Reflection of Celestial Luminaries, Constellations, and the Structure of the Universe in the Archaeological Artifacts of Ancient Armenia

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Abstract

Numerous evidences of observing the starry sky since ancient times have been recorded in the Armenian Highlands, which have been imprinted in the form of geometric images on rocks, stone carvings, and archaeological artifacts. The oldest cosmogonic myths have been preserved in folklore, mythological narratives, epics, ethnographic rituals, and charms. This article is devoted to the interpretations of the myths that have reached us about the universe, constellations, the Sun, stars, comets, meteors and other celestial bodies, and the ancient and medieval geometric signs that reproduce them.

Keywords: *Galaxy, comet, spiral, triangle, zodiac constellations, Armenian Highland, astronomical observations, cosmogonic myths.*

1. Introduction

The most ancient mythopoetic perceptions of cosmogony have been preserved and transmitted to us through narratives reflected in legends, mythological stories, epics, ethnographic rituals, charms, fairy tales, riddles, ritual prayers, and other areas of folklore (Abeghyan, 1975, Alishan, 1910). The oldest of these addresses the themes of the origin of the universe and humanity within the flow of space and time. The realm of mythopoetic perceptions of cosmogony is extremely diverse, as it unites nature (macrocosm) and humanity (microcosm). According to ancient myths, humans were created from the elements that formed the world, such as clay, or conversely, the universe originated from the body of a primordial human, a demiurge (anthropogonic myths).

Cosmogonic myths, the heroic epics of world creation, "tell" of the victory of Cosmos over Chaos, the eternal struggle between good and evil, which were sung from generation to generation during folk gatherings and ritual ceremonies, reproduced and illuminated during funeral rites, and reflected in the compositions of ancient ornamental art and rock carvings.

To describe ancient narratives and transmit information to future generations, a symbolic "language" of symbols was developed, in which geometric signs played a crucial role. Geometric signs are various lines: straight, curved, broken, wavy, zigzag, and their combinations. From these combinations, geometric shapes are formed: cross, triangle, square, circle, sphere, cube, pyramid, cone, etc. In two-dimensional space, these become complex figures endowed with symbolic meaning.

Geometric symbols were frequently used to depict the structure of celestial bodies, ritual structures such as temples and tombs, and sacred objects. With the aid of geometric symbols, the social structure and nature of society, as well as spiritual (ethical) phenomena, were also portrayed. These symbols were widely employed in magic, ritual ceremonies, the recording of encrypted information, and in the fields of science.

In Armenia, from ancient times, geometric symbols have reproduced various celestial bodies, visible cosmic phenomena, cosmogonic myths, and their abstractions. These symbols were widely used in the

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ancient East by professional astronomers, alchemists, and astrologers. In ancient times, it was believed that the destinies of kingdoms and people, the successes of wars and affairs, were determined by the position of constellations and luminaries. Fortune-telling was widespread, particularly in Babylonia, where geometric figures were preferred for depicting celestial luminaries and constellations.

Currently, ancient symbols are used relatively rarely in works dedicated to astronomy, with the exception of the symbols for the Sun ☉, Earth ⊕, and, to some extent, the comet ☄, which are still widely used in professional publications.

In almost all areas of ancient art in the Armenian Highlands, such as cave paintings, rock carvings, carvings on stelae and architectural structures, and decorations on pottery and amulets, numerous phenomena of the perception of the universe are depicted.

In all areas of ancient art of the Armenian Highlands, such as cave paintings, rock carvings, carvings on stelae and architectural structures, decorations on pottery and pendant amulets, and so on, numerous phenomena of the universe and celestial luminaries are depicted. These ritual-magical images have been perceived and presented with diverse interpretations.

From the vast repositories of archaeology and ancient art, we present today a group of the most remarkable artifacts that reflect the astronomical perceptions of our ancestors. First, we will address the symbolism of geometric images and their reflection in the night sky, and then we will present the embodiments of star clusters and celestial phenomena in the ornamental art of ancient and medieval Armenia. Particularly noteworthy are the drawings and sculptures that reproduce the constellations, distinguished by bright stars for orientation in the starry sky. Our distant ancestors discerned groups of bright stars in the starry sky and then connected them with straight lines, creating the zodiac constellations. It is extremely noteworthy that they replicate the outlines of the constellations and are reflected on many objects of a ritual-magical nature.

