

## The spectrum of consciousness in the world

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*Article History: Received 6 October 2022; Accepted 28 November 2022*

### ABSTRACT:

Original Paper

In this paper, we try to show, based on scientific evidence, that assigning consciousness to humans and calling the "world without humans" meaningless does not seem like a comprehensive approach. The intellectual foundation of this attitude is based on a kind of "spectral approach" in examining the phenomena of the world. To explain this attitude, we refer to evidence of scientific findings to show that our lack of understanding of the consciousness of other beings does not mean the lack of intelligence in them. We also show that many phenomena in this world are spectral. Then, based on the verses of the Qur'an and the concept of the dignity of beings from the perspective of Islamic philosophy, we conclude that other creatures also have a hierarchy of intelligence that we describe here as "the spectrum of consciousness".

**KEYWORDS:** Spectral approach, the Qur'an and science, the consciousness of beings, intelligence.

### 1. Introduction

The object-oriented and instrumental-oriented view of the "universe without humans" and the speciesist view to humans as the only conscious being in the universe have always been prominent in Aristotle's philosophy and among his followers (Benson 2000). This superiority-seeking and selfish view to human and placing humankind at the center of universe has a story as old as the life of an intelligent and civilizing human.

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The modern form of this thinking is manifested in schools such as humanism (with a religious, secular, or naturalistic approach), positivism, fascism, racism, etc. (Tavakoli 2003).

The purpose of this study is to show that intelligence in the universe is not specific to human beings, and all beings, both living and non-living, have some kind of consciousness. In other words, the intelligence, like many of the phenomena of this universe, is spectral and should not be viewed with a black and white approach. To explain and confirm this attitude, we refer to some examples of scientific findings. Then, using the spectral approach with intra-religious reasoning, based on the some verses of the Quran and the concept of the dignity of beings from the perspective of Islamic philosophy (Karimian Seyqalani 2013), we conclude that consciousness is not specific to humans and other creatures have degrees of consciousness, which we describe it as "spectrum of consciousness".

## *2. Historical discussion*

One of the causes of human error is false pride and selfishness caused by his ignorance. The school of humanism is the result of this human selfishness (Rahimi Boroujerdi 1991). Followers of humanistic thinking consider the development of science and technology as the foundation and support for this thinking. They believe that with the help of science and technology, which is the result of the curiosity and research of the elites and scientists of the society, human can negate all immaterial things. Finally, he can become the owner of all the material world by emphasizing the centrality of human. However, the examination of the evidence in the history of the development of science and technology proves the opposite of this opinion. In other words, although in the short term, the development of science and technology has been the basis for the creation of extremist schools and selfish thoughts, but in the long term, it has led to the correction or cancellation of such ideas. To clarify this claim, pay attention to some examples.

### *2.1. First example*

In the history of evolution of the periods of astronomy, the period of ancient history until the end of the 16th century is called the geocentric period. During this period, humankind thought that the entire universe and the heavenly bodies in it, which were apparently located in the inner surface of the "celestial sphere", revolve around the earth, which was thought to be

located in the center of the universe. This astronomy is called Ptolemaic astronomy after its founder, Ptolemy (90-168 AD), a Greek philosopher and astronomer. In fact, astronomers believed that the earth, that is, the point of the universe where human is settled, is the center of the universe.

The naive appearance of observational evidence also confirmed this worldview. With the passage of time and the theoretical and practical efforts of astronomers, the simple and basic model of Ptolemaic astronomy was gradually developed and to explain some new observational evidence added to its complexity to the extent that it was no longer able to justify the newer observational findings. Therefore, astronomers inevitably declared geocentric astronomy obsolete after centuries of efforts and research. But since the pride and arrogance of man did not allow the sweetness of the centrality to be easily ignored, finally, based on the knowledge of that day, it was decided that the sun, the closest star to us, to be the center of the universe.

With the development of science and technology and the construction of accurate observation instruments, this thinking also turned out to be wrong. Man did not learn from this historical experience and this time considered "our" galaxy, the Milky Way, as the center of the universe. Although the development of science and technology supported these centripetal models for a while, but eventually with the discovery of other galaxies, not only did it remove the Milky Way galaxy from the center of the universe, but suspended the concept of the center of the universe (Nasiri 2018). Selfish, but curious humankind has not yet learned from this historical experience and looks for a preferred base for himself in the world within the framework of humanistic thinking. This historical fact shows that the growth of science, reason, awareness and advancement of tools and technology has a direct relationship with the reduction of ignorance and false pride of human and ultimately forces him to obey the laws and be humble.

