

Creation

An extraordinary Indo-Iranian concept promulgated during the Middle Bronze Age (1800-1500 BCE) and, now, acknowledged by modern science

The Universal Laws of Nature of the Āryas

‘Āshā’ of the Airyānic peoples and ‘Rta’ of the Vedic people is so ordained by the Creator that it cannot be altered or even side-stepped. *Collectively termed the ‘Āshā / Rta Complex’ it is the Indo-Aryan Universal Law - the Universal Principle of Natural Order - ‘the way things are ordained to remain’ in such a precise way that no human can ever change its appointed process.*

The workings of this Universal Laws of Nature - the ‘Āshā / Rta Complex’: A Bronze Age Indo-Iranian concept of the modern science terminology - the ‘Grand Design’.

The purpose of this article is to try and trace, through valid memory of human endeavours, even of the telling events of nature, life and thought during prehistoric times of the Indo-Iranian peoples as being governed by a *Universal Cosmic Order - Avestan Āshā and Vedic Rta* in the domains of Earth and Space/Time. This Universal Order is ordained by the Creator to maintain perfect orderly harmony and equilibrium in life on Earth and events in the Universe.

As a *Cosmic Principle maintaining Order*, it organizes the Cosmos and governs all the events in Nature enveloped within Earth’s environment. Outside Earth’s environment, in the entire Cosmos with all its other heavenly bodies, it regulates in a precise, orderly manner through its force of mutual vibrational and balancing influence on each other, their interaction with each other. Thus, on Earth as it hurtles through Space in a predetermined elliptical orbit around the Sun, the Sun appears to rise and set, the Moon waxes and wanes; both, in turn, influencing the onset of day and night, the tides to rise and ebb, the seasons to change and the winds, the clouds and all of Nature’s ordained events to fulfil their precise, unceasing and timely role. The modern western concept of this is (summarized as) *‘time and tide wait for no man’*, the modern lay term being *‘the Grand Design’* and its modern scientific study is in the form of *‘Quantum Mechanics’*. For humans, this points towards living all the components of life in harmony with this Natural Order with sincerity, personal integrity, truthfulness and honour. As an *Ashavan*, each person actively possesses the capability of doing so either with good or with evil intent but learning to choose the former while rejecting the latter, *Druj (Gathic: Drug)*, which is actively promoted by the *Drujyan*.

With these outward changes the inward physiology of human, animal and plant life alters to adjust to the cyclically changing patterns. Even, Earth’s second Sun, Sirius (Avest: Tishtrya; Ved: Pushya) 8 ½ light years away, influences the onset of the rainy seasons and probably many other natural occurrences on Earth.

As a result of this vast and strictly intransigent Universal Order, which is quite incomprehensible to the human mind, in return, there is a certain compensatory human socio-moral-ethical acknowledgement of and gratitude to this *force*. This is why this ordained Cosmic Order is often referred to as *‘Truth Eternal’ at a spiritual level - in one way, an expression of human awe (and perhaps an admittance of our littleness, too) in the immense scheme of things*. Such has been the impact of this *awesome force on human psyche* that verbal praise and ritual performances in adoration have included animal (and even human sacrifices in some primitive traditions). The Vedic word for the sacrificial incantations and rituals is *‘yajna’*. A somewhat altered form of these rituals among the Avestan peoples is called *‘yasna’*).

Science and the innovative human brain, being what they are, now want to continue to probe into these awesome events occurring in the Cosmos (and even try to define the meaning of life). Intricate terminologies of **Quantum Mechanics** in modern times seem to remain merely as conjectures; none have yet been validated to any appreciable extent.

Zarathushtra's concept of the Universal Cosmic Order as '*Āshā*', promulgated during an archaic age in history (Middle Bronze Age: 1800 -1500 BCE) of *Earthly limited and bounded time within and as part of the limitless unbounded time of Eternity, which has no beginning and will continue to remain without an end for ever (true timelessness) was extraordinary*.

