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# The Musicality of Birds: From Charles Darwin to Hermeto Pascoal

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*Traditionally, music is studied from an anthropocentric point of view, which neglects the wealth of knowledge that can be learned from considering the role of the natural world in the creation of music. One of the most notable contemporary jazz composers to draw inspiration from the natural world is the Brazilian composer Hermeto Pascoal. Throughout Hermeto's prolific career, he has written numerous compositions that were inspired by nature. This essay explores several compositions by Hermeto that were directly inspired by birds and examines the musicality of birds through the lens of evolutionary biology and aesthetics. To demonstrate the intricacies of bird songs, I will explore Charles Darwin's theory of sexual selection, aesthetic mate choice, and his ideas concerning aesthetic evolution. By understanding the function of bird songs and how they have evolved, new insights can be gained that will offer a new way to appreciate Hermeto Pascoal's music. I argue that the complexity of aesthetic mate choice is manifested in the intricacies of bird songs and has subsequently influenced the compositional output of contemporary musicians such as Hermeto Pascoal, which has led to a deeper appreciation of biotic art in the jazz idiom.*

**Keywords:** jazz, birds, biotic art, aesthetics, Brazil

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On the whole, birds appear to be the most aesthetic of all animals, excepting of course man, and they have nearly the same taste for the beautiful as we have. This is shown by our enjoyment of the singing of birds. . . . [Birds] charm the female by vocal and instrumental music of the most varied kinds. (Darwin, 1871/2008, p. 408)

## INTRODUCTION

A significant issue facing contemporary musicology is the question of whether music should be studied from an anthropocentric point of view. To fully understand the origins of music and the creation of music, it is crucial to consider the connections between music, aesthetics, and evolutionary biology. One of the most influential and significant scholars to investigate these relationships is Charles Darwin. Darwin began to explore the origins of music while he developed his theory of sexual selection, which he introduced in *The Origin of Species* (1859) and later greatly elaborated on in *The Descent of Man, and Selection in Relation to Sex* (1871). In Darwin's writing, he discusses how music plays a crucial role in the process of sexual selection and aesthetic mate choice, particularly in many species of birds. I argue that the complexity of aesthetic mate choice is manifested in the intricacies of bird songs and has subsequently influenced the compositional output of contemporary music composers, most notably the Brazilian composer Hermeto Pascoal.

In the past several decades, Hermeto Pascoal's compositional output has received critical attention from scholars such as Luiz Costa-Lima Neto, Vilson Zattera, Almir Côrtes, Andrew Connell, and Adam Rosado (Costa-Lima Neto, 2000; Zattera, 2010; Côrtes, 2011; Connell, 2002; Rosado, 2019). These scholars have focused their efforts on analyzing various aspects of Hermeto's music, including his approach to harmony, the influence of various Brazilian musical styles on his music, as well as Hermeto's philosophy of music. However, despite the rich scholarship that exists concerning Hermeto Pascoal's oeuvre, there has not been adequate attention given to Hermeto's compositions that are a reflection of his fascination with the natural world, most notably his compositions that were inspired by birds. This article seeks to investigate the aesthetic beauty of bird songs and illustrate the importance of biotic art in Hermeto Pascoal's compositional style.

Pascoal's music is rooted in the musical traditions of the Northeast region of Brazil, where he spent his childhood and the early part of his career as a professional musician. His music draws on northeastern folkloric styles of music, such as frevo, baião, and maracatu, as well as elements of American jazz. Frevo is a musical genre and style of dance that was developed in Recife in the early 20th century and is the premier carnival music in Pernambuco. This highly syncopated style of music was significantly influenced by marches and social dances of the early 20th century, such as the tango, the waltz, and the polka (Crook, 2013, p. 171). Baião is a genre of music and dance that originated in northeastern Brazil and was popularized by Luiz Gonzaga in the 1940s (Morales, 2003, p. 204).