## *2.2. Second example*

Electricity and magnetism were initially known as two independent branches. In 1820, Hans Christian Orsted realized that an electric current in a conductive medium can create a magnetic field, so the topic of electromagnetism was raised as a branch of physics. The theory of electromagnetism was codified by the valuable work of James Clerk Maxwell, and the nature of visible light was determined and known as electromagnetic waves. The human eye has the ability to detect light as a combination of the red to violet light spectrum, and no more. The interesting point is that until then, humans were only able to detect light waves in the

wavelength range of 700 (red light) to 300 nm (violet light). It means that other electromagnetic waves did not exist for humans, simply because they could not be detected by him. However, with the passage of time and the development of science and the advancement of tools, other waves were discovered in the electromagnetic spectrum.

In the field of waves with longer wavelengths than visible light, William Herschel discovered infrared waves in the wavelength range of 700 nanometers to one mm. Heinrich Hertz discovered radio waves, whose entire spectral range was later known from one millimeter to several centimeters, meters, and kilometers. In the shorter wavelength range, ultraviolet waves were discovered by Johann Wilhelm Ritter, X-waves by Wilhelm Conrad Roentgen, and gamma waves by Paul Willard in the wavelength range of 300 nanometers to femtometers (Jackson 1998) (figure 1).

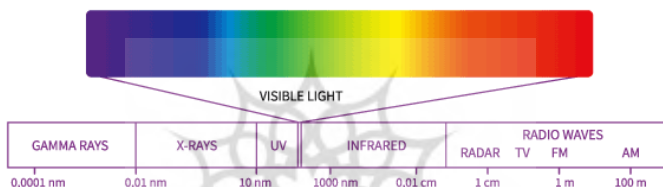


Figure 1. Spectrum of electromagnetic waves

Before the discovery of the waves of the electromagnetic spectrum, man recognized only visible light, which was a small part of this spectrum, despite the fact that it was not visible to the naked eye; he was forced to accept the rest of the spectrum. In other words, he submitted to the fact that "there are other things besides what he perceives by the visible rays and by the help of his sense of sight." Note that this compliance has happened with the "advancement of science and technology" and by elite people who do not stop researching for a moment.

### 2.3. Third example

Similar to what was said about electromagnetic waves, it is also true about sound waves. Figure 2 shows the power of human hearing, which only includes waves with a frequency of 20 Hz to 20 kHz, i.e. the audible range (Motamedi 2004). However, by discovering the spectrum of sound waves with frequencies higher and lower than the audible range, man accepted the existence of sound waves that cannot be understood by his sense of hearing. Meanwhile, today, it has been determined that part of these waves can be

produced and detected by the hearing system of some other creatures such as bats, dolphins, etc. (Adams and Pedersen 2000).

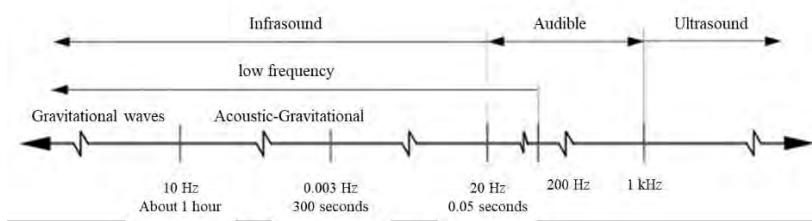


Figure 2. Spectrum of sound waves

In the same way, numerous examples of this type can be mentioned in the history of the evolution of different fields of science.

### 3. Consciousness of the universe from the viewpoint of science and technology

The followers of the school of humanism, both those who chose the religious branch and those who chose the non-religious branch, consider humans to be distinguished from other forms of life. In this school, human is the only one who has originality in the world and is considered the center of all values. Everything starts from the human point and ends at the human point and every development must be according to his will. In fact, it is human who is the supreme truth of existence and his existential capacities are unique in the world.

Evidences of the kind of the second and third examples and numerous other experimental requirements in the world are not compatible with allocating the diverse capacities of life to humans. What is deduced from the observations of nature is the spectral form of these capacities. It seems that just as electromagnetic waves and sound waves are spectral, the capacities of life also have a spectral nature, even if a part of this spectrum cannot be understood and revealed by our senses and perceptive powers.

