

## THE ORIENTATION OF THE DEAD AT URZICENI NECROPOLIS. AN ARCHAEOASTRONOMICAL APPROACH

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**Rezumat.** În vama de la Urziceni (România–Ungaria), jud. Satu Mare, s-a descoperit, în 2003, o necropolă eneolitică (circa 4200 îHr, 79 de morminte cercetate până în prezent, cultura Bodrogkeresztúr) cu un inventar spectaculos: numeroase piese ceramice, piese din cupru (ornamente și arme), ornamente din scoica *Spondylus*, vârfuri de săgeți, lame și chiar câteva piese de aur. Studiem orientarea scheletelor din necropola Urziceni din punct de vedere arheoastronomic și analizăm scheletele care cad în afara arcului solar.

**Cuvinte cheie:** arheoastronomie, orientare, Urziceni, necropolă, eneolitic.

### 1. Introduction

It is very interesting that an astronomer – who studies the height –, and an archaeologist – who explores the depth – are able to work together. The “connection” between depth and height could be the orientation and alignments connecting earthly problems with heavenly solutions.

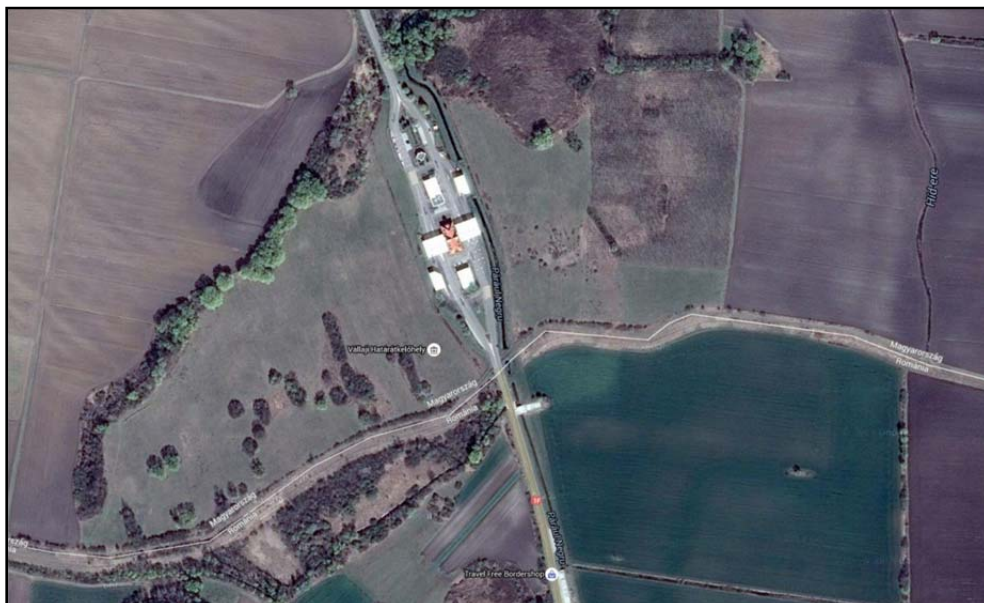
Very often an alignment study can broaden the excavation’s horizon, helping to understand better the positions of skeletons and graves in a Eneolithic cemetery. The Eneolithic people could have been oriented the graves and the deceased towards the direction of the (rising or setting) Sun in the day of the burial (solar cult), or another important direction (other customs).

The Sun describes apparently on a horizon during a year an arc (so-called *solar arc*). If somebody is orientated towards the direction of the Sun, then this orientation must be inside of the solar arc, which has its limits at solstices, and the middle at equinoxes. If the majority of the graves are orientated inside the solar arc, then we can conclude, that this Eneolithic population practiced the solar cult.

Our research targets a recently discovered necropolis, the Urziceni-*Vamă* (Csanálos-*Határátkelő*) Necropolis, near the Romanian–Hungarian border (**Fig. 1**).

Eneolithic site is still under archaeological research. The data about graves and skeletons used in this article are based on the archaeological excavations which took place between 2003 and 2015. Measuring the azimuths of skeletons and calculating the position, according to the solar arc, for the dead from the Eneolithic necropolis of Urziceni, we found that 97% of skeletons are inside the solar arc. We analyzed also the distribution of skeletons in the cemetery according to age, sex and crouched positions.

