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Technological Comparison Between Three Specific Megalithic Monuments on the Balkans and in Caucasus

Lyubomir Tsonev

Institute of Solid State Physics, Bulgarian Academy of Sciences, Sofia, Bulgaria, e-mail: ltsonev@abv.bg

Abstract

This publication describes three axially symmetric structures of the megalithic type: two on the Balkan Peninsula and one in the Caucasus.

First, an attempt is made to give a detailed representation of the buildings in the extent to which this is possible according to available publications.

Then the structures are analyzed in terms of megalithic architecture. It is established that the design of their pyramidal roof is unique in the whole world.

The analysis allowed us to formulate a complex archaeological problem that still has not found an acceptable solution: in what way rarest and identical engineering solutions occur in two adjacent megalithic areas, but in two mutually very distant epochs. Most likely, the situation described here represents a curious example of an exact technological coincidence in the development of two neighbor megalithic traditions without direct interaction between them.

Keywords: megaliths, megalithic technology, specific megaliths on the Balkans an in Caucasus

1. Introduction. Methodological notes

This publication comments two remarkable phenomena in the history of megalithic technology.

The first phenomenon is *the unique pyramidal (polygonal tent) roof* of prehistoric cylindrical stone structures located in South-Eastern Europe. This construction has been used by the ancient architects only three times: two in South-Eastern Bulgaria (in the localities "Propada" and "Mishkova Niva" in Strandzha Mountain, South of the town of Malko Tarnovo, Bulgaria) and one in the Caucasus (on the left bank of the river Fars, at the village Novosvobodnaya, Western Caucasus, Russian Federation).

The second phenomenon is *the implementation of this very specific technological innovation in two neighbor regions*, which raises the difficult problem about the possibility of exchange of ideas between such regions taking into consideration the significant temporal difference between these monuments [1], [2].

Still nobody looked at these objects from the point of view of building statics. Filling up this omission is the main objective of our article. Our aim is to give here not archaeological but technological analysis, not duplication but expansion of already published studies of archaeologists in a new perspective, implementing the interdisciplinary approach.

The problems analyzed here relate to some of the key issues of defining, terminology and typology of megaliths, which still did not find a generally accepted solution [3], [4]. These problems do not depend on the function of objects, but significantly concern their technology. In this aspect we have to start with some methodological comments explaining the complexity of the situation, as well as with some clarifications of the terms and principles.

Megalithic monuments entered the scope of scientific observation and analysis relatively late (in Western Europe in the XVIII-XIX centuries [5]; in Russia in the XIX-XX centuries [6]; in Bulgaria in the beginning of the XX century [7]). Therefore, some cognitive processes occur intensively today in the megalithic archaeology that were characteristic for the early stages of development of other sciences where these processes have been overcome long ago mathematics, physics, chemistry, biology, philosophy. On the one hand, we observe accumulation of information, description of concrete objects and attempts to define, systematize and formulate some general principles (induction). On the other hand, various megalithic objects are analyzed, compared and commented using already developed terminological system (deduction) [8].

Megalithic type of construction covers a vast region, almost the entire Northern hemisphere, but at the same time, the megaliths are found not everywhere, but only in specific areas [9], [10], [11], [12], [13], [14]. Distribution of megaliths is remarkable for its mosaic, kaleidoscopic character: areas with high concentration of various megaliths alternate with large areas without megaliths. Objects built by combining big and rough stone blocks demonstrate some similarity, several specific common characteristics and therefore are denoted by the generic term "megaliths". The reason for including them in one and the same group has not been definitely clarified and exactly formulated so far [15], [16]. At the same time, we observe some structural differences even between the megaliths in two neighbouring areas. In order to systematize the objects in different areas one has to create different classifications, which are similar, but only partially. Classification of megaliths in Western Europe partially differs from the corresponding classification in Eastern Europe [17]. If we consider only Eastern Europe, it turns out that the megaliths on the Balkan Peninsula [18], [19] partially differ from the megaliths of the Caucasus [20] and the Urals [21]. Further, if we restrict ourselfs only in the region of Western Caucasus several classifications about the megaliths exist that are similar but not identical – sometimes complementary, sometimes competing with each other [22], [23]. Some are limited to the Caucasian dolmens only, and others try to combine them with Western European typology, but without success so far.

