

Zoo-Musicology: Relation of Music with Animals and Birds

Dr. Krishnendu Dutta (Associate Professor)

Priyanka Howladar (Guest Faculty)

Juhi Kumari (MPA student)

Dept. of Music, Sikkim University, Gangtok, Sikkim

Email: kdutta@cus.ac.in

Abstract

Music can affect human health and well-being. This sparked an expanding field of study that focuses on how music might improve animal welfare and facilitate human-animal interaction. A method of producing sound is through Birds have a vocal organ called the vocal cords deeper into their bodies. vocal cords, songbirds have two sets, distinct sounds simultaneously and in unison. The term "bird song" refers, in non-technical terms, to the musical bird sounds that humans can hear. Loud shouts from world monkeys are the most plausible choice for the model of predecessor for human vocalisation due to structural and behavioural similarities in all non-human primates' vocalisation.



Keywords: Birdsong, Zoo-musicology, Animal Vocalization, courtship song, Crickets, Gibbon song and musical instruments

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Research Objective:

The major goals of this study are to examine various functional relationships between music and animals or birds as well as various sound-generating techniques. Look for musical instruments that mimic animals or birds by reading and evaluating relevant books and articles.

Methodology:

The methods used in this qualitative research depend upon secondary sources of research, reading articles, journal articles books, and Wikipedia Google. The study of literature, existing research, articles, and other written materials as background sources of information was also part of the methods. I have followed qualitative research in this dissertation.

Introduction:

A new Science is aided in its beginnings by the discovery of animal-human interaction and its relation to musical method technique. The greatest at keeping time with musical rhythm,

according to a 2009 Harvard study, were those animals who can mimic sounds with their voice. Researchers claim that the 1940s saw the first recordings of whale sounds in the ocean. The interesting discipline of bioacoustics, which connects biology and music, has recently emerged in the study of animal communication sound. Zoo-musicology is the study of how animals and music interact. Many animals have a variety of musical skills, pitch, production processes, and tone scales. Effective signals in human and non-human animals were very thoroughly described by Darwin in 1872. Neurophysiology permitted the study of birdsong, according to the unique approach. I have heard a variety of musical styles, including the sparrow's song. Birds' voices have always been intriguing to listen to. Some of the top experts on bird songs in the world come together to listen to nature's melody. The most important point arise is how and why bird sing and how to communicate with animals. What the meanings of their songs and calls are, and how have they changed over time? Bird song has considerably more purposes than only serving a certain group of organisms. Numerous questions about the auditory system, pitch, tuning, loudness, frequency, and comparison to music occur in this situation. Excellent musical instruments that have a strong connection to mammals. It serves as a model for the investigation of a wide range of animal behavioral systems. Bird songs and animal sounds had never failed to pique my interest in the past. These days, this subject is crucial and demanding, and soundscapes have encouraged people to make discoveries. Researchers also pay attention to musical instrument playing as a technique for simulating avian experience. This study looks at how folk music affects insects and how it surrounds us. Collective difficulties, emotional expression, and low tension are brought on by folk music. Music is a particularly effective kind of meditation for humans, as well as for animals like birds, mammals, and insects. The largest relaxing effect of music on people and other animals is that it extends drosophila longevity. If song is defined as a rhythmically repeated sound made by a whale, a bird, a frog, an insect, or a person. The humpback's song was created using rules similar to those used by human composers. This essay examined the connections between music and animals and the kinds of thoughts that might be sparked by listening to an animal's voice, tone, or sound. This essay examines in depth how humans talk about birds and how musical instrument players imitate the sounds and sensations produced by birds. Bird listening and musically re-creating their sensations are two techniques to create emotional connections between people and other species. built in accordance with laws comparable to those used by human composers.

The main objective of this essay is to demonstrate the relationship between music and any animal in order to analyse a particular musical composition. Starting with the notion that zoological domains, as opposed to human ones, have specific musical elements with transpacific attributes. Humans, birds, and insects all exhibit striking similarities in their musical behaviour, and it has already begun. Francois B. Mache is credited with coming up with the concept of zoo-musicology in his essential work *Musique, Myth, Nature*. Although he claims that zoo-musicology has "not yet been born," its actual existence is securing its birth. His book was initially published in 1983.

