

Do Animals communicate with each other? A Scientific Evidence Supporting what was Revealed in the Quran

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ABSTRACT

In this survey, we analyze the recent discoveries on animal communication, such as birds, dolphins, ants and honeybees communication. We also try to see the Quran point of view on the matter by exposing some pertinent verses reporting a speech/communication related to animals.

The recent works cited in this paper affirm that it does exist a real way of communication between animals, confirming the information revealed by the holy Quran on the subject.

The cited research works and related results, not only confirm the information embedded in the Quran, but also lead to an important conclusion about the Divinity of this noble book.

I. ANIMAL COMMUNICATION IN THE QURAN

The Quran mentions the language of birds. For instance, in the verse (27:16), Allah (*The most Gracious the most Merciful*) says:

وَوَرَّثَ سُلَيْمَانَ دَاوُودَ وَقَالَ يَا أَيُّهَا النَّاسُ عَلَّمْنَا مَنْطِقَ الطَّيْرِ وَأَوْتَيْنَا مِنْ كُلِّ شَيْءٍ إِنَّ هَذَا لَهُوَ الْفَضْلُ الْمُبِينُ [27:16]

Translation: And Solomon (Sulaiman) inherited David. He said, "O people, we have been taught the **language of birds**, and we have been given from all things. Indeed, this is evident bounty." (Quran 27:16).

The Quran clearly mentions the language of birds, where it can be noticed that the birds speak with each other. Some birds like parrots can learn human words. Moreover, some humans, for example villagers of Kusköy in Turkey are used to communicate with each other by whistles like birds. However, the strange ability hold by the Prophet Sulaiman to have meaningful conversations with birds (see verse (27:16)) is amazing [Illias S., 2018].

Here is a part of discussion between Suleiman (Solomon) and the Hoopoe bird:

وَتَفَقَّدَ الطَّيْرَ فَقَالَ مَا لِيَ لَا أَرَى الْهُدُودَ أَمْ كَانَ مِنَ الْغَائِبِينَ * لِأَعَذَّبَنَّهٗ عَذَابًا شَدِيدًا أَوْ لَأَذْبَحَنَّهُ أَوْ لِيَأْتِنِي بِسُلْطَانٍ مُبِينٍ * فَمَكَثَ غَيْرَ بَعِيدٍ فَقَالَ أَحَطْتُ بِمَا لَمْ تُحِطُ بِهِ وَجِئْتُكَ مِنْ سَبَإٍ بِنَبَأٍ يَقِينٍ (27:20-22)

Translation: (Solomon) inspected the birds and said, "How is it that I cannot see the hoopoe. Is he absent? I shall certainly punish him severely or slaughter him unless he has a good reason for his absence." Not long after, the hoopoe came forward and said, "I have information which you do not have. I have come from the land of Sheba with a true report. (Quran 27:20-22).

In these verses, we notice a discussion between the Prophet Sulaiman and the hoopoe bird, where the bird not only understand what was said by Sulaiman, but also responds to him too.

Concerning the Prophet Dawud (David), we find the mention of the birds too:

وَلَقَدْ آتَيْنَا دَاوُودَ مِنَّا فَضْلًا يَا جِبَالُ أَوِيبِي مَعَهُ وَالطَّيْرَ وَأَلَنَّا لَهُ الْحَدِيدَ (34:10)

Translation: And We certainly gave David from Us bounty. [We said], "O mountains, repeat [Our] praises with him, **and the birds** [as well]." And We made pliable for him iron (Quran 34:10).

More surprisingly Prophet Suleiman (Salomon) was even able to listen to ants communicating with one another, as cited in the verse (27:17-19):

وَحَشِيرَ لِسُلَيْمَانَ جُنُودَهُ مِنَ الْجِنَّ وَالْإِنْسِ وَالطَّيْرِ فَهُمْ يُورَعُونَ *حَتَّىٰ إِذَا أَتَوْا عَلَىٰ وَادِي النَّمْلِ قَالَتْ نَمْلَةٌ يَا أَيُّهَا النَّمْلُ ادْخُلُوا مَسَاكِنَكُمْ لَا يَحْطَمَنَّكُمْ سُلَيْمَانُ وَجُنُودُهُ وَهُمْ لَا يَشْعُرُونَ *فَتَبَسَّمَ ضَاحِكًا مِّن قَوْلِهَا وَقَالَ رَبِّ أَوْزِعْنِي أَنْ أَشْكُرَ نِعْمَتَكَ الَّتِي أَنْعَمْتَ عَلَيَّ وَعَلَىٰ وَالِدَيَّ وَأَنْ أَعْمَلَ صَالِحًا تَرْضَاهُ وَأَدْخِلْنِي بِرَحْمَتِكَ فِي عِبَادِكَ الصَّالِحِينَ (27:17-19)

