

Zarathushtra's Genetic System

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This Paper is originally from the winter 2004 issue of Hamazoor, the World Zoroastrian Organization's (WZO) quarterly publication. However, a somewhat different version of this article was uploaded on the vohuman website (<http://www.zoroastrian.org.uk/vohuman>) in an unfortunately subpar state with many special characters being corrupted and multiple pictures not displaying. The original article can be found by searching for the winter 2004 issue of Hamazoor, but the version on Vohuman had some differences and extra material. Considering the poor state of that article, I decided to reprepare it for ease of reading.
– Caleb Goodfellow

Hamazor introduction:

The year 2003 marked an important milestone in the history of Zoroastrianism. I am referring, of course, to UNESCO's declaration of 2003 as the 3000th anniversary of the remarkable religion and design for living founded by Zarathustra sometime around the turn of the first millennium before our current era. As many of you may know, special events were scheduled around the world to celebrate this turning point commemorating the survival of Zoroastrianism as one of the world's oldest living faiths. These events bear testimony of the pride and esteem that living Zoroastrians possess for their extraordinary religion.

There was an extremely interesting issue of Hamazor published in Karachi, with contributions that touched upon almost every important aspect of the history of Zoroastrianism and its contemporary conditions around the world today. A seminar on Zoroastrianism was arranged at the Library of Congress in Washington, DC, in December, and a similar meeting took place in Anaheim, California, later in the same month. I was honoured to have participated in these events and I was delighted to have seen that both meetings attracted large and engaged audiences who were most eager to learn and discuss matters concerning the history and doctrines of Zoroastrianism.

And here I am again today among my Zoroastrian friends in London at this event sponsored by the WZO, convened once more in celebration of the UNESCO declaration. Suffice it to say, I am equally honoured and pleased to be present today, especially among so many familiar faces. When asked why I am so fascinated by Zarathustra, my invariable answer is that I am a "Zoroastrian in spirit." By that I mean to express that I believe in the message taught by Zarathustra, although I have not been born into the faith. For the simple fact is that the values and principles first promoted by Zarathustra are of such universal nature, they are immediately appealing and compelling to anyone who has studied them carefully. In my case, the study of them has endured through most of my adult lifetime.

Truthfully, sometimes I wonder whether I have anything new to say about Zarathustra, having written and lectured about him so frequently. And yet, each time I return to the subject from a different perspective, I realize that the extraordinary system designed by Zarathustra can be analysed quite productively from alternate points of view. So allow me to contrast two separate yet interesting ways of conceiving some of the fundamental concepts of Zarathustra's philosophical religion.

A few years ago I delivered a series of lectures in London at Zoroastrian House, in

celebration of the 20th anniversary of the founding of The World Zoroastrian Organisation. One of them was entitled “The System of the Amesha Spentas”, and in that lecture I attempted to demonstrate that the traditional order of the six Amesha Spentas, or Holy Immortals, as depicted in later Zoroastrian texts was inherited from Zarathustra himself. Many scholars of course contest this view and attempt to defend their position by stating that nowhere in the Gāthās do we find an enumeration of the Amesha Spentas in the traditional sequence and that, in fact, Yasna 47.1 is the only passage in the sacred hymns where all of them are mentioned in totality.

These scholars, however, fail to grasp a fundamental and important notion that applies to all the sacred hymns of Zarathustra. The Gāthās, in truth, do not represent in any way an attempt at systematic theology. Rather, they represent for the most part Zarathustra’s poetic thoughts to Ahura Mazdā concerning the prophet’s own understanding of the origins, workings and relationship of the underlying group of six Amesha Spentas and their manifestation in the world of god and the world of man. Yet these poetic elaborations, in all their eloquent style and often complex formulation, cannot have possessed significant meaning unless they were based on the fixed and traditional set of the six holy immortals encountered in the later theological works. The place for systematic theology in the prophet’s time must have been in prose sermons that he delivered to his adherents, much as Meillet suggested in the 1920s. These formed the necessary instructional background for Zarathustra’s followers to grasp his important concepts in general, as well as to comprehend the highly poetic language of the Gāthās in particular.

Beyond demonstrating the necessary existence of the six Amesha Spentas in the Gāthās, I then turned to a much more important aspect of the group. I explored the question of whether there was any inner logic to the traditional ordering of these fundamental elements of the religion, and I demonstrated how the group of Amesha Spentas was precisely arrayed by the prophet to form a coherent, closed and productive system in which each member of the series was dependently connected to the adjacent ones. As in all true systems of this type, the links connecting the constituent elements were essential for the system to function properly. How did this system work?

