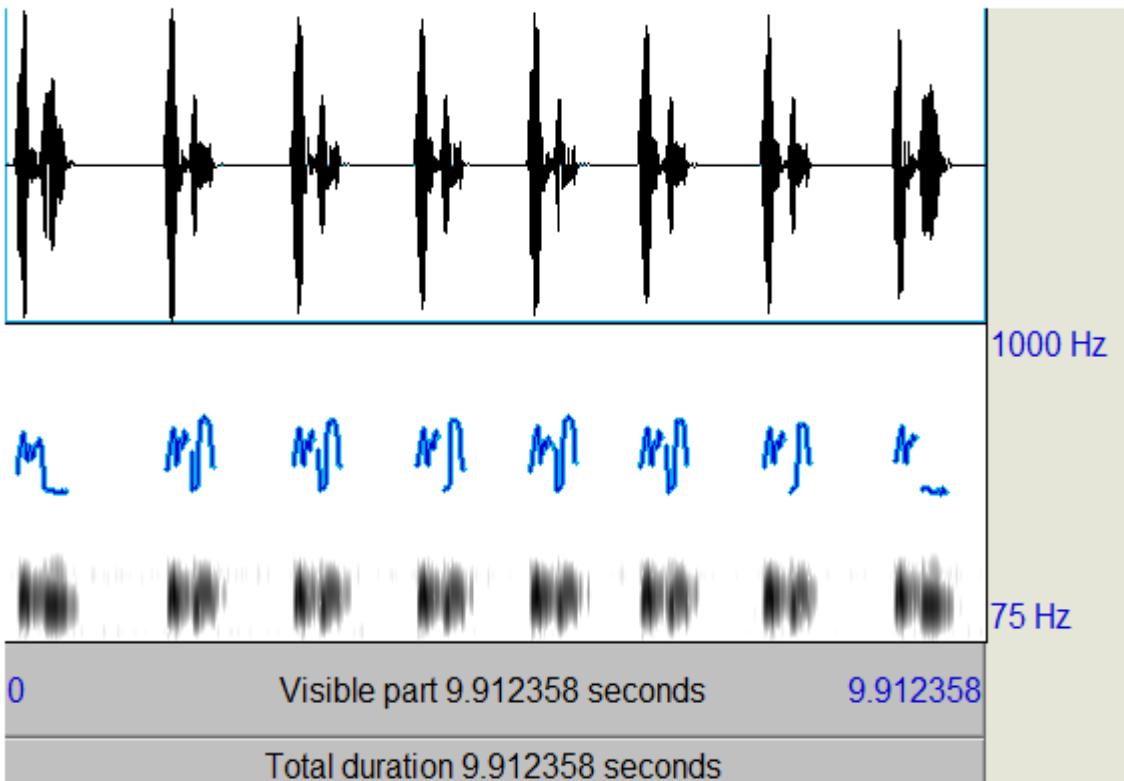
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Discography

Messiaen par lui-même. EMI Classics (CD CZS 7674002), recorded by Olivier Messiaen (1957). This recording includes all the organ works by Messiaen till 1951, performed by the composer himself on the Cavaillé-Coll organ (1868) of the Trinity Church of Paris. The recording of the *Messe de la Pentecôte* can be found on the fourth CD.

Appendix



Appendix Example 1: oscilloscope (top) and spectrogram (bottom) of a cuckoo recording. In both graphs the x-axis represents time (9.91 seconds). In the oscilloscope the y-axis denotes the amplitude or loudness of the sound wave. When there is no amplitude, there is no sound, so a straight line represents the end of a call. In this example, the cuckoo makes 8 calls with pauses in-between. The higher the amplitude, the louder the sound. In the example you can see a sound with high amplitude first, a decrease in amplitude almost to a silence, and then a sound with a smaller amplitude. Thus, the call of a cuckoo consists of a loud sound first (*cu*) followed by a somewhat softer sound (*ckoo*). The spectrogram at the bottom represents the frequencies or tones of the sound wave in Hertz (Hz) on the y-axis. The blue line shows the call: the larger the unit of Hz (or the higher the blue line in the graph, the higher the sound. In this example, the cuckoo shows the classical major third in the first call (high sound followed by a low sound (*cu-ckoo*)). In the subsequent calls, the cuckoo makes a hiccup after the low sound (*cu-cu-ckoo*). The black sweeps underneath the blue lines are the fundamental frequencies (as opposite to the high overtones of the bird call) in the recording: this can be seen as background noise.



Appendix 1: Fragment of the upper voice of bar 111-112 of the *Offertoire*. A shorter version of this motif appears in bar 130 at the end of the *Offertoire* as well. Within *Traité*, Messiaen explains that this pattern could be from a robin or a garden warbler.

Modéré
Pos
MAN *mf legato*
MAN
MAN
MAN

A musical score for four voices, all labeled "MAN". The tempo is "Modéré". The first voice has "Pos" above it and "mf legato" below it. The other three voices are identical, showing a unison line of eighth-note chords. The score consists of four staves, each with a treble clef and a key signature of one sharp (F#).

Appendix 2: Unison passage of the *Offertoire* (bar 11-20) that is considered by some Messiaen interpreters as a birdsong, but Messiaen did not make any reference to a specific bird species, both in the score and in his *Traité*.

Modéré

R: Hautbois (*oiseau*)

legato *pp* *f* *ff* *mf* *f* *pp*

Appendix 3: Beginning of the *Communion* (bar 1-4). Messiaen called it the ‘call of an idealized bird’ that announces the start of the spring. The passage contains large differences in volume and a diversity of rhythmical patterns.

a Tempo

(*chant de merle*)

Pos: Flûte 4 seule

p poco rubato

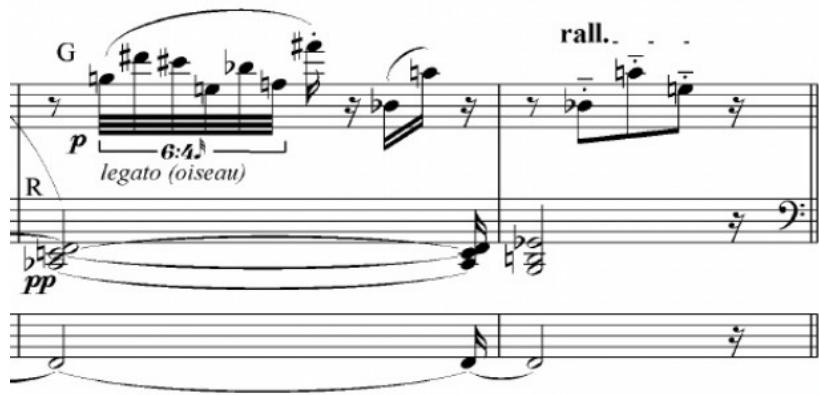
pp staccato sempre

Appendix 4: Beginning of the *Chant de merle* on the second half of bar 19 of the Communion.

G

p legato (oiseau)