We found, that the Eneolithic communities from Urziceni-*Vamă* practiced the solar cult, and have the same belief as the nearby communities discovered in Bodrogkeresztúr culture<sup>1</sup>.



**Fig. 1. Urziceni Necropolis (Google Earth).**

## **2. Urziceni-*Vamă* necropolis**

The Eneolithic necropolis from Urziceni was discovered in 2003 as a result of archaeological research due to the construction of the border point at Urziceni. We are dealing with the largest Eneolithic necropolis belonging to Bodrogkeresztúr culture in Romania. The Urziceni necropolis is dated between 4300–4000 BC.

The settlement Urziceni-*Vamă*, situated in the Carei Plain, is on the Romanian-Hungarian border. Carei, the nearest Romanian town, is 7 km far away.

The territory of Urziceni was intensely inhabited along history, like other localities on the margins of the Ecedea Swamp. The lands near the Swamp and the valley that is flowing into it were favorable for agriculture even with primitive tools, due to its soil moisture and its sandy composition. Wetlands in the valleys between the sand dunes were suitable for husbandry. The nearby forest provided raw material for buildings.

The oldest traces of habitation on Urziceni's territory date from the Early Neolithic. Cultivating plants and the husbandry determined the prehistoric communities to become sedentary. Pottery was invented in order to prepare the cereals, tools, decorations were manufactured etc.

Prehistoric communities preferred to set their dwellings alongside rivers, on heights with the aspects of small hills or banks, dominating the surroundings. These

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<sup>1</sup> Luca, 1999; Maxim, 1999; Csillik *et alii*, 2004.

island-like points were safe places against floods. In this sense, on the territory of Satu Mare County, the edge of the Ecedea Swamp, situated on the line of Berveni, Cămin, Căpleni, Domănești, Moftinu Mare, Ghilvaci, Doba, Boghiș and continuing beyond the border, is the richest in Neolithic settlements.

The Eneolithic Urziceni cemetery (79 skeletons in 2015) is characterized by a spectacular inventory, with numerous pottery, pieces of copper (adornments and weapons), *Spondylus* shell ornaments, lithic pieces (arrowheads, blades).



**Fig. 2. Skeletons in necropolis (Graves M29 and M33).**

The religious belief of the Eneolithic period is reflected through special finds<sup>2</sup>. The burials are mostly inhumations, the body being laid in crouching position (**Fig. 2**). This position of the body is interpreted in some practices as an attempt to prevent the dead to come back among the living (“foetus” position). The whole rite represents the rebirth to the after-life. The body laid on the left or right side, along the East–West axe, the head facing East or West. It seems that the side in which the body laid is determined by the sex, women were laid on the left side, and men on the right side. The differences between sexes can be remarked in the inventory of the graves. Women had 6–7 vessels put around the body, and often on the hips area strings of shell beads were laid, probably used for decorating the clothes (**Fig. 3**).



**Fig. 3. Decorative shell beads.**

<sup>2</sup> Comșa, 1987.

Men graves contain only few vessels, put near the legs, and the inventory was completed with stone or copper tools, like arrow points, knives, rasper and borers.

The pottery was well fired, its color is from dark brown to red-grey (**Fig. 4**). Some pieces were decorated with zig-zag lines, meandric ornament<sup>3</sup>.

The forms: cylindrical, spherical sides large and medium pots with a high, narrowed neck; conical and frequently deep bowls, small, spherical cups with a narrowed neck; tulip shaped vessel on tall cylindrical and bell shaped pedestal; amphora like pots with high, cylindrical neck.