Now we return to the issue of consciousness. In the same way, it can be argued that consciousness in the universe can also include a range of inanimate, plant, animal, human consciousness. Note that the different parts of the electromagnetic wave spectrum, i.e. the visible, infrared, radio, ultraviolet, X-ray and gamma light ranges, each in turn includes a range of wavelengths. It is the same here, that is, each type of consciousness has its own range. We know the fact that the members of a statistical sample of

human society do not have the same intelligence and the level of human intelligence itself has a spectral subset.

In table 1, you can see the spectral class of human consciousness in Wechsler's model (Gomez et al. 2016). According to this table, this subclass follows a normal distribution (with an average intelligence value of 100). In other words, human society includes a minority with very high intelligence, a minority with very low intelligence, and a majority with average intelligence. It is interesting that in the mathematical sciences, the Dirac delta function with zero width is an "undefined" function. That is, there is no distribution function with zero width, or every distribution function must have a certain width (Dirac 1926).

*Table 1. Wechsler's classification for human consciousness*

Classification of intelligence	very superior	superior	above average	average	Below average	borderline	Very low
Intelligence range	135 and above	120-130	110-119	90-109	80-89	70-79	69 and below

As before Orsted's discovery, not having knowledge of the rest of the spectrum of electromagnetic waves did not mean their non-existence, if we do not have knowledge of inanimate or plant or animal consciousness, it does not mean their non-existence. Therefore, the denial of the unrevealed realities of the world by our senses and perceptions as a result of pride is re-experiencing the repeated failures of the past. It is better to humbly admit that everything in the world is not limited to the human domain and we have no right to take over the rest of the world as an environment, tyrannically and cruelly. Just as we have no right to be disrespectful to the intelligence and rights of other human beings, we have no right to disrespect and ignore the intelligence of other creatures in the world, including inanimate objects, plants, and animals. On the contrary, because we are at a high level of the intelligence spectrum, we should pay more attention and be more responsible.

In support of the spectral view of consciousness, we can refer to other examples of the existence of spectral distribution of various physical quantities in the real world.

### *3.1. Distribution of mass in atoms*

Most of the mass of atoms is made up of their nucleus, which is

composed of protons and neutrons. The mass of the electron is about 2000 times less than the proton or neutron, so the mass of the electron can be ignored compared to the mass of the nuclei of different atoms. With a general look at the Mendeleev table, one can easily see the spectral distribution of the physical quantity of mass among all the atoms in nature. The smallest atom, the hydrogen atom, has one atomic mass unit and the heaviest atom, the uranium atom, has 238 atomic mass units. The rest of the atoms also have a mass in the range of this spectrum (IUPAC Standard Atomic Weights 2007).

### 3.2. *Distribution of mass in the universe*

The universe is mainly composed of planets, interplanetary matter, stars, interstellar matter, galaxies and intergalactic matter. The mass of other parts of the universe such as moons, asteroids and comets can be neglected with a good approximation. In the table 2, you can see the spectral distribution of the mass of the above celestial bodies.

The density of the Earth	5.5 grams per square centimeter ( $10^{22}$ particles per cubic centimeter)
The density of the sun	5 grams per square centimeter
The density of the earth's atmosphere	$10^{20}$ (on the surface) to $10^8$ (at an altitude of 100 km) particles per cubic centimeter
Density of interplanetary matter	10 particles per cubic centimeter
Density of interstellar matter	5 particles per cubic centimeter
Density of intergalactic matter	1 particle per cubic centimeter

*Table 2. Mass spectral distribution of celestial bodies*

Stars have a spectral category that is defined based on their surface temperature or luminosity. With a simple look at the sky, on a clear night away from light pollution, you can see the spectral distribution of the stars' temperature from red (with a surface temperature of 3000 degrees Kelvin) to blue stars (with a surface temperature of 25000 degrees Kelvin). The origin of this spectral category is related to the mass-luminosity law. Therefore, the surface temperature distribution of stars is directly related to their mass distribution. The important thing is that the path of evolution and the final fate of the star depends on the mass it starts with. The high-mass star will be blue and the low-mass star will be red (Nasiri 2018).