About the most popular class of megaliths – about the dolmens - we also do not dispose of an universal definition. In Europe almost all researchers "officially" define the dolmen as a structure in the form of a closed chamber of large vertical plates and horizontal cover plates, or as a specific chamber, carved in mainland rock [24], [25]. At the same time one notices in Western Europe a lot of specific constructions consisting of a horizontal plate resting on 3 or 4 vertical pillar-like stones (menhirs). These constructions do not form any camera and thus the above mentioned criterion is not met, but despite this disadvantage, they are also called dolmens or at least tripods [26]. The idea of a large stone plate, raised and fixed in a horizontal position above the ground, as the main indicator of dolmens, is obviously not as

exotic as it seems at first glance. The most popular megalithic term "dol-men" (introduced by the French archaeologists on the basis of the Breton language [27]), means a "stone table" and not a "stone chamber", due to the obvious similarity between the mentioned specific construction and an ordinary table. In connection with the Caucasian megaliths this broader interpretation of the dolmen concept was used by the French traveller Frederic Dubois de Monpere. Visiting in the summer of 1837 the dolmens, located near the village Fontalovskaya in the Western Caucasus, he called them "raised stones (pierres levées)" [28].

A purely terminological instability exists in the study of megalithism which is not yet fully overcome. For example: (1) In the Caucasus: dolmens \leftrightarrow true dolmens [29]; composite dolmens \leftrightarrow block dolmens [30]; (2) In Western Europe: dolmen (Fr) \leftrightarrow cromlech (UK) [31]; standing stone (UK) \leftrightarrow menhir (Fr); stone circle (UK) \leftrightarrow cromlech (Fr) and so on.

All classifications depend seriously on the decision which objects we want to combine within one set, one group. During the long research process the set is changing and its description, criteria and classification are changing respectively. The output of this methodological difficulty we find only in the continuous iterative movement of thought in two directions: from concrete objects to definitions and typology, and vice versa [32]. The result has the form of a successive approximation with increasing accuracy.

Historians of megalithic architecture intuitively became aware long ago of the division of all ancient buildings into two basic classes: microlithic and megalithic architecture [33], [34]. Sometimes this separation is evident even unconsciously [35].

The concept of microlithic architecture is associated with the concept of dry masonry (dry walling – layering). We use the term "dry masonry" to note the construction process where relatively small elements (pieces of broken stone, faceted boulders, well-crafted quadras, bricks) are laid as successive horizontal layers (next over the previous) without mortar so that the elements of the upper layer contact with the elements of the lower layer only by their two-dimensional walls, planes.

The concept of megalithic architecture is usually associated with the idea of front joining, assembling orthostats (assemblage/composition of orthostats along their edges). By the term front joining we denote the construction process whiere the whole structure is constructed from rough vertical posts or plates, which contact in between not by their plane walls, but only by their one-dimensional edges along the periphery. This definition agrees well with the usual concept of dolmen, except for the cover plate, which is not an orthostatic (vertical) but a horizontal element; nevertheless, the monolithic cover fits well the general ideology of megalithism. Under this definition, for example, the pyramids of Egypt, the cyclopean fortifications, the structures "Nuraghe" in Spain and Sardinia, the Great wall in China etc. are not included in the megalithic architecture in spite of the large size of their constituent elements [36].

Since the megalithic objects I am comparing in this study are too complex and unusual (or even unique, as I will try to show later), I'll label them with neutral terms like "building", "monument" with the appropriate number to specify. For the purpose of my investigation I have to modify, to refine some definitions and typological characteristics, to adapt them to the present research situation in order to turn them into effective tools of analysis. Based on the above methodological remarks, I will very briefly formulate the main system of characteristics and concepts used in the present study. Especially I want to note that I do not insist that my opinion is the only possible, perfect, final, and undoubtedly correct conception.

I'll use the term "megaliths" in relation to:

/1/ constructions, immovable monuments of culture

/2/ which are built by people during the stone-copper, bronze or early iron age

/3/ of crude or poorly processed stone blocks – monolithic pillars, plates or polyhedral boulders

/4/ by **spatial grouping** (e.g. menhir rows, cromlechs etc.) or by **dry front joining** (e.g. dolmens)

/5/ combining within one monument the minimum possible and sufficient number

/6/ of **relatively large monoliths** (compared with the height of the man and with the dimensions of the entire building);

/7/ the constructions created in this way exist in **two basic forms – menhirs and dolmens**.

I'll use the term "dolmen" in relation to:

/A/ a big stone plate

/B/ raised and approximately **horizontally** fixed above the terrain

/C/ supported by a combination of orthostats: by 3-4 **vertical monolithic pillars** ("table-type dolmen") or by 2 or more front joined **vertical or inclined monolithic stone plates** forming an open or closed chamber of rectangular, trapezoidal or prismatic plan ("chamber-type dolmen").

I propose here to expand the standard definition of chamber-type dolmen with the assumption that the walls of the dolmen chamber may include not only vertical but also inclined plates. I find the reason for such supplement of the standard definition in some special chamber dolmens, which exist in Bulgaria. The walls of these monuments include not only vertical plates (orthostats) but also inclined plates that touch each other not only by their vertical side edges, but also by their horizontal edges. Thus, without using microlithic masonry, these interesting structures fit the scope of megalithism quite well.