The existence of a fixed and ordered group of 6 *Aməša Spənta*, or Holy Immortals, is essential for comprehending Zarathustra’s theological system. Admittedly, nowhere in the Gāthās do these 6 abstract entities occur in the traditional order of the later Zoroastrian texts, and in fact, only once in the hymns, at Y 47.1, is the group of 6 mentioned together in the same stanza. For this reason, scholars such as Narten contest the view that the notion of a fixed and structured group of these abstract entities was inherited from Zarathustra. On the contrary, they claim that the ordered grouping of the *Aməša Spənta* must be a later development within the religion.

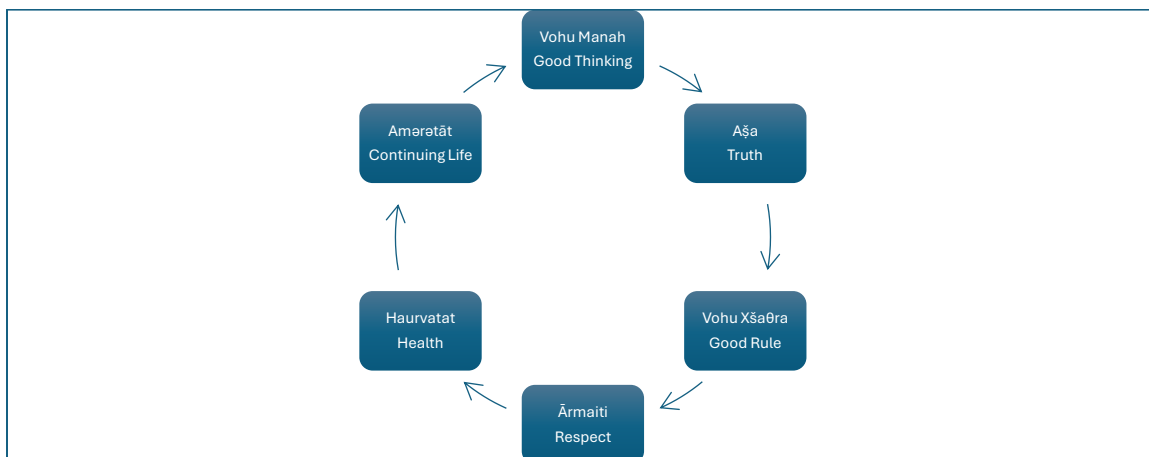
These scholars, however, fail to grasp a fundamental and important notion that applies to all the sacred hymns of Zarathustra. The Gāthās, in truth, do not represent in any way an attempt at systematic theology. Rather, they represent for the most part Zarathustra’s poetic thoughts to Ahura Mazdā about the prophet’s own understanding of the origins, workings and

relationship of the underlying group of the six abstract elements and their manifestation in the world of god and the world of man. Yet these poetic elaborations, in all their eloquent style and often complex formulations, cannot have possessed significant meaning and inner logic unless they were based on the fixed and traditional set of the six Holy Immortals attested in the later theological works. The place for systematic theology in the prophet's time must have been prose sermons that he delivered to his adherents, much as Meillet suggested in the 1920s. These formed the necessary instructional background for Zarathustra's followers to grasp his important concepts in general and to comprehend the highly poetic language of the Gāthās in particular.

If, as I now suggest, the fixed order of the *Aməša Spənta* reverts to Zarathustra himself, what was the purpose of the prophet's particular arrangement of these abstract entities? My view is that the traditional succession of these elements was precisely arrayed by the prophet to form a coherent, closed and productive system in which each member of the series was dependently connected with the adjacent ones. As in all true systems, the links among the constituent members and their sequencing were essential for the system to function properly. Now, how did this system work?