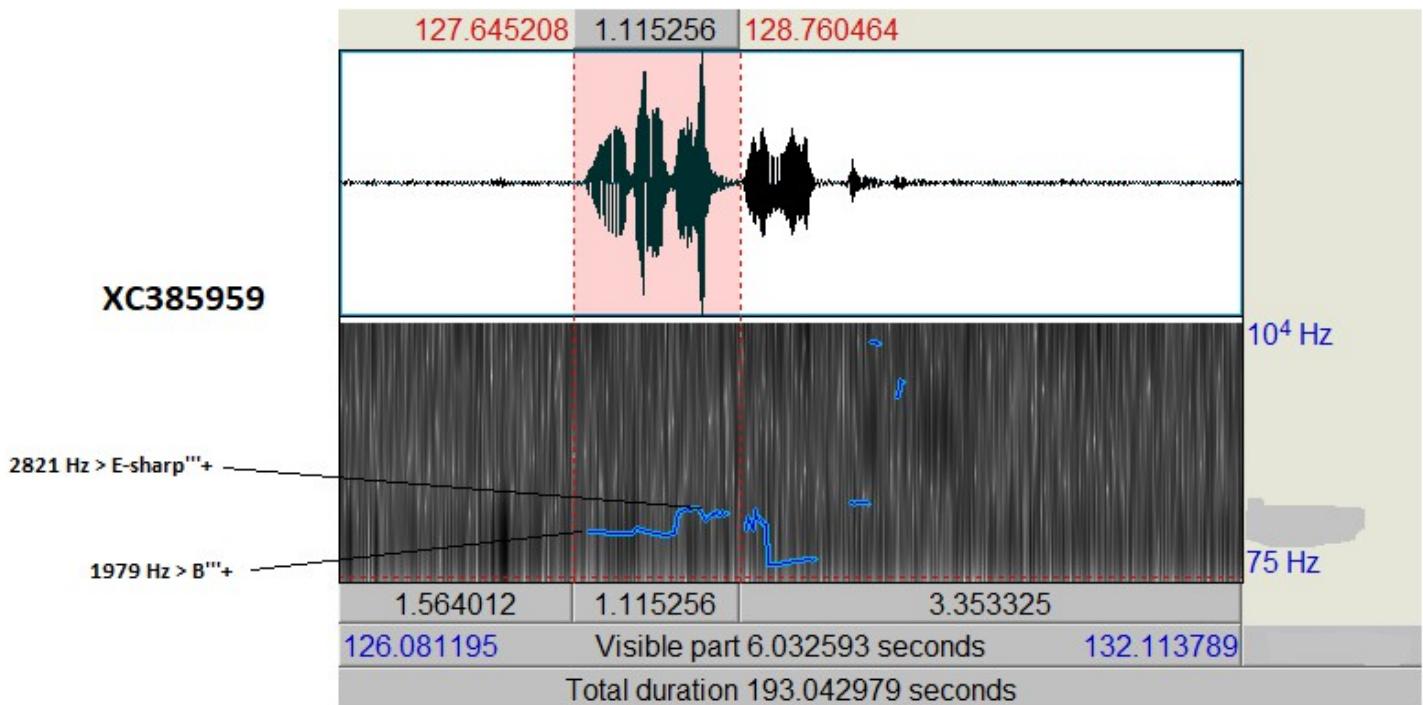
Appendix 5: Call of the blackbird in bar 103 of the *Offertoire*. This is the first time that Messiaen referred to birds within his organ music. The motif comes back in bar 106 and 127.



Appendix 6: Short bird phrase in bar 113-114 of the *Offertoire*.

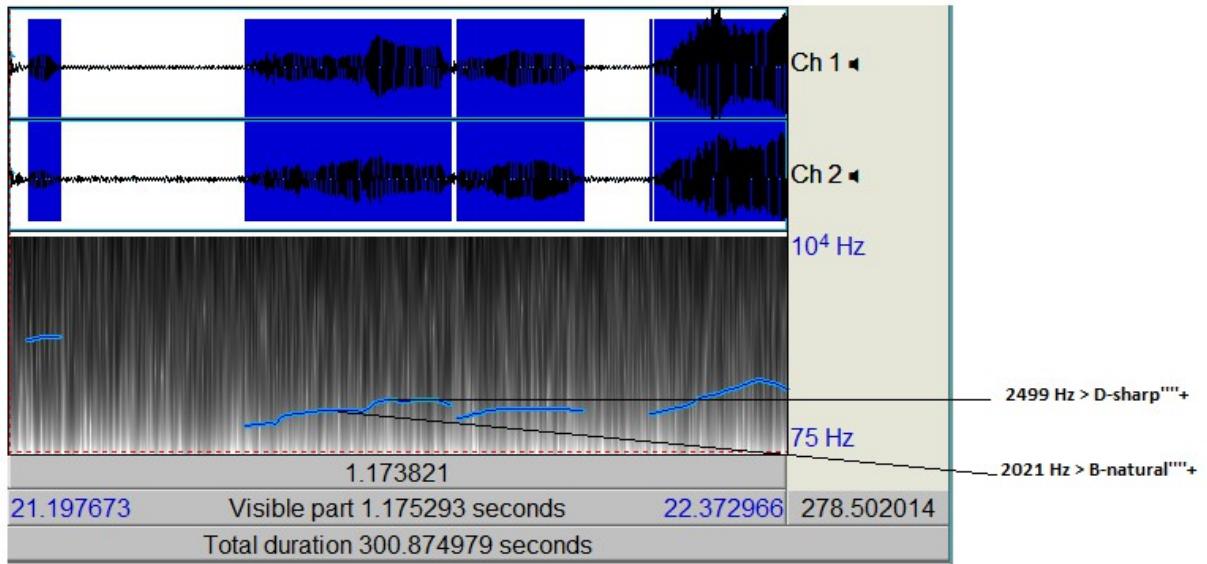
R: Bourdon 16 et Octavin 2 | Pos: Flûte 8 | G: Bourdon 8
Modéré, librement (oiseaux)

Appendix 7: Beginning of the dialogue between the blackbird and the distant cuckoo within the *Communion* (bar 14).



Appendix 8: Blackbird spectrogram of XC385959. In this small fragment, one can see that the blackbird starts at a pitch of 1979 Hz, which is just a little higher than a B-natural''' in our piano key frequency system (1975 Hz). This pitch is followed by a step upwards that ends on 2821 Hz, which is somewhat higher than an E-sharp''' in our piano key frequency system (2793 Hz). Together, B-natural and E-sharp form an augmented fourth interval, which is common in the blackbird repertoire.

XC405785



Appendix 9: Blackbird spectrogram of **XC405785**. In this closely examined fragment between the 21st and 22nd second, one can recognize a major third. The lower arrow the line is at 2021 Hz, which is close to the frequency of a B-natural on the piano key frequency system (1975 Hz). Hereafter, the blackbird line goes upwards and reaches 2499 Hz, which is close to the frequency of D-sharp (2489 Hz).

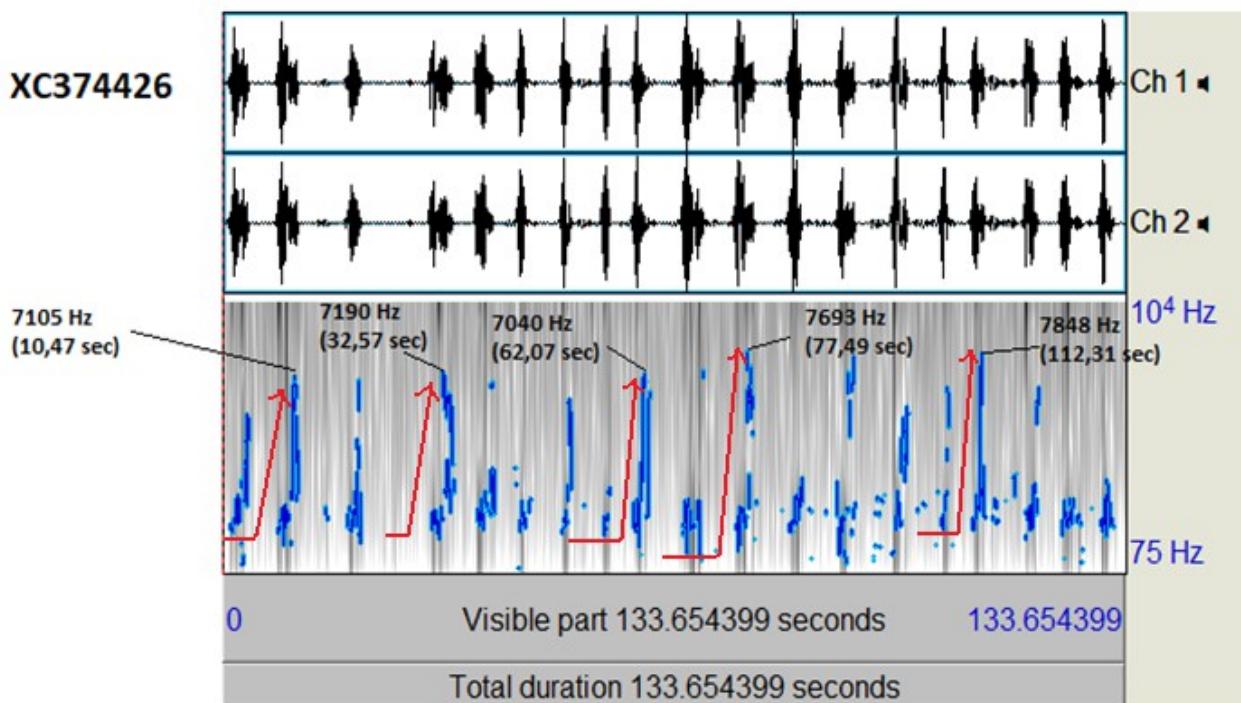
The musical score shows the upper voice (MAN) playing the *chant de merle* of the *Communion*. The score includes dynamic markings like *poco ritard.*, *poco rall.*, *pressez*, and *a Tempo*. The intervals are highlighted with colored boxes: red for Major third interval, orange for Perfect fourth interval, and green for Augmented fourth interval. The score consists of four staves of music with various note heads and rests.