Music produced by animals- the study of how music is made, or zoo-musicology. The primary aspect of this large field is that zoo-musicology spans a variety of academic fields. According to David Rothenberg, who has authored a book on the connections between human music and bird, insect, and whale song as well as plays music with animals (Snowdon, 2021). Birdsong is the most well-known type of music produced by non-human creatures. Bird calls vary from those made by other animals. A bird may call for immediate attention if a predator is around,

for instance, even if a direct communication call is often made in a straightforward way. The repetition procedure is repeated frequently in the song's beginning, middle, and end. Numerous songbird species use song to indicate and protect their territory as well as to entice possible mates. The capacity to sing is something that young songbirds pick up to imitate adult songbirds, according to observations. Some birds are able to imitate other birds' songs. As air moves from the lungs through the larynx, into the throat, and out the mouth, the vocal folds of the larynx vibrate, creating sound. Changes in the animal's buccal cavity, tongue, and lips position and shape affect the larynx's ability to make sound. This system in animals produces sound or melody.

Birdsong- Both bird calls and bird songs are examples of bird vocalisation. The term "birdsong" refers to a bird sound that is musical to the human ear. When comparing songs and calls based on complexity, length, and content, calls typically serve as alerts but songs are longer, more complex, and related to mating, territory, and wooing. Howell and Webb (1995) distinguish between short vocalizations like those of pigeons and non-vocal noises like the pounding of woodpeckers depending on function (Rothenberg). When a bird sings, produces a sound which communicates with other members of the same species because the song is special structure used in communication, e.g. signals. (Catchpole, 2003). According to Richard Prum, Birdsong is likely to constitute music, according to an ornithologist at Yale University, because different types of songs are frequently displayed by birds in concert over time. Birdsong frequently exhibits musical acoustic characteristics such as rhythmicity, melodic contouring, and overall pitch selection.

Gibbon song- Depending on the species and environment, gibbons sing loudly and for extended periods of time. Typically, ten to thirty minutes long. Early in the morning, the song is performed with particular species. Living in the tropical rain forests of Southeast Asia are arboreal apes. Gibbons live in monogamous societies. Mammals rarely engage in monogamy. The song is a collection of sounds that are typically stereotyped, of more than one type, and specific to one species. Males of numerous gibbon species make one or more distinct sorts of brief sentences, which frequently get more complicated over time. Most species' cries are made up of an especially rhythmic series of lengthy notes played at progressively faster tempos. Males typically pause their vocalisations at the beginning of each call and utter a unique reply phrase before returning to their more typical short phrase (Mitani, 1985).

Communication of animals:

Advertisement cell- For several hours, male crickets scream loudly and continuously to entice females. Cricket females do not sing. In males, the stridulatory organ and sound-producing equipment are on the wings. When cricket wings spread out more, they slide the scraper on one wing across the file on the other wing like a violinist would do with a bow and string. Mammals may sing solos or choruses, but most songbirds only have males who may sing elaborate love songs. Crickets come in 3,000 kinds, each with a unique singing style. The song of the female is the same throughout all Fruit Fly species. The arista, which are feathery projections on the antenna of wasps and bees that buzz similarly, are how females hear sound.

Contact cell- Before assembling in shoals, males and females first create sound, especially during the breeding season. Wolves and monkeys have similar cells, and the howling of the

pack provides information about the caller's identity, the size of the pack, and its position. The signals from insectivores and rodents like mice and voles have a very high frequency (40 kHz to 100 kHz). Frogs and salamanders make sounds when they are acting aggressively. The rapid flapping of a worker bee's wings draws other worker bees to the dance, which directs the entire group of bees to a flower where they can gather nectar. African bird species sing in particular to keep close communication. Mammals' contact calls often have a low pitch. A succession of brief, extremely high-frequency (100,000 cycle/sound) ultrasonic cries are produced by bats.

Alarm cell - Make a unique alarm call to detect predatory mammals and birds. A wide variety of various frequencies are typically covered by high-pitch distance calls. A brief, 0.5-second high-frequency note at a frequency of 7 kHz is produced by hawk and cat alarm calls. The larva of the cabbage moth is a little, green caterpillar that feeds young, sensitive cabbage leaves. It has an ear of eight thin hairs that is positioned on the anterior segment in the socket. Belding ground squirrels make a chattering sound when they see a ground predator and a high-pitched whistle when they see an aerial predator.

Territorial cell- When a male cricket uses a female and another male to stake out its territory, a fight breaks out. Both start singing a rivalry song and after a fierce fight, the victor continues the victory song. Music is found in all human cultures and thus appears to be our biology and not simply a cultural phenomenon.