Let me begin by recalling the order of the 6 *Aməša Spənta*: (1) Vohu Manō 'Good Thinking', (2) Aša 'Truth', (3) Vohu Xšaθra 'Good Rule or Sovereignty', (4) Ārmaiti 'Respect', (5) Haurvatāt 'Health', (6) Amərətāt 'Continuing Life'. Their inter-dependency can be described in the following manner. Good thinking leads to the understanding of truth. Truth, formulated as the laws of society, is the basis of all good rule or government. Good government fosters respect for it. And when there is respect for the ruling authority or government, society is healthy and vigorous, thus encouraging further good and positive thinking among the people. In this manner the cycle of this closed system continues in a loop, producing the further external result of peace and prosperity for everyone. This system can be visualized in the following flow chart:

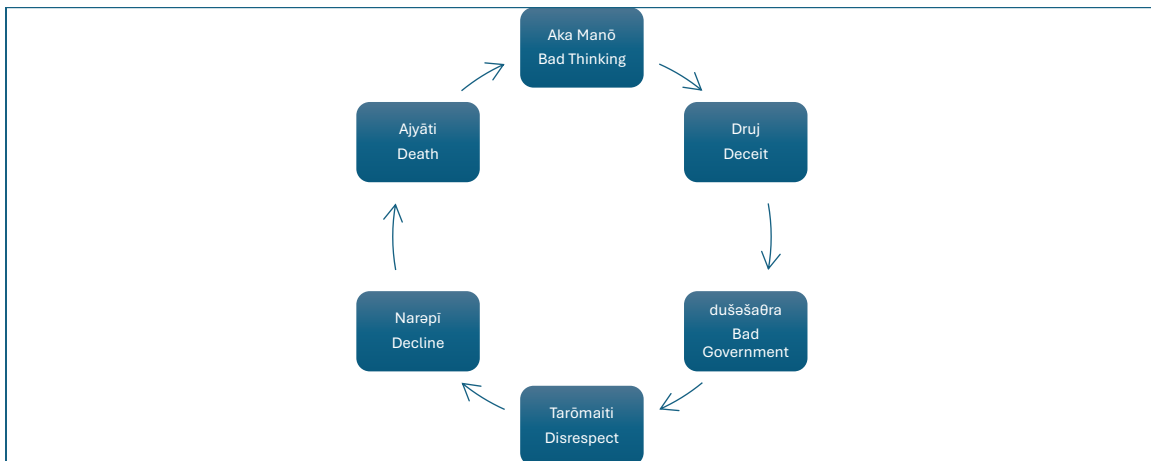
System of the Aməša Spəntas:



The wisdom of Zarathustra's system is sadly seen in its perversion that seems to be the typical world situation today. By this I mean to say, wherever we look around the world, it appears that bad thinking has led to deceit and subsequent bad government, engendering disrespect, with the result that society has become unhealthy and its future quite uncertain. The

outcome of this perverted system, of course, is that instead of the peace and prosperity created by the positive system, we encounter strife, terrorism and economic hardship both at home and abroad. The perverted system can be schematized in the following manner (All the pertinent terms are attested in the Gathas):

Perverted System



Our contemporary situation is undoubtedly the one Zarathustra encountered during his lifetime. It was the large-scale spread of deceit, evil and strife in his world, documented so frequently in the Gāthās, that motivated the prophet to reflect upon the organization of his society and the elements within it that were false and corrosive, and how they had become that way. He understood, just as we do today, that the basis for the unrest and discontent in his world were false ideas, lies, theft, exploitation of the poor, bad rulers who disrespected the laws of society, and every other sort of malignant social act and political policy. By examining what was wrong in his world, Zarathustra imagined a world in which everything could be right and true, resulting in benefits for all members of society. But, we may well ask, how could Zarathustra conceive of what was right by examining what was wrong?

The answer to this question is rather simple. Consider Yasna 30.6:

‘Since they (the other gods) chose the worst thinking, they then rushed into fury with which they have afflicted the world and mankind.’

Here we learn that Zarathustra conceived of the presence of evil in the world as a disease inflicted upon mankind, and from Yasna 31.19 we equally learn that the prophet calls himself a world-healer or physician:

‘This knowing world-healer has listened, he who has respected the truth, Lord.’

In fact, the whole plan for the restoration of the best existence in the Gāthās is conceived of as a curative and healing process. Therefore, can we not conclude from these direct references that Zarathustra was not only a priest but also a physician? This dual role is in no way unusual in the ancient world because healing was considered a holy art, dealing most often as it did with life and death situations, and it was quite normal that adept priests, living in

touch with the sacred, were also trained in the skills of medicine and healing. Consequently, like all physicians, Zarathustra had to have understood cause and effect, condition and symptom, which is the basis of all medical treatment, and his training as a physician was most helpful in allowing him to apply this knowledge to the construction of the system of the *Aməša Spənta*.