Baião is characterized by lyrics that are nostalgic for the natural beauty of the Northeast and is typically performed by an ensemble consisting of an accordion, a *zabumba* (bass drum), and a triangle (Murphy, 2006, p. 95). The musical genre known as maracatu dates back to the 17th century and is associated with Afro-Brazilian religious practices in Recife and is often performed during Carnival (Metz, 2008, p. 67).

American jazz is another noticeable influence on Hermeto's musical style. In the late 1950s, bossa nova—which combines Brazilian samba with American jazz—became extremely popular in Brazil and abroad. During this period, Hermeto moved to Rio de Janeiro and regularly performed at the same music clubs as bossa nova masters such as Antônio Carlos Jobim and João Gilberto and performed in several bossa nova ensembles (Zattera, 2010, p. 5). In addition, he began playing jazz in the nightclubs and radio stations of Rio de Janeiro and started to incorporate jazz elements into his arrangements and compositions (Costa-Lima Neto, 2015, p. 32). In the 1970s, while living in New York City, Hermeto had the opportunity to collaborate with notable American jazz musicians such as Ron Carter, Miles Davis, Donald Byrd, Duke Pearson, and Joe Farrell, among others. The experience of working with some of the most significant jazz musicians of the 1970s undoubtedly had a profound impact on his musical style.

## THE MUSICALITY OF BIRDS ACCORDING TO CHARLES DARWIN

In 1859, Charles Darwin published his book *The Origin of Species*, which revolutionized the way scientists perceive evolutionary biology. Throughout the book, Darwin lays out his theory of evolution through natural selection, which argues that organisms adapt to their environment by selectively reproducing changes in their genetic make-up. These genetic variations occur to increase the chances of survival and reproduction in various organisms. In the fourth chapter of the book, Darwin (1859/2003) discusses his notion of sexual selection, which does not depend on a struggle for existence but on a struggle between the males of a species for possession of the females. The result of this struggle is the ability of an animal to mate and produce offspring (Darwin, 1859/2003, p. 89). As a result, the males who are the most energetic and healthy tend to produce the most offspring.

Darwin also notes that certain males that have the most aesthetically pleasing physical features and have the ability to charm females have the most success in finding a mate. Darwin illustrates this notion by referring to birds such as the rock-thrush of Guiana, and the birds of paradise, which engage in elaborate displays to show off their beautiful and intricate plumages in an attempt to enchant the females of their species. Other species of male birds have developed highly stylized songs and mating calls to impress their female counterparts. Darwin (1859/2003) asserts that "I can see no good reason to doubt that female birds, by selecting, during thousands of generations, the most melodious or beautiful males according to their standard of beauty, might produce a marked effect" (p. 85). The effect that Darwin is referring to is the notion that birds have developed

exceedingly intricate display rituals, mating calls, and plumages for purely aesthetic reasons as a result of sexual selection.

In Charles Darwin's book *The Descent of Man, and Selection in Relation to Sex*—which he published in 1871—he explores the idea of aesthetic evolution through mate choice. He referred to this as sexual selection, which he briefly discussed in *The Origin of Species*. Darwin proposed the notion of sexual selection because he felt that natural selection could not be the only evolutionary force at play in the natural world and that his theory of sexual selection could help to account for the enormous amount of diversity regarding ornamentation that is found in nature. His notion of aesthetic mate choice was inspired by his observation of the peacock's beautifully elaborate tail. He observed that the peacock had developed this highly ornamented trait that was impracticable for survival, which challenged his theory of natural selection that he had described in *The Origin of Species*. "The tail obviously did not help the male peacock to survive; if anything, the huge tail would be a hindrance, slowing him down and making him much more vulnerable to predators" (Prum, 2018, pp. 20–21). The notion that sexually successful males of various species of animals could evolve to be worse at survival or poorer in health or condition as a result of traits that they had developed through aesthetic mate choice was later studied by Ronald Fisher and Richard Prum, both of whom have published significant research on the subject (Prum, 2018, pp. 35–40).