Fig.1. Original dolmens in Bulgaria: chamber walls contain vertical as well as inclined plates, contacting along their vertical and horizontal peripheral edges only (megalithic front joining) [37].

Menhirs and dolmens allow a variety of combinations, variations and significant complications; some of them have their own traditional names. For example: (1) several menhirs form a single architectural object – a straight line, a cromlech, a lattice or a disordered group; (2) the supporting construction of the dolmen cover plate may consist of 3-4 menhirs in the form of a stone table of 3-4 vertical plates in the form of a chamber; (3) the dolmen may contain two chambers, which are covered by two separate plates – one for each room; it can be noticeably long (corridor tomb), it may have dromos, etc.; and (4) the combination of menhirs, dolmens and dry stone masonry created magnificent and very complex megalithic temples on the island of Malta.

It is useful to introduce the term **quasi-megaliths** in relation to megalithic monuments, containing either sections of dry masonry or sections directly cut into the original rock among the main megalithic elements. They are usually found in megalithic areas and, probably, are built in the same historical time. In this sense we can terminologically record **the difference between dolmen and quasi-dolmen:** /i/ the latter may be partially or entirely hollowed in the natural rock; /ii/ one or all of the walls may be created not by monolithic plates, but by dry masonry from relatively small stone pieces; /iii/ the cover may be constructed not by one but by several plates (e.g., a gable roof of two inclined plates), etc.

In the following sections I made an attempt to gather all published information about the objects No. 1, 2, 3 as well as about the archaeological excavations, findings and general estimation. At the end a comparative comment on the nature of the analyzed objects is given.

2. Description of building No.1 at the river Fars in Caucasus

2-1. Registration and location

Building No. 1 does not exist today - it was destroyed in the early twentieth century. It was registered by Colonel N. L. Kamenev on the left bank of the river Fars at the village **Tsarskaya** (**now Novosvobodnaya**) in 1869-1870 [38]. This megalithic monument, although unique in its appearance and in its design, is not alone in the sense of building techniques: he is surrounded by a large dolmen complex at the Northern foot of Western Caucasus, where people developed megalithic construction skill in the course of one millennium. Here I present a diagram with the location of dolmens and a physical map of the local landscape. Building No.1 lies at a moderate altitude above the sealevel - between 700 and 800 m. It is curious that the same megalithic region includes specific composite dolmens, which are also quite rarely observed. In Caucasus about 2300 dolmens were registered; about 1.5% of them are composite, quasi-megalithic. They are very poorly studied. [39]



Fig.2. Caucasus. Red circle 13 - building No.1 near village Novosvobodnaya, on the left bank of the river Fars. [40, p. 6].



Fig.3. Caucasus. Red circle – building No.1. [41, p. 112]

Geographical coordinates of the village Novosvobodnaya: N 44°21'09.0" E 40°24'35.96" (Google Earth values). However, it is impossible to specify precisely the location of building No.1 today. L.I.Lavrov mentions [42] that dolmen No.1 lies on the left bank of the river Fars, but according to some sources it lies 5 km downstream, and according to other sources 5 km upstream in respect to the village Novosvobodnaya.

2-2. State of the construction at the time of registration

At the time of registration, the monument was hidden under a **heap of stones** (according to the description of V.N.Markovin [43]; under a **tumulus**, which was covered by stone plates along its perimeter (according to the description of L. I. Lavrov [44]; "the camera was covered by a **mound**" (according to the description of V.A.Trifonov [45, p. 39].

2-3. Archaeological excavations. Representations of the construction

N.L.Kamenev had to carry out archaeological excavations to uncover the entire structure. Then he made the first sketch (Fig.4, 1870). "This tomb was examined 15 years after the primary excavations by E.D.Felitsyn, he also made some measurements" [46, p. 15]. During this campaign Felitsyn created the second sketch (Fig.5, 1904). Much later, T.B.Popova, describing building No.1, published the third sketch (Fig.6, 1963), without indicating its author.



Fig.4. The original drawing of building No.1 sketched by L. N. Kamenev, 1868-1870, [47, p. 21]



Fig. 5. Drawing of building No.1, published by E. D. Felitsyn in 1904 [48, p. 134]



Fig. 6. Drawing of building No.1, published by T. B. Popova in 1963 [49, p. 134]; [50, pp. 15-16]. The author of the picture is unknown.

All three representations have a non-professional character. They give only an approximate idea about the construction, they have no scale, they do not abide by the rules of perspective. Photographs of construction No.1 do not exist at all.