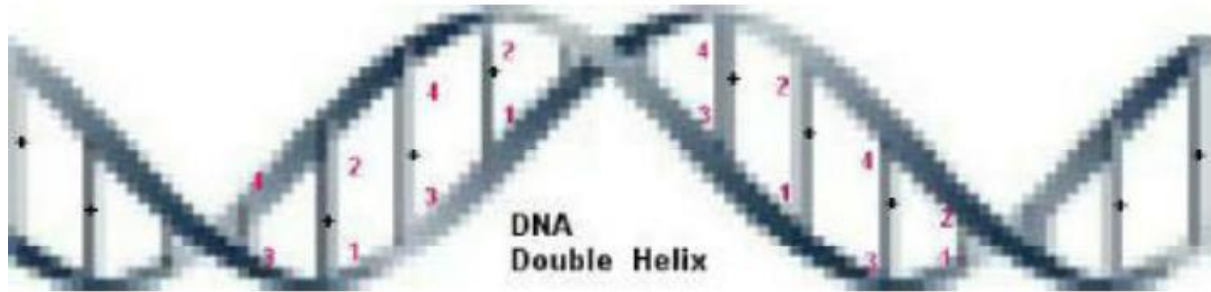
In passing let me note that Buddha and Mani, both founders of new religions, were also physicians. And Buddha in particular conceived his whole Weltanschauung on the basis of a theory of causality consisting of dependent components that linked with one another in a manner exactly parallel to Zarathustra's system. Its pivotal elements are becoming, birth, growth, decay and death, and this conception is obviously the insight of a physician.

The mention of disease and healing finally brings me to the announced title of this paper, "Zarathustra's Genetic System", the second approach to analyzing the system of the Holy Immortals. I conceived of this idea because UNESCO declared the year 2003 as the 3000th anniversary of the founding of Zoroastrianism, and 2003 also commemorated the 50th anniversary of the publication by Crick and Watson of their classic paper on the structure and replication of DNA, the fundamental building material of all living things. Since the UNESCO declaration celebrated the survival of Zoroastrianism on the one hand, and the Crick and Watson paper dealt with the system of survival of all living beings on the other hand, I wondered whether it might be possible to apply their insights concerning the structure and function of DNA to the system of the *Aməša Spənta*. As expected, this idea bore fruitful results. But before I can proceed, some fundamental comments about cell biology are necessary.

Every cell consists of 3 essential parts: a nucleus, surrounding matter called cytoplasm and an encompassing membrane or cell wall. Although not directly comparable, one can visualize the structure of a cell in the form of a common egg, such that the nucleus, cytoplasm and membrane correspond respectively to the yoke, the egg white and the egg shell. Furthermore, the nucleus of every cell contains all the information that is necessary for the development, growth and future survival of the living being. All this information is encoded in the genes of the chromosomes of the cell's nucleus, and the genes themselves are composed of DNA, the fundamental material of life.

In contrast to the cell nucleus, the cytoplasm of a cell contains the amino acids and proteins that are necessary to store energy and food for the continuing growth and development of the living being. The production of the amino acids and the proteins is also ultimately controlled by the DNA in a totally dependent manner. However, their production involves a second intervening process that will be discussed below.

Crick and Watson determined that the structure of DNA is elegantly simple. It consists of 2 parallel chain-like strands on which only 4 distinct elements appear. These elements are called nucleotides and possess the chemical names adenine, thymine, cytosine and guanine, but we can refer to them as elements 1, 2, 3, 4. Furthermore, owing to their chemical properties, element 1 can pair only with element 2, element 3 only with element 4. As a result, where elements 1 and 3 appear on one strand of DNA, the complementary elements 2 and 4 must appear on the other strand, and as a consequence of the 3-d geometry of their chemical structures, both strands twist around each other in the form of a double helix. One can picture the structure of DNA easily in the form of continually twisting ladder, on which the rungs of the ladder consist of the paired elements 1 and 2 and the paired elements 3 and 4.



1 = adenine, 2 = thymine, 3 = cytosine, 4 = guanine

The structure of DNA depicted above is the simplest, most idealized form. In reality, the structure of the some 20-30,000 genes in an individual can vary in every possible way, in almost every conceivable combination. Yet, what remains consistent in all arrays of DNA is the fact that elements 1 and 3 can only combine with the complementary elements 2 and 4, no matter on which strand of the double helix these elements are found.