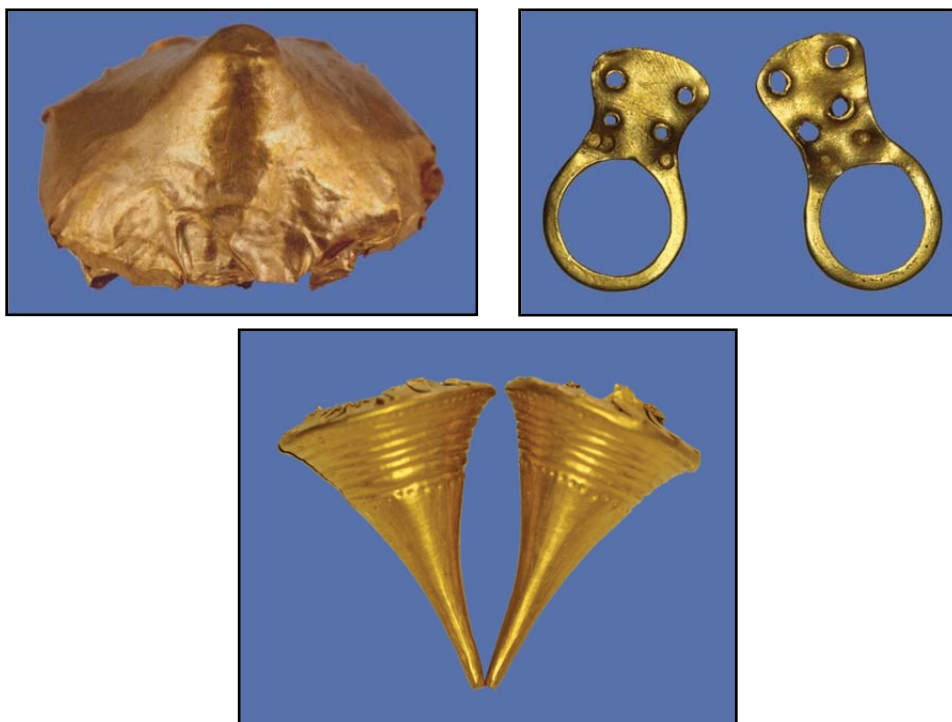


**Fig. 4. Pottery from the Eneolithic necropolis of Urziceni-Vamă.**

The graveyards were placed, in low swampy places or on small heights, protected from floods. The body was buried about 50 cm in depth. Axes, knives are present in the Urziceni-Vamă necropolis. The burials contain also neddles, borers, ornaments and beads made of copper. The use of gold at this time is represented by a conical-shaped hair-ornament found in M29, made by pounding the thin, golden plate (**Fig. 5**). Other interesting graves, which have inside them gold pieces are M41, M63. Six pieces of gold discovered in this necropolis were near the head zone and corresponds with hair and head ornaments<sup>4</sup>.

<sup>3</sup> Gindele *et alii*, 2014.

<sup>4</sup> Virag, 2004; *Idem*, 2007.



**Fig. 5. Golden adornments. 5/1. M 29 grave<sup>5</sup> (2005); 5/2. M 63 grave<sup>6</sup> (2014); 5/3. M 41 grave<sup>7</sup> (2014).**

### **3. The orientation study**

Urziceni-*Vamă* Necropolis' geographical coordinates are latitude 47°74' N, longitude 23°39' E, and altitude 123 m. Knowing these data, and using our program written in Matlab, which takes into account the obliquity of the ecliptic<sup>8</sup>, we calculated, in azimuths measured from North, the solar arc parameters: at rising (summer solstice - 52°, winter solstice - 128°) and at setting (summer solstice - 232°, winter solstice - 308°). Now, we can see the solar arc (**Fig. 6**), and using the data from Urziceni cemetery, especially the orientation of skeletons, we can determine which skeletons are orientated inside or outside the solar arc<sup>9</sup>.

<sup>5</sup> Gold adornment, discovered near the head. The ornament have a conic form made from thin gold plate (diameter = 21 mm, height = 8 mm, weight = 0.533 g.)

<sup>6</sup> Golden adornments. The objects have annular body, with a central orifice, with a trapezoidal extension, with four perforations slightly irregular, made with a punch through hammering. Between perforations and the annular body are visible punch traces from other trials of perforating the pieces

<sup>7</sup> Golden adornments. The objects have conical shape, bent in right angle at the base through wrinkling, made through hammering from a golden leaf. They are decorated with six striations flanked by bands of rows of dots, made through hammering from outside towards inside.

