Sarvaṁ Khalvidaṁ Brahma: Perceptions of Vedic Seers and Modern Scientists

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This article discusses a theist approach to epistemology and knowledge of the universe's creation. It is based on twelve assertions concerning the presence of the Brahman, or Supreme Entity (SE), founded on the Vedic-Hindu theistic intellectual approach. These are:

An entity, named *Brahman* (neuter gender) or the SE exists, which cannot be described in words in totality.

The *Brahman* is the creator of this perceptible, imperceptible universe pervading all the universe and extending beyond it.

SE created the cosmos to enjoy the diversity of almost limitless forms (*ekohaṁ bahusyām*), meaning "I am alone, I will be many."

According to current cosmology, it sprang from the condition of singularity, which is an undefinable state in which physical rules break down.

Brahman also created the universe's working order, '*ṛtam*', which constitutes the laws that govern the universe at a grand, unified cosmic level and the minute micro level.

According to a version in modern cosmology, this universe has to collapse and comes to an end, though it will commence after an unimaginably long duration of existence.

The collapse of the existing universe will return it to the condition of singularity from whence it originated.

Scientists and cosmologists cannot predict the end of the cosmos with current scientific and mathematical achievements.

There is a controversy about the universe's genesis and devolution. It has continued indefinitely and some mathematical principles predict the presence of parallel worlds.

Brahman has endowed humans, in particular, with the ability to imagine, visualize, and genuinely think about the nature of the universe, its creation, understand the laws governing it and the sequence that constitutes the laws governing the universe at the subatomic and cosmic levels, and articulate and define it in various ways to other humans in a language.

Human beings have perceived the universe only in parts. The verbal expressions about being aware of the nature of the universe were considered the ultimate knowledge—*brahman* in the Hindu philosophy. Knowledge about the laws and workings of the universe dawns on human beings through intense meditation.

Almost all civilizations have predicted the dissolution of the present universe; however, RV 10.191.3 states that the present universe was a recreation—*sūryācandramasau dhātā yathāpūrvamakalpayat, i.e.,* the creator recreated the sun and the moon (i.e., the universe) as it was in the earlier creation.

Some components help in understanding the happenings of cosmic creation and perceptions that lead to the revelation of the ultimate knowledge behind creation.

Logos—An Infinite Mind

The notion of 'Omniscient and Omnipresent Supreme Entity' has been in the West since ancient times. In ancient Greek philosophy and early Christian theology, it was known as "Logos" (Greek 'word,'' reason,' or 'plan'), the divine reason that ordered and gave shape to the universe. …. The concept of Logos in Greek thinking dates back to the 6th century BCE philosopher Heraclitus, who discerned the cosmic process as logos, akin to human reasoning capacity" (www.britannica.com).

Joseph Mathew (2023:18-44) has examined the role of realism and subjective idealism' as advocated by the 17th-century philosopher George Berkley (1685-1753) while dealing with the knowledge of the scope of the observer and an object in the context of the 'wave function' in physics. Mathew summarizing two great physicists of

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the twentieth century, Arthur Eddington and Max Plank, says, "Truly, in their deepest speculations, these great men of science have come to admit the existence of an infinite observer, Super Mind/Consciousness or Logos as the Ground of all reality" (Mathew 2023: 39).