Neuroanatomy – learning of birdsong involves a group of distinct brain areas that are aligned two connecting pathways. In which music can be defined by production and vocal systems.

Anterior pathway- The anterior forebrain pathway is significant (vocal learning) which is composed of area X, which is homologous to mammalian basal ganglia.

Posterior pathway- The posterior forebrain pathway is significant for (vocal production) The HVC (high vocal center) is the nucleus in the brain of the songbird which is necessary for both the learning and production of birdsong. (GF Ball, 2010). The bird brain contains significantly more nerve cells compared to the mammalian. Both birds and mammals are warm-blooded.

Drosophila – Male *Drosophila Melanogaster* wing vibrations during courtship result in trains of pulses and longer tones known as pulse and shine song. Male drosophilas exhibit a wide range of complicated behaviours that they have developed to be successful in reproduction. Pursuing the female while she is singing a particular species' courtship song. Each wing includes teeth that resemble combs for producing the sound. By rubbing the top of one wing against the teeth at the base of the other wing, chirping noises are produced. Loud noises blasting at fruit flies have the same effect on the small insects as they have on people. Insects are equipped with organs that can detect vibrations, analyze them, and decipher their frequency. The fly utilizes its antenna as an ear and responds to courtship melodies produced by wing vibrations by resonating (K Klappert, 2009).

Animal and human sound production. the beginning of sound as a method of information transfer in animals. New research indicates that although birds and humans have entirely distinct vocal organs, both employ the same basic process to move their vocal cords and make sound. Vocal sounds are those produced in the respiratory system, while mechanical sounds are those created by the mutual touch of two or more body parts. Many animals have unique structures for making sounds, such as the syrinx used by birds to make sound and the larynx

used by humans. The r structures on the wings of grasshoppers and crickets are used to create sound. The loudest sounds known to man are produced by cicadas. insects do so by means of a pair of membranous organs (cockere1, 1650)

Crickets- The species' messengers are the male crickets. The female patiently awaits the guys' singing. Crickets primarily make calls to entice females. By rubbing a sharp edge at the base of one front wing against a file-like ridge on the bottom edge of the other front wing, the male creates the chirping sound. The songs of the crickets are well-recognised around the world. For the chamber ensemble of soprano and boy soprano, oboe, mandolin, harp, "electric piano" (a regular concert grand fitted with contact mics and connected to an amplifier and speakers), and a percussion suite requiring three players, Ancient Voices of Children is scored. (Cook, 2013)

The magical relation between instruments and animals.

- Birds as a Flute
- Wolf as a French Horn
- Cat as a Clarinet
- Duck as an Oboe
- Bee as a Trumpet
- Hummingbird (Crickets) as a Violin string. Etc.

Data Analysis:

After doing a literature review, some data were gathered from various publications, journal articles, books, Wikipedia, and Google because this study is based on articles. Birds produce sounds akin to sapta swaras, animal communication, gibbon song, birdsong, drosophila, crickets, instruments that connected with bird sound, as well as the function of the trachea, brain, neural systems, vocabulary, tempo, pitch, frequency, and sound.

Results:

I discovered through a combined analysis of the digital data collection methods that social media plays a significant role in data discovery nowadays. There are several options available in every sector. Resuming my study of the "Relation of Music with Animals and Birds: Zoo-Musicology" The findings indicated that there is a strong connection between music and animals and birds, and many musical instruments have their origins in animal sounds. Because sapta swaras are swaras that we have tried to pronounce as different scales in many ways, music is not just for humans or those who can speak. Mammals also make sapta swaras that are accompanied by the beauty of the natural world. among the birds whose songs are most frequently incorporated into music.

Conclusion:

According to my topic and investigation, I discovered that there is a strong correlation between musical compositions by humans and the sounds of birds or other animals. Humans and birds employ the exact same physical mechanism to move their vocal cords and produce sound, thus some intrinsic aspects of sound creation are the same in both species. While the frequency, tempo, rhythm, and pitch may vary, they are all present and capable of exhibiting the phenomenon of song repetition. In my research, I discovered that although mammals and birds both have warm-blooded bodies, their nerve systems and brain regions differ in some important

ways. Bird brains contain much more nerve cells than those of mammals, and on average, birds have twice as many neurons per unit mass as mammals. A gibbon establishes its territory by vocalising while moving inside its home range. A performance in Shanghai will involve both human musicians and hundreds of crickets that produce music by rhythmically rubbing their wings together during a mating ritual, I discovered. Several musical instruments were inspired by both animal and bird sounds.

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