Darwin described the notion of sexual selection as having two opposing evolutionary mechanisms, the "law of battle" and "the taste for the beautiful" (Darwin, 1871/2008, pp. 407–409). The law of battle refers to the struggle between members of the same sex—usually males—for dominance and control over members of the opposite sex. Darwin notes that the males of many species of birds have evolved hard, sharp beaks and extreme pugnacity in an attempt to maintain sexual control over the females (Darwin, 1871/2008, p. 409). Darwin calls the second evolutionary mechanism the taste for the beautiful, which refers to the process by which the females choose their mates based on their unique preferences and idea of aesthetic beauty. Darwin states that the best evidence for the notion of a taste for the beautiful lies in the example of the Australian bowerbirds. Male bowerbirds are unique in that they construct elaborate, decorative bowers for the sole purpose of attracting a female mate (Darwin, 1871/2008, p. 465). Darwin believed that as a result of animals having aesthetic preferences, they evolved ornamental traits such as songs, colorful feathers, and elaborate mating displays.

In part II of *The Descent of Man*, Darwin (1871/2008) discussed at great length the voices of birds and the complexity of emotions that these sounds express. Birds use their voices to express emotions such as distress, fear, anger, triumph, and happiness. Darwin observed birds calling to each other in an attempt to communicate a need for aid or to provide a warning signal to other birds that a potentially dangerous threat may be near, as he illustrates in the example of geese and other water-fowl (p. 417). Darwin states that most species of birds are the

most vocal during their breeding season, where male birds sing to the females in an attempt to charm them and display their superiority over the other male birds. An example of this phenomenon occurs in canaries, where the female canary always chooses the best male singer. This phenomenon can also be observed in finches, where the female finch selects a mate out of over 100 male finches that sing to her. She makes this determination based on the aesthetic beauty of the songs that the male finches sing (Darwin, 1871/2008, p. 417).

It is also worth mentioning that regarding the species of birds that are adept singers, the larynx muscles are stronger and more developed in males than in females. The males also tend to sing more often and for greater lengths of time as opposed to their female counterparts. This notion supports Darwin's claim that male birds have developed their voices due to sexual selection. Darwin also notes that birds that are known for their singing abilities rarely have bright, brilliant plumages and other ornaments that would be used to attract females of their species. Since these birds often do not have brightly colored feathers to attract their mates, they have developed the ability to create aesthetically pleasing sounds that effectively charm the females of their species, enabling them to procreate (Darwin, 1871/2008, p. 420).

Not only do birds use their voices to communicate with other birds, thus creating vocal music, but some species also produce what Darwin (1871/2008) calls "instrumental music" (p. 424). For example, peacocks and birds of paradise rattle their quills together to create sounds that attract the females as part of their mating ritual. Black-headed weavers from the West Coast of Africa are known to make a fast whirring sound as they fly through the air during mating season (Darwin, 1871/2008, p. 424). Woodpeckers are another example of a species of bird that creates a unique sound with their bodies during their mating season. Woodpeckers exhibit a behavior known as *drumming*, where they will strike wooden branches with their beaks at a rapid rate, creating a sound reminiscent of a drum roll. This behavior and its resulting sounds are a vital part of the bird's courtship ritual (Budka et al., 2018).

In *The Descent of Man*, Darwin (1871/2008) also examines birds that have developed modified feathers for the sole purpose of producing sound to attract a mate. In several manakin species, such as the club-winged manakin (*Machaeropterus deliciosus*), the males have a modified secondary wing feather, which is thicker and denser than other manakin species and also varies in shape. In addition, the wing bones of the club-winged manakin are thicker and more ossified than other manakin species (Darwin, 1871/2008, pp. 428–429). As a result of these adaptations, the club-winged manakin is able to make an incredible buzzing sound by shaking its wing feathers back and forth over 100 times per second. To put that speed into perspective, a hummingbird can only flap its wings at a rate of 50 times per second (Zimmer, 2005). In the case of the club-winged manakin, this bird species has adapted heavily ossified bones through natural and sexual selection, enabling them to create unique mechanical sounds, which aid them in attracting mates.

