

Rock Art Calendars from Negev Desert, Israel

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The sun, moon and stars were important symbols in early Eastern religions in Egypt and Mesopotamia. Observing the stars was part of every ancient civilization and it included tracking sunrise and sunset, daily changes in the moon, eclipses, planetary positions for the moon and the zodiac stars. Since many astronomical phenomena are cyclical, it was possible to calculate their appearance ahead of time by observations over many years. This led to the creation of a calendar or the heavenly clock, which enabled people to manage their social and agricultural lives and plan in advance special events such as the New Year and other religious ceremonies.

Negev Desert Rock Art proves beyond any doubt that the Moon, Sun, and Venus calendars were utilized long ago for time keeping in this small desert.

This article is an excerpt from the book [Heavenly Art](#), published recently, which deciphers the Negev Desert rock art.

Keywords: Calendar, Moon Calendar, Venus Calendar, Rock Art, Negev Desert, Sun, Moon, Venus, Egypt, Sumer, Babylon, Mesopotamia, Petroglyphs, Sunrise, Sunset, constellation, zodiac, Star-lore.

Introduction

The influence of heavenly bodies is ingrained in nature and every organism is programmed to obey it. The daily, monthly, and seasonal cycles directly affects life on earth. The rhythmic cycles were followed religiously, mainly out of the fear of unknown; knowledge of them became crucial for daily life. Every culture observed and documented the star cycles, including the desert dwellers that inscribed them as rock art and later in writing.

Our concepts of time is derived from the sky; the day is set from the rising and sun setting, the month from the changing moon phases and the year from the

positions in which the sun rises on the horizon, allowing the seasons marking. Each sunrise and season was viewed as a renewed act of creation. Days such as the New Year, the new month, a week and the time of season change all became holy days. The heavens received additional meaning beyond being the world rulers. They also determined time!

Ten thousand years ago, the agricultural revolution swept the world. This change created a need for new social organization. Farming created permanent settlements, villages and later cities and countries. The new complex societies needed coordination, whether for agriculture or worship and thus created the need for a calendar. A calendar could be created by tracking the moon and sun cycle, and of course, selected stars. All human societies eventually "invented" such a calendar to plan their ritual and agricultural activities. The first calendar was established by following the lunar cycle. Later in the Bronze Age, the calendar was based on the solar cycle. This shift needed to adapt the life cycle on earth to the natural sun rhythm.

Today when we look at the round clock face, we forget that it is based on a sky circle. The moon was the little hand in the ancient clock that measured days and months, the sun was the big hand and indexed hours and seasons. Known stars like those in the zodiac and others were used to define months and years. The cyclical knowledge of stars like Sirius and Venus allowed the lunar calendar use that was calibrated by the known cycle of these stars to match the seasons.

Man has always tried to define and measure time. Although the concept of time is abstract, it is always marching forward. The "arrow" of time is forward motion that causes all the changes in the world. Time is the mysterious hidden force in nature that ticks within each organism giving it the power of life. Time governs the world's conduct and therefore became the source of many myths. Many rock art motifs show the attempt to mark time by the invention of various calendars or by engraving the season's constellation.

Calendars in Babylonia

The ancient Babylonian calendar began as an empirical lunar calendar. Each year contained 12 months with alternating months of 29 and 30 days. The Babylonian astronomer announced the beginning of the month based on the new moon. The moon also set the beginning of the year on the vernal equinox. To create a solar calendar from the lunar calendar, three months, of 30 days each, were added during an eight-year cycle.

Babylonian texts explain the methods of intercalation. This is done by adding a month three times in an eight-year cycle. The month is added before the autumnal equinox or the vernal equinox as decided by the ruler. An example from Babylonia is an order given by Hammurabi, 18th century BC, "*As the year is ending too soon, let the month following Ululu be called the second Ululu, but let the taxes due in Babylon in Tashritu be paid in the second Ululu*".