Modern science is now probing into **Earth's gravitational force, Outer Space** which is beyond the confines of our Earth's environmental atmosphere, the Firmament, which is **Inner Space** and **Time**.

a. Earth's Gravity (Vedic: 'Gurutva'):

In Surya Siddhānta 400-500 CE, the Hindu astronomer, *Bhāskarāchārya* talks of Earth's Gravity, thus: "**Objects fall on the earth due to a force of attraction by the earth. The earth, planets, constellations, moon, and sun are also held in orbit due to such mutual force**". Approximately 1200 years later in 1687 CE, surprisingly Isaac Newton has been credited as having 'discovered' this phenomenon (apparently) when an apple fell from a tree onto his head. He called it the **Law of Gravity**.

b. Outer Space (Avestan: 'Adhwānō'):

Modern science now explains Outer Space as just plain unilluminated 'nothingness' perceived by humans between two or more heavenly bodies (or between man-made objects sent into Outer Space or their debris). It is only an estimated distance, an interval of 'nothingness'. If these heavenly bodies did not exist in this dark 'nothingness' there would be no Space. Even light passes through Outer Space without illuminating this darkness of 'nothingness' unless there is an object or objects in Space from where it can bounce and be perceived by our eyes - like our Moon, the 'stars', the heavenly bodies do, through reflected light from the Sun.

c. Inner Space (Avestan: Thawāshē khadātē):

Earth's environmental atmosphere, the Firmament does exist as a capsule sustaining our breath and protects life itself from life-destroying emanations from Outer Space. Indeed, our very existence depends on this capsule of the Earth's atmosphere. Our amazing Avestan concept of Creation and the subsequent process of the development of Earth's atmosphere is now recognised by modern science. The sequence of development of life on Earth occurred thus - following on the Sky (Outer Space with its heavenly bodies – the Sun, Moon and stars seen as the vault), the Earth and the Waters, *Ahura Mazda's fourth Creation was Plant Life (which developed the Atmosphere surrounding the Earth, an Environment for the maintenance of the life) ahead of his fifth, Animal and sixth, Human creations*, all ordained to exist until the end of Zravānē Daraēghō Khadhātē (Earth's limited time). *The Divine plan for humankind being made the last creation was for humans to thrive on the previous five Creations, which were specially created as 'beneficent' for the joyful existence of humans, created to remain as co-workers of the Creator for the ultimate annihilation of all evil.*

Gatha Spanta Mainyu 48.6 '....and Mazda, through righteous acts, created and clothed the bare Earth first with trees and plants.'

This first life on Earth, a **green mantle of freshness / flourishing greenery of vegetation** (Avestan: '*Varena*' meaning '*an exquisite garment*') cladding the naked Earth was planned to initiate the life-giving atmospheric capsule of air (our environment with the precise proportion of oxygen, carbon dioxide and nitrogen).

Vəndidād 9.46: '.....and the Druj shall flee, like an arrow well darted,

as hastily as would the previous season's green freshness covering the Earth'

To the Gathic /Avestan peoples, among ‘the first documented greenies’ on record, all life, not just human life, has a higher destiny. Ahura Mazda’s supreme attribute Immortality - Amərətat, the protector of Vegetable life, thus endowed all vegetation on Earth with the spirit of sacredness such that humans were made obligatory to its conservation.

Hādōkht Nask 22.13 quotes the comparative value of regretful actions: ‘.....ridiculing others, encouraging acts of idolatry, withholding charity from the needy, cutting down treesthen, it becomes obligatory to commence chanting the Gathas’.

During absolute necessity, however, some clearance of trees and shrubs was permitted, but with strict limitations.

Vəndīdād 9.2: ‘In truth, a good Mazdayasnian, well versed in the texts of the scriptures, will fell trees only in one area of 9 lengths of the extended arms within the 4 sides of a square’ (about 18 square meters).

Vəndīdād 16.2 adds: ‘a good Mazdayasnian.....he carefully selects areas devoid of plants, trees or sources of firewood during the necessary clearance for a path, passageway or road’

Zarathushtra’s people, as settled pastoralists tended cattle, sheep and goats and kept dogs for herding and hunting in the rich grasslands and dense wooded forests. Becoming one with the natural world they saw themselves as custodians as well as dependants. Such was their deep reverence for their planted trees that they named them after noted persons and loved ones.

