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The General Archaeoastronomical Methodology of the Research of Historical Sites in the Various Astronomical Coordinates

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Abstract

The need for research of historical monuments in various astronomical coordinates very relevant today because in recent years it has not denied the idea that ancient people knew very well the starry sky because of their worship of the heavenly forces. That's why not only newly discovered, but long-studied sites should be subject to full archaeological research in terms of availability in the monuments of astronomical coordinates. Usually archaeological studies are reduced to the study of astronomical objects in the *Horizontal* coordinates, when analyzing the position of celestial bodies above the horizon. However, this is not enough for a full analysis of the historical astronomical sites. Some items remain unexplained, because of their affiliation to other celestial coordinates: *Equatorial, Ecliptical, Galactical*.

1. Introduction

The scientific community is still avoids astronomical concepts in the ancient world, suspecting them unfounded superstition. But we have a program available to facilitate astronomical studies and evidence of good knowledge of astronomy, ancient people, which was a significant contribution to the treasury of human knowledge.

At present time, there are several areas archaeological (paleoastronomical) studies of ancient monuments astroarchaeology, astromythology, astrotheology, astroethnology, astrography, astrotopography.

Astroarchaeology explores the location of objects in the archaeological sites (sanctuaries, observatories, cities, settlements) and their relationship with the heavenly objects.

Astromythology explores the semantic context of the behavior of the characters of myths, interrelated with the movement of celestial objects.

Astrotheology explores the effect of changing the picture of the sky on religious concepts.

Astroethnology explores ancient ceramic ornament on clothes and in relation to the celestial phenomena.

Astrography should engage in research astronomical sense of rock carvings (petroglyphs) and other types of pictographs (hieroglyphs).

Astrotopography should engage in research in the astronomical sense of place-names of geographic locations.

In all these cases, we, basically, always dealing with the same air, with its four main celestial coordinate systems: horizontal, equatorial, ecliptic, galactic. Each of astronomical systems has its specific characteristics and the task archaeoastronomy reveal them to the test object.

2. Background

Good tone astroarcheological studies demonstrated G. S. Hawkins and J. B. White in 1966 year in book "Stonehenge decoded" [1] that the method Lokkera computer calculated the rising and setting of the sun and moon (objects of the ecliptic) in astronomical *Horizontal* coordinates, which has become the traditional method astroarcheological researchs of historical monuments. However, such studies do not fully reveal the astronomical idea of a historical monument, and usually need additional astronomical research.

Attempts to describe a complex astronomical worldview of ancient peoples were made by G. de Santillana and H. von Dechend in "Hamlet's Mill" in 1969 year [2], where by the example of the ancient Germanic myths, where the model of "mill" represented the slope of the Earth's axis (in the *Equatorial* coordinates) to the ecliptic plane (in *Ecliptic* coordinates). But then the scientific community was not ready to accept these astromyphological studies because of the lack of common astronomical knowledge among the humanitarian scientific majority.

Some partial studies have been conducted in different astronomical coordinates, but as a rule, is not determined by membership of a particular celestial coordinates, or was incorrectly identified due to lack of a common methodology archaeoastronomical research.

For example:

In Russia, V. E. Larichev exploring the Paleolithic, began to find traces of the ancient people worshiped the sun and moon calendars on the bones and stones, as written in the book "The Wheel of Time: The sun, the moon and the ancient people." [3]. But while he has not yet determined the membership finds various celestial coordinates.

W. Sullivan in 1996 right explores the changing world view in the myths of the Incas under the influence of changing the position of the clouds of the Milky Way on the horizon [4], that from the an arhaeoastromical point of view, occurs in axial projection in *Horizontally-Galactical* coordinates.

In Russia, the E. N. Kaurov in 1997 right investigated the ecliptic pole in the constellation of the Dragon and the motion with respect to a Celestial pole, studying Chinese historical chronicles [5] that from an arhaeoastromical point of view, belongs to the *polar* projections of the *Ecliptical* coordinates and *Equatorial* coordinates.

In Russia, the L. S. Marsadolov in 1998 in the West Altai studied astronomical observations at Mount Charming [6] and right showed his true research in a form that arhaeoastromical from the point of view refers to the *polar-axial* projection in *Horizontally- Ecliptical* coordinates.

In Russia, T. M. Potemkina and V. A. Yurevich in 1998 created a reliable to archaeoastronomical method for Russian researchers, who, from an archaeoastronomical point of view, traditionally carried out in the *Horizontally- Ecliptical* coordinates [6]. But in the same manual presents a monument Savin (Kurgan Region, Russia) [Idid, 30-31], where the ancient people were made two circles, which, from an archaeoastronomical point of view, should be attributed to research in the *polar* projections of the *Equatorial* coordinates (left circle) and *Ecliptical* coordinates (right circle).

R. Frank in the book "Astronomy ancient societies" in 2002, in some cases, truly says about *Equatorial* run in the legends of Slavonic and Finno-Ugric peoples [8], but, in one cases, instead of the projection *Equatorial* need to talk about *Horizontal* projection arhaeoastromical standpoint [Ibid, p. 245]. But, perhaps, a typo in the book.

In Russia, K. K. Bystrushkin in 2003 he studied in detail and right archaeological and mythological historical monuments for movement *Celestial Pole* with respect to the *Pole of the Ecliptic*, and suggested naming the constellations of the zodiac - Eternal Zodiac and Zodiac Signs from the vernal equinox - Moving Zodiac [9]. But there will always be unfinished debate what is considered eternal - the zodiacal constellations with respect to the Pole of Ecliptic, which is millions of years in the constellation of the Dragon, but still gradually shifted from the center of the galaxy (in *Ecliptical* coordinates), or forever reiterative "cross" of the equinoxes and solstices - change seasons of the year against a background of signs of the Zodiac (in the *Equatorial* coordinates), which had a tradition of pre-Greek names of months the seasons. controversy, what is considered eternal - the *Zodiacal Constellations* with the *Pole of the Ecliptic* (in *Ecliptical* coordinates), or the ever-recurring seasons along the *Signs of the Zodiac* (in the *Equatorial* coordinates). Therefore, in my opinion, it is better to adhere to the generally accepted astronomical names. In this book, K. K. Bystrushkin widely and thoroughly considered various examples, that with the aecheoastronomical point of view, can be attributed to research in the *polar* projections of *Horizontal, Equatorial, Ecliptical, Galactical* coordinates.

In Dagestan, M. I. Israpilov, despite the controversial conclusions about the movement the geographic pole in 2003, rightly says Zenithal coordinates in which the night and watched the years, the shadows of objects [10, p. 16-21]. But from an astronomical point of view, these observations can be attributed to the *axial Horizontal* coordinates.

The author in the "Types of astronomical lay-outs in archaeological sites (methodological aspects)" in 2003 [11], and then at a conference in 2004 [12] proposed to consider archaeological sites in the complex astronomical coordinates - horizontal, Equatorial, Ecliptic, Galactic. With this method, the author, along with other researchers studied archaeological materials: Altai with L. S. Marsadolov - Ak-Baur in 2005 [13, 14] and Semisart in 2005 [15]; the Ukraine with T. M. Potemkina and S. Ivanova - in Revovo 3 in 2005

[16, 17]; to the Southern Urals with A. I. Mathsyna - in Kondurovskiy 2005, 2006 [18, 19], in with I. A. Rusanov, K. A. Denisova, J. A. Nikitona, D. G. Emchenko - in Arkaim in 2006 [20]; Altai from N. V. Dmitrieva - Ak-Baur in 2007 [21, 22] with V. E. Larichev - in Siberia in 2007 [23, 24, 25]; with Ishangali Sagyndyk - Kazakhstan in 2007 [26, 27]. The work of the author "Archaeoastronomy in the mirror evolutionary knowledge" in 2007 [28] improves the previous experience astroarchaeological research, and offers a total archaeoastronomical methodology study of ancient archaeological, mythological and religious sites in astronomical coordinates *polar-axis - Horizontal, Equatorial, Ecliptical, Galactical*. This method allows you to reconstruct a complete cosmological picture of perception of the world by ancient people. Also, this method was proposed by the author for discussion at the International Conference SEAC in 2008 in Spain [29].