To substantiate our claims, we have included in the table below some images of planets, stars, the sun and moon, constellations, and the cosmos, which reflect the actual position and symbolism of celestial luminaries, as evidenced in the limited repository of archaeological monuments. It is noteworthy that these images, originating at the dawn of civilization, became more widespread in the monuments of the Early and Middle Bronze Age. The outlines of individual constellations are reflected only in the Early Bronze Age, such as the triangular bird images characteristic of the constellations Cassiopeia and Lyra; others, such as the Sun and other constellations, as well as the similar depiction of comets, continued to be depicted in subsequent centuries, up to the Middle Ages.

2. Material and Methods. Geometrical Elements and Mottifs.

1. Linear Patterns. In magic and incantations, straight, broken (zigzag), wavy, and spiral lines and spirals were frequently used, symbolizing thunder, water, earth, snake, and so on. The continuous line broken at a right angle, the meander, and two spirals connected to each other, the "running spiral," symbolized eternity, infinity – the absence of beginning and end. In ancient Greece, the meander was compared to a labyrinth, and in ancient China to reincarnation[1]. There are numerous variations of linear patterns on the rock carvings and pottery of Armenia (Figure 1). Numerous examples of broken images can also be distinguished by mentally connecting celestial luminaries and the bright stars of constellations.

2. The cross is one of the most widespread and supreme symbols of religious sacred values. It has been attested since the Neolithic era. Unlike the circle and square, which symbolize limited, enclosed spaces, the cross emphasizes the idea of a center and the main directions emanating from it. It has been perceived as the center of the world, a cosmic axis connecting heaven and earth, an embodiment of a human with outstretched arms, or an anthropomorphic deity. The cross models the spiritual aspect, the harmony of infinite striving in vertical and horizontal directions. The vertical arm of the cross symbolizes the ascent of the spirit, the striving towards God, towards eternity, stellar, intellectual, positive, active, masculine power. The horizontal arm of the cross symbolizes the earthly, rational, passive, negative, feminine principle[2].

[1] https://dzen.ru/a/XlGR7_K8b2Ka7dwz
[2] Ibid.

The cross is an androgynous (an individual possessing characteristics of the other sex) figure, reflecting dualism in nature and the harmony of opposing unities. The cross is also a symbol of the unity and wholeness of the human spirit, the vertical and horizontal axes, and the fullness of life.

The Greek philosopher Plato (428-348 BCE) put forward his view on the "correspondence" between the zodiac and parts of the human body, providing drawings and explanations (Neoplatonism, 2016). His idea was also widely circulated among medieval Armenian thinkers.

The cross is an embodiment of a human with outstretched arms, symbolizing the penetration of spirit into matter. Various forms of the cross are known. A cross with a ring at the top was perceived as a key that opens the gates of divine knowledge. The T-shaped segment symbolizes wisdom, the teardrop-shaped circle symbolizes movement towards eternity, a beginning. The T-shaped tau cross of the ancient Egyptians was a symbol of the Messiah. Later, various religious movements and political unions invented crosses of specific forms: Burgundian, Maltese, Andreevsky, and others.

Cross images are present in the incised ornaments of the coroplastic art of Central Asia from the 3^{rd}-2^{nd} millennia BCE (Masson & Sarianidi (1973) pp. 38, 91, 94). In Ancient Armenia, the oldest cross images have been attested in rock carvings (Sev Sar, Murad Sar, etc.), as well as in the ornamentation of pottery from the Early Bronze Age (3rd millennium BCE) and the Middle Bronze Age (2200-1800 BCE), /Trialeti-Vanadzor culture/ (Figure 2). The image of the cross in the starry sky is expressed in the constellations Cygnus (Latin: Cygnus) (Broutian, 2021) and Crux (Latin: Crux) (Figure 3).

3. The swastika is a cross with equal arms and bends, the ends of which are bent at right angles to the right or left, creating images in the form of the Greek letter gamma. It is considered an ancient Aryan, Hindu symbol. In Asia and Europe, the swastika was considered a magical secret sign. The swastika, located inside a triangle, was perceived as a symbol of cosmic harmony. The swastika is the sun, the source of life and fertility, at the same time it symbolized thunder and celestial fire[3], eternal movement, the four corners of the world, and perhaps the four elements that created the universe: fire, water, earth, and air (wind) (Simonyan (2023) pp. 29-48). Rock carvings and pottery decorations in Armenia depict swastikas rotating in various directions (Barseghyan, 1966). The oldest example of a swastika in Armenia is depicted on the painted hearth of Shengavit (Simonyan, 2015) (Figure 4).