Fravardin Yasht 13.79 ‘nāmēni āpō, yazmaidē; nāmēni urvarō, yazmaidē (reverence by name to the waters; reverence by name to the trees).

The sociology of such co-existence enabled Zarathushtra’s people to recognize the action of the Sun’s rays.

Tir Yasht 8.7: ‘.....Ahura Mazda gave admirable light and heat to the Sun to make the Earth fertile by felicitating the growth of Vegetation and increasing

as also of the Moon beams - that abundant foliage attracts moisture and, therefore, rain.

Māh Yasht 7.4: ‘When the light of the full Moon shines the attraction of moisture from the waters causes green coloured off-shoots to begin to sprout...’

d. Perceived limited Earthly Time (*Avestan: Zravānē daraēghō khadhātē*):

It is a moment by moment perception/ recognition/ awareness (measured in recent times) in a continuous flow by humans on Earth. It is an interval between two (or more) events of recognition in consciousness until the event ends and a new event follows. An unconscious person and Zarathushtra’s ‘*Ajyāti*’ - *non-life* are not able to perceive time.

e. End of Earth Time:

When we talk of the ‘end of time’ we are talking of Zarathushtra vision - a precursor of modern concept of Space/Time. He explained, it would be really the ‘end of physical life on Earth’, which had been ordained during Creation to exist during a limited, bounded period of time. It had a beginning and will have an end, when there will remain no human perception left to calibrate it any more. Literally, the clocks will stop ticking (cease to exist) when the ordained limited period of Earthly time is over. The late Emerita Professor Mary Boyce, in her ‘Zoroastrianism - Its Antiquity and Constant Vigour’ writes “*For him (Zoroaster) Heaven was to be enjoyed in spirit only, just as Hell was to be suffered (though both intensely) until the end of time. The phrase ‘end of time’ has*

now both a solemn and a familiar ring; but Zoroaster, as far as is known, was the first man on earth to conceive of such a thing - of an end, that is, of historic time within the framework of Eternity; and, with it an end of birth and death, destruction and renewal – ‘a cessation of all change’. Indeed, human history will then draw to a close.

f. Unperceived Time (forever) and time before Earthly time (*Avestan: Zravānē akaranē* - literally ‘Time unbounded’):

Whatever (physical matter of Earth’s structure) is left after this ordained Earthly time is over, will remain in a static imperceptible, unperceived, (we be tempted to call it unearthly) phase of unintelligible, incomprehensible stillness within a state of ordained boundless permanence of Eternity for ever, without an end.

A limited chronological overview:

The early Stone Age

From the archaic prehistoric times of the early *Stone Age, apparently 3-4 million years ago*, primitive humans have endured a relentless battle for survival in their unceasing efforts to establish some modicum of sustainable order in their encounters against the forces of evil disorder. They genuinely believed that showing respect to the many *evil divinities* (of their own making) *of disorder* and appeasing them lavishly with offerings of food and sacrifices would placate them, obtain their favours and restore some sort of acceptable order in life. In the absence of scientific knowledge they may even have resigned themselves to the fact that this state of affairs on Earth in their precarious way of life will remain the only way of life forever. Any positive change from this (their primitive state with little and, at times, no progress), it would appear, could not be envisaged by them.

The end of Stone Age - the onset of civilisation

But, the ingenuity of the human brain constantly seeking out the inevitable change, thankfully, is limitless. Deep down unceasingly it looks forward to and improvises on the many strategies of progress in new ways. Thus, slowly the comparative harshness of the *archaic Stone Age* ended (*ca. 4000 BCE*) and a new Age commenced, with the finding and recognition of the Copper ore, the extraction of the metal by smelting and its conversion to alloys to fashion useful implements. Thus commenced a new more progressive era.