The essence of the research on archaeoastronomical method is changing the starry sky reflected in the knowledge of people that we can find in the various tracks of culture. The starry sky changes over time and if knowledge is transmitted to descendants for generations, these changes become visible, what we are seeing in historic monuments. In particular, such noticeable changes is the shift of poles of the world - the point in the sky where the Earth's axis points. This point becomes noticeable when it gets some star which at that time became a fixed point in the sky - the Polar Star - the center around which the entire sky rotates. The realization of this extraordinary event causes people to seek explanations available for each historical period level. Center sky attributed divine powers to make laws of the universe in the mythological and religious contexts, built the observatory, developing analytical and radiant-associative thinking, which led, ultimately, to the modern knowledge of astronomy. The proposed method for the study of knowledge will allow to reveal some "white spots" in the history of mankind.

3. Astronomical Basics in Archaeoastronomical Methodics

Archaeological sites should be checked for the presence in them of astronomical coordinates. On the basis of common astronomical terms about *polar-axial* coordinate systems one can distinguish typical categories of polar lay-outs according to certain peculiarities of astronomical coordinate systems: *Horizontal, Equatorial, Ecliptical* and *Galactical*.

Polar characteristics appear where fixation takes place in polar coordinates with circular characteristics. Those characteristics are reviewed in myths and fine art (images Wheels, Mirgord, symbols of the poles in the form of the Dragon, Snake, Mother of the World, the World Tree, the World mountains), religions (Heavenly Paradise) and in the planning of archaeological sites (circular structure). In modern astronomical coordinate systems installed *polar* radial characteristics: in *Horizontal* coordinates - azimuth 0 degrees to 360 degrees; in the *Equatorial* coordinates - stellar

longitude from 0 degrees to 360 degrees, or hours decline from 0 to 24 hours; in the *Ecliptical* coordinates - longitude from 0 to 360 degrees from the vernal equinox along the ecliptic of the zodiacal constellations; in the *Galactical* coordinates - longitude from 0 to 360 degrees from Galactic Equator - The Milky Way.

Axial characteristics can be seen on ancient objects, which are divided into levels according to their heights, according to the principle, which is used in modern astronomical systems of coordinates: the axis divided by the breadth of the level of the great circle (the equator of the system) from 0 degrees to the pole of the system - 90 degrees. This division in the monuments of culture is usually observed in the vertical symbolic structures (stairway to heaven, floor division of the divine worlds).

The feature of the *Horizontal* coordinates is that the *Horizontal* astronomical coordinates on the horizon line crosses another astronomical coordinates with other astronomical properties. That's why need detailed archaeoastronomical classification.

Classification of *Horizontal* coordinates based on the characteristics of other astronomical systems crossing the horizontal system:

1. Horizontal (local),
 2. Horizontal - equatorial,
 3. Horizontal - ecliptical,
 4. Horizontal - galactic.
1. *Horizontal (local)* coordinates in archeological sites are those that indicate specific local directions. A typical example *Horizontal (local)* lay-outs is the direction burial place that indicates the direction of the ancestral home. The calculations are carried out on the azimuth from 0 to 360 degrees to the north.
 2. *Horizontal-equatorial* coordinates - in which there are signs of fixing some of the constellations and stars, cross the horizon. If the monument contains a point-pole, while planning is *polar*. An example is the monument of Savin (Siberia, Russia), studied T. M. Potemkina, where celestial pole indicates the trace of the post №1 in the left circle of the monument [7, p. 30-31] (Fig. 1). If the lay-out is not the point of the pole, then the planning can be *axial*. An example is the line of the pyramids in ancient Egypt, focused on the rise of constellation Orion and the star Sirius [29] (Fig. 2). Also, the example is the Sami drums, presented by R. Frank [7, p. 246, Fig. 8] (Fig. 3). Speed rotation of stars in the equatorial coordinates depends on the speed of rotation of the Celestial pole around the pole of the Ecliptic, precession in: 50. 3 seconds / year [31].
 3. *Horizontal-ecliptical* coordinates based on the principle of observation in the sky ecliptic coordinates. Such planning can not point to the pole of the ecliptic. Examples of such planning are all archaeological sites which are indicators of places where you can watch the ups and sets (Sun and Moon) above the horizon. Horizontal-ecliptic studies are

widely used in archaeoastronomical studies. But there is a caveat, which is not always taken into account by researchers: this is the height of the horizon line affects the current astronomical azimuth of the event, especially if the terrain is mountainous. It is necessary to show the astronomical events, taking into account the height of the horizon line, such as in studies G. S. Hawkins and J. B. White in Stonehenge (England) [1] (Fig. 4), or L. S. Marsadolova on Mount Ocharovatel'naya [6] (Fig. 5) or the author of this article studies Kondurovskiy mound with "mustaches" [28] (Fig. 6). Originally presented *Horizontal-ecliptic* research L. S. Marsadolov on Mount Ocharovatel'naya (Altai) in *polar-axial* form [5, Fig. 8, 9, 22] (Fig. 6). *Horizontal-ecliptic* coordinates in *polar* form can be considered as presented by R. Frank shaman drum that may have been used as a compass [8, p. 245; 32, p. 71] (Fig. 7). Tambourine shows skyline point of sunrise and sunset, there's also a point on the south and north - connects these points the meridian in *Horizontal* coordinates. A special case of *Horizontal-ecliptic* coordinates in *axial* view are Zenital coordinates, as they are called, M. I. Israpilov - among the many petroglyphs on the walls of caves can be distinguished figures who served as a measure of the time in a particular area (local horizontal coordinate) based on tracking the shade from the sun (the object of the Ecliptic) in different seasons of the year, on the same basis as arranged gnomons - Solar clock. To correct the calculations in ecliptic coordinates to take the angle of the Earth's axis to the ecliptic plane of the solar that changes in 63. 5-68. 5-63. 5 degrees about 80 000 years [33, p. 21], i. e. with an approximate speed of 0. 43 seconds / year - it is about 100 times less than the rate of displacement of stars in the *Equatorial* coordinates.

4. *Horizontal-galactic* coordinates can be seen in historical monuments, if they have signs of various events associated with the intersection of the horizon objects of the Milky Way. Calculations are made made with speeds of displacement of the stars in the equatorial coordinates - 50. 3 seconds / yr, but are fixed on the ground in the *Horizontal* coordinates. An example of the use of *axial Horizontal-galactic* coordinates can serve as enshrined in the ancient legends of observation by the Incas in South America observed the change of the Milky Way in the sky. There's a legend, according to which the Incas tragically die in the Flood and saved only a few animals on the mountain top, and the fox dunk his tail. The legend symbolically shows the location of clouds Chanterelles after 650 years, when the "tail" Chanterelle no longer appears above the horizon during the winter solstice. [4] (Fig. 8). Also, the objects of the Milky Way are the constellation Southern Cross and Centaurus, who metaphorically participate in the myths of many ancient peoples, and,

in particular, from the ancient Greeks - the ferryman Centaur (Centaurus) carries the souls of the dead on the river Styx (the Milky Way) in the underworld of Hades, which protects the three-headed dog, probably the top three stars of the Southern Cross in the Southern Hemisphere sky. Constellation Southern Cross appeared in the northern sky in the fall, as it were, showing the Lower World of the Southern sky, usually hidden from the inhabitants of the northern hemisphere of the Earth. [35]

Equatorial coordinates describes the picture of stellar sky rotating around the Earth axis, i. e. around the Celestial Pole. Examples of the equatorial coordinates in the *polar* can be the horse in Terekty Aulie (Central Kazakhstan), which stretches from the east (from the horse's head) to the west. There, on a stone slab has detached "cross" over the image of a horse on the north side. Combining pole of the world with a "cross" and the constellation Ursa Major with the contour of the horse gives us a date of about 1400 BC Then the Pole Star in the poles of the world was not a world pole, apparently, had to look perpendicular to the upper contour line of the Big Dipper depicted on a stone slab in the form of a knocked-out holes along the back of the horse [26, p. 32; 27, p. 128] (Fig. 9). Also, the Big Dipper in the outer circle can be traced on the plan settlement Arkaim (South Urals), which consists of 4 major sectors of 85 degrees and a small sector of 15 degrees. Large sectors coincide with the outlines of the constellation Ursa Major, and this constellation of occupied sector of about 85 degrees in 1600 years. BC, after the recent reorganizations settlements [35, p. 32; 28, p. 90] (Fig. 10). Interpreting the constellation Ursa Major with the image of the horse in the Indo-Iranian tradition becomes clear words from Avesta of Varya, who built Yima: "And Yima made Vary the size of running (horse) on all four sides. . . " [36, p. 79-80]. Apparently, the ancient concept of "race (horse) on all four sides" meant not a simple horse race, and running in a circle (on all four sides) Horse constellation (Ursa Major) with a radius of this constellation. Apparently, in the era of the creation myth, the mathematical concept of "radius of the circle" had not yet been invented and shaped the ancient people picked description appropriate to the meaning of a mathematical function.