However, as mentioned above, the DNA of the cell nucleus does not directly cause the synthesis of amino acids and proteins. There is an intervening process involving other nuclear matter called RNA, and the process can be briefly described in the following manner. The information, i.e., the linear sequence of elements contained in a particular form of DNA, is transcribed into RNA that acts as a messenger of this information, and for this reason this other chemical material is called messenger RNA (mRNA).

Once encoded into mRNA, the original DNA information is subsequently translated in the cytoplasm into enzymes that then trigger the formation of the necessary amino acids, proteins and other molecular components needed for growth and survival. Equally important is the fact that DNA also triggers in a similar fashion the antibodies that combat foreign matter that can cause disease. This complete process that begins with DNA, continues with mRNA and ultimately results in the synthesis of amino acids and proteins is called the central dogma of biology. It functions in every living creature, from the simplest to the most complex.

Let us now return to Zarathustra's system of *Aməša Spənta* and see how the DNA model might be applied to the basic elements of his design for living. First let us note that there is a basic distinction between the first 4 elements of good thinking, truth, good rule and respect on the one hand, and health and continuing life on the other. In the first place, it is clear from reading the Gāthās that health and continuing life for both god and man are dependent upon the existence of the prior four elements. Zarathustra continually stresses that neither health nor continuing life can exist without the presence of good thinking, truth, good rule and respect. An excellent example of this notion occurs at Y.34.11, where health and continuing mentioned earlier in the stanza are recapitulated by the phrase 'two enduring powers':

Through the rule of good thinking joined with truth,
(our) respect has increased these two enduring powers.

In this light, health and continuing life are the equivalent of the proteins and the amino acids in the cell's cytoplasm. Therefore, just as the formation of proteins and amino acids are

ultimately dependent upon the DNA in the cell nucleus, so too health and continuing life in Zarathustra's system are produced and dependent upon these 4 fundamental abstract elements which lie at the center of the prophet's ideas. These are the fundamental elements necessary for survival.

Secondly, Zarathustra makes it explicitly clear in his poems that truth and good thinking on the one hand, sovereignty and respect on the other, stand in complementary, dependent relationships. He repeatedly informs us that the grasp of truth comes only through good thinking, that rule or any other form of authority has no meaning without the proper respect for it. The interdependency of truth and good thinking is immediately encountered in the very first Gāthā, where the prophet asks:

Truth, shall I see thee, as I continue to acquire good thinking? (Y. 28.5).

This establishes a fixed link between truth and good thinking. Note also Y.45.9 which speaks of 'the good kinship of truth with good thinking.' In a similar fashion, the interdependency of sovereignty and respect is found in the clear and unequivocal statement of Y. 47.1, "The Wise One in rule is Lord through (our) respect." But their co-dependent bond is most notably expressed at Y. 44.7:

Who fashioned respect along with sovereignty?

Therefore, we can map these 4 elements on to a double helix model in which good thinking and respect appear on one strand, and truth and good rule appear on the other, with the bonding between both strands formed by the complementary pairs of these basic elements.



1 = Good Thinking, 2 = Truth, 3 = Respect, 4 = Good Rule

Furthermore, we can equally understand how the system of elements reproduces itself in a manner similar to DNA. The 2 strands separate, and the one with good thinking and respect will form a new complementary strand with truth and good rule, and the strand with truth and good rule will form a new strand with good thinking and respect. This occurs because the elements on each strand cannot function without the complementary elements on the other strand. In this regard, the DNA model of the Holy Immortals is similar to the "systems" model first discussed. The two models function in both directions, and the elements of each model are dependent upon the others. Again, it is the simplicity of the organization of the DNA model that allows it to work so successfully.

Finally, there is a very important point that I need to underscore. When I began the

discussion about DNA, I mentioned that Zarathustra considered evil and deceit to be a disease that has afflicted the world of mankind. Once the prophet has made this point in Yasna 30.6, in the very next verse he states that Ahura Mazdā came into our world with his rule of truth and good thinking and that enduring respect gave body and breath to it. Here the 4 basic elements of good thinking, truth, sovereignty and respect are mentioned, as well as health and continuing life rephrased in the poetic terms body and breath. But the verse underscores the crucial notion that the continuing respect of man imparts life to the good rule of god.

By this statement, Zarathustra has pointed out two very fundamental notions. First, that the remedy or medicine for curing the disease of evil and deceit in the world is a sovereign rule that is based on truth and good thinking. And second, that such a sovereign rule cannot exist without the respect for its authority. All four elements are necessary for ridding the world of evil and deceit and all four elements are equally necessary for the survival of both god and mankind. Cast in the simplest terms, truth, good thinking, enlightened government and respect are the basic genetic elements for the survival of the world, the only ones that can produce peace and prosperity, growth and stability, and all the healthy conditions that will promote the progressive advance of mankind.