The *Early Bronze Age in the Sub-arctic region of Central Asia (ca. 4000-1800 BCE)* had arrived in the common Primeval Homeland of the *Āryā(n)s* (like the ‘*Y*’ in ‘*Psalm, calm, palm*’ here the ‘*n*’ is meant to be nasal, soft or not pronounced at all in Sanskrit but is often spelt and pronounced in Avestan and other languages). The state of settling down into structured settlements of pastoral life of the Central Asian Steppes leading to more gainful pursuits of life began to emerge. These *Āryā* settlers of a structured society naturally distinguished themselves as being *noble / venerable* compared to the marauding tribes of unsettled nomads who preferred to remain unproductive raided and stole their property, livestock and harvest and fruits of labour and often carried away their women and children to work as slaves. *A cradle of civilisation had now been established leading to ceaseless developmental progression.*

Contrary to a distorted view promoted when Sanskrit and Avestan languages of the *Āryas* were recognised by European scholars as late as just 250 years ago followed by the acceptance of Indo-European languages (after Anquetil du Perron’s publication of the Holy Avesta in France 1771), there is enough evidence to suggest *the common Āryās inhabited strictly only the eastern third of the Sub-arctic region around the northern Steppes of Central Asia*. Clearly, it must be acknowledged that the other Sub-arctic inhabitants of the middle third and western third of the massive hinterland of Eurasia had no inkling of the *Code of Manu* around which the way of life of the *Āryas* in the eastern third strictly rotated.

History now records that it was shockingly surmised that *the Āryas have been erroneously identified as ‘a race’*. This misconceived concept was based on distortions by applying linguistic affiliations and physical appearance, the latter having been more or less identical to the inhabitants of the middle and western third regions of the entire Subarctic belt in the massive hinterland of Eurasia (extending from the outskirts of Siberia in the East to the outskirts of Sweden in the west). Some radical and vested groups went further and even considered the Nordic peoples of the western third of the Subarctic belt as being the only ‘true’ Āryās - a word the Nordic peoples living in a far off western third region, but in the same latitude regions of the Sub-arctic belt, would have themselves not heard of at the onset of the Bronze Age and of their Code of Manu.

The long maintained radical differences in the lingering spiritual thinking between the two groups - *the Indic and the Irānic Āryas*, unfortunately, had to come to a head ca. 2000 BCE resulting in an irreconcilable schism. Whereas previously their common Creator (*Bhāgō-dāttā - God the Father*) was *Bhāgā, the break up induced reverence to Brāhma and Mazdā* (Gathic: sometimes, simply ‘dā’ / Avestan: ‘dātār’ / Pahlavi & Guj: ‘dādār’/ the Vedic assura, Mēdhā) **in separate ways**. Brāhma of the *Indic Daēva-yasnic* peoples and Mazdā of the *Iranic Mazdā-yasnic* peoples then became their Supreme Creator, respectively. The only difference (a crucial one, maintained to the present day) was that that the former appeased the lesser divinities, the daēvas (presumably through fear) but the latter opposed them vigorously and without compromise. Such is the legacy of the memory of those prehistoric times that *Bhagavān* still, to this day, remains the Creator/‘God the Father’ among the Vedic peoples and the *Bhāgavād Geetā* remains a major book of references to ancient wisdom. The ancient City of Bhāgō-dāttā is its Pahlavi version is the modern city of Baghdād.

In Yasna 45.2 Zarathushtra makes a firm statement about the attitude exhibited, right from the beginning, by Spənishta Mainyu towards Anghrəm (Gathic short for Angra Mainyu to justify the metric beat of the verse)

“**there will be no compromise**, no yielding to evil in thinking, teaching, will, belief, speaking, experiencing, nor in the matter of the Inner Self or of the Inner Consciousness”.