Hindu Theistic Approach

According to Ṛgveda theism, there is a SE that presents itself in several forms, such as "*ekaṁ sadviprā bahudhā vadanti*" (RV 1.164.46), which is referred to by numerous names. Later, the term "Brahman" was applied to describe the SE. The Brahman created this cosmos out of its own volition. The Nāsadīya sūkta RV 10.129 focuses on this topic. The Brahman pervades the entire universe: "*Īśāvāsyamidaṁ sarvam, yatkiñ ca jagatyāñ jagat*" (Iśa Up, SYV 40.1). Brahman is sometimes stated as "*tvaṁ jñānamyo vijñānamayo*," which means 'you are full of knowledge and the science itself'. It is closely linked with another often-quoted proverb, "*tat tvaṁ"asi*"—you are that. It links Brahman with a certain '*being'*. If an individual soul is a component of the SE (universal soul), it seems to reason that it should be able to observe, comprehend, and grasp the information that permeates the world. In the Vedic-Hindu tradition, it has been named brahmajñāna, which means understanding the SE. The Brahman is also characterized as *satyaṁ jñānamanantaṁ brahma*, which presents itself as actual (in both respects, the physical cosmos and a sentient "being") knowledge of every sort and is limitless and everlasting, suggesting it cannot be observed in its entirety. Can it be perceived, even partially? Yes, it is feasible to have a partial understanding of the cosmos.

Renaissance and Scientific Development in the West

Following the renaissance, contemporary sciences flourished, particularly in the West. By then, European scientists had become aware of the quantitative character of scientific developments[1]. Kepler's search for the quantitative character of planetary movements, an estimate of air weight, and the artificial creation of oxygen gas as a distinct element in the air were among the milestones in Western scientific growth. These were identified by quantifying the linked physical entities. It paved the way for the development of the quantitative character of scientific investigation. The rules and principles revealed during the investigation of scientific facts were universally verifiable and relevant. Intuitive perceptions were an important factor in scientific advancement. These were quantified as post-perceptions.

What was at the root of the development of science? How ideas about natural phenomena were conceived by the respective individuals? How were those consolidated in the form of quantitative estimates and results becoming predictable with changes in the involved parameters? What made it happen? These are some of the questions debated by the philosophers of science. One of the most prominent names amongst them was Karl Popper (1902-1994).

Intuitive Perceptions of Physical Reality

While paying honor to Karl Popper, Kamino adds, "Now, according to Popper's view here, we are led to accept not only our ordinary world but also further worlds described by further theories - theories of a higher level of abstractions, universality, and testability - as equally real." All of them are equally valid elements or layers of the real world. Indeed, he observes that if we adjust the magnification of a microscope, we may perceive distinct facets or layers of the same item, all of which are as genuine. He does not believe that just the so-called basic properties of a body are genuine, whereas secondary attributes are not. He does not contrast a body's core properties with its illusory, seeming secondary ones. Both attributes are equally real, as are forces and field of forces, despite their undeniable hypothetical or conjectural nature.

Despite this, Popper implies ironically that, while in one meaning of the word '*real'* all these varied levels are equally tangible, there is another yet closely related sense in which we may say that the higher and more conjectural levels are the more actual ones. (Kamino 1996, 53).

Stephan Hawking, in dealing with the mathematical approach to the essence of time, discovered two solutions: real-time and imaginary time. He had similar concerns regarding the second form of conjectural reality: "This may imply that the so-called imaginary time is a real-time (with no singularities), and what we term real-time is only a fiction of our minds. In actual time, the cosmos has a beginning and an end at singularities, which establish a limit to space-time and where scientific rules break down. However, in imaginary time, there are no singularities or boundaries. So maybe what we call imaginary time is more basic, and what we call real time is just an idea that we invent to help us describe what we think the universe is like" (Hawking 1989:147).

As the present author proposes, all the knowledge of every type regardless of any discipline, related to basic and advanced sciences, astronomy, and cosmology is part and parcel of the *brahmajñāna*. The above comparative description of the real and imaginary times would remind a student of the *Advaita* philosophy a very well-known statement by Ādi Śaṅkarācārya, *brahma satyaṁ jaganmithyā। jīvobrahmaiva nāparaḥ।* implying "what we mortal humans experience in our lifetime is a figment

of our imagination, while the reality of individual soul uniting with SE is the real state of being". The Union of the individual soul with the Supreme Soul is the prime aim of the spiritual pursuit in the domain of Hindu spiritual philosophy.

Intuitive perceptions have played an important part in the creation of several current scientific fields. Only current Western scientific advances are mentioned here. The scientists who developed such ideas and universal laws were not affected by their theistic or religious beliefs. They had no idea which SE was responsible for these discoveries.