The sequence of adding a month was as follows (months added in bold): 1, **2**, 3, 4, **5**, 6, 7, **8**, the total numbers of days in this cycle are 2,922. The Solar and Lunar cycles, of Venus' eight years cycle, equates as follows: $(354 \times 8 + 3 \times 30 = 8 \times 365.25)$. The left side of the equation is the total number of lunar days and the right side is the total number of solar days in eight years.

Calendars in Egypt

In Egypt there were three calendars; lunar, solar and a civil calendar. Annually there were 12 months of 30 days each and at the end of each year, five days were added which were celebrated as holidays for Egyptian gods, they were called "days of the year." To match the solar year, an extra day was added every four years. The oldest of the three calendars is one that was used for setting dates and times for sacrifices, festivals and holidays.

In Egypt, the star Sirius was the most important of the stars. He shone in the sky most summer months and the Egyptians thought that his bright light, which could be seen at sunrise, was the cause of the excessive summer heat. His

appearance (circa July 19 today) heralded the beginning of the New Year. The heliacal rising of Sirius on the eastern horizon announced the Nile River flooding caused by the tropical summer rains and snow melting from the Ethiopian Mountains.

Sirius was identified with the goddess Isis and was called the “star of Isis”. The temple of Isis in Dendera, in Egypt, specially designed to point to the exact spot where Sirius rises over the horizon. The writing in the Temple reads: *"Her Majesty, resplendent on the temple on New Year and her light mixes with the light of her father's in the horizon."*

The first ten days of Sirius' appearances are called the “Heavenly Sunrise”. A tablet from the reign of King Djer (c. 3000 BC) was conjectured by early Egyptologists to indicate that the Egyptians had already established a link between the heliacal rising of Sirius and the year beginning.

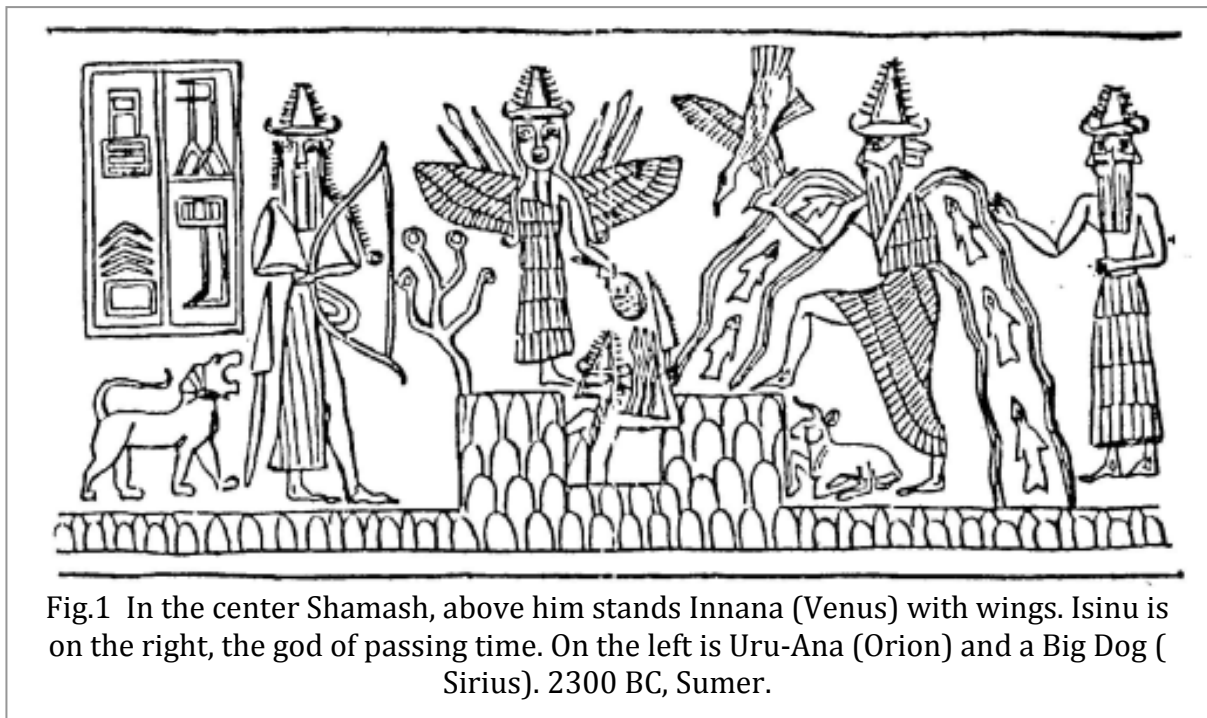
The Jewish calendar is lunisolar and is based on 12 lunar months of 29 days, alternating with 30 days. It is derived from the Mesopotamian calendar. The New Year began at the first new Moon after the autumnal equinox. The day began at sunset and the high priest in Jerusalem, on first sighting the new crescent, announced the new month. The decision to intercalate a 13th month depended on whether the barley harvest came in before the celebration of Passover in the spring so that a proper offering of grain could be made to God on the day after the holiday.