Yet two aspects are missing to complete the homology with biological DNA. In the first place, what is the equivalent within Zarathustra's system that corresponds to messenger RNA (mRNA)? In other words, how do good thinking, truth, good rule and respect eventually become translated into health and continuing life? The answer to this question is furnished several times in the Gāthās, but one of the clearest instances occurs in Yasna 34.1:

By whichever action, by whichever word, by whichever worship,
Wise One, Thou didst receive for Thyself continuing life ... and
mastery over health, let these very things be given by us to Thee,
O Lord, in the very greatest number.

Here Zarathustra reveals, as he does in many passages of the Gāthās, that the abstract notions of good thinking, truth, sovereignty and respect must be encoded into real and concrete processes. The messenger elements that perform this function are the other foundational concepts of the religion that every Zoroastrian understands: good thoughts, good words and good deeds. The prophet's notions here are easy to comprehend. A person must understand the underlying abstract system of the religion and its goals in the first place. However, this understanding must in turn be encoded into concrete good thoughts, good words and good deeds which subsequently will be translated into the manifold activities and undertakings that produce health and continuing life for god and man. In this light, we may call Zarathustra's system the central dogma of the Zoroastrian religion.

To grasp the prophet's ideas more easily allow me to employ a parallel analogy. The group of fundamental entities comprised of truth and good thinking, sovereignty and respect, is an abstract blueprint, much like the design or blueprints for the construction of a building. For the group of abstract ideas to be brought to realization, they must be encoded into concrete form through good thoughts, good words and good deeds in the same way that the blueprints for a building must be encoded into the real ideas, real orders and real labor necessary to proceed

with its construction. Finally, when these procedures function properly together, a structure is produced that will survive and offer protection and permit growth and development to its inhabitants. This is exactly how Zarathustra's design for living is conceived.

One element is missing in my analysis to complete the biological homology. What corresponds to the cell's membrane, the element that encompasses the nucleus and cytoplasm of the cell as the chemical processes take place? Here as well there is a clear answer. It is the *Spənta Mainyu*, the Benevolent Spirit. By this I mean to say that a person cannot comprehend either the knowledge or workings of the *Aməša Spənta* unless that person has the proper disposition or holy inclination to want to fight against evil and further good in the world.

In Yasna 43, Zarathustra himself explains that he began to understand the wonderful things that Ahura Mazdā had created only when his own benevolent spirit had been awakened. That is to say, the prophet explains that a person's progressive spirit or nature is the underlying principle that motivates someone to understand the sorry condition of the world and to seek after those processes that will result in its betterment. Furthermore, it is the recognition of such a spirit in others that permits good people to communicate with other good people and to forge an alliance for the good of mankind, much as membranes of cells communicate with one another in order to form a cooperative undertaking for the survival of the living being.

I am not suggesting in this paper that Zarathustra was the first biological geneticist. Rather, I do believe that the prophet was a physician and that he understood the relationship between disease and remedy. However, his great insight allowed him to view evil and deceit in the world as a disease and his great intelligence allowed him to propose a model for eliminating this disease and returning the world to a healthy condition by which it could survive into the future. That the model he proposed for world survival consists of 4 basic interrelated elements that find a direct parallel in the 4 interrelated elements found in DNA demonstrates that the most complex conditions and problems can most often be solved in the simplest and most elegant fashion. It is a pity that this approach is almost invariably ignored in our times and buried under the clutter and corrosiveness of overcomplicated and vapid proposals that lead nowhere except to further difficulties and maladies. On the other hand, the prophet Zarathustra's simple genetic system for survival has blissfully allowed a great religion to endure for 3000 years and to impart to its followers a simple and effective model for sustaining their own lives and those around them.

Hamazoor biography:

Stanley Insler is Salisbury Professor of Sanskrit and Comparative Philology at Yale University, where he served several terms as chairman of the Linguistics Department. He has written extensively about the literature and languages of both ancient India and Iran. Professor Insler is best known for his 1975 translation and commentary of the Songs of Zarathustra, which he is currently revising. Between his many academic commitments, he has often lectured on Zarathustra in India, Britain and The States. He is a member of many learned societies, including The American Academy of Arts and Sciences.