## THE INFLUENCE OF BIRDS ON HERMETO PASCOAL'S COMPOSITIONAL PROCESS

Hermeto Pascoal is a Brazilian jazz composer and multi-instrumentalist who has been a leading figure in the Brazilian jazz scene since the late 1960s. He was born in Lagoa de Canoa, Alagoas, Brazil, in 1936 and began studying music at a young age. In an interview with journalist Jon Pareles in 1989, Pascoal stated that "there was no electricity where I was born, so my radio was listening to the birds, the frogs, the horses, oxcarts going by, those were the sounds that shaped my growing up. I would take a reed and make a little flute out of it, sitting under the trees and playing for the birds who would gather above me. I would hear all those sounds and put them together in my head" (Pareles, 1989). As a child, he learned how to play the accordion, the piano, and several types of wind instruments, which would shape his career as a musician. In the 1960s, he began playing flute in the band Quarteto Novo (New Quartet), which included the Brazilian percussionist Airto Moreira. Moreira went on to record with jazz giants such as Chick Corea on the albums *Return to Forever* (1972) and *Light as a Feather* (1973) and Miles Davis on the album *Bitches Brew* (1970). In 1970, Airto Moreira recommended Pascoal to Miles Davis, which resulted in Davis hiring Pascoal to perform on Davis's 1970 album *Live Evil*. Pascoal was featured as a soloist on this album, and he also contributed three compositions. The opportunity to record with Davis propelled Pascoal's musical career and awarded him international recognition as one of the world's leading jazz musicians.

In order to understand Hermeto's compositional process, it is essential to consider where he draws inspiration. Hermeto describes his philosophy of music by saying that "music is everywhere in the air and can be heard by all who have an antenna for it" (Connell, 2003, p. 197). From an early age, Hermeto was surrounded by the complex sounds found in nature, and as a result, he developed aesthetic preferences relating to music that included a deep appreciation for biotic art, exemplified in his fascination with bird songs. In a 1998 interview for the Brazilian newspaper *O Globo*, Hermeto recalled his childhood musical experiences by stating the following: "I felt at ease playing and I wanted to know if the birds liked my music. When my father took me to the fields in his oxcart, I brought some flutes that I had made in order to play with the birds. . . . To this day, when I play in a place where there are birds, I can communicate with them" (Connell, 2002, p. 177). To illustrate the inspiration for many of his compositions, Hermeto refers to the notion of the "Som da Aura" (Sound of the aura). "Som da Aura" is a term that he created to describe the spoken voice and sounds from nature—such as animal sounds—that can be used as a non-conventional melody (Costa-Lima Neto, 2020, p. 20). Throughout his career, Hermeto has created numerous Som da Aura pieces that epitomize his philosophy of music—that music exists everywhere and is embedded in the webs of everyday life (Connell, 2002, p. 236).

In 1981, Hermeto Pascoal put together a band featuring some of the most talented young musicians in Brazil. For 12 years, Hermeto Pascoal e Grupo (Hermeto Pascoal and Group), as they were called, rehearsed at Hermeto's home

in Jabour, a neighborhood in the West Zone of the suburbs of Rio de Janeiro, and performed throughout Brazil, Europe, and the United States (Costa-Lima Neto, 2011, p. 141). The band would practice at Hermeto's home from Monday to Friday, from 2 to 8 pm, and would meticulously perfect Hermeto's extremely challenging compositions. During these rehearsals, Hermeto would also teach his bandmates how to improvise over the chord changes of his compositions using a triadic approach to improvisation as opposed to the more conventional method of improvising using linear scales and modes (Santos Neto, 2018). Upon entering Hermeto's house, one can see a series of cages filled with birds, including Hermeto's parrot Floriano (Costa-Lima Neto, 2011, p. 143). These birds have acted as pets for the composer and as an inspiration for numerous musical compositions.