Friedrich August Kekulé (1829-1896) was recognized as the most prominent theoretical chemist in Europe. Around 1855 the molecular formula of benzene was experimentally determined; it consisted of six carbon atoms and six hydrogen atoms. It was already known that the valence of a hydrogen atom was one while that of a carbon atom was four. By 1872 Kekulé came out with the proposal that two carbon atoms shared one valence bond and they were directly interlinked. It gave rise to a new type of inter-atomic bond named covalent bond sharing between the carbon atoms in a compound resulting in a hexagonal ring structure. It satisfactorily explained the molecular structure of benzene. That discovery brought a revolution in the field of chemistry leading to the identification of a separate class of carbon compounds, the 'aromatic compounds'. While speaking about his discovery of the bonding type Kekulé recounted being in the mental state of having a reverie or daydream of a snake seizing its tail forming a circular ring. It prompted him to define a new type of bond where the same elements in the same structure shared valences. This discovery of a very basic molecular structure of a class of compounds had no precedence, it had no mathematical formulation. It was intuitively perceived by Kekulé as it existed in nature.

The Milky Way is a long strip of a distinct starred patch observable in the sky. It has been noticed by human beings since time immemorial. Our ancestors were keen observers of the sky and the movement of the stars and planets. In the 18th century, there was a mathematician Johann Heinrich Lambert (1728-1777) who was known for his sky watching. He discovered some formulae about the movement of the celestial bodies. Among his works was a collection of essays titled '*Cosmological Letters*', which this solitary man, wrote to an imaginary friend. In it, Lambert proposed that the sun lies towards the edge of a disc-shaped system of stars, the Milky Way and that there are innumerable other Milky Ways. He indicated that he arrived at this theory while gazing for long hours at the night sky (Ferris 1988:149-150). Lambert foresaw the creation of astrophysics around two centuries ago, based solely on visual perception. In the 1920s astronomer Hubble was studying the nebular structures around the Milky Way with an advanced telescope and was busy conducting spectrum analysis of the light emanating from the nebulae. He discovered the phenomena termed the 'red shift'. It led to the discovery of innumerable Milky Ways like ours. These are now called galaxies. These galaxies are ever running away from each other. The predictions that Lambert had intuitively arrived at, were confirmed by Hubble's predictive analytical propositions. In due course, it gave rise to the Big Bang theory of the universe's creation. The movement of galaxies was intuitively perceived by Lambert while in deep contemplation.

The most important and revolutionary discovery in the field of physics was Einstein's theory of relativity. By 1905 Einstein had proposed the special theory of relativity. Toomey described the occurrence in which the 'principle of equivalence' was discovered, which led to the development of the general theory of relativity. "Probably sometime in November (1906) he (Einstein) experienced what he would call, 'the happiest thought of my life". He recalled, "I was sitting in a chair in the patent office at Bern when all of a sudden, a thought occurred to me: If a person falls freely, he will not feel his weight. I was startled. This simple thought made a deep impression on me". Einstein's insight was that gravity and acceleration are not separate phenomena that just happened to produce similar effects…. This insight produced the postulate called the principle of equivalence (Toomey 2007:62). As Einstein mused over the future, to begin with, the discovery of the 'principle of equivalence' was not based on the mathematical postulate and subsequent derivation. It was an intuitive perception. Einstein's happiest and most "ecstatic" moment was when he realized gravity was not independent from acceleration. From the Hindu spiritual point of view, it was the moment closer to the experience of *brahmajñāna*, invoking *aṣṭa sātvika bhāva* –eight pious emotions. It was a glimpse of the cosmic reality of the space-time continuum, which the Indian seers have recounted having experienced.