Building No.1 consists of two parts – base (prismatic chamber of vertical rectangular plates, orthostats) and roof (pyramidal combination of inclined trapezoidal plates). Both parts of the construction implement the same technology – the megalithic one: front jointing of large stone plates along their edges. In his classification V.I.Markovin denotes this unique monument as a composite polyhedral dolmen of the second kind.

2-4. Foundation of the building

According to the description of E.D.Felitsyn: "The foundation of this dolmen was realized in the form of a thick, up to **27 cm**, stone **slab**, **which had the shape of a true circle** with a diameter of 3 m" [51]. According to the description of T.B.Popova: "A **24 cm** thick stone **plate**, **having the shape of a true circle** with a diameter of 3 m and weighing over 2 tons served as foundation of the dolmen" [52].

This, apparently monolithic, slab serving as foundation of building No.1, is depicted on all three drawings. An important technological feature can be observed there. To ensure the stability of the heavy construction, the circular stone slab extends beyond the limits of the prismatic chamber, forming, thus, not just the floor of the chamber, but also a stable foundation of the entire structure. It has a diameter of 3 m and the chamber has a smaller diameter of about 2.5 m.

2-5. Chamber walls

According to Markovin [53]: "N. L.Kamenev described [the chamber] as consisting of sixteen vertical plates; however, E.D.Felitsyn, after careful examination of this dolmen (15 years later than Kamenev) reported about **11 chamber walls**. At the edges [of the foundation plate] were standing 11 elongated stone slabs of the same height (2.13 m) and thickness (up to 20 cm), but **of different width**; tightly contacting each other, these plates formed an **eleven-faceted cylindrical box** of a slightly irregular shape."

According to V.A.Trifonov [54, p. 39]: "The construction was built of **11** high (2.13 m) **plates** vertically set on a round foundation, forming a multifaceted burial chamber with diameter of about 2.5 m..."

According to the description of T. B. Popova [55]: "A tomb of **cylindrical eleven-faceted shape** was located on the level of the ancient horizon. ... Side plates were of the same height, but of **different width**. They were all well processed and in tight contact with each other... All the side plates had a height of 2 m 13 cm, thickness up to 20 cm. Their widths, however, were different. **The widest of them was 90 cm wide**; a square hole of 37 cm was bored through this plate."

Kamenev made a very strange mistake, reporting about a 16-sided building; fortunately, later Felitsyn corrected him. Another strange circumstance: none of the researchers measured the width of the side plates, although all agree that the side plates were of different widths; they measured the height of the chamber, the diameter and the thickness of the foundation plate, the height and the thickness of the side plates, but ... no one measured the width of the side plates. Third oddity: some authors make a purely geometric error: combination of 11 vertical plates gives a prism, but not a cylinder.

2-6. Roof

V.I.Markovin quotes Felitsyn [56]: "The roof consisted of 8 **different triangular** stone slabs, stacked in the form of a **cone**".

According to the description of V.A.Trifonov [57, p. 39]: "The chamber was covered with a **conical** roof of 8 **triangular** plates".

According to the description of T.B.Popova [58]: "The tomb had a **conical** roof, which consisted of 8 **identical triangular** plates, stacked in the form of a **cone**".

First strange circumstance: no one gives details about the triangular plates, except for their number -8. Second oddity: some researchers report that the plates were different, and others say they were identical. Third oddity: the authors use an inaccurate geometric expression - the combination of triangular plates gives a pyramid but not a cone.

2-7. Entrance to the chamber

V.I.Markovin quotes Felitsyn [59]: "At the widest (90 cm) vertical plate located **in the Eastern part** of the dolmen, in the middle, there was a **square hole of width 37 cm**, which was closed from the outside by a stone sleeve of the same shape" and comments this fact as follows "The dolmen [*building No.1*] had a rectangular hole, **typical for the early (portal) dolmens** and can be considered to be synchronous with them in some degree."

2-8. Dromos

V. A. Trifonov [60] gives an important detail, quoting Felitsyn: "the chamber was blocked by a mound, and to the facade led **'a corridor, which remained unexplored'**". As it can be noticed on the drawing made by Trifonov the dromos begins – quite naturally – from the widest orthostat with the square entrance hole, and then goes down; however, the direction "down" is not specified geographically in this drawing. In the above excerpt from Markovin's book [61] one can find the statement of Felitsyn that the hole is located on the Eastern part of the dolmen. Therefore, apparently, the unpreserved dromos was also directed to the East.



Fig 7. Horizontal plan of building No.1 according to V.A.Trifonov [62, p. 34]. Down – East direction. The author does not inform where the values of the side-plates-width are taken from.