Appendix 10: The *chant de merle* of the *Communion* (bar 20-27) – played in the upper voice – contains intervals that are typical within the real blackbird repertoire: major thirds, perfect fourths and augmented fourths.

R: Bourdon 16 et Octavin 2 | Pos: Flûte 8 | G: Bourdon 8
Modéré, librement

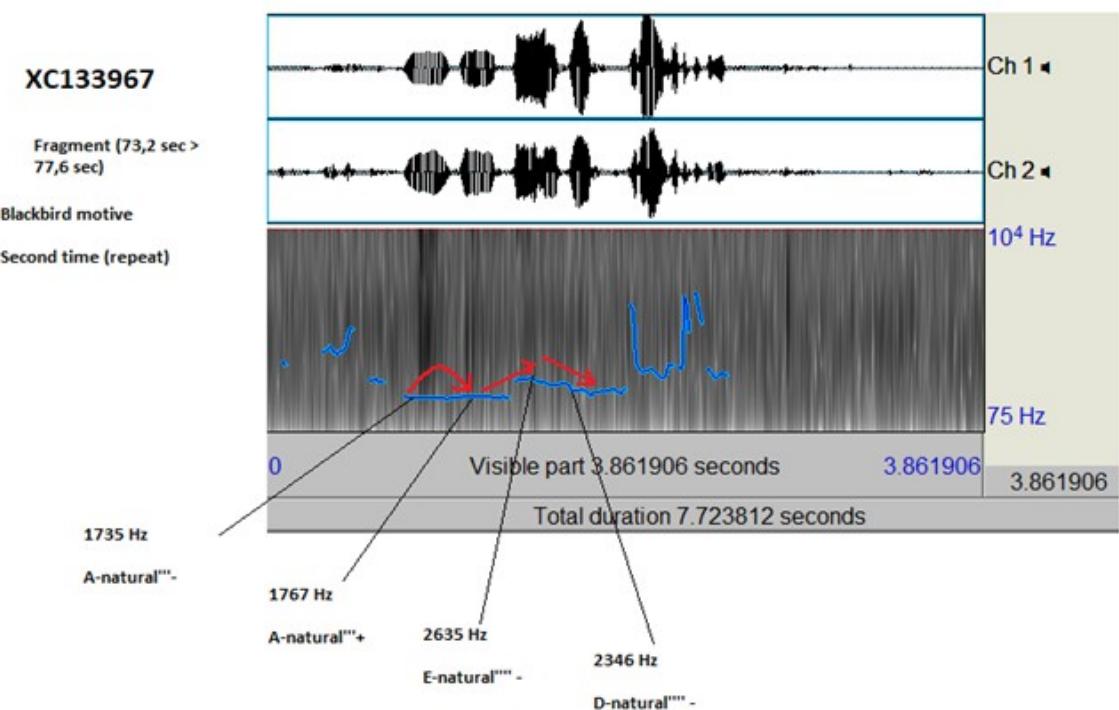
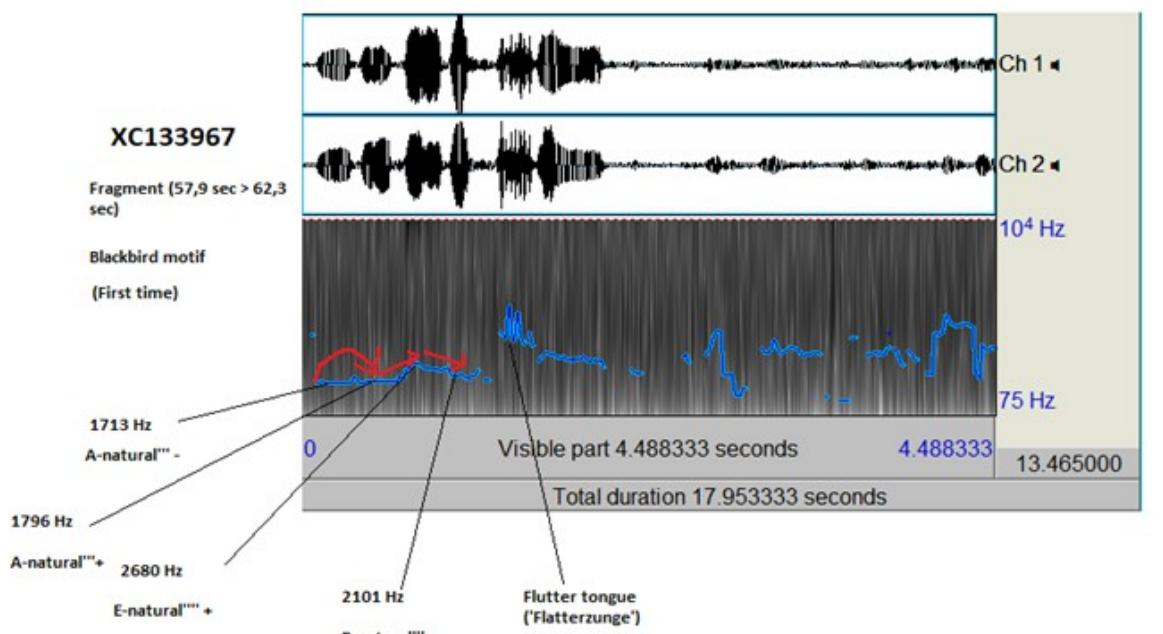
Major sixth interval

Appendix 11: Bar 14-19 of the *Communion*. The blackbird passages are red-framed. The orange frames indicate the major sixth intervals that appear within the blackbird passages.

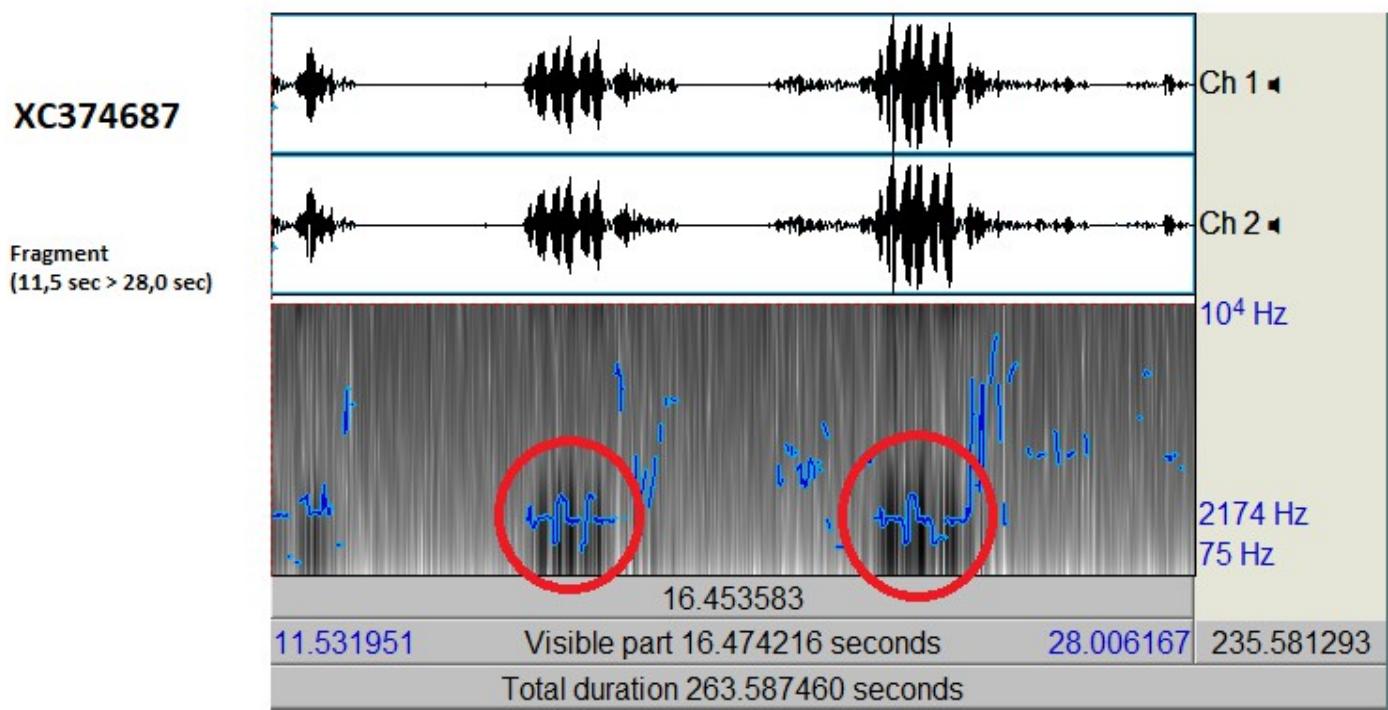


Appendix 12: Blackbird spectrogram of XC374426 that shows examples of a "regular advertisement song" of a blackbird. After a low start of each formula, the blackbird's song constantly makes a sudden jump upwards toward a very high pitch. In this case, the blackbird surpasses 7000 Hz every time.