Stephen Hawking is known for his research in the field of black holes. He was contemplating the structure of black holes, their entropy, stability, and their future. As he was preparing to go to bed, suddenly an idea flashed in his mind. Hawking (1989) recounts, "At that date (November 1970) there was no precise definition of which points in space-time lay inside a black hole and which lay outside. I had already discussed with Roger Penrose the idea of defining a black hole as the set of events from which it was not possible to escape to a large distance, which is now the generally accepted definition.

… Suddenly, I realized that the paths of these light rays could never approach one another" (Hawking 1989:105-106).

"I was so excited with my discovery that I did not get much sleep that night. Next day I rang up Roger Penrose. He agreed with me" (Hawking 1989:108). Both then joined together to arrive mathematically at the nature of the black hole, a path-breaking discovery. Brian Greene's book '*The Elegant Universe*' (2003) recounted an epiphany in the life of theoretical physicist Gabriele Veneziano, who hypothesized a relationship between nuclear particle characteristics and an arcane mathematical formula. In a couple of years, it led to another important theoretical particle physics model named the '*String Theory*'. In 1968, Gabriele Veneziano, a young theoretical physicist, was trying to make sense of numerous empirically reported features of the strong nuclear force. Veneziano was a Research Fellow at CERN, the European accelerator laboratory in Geneva, Switzerland. Much to his surprise, he realized that an esoteric formula concocted for purely mathematical pursuits by the renowned Swiss mathematician Leonard Euler some two hundred years earlier – the so-called Euler beta-function – seemed to describe numerous properties of strongly interacting particles in one fell swoop" (Greene 2003:136). While experimentally determined properties of the strong nuclear forces, were rationally arrived at, their linkage to a mathematical formula, what Greene described, was a revelation. In a couple of years, three other physicists, Yoichiro Nambu, Holger Nielsen, and Leonard Susskind proposed further developments in understanding the Eulers beta-function leading to the development of the '*String Theory*'.-

Technical Marvels through Intuitive Feel

The instances quoted above are in the realms of pure sciences. But there are umpteen numbers of demonstrable objects which are technical marvels in reality. The great sculptors of the yore created them centuries ago when modern science based on a theoretical numerical model approach had yet not developed. There are several examples from Indian architectural monuments that stand witness today. What they built out of their intuition and feel of the natural objects cannot be replicated with the highly advanced and computer-aided designs of modern times.

The kingdom of the Pallava dynasty was the famous city of Kāñcīpuram. Pallava kings had built two majestic temples Kailāsanātha temple and Ekāmbareśśvara temple. Names of the architects of these two temples were 'Sarvasiddhācārī' and 'Gundā Anīveditācārī'. On the walls of the temple, many decorative geometric patterns represent what we call the '*fractals*.' Later on, both of them were invited by King Vikramāditya (Second) to build temples at Pattadakala. They built Virupākṣa temple at Pattadakal in 740 CE. There too, they repeated similar fractal geometric patterns. Today we have the Mandelbrot equation which needs tremendous calculation capacity to conceptualize and generate such patterns with mathematical accuracy. However, roughly eight centuries ago, such designs with pretty correct geometric proportions could be conceived more intuitively than mathematically. Furthermore, it has been observed that these geometric patterns correspond to what is known as the '*Fibonacci Series*'.

Mystical Acoustics

Temples in South India are known for their musical pillars carved out of granite stones. Many columns when tapped by wooden logs, produce musical notes that are the outcomes of resonance. A few years ago, Dr. Hemachandra Modak[2] and his associates (Modak 1985) conducted research on sound generation in the hall and were able to record resonating notes of various wavelengths produced by resonance. When they played Vīṇā, a string instrument within the precinct, the notes were identically replicated by resonating columns, which were recorded. Dr. Modak proposed that the distinct resonant musical notes were resultant of the geometric patterns engraved on the ceiling. Dr. Modak came to this conclusion after examining the ceiling patterns. These are known as Chladni patterns by scientists and musicians from the 18th century. Around 1787 CE, Chladni created a generation of these designs using musical plates. (Joshi 2023:87-91, personal communication on 11 Mar. 2024). Later, appropriate mathematical formulae were devised to produce such patterns. Will current architects, with mathematical algorithms and huge computing power, be able to create a comparable hall and duplicate musical notes within it? Saxena and coworkers (2022) reported Musical Pillars from the Vijay Vittala temple at Humpi, Karnataka. Despite the lack of mathematical instruments, ancient Indian sculptural architects instinctively understood models of the Chladni patterns and Fibonacci Series.