Ecliptical coordinates in the polar projection present in the field observing the ecliptic pole in the constellation Draco, as a rule, on a very ancient monuments that were not visible to the North Star and astronomical calculations were conducted in the ecliptic coordinate system. As an example, consider a plan of Stonehenge I, when were built only circular earthen ramparts and set a few stones of reference [1, p. 63; 28, p. 102] (Fig. 11). If you plan to place the center pole of the ecliptic, the stones 92 and 94, around which dug small trenches will show the position of the star Alpha of the Great Bear in the days of the equinoxes, spring and autumn respectively. The size of individual trenches in the outer circle correspond to the size of the constellation Ursa Major - apparently the constellation Ursa Major was a kind of geometric measure in the ecliptic coordinates. The alternating

white and black hole inside the circle in the amount of 56 match 28 pairs of (start-end) lunar mansions, known systems of the ancient lunar calendar. Another interesting example is the burial Bolshekaragansky 25 near Arkaima (Russia, South Urals) [37, p. 44; 28, p. 63] (Fig. 12). The cemetery is surrounded by a circular moat, which consists of 12 small ditches of different lengths, as well as the twelve zodiacal constellations in the Western tradition. Selection of the lengths of the zodiacal constellation showed the creation of the monument around 2000 BC. Another interesting example of the movement of time in the ecliptic coordinates is the Mayan calendar, which can be traced epochal movement of celestial pole around the pole of the ecliptic by law precession seems open for a long time the ancient Mayans. Five bright polar star in the way of precession in the Northern Hemisphere were taken as the start time of the creation of five in the calendar Tzolkin: The first (23615 BC and 2012 AD) - Alpha Ursa Minor, II (18489 g BC and 7138 AD) - Alpha Cephei, third (AD 12263 and 13364 BC) - Alpha Lyrae, fourth (8239 BC.) - Tau Hercules, fifth (3114 BC) - Alpha Draconis [38; 39] (Fig. 13). Another part of the calendar - the annual calendar Haab associated with the Tzolkin 20-d-old signs-kin on the ecliptic, which were observed at sunrise or sunset, or the zenith, at any time of the year, due to the fact that did not go to each other, as is customary in the old light, and 10 marks the 11th sign [40, p. 52] (Fig. 17). Found knowledge of the phenomenon of precession (movement around the poles of the world pole of the ecliptic) and other nations. For example, in ancient Greek astronomy the twelve labors of Hercules, created long before Hipparchus, who is considered the discoverer of the precession describes how Hercules temporarily holding the sky instead of the Atlas. There allegorically describes astronomical situation of the North of the sky on the border

of VII millennium BC. , When the tau Hercules (hand in the constellation Hercules) (Hercules - analogue of the Roman Hercules) was held around the celestial pole (the point at which the Atlas holding the sky). It is clear that the myth was created later this phenomenon, as the myth tells that Hercules was gone, leaving the Atlas to hold the sky. Also in Russia, there is evidence Astrography - ancient cave paintings, showing the movement of the celestial pole around the pole of the ecliptic in the images of mythical heroes. For example, investigated VE Larichev astrorisunkah Fourth chest in Khakassia (Southern Siberia) is the image appears to be a circle of precession which transmitted the divine symbols by some hero (obviously divine representatives of the North Star and the pole), while in the center of the circle, where it should be ecliptic pole, visible certain entities related, according to VE Laricheva, the process of shamanism (the shaman with the boiler and serpentine nature - Dragon?) [23, p. 220-221, Fig. 3, 4; 28, p. 35-36] (Fig. 14). In the Altai, in the grotto Ak-Baur, there are rock painting, first sketched by local researchers, and subsequently interpreted the astronomical point of view of the drawings of local researchers, Dr. Cultural Studies from the Hermitage LS Marsadolovym (St. Petersburg), the author of this article (Chelyabinsk) and the head of the children's Outer Circle NV Dmitrieva (Moscow). In the ancient figure, including all sorts of icons, the icon shows two "cross in the box", with the "cross in the box" in terms of the composition is in the center and around the broken line resembles the outline of the constellation Draco, ie where is the ecliptic pole. A different icon "cross in the box" is located on the periphery of the right, with, between the two icons' cross in the box "visible image" carts. " Heavenly wagon in many cultures considered a "scoop" Ursa Minor [42, p. 301-303]. "Bucket" Little Bear is between the two poles of about 1, 100 years. BC. (Fig. 15).

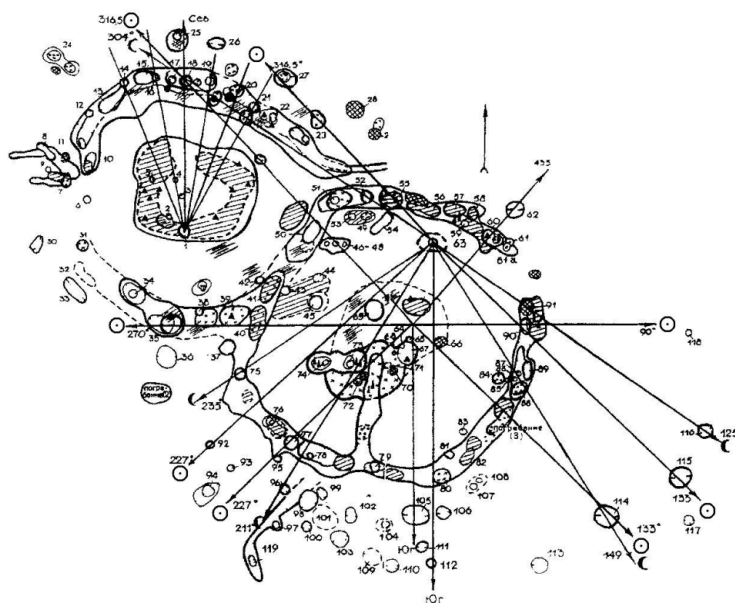


Fig. 1. Archaeoastronomical study the monument Savin (Siberia, Russia) on materials T. M. Potemkina, V. A. Yurevich [7, p. 30-31]. Polar projection Horizontal-equatorial coordinates (left) and Horizontal-ecliptical coordinates (right).

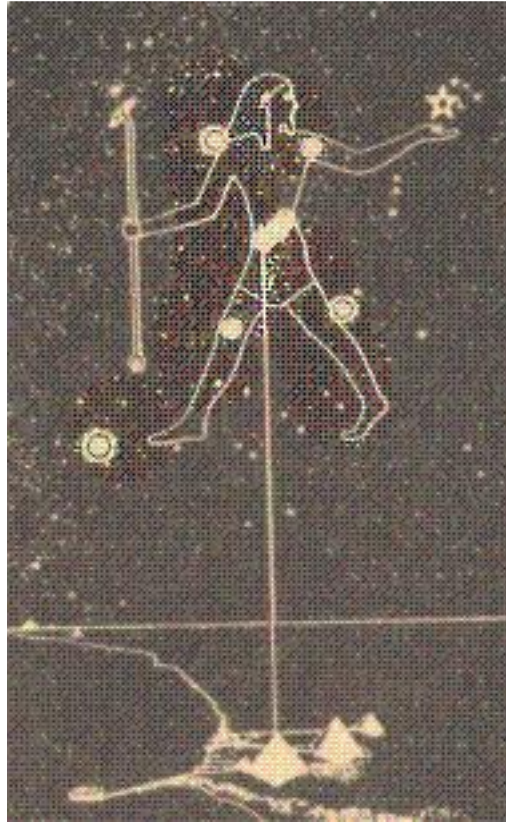


Fig. 2. The orientation of the Pyramid in Egypt at sunrise constellation Orion and the star Sirius. [30] The axial projection Horizontal-equatorial coordinates.