Appendix 13: Examples of sudden jumps to high pitches within the blackbird songs of the Communion: bar 14 (top left), bar 21-22 (top right) and bar 23 (bottom). The blackbird songs are played all in the upper voice, accompanied by staccato notes in the lower voice that are represented as *gouttes d'eau* (water drops). In every case, Messiaen's blackbirds make a sudden quick movement upwards to high notes (e.g. B-natural "", D-natural "") through the use of fast rhythms (e.g.. hemidemisemiquavers in bar 14) or acciaccatura notes.



Appendix 14: Spectrograms of the same blackbird song (XC133967) showing a repeated motif. The human ear does not hear many differences between the two motifs (see audio-file XC133969). It also recognizes a comparable structure – two identical notes, followed by a small jump upwards and downwards again (marked by the red arrows). The frequencies, however, show that – although the frequencies come close to each other (e.g. first pitch: 1713 Hz versus 1735 Hz) – the blackbird never reaches the same pitch. As such, it is different from the fixed pitches of Messiaen's blackbirds.



Appendix 15: Blackbird spectrogram of a fragment of XC374687, on which one can recognize forms that come close to 'acciaccatura notes'. The blackbird song makes sudden jumps upwards that immediately return downwards.



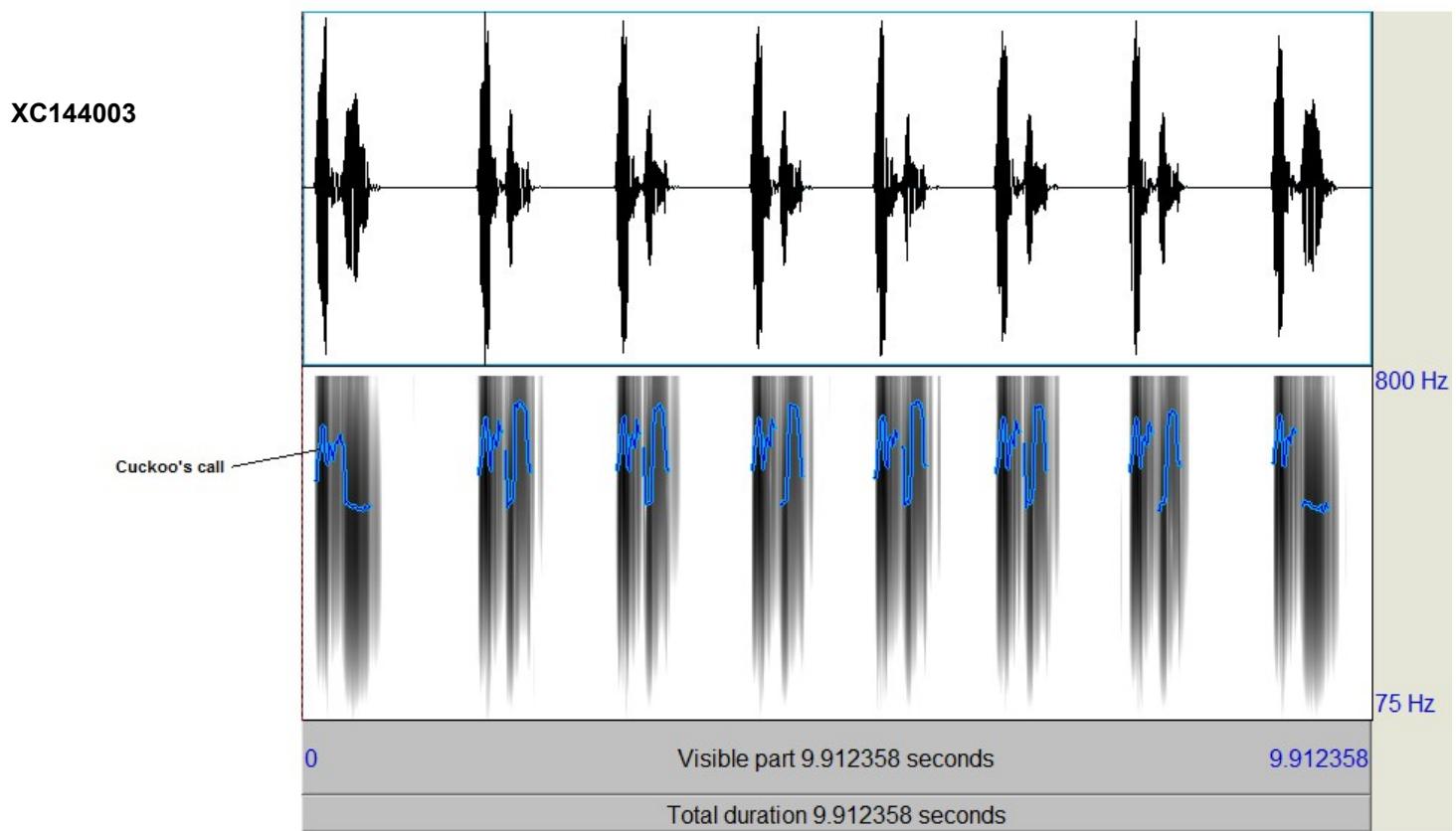
Appendix 16: Bar 15 of the Communion. While the water drops in the lower voice are constantly moving, the blackbird in the upper voice sings long and very tranquil notes with one 'acciaccatura'.

Appendix 17: Cuckoo passage in bar 7-8 and bar 31-32 of the Communion. The notes of the call have to be played with great emphasis and heaviness (*louré*). The second time, the first note is even longer through the addition of a small dot.