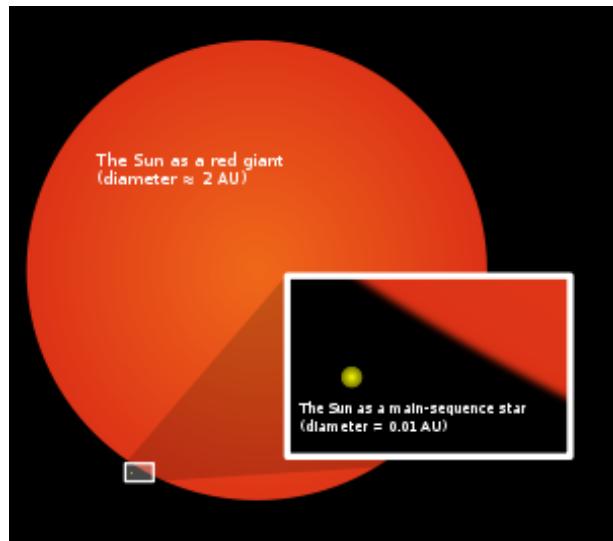
Scientific (parallel) notion of the end of Earth’s existence (part of this oversimplified description below has been taken courtesy of Wikipedia).

The exact date of the end of the Earth has been predicted in history umpteen times with much ado but so far none have materialised. In the light of our present scientific knowledge, which is again likely to be modified as more cosmic data becomes available, the experts predict the end thus: -

Excluding the possibility of an acute major planetary or earthly environmental catastrophe, created by humans themselves or by the forces of nature, let us examine the extant highly speculative scientific theory. When the end comes in approximately 6 billion years the Sun is predicted to expand into a **Red Giant**. It will become sufficiently large to engulf the current orbits of the solar system's inner planets up to Earth as its radius will expand to a minimum of 200 times its current value losing a significant fraction of its mass in this process of becoming a **Red Giant**.

There is a chance that **Mars** and all the outer planets will escape as their resulting orbits will widen. **Mercury** and most likely **Venus** will have been swallowed by Sun's outer layer at this time. **Earth's fate is at present less clear**.

Earth could technically achieve a widening of its rotating orbit and could potentially maintain a sufficiently high angular velocity to keep it from becoming engulfed. In order to do so, its orbit in which it rotates around the Sun will need to increase to between 190 and 250 million kilometres. However, the results of recent studies show that due to tidal interaction between Sun and Earth, Earth would actually fall back into a lower rotating orbit, and get engulfed and incorporated inside the sun even before the Sun reaches its largest size, despite the Sun losing about 38% of its mass.



The size of the current Sun (now in the main sequence, as in the inset) compared to its estimated size during its red giant phase in the future. All life on Earth will be extinct at this phase.

Even before the Sun's transition to a Red Giant or, later, if our Earth is spared from being engulfed by the Red Giant, Earth's biosphere will have long been destroyed by the Sun's steady increase in brightness as its hydrogen supply dwindles and its core contracts. After just over 1 billion years, the extra solar energy input will cause Earth's oceans to evaporate and the hydrogen from the water to be lost permanently to space, with total loss of water by 3 billion years. Earth's atmosphere and lithosphere will become like those of Venus, over another billion years. Most of Earth's atmosphere will become disseminated in space as well, *ultimately leaving Earth as a desiccated, lifeless planet with a surface of molten rock.*

Divine Cosmic Justice at the ‘End of Earthly Time’

(Later, Biblical - **Apocalypse / Doomsday**)

The late Mary Boyce, Emerita Professor, London University describes the final event as explained in the Holy Avesta thus:

“Zarathushtra was the first man on earth to conceive of such a thing as ‘an end’. For him Heaven was to be enjoyed in spirit only just as Hell was to be suffered in spirit only (though, both intensely) until the end of time, that is historic (Earthly) Time set within the framework of Eternity. He is recorded to prophesise that time was progressing towards a final culmination when the world would end and with it an end of birth and death, destruction and renewal - **a cessation of all change**. This is Zarathushtra’s vision of the ultimate final apocalyptic process of “making afresh / making anew” - Gathic: ‘Frashā-kar (Avestan: Frashō-kērēti / Pahlavi: Frashēgard; Frashēkart).

Human history will then draw to a close. The cessation of all change arrives when the ‘Earth has thus been made glorious/made afresh/anew’ through the ultimate elimination of all evil and Mazda’s Kingdom is established upon Earth. Heaven that is Mazda’s Domain, is to come down from above, with all its divine inhabitants, and be established on Mazda’s original Creation - Earth, now being made perfect once again.