To explain why Hermeto finds bird songs inspiring and enjoys listening to them, one needs to consider Darwin's notion of aesthetic mate choice. Darwin (1871/2008) convincingly demonstrates in *The Descent of Man* that various types of birds have developed elaborate and highly ornamented songs for the purpose of attracting a mate. These songs are not only aesthetically pleasing to birds that are members of the opposite sex, but they are also entertaining and pleasant to listen to from the perspective of the human observer. By recognizing the evolutionary utility of bird songs, one can gain a deeper appreciation for biotic art and acknowledge that birds have "nearly the same taste for the beautiful as we have" (Darwin, 1871/2008, p. 408). The often overlooked songs of birds have the distinct potential to affect the imagination of a creative musician, which is evident in the case of Hermeto Pascoal, who displays a penchant for biotic art.

An example of the influence of birds on Hermeto's compositional output is illustrated in his 1984 recording of "Papagaio Alegre" (Merry Parrot) on the album *Lagoa da Canoa Município de Arapiraca* (Lagoa da Canoa Municipality of Arapiraca). This album is significant because it references the small town in Alagoas where Hermeto grew up. Throughout the album, and particularly the song "Papagaio Alegre," Hermeto is drawing inspiration from the natural world, which played an integral part in his musical development as a child. In the example of "Papagaio Alegre," Hermeto recorded his pet parrot Floriano singing and then composed melodic counterpoint around the singing bird (Costa-Lima Neto, 2011, p. 143). Throughout the entire composition, the brief recordings of Floriano are played numerous times and are treated as thematic elements. At the beginning of the composition, a recorded excerpt of Floriano singing a rhythm associated with *maracatu* is presented (see example #1).

*Maracatu* is an Afro-Brazilian style of music that originated in northeastern Brazil and is one of the musical styles that Hermeto learned at an early age. *Maracatu* is a musical genre that dates back to the 17th century and is often performed

**Example 1.** "Papagaio Alegre" (0:00–0:02), transcribed by Nick Payne.

by large ensembles of people singing and dancing to highly syncopated, driving rhythms played on *alfaias* (large bass drums), snare drums, *chocalhos* (a type of metallic shaker), and *gonguês* (a type of iron cowbell) (McGowan & Pessanha, 2009, p. 156). Maracatu is also associated with the Afro-Brazilian carnival tradition of Pernambuco state and represents the African heritage of the area.

In the 1930s and 1940s (during Hermeto's childhood), composers in Recife began making a substantial effort to make maracatu a commercially popular genre of music. During this period, the Pernambuco Ministry of Culture began awarding prizes to composers who would write in the maracatu style. This resulted in a commercialized version of the genre that transformed the traditional maracatu music that was dominated by drums and voice into a radio-orchestra format that emphasized brass and wind instruments with minimal percussion accompaniment. Although maracatu never gained the widespread commercial success that samba enjoyed, maracatu remained an extremely popular genre in northeastern Brazil and was undoubtedly a significant influence in Hermeto Pascoal's musical development (Crook, 2005, p. 157).

In the recording of "Papagaio Alegre," Hermeto's pet parrot Floriano makes several appearances throughout the work, most notably during the presentation of the melody. In composing the melody of "Papagaio Alegre," Hermeto treats the brief recordings of Floriano singing as an integral thematic element that elevates the rhythmic complexity of the piece. In Example #2, a variation on Example #1 is presented, creating rhythmic counterpoint with the rest of the ensemble. This highly syncopated five-note theme sung by Floriano is then played numerous times. In Example #2, Floriano's melodic theme is played a total of four times. Each occurrence of the theme is slightly displaced in that it starts on a different part of the beat. The result of the rhythmic displacement of Floriano's theme is a highly complex web of polyrhythms happening simultaneously.