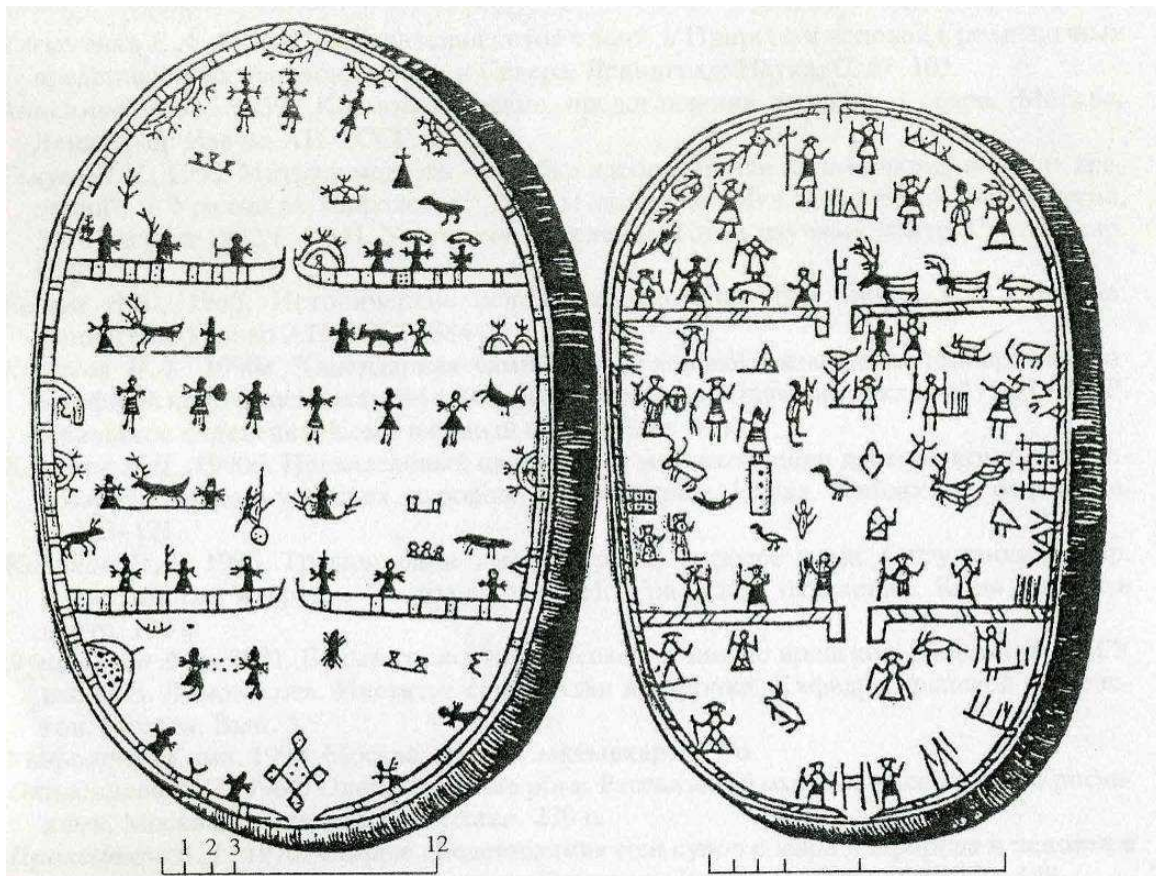


Fig. 3. Two Saami Drums. According to the materials R. Frank and Pentikäinen [8, p. 246].

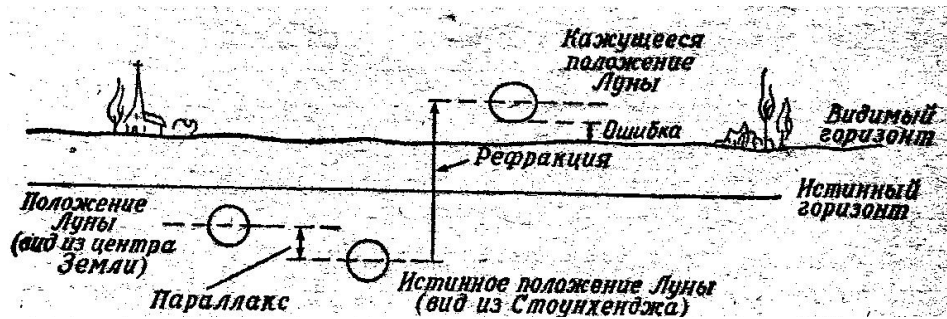


Fig. 4. The visible horizon line, included in the calculation at Stonehenge in axial projection Horizontal-ecliptical coordinates (based on John. Hawkins and George. White [1, Fig. 13]).

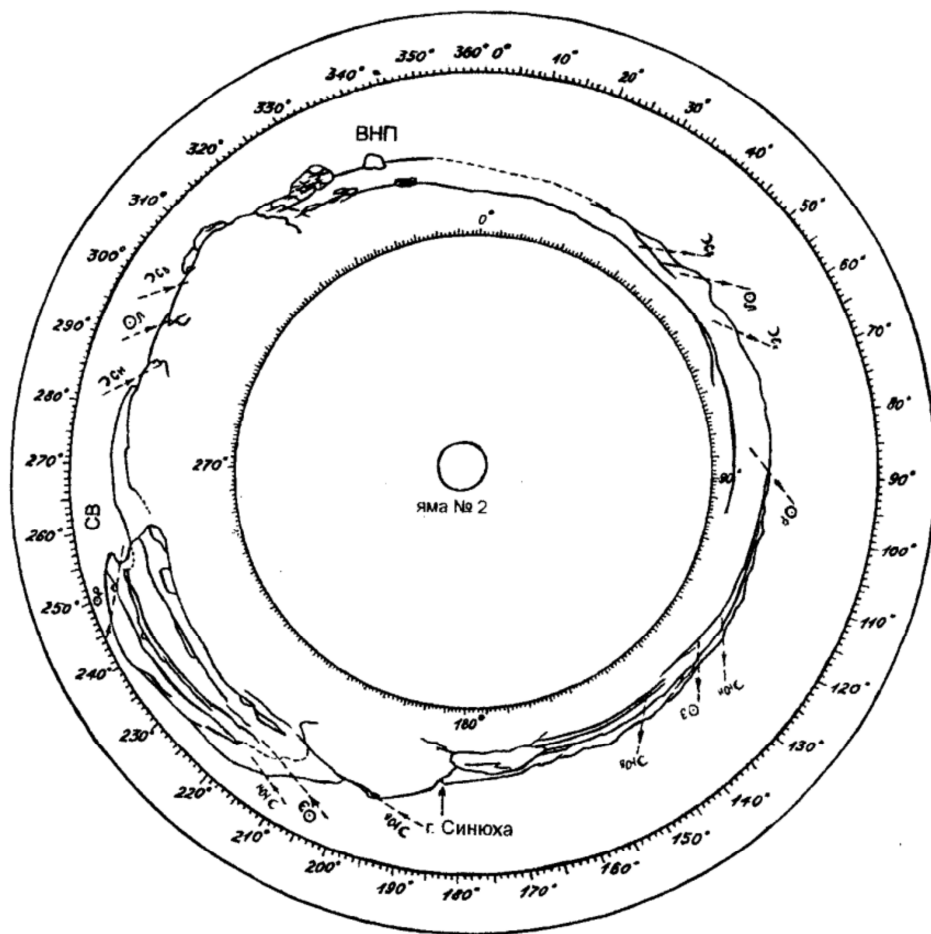


Fig. 5. Polar-axis projection Horizontal-ecliptical plan archaeological studies in L. S. Marsadolov on the mountain near the village of Kolyvan Charming (Altai, Russia) (based on L. S. Marsadolov [6]).