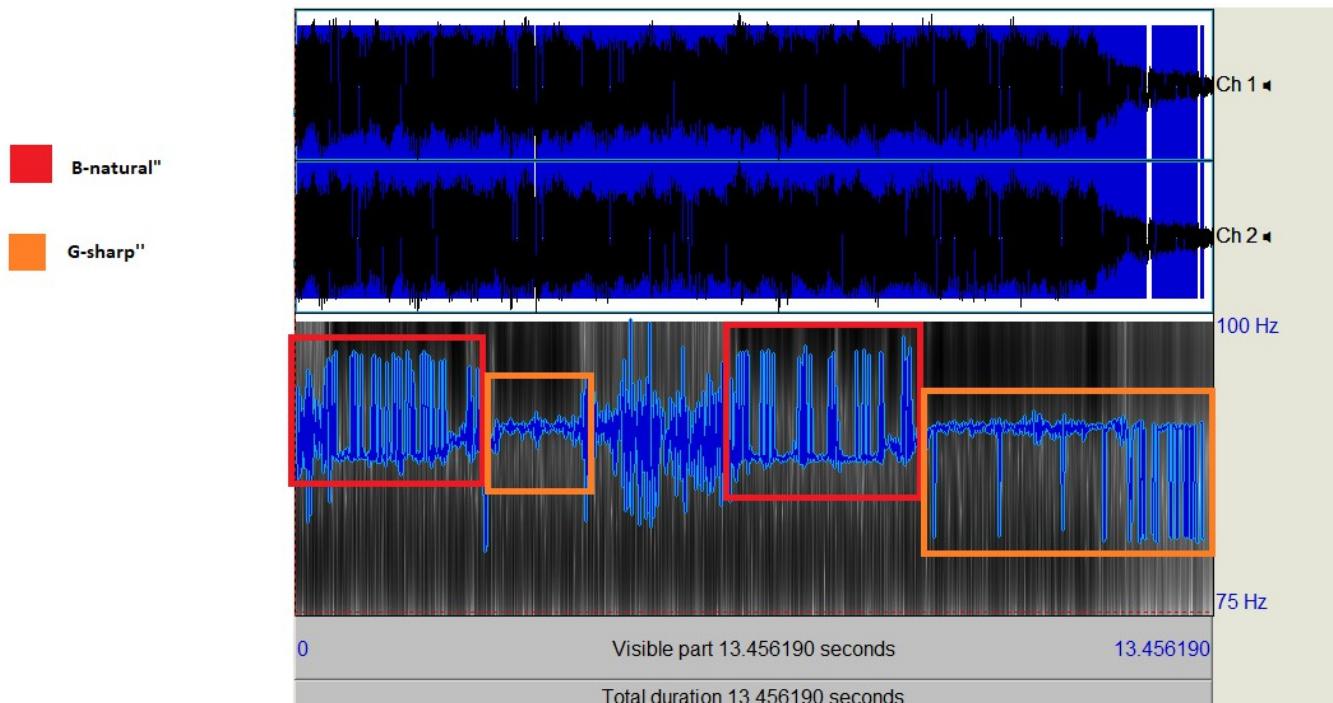
Appendix 18: Passages of the other cuckoo in bar 14 (top left), bar 19-20 (top right) and bar 27 (down). In every case, the call is slowed down towards the end.

Xeno-canto nr.	Recorder	Average pitch first tone	Average pitch second tone	Piano key translation
XC78110	Mike Nelson	644,4 Hz	560,9 Hz	E-natural" > C-sharp"
XC144003	Julien Rochefort	678 Hz	671 Hz	**
XC242024	Yoann Blanchon	630,4 Hz	535,3 Hz	E-flat" > C-natural"
XC391773	Christophe Legrand	695,4 Hz	546,5 Hz	F-natural" > D-flat"
XC412686	Stanislas Wroza	647,9 Hz	555 Hz	E-natural" > C-sharp"

Appendix 19: Table that shows the average pitches of the first and second tones produced by real cuckoos in France. The results are based on the analysis of the Praat spectrograms. **: the piano key translation of **XC144003** is not included in this research, because the pitch of the second tone is more or less equal to the first tone. This is due to the fact that this particular cuckoo is making kinds of hiccups on his second tones.

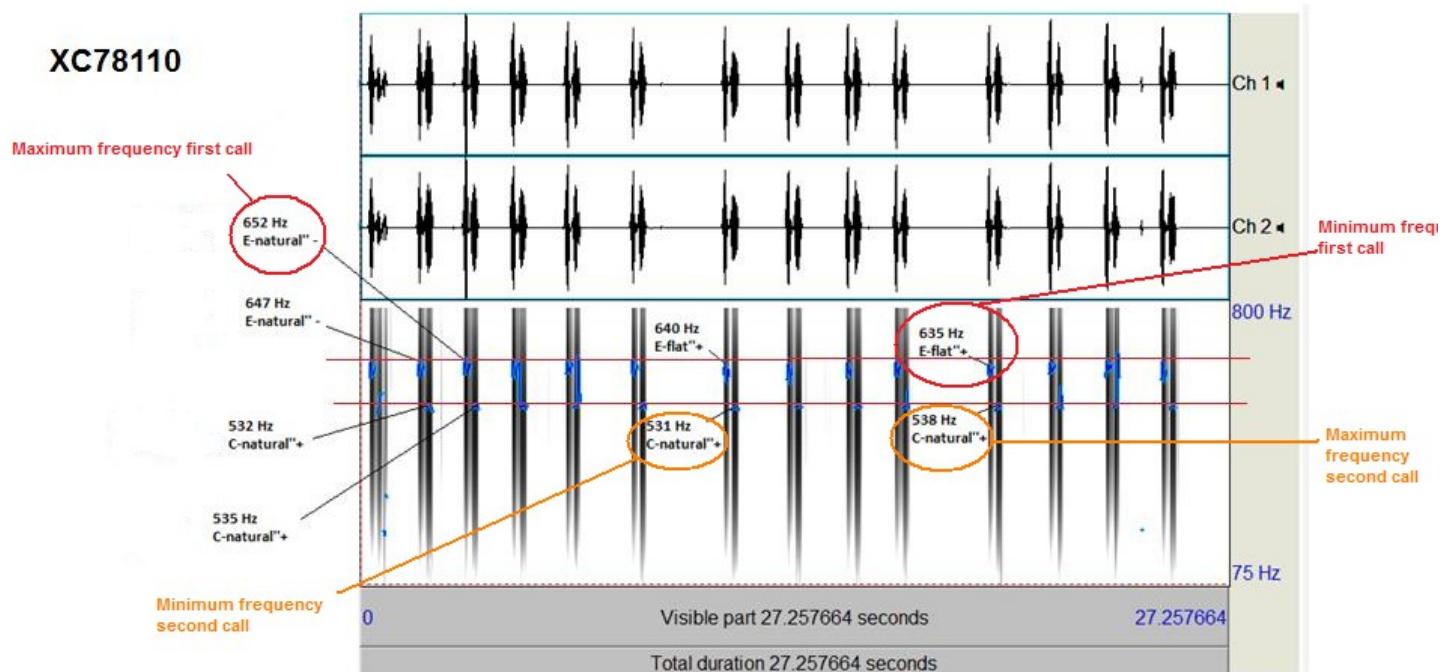


Appendix 20: Cuckoo spectrogram of XC144003. Within approximately ten seconds, this cuckoo produces eight calls.

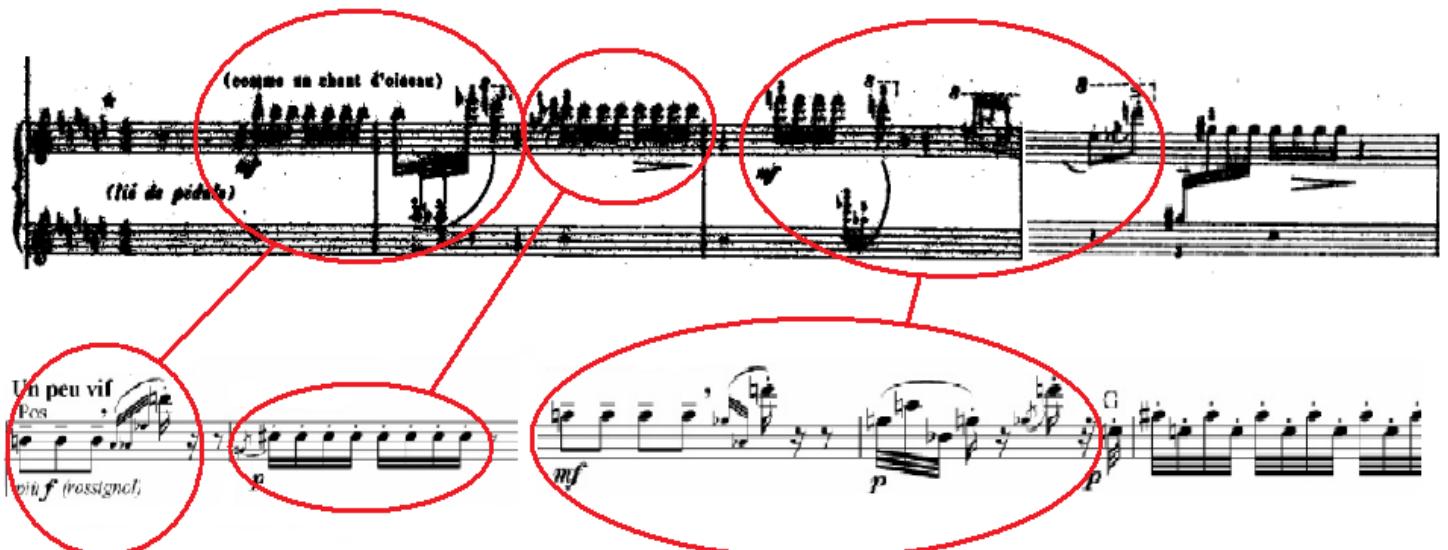


Appendix 21: Spectrogram of bar 7-8 of the Communion, performed by Messiaen himself on the Cavaillé-Coll organ of the Trinity Church of Paris (1957). The red and orange fields indicate the tones of the cuckoo's calls, namely B-natural" and G-sharp".