Planet Venus Calendar

Closely behind the sun and the moon of celestial glory stands the planet Venus that symbolizes the Great Goddess, known as Ishtar. The celestial collection from Assyria named *Venus tablet of Ammisaduq*, dated to 1700BC, illustrates her importance. Venus is the harmonizer and many blessings attributed to her: *"You make the heavens and the earth shake and shout. Great princess, who will tell you words of serving. You are like lightning, scattering bits of fire on earth."* Venus sky travel was recorded in detail: *"... Venus*

disappeared again in the West – the heart of the country is happy. In Nissan, on the twenty-seventh, Venus disappeared in the west ... The country has riots, the harvest was very successful."

The famous cylinder seal called the "Seal of Ada" (Fig. 1) shows the prominent gods in Sumer in the celebration of New Year. In the center of the seal, the sunrises between the mountains, are the gates of the sky.



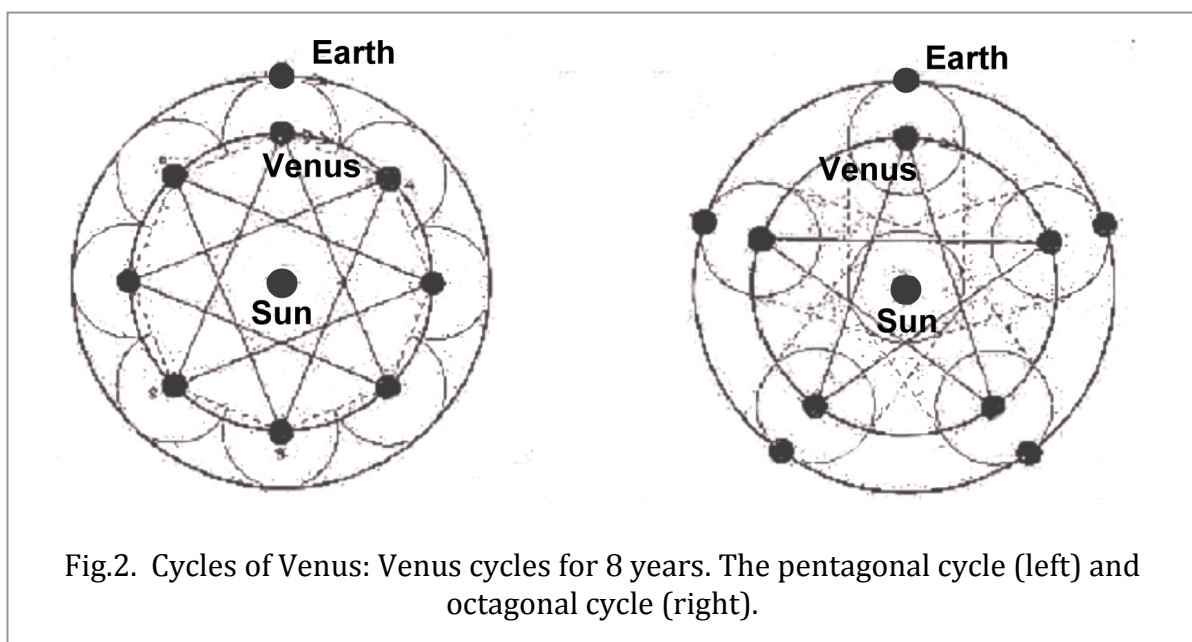
Shamash, the sun god emerges from the mountains with a drawn sword, which is shining like the sun. He cuts the sky and allows the sun to break into the world. Above him stands Venus, she controls the whole scene. With her hand, she directs the moment when the sun rises. The appearance of Venus center stage shows her prominence.