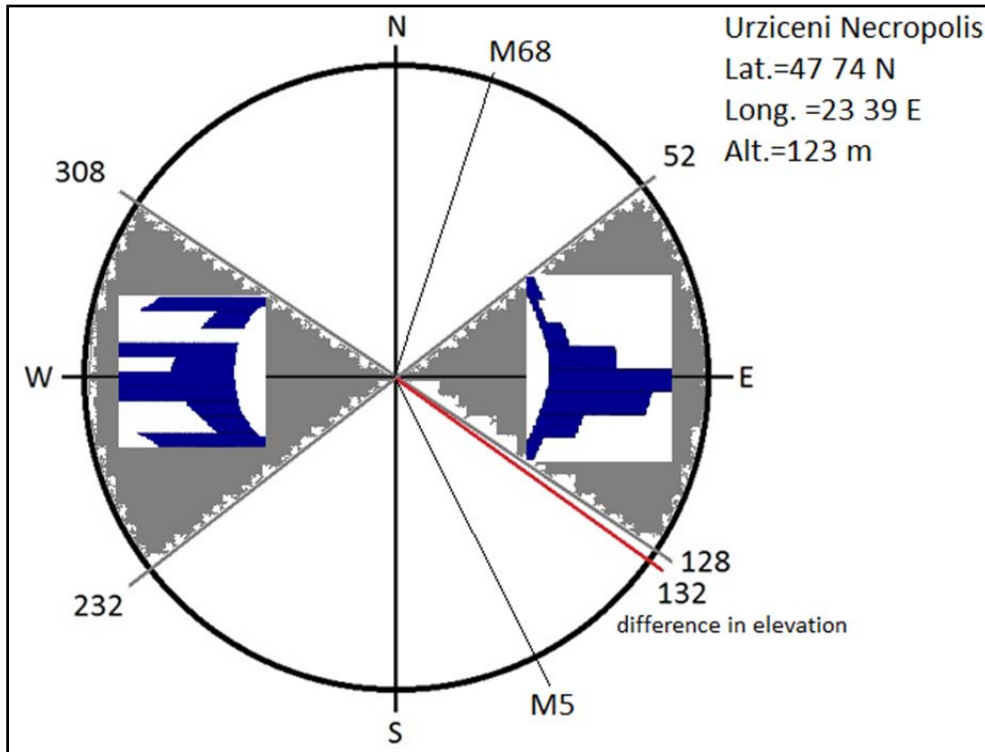
<sup>8</sup> Wittmann, 1979.

<sup>9</sup> Szücs-Csilli *et alii*, 2010; Szücs-Csillik, Comşa, 2012.



We found that 97,26% of skeletons are inside the solar arc, just graves M5 and M68 fall outside the solar arc. In grave M68 is an old man (40–59 years old, crouched position on left side, with 2 pots) with handicap, a lame man, and in grave M5 is an adolescent (18–20 year old, crouched position on left side, with 4 pots).