4. The spiral has been an ambiguous magical symbol in Ancient Egypt, Mesopotamia, Armenia, India, China, Europe – in Scandinavian countries and Crete, Japan, Oceania, pre-Columbian America and elsewhere. The spiral is a symbol of solar and lunar energy, thunder, lightning, whirlpools, and creative forces[4]. According to Neoplatonic teachings, the body is characterized by linear movement, while the soul is characterized by spiral movement (Neoplatonism, 2016). Most likely, our ancestor, observing the stars, perceived the spiral outline of the Milky Way (Figure 5) and reproduced it in rock carvings, toreutics, small-scale sculpture, and especially in the ornamental art of pottery. It is noteworthy that the spiral, being a beloved ornament since ancient times, continued to be carved on medieval tombstones – Artsakh, Sonasar (Figure 6).

Spiral rock carvings, which bear a strong resemblance to the ornamental patterns of pottery from the Early and Middle Bronze Ages in Armenia, probably symbolized the spiral structure of the star clusters (Figure 7).

In some cases, we observe concentric circles as an intermediate stage between a circle and a spiral, symbolizing the emergence of the internal structure of the circle but not yet reflecting the idea of its internal self-development (Figure 8). The prototype of the spiral was the image of a snake, which correlates with the spiral movement of the Galaxy (Butkevich (2008) p. 24).

In Armenian rock carvings, one can also occasionally encounter mythical creatures with the body of a snake and the head of a human. The earliest sandstone-carved sculpture of this mythical human-snake creature is known from the Nevali Çori monument of the Portasar culture (Hauptmann (1999) p. 44, fig. 10). During the Bronze Age, images of human-snake creatures became more widespread in Mesopotamia and Elam (Hinz (1977) p. 37, Shvets (2008) p. 21). We have documented images of human-snake creatures in the Zarri rock carvings (Figure 9).

5. The triangle symbolizes the number 3, as well as birth-life-death, body-mind-spirit, father-

[3]Ibid.
[4]Ibid.

mother-child, heaven-earth-underworld, masculine (pointed upwards) and feminine (pointed downwards) ideograms. It also symbolized the fertile power of the earth, marriage, flame, mountain, pyramid, physical stability, the head of God, etc. Three connected triangles, according to Pythagoras, symbolized health. This symbol is also depicted on the Freemason coat of arms. A swastika depicted within a triangle symbolized cosmic harmony. A triangle placed inside a square is a symbol of the combination of the divine and the human, the celestial and the earthly, the spiritual and the physical. A triangle placed inside a circle is a symbol of the Holy Trinity, and two intersecting triangles inside a circle symbolized divine power, the union of water and fire, and the victory of spirit over matter[5].

It is noteworthy that on the pottery of the Shengavit culture, birds were depicted with a triangular body, in the form of an ostrich-like bird unknown in the Armenian Highlands (Figure 10), which could only have been depicted by replicating the outlines of the starry sky, particularly the constellations Libra, Leo, and Cassiopeia (Figure 11).

6. The square is a symbol of stability, as well as the perfect form of the closed and mysterious unity of the four elements[6]. This image is clearly visible in the head of the constellations Corvus and Pisces, which were probably reproduced in rock carvings and Bronze Age pottery (Figures 12, 13).

7. The image of a regular five-pointed star symbolized eternity, perfection, and the Universe. The pentagram is a symbol of the microcosm, as well as the structure of the human body. The pentagram represents the five mystical centers of power, the five senses of man, the five elements of nature, and the five limbs of the human body. It was believed that with the help of the pentagram, a person could control lower creatures and ask for help from supernatural forces[7]. Talismans with the image of a five-pointed star are guardians of health. It was believed that this symbol, depicted on doors, protected the family from witchcraft and evil forces. The five-pointed star was used in various magical spells and rituals. Five-pointed stars are depicted in rock carvings (Figure 14), on pottery, and embodied in the form of jewelry. It is clear that celestial luminaries were mainly perceived in the form of five-pointed and six-pointed stars.

8. The hexagon, the regular hexagon, is a symbol of beauty and harmony. It is also an image of a human: two arms, two legs, a head, and a torso. On the one hand, the hexagon has angles, and on the other it is close to a circle, as a result of which the six-pointed star in magical rituals symbolized the idea of the Sun, energy and peace (Masson & Sarianidi, 1973). Here, the Trinity is in one whole: two intersecting isosceles triangles symbolize the divine, the unity of the feminine and masculine, fire and water, and the victory of spirit over matter.