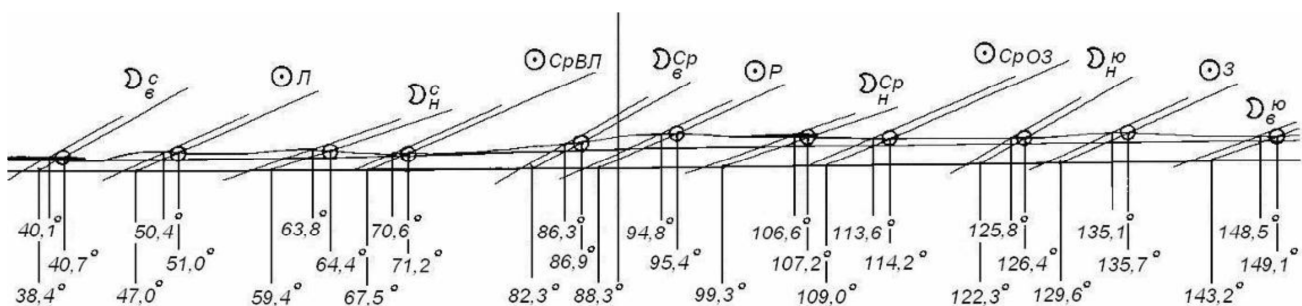


Fig. 6. The axial projection Horizontal-ecliptical coordinates. Offset azimuth sunrise and moon, depending on the height of the horizon line at Kondurovsky mound "with a mustache" (South Ural, Russia) [28, p. 127].

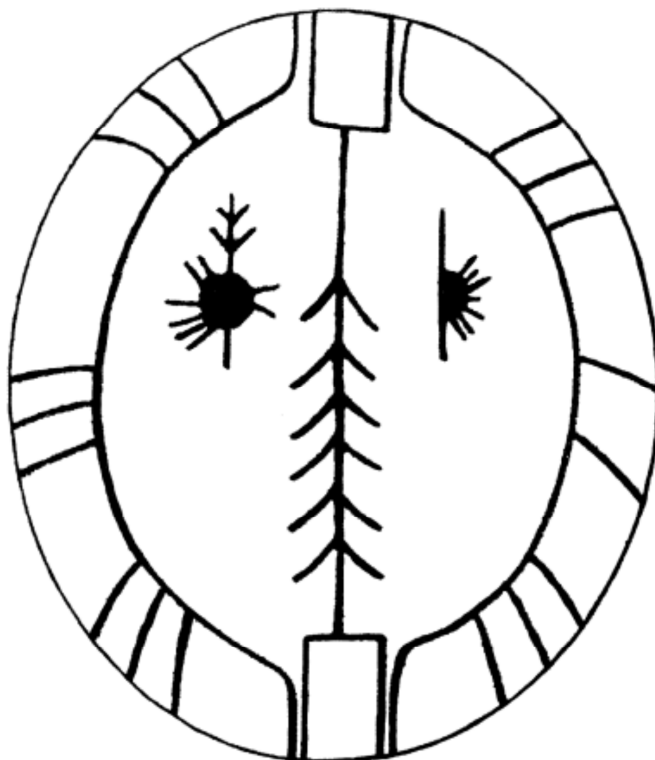


Fig. 7. Polar projection Horizontal-ecliptical plan shaman tambourine Selkup (based on Frank R. [8, Fig. 7; 32, p. 71, Fig. 56].

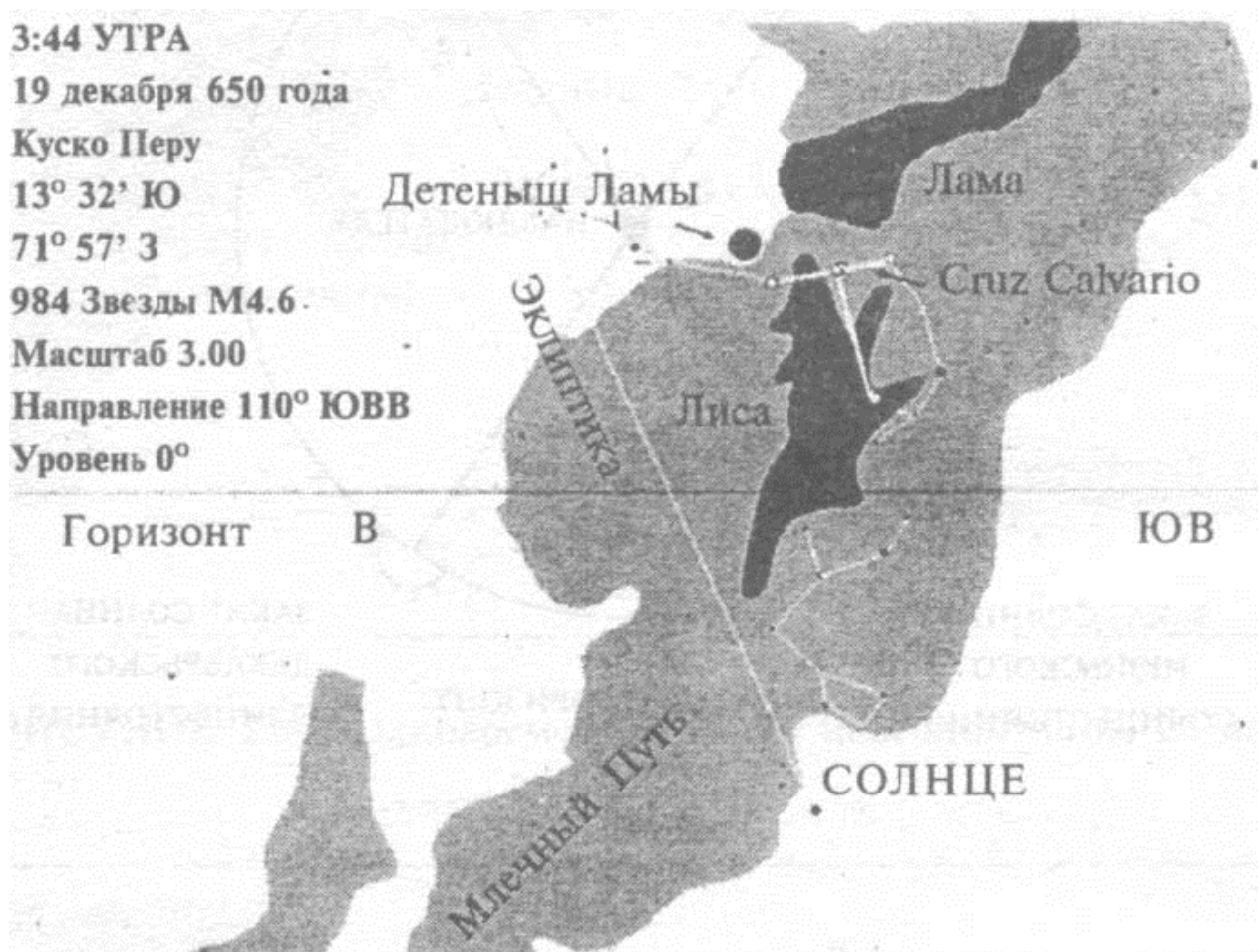


Fig. 8. The axial projection Horizontal -galactical coordinates by observing the clouds of the Milky Way, rising above the horizon [4, Fig. 2. 9a].

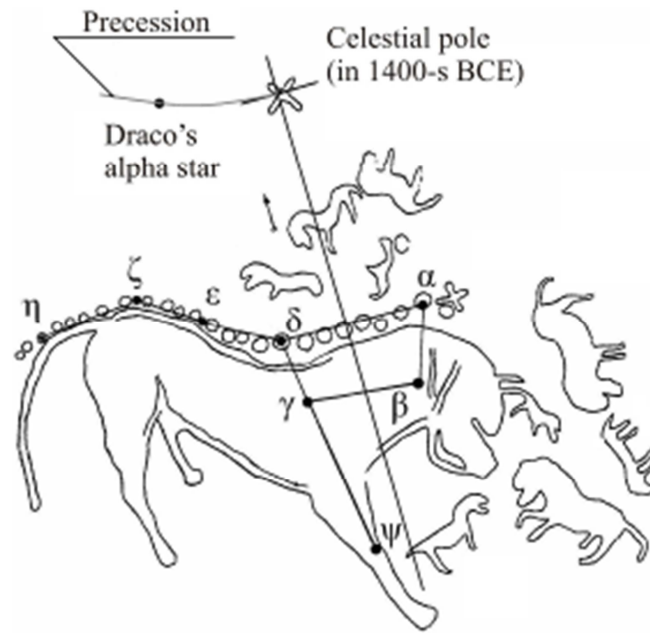


Fig. 9. The polar projection of the Equatorial coordinates of the rotation horse (the constellation Ursa Major) around the pole of the world (based on Ishangali Sagyndyk and author) [26, p. 32; 27, p. 128].