At the seal left edge stands Uru-Anna (Orion in Greek mythology), symbolizing the winter sky. He is about to resign and disappear from the night sky. At the right edge stands Isinu, the god of time passage. He has two faces, looking both ways, it symbolizing the end and the beginning of New Year. In Roman mythology, the same hero is named Janus. He is the deity of beginnings and changes and presides over thresholds and gateways. (The month of January

is named after him since he symbolizes the transition to New Year or the end and the beginning).

This cylinder seal apparently depicts an important event, such as a New Year, called "Year of the Golden Throne" which was celebrated every eight years. It marks the completion of Venus cycle of eight years. The ancient's awaited her arrival with great anticipation and composed greetings for her return: *"To that which appears in the sky I want to send a greeting to the largest queen of the sky, Innana, I want to address"*. Already in the second millennium BC, the Babylonians deciphered Venus cycle. This knowledge allowed them to match the differences between the solar and lunar year. Thus, Venus became the one to restore harmony to the world.

The Babylonians discovered, in 1500 BC, that Venus has two cycles that can be used to set time. The first Venus cycle, charted from its travel in the sky, creates an octagon and the second cycle creates a pentagon.



The octagonal cycle occurs every eight years when Venus completes her long journey around the sun and returns to the same point in the sky where the cycle began. In the pentagon cycle the Earth, Venus, and the Sun are in line five times during the eight-year cycle. The distance between pentacle vertices is 584 days.

Both cycles have become the symbols, in a shape of a star, of Venus around the world. Venus continued to be an important star in Greek mythology, where it was associated with Aphrodite, the goddess of love and beauty. Her importance continues today in the cycle of Olympic Games, every four years, which is half the Venus cycle. Venus' cycle was utilized to create a calendar in the Negev Desert as seen in the records of rock art.

Moon Calendars in Negev Desert Rock Art

The Moon is the most recognizable heavenly object. Its size, grandeur and the proximity to man made him undisputedly the most important god and there is evidence that it was tracked 20,000 years ago, long before the agricultural revolution. Moon observation played an important role in the measurement of time and as crude calendars. In (Fig.125) we see an example of an ancient lunar calendar; it is a painting from the Lascaux Caves dated 15,000 BC.