On the Nature of Knowledge

Since the time of the Vedas, there has been a tradition of searching for the root cause of creation and evolution. Seer Viśvakarmā appealed to intellectuals of his time:

manīṣiṇo manasā pr̥cchatedu tadyadadhyatiṣṭhatbhuvanāni dhārayan। (RV 10.81.4)

Tr.: "You deep thinkers (*manīṣiṇo* - intellectuals of the day), ask yourselves in your own heart, where did He stand (outside) when He created worlds?"

This is a very basic question. For creating something, one needs a place oneself outside of the thing being created. The seer then found the answer himself. SE is pervading the whole of the universe, such that his sensory faculties are present everywhere and he at the same time sacrifices Himself to create the perceptible universe.

sikṣā sakhibhyo haviṣi svadhāvaḥ svayaṁ yajasva tanvaṁ vṛdhānaḥ। (RV 10.81.5)

Tr.: "(O All-Maker,) help your friends to recognize them in the oblation. You who follow your own laws, sacrifice your body yourself, making it grow great" (Doniger 1981:35).

It reiterates the axiom of there being SE who is all in all of the created universe.

yajñena yajñamayajanta devāstāni dharmāṇi prathamānyāsan। *te ha nākaṁ mahimānaḥ sacanta yatra pūrve sādhyāḥ santi devāḥ*।। (RV 10.90.16)

In this *ṛc* the Primordial Man Himself is conceived as the sacrifice – *yajña.* He was sacrificed by gods to perform a sacrifice resulting in the creation of a universe full of marvels and novelty followed by the creation of living entities endowed with senses and conscience.

Tr.: "With the sacrifice, the gods (by performing sacrifice) adored the sacrifice. These were the earliest holy (*dharma*) tenets; (By following these holy tenets, other human beings) became (spiritually) powerful they reached the heaven where the great souls (*sādhyāḥ*, who too had achieved similar spiritually powerful status) and gods dwelt."

Singularity in Background

There are many such cosmic and cosmogonist hymns in the Vedic literature, especially in the RV text. These were grand perceptions of the seers who enunciated them. These can now be understood on the background of the state of singularity and the most widely accepted creation model of the Big Bang.

At the present stage, it is impossible to know what goes inside that undefinable state of singularity that certainly existed. There exists a parallel situation in the black holes, which are known for not letting even light rays, (electromagnetic waves) escape because of the extreme gravity. There certainly exists a boundary around the black hole which is defined as the event horizon (Hawking 1989:92, Fig. 6.1). In typical technical terms, space around the black hole on all sides up to the event horizon is warped. Within its periphery, there exists an enormous gravitational pull such that even light rays cannot escape. There are dimensional limits to that pull. It is approximated by the Schwarzschild radius for a non-rotating black hole. At present we cannot fathom what keeps happening inside the black hole and whether they are steady, non-rotating, or in flux. It is not possible to exactly give the dimensional details of a black hole.

The seer's perception in RV 10.90.1, that the SE lay ten fingers beyond the physical existence, runs parallel to the existence of an 'event horizon' that extends beyond the singularity limits. Since the black holes are mini/micro replicas of the primeval state of singularity, a similar situation can be extrapolated to exist in the pre-Big Bang state. The dictum, *yat piṇḍe tat brahmaṇḍe* – what exists at the microcosm, the same at the macrocosm, applies there. What the seer of the hymn RV 10.90 perceived is indirectly confirmed. This is the knowledge of the Supreme Entity perceived by the seer that is in tune with "*Sarvaṁ khalvidaṁ brahma*".