It is believed that the six-pointed star, the hexagram, formed by two isosceles triangles pointing in opposite directions, was first depicted in ancient India. The oldest known hexagram in western Asia is depicted in a 7^{th}-century BCE seal discovered in Sidon. There is evidence that an image resembling a six-pointed star was also on the wall of King Ahab's palace, 9^{th} century BCE, as well as on the amulet of the Babylonian king Kurigalzu, a contemporary of the prophet Moses, and on the seal of King Solomon[8].

The six-pointed star of David, or otherwise the hexagon, according to legend, was the coat of arms of King David of Israel in the 10th century BCE. It was this dubious, later-centuries-proposed version that became the basis for the name of this symbol. Against the background of this real and fictional information, the earliest depiction of a six-pointed star in an archaeological find, discovered in Armenia from the Upper Naver I:A royal tomb, dated 1610-1550 BCE based on radiocarbon analysis, is more than notable (Figure 15). This find, still unknown to English-speaking readers, is the oldest in the entire Ancient East, which substantiates the view that the six-pointed star is an Indo-European symbol, and that only a millennium later it became a symbol of the Jews and was called Magen David (Simonyan, 2014).

9. The circle is a symbol of completeness, harmony, and perfection. It has neither beginning nor end, neither top nor bottom. Since ancient times, the circle has been considered a sacred sign, as it is the most perfect form found in nature. Currently, the circle symbolizes the continuity of space and time, as well as phenomena beyond time and space. A circle with a point in the center is a symbol of

[5]Ibid.
[6]Ibid.
[7]Ibid.
[8]Ibid.

a complete temporal cycle. In astronomy, the circle is a symbol of the Sun and in alchemy, a symbol of the Sun and Moon. A cross inscribed within a circle symbolizes paradise and its four rivers flowing from the center—the tree of life[9]. Circles with a point in the center were widespread in Armenian rock carvings, in the ornamental art of Early Bronze Age black-polished pottery, and Middle Bronze Age painted pottery (Figure 16).

A separate group of geometric figures consists of radiating circles, dots, pits, dots enclosed in circles, and so on. Most of these symbolized celestial luminaries, especially the sun and stars. The signs of celestial luminaries, as a rule, accompany mythical heroes and animals, symbolizing their celestial origin.

3. Results and Discussion

In mythological figures, according to thematic importance, certain parts of the human body were emphasized. For example, long and wide-open legs symbolized swiftness. The depiction of deities with exaggerated male symbols was particularly widespread in scenes of allegorical fertilization of the earth, considered the feminine principle (Florensky, 1967).

Most likely, people with huge, radiating fingers symbolized a lightning-flashing deity. In certain cases, with the intention of revealing the figure, zigzag lines, lightning bolts, were depicted near their hands (Simonyan, 2015). From ancient times, in the beliefs of many Indo-European peoples, the goat was perceived as a symbol of lightning. In the petroglyphs of Syunik, there are examples in which, in order to make the image of the thunderbolt deity more understandable, the god of thunder was depicted with a combination of goat-lightnings flying from outstretched hands (Simonyan, 2015).

Images of celestial luminaries (solar symbols) are widespread in petroglyphs, often accompanying mythological heroes and celestial beings. In our opinion, the depiction of animals and humans within the environment of celestial luminaries symbolized the supernatural, non-earthly nature of these beings. According to the accepted view, the worship of celestial luminaries became widespread, especially during the Bronze Age. Perhaps it is this period to which the petroglyphs saturated with luminary symbols are primarily dated (Formozov, 1978).

Meteorites, asteroids, comets, and perhaps even "flying saucers" had an exceptional influence on the imagination of the ancient inhabitants of Armenia. These fateful celestial phenomena were periodically reinterpreted both in antiquity and in the Middle Ages. In Armenia, comets were perceived and reproduced similarly in Bronze Age petroglyphs (Mount Murad) and on the walls of the early medieval churches of Ptghnavank and Artik (Figures 17, 18) (Simonyan, 2015). The correlation of these petroglyphs and murals with astronomical observations can serve as a basis for the identification and dating of celestial phenomena.

In petroglyphs, there are also signs of orientation in time and space, which, according to Benik Tumanyan, were calendars, constellation maps, and symbolized the constellations Leo, Sagittarius, and Scorpio (Tumanyan, 1969).