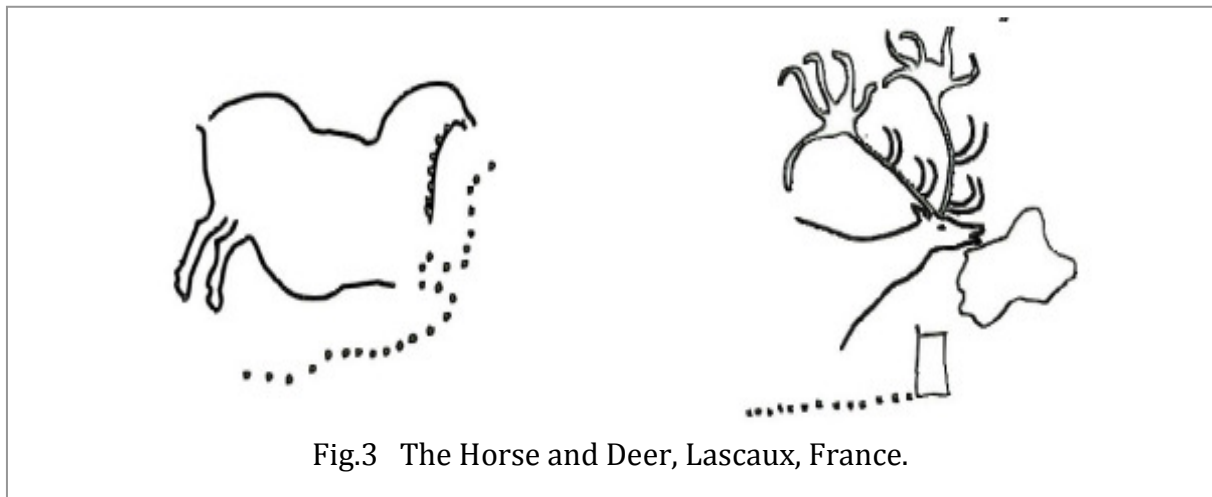


Fig.3 The Horse and Deer, Lascaux, France.

The twenty-eight dots, painted under the pregnant four-legged animal, indicate the count of lunar cycle. The pregnancy symbolizes renewal, the same quality inherent in the moon cycle. Under the deer, there is a square with thirteen dots, representing the number of crescent moon nights until full Moon, and is a shorthand notation for counting the lunar cycle.

The count proceeded in both directions forming twenty-six days, the number of days the Moon appears in the sky. The square is a "rest station" that probably marks the moonless days. Calendars such as this one were used in holy places that are not easily accessible and served as a reference for learning about the calendar during the rituals. This way the worshippers learned about the Moon behavior and the method of counting the monthly cycle. Fig. 4 is a Negev rock art that resembles a centipede, and is another creative way of expressing the lunar calendar. This strange

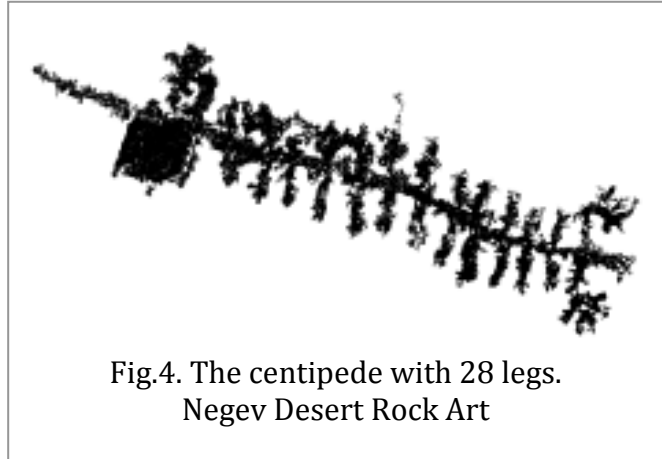


Fig.4. The centipede with 28 legs.
Negev Desert Rock Art

looking creature has twenty-eight legs with a square at the end. The centipede shape mimics the lunar cycle with the square, which is Moonless days station. The counting principle is similar to Lascaux Cave deer. The space between its legs is large enough to place small stones to mark the days passed. By this method, a lunar cycle is completed when all the legs are covered with stones.

Fig.5 is a Babylonian cylinder seal showing the Moon god Sin sitting on a throne. Sin is described as an old man full of wisdom who knows the secrets of time. His outstretched hand is greeting the Moon, its symbol, which shines above. Sin's crescent form is a recurring motif in numerous Sumerian cylinder seals.