A Clue to Universal Knowledge

The Pātañjala Yogasūtra gives us clues to understand the path to intuitive reception of the cosmological and even the materialistic laws that govern the cosmological events and physical as well as the chemical changes occurring in nature. Few aphorisms deal with objects of meditation and laws of universal knowledge being revealed to the person in pursuit of it.

tatra niratiśayaṁ sarvajñabījam।। (*Yog sutra* 1.25)

Tr.: "The omniscience (*sarvajña* - that is the quality of God, SE) in seed form (i.e. dormant) is present (in a Yogi) to the immense extent (*niratiśayam*).

It implies that all human beings possess the potential to grasp the state of omniscience as it is present in them in a dormant stage. Through his efforts, meditation, and contemplation, a Yogi's potential for perception gets immensely enhanced - *niratiśayaṁ*, such that he can perceive the creation phenomenon. In modern times, scientists intensely contemplating some topics of their interest develop that type of potential to grasp glimpses of the knowledge that is an embodiment of the SE.

ṛtaṁbharā tatra prajñā।। (Yoga Sutra 1.48)

Tr.: (A yogi practicing the path of yoga rigorously attains the perceptual status where) his wisdom becomes perceptive to universe principle (*ṛtaṁ*) (including the universal laws regarding the materialistic world).

Then follows the consequence of the attainment:

śrutānumāna prajñāmanyāviṣayā viśeṣārthatvāt|| (Yoga Sūtra 1.49)

Tr.: It (that wisdom) is different from two methods of insight which are based on what is heard and what is reasoned out, because that is limited to a particular aspect of an object.

Whether it is information about the path of step-by-step spiritual attainments or applying reasoning to the already known information and arriving at the conclusion logically are known paths of exploration. This aphorism goes beyond that path. With the attainment of the *ṛtaṁbharā prajñā*, a yogi becomes receptive to knowledge that was not known till then or that can be arrived at by logical approach. Many modern-day scientists too, attain the same status akin to yogic wisdom out of their intense thinking and contemplation and become receptive to universal laws that go beyond their object of research and physical-level investigations. On the contrary, these intuitive perceptions guide them to formulate the paths for further exploration.

Perceptible objects of intense meditation becoming key to the revelation of universal principles are enumerated in aphorisms 3.27 to 3.35. Two of these are described below:

Bhuvanajñānaṁ sūrye saṁyamāt (Yoga Sūtra 3.27)

Tr.: Intense meditative concentration (*saṁyama*) on the sun results in knowledge of the world.

Candre tārāvyūha jñānam|| (Yoga Sūtra 3.28)

Tr.: Intense meditative concentration (*saṁyama*) on the moon results in knowledge of the planets and constellations.

Intuitive Perception of Physical Knowledge

The Patañjala Yogasūtra aphorisms give us clues to understand that the intense concentration on objects of meditation can reveal to a person some universal truths and laws associated with it. These could be connected with attainment in the spiritual arena and at the same time dealing with physical matters. The examples quoted earlier, i.e. about the covalent bond formation in Benzene and Gabriele Veneziano's vision leading to string theory, are the examples from the material world revealing the intuitive dawning of the universal knowledge on individuals. This makes it clear that both the esoteric spiritual wisdom and the laws governing the material world are part of the universal knowledge. It's against this logical backdrop that the revelation of knowledge of creation and other natural events to seers, saints, and philosophers must be seen as comparable to scientific principles. These are the intuitive, contemplative, and superconscious approaches to understanding.