Unique in global rock art is the astronomical map located on the northern slope of the elevation known as Sev Kar or Sev Sar (Black Stone or Black Mountain), at the western edge of the Vardenis mountain range, 3 km east of the Selim Pass of Martuni, at an altitude of 2600 meters above sea level, within the administrative territory of the village of Geghhovit. It was discovered by Suren Petrosyan in 1965. A complete cultic complex is located on the natural rocks, with mysterious carvings in its central part. The unique rock carving of the central part, with an area of 6 square meters, according to Benik Tumanyan, reproduces the Milky Way and an exceptional cosmic phenomenon—the appearance of a huge meteorite in the Armenian sky (Tumanyan, 1972). There is a hypothesis that the crater of Sev Sar, located near the petroglyphs, was formed as a result of the meteorite impact (Tokhatyan, 2014). Almost all publications circulate the schematic drawing published by Harutyun Martirosyan. Later, geologist Hovhannes Azizbekyan conscientiously copied the star map. The latter, being more accurate, corrects the inaccuracies of the astronomical map circulated in previous publications (Azizbekyan, 2021).

[9]Ibid.

Conclusion

Regular geometric shapes, which are not widely prevalent in nature, must have been replicas of revered phenomena, subsequently acquiring their symbolic semantic load. The primary sphere of worship was the sky, more specifically the star-studded sky, which always evoked a sacred awe of infinity in humans, perceived as the abode of the Gods, an unattainable, flawless, and perfect environment that directly influenced earthly phenomena and human destinies.

Most likely, the connections of bright stars observed in the celestial dome and then mentally connected formed the basis upon which human perceptions of geometric shapes were developed. From this we can conclude that geometric shapes came into widespread use when ancient thinkers observed and distinguished constellations, zodiac constellations, and endowed them with meaning through cosmogonic myths. During this period, astronomy, particularly astrology, must have originated.

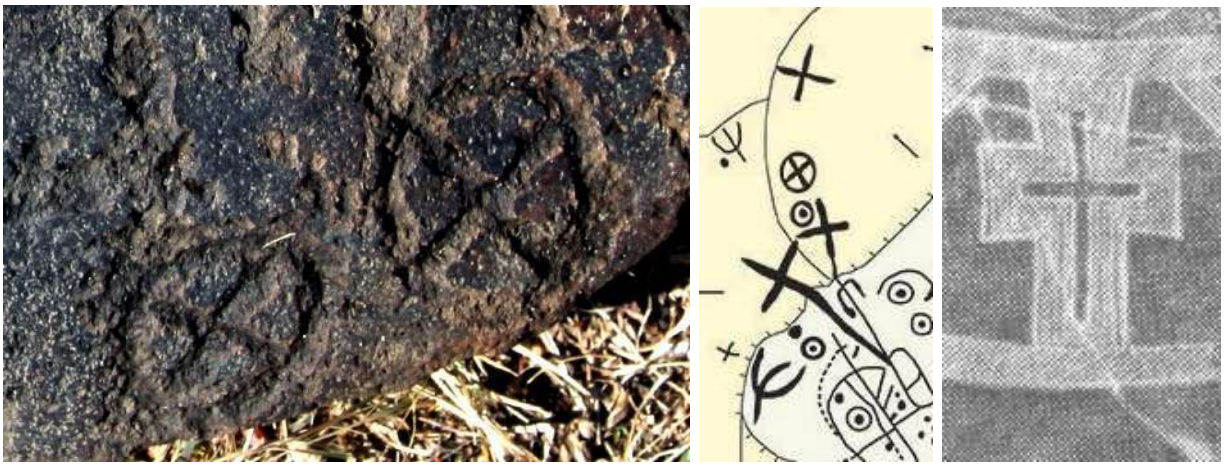
According to our observations, the depictions of certain mythical animals and birds unknown in our region in ancient ornaments, by their outlines, replicate celestial luminaries, more precisely, mentally connected bright stars. These, in turn, provide a basis for concluding that the perceptions of zodiac constellations, based on ancient astronomical observations, are contemporary, if not preceding, the archaeological objects on which the images "suggested" by the starry sky are depicted. It is noteworthy that the symbolic perceptions of constellations and their depictions on stone, clay, metal, and other mediums in Armenia have been documented as early as the 4th-3rd millennia BC. Their identical reproductions in medieval monuments testify to the ethnic memory and traditionalism of the autochthonous population. We hypothesize that the priest-astronomers established on Sev Sar observed the starry sky and made "records" on the rocks, which were not only astronomical but also calendrical maps-calendars (Martirosyan, 1978). It is well known how much importance people in ancient times attributed to celestial bodies, predicting human destinies by their movement or appearance.