Another way that Hermeto integrates Floriano's singing into his composition "Papagaio Alegre" is by using the recordings of Floriano as inspiration for transitional material. To transition from the melody to the solo section of the composition—where Hermeto improvises on the flute—Hermeto orchestrates a transition section consisting of a call and response dialogue between the rhythm section and a recording of Floriano, the parrot (see Example #3). In this brief transitional section, the rhythm section (consisting of the piano, bass, and drums) plays a repeated rhythmic figure that is a variation on the maracatu rhythm that is sung by Floriano. This transitional section further solidifies the importance of the recorded excerpts of Floriano singing in the overarching structure of the composition. In addition to providing rhythmic inspiration throughout the piece, Floriano's singing also produces a sense of conversational dialogue in the aforementioned transition section. In this transition section, Hermeto links the composition firmly to the jazz tradition with the use of call and response—an essential facet of jazz performance practice—while maintaining his Afro-Brazilian roots. By having the rhythm section engage in a call and response dialogue with Floriano, Hermeto is effectively setting up a participatory musical framework

The musical score consists of two systems of five staves each. The instruments are: Bird Song (treble clef), Piccolo (treble clef), Tenor Saxophone (bass clef), Piano (bass clef), and Electric Bass (bass clef). The key signature changes from G major (no sharps or flats) to F# major (one sharp) at measure 5. Measure numbers 1 through 8 are indicated above the staves.

**Bird Song:** Starts with a rest, followed by eighth-note patterns. At measure 5, it continues with eighth-note patterns.

**Piccolo:** Starts with eighth-note patterns. At measure 5, it continues with eighth-note patterns.

**Tenor Saxophone:** Starts with a rest, followed by eighth-note patterns. At measure 5, it continues with eighth-note patterns.

**Piano:** Starts with eighth-note patterns. At measure 5, it continues with eighth-note patterns.

**Electric Bass:** Starts with a rest, followed by eighth-note patterns. At measure 5, it continues with eighth-note patterns.

**Example 2.** “Papagaio Alegre” (1:07–1:15), transcribed by Luiz Costa-Lima Neto (2000, p. 128).

The musical score consists of three staves. The top staff is labeled "Bird Song" and shows a melody line with eighth-note patterns. The middle staff is labeled "Piano" and shows harmonic support with eighth-note chords. The bottom staff is labeled "Electric Bass" and provides rhythmic foundation with eighth-note patterns. The tempo is marked as  $\text{♩} = 115$ . The score is divided into two sections: the first section ends at 1:51 and the second begins at 1:58.

**Example 3.** “Papagaio Alegre” (1:51–1:58), transcribed by Nick Payne and Jackie Yin.

for his subsequent flute solo to build on. During Hermeto’s flute solo, contrasting recordings of Floriano are played on several occasions resulting in an elaborate musical dialogue between the composer and the parrot.

Another instance where Hermeto draws inspiration from the sounds of his pet parrot Floriano occurs in the 1999 recording of his composition “Caminho do Sol, Tributo ao Papagaio Floriano” (Path of the Sun, a Tribute to Floriano the Parrot). This composition is featured on the album *Eu e Eles* (Me and Them) and was recorded entirely by Hermeto, where he plays all of the instruments on the album by himself, including keyboard, string, wind, and percussion. In the recording of “Caminho do sol, Tributo ao Papagaio Floriano,” Hermeto whistles several melodic lines in harmony while playing several percussion instruments providing the rhythmic foundation for the composition. The composite timbre of whistling and percussion is reminiscent of the *Banda de Pifanos* (fife bands) from Northeast Brazil that consisted of flutes (made from bamboo) and percussion instruments and typically performed the musical styles *forró* and *Baião* at public events and religious processions (McGowan & Pessanha, 2009, p. 157). The *Banda de Pifanos* date back to the sixteenth century and were common among the mestizo population in Northeast Brazil (Crook, 2008a). By imitating the *Banda de Pifanos* in this composition, Hermeto illustrates the significance of his rich musical heritage growing up in Alagoas. As a small child, Hermeto would make handcrafted flutes to imitate the pifanos played by the Xucuru-Kariri Indians, who lived near his hometown of Lagoa da Canoa (Costa-Lima Neto, 2011, p. 136). This experience undoubtedly had a profound impact on the composer’s musical upbringing. Throughout the recording, Hermeto also whistles short melodic fragments that are reminiscent of bird songs, which provide melodic counterpoint to the other whistled melodic lines.