### *3.3. Distribution of angular momentum in galaxies*

In addition to mass, their rotation also plays a role in the evolution process of galaxies. Therefore, the appropriate physical quantity to investigate the evolution of these objects is the amount of angular motion. Here too, the spectral classes and subclasses of the size of the angular momentum are easily visible and it is a suitable quantity for the classification of the galaxy family. In Figure 3, normal galaxies (top right), quasars (top left), Seyfert galaxies (top of the solid line) and BL Lacertae object (red peak) are plotted as large-scale structures of the universe in terms of their absolute magnitude size (which is related to the amount of angular momentum).

Each class includes a range of angular momentum, and of course, each class has a spectral subclass that covers a range of angular momentum. The examples of subclasses as the diversity of members of each family is an interesting fact. The visible region in the range of electromagnetic waves, the range of the audible region in sound waves, the range of mass distribution in the family of stars, the range of angular momentum distribution in each of the families of galaxies, quasars, Seyferts, BL Lacertae objects, etc. confirm this claim. This variety sometimes creates a kind of beauty and pleasant features in the statistical samples of these subclasses. For example, the presence of beautiful colors in the visible light spectrum, the embellishment of colorful stars due to the variation of their surface temperature in the night sky, and other modes are examples of this kind.

Here too, we see that the path of life and the fate of a proto-Galaxy depends on the size of the initial angular momentum with which the first day begins. If it starts with a smaller initial angular momentum, it will become a regular galaxy, and if it starts with a larger initial angular momentum, it will become a quasar. Intermediate values will also produce Seyfert galaxies and BL Lacertae objects. Each of these sub-categories includes a range of initial angular motion size (Khalkhali and Nasiri 2016).



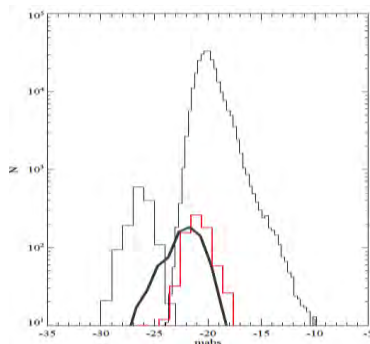


Figure 3. Spectrum of world structures

A long list of such examples can be mentioned, which shows that the objects and beings of the world were created with a range of different existential capacities.

According to the above, the following results can be obtained:

- Reasoning, thinking, wisdom and learning make people submit to the facts. Ignorance and illiteracy cause arrogance, pride and misguidance. Schools such as humanism, which considers human to be the owner of a preferred position, are the result of this selfishness caused by human ignorance.
- Failure to understand facts and realities by human senses and perceptive powers should not be considered as their negation.
- Spectral view of the realities of the world causes respect for the rights and authority of other beings. This view, which shows itself everywhere in the world, prevents limiting the diverse capacities of life to humans and neglecting other creatures, especially the environment. In fact, the term "human environment" is a misleading and ambitious phrase. The environment belongs to all beings on earth, including the earth itself.
- Consciousness not only does not have a specific and constant value among different people and follows a normal distribution function, but also its levels include inanimate objects, plants, animals and humans.
- Most of the numerous wars and crimes throughout human history have been caused by self-aggrandizement and preference of group interests over collective interests, disrespect for cultural diversity and the rights of others, and finally, encroachment on the privacy of other peoples and nations. In the spectrum view of human societies, no group is superior to the other and all nations and ethnic groups,

regardless of skin color and race, are in the non-preferred range of the human spectrum. It is in the shadow of this attitude that justice in the general sense of the word and the survival of peace and prosperity can be guaranteed.

#### 4. *The consciousness of the world from the perspective of the Qur'an*

In the view of some Islamic philosophers, the system of nature is intelligent, but it has levels (Azimi 2017; Asadi et al. 2021). From the point of view of the Qur'an, seeking superiority of any kind is condemned and rejected and causes misguidance. What is approved from the Qur'anic point of view is the pursuit of perfection, which leads to the exaltation of the human soul. Achieving human perfection is possible only through worship and obedience to God Almighty. The Quran says:

إِنَّ أَكْرَمَكُمْ عِنْدَ اللَّهِ أَتْقَاهُمْ (الحجرات/13)

*Verily the most honored of you in the sight of Allah is he who is (the most righteous of you (Q.49:31).*

Everything is not finished in human. Firstly, the assessment of human performance is ultimately done by God Almighty, not by humans. Secondly, the criterion of evaluation is piety, not the satisfaction of human desires in any possible way. Virtue in human is not achieved except through humility, submissiveness, glorifying and worshiping God and avoiding any superiority and arrogance. Almighty God says:

تُسَبِّحُ لَهُ السَّمَاوَاتُ السَّبْعُ وَالْأَرْضُ وَمَنْ فِيهِنَّ وَإِنْ مِنْ شَيْءٍ إِلَّا يُسَبِّحُ بِحَمْدِهِ وَلَكِنْ لَا تَفْقَهُونَ تَسْبِيحَهُمْ  
إِنَّهُ كَانَ حَلِيمًا غَفُورًا (الاسراء/44)

*The seven heavens and the earth, and all beings therein, declare His glory: there is not a thing but celebrates His praise; And yet ye understand not how they declare His glory! Verily He is Oft-Forbear, Most Forgiving! (Q.17:44)*

This glorification and thanksgiving is not specific to humans and includes all creatures. In this verse, it is clearly stated that human does not understand the glorification of the world. Human understands the world, but he cannot understand that this world is engaged in glorification in its own ranks. In the many examples above, we have seen that not understanding something by our senses and perceptions is not a reason for the non-existence of that thing. Because our scientific understanding of the universe,

despite the amazing development of science and technology, is still very limited. In confirming the existence of intelligence in non-humans, the Qur'an says:

أَلَمْ تَرَ أَنَّ اللَّهَ يُسَبِّحُ لَهُ مَنْ فِي السَّمَاوَاتِ وَالْأَرْضِ وَالطَّيْرِ صَافَّاتٍ كُلٌّ قَدْ عَلِمَ صَلَاتَهُ وَتَسْبِيحَهُ وَاللَّهُ عَلِيمٌ  
بِمَا يُفْعَلُونَ (النور/ 41)

*Seest thou not that it is Allah Whose praises all beings in the heavens and on earth do celebrate, and the birds of the air (with wings outspread? Each one knows its own mode of (prayer and praise. And Allah knows well all that they do (Q.24:41).*

If humans praise and glorify God because of their intelligence, birds (as a species of the animal world) are also capable of doing that. From the point of view of the Qur'an, in addition to animals, inanimate objects also have a level of intelligence. In this case, pay attention to the following verse:

وَلَقَدْ آتَيْنَا دَاوُدَ مِنَّا فَضْلًا يَا جِبَالُ أَوْبَىٰ مَعَهُ وَالطَّيْرِ (سبأ/ 10)

*We bestowed Grace aforetime on David from Us: " O ye Mountains! Sing ye back the Praises of Allah with him! and ye birds (Q.34:10).*

In this verse, mountains as a symbol of the inanimate world, birds as a symbol of the animal world are addressed by God. They receive messages and understand singing together by their consciousness. Among these phrases and similes in the Qur'an, which show the intelligence of animals, we can mention the story of the dog of Companions of the cave, the story of Prophet Solomon with animals such as the hoopoe and ants.

## 5. Conclusion

Man judges his fellow humans due to the allocation of intelligence for himself. Based on this reason, being intelligent, he allows himself to abuse his fellow creatures more than other creatures. While consciousness and consequently, the world does not belong only to man and countless creatures of God share it with him. On average, humans are at a higher level of intelligence than other creatures. However, this does not mean negating the intelligence and rights of other creatures of the world, on the contrary, an intelligent person is expected to be responsible and trustworthy to nature. In the spectrum view of the world, human consciousness includes only a range of the spectrum of consciousness. Similar to the range of visible light in the spectrum of electromagnetic waves or the audible range in the spectrum of sound waves. black and white approach to the concept of consciousness, the negation of other creatures' consciousness and giving a preferential position

to human has caused him to be isolated and it is the main cause of racial supremacy, threatening peace and committing countless crimes throughout history.

In order to avoid the repetition of such unfortunate events, every human being must recognize the consciousness and rights of other creatures in the universe, including other humans, animals, plants, forests, and inanimate objects. From the viewpoint of the Qur'an, protecting the environment is not only about respecting the fact that humans live in this environment and their desires must be satisfied, but also in this way, the rights of all creatures that have levels of intelligence must be respected. The condition of humans, with any race, will be good when the condition of the whole world is good. The universe is respected since it was created by the power of God Almighty. None of the creatures in the world is devoid of consciousness and therefore, intelligence, like all the attributes and capacities of creation, should be considered as a spectrum whose different intervals are assigned, to various types of existence, or if we say in mathematical language, different ranges of consciousness are projected on creatures.

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