Life here will take on the essentially static quality attributed to the other world, its joys and slendours unthreatened by blemish and alteration. This wholly original concept of time and history having an end was a necessary corollary of Zoroaster’s other deeply original one of Mazda’s great moral purpose in creating the world. Once that purpose has been achieved, activity and striving will no more be needed. The prophecy in many ways satisfies human instincts and longings, not least that it makes this dear and familiar earth, which has been the arena of contest, the setting also for eternal bliss.

The events that Zoroaster saw as taking place before ‘Frashā-kar’ (Avestan: Frashō-kērēti / Pahlavi: Frashēgard/Frashēkart) are richly dramatic. Āshā will by then have been made strong through the actions of the Yazatas and all just people, and Mazda will have absolute power. The forces of evil having been defeated, there will be a general resurrection of bodies and the souls of the blessed and the damned will be brought from heaven and hell and incarnated again, so that with those still living they can undergo in flesh the last judgment.

This judgment is to be achieved in a traditional way, through ordeal by fire, but in a Bronze Age form of that ordeal, with use of molten metal. As we have seen, one attested way of administering this was to pour burning hot metal on the bared breast of the accused. If he survived he was judged innocent, saved by Mithra because he was an Ashavan; if he died he was plainly guilty, abandoned by the Yazata to his proper fate. Zoroaster foresaw such an ordeal taking place on a vast scale for all humanity, through immersion in a river of metal, melted by fire. All will have to pass through this river, and the Ashavan will be saved by the divine beings, whereas the Drugvant will perish body and soul - an utter destruction which will be part of the total elimination of evil from the cosmos.

*The aim of the complete purging of all evil, and the comprehensive, logical nature of Zoroaster’s thought, makes it possible to attribute to him himself the belief that the fiery river will then pour down into Hell, burning away its horrors and scaling its once dreaded entrance. Hell will thus cease to exist, with all its demonic inhabitants, including the Evil Spirit. The earth will become one level verdant plain, blossoming as in springtime and ready for Mazda’s kingdom to come upon it. The blessed will share a communal meal consecrated by a last *yasna*, at which yazatas will act as priests; and through this their resurrected bodies will be made unblemished and as in their prime, and also immortal, so that they will be fit inhabitants, forever, of Mazda’s realm.*

The adoption of the essential pattern of his eschatology by the three great Semitic monotheisms has made a number of his leading doctrines familiar to much of mankind.....”

Quoting Mary Boyce again “Zoroastrians view the ‘getig’ (physical existence) as superior to the ‘menog’ state (spiritual existence). Having material form is seen as a positive quality of creation, preferable to the state that is only spiritual. This might explain why Zoroastrians have come to await a physical resurrection of the body and a renovation of the physical earth rather than just a disembodied existence in a spiritual heaven.”

Clearly thus, compared to the Semitic monotheisms, there is, here, meaningful validity to the purpose of creation and fullest coherence to the conduct of a second and last judgement on the final day.

Last word:

Earth & Space/Time in the Holy Avesta.

The much revered Avestan ‘*Jasa mē avanghē*’ prayer recitation, which is included in all Yashts in the Common Book of Prayers of the Religion of Zarathushtra and is recited in every liturgy and during every ceremonial occasion appears to have been composed in a rather delicate prosaic manner in that its stepwise essence is commensurate with the modern scientific observations. It sings praise to the glory of such decreed Time of limited duration (in a way, hinting at the modern scientific observations of Earth’s creation and its position in Space/Time).

The reverence commences
from grass-roots levels &
ascends higher and higher
until it reaches the Finite &
fuses imperceptibly with the Infinite.

Imagine (it says)

the immense strength and the all-conquering power of
Yazata Vərəthrəghna and Yazata Uparōtāt.

Imagine

lush green pastures being softly wafted by these two gentle
giants by creating breezes that offer comfort.

Imagine

Yazata Vāyu, too, creating the swaying winds

Imagine and the mighty currents of air in the lower atmosphere.
rising further up in the atmosphere (beyond the clouds)
where there is the rarefied air of the Inner Space.

Imagine the outer reaches of this rarefied atmosphere, *Thawāsha*,
which reaches beyond 300 kms above the green pastures and
which touches the nothingness of *Adhwano*, the Outer Space.