2-9. Comments on building No.1 from engineering point of view

A significant difference could be observed by careful examination of the various images of building No.1. In Fig.3 and Fig.5 **only one** triangular cover plate lies over the main chamber orthostat containing the rectangular entrance hole, and in Fig.4 the junction of **two adjacent**

triangular cover plates is located over the same chamber orthostat. If we want to evaluate which image is the most realistic one, we have no other way, except analysing the building in accordance with the principles of statics. In this way, however, we encounter a serious difficulty - the lack of detailed measurements.

Sources mention that the widths of the 11 rectangular side orthostats are different, but nobody gives measured values of this magnitude. Only the width of the face plate (with the entrance hole) is known: 90 cm. Hence, the angular sector of the main face plate is supposed to be 42° . For the remaining 10 side orthostats we do not have any width values. Unfortunately, for all 8 triangular cover plates we do not have any data; it is not even clear whether all of the triangular plates were of the same form and size.

Despite the lack of data, I decided to examine what conclusions can be drawn, if we idealize the situation, assuming that: (i) the 10 rectangular side orthostats were practically identical and (ii) all the 8 triangular cover plates were identical. Then the angular sectors of the 10 orthostats would be equal to $(360-42)/10 = 31.8^{\circ}$, and the angular sectors of the triangular cover slabs would be 45° . Both hypothetical versions of the horizontal plan of construction No.1 are presented in Fig.8 (version A corresponding to the pictures in Fig.4 and Fig.6) and Fig.9 (version B corresponding to the picture in Fig.5). The internal polygon (11 sides) depicts the top view of the prismatic chamber and the external polygon (8 sides) gives the top view of the pyramidal roof.



Fig.8. Ideal horizontal plan of building No.1 (version marked as "A" by L.Tsonev) according to Kamenev 1880 (see Fig.3 here) and to Popova 1963 (see Fig.5 here).



Fig.9. Ideal horizontal plan of building No.1 (version marked as "B" by L.Tsonev) according to Felitsyn 1904 (see Fig.4 here). "B" is the more reliable version.

From engineering point of view the **spatial coincidence** of the front junction between two adjacent rectangular side plates with the junction between two adjacent triangular cover slabs creates a **weak spot** in the whole construction where the stability of the assemblage is lower in comparison with the areas where these two joints are substantially displaced.

Version A (Fig.8) contains 4 weak spots and version B (Fig.9) contains only 1 weak spot. Assuming that building No.1 was created by people possessing a considerable experience in building of megalithic monuments, we could assume that they implemented the more stable version B – Fig.9. In this sense, I believe that the picture of Felitsyn (Fig.5) is more realistic than the picture of Kamenev (Fig.4) and the practically identical drawing published by Popova (Fig.6).

Drawing carefully this conclusion I was pleased to notice that it is in agreement with the undoubted fact that Felitsyn examined building No.1 more precisely and carefully than the discoverer Kamenev. Felitsyn first carried out some measurements (diameter and thickness of the round foundation plate, diameter of the entire structure, thickness of the rectangular side plates, width of the main front plate, dimensions of the entrance opening, height of the prismatic chamber) and also corrected a very substantial error of Kamenev, saying that the chamber is assembled from 11, and not from 16, side orthostats [63, p. 15].

The agreement just noted suggests retrospectively that the above declared approximated assumptions which allowed creating Fig.8 and Fig.9 are not too far from reality.

2-10. Inventory found inside the building and around it

According to the description of L.I.Lavrov [64]: "Ceramics, a stone for sling, bronze arrowheads, a golden ring".

According to the description of T.B.Popova [65]: "Inside the dolmen, on both sides of the square entrance opening stood 2 clay pots. In various places inside the burial chamber following objects were observed: a small marble ball, 2 bronze rings and 2 bronze spears. Two copper spears or knifes and one ball are stored in Tbilisi Museum as communicated by P.S.Uvarov and E.D.Felitsyn".



Fig.10. Artifacts from the megalith No.1 at river Fars [66, p. 257, Table 129]; [66, p. 261, Table 130]; [66, p. 266, Table 131].

Popova denotes construction No.1 as a tomb and Markovin defines it as a dolmen, taking into account its own megalithic classification and implying that dolmens are supposed to be tombs in general. However, the inventory, found in the excavations, does not give us sufficient reasons to speak about a funeral. Other researchers are more cautious and thus more realistic – Trifonov uses the term "monument", and Felitsyn – "building".

2-11. Dating

Dating of construction No.1 is approximate and indirect.

Commenting upon the artifacts found there, V.I.Markovin notes:

"Regarding its form the most archaic artifact is a bronze leaf-shaped knife with an expanding and a rounded blade and handle. It was found in the multifaceted tiled dolmen at the river Fars (village Novosvobodnaya) [*the knife is depicted here in Fig.10, Table. 129, knife* 5 - L. *Tsonev*]. This knife is not typical for the Caucasian antiquities. He finds analogies in Mediterranean cultures. ... Finds discovered in early-type monuments indicate very distant external links of Caucasian dolmen builders with other antique regions...