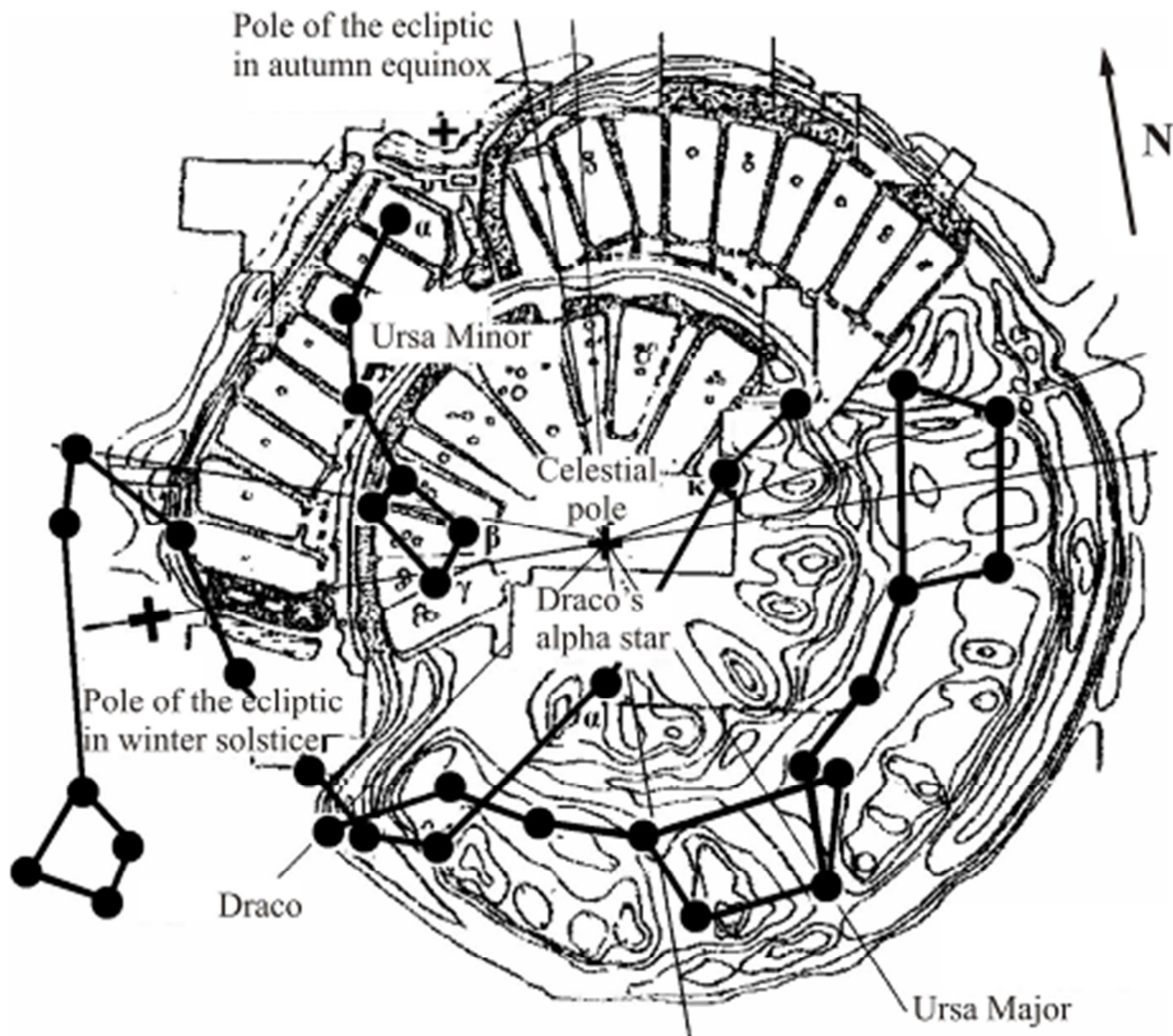


Fig. 10. Polar projection of the equatorial coordinates of the rotation around the poles of the world of the constellations Ursa Major and Ursa Minor (based on GB Zdanovich and author) [35, p. 32; 28, p. 90].

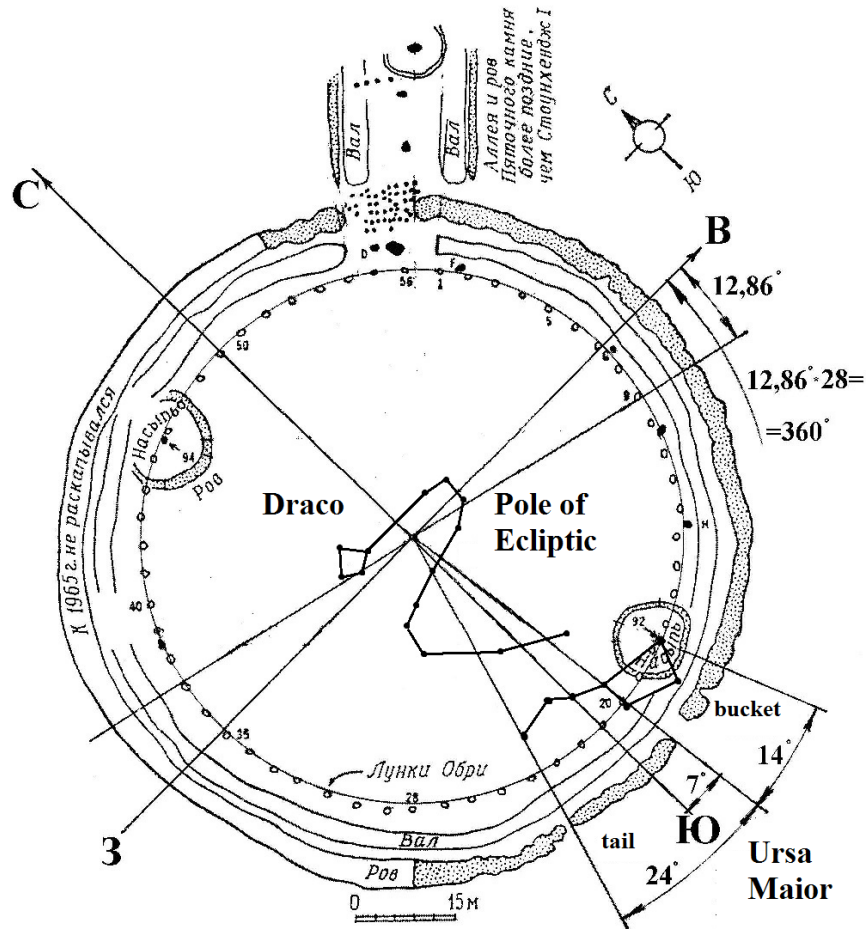


Fig. 11. Stonehenge-I in the 2800's. BC. [1, p. 63; 28, p. 102]. Polar projection of the Ecliptical coordinate - Lunar Calendar.