XC78110



Appendix 22: Cuckoo spectrogram of XC78110. The pitches of both the first and second call are more or less similar to each other. This is marked by both the frequencies (and the nearest instrumental tones) and the red horizontal lines.



Appendix 23: Comparison between the first four bars of the piano part of the Jardin du sommeil d'amour (sixth part of the Turangalila symphony; top) and the first nightingale passage within the Communion of the Messe de la Pentecôte (bar 9-13; bottom). The form and motifs that Messiaen used in both pieces are almost identical.

Pos: Flûte 4, Piccolo 1, Tierce
Un peu vif



Appendix 24: Second and third appearance of the nightingale fragment (bar 33 and 47) within the *Communion*. Messiaen uses the arpeggio motif of bar 9 again.

Pos: Flûte 4, Piccolo 1, Tierce
Un peu vif

Musical notation for Bar 33 showing the nightingale motif followed by three crotchet rests.

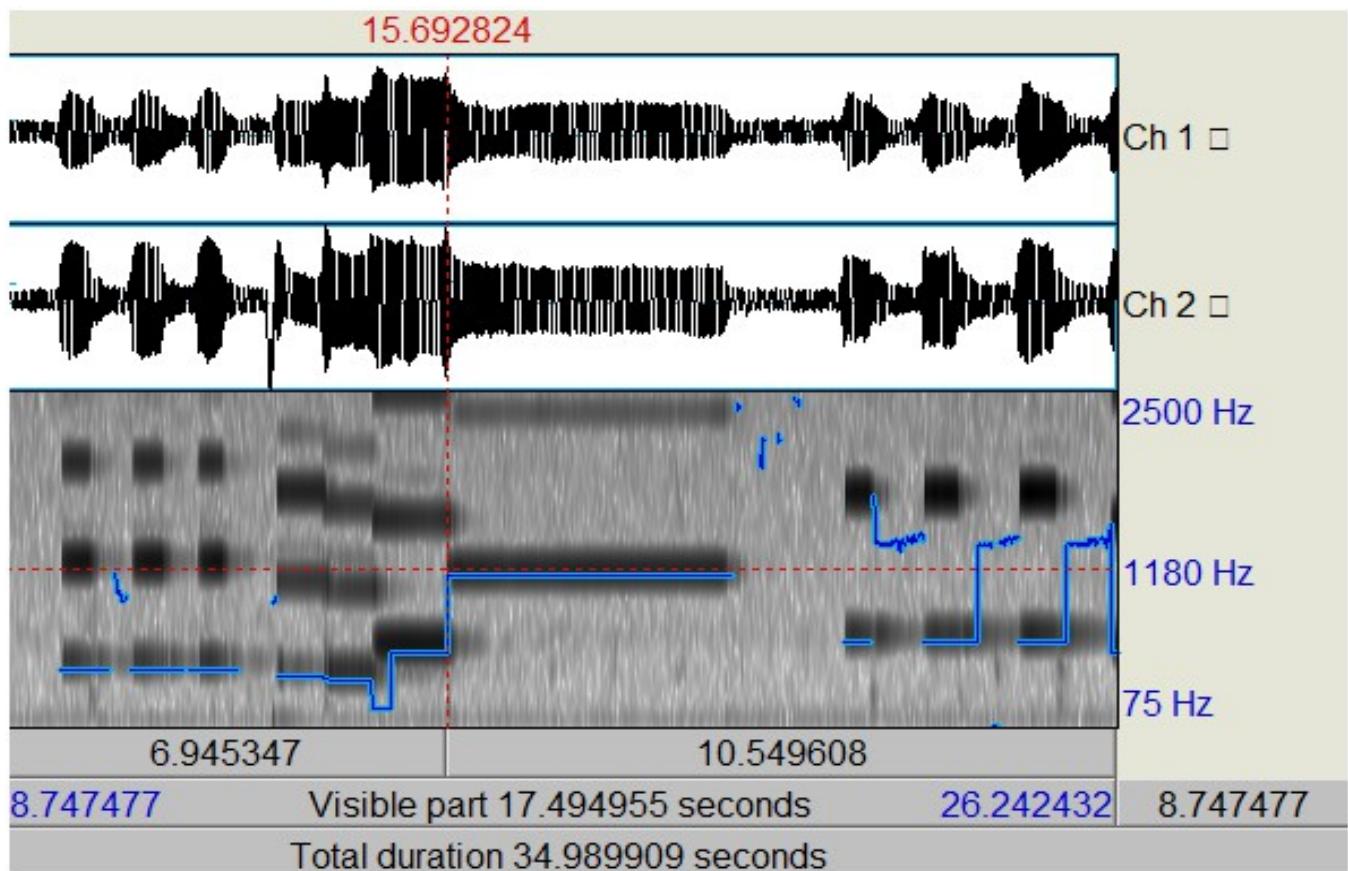
Pos: Flûte 4, Piccolo 1, Tierce
Un peu vif

Musical notation for Bar 47 showing the nightingale motif followed by three crotchet rests.

Appendix 25: Bar 33 (left) and bar 47 (right) of the *Communion*. After both nightingale motifs, the music stops suddenly for a moment, indicated by two or three crotchet rests.

Xeno-Canto nr.	Recorder	Frequency max (Hz)
XC374317	Manuel Grosselet	7598
XC374780	Manuel Grosselet	7334
XC380492	Timo Tschentscher	7528
XC394428	Cédric Mroczko	8308
XC411811	Audevard Aurélien	8172

Appendix 26: Table with the maximum frequencies of real nightingales recorded in France. The results are based on the analysis of the Praat spectrograms. Those frequencies can never be reached by Messiaen's birds.



Appendix 27: Spectrogram the nightingale song of bar 9 of the *Communion*. The high blue line in the middle represents the “D-natural” which frequency reaches 1180 Hz (as marked by the red speckled horizontal line). This spectrogram is based on a recording by Jan Pieter Lanooy on a Domus Vivace 40-organ. The registration is more or less similar to Messiaen's prescriptions (*Flute 4, Tierce 1 3/5, Sifflet 1*). The recording can be found in the audio appendix.