Notes and References

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3. SYV – *Vājasaneyimādhyandina Śuklayajurveda saṁhitā* with *Uvaṭācāraya viracita mantrabhāṣya and Mahīdharakṛta vedadīpākhyabhāṣya,* Hindi translation by Dr. Ramakrishna Sastri, (1996), Published by Chaukhamba Vidya Bhavan, Varanasi.
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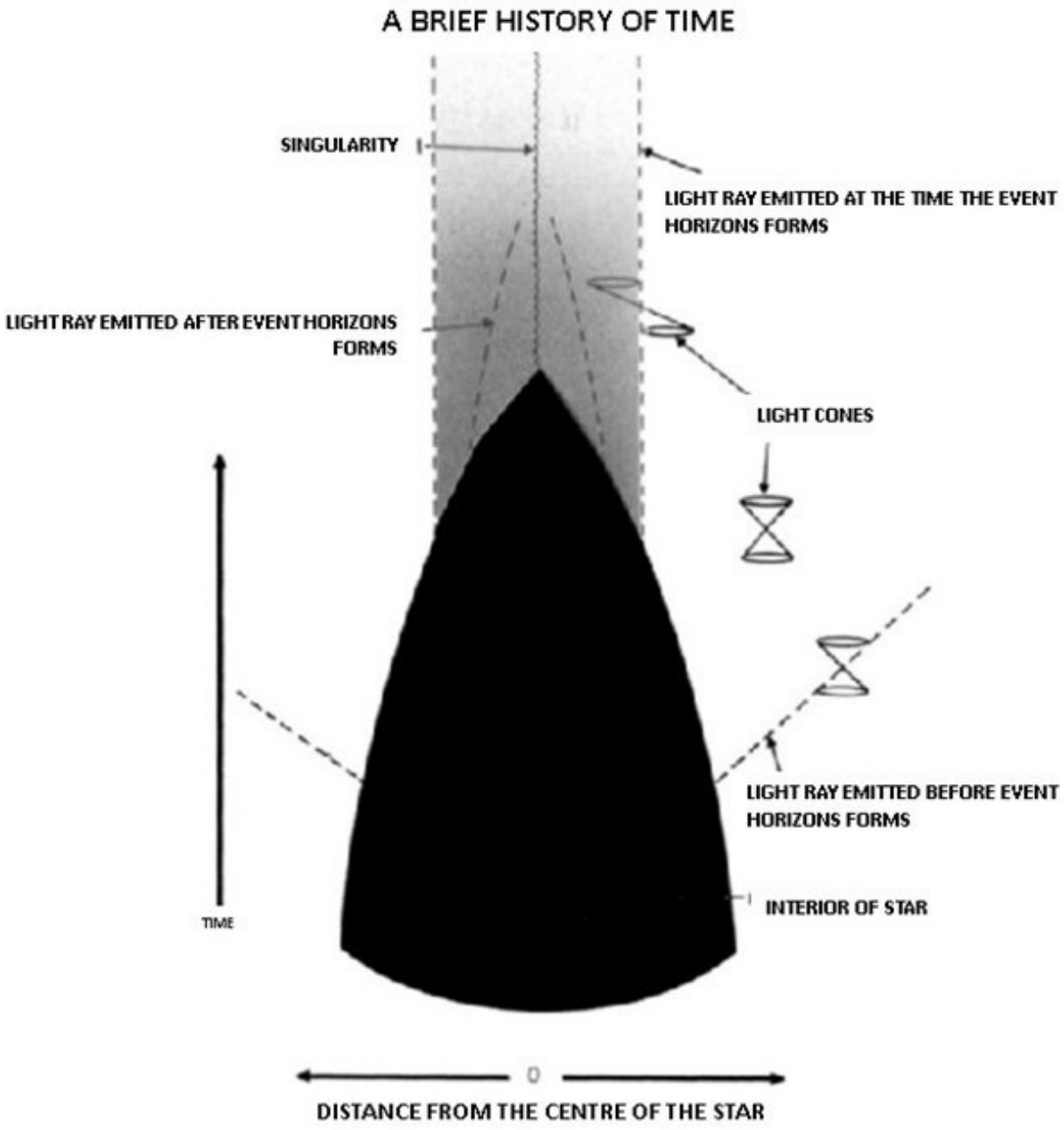

Fig. 6.1