Throughout Hermeto’s 1999 recording of “Caminho do Sol, Tributo ao Papagaio Floriano,” Hermeto engages in a call and response dialogue between three melodic voices. Two of these melodic voices consist of Hermeto whistling the melody of the composition in two-part harmony, and the third melodic voice is produced by Hermeto whistling a countermelody that resembles a bird singing.

These series of bird calls provide a sense of melodic contrast to the composition. The first bird call occurs in measure 3 of Example #4 and is a short melodic fragment consisting of three pitches. This same melodic motive is then repeated verbatim in measure 7 but repeated twice as a form of variation. The subsequent bird calls throughout the piece are similar melodic fragments made up of 16th notes and 32nd notes whistled in quick succession. It is also worth mentioning that each melodic fragment is slightly different from the last.

Hermeto treats the bird calls in this piece as contrasting melodic material that keeps the listener engaged. This is particularly important because of the repetitive nature of the melody that is played by the two whistled lines. The melody is 24 measures long and is repeated twice. In addition, this 24-bar melody can be broken up into three eight-bar phrases that bare a striking similarity to each other. The entire

The musical score consists of three staves. The top staff is labeled "Whistle 1", the middle staff is "Whistle 2", and the bottom staff is "Bird calls". The tempo is marked as  $A = 150$ . The key signature is one flat. Measure 1 starts with a rest followed by a melodic line in Whistle 1. Measure 2 shows a melodic line in Whistle 2. Measures 3-4 show a melodic line in Whistle 1. Measures 5-6 show a melodic line in Whistle 2. Measures 7-8 show a melodic line in Whistle 1. Measures 9-10 show a melodic line in Whistle 2. Measures 11-12 show a melodic line in Whistle 1. Measures 13-14 show a melodic line in Whistle 2. Measures 15-16 show a melodic line in Whistle 1. Measures 17-18 show a melodic line in Whistle 2. Measures 19 shows a melodic line in Whistle 1. The "Bird calls" staff contains mostly rests, with occasional short melodic fragments appearing in measures 3, 7, 11, and 15.

**Example 4.** “Caminho do Sol, Tributo ao Papagaio Floriano” (0:00–0:19), transcribed by Nick Payne and Jackie Yin.

melody is written in eighth notes and is written primarily in the sixth mode of the melodic minor scale (also known as the Locrian #2 scale). Not only are the two whistle parts that Hermeto performs derived from the Locrian #2 scale, but the various bird calls throughout the composition are composed from this collection of notes as well.

In June of 1996, Hermeto Pascoal began working on a collection of compositions titled *Calendário do Som* (Calendar of Sound), in which he composed one piece of music per day throughout an entire year to celebrate all of the birthdays that had occurred that year. The collection consists of 366 pieces of music—one piece of music for each day of the year—composed between June 23rd, 1996, and June 23rd, 1997 (since 1996 was a leap year, there were 366 days in that particular year) (Pascoal, 2000, p. 18). Each piece of music is handwritten by Hermeto in lead sheet notation in which a single line melody is provided as well as chord symbols that dictate the harmony of the song. In addition to this musical information, Hermeto included the date that each piece was completed as well as a number (1–366), which serves as the title. Hermeto also wrote inscriptions on each composition where he discussed the inspiration for the piece, the place where he composed the piece, the time it was completed, and his general thoughts and emotions that he was feeling on the particular day on which the composition was completed.

Six of the compositions in this collection were inspired by birds in different ways (as stated by Hermeto in the included inscriptions), and they all tell unique narratives. Two of these compositions were directly inspired by Hermeto's pet parrot Floriano ("#123" and "#309"). In "#123," from October 23rd, Hermeto writes, "this summer isn't arriving, I'll wait calmly with my beautiful birds and the parrot Floriano" (Rosado, 2019, p. 127). In "#309," which was written on April 27th, Hermeto describes the impetus for the song by stating the following: "I had a beautiful dream with my parrot Floriano; I dreamed he was giving me his foot and singing beautiful things, posing on my forefinger. For this, he is also honored with all of you. Long live love!" (Rosado, 2019, p. 136).