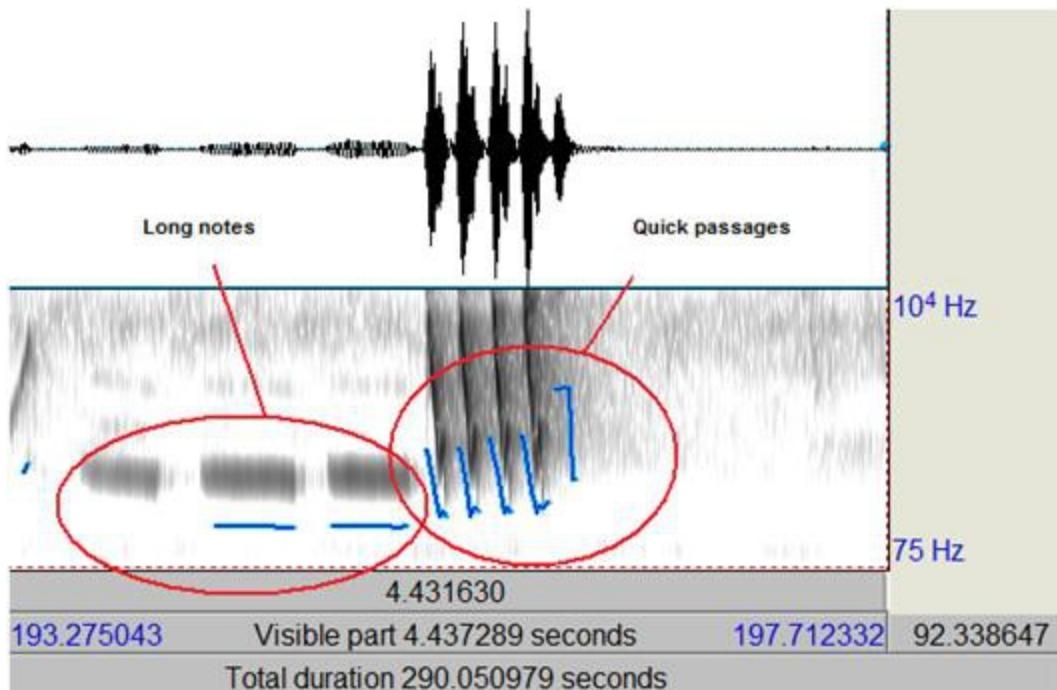
Pos: Flûte 4, Piccolo 1, Tierce

Un peu vif

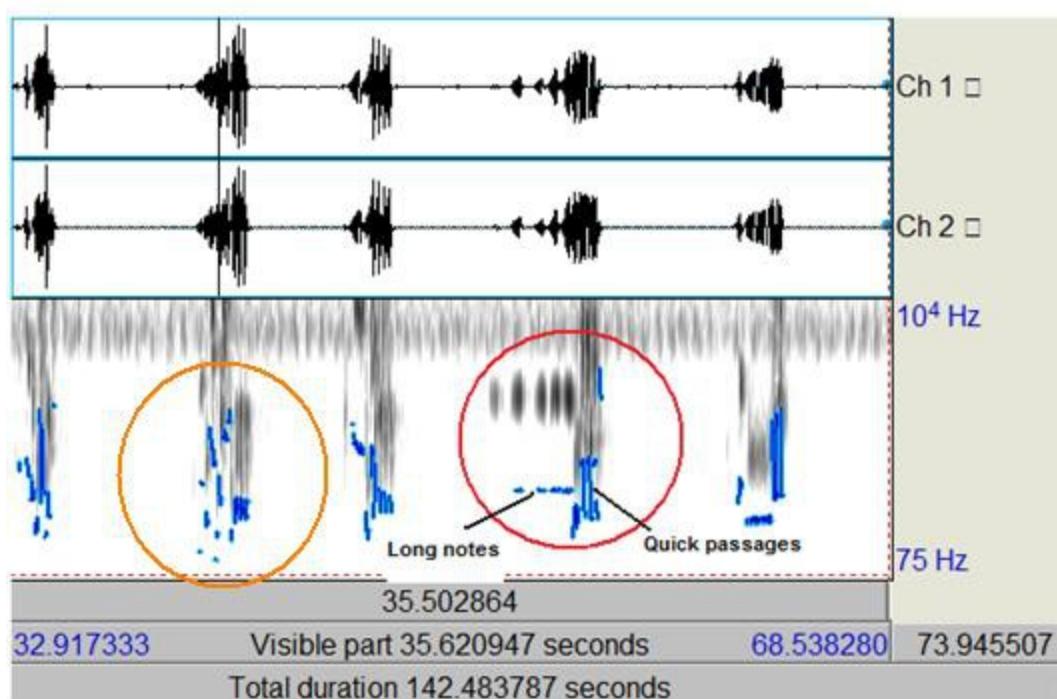
Pos



XC374317

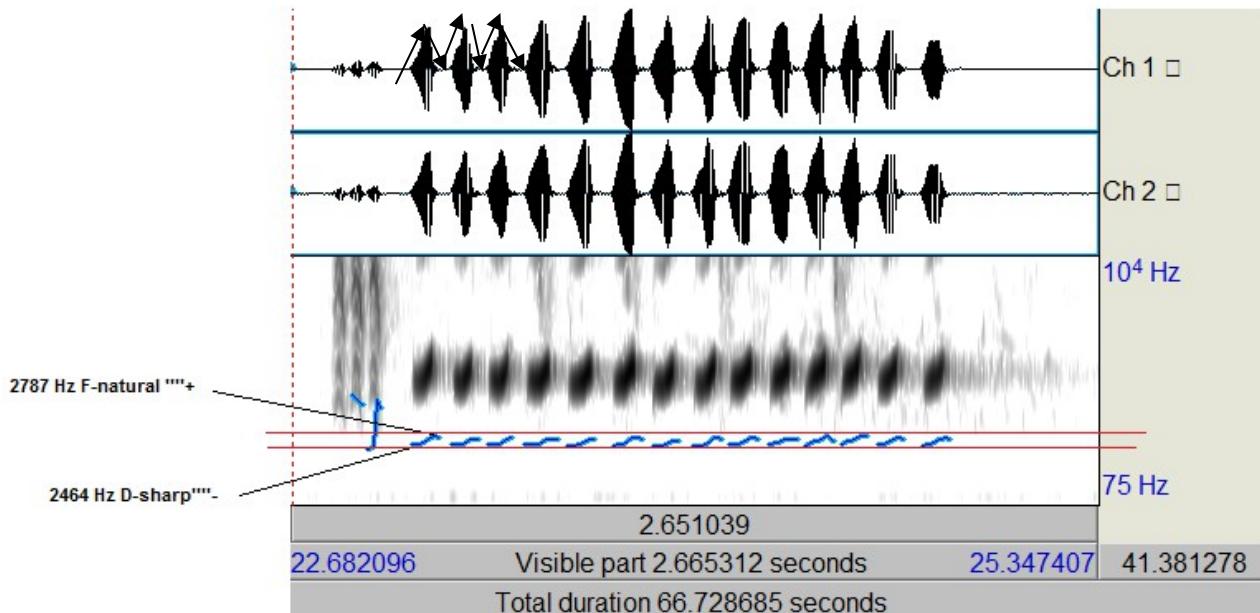
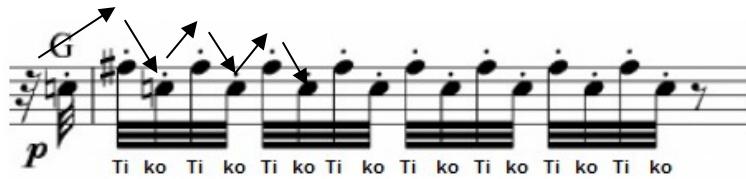


XC394428



Appendix 28: Bar 9 of the *Communion* with its onomatopoeic formula. Bottom: the spectrograms of XC374317 (top) and XC394428 (bottom). Both Messiaen's fragment and the spectrograms show the same nightingale's song pattern: long repeated tones followed by quick passages upwards (indicated by the arrows). The orange circle in XC394428 indicates the quick pitch changes. Within a split second, his song can make jumps from low to high and the other way around.

XC374780



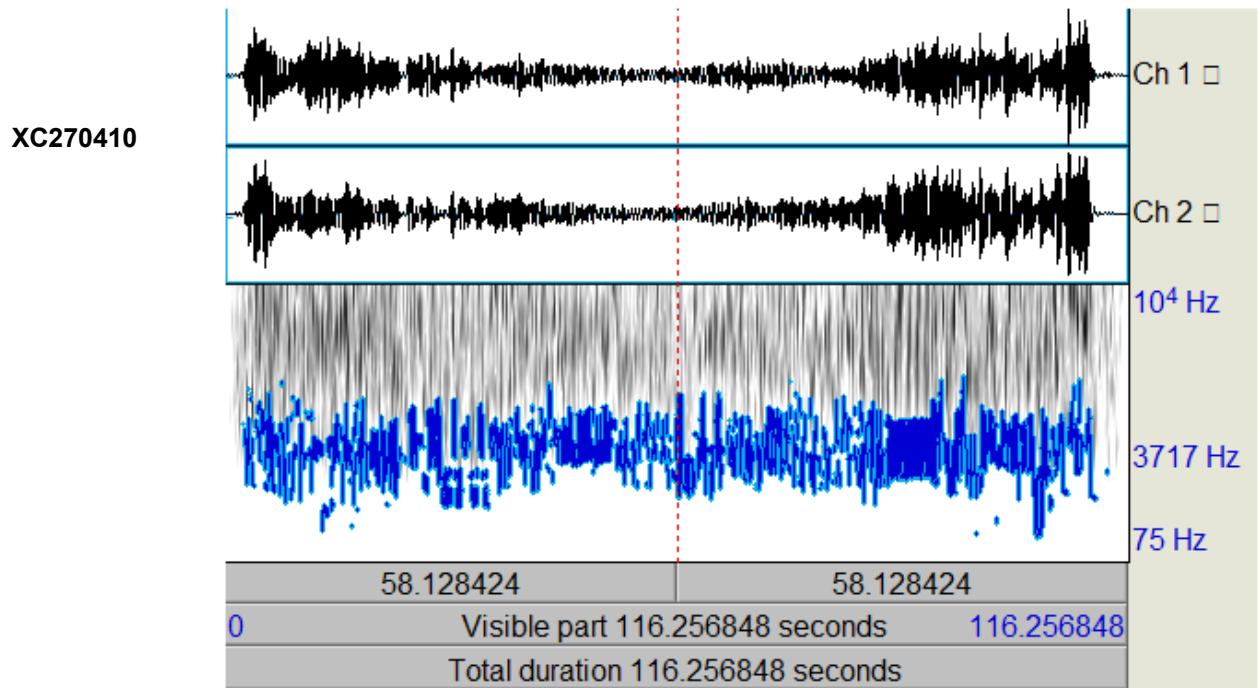
Appendix 29: Bar 13 of *Communion* and the nightingale spectrogram of **XC374780**. Both fragments show a comparable pattern, namely a series of two disjointed tones. The spectrogram show that the disjointed tones have a more or similar pitch. Moreover, the amplitude of the spectrogram (Ch1) show a pattern that is similar to the Messiaen nightingale, namely an alternation between rising and descending pitches.