A second similar large knife was found together with the previously mentioned one in the multifaceted dolmen at the river Fars [*the second knofe is depicted here in Fig.10, Table 129, knife* 9 - L. *Tsonev*] ...

Experts date such quite old blades to the second half of the III Mill. BC, and the earliest of them even to the IV Mill. BC." [67, p. 258-260].

"A hook rolled out from a smooth sheet of arsenical bronze **comes probably also** from the dolmen at the river Fars, excavated by N.L.Kamenev [*the hook is depicted here in Fig.10, Table 130, hook 15 – L. Tsonev*]... Analogous hooks were commonly produced and used in the Mediterranean during the age of bronze" [68, p. 263].

"**Probably** we have to assume that the spherical stone belongs to a sling-like weapon (greenish Jasper stone of diameter 5.5 cm) which was found by N.L.Kamenev in the multifaceted dolmen at the river Fars [*the sphere is depicted here in Fig.10, Table 131, ball 36 - L. Tsonev*]. A similar stone (greenish granite-gneiss) of diameter 4.3cm was found in the dolmen No. 502 localized in the basin of the river Kizinka. Such stone spheres could be used as ammunition for slings" [69, p. 271].

"We need to turn again to the dolmens at the village Novosvobodnaya. As already mentioned most of the finds there were **associated with the late stage of the Maikop culture**, when purely home centres of metallurgy arised and the interaction with the cultures of the southern regions (Anatolia, Asia Minor) was reduced. ... Various attempts to date the dolmens around the village Novosvobodnaya as well as the respective stage of the Maikop culture, where their typical inventory content belongs, exist in the literature. ... Most fruitful attempt to date the dolmens at the village Novosvobodnaya was undertaken by A.A.Iessen. In his latest work he attributed the whole '*Novosvobodnaya stage of the Maikop culture*' to 2300-2000 BC and, respectively, **the dolmens at the village Novosvobodnaya - to 2300 BC**. This date has been accepted in general by almost all of the researchers" [70, p. 275-278].

3. Description of building No.2 in the locality "Pròpada", Strandzha Mountain, South-Eastern Bulgaria

3-1. Registration and location

The mound in the locality "Pròpada" or "Sushitsa", which covers building No.2 (destroyed in antiquity), was identified in the late 70-ies of XX century [71]. The same statement applies to building No.3 in the locality "Mishkova niva", which will be described and discussed in the next section of the present study. We give here a diagram with the location of dolmens (Fig.9) as well as a physical map (Fig.10); they apply to both sites under examination. The geographic

coordinates of construction No.2 are as follows: N 41° 59' 10.05"; E 27° 29' 33.26" (Google Earth values).

Both constructions are located at moderate altitude over the sea level - between 700 and 800 m. Dolmens are spread not only to the North of the Bulgarian-Turkish border, but also to the South of it, although the dolmens in Turkey are not shown on the map. Thus, buildings No.2 and No.3 are surrounded by numerous dolmens, just like building No.1 in North-Western Caucasus.



Fig.11. Balkan megalithic area – distribution of megaliths in South-Eastern Bulgaria. Scheme by P. Delev [72, p. 38]. • dolmens; ○ – rock-cut tombs; ▲ – niches carved into the rocks. The number of monuments in the respective locality is given in parentheses. Small white circles near the town of Malko Tarnovo indicated by arrows – buildings No.2 and No.3.



Fig.12. Physical map of South-Eastern Bulgaria. Red circles near the town of Malko Tarnovo – *buildings No.2 and No.3.*



Fig.13. Detailed tourist map of the surroundings of Malko Tarnovo.

3-2. State of the construction at the time of registration

Building No.2 was discovered almost by accident in 1979, during a series of expeditions "Sakar-Strandzha", conducted by the Institute of thracology at the Bulgarian Academy of Sciences under the leadership of Professor Alexander Fol [73], [74]. It was placed in the **Southern** periphery of a mound with a diameter of 16 m. In the upper part the mound a treasure-hunters ditch was digged out, therefore the height of the damaged mound was 2 m [75].



Fig.14. Top view and cross section of building No.2 together with the mound [76, p. 90].

According to other informations building No.2 was placed in the **South-Eastern** periphery of the mound, the entrance corridor to the building has also South-East direction [77]. In the southern foot of the mound a marble slab from the destroyed dome was found [78], [79], [80]. The building was tumbledown and plundered in antiquity [81], [82], [83].