Translation: Solomon's army, consisting of human beings, jinn, and birds were gathered together in his presence in ranks. Until, when they came upon the Valley of Ants, **an ant said**, "O ants! Go into your nests, lest Solomon and his troops crush you without noticing". So [Solomon] **smiled, amused at her speech**, and said, "My Lord, enable me to be grateful for Your favor which You have bestowed upon me and upon my parents and to do righteousness of which You approve. And admit me by Your mercy into [the ranks of] Your righteous servants." (Quran 27:17-19)

In the previous verse, Allah (*The most Gracious the most Merciful*) reports the scenario between Suleiman and the ant, which was calling her community to enter their habitations to avoid being crushed by the Prophet and his army. The Prophet was able to understand its speech, which proves that ants have a developed means of inter-communication.

According to the holy Quran, it is stated that every creature is organized in communities, as it is the case with human beings. This fact is clearly mentioned in the verse (6:38)

وَمَا مِنْ دَابَّةٍ فِي الْأَرْضِ وَلَا طَائِرٍ يَطِيرُ بِجَنَاحَيْهِ إِلَّا أُمَّمٌ مُّمْتَلِكُمْ مَا فَرَطْنَا فِي الْكِتَابِ مِنْ شَيْءٍ ثُمَّ إِلَىٰ رَبِّهِمْ يُحْشَرُونَ

Translation: All the beasts on land and flying birds have different communities, just as you (people) do. Nothing is left without a mention in the Book. They will all be brought into the presence of their Lord (Quran 6:38)

II. SCIENTIFIC DISCOVERIES ABOUT ANIMAL COMMUNICATION

Looking for animal behavior is an exciting experience, which shows how little we know about the many species that exist on earth and how little we know on their mean of communication.

We are still discovering more about the strange and high capabilities that animals possess to communicate each other.

In the songs and rituals they perform, one can detect a real meaning, which represents a real motivation in studying animal communication and facts that sustain the most enduring inquiries [Rogers, 2002].

As mentioned in [Rogers, 2002], most communications occur between members of the same species (intraspecies communication), but there are cases where one species communicates with another species (interspecies communication). [Rogers, 2002]. We can quote for instance a communication between a furious dog and a female cat trying to protect its babies.

Scientists from different research fields might agree that the study of animal communication and the discovery of commonalities of some features of communication between animals, raise the possibility of considering the human language as only one of the different existing alternative modes of communication [Rogers, 2002].

II.1 DOLPHIN COMMUNICATION

Dolphins employ a highly developed acoustic communication system that uses many pertinent features associated with the term language [Fulton, 2021].

As illustrated by Dr. Denise Herzing, Founder and Research Director of the Wild Dolphin Project [www.wilddolphinproject.org], dolphin communication employs the same mechanisms and signaling parameters as human speech except for the frequency range of 3900 and medium used [Fulton, 2021].

Moreover, Dr Herzing asserts that the dolphin language presents a high entropy (suggesting that it could even approach some human languages), but without identifying any word in that language [Fulton, 2021].

According to Lammers et al. [Lammers, 2003], if dolphins pay attention to the whistles structure with an important associated social role, then the evidence presented here indicates that there is considerably more to the social acoustic signaling behavior of some species of dolphins than meets the human ear [Lammers, 2003].

In figure 1 below, one can see a Markov model tree representing the probabilistic sequences of two dolphin whistles. Numbers in boxes represent whistle types. Percentages and direction of arrows shown represent the probability of one whistle type following a second whistle type. A curved arrow indicates the probability that a whistle of one type immediately follows itself. This figure shows a certain probabilistic structure between whistle types.