Fig.5 Sin Moon god

Fig.6 is a Negev rock art image showing a similar figure in the Babylon cylinder seal, a seated man on a throne. There are many similarities between the characters in the two drawings. For example, the greeting form, the chair structure, the body position with the outstretched hand, they even wear the same shaped hat. A large Moon is engraved under the chair connecting the figure with its symbol. The two scenes

similarities and the fact that there are no chairs in the desert suggest that this rock art has been copied from Mesopotamian culture. The vertical lines, fourteen lines, at the top indicate the half Moon cycle count. The lines on the right end form a semicircle around a natural rock depression in the shape of a crescent. The count proceeds with putting a stone in both directions for each day that passes. In early times, astronomical observation and agriculture fused together and season marking days became the holy days prescribed by the calendar. These days were particularly important since they marked the dispersed tribe's pilgrimage days for rituals, worship and social gathering – they are the precursors of our modern holidays.

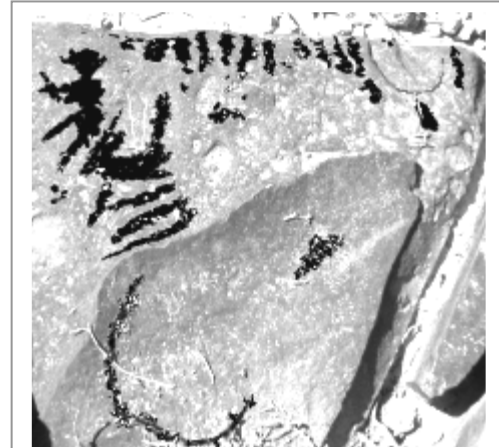


Fig.6 The Moon calendar, Negev Desert Rock Art.

Venus Calendars in Negev Desert Rock Art

Archaeological discoveries provide evidence that calendars were used in the ancient world 4,000 years ago. The entire ancient Near East kingdoms and city-states adopted the same principle for their calendar, based on the lunar cycle. The lunar calendar does not follow the seasons since there are only 29.5 days in a lunar month, so that the total days in a year, of 12 lunar months, are 354 compared with the solar year of 365.25 days. This difference of eleven days means that the lunar and solar cycle is inherently mismatched. In Mesopotamia, this problem was solved by interlacing months and adopting accurate stellar references for checking that the lunar and solar calendar are synchronized with the cycles.

The Venus cycle played an important role in verifying the match between the Sun and Moon cycles, which is why, Venus was elevated to the Moon and Sun ranks. The planet Venus (Innana, Ishtar) was already venerated in the earliest historical period in Mesopotamia. The Late Babylonian version of *The*

Exaltation of Inanna, describes Inanna with much adoration. It is equal to the mighty Moon and Sun gods: “*Oh divine mistress, may you be the one that shines over them, that they call you ‘divine source of all life’, at their sides (the Sun and the Moon), in your dominant position, may you gloriously accomplish your (celestial) crossing, even during the time that Sin and Utu are awake...* ”.

The hidden meaning of this hymn is revealed when we match its lyrical content to its calendrical association. Venus is elevated above the Sun and the Moon when it crosses them. It is apparent from the Negev rock art that the Venus cycle was recognized and that it was used in a calendar for calibrating the lunar and solar cycles.

Fig. 7 is a rock art with four main themes combined together; they form an ingenious Venus calendar. The four objects in the drawing are, the plant with eight branches, a wheel with twelve cavities, a foot symbol on the right, and an open square between the foot and the plant. Together they form a simple and effective Venus cycle calendar of 8 years, as follows: The New Year begins in the spring, in the fourth month, where the wheel touches the plant. The months are counted by filling each cavity in the wheel with a stone, counter clockwise, for each lunar month. Once the wheel is filled with twelve stones, it marks the transition of a