Imagine, too its boundless potential and share its destiny
with Infinite Time (*Zravānē akarane*)
from which Finite Time (*Zravānē daraēghō khadhātē*)
has been appointed by Ahura Mazda.

The following is an exquisite composition in the Avesta (explaining the above description):

Jasa mē avanghē, Mazda

Jasū me avangne, Mazdā
[Come unto my aid. O Mazdā]

amahē hutāshtahē hurāōdhahē Vərəthraghnaḥahē

[let praise be to the glory of the creation of the immense strength of
Vərəthrəghna (Yazata of Victory)]

(Ahuradhbhātahē) vanaintyāoshcha Uparatātō

[*(who was created by Ahura) and of the all-conquering power of Uparōtāt (Yazata of Conquest)*]

Rāmano khvāstrahē

[of *Rāman* (Yazata of Wholesome Pastures),
whose comforting breezes bring joy to life]

Vayaosh Uparō-kairyēhē taradhātō anyāish dāmān

[of Yazata *Vāyu* - the most efficient and far-extending Wind created to reach higher than any other in the creation]

aētat tē Vayō yat tē asti Spentō-Mainyaom

[of higher currents of Air in the region that belongs to the realms
of the Holy Spirit (far above the clouds)]

Thwāshahē khvadhātahē

[of the *Atmosphere*, the Inner Space - the Firmament]

Zravānahē akaranahē

[of the *Finite Timelessness* of Eternal Boundless Time]

References:

Anquetil du Perron, Abraham Hyacinthe, *Zend-Avesta* (Ouvrage de Zoroastre) in French, Paris 1771, published in 3 volumes consisting of two parts.

Āptē, Vāman Shivrām, *The Sanskrit-English Dictionary*, Motilal Banarasidass, Delhi 1979.

Boyce, Mary, Zoroastrians: Their Religious Beliefs and Practices, London: Routledge and Kegan Paul, 1979, pp. 1 & 29.

Boyce, Mary, *Zoroastrianism: a shadowy but powerful presence of Zoroastrianism in the Judaeo-Christian world*, London, 1987. Lecture alone published by 'Friends of Dr. Williams: London' UK, 1988.

Boyce, Mary, *Textual Sources for the Study of Zoroastrianism*, edited and translated by Mary Boyce, Manchester University Press, 1984.

Griffith, Ralph T. H., *The Hymns of the R̥gveda*, Motilal Banarasidass, Delhi, 1986.

Kalyanaraman, Ayyaswami, 'Aryatarangini': *The Saga of the Indo-Aryans*, 2 Vols., Bombay, 1969-70. Reprinted by Amazon Books - www.Amazon.com

Kanga, Ervad Kāvasji Ēdulji, *The Avesta-English Dictionary 'Avasthā bhāshā ni sampurna farhang'* (A Dictionary in Avesta, Gujarati and English languages), Education Society's Steam Press, Bombay, 1900.

Kānga, Ervad Kāvasji Ēdulji, *Khordeh Avesta*, 1926. Gujarati Reprint of the original of 1880 printed in Gujarati and the 1993 English print by the Bombay Parsi Punchayet.

Moniér-Williams, Sir Moniér, *The Sanskrit-English Dictionary*, Motilal Banarasidass, Delhi 1988.

Sēthnā, Tēhmurasp Rustamjee, *Translations of the Avestan and Pahlavi Texts*, 46, Parsi Colony, Karachi, 1976-1977.

Spencer, Hormusji Shapoorji, *The Aryan Ecliptic Cycle*, H. P. Vaswani, Poona, 1965.

Taraporewala, Irach J. S., *Ashō Zarathushtra nā Gāthā*, Trend Printers, Bombay-4, 1962 (in Gujarati) and *The Divine Songs of Zarathushtra*, Bombay, 1993 (a reprint of his First Edition of 1951 in English)

Van Eck, Stephen, Zoroastrianism: *The Forgotten Source*, Goodreads, Inc. Publication, 2012.

Wikipedia - Select portions and diagram from the section '*The Sun as Red Giant*'.

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