Xeno-Canto nr.	Recorder	Frequency min (Hz)
XC374317	Manuel Grosselet	550
XC374780	Manuel Grosselet	965
XC380492	Timo Tschentscher	574
XC394428	Cédric Mroczko	586
XC4111811	Audevard Aurélien	749

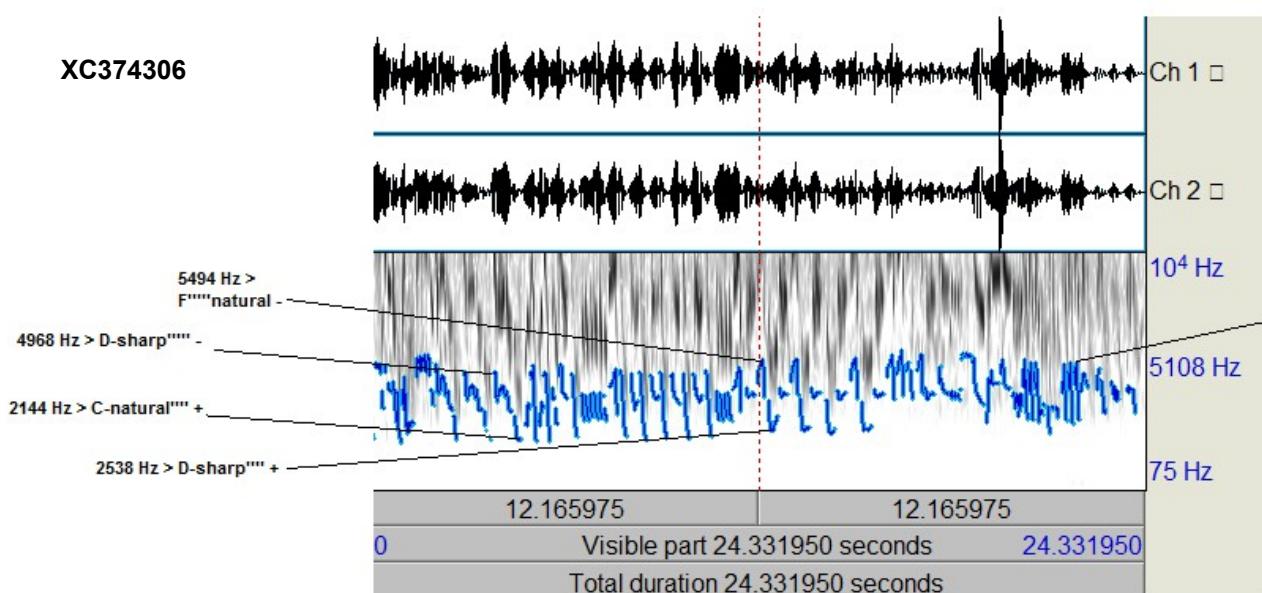
G: Bourdon 8



Appendix 30: Top: Table with the minimum frequencies of the Xeno-canto nightingales. Those frequencies are more or less similar to the frequencies of the low nightingale tones by Messiaen in bar 10 (middle) and bar 13 (bottom).



Appendix 31: In this spectrogram of XC270410, a skylark sings about 115 seconds (out of 116 seconds) without interruption.



Appendix 32: The spectrogram of XC374306 shows the sudden jumps downwards of a skylark. Within a split second, a skylark can make jumps of 2000-3000 Hz difference. In other words, it produces intervals of more than an octave (D-sharp'''' > C-natural''''; F-natural'''' > D-sharp'''').

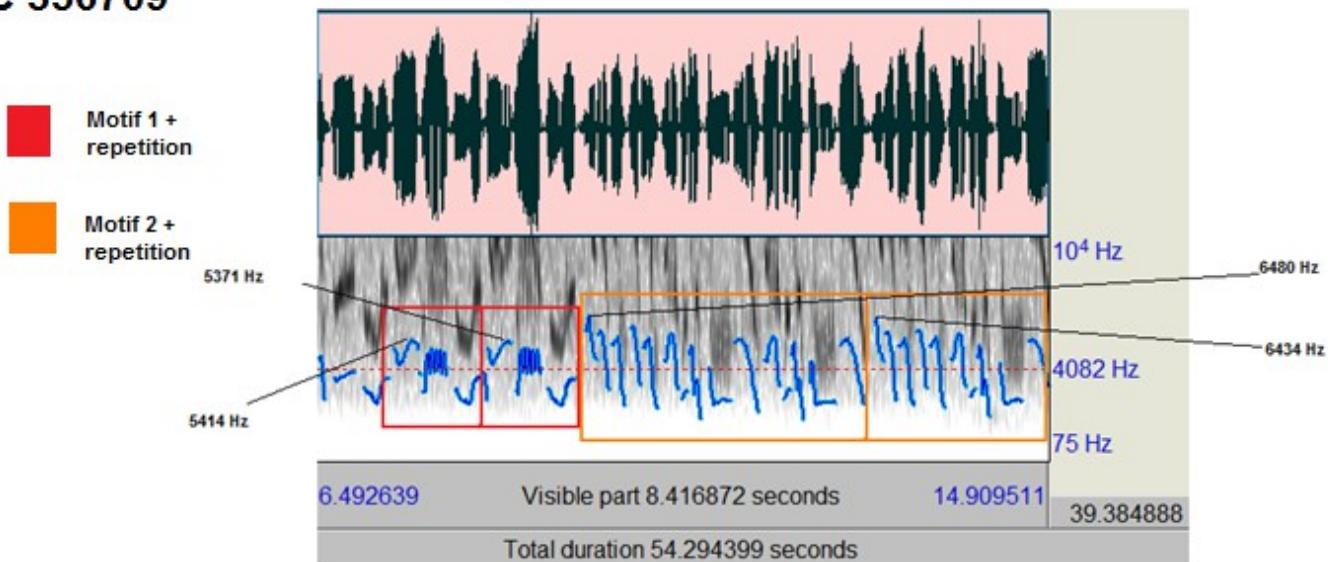
Vif (*Choeur des alouettes*)

Appendix 33: A selection of the skylark chorus motifs within the *Sortie*. **Top left:** the motif in bar 18 – repeated in bar 19, 22 and 26 – has four repeated notes followed by a sudden jump downwards before finishing on a high point again. **Top right:** the motif in bar 20 – repeated in bar 27 – is lower than the aforementioned motif and has only a couple of tonal peaks. **Bottom:** the motif in bar 21 – repeated in bar 24 – is full of acciaccatura's and finishes with an enormous jump downwards of more than an octave.

First motif appearance	Repetition of the motif (extended or with rhythmical variation)
Bar 18 GPR stacc. ff	Bar 19
Bar 20	Bar 27
Bar 21	Bar 24

Appendix 34: Motifs of the *Choeur des alouettes* (left bar) with the repetitions later on (right bar).

XC 356709



Appendix 35: a closely examined part of the skylark spectrogram of **XC356709** that shows the skylark's repetition of motifs. Both fragments show (left-hand field) and the repetition of the motif (right-hand field) with highly comparable structures. Differences can be found in the comparison of frequencies of the motifs.