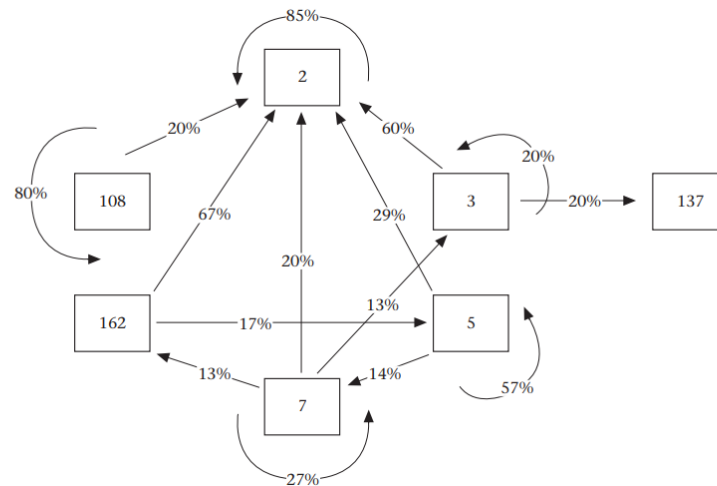


Figure 1 [McCowan 1999]. One set of two-whistle sequences shown as a probability tree based on a Markovian first-order (i.e. Shannon second-order entropy) analysis. Numbers in boxes represent whistle types. The number of whistles for each whistle type (WT) included in the diagram were: VVT2=188, VVT7=15, WT162=12, WT5=7, VVT108=5, WT3=5, WT137=1 [McCowan 1999].

According to Ferrer-i-Cancho et al., it appears that the statistical properties of the mapping of dolphins whistle into meanings is really consistent with the hypothesis that dolphins whistles have some sort of meaning and that dolphins can communicate through them: the use of a specific whistle type is constrained by the behavioral context, where it can be shown that these constraints are sometimes shared by several individuals [Ferrer-i-Cancho, 2009].

II.2 BIRD COMMUNICATION

Birds produce a large variety of sounds, from high-frequency whistles to simple hooting. All of these sounds are used to communicate an information to other members of the same species. However, birds have another way of communication: birds can also communicate with their bodies through movement or color for example [Birdfact, 2022].

Communication between individuals of any species, especially birds, relies on sending and receiving information in a format that can be understood by both parties. Moreover, the sense of hearing is highly developed in birds, so it is unsurprising that they use the sound signal to communicate with each other [Birdfact, 2022].

Some investigations and analyses that were made on some animal sounds and their studies have provided evidence for syntax-like structures in their communication systems. In linguistics, syntax represents the rule of combination of meaningful sounds to form higher-order structures like phrases or sentences [Spiess, 2022].

Furthermore, vocal communication in birds can roughly be divided into songs and calls. Although, these two terms are often used for the same meaning, scientists separate them depending on their real message and targeted function [Birdfact, 2022].

An example of human-bird communication can be seen in the following video representing an interesting human-hawk example of communication: Can I talk to my Hawk?

<https://www.youtube.com/watch?v=9mWzwWY1TuM> [Mercer, 2022].

II.3 ANT COMMUNICATION

As other animal species, ants also do communicate between them by forming a strong community collaboration. We do not exactly know all their means of communication, but it is possible that they could communicate with different means and in different ways.

Recent research works have shown that ants can communicate via large arrays of pheromones and possess complex olfactory systems, with antennal lobes in the brain, with up to 500 glomeruli [Hart, 2023].

So, it appears that odors could activate hundreds of glomeruli, which would pose challenges for higher-order processing. The researchers in [Hart, 2023] generated transgenic ants expressing the genetically encoded calcium indicator in olfactory sensory neurons, and by using two-photon imaging, they mapped complete glomerular responses to four ant alarm pheromones.

Interestingly, alarm pheromones activated almost 6 glomeruli, and activity maps for the three pheromones inducing panic alarm in their study species converged on one glomerulus.

Their results showed that ants employ precise and stereotyped representations of alarm pheromones. Furthermore, they stated that a simple neural architecture is sufficient to translate pheromone perception into behavioral outputs [Hart, 2023].

However, it is also possible that ants communicate by sounds too, and the important role that acoustic signaling has in ant communication is well established and it is unsurprising that other interacting species present adaptations that relate to the acoustic characteristics of the host [Schönrogge, 2017].