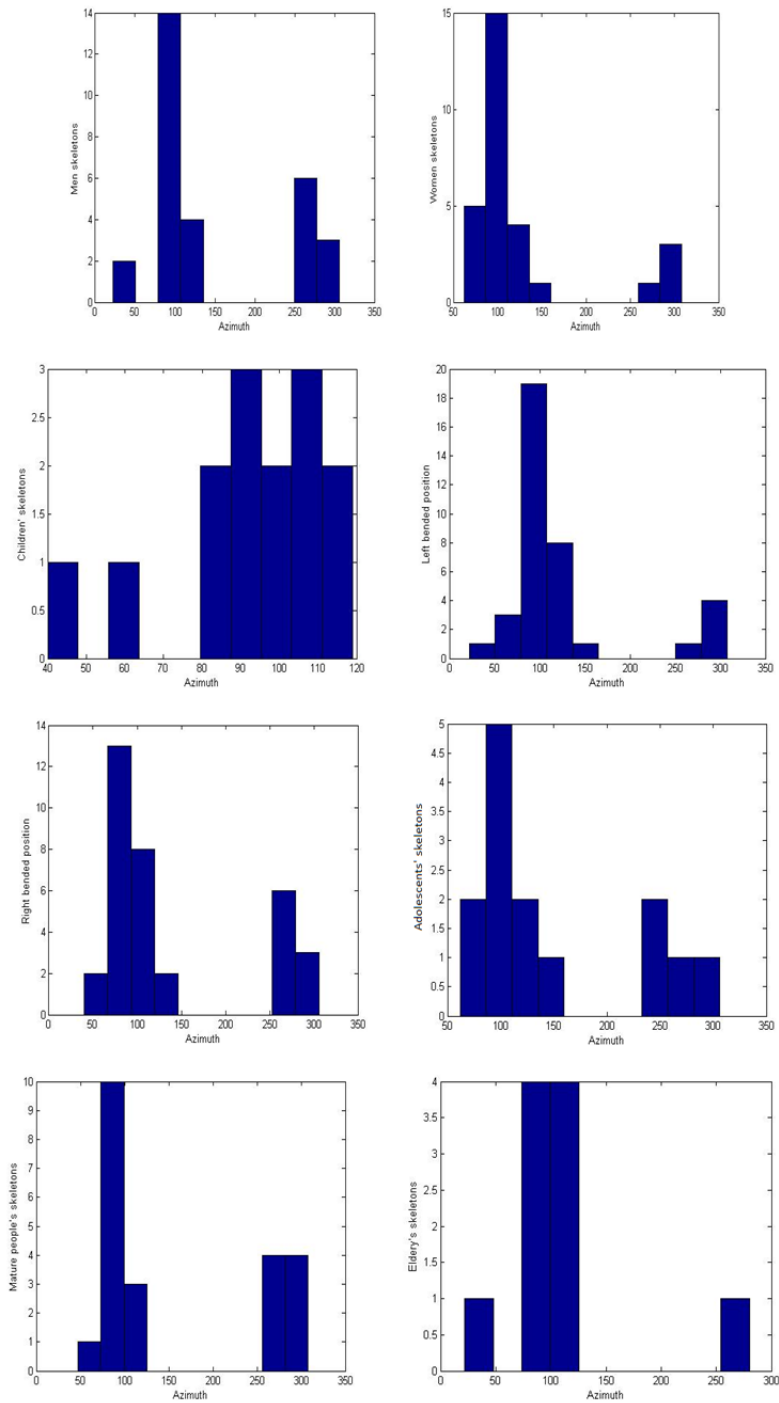
We studied statistically from the orientation point of view the skeletons of men, women, children (infans–14 year olds), adolescent (15–25 year olds), mature (26–45 year olds), elderly (46–60 year olds), left and right crouched skeletons (**Fig. 7**).



**Fig. 6. The distribution of skeletons inside the solar arc and the position of the two skeletons outside the solar arc.**

We found that, of 72 skeletons with established orientation:

- 80.55% are aligned towards East and 19.45% towards West;
- 6.21% female skeletons are orientated towards East and 13.49% towards West;
- 68.96% male skeletons are aligned towards East and 31.04% towards West;
- all children skeletons are aligned towards East;
- 71.42% of adolescent skeletons are orientated towards East and 28.58% towards West;
- 63.63% mature skeletons are orientated towards East and 36.37% towards West;
- 90% old are aligned towards East and only 10% towards West;
- 86.48% left crouched dead are aligned towards East and 13.52% towards West; and
- 73.52% right crouched dead to-wards East and 26.48% towards West.



**Fig. 7. Statistics from the orientation point of view.**

#### 4. Conclusions

Many cultures have locations in which graves are usually grouped together in a plot of land (cemetery or graveyard), and burials are arranged by their religions. Our investigation shows that people paid attention to the burials alignments. Our statistics shows clearly that the graves and the skeletons from Urziceni necropolis are aligned East–West. So, we can conclude, that the Eneolithic community from Urziceni Necropolis practiced the cult of the dead and an ancient solar cult. Many cultures have incorporated a god of death into their mythology or religion. As death, along with birth, is among the major parts of human life, deities representing these events or passages may often be the most important deities of a religion (the cult of the dead). However, in practice there are many different rituals and traditions for acknowledging death, which vary according to a number of factors, including geography, politics, traditions and the influence of other religions. At the Urziceni necropolis, as at the Basatanya cemetery, it seems that those who are outside the solar arc, were people with “problems”, which cannot be accepted by the community, and that the community had an hierarchical burial rite, namely children, women and elderly people were buried in the middle of the cemetery, and men on the margin of the cemetery<sup>10</sup>. In conclusion, the sky played a very important role in the culture of the Eneolithic community from Urziceni-*Vamă*.

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<sup>10</sup> see similar studies in Barlai, 1980; Csillik *et alii*, 2004.



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