3-3. Archaeological excavations. Representations of the construction

Excavations of building No.2 were carried out during the summer of 1979 by Peter Delev from Sofia University "St.Clement of Ohrid" [84], [85].

An antique necropolis of several graves exists in the vicinity of building No.2. For this reason secondary excavations were undertaken under the direction of D.Agre in the period 1999-2004 [86], [87]. She discovered two peculiar tombs from the Roman era there, which we will discuss later in section 4.



The status of building No.2 during the excavations of 1979 allowed the archaeologist P.Delev and the architect M.Russeva to accomplish an almost complete and reliable reconstruction by the method of anastylosis in the summer of 1981 [88], [89], [90].

Building No.2 consists of: (1) base - cylindrical chamber, (2) roof - pyramidal / conical vault and (3) corridor - dromos. Unlike building No.1, the camera and the roof of building No.2 are realised by two fundamentally different technologies: the roof has definitely a megalithic character, and the chamber was built by the technique of classic dry masonry of well-dressed stones.



Fig.16. Technological scheme of building No.2 by L. Tsonev.



Fig.17. Anastylosis of building No.2 [91, p. 141].

The stabilization of the restored monument was not adequately fulfilled and a few years later (2008) it turned in an emergency condition (Fig.18).



Fig.18. Building No.2 in locality Propada. Left – after the anastylosis in 1981. (photo D.Kolev, 2006). Right - emergency state as a result of the poor protection of the site (photo Sv.Solovyov, 2008).

The diameter of the chamber is 2.12 m, the height of the whole construction is 2.15 m; the length of the asymmetric dromos is 2.10 m and the width of the dromos is 1.05 m [92]. According to other sources [93] the diameter of the chamber varies between 2.00 and 2.10 m, and the height of the uncoated dromos is 1.07 m.

3-4. Foundation of the construction

The floor of the chamber consists of well-processed marble slabs with a thickness of 0.14 m. The lowest layer of the chamber wall masonry is laid for greater stability in a shallow groove of circular shape, carved in the floor [94]. In the dromos the floor slabs are set only between the walls, but in the chamber they penetrate under the walls, creating in this manner a specific foundation of the entire structure. These plates are irregular in shape, but tightly arranged along their edges [95], [96].



Fig.19. Building No.2 – the floor of the chamber [97, p. 141].

3-5. Chamber walls

Chamber walls were built in the technique of dry masonry: marble bow-shaped quadras were arranged in three layers. The inner diameter of the chamber decreases in vertical direction, starting from the first layer of quadras, and resulting in a truncated cone with a very small angle at the virtual apex, and with a very large virtual height ([98] – see Fig. 17 here, and [99]).



Fig.20. Cylindrical chamber of building No.2 [100, p. 218].

Stability of masonry is guaranteed in two ways. First, the stones of each layer were placed in a special shallow channel cut on the upper surface of the lower layer. Secondly, the quadras of one and the same layer (on one and the same level) were connected with iron brackets, which were poured over with liquid lead to protect them against corrosion. [101].



Fig.21. *Cylindrical chamber and the dromos of building No.2 – technical scheme [102, p. 90]*

3-6. Roof

The roof is extremely interesting and unusual. According to the description of the archaeologist P.Delev it is formed by 7 tilted triangular plates [103], [104], [105], [106]. The description given by the archaeologist is inaccurate: **the roof was created not of triangular but of trapezoidal plates**. Architect M.Russeva described them accurately as wedge-shaped (trapezoidal) plates [107], [108], [109].

Cover slabs of building No.2 possess an unique feature: from the outside they're all flat and therefore the vault gains **the external form of a truncated pyramid**; however, from the inside they are treated with azimuthal curvature, so that the vault gains **the internal form of a truncated cone**!

Only six trapezoidal cover plates were found in the excavations, the 7-th plate was absent. Their height varies in the interval 0.74-0.82 m, the width of the lower base of the trapezoid is 0.70-0.90 m, the width of the upper base of the trapezoid is 0.10-0.25 m, the thickness is 0.28 - 0.35 m [110]. These data are somewhat (but not significantly) different from the initial publication [111].



Fig.22. Top view of the roof of building No.2 [112, p. 91].



Fig.23. Roof of building No.2 - from the inside (left) and from the outside (right). Photos D.Kolev, 2006, after the successful restoration in 1981.



Fig.24. Roof No.2 from the outside in an emergency condition as a result of poor protection of the site (Photo Sv.Solovyov, 2008).

3-7. Entrance to the chamber

The entrance is designed without using special horizontal and vertical quadras. According to M. Russeva "the entrance to the chamber is formed by the contour of the rectangular stones of the wall masonry. The entrance height is 0.93 m, its width is 0.60 m and its depth is 0.40 m" [113].