For concreteness, one can hear a sample of ants sound in this link:

<https://exploresound.org/2020/01/ants-have-an-acoustic-world-of-their-own/> [Hickling, 2023]

II.4 BEE COMMUNICATION

Really, bees do communicate and this fact was proven by scientific evidences. In fact, the Austrian scientist Karl von Frisch (living from 1886 to 1982) observed that the body movements of foraging bees on their return to the nest from a food source correlate with its direction and its distance [Von Frisch, 1965 a,b]. Scientists have been amazed by the discovery of this encoded language, based on the waggle dance, and how it could be effectively used to transmit information about the localization of remote objects (see figure 2) [Hrncir, 2005].

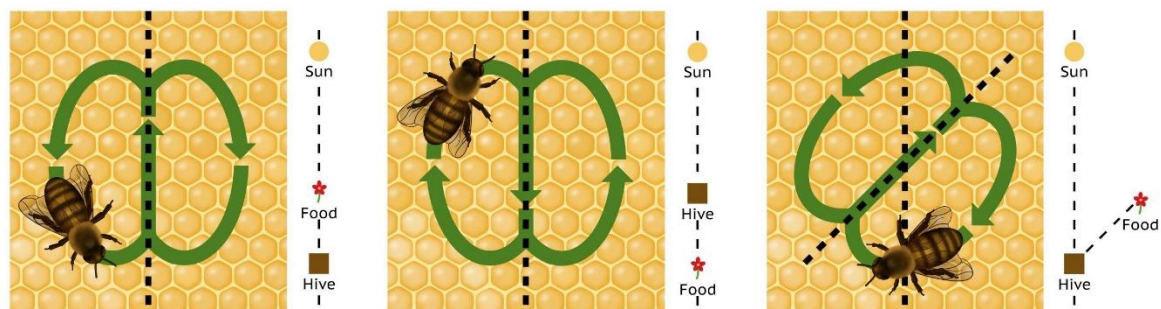


Figure 2 [BeesWiki, 2023]. Waggle dance is one of the main types of communication methods used by bees [BeesWiki, 2023]

Further investigations using recording techniques have revealed that the bee's communication is quite complex and we are only beginning to understand a little of the large field of bee communication. In fact, the bee dance movement is only one chapter of the large story of communication processes that is used by hundreds of bees belonging to a single colony [Hrncir, 2005].

III. CONCLUSION

In this survey we saw that the holy Quran mentioned the language of birds and ants. For instance, in the verse (27:16), the Quran clearly mentions the language of birds, where it can be noticed that the birds speak with each other.

In the verse (27:20-22), we noticed a discussion between the Prophet Sulaiman and the hoopoe bird, where the bird understood what was said by Sulaiman, and even responded to him.

Moreover and more surprisingly, as cited in the verse (27:17-19), Prophet Suleiman (Salomon) was even able to listen to an ant that was talking to its community.

When we read the Quran, we understand that animals are grouped in well-organized communities. In fact, according to the holy book, and as it is clearly mentioned in the verse (6:38), it is stated that every creature is organized in communities, like human beings.

So, the holy Book states that animals, or at least those cited in the Quran, do communicate and speak with each other in their own language, even if we do not understand their speech.

On the other hand, and through this investigation, we could cite different high-quality scientific research works related to animal communication, such as dolphins, birds, ants and honeybees, illustrated in the following publications: [Fulton, 2021], [Lammers, 2003], [Ferrer-i-Cancho, 2009], [Birdfact, 2022], [Spiess, 2022], [Mercer, 2022], [Hart, 2023], [Hickling, 2023], [Von Frisch, 1965 a,b] and [Hrncir, 2005], and which explicitly show that those animals do communicate within their community and do possess a real organized way of communication with a specific language, as seen in sections II.1, II.2, II.3 and II.4.

Consequently, the scientific discoveries in this research field clearly confirm the main concept of animal communication revealed in the holy Quran, and which was reported 14 centuries before.

The rising question now, is: Is it possible that the holy Quran, with all that knowledge, could be written by a human being from the 6th century? The response is obviously: No. Moreover, it is not surprising to see many other scientific discoveries sustaining the Divine origin of this holy book.

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