And it is not a coincidence that the view proposed by William Olcott and others in the early 20th century still circulates, namely that one of humanity's greatest achievements in the field of astronomy – the invention of orientation by observing the Zodiac constellations of the starry sky – occurred in the 30^{th}-28^{th} centuries BCE in the area located between the 42° and 36° northern parallels, more precisely, near Mount Ararat (Olcott, 1911). European scientists arrived at this conclusion as a result of theoretical studies of astronomical observations (where, at what geographical latitudes, and when the Zodiac constellations are visible) and geographical considerations (in what geographical and climatic environment do the animals indicated in the Zodiac live). The exceptional astronomical map of Sev Sar, which was certainly unknown to William Olcott and his supporters, substantiates their brilliant conjecture with factual evidence.

To substantiate our claims, we have included in the table below some images of planets, stars, the Sun and Moon, constellations, and the cosmos, which represent the real appearance of celestial luminaries and their symbolic representations, documented in the vast repository of archaeological monuments. It is noteworthy that these images, originating in the monuments of the dawn of civilization, are most prevalent in the monuments of the Early and Middle Bronze Age. That is, the view put forward by Olcott and his supporters, that the definitions of constellations were made in the Armenian Highlands at the turn of the 4^{th}-3^{rd} millennia BC, is also substantiated by the results of research into the ornamental art of Armenian petroglyphs and archaeological artifacts[10].

[10]Sketches of individual constellations are reflected only in the Early Bronze Age, for example, the triangular bird images characteristic of the Cassiopeia and Lyra constellations, successive rows of isosceles triangles with sharp points directed up and down, which is one of the main elements of Bronze Age ornamental motifs; the others—the Sun and other constellations, as well as the identical depiction of comets—continue in subsequent centuries, up to the Middle Ages.

1) 

2) 

3) 

4a) 

4b) 

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6) 

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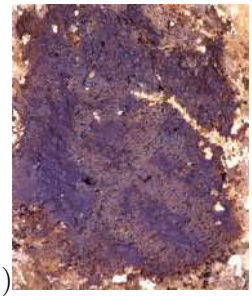
9) 

10) 

11) 

Figures. 1) Geometric - linear ornamental images of light in Armenian rock paintings, jewellery and ceramics; 2) The oldest images of the cross in the rock-carvings of Murad Sar and Sev Sar, and in the decorative images of Early Bronze Age (3^{rd} millennium BC) and the Middle Bronze Age (2200-1800 BC) clay ceramic vessels /Trehq-Vanadzor culture/; 3) The image of the cross in the constellations Cygnus (Swan, Northern Cross); 4a) The oldest image of the swastika in the color-ornamented bowl of Shengavit; 4b) The oldest images of the swastika in the rock-carving and on a color-ornamented bowl from Nerkhin Naver; 5) The spiral outline of the Milky Way; 6) The spiral carved ornament on a medieval tombstone – Artsakh, Sonasar; 7 The spiral ornamental motifs on Petroglyph; 8) The spiral ornament in the ornamentation of Early and Middle Bronze Age pottery; 9) The mythical creatures with the body of a snake and the head of a human in Armenian rock carvings – Zarri petroglyphs; 10) The depiction of an ostrich-like bird with a triangular body on the Shengavit bowl – Early Bronze Age; 11) The star clusters in a triangular position within the Capricornus constellations; 12) The Square in the head of the Corvus and Pisces constellations. The square in rock carvings and on Bronze Age Clay pottery; 13) The square in rock carvings and on Bronze Age Clay pottery; 14) The tuff-carved sculpture with the outline of a five-pointed star — Shengavit, Early Bronze Age; Figure 15. The bronze jewelry ornament with an image of a six-pointed star. Verin Naver, 17^{th}–15^{th} centuries BC; 16) The sculptures with images of a six-pointed star on medieval churches and tombstones of Armenia; 17) The circles with dots in the center in Armenian rock carvings; 17a) The circles with dots in the center on Early Bronze Age black burnished and Middle Bronze Age painted pottery of Armenia; 18) The image of a comet in a Bronze Age rock carving (Mount Murad); 18a) The images of comets on the walls of the Early Medieval Ptghnavank and Artik churches.

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