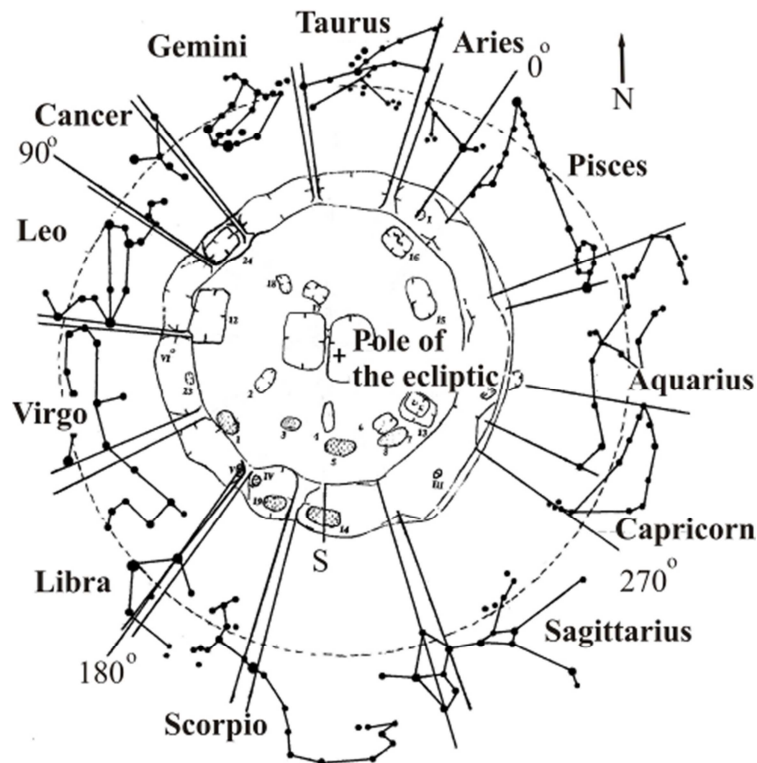


Fig. 12. Polar Ecliptical layout. Two stones in the center show the two poles - the Celestial Pole and Pole of the ecliptic. Regarding the Pole of the ecliptic to calculate the length of 12 trenches, roughly corresponds to the length zodiac sign taken in Western astronomy [28, p. 63].

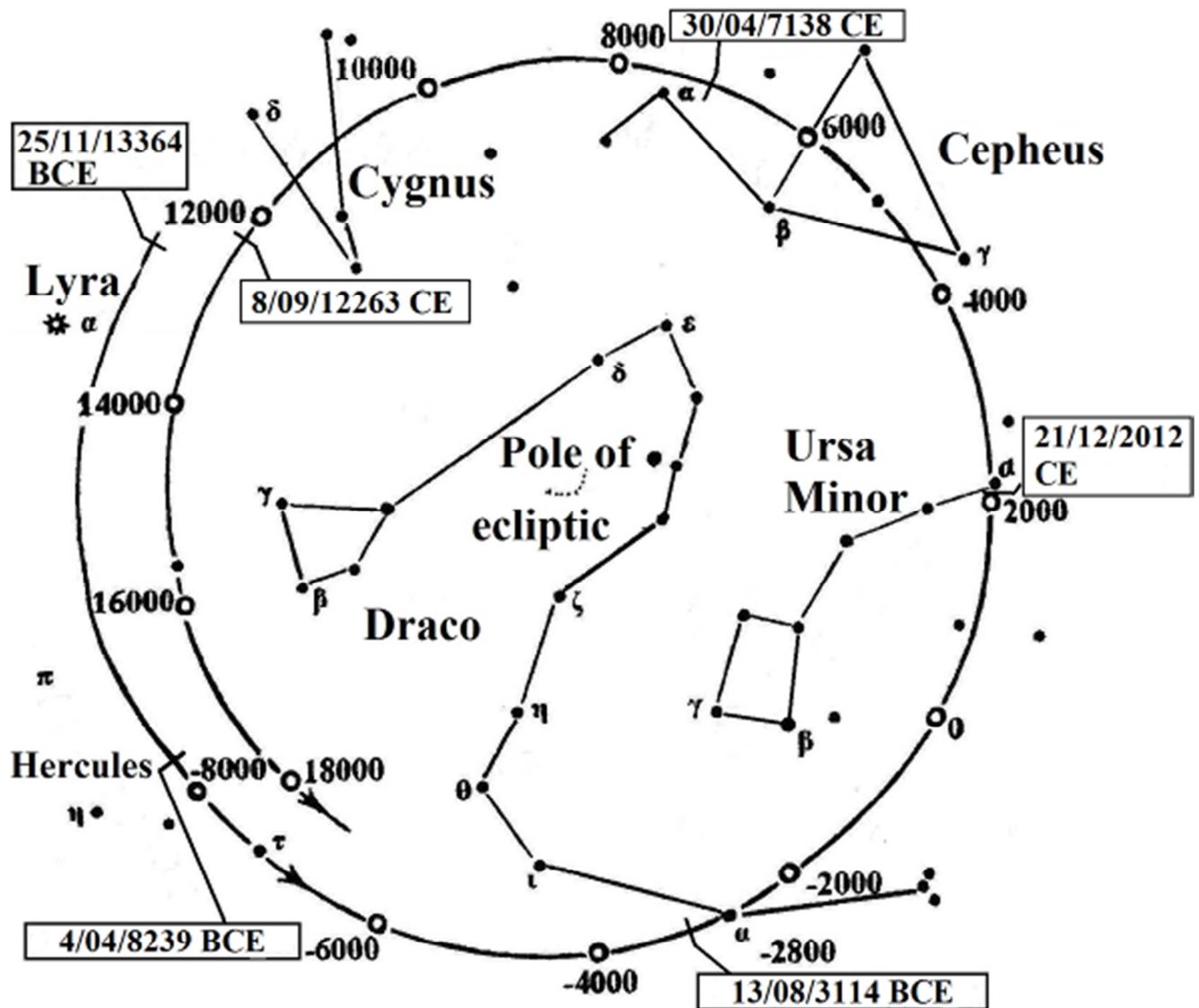


Fig. 13. The Five Ages of creating the Mayan Calendar, respectively, are located along the Precession of the five bright polar star of the northern hemisphere sky. Polar projection of the Ecliptical coordinates [33; 34].

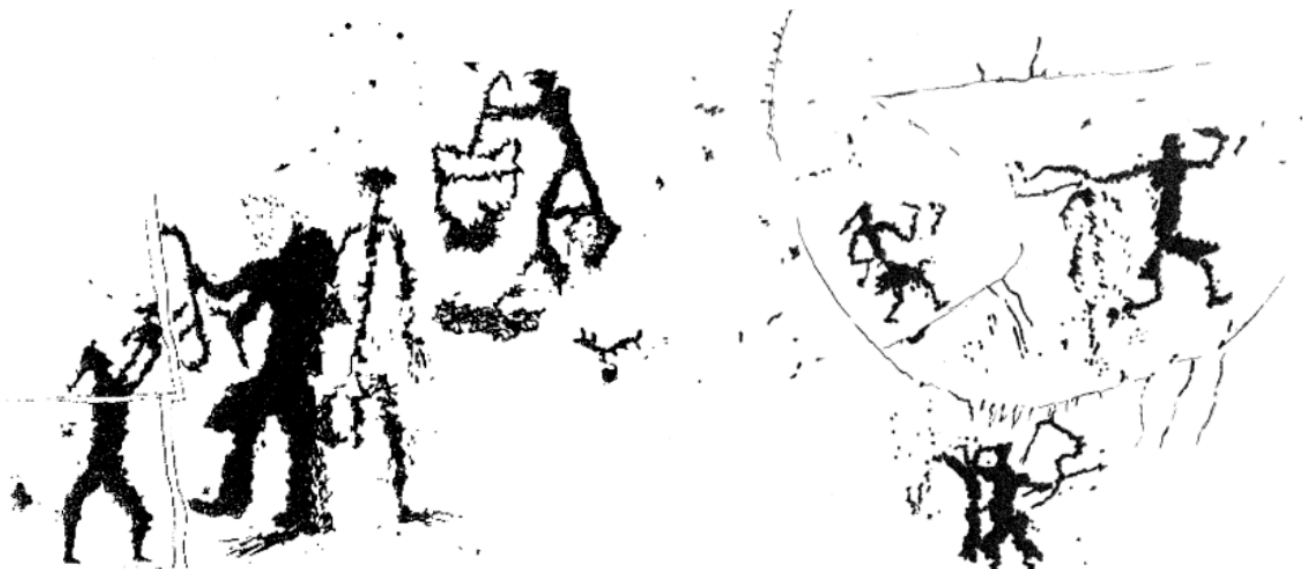


Fig. 14. Astropiktografy with precession in cave paintings in the fourth Chest (Khakassia) [23, p. 220-221, Fig. 3, 4].