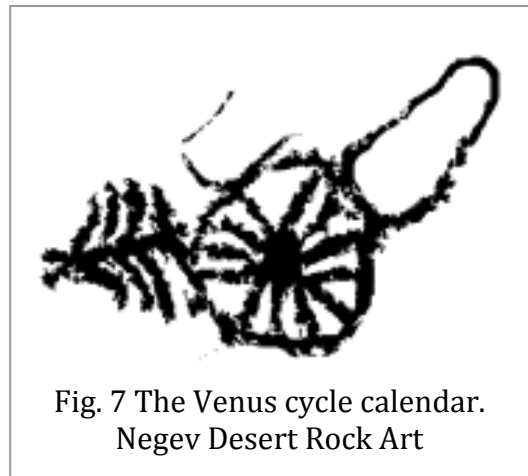


Fig. 7 The Venus cycle calendar.
Negev Desert Rock Art

lunar year and then a stones are removed from the wheel and one stone is added to the plant branches. A new count of twelve months begins again, as described above, until all the eight plant branches are filled. Every three years there is a leap year and an additional month of 30 days is added.

What looks like a foot, actually represents the heavenly gate through which the additional month enter the year, as we shall see later, (see Heavenly Gate). To mark the addition of leap month a stone is placed on one of the open square

three lines, a total of three times in an eight-year cycle. The solar and lunar count is synchronized when all the branches are filled with stones. The cycle of eight years ends, in springtime, when Venus returns to the same point in the sky where it began its long journey.

Another rock art Fig.8 depicts the Venus cycle in a more symbolic way. The rock art motifs from right to left are a crescent Moon, eight vertical dots, each the size of a small stone, a standing woman with outstretched arms and wide hips (a symbol of a woman), a Sun (the filled in circle) and three lines at the top left. The years are counted by adding a stone on the vertical line, one for every lunar year. Every three years, a month of thirty days is added by laying a stone as a reminder on one of the three lines on left. The Moon and Sun are on both counting line sides, pictorially indicating the lunar and solar cycles "matching". When the line is full with stones, it marks the passage of eight years and the lunar and solar cycles are matched when Venus returns home to the same

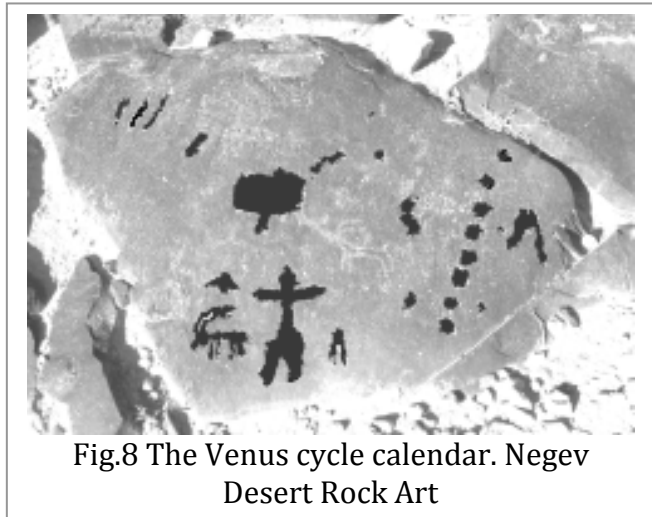


Fig.8 The Venus cycle calendar. Negev Desert Rock Art

point in the sky. In Eastern myths, the prevalent idea was that when a goddess completes her mission she already bears within her the "new god". The small ibex next to Venus probably signifies the start of a new cycle. The ibex is carrying off the new young Venus, which is represented by the star between its horns.

Conclusion

Man always needed to follow the year cycle for agriculture and to understand the workings of the invisible force that governed his life. Time is a force that moves forward while it is changing life. Without knowledge of time there is no before and no after, everything remains motionless in the same place.

Many rock art images indicate the tracking of time in the Negev Desert. Time set their ritual and pilgrimage time to sacred gods dwelling places, such as caves, mountain peaks, springs, sacred trees. The pilgrimage served as a bridge between the people and their gods.

The absolute dependence of the desert inhabitants on nature elements forced them to rely "religiously" on the mercy of higher powers. They had to obey and respect them daily, monthly, and seasonally and for this they needed a clock and calendar!

REFERENCES

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