Three compositions in the *Calendário do Som* refer to birds found in Brazil ("#245," "#325," and "#336"), most likely near Hermeto's home in Jabour, Rio de Janeiro, where the songs were composed. In "#245," which was written on February 22nd, Hermeto describes his motivation for composing the piece by stating the following: "Long live divine inspiration! This music has a lot to do with a bandstand and a little bird" (Rosado, 2019, p. 132). In "#325," completed on May 13th, Hermeto draws inspiration from observing nature when he states that "here a pretty little bird passes through my window, good to see you. Today was a day in which he sang more, so I composed this piece listening to him. I think that he also has a birthday today; congratulations to him and all his little friends from the trees" (Rosado, 2019, p. 137). In "#336," which Hermeto wrote on May 24th, Hermeto notes that "this piece reminds me of the arrival of relatives with a puppy, birds, children with dolls, whistles. Only all together can this group give sound" (Rosado, 2019, p. 137). Although this composition draws inspiration from the notion of family, Hermeto does refer to the importance of birds in the family group and their importance in the creation of music.

The last instance of Hermeto referencing his appreciation for birds occurs in "#364," which was completed on May 24th. In this composition, he states in the inscription that "I composed this piece in Central Park looking at and admiring the landscape and the singing of birds together with people talking. I was looking from inside the dressing room and (the sound) gave this song, I hope you like it" (Pascoal, 2000, p. 413). The inscriptions that Hermeto provides in these examples illustrate the importance of bird songs in Hermeto's compositional process and the aesthetic beauty that Hermeto sees in the songs of various birds.

Throughout the *Calendário do Som*, Hermeto also provides the reader with visual representations of his love for birds. In 332 of the 366 compositions in the collection, Hermeto draws ornate pictures of birds in the margins, usually as part of a repeat sign (see Example #5). The only instance in the *Calendário do Som* where Hermeto draws a different kind of animal occurs in "#78," where Hermeto draws

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**Example 5.** Hermeto Pascoal, "#245," *Calendário do Som* (Pascoal, 2000, p. 267).

an image of a monkey. These illustrations exemplify the importance of birds to Hermeto's creative process and represent his ecocentric perspective on art. As a result of the frequency that images of birds appear in the collection, one can infer that birds are a prominent figure in his mind during the creation of his compositions.

## CONCLUSION

I maintain that Charles Darwin's insights regarding sexual selection and aesthetic mate choice provide a unique way to understand and appreciate the intricacies that are evident in bird songs. By investigating the complexities surrounding Charles Darwin's theory of sexual selection and aesthetic mate choice, it is apparent that birds have been making aesthetic judgments and creating music to charm potential mates for millions of years. As a result, birds have created a multitude of intricate and elaborate songs and calls that are perceived as aesthetically pleasing not only by other birds belonging to the same species but also by humans. By departing from the traditional anthropocentric view concerning the origins of music, and including nonhuman mating displays as a kind of biotic art, a wealth of understanding can be gained.

The forward-looking music composer Hermeto Pascoal has adopted this view and clearly appreciates the natural world's aesthetic richness. Hermeto grew up spending a significant amount of time in nature, communing with the animals found in his native state of Alagoas. Beginning in his childhood, the songs of birds and the sounds of other animals such as frogs and horses provided Hermeto with musical inspiration and sparked his fascination with biotic art that has continued throughout his prolific career as a composer and improviser. As a result of his propensity for using sounds found in nature as the impetus for his musical creations, Hermeto's music has pushed the boundaries of contemporary jazz composition and has reshaped his audiences' ability to imagine how music can be created as well as how it can sound. Through his unique method of combining a diverse array of musical influences that include Brazilian popular music, folkloric music, American jazz, and sounds from the natural world as well as everyday objects, Hermeto uses these sounds in unconventional ways resulting in music that defies category. His artistic output and approach to making music have helped to shape the genre of Brazilian jazz for the past 50 years and continue to inspire listeners from around the world.

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