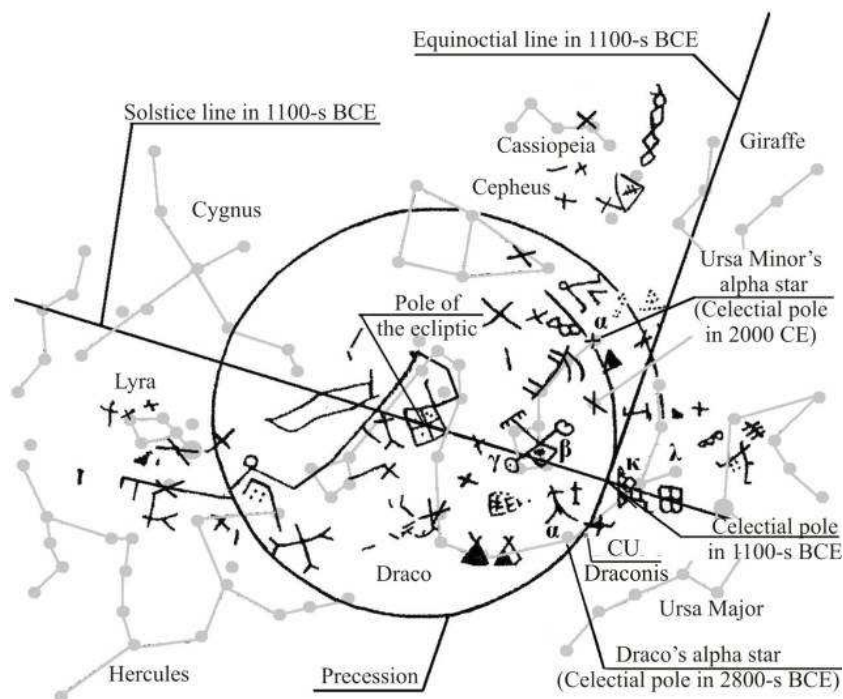


Fig. 15. Icon 'wagon »№7 between the two poles in the form of icons: the "cross in the box" in terms №1 (Pole of the ecliptic) and "cross in the square" №4 (the Celestial pole) correspond to the astronomical situation about 1100 years. BC. [28, p. 134].

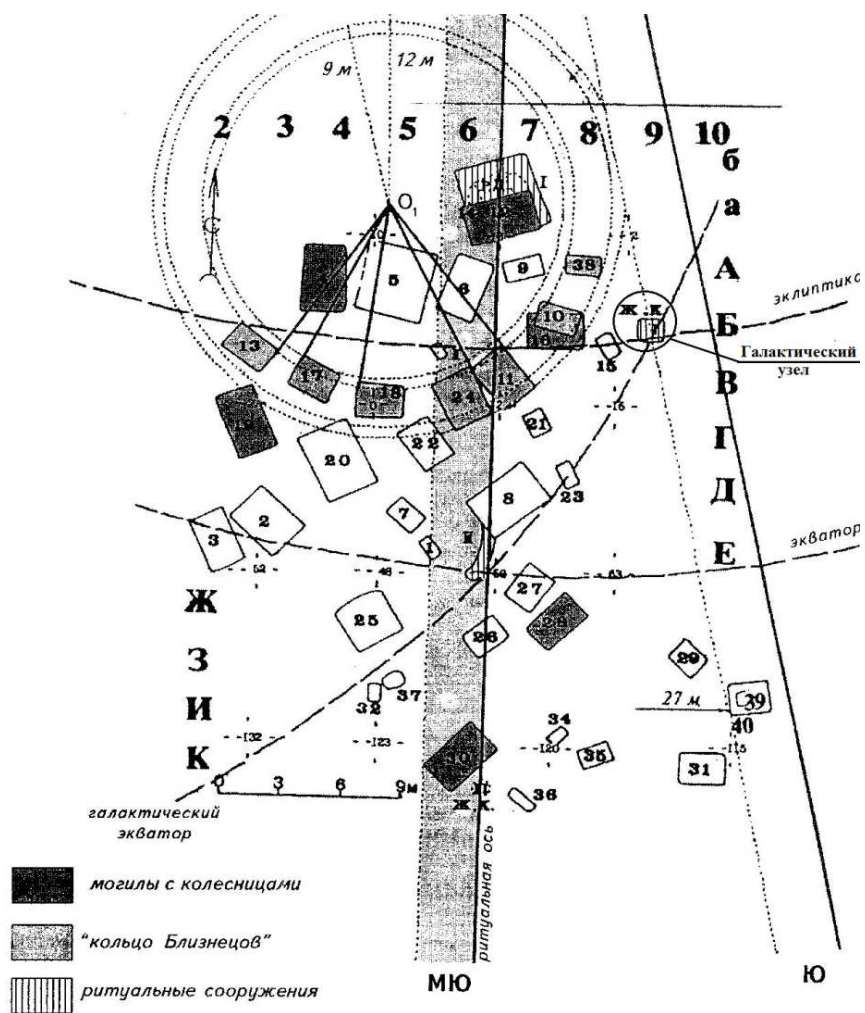
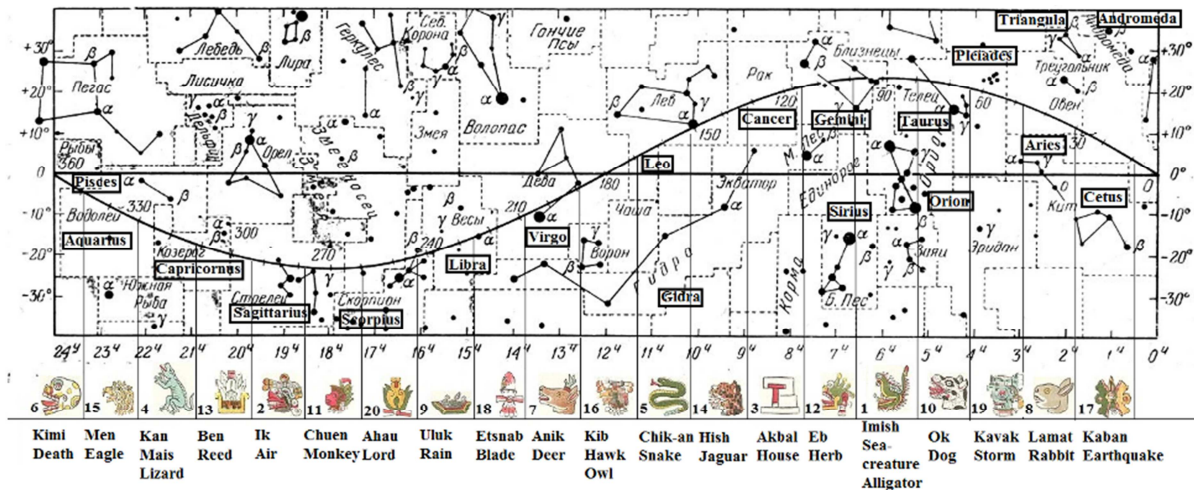


Fig. 16. Horizontal-galactic coordinates Sintashta - I is shown in the LCD Galactic node - the point of intersection of the Milky Way and the Ecliptic [9, p. 49].



Galactical coordinates observed on monuments used for observation of objects of the Milky Way, such as clouds and voids the Milky Way galactic center (at the convergence of three constellations - the Scorpion, Sagittarius and Ophiuchus, and have Ophiuchus there is only a "heel"), two Galactic site at the intersection of the galactic equator and the ecliptic at the intersections of the constellations Taurus - Aries and Scorpio - Sagittarius; Galactic Pole: North Pole Galactic hemisphere is in the constellation Coma Berenices, in the Southern Hemisphere Galactic Pole is located in the constellation Sculptor. An example of a polar projection of the galactic coordinates can serve as a study K. K. Bystrushkina in Sintashta (Russia, Chelyabinsk Region) and his assumption of the projection Galactic node on the sacrificial complex LCD [9, p. 49] (Fig. 16). It is known that the intersection of the ecliptic and the Milky Way have been marked by the Pythagoreans, which suggests that the seeds of souls descending into the human body through one of the Milky Way Galactic nodes [43, p. 184].

4. Conclusions

Most often found on monuments mixed astronomical coordinates, as the perception of the astronomical sky ancient people was complete. But different people and at different times of extracting the center of the different coordinates, depending on the outlook of the local population, despite the fact that the rest of the coordinate system, one way or another, were also present on the monument. Task archaeoastronomy understand the basics of the ancient world studied eras. This will help archaeoastronomical technique and astronomy program. The author uses the program StarCalc. 52.

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