Fig.25. Chamber of building No.2 in the process of reconstruction, 1981 [114, p. 142].

3-8. Dromos

The dimensions of the dromos were already given above. Here we focus on the most interesting feature of the dromos – on its cover. The so-called false barrel vault was not used here. Instead of realizing this standard possibility, **the dromos was covered in a peculiar way of megalithic character**: with three large marble blocks placed over and along the corridor walls. The lower (i.e., internal to the corridor) surface of each covering block was smoothly processed in the form of a cylinder [115]! This is another expression of the same original architectural idea, which was applied already in the conical cover of the chamber.



Fig.26. Dromos of building No.2 in the process of reconstruction, 1981 [116, p. 219].

Architect M.Russeva proposes the following reconstruction of the three covering blocks of the dromos:



Fig.27. Photographs of two cover elements from the dromos of building No.2. Upstairs – photo from [117, p. 90]. Below – photo D.Kolev 2006

Fig.28. Reconstruction of three cylindrical cover elements from the dromos of building No.2 [118, p. 91].

3-9. Entrance to the dromos

The archaeologist P.Delev and the architect M.Russeva believe that the entrance to the dromos was decorated with the pediment, kept now in the Museum of the city of Malko Tarnovo [119], [120], [121]. Very important is the image in the tympanum: a shield crossed with a spear. This subject is used very often in Ancient Thrace and only there; so it can be interpreted as an ethnic marker or identifier of Thracian population [122].



Fig.29. Pediment of building No.2. History museum in the town of Malko Tarnovo. Photo L.Tsonev, 2003.

Thracian infantry warriors were traditionally portrayed in Persian reliefs in the antique town of Persepolis as well as on numerous Greek ceramic vessels armed with one or two spears (dressed in appropriate clothing, often equipped also with a light round shield) [123] [124]. As an example of this emblematic Thracian symbols in Roman Thrace we present here a watercolor image of the XIX century drawn by the Austrian historian and traveler Felix Kanitz. It depicts the Roman ruins from the II century in the vicinity of the today's village of Russalya located around the ancient town of Nicopolis ad Istrum (its ruins are near to the town of Veliko Tarnovo). The city was built by Emperor Trajan after his victory over the Dacians in the beginning of the II century AD. Kanitz has depicted two pediments containing two typically Thracian subjects: the Thracian horseman and the combination of a shield with a spear.



Fig.30. Watercolor by Felix Kanitz –Ruins of a temple from Roman epoch devoted to the Thracian horseman, North Bulgaria, II century AD. General view (left) and detail with both pediments (right) [125].

3-10. Comments on building No.1 from engineering point of view

The importance of the pediment representation for the analysis of building No.2 is expressed also in another relation. The architecture of the Classical and Hellenistic Thrace in V-III centuries BC has never created Greek-type temples with gable roofs and columns and, therefore, it has never used true pediments made of monolithic marble slabs or of quadras. Only imitative, symbolic pediments carved in low relief on the wall surface as a geometric ornament are present in the Thracian sacred monuments in the mentioned epoch. After a short break between II century BC and II century AD the Thracian architecture continues to evolve, but already under Roman occupation and domination in II-IV century AD. Only when Roman architecture penetrated Thrace Greek-type buildings with gable roofs, colonnades and true pediments appeared there.

If we summarize, the presence of the pediment with the motif of the shield and spear in building No.2 is a serious argument (i) in favor of its Thracian origin, and (ii) in favor of its dating to the Roman period in Thrace (about II-III century AD).

3-11. Inventory found inside the building and around it

According to the description of the archaeologist P.Delev following objects were found during the excavations: "small fragments of ceramic and glass vessels and two clay lamps, beads of black glass, a bronze key, a bronze coin of the beginning of the III century AD as well as the scattered and shattered bones of seven individuals" [126]. A few additional clarifications: the beads were four and the coin was, apparently, cut during the government of Julia Domna (211-217 AD) [127]; "the bones of two dogs were also found... all content is owned by the Roman era, whereto we must date the tomb itself" [128]. Drawings or pictures of the artifacts were never published by the archaeologist.

The number and the status of the bones of several individuals in the chamber give us a reason to doubt that they represent an ordinary funeral. The situation reminds an ossuary similar to several dolmens in the mountains Sakar and Strandzha.

The archaeologist P.Delev supposes that building No.2 (the same about building No.3) was built, apparently, by Greek workers who were employed in the extraction of iron ore in this region of Thrace. In my opinion, however, the image in the tympanum of the pediment is a serious argument that building No.2 (the same about building No.3) was created in the framework of Thracian and not in the framework of Greek culture.

3-12. Dating of building No.2

The archaeologist P. Delev draws a categorical conclusion: "the excavations indicate the **end** of **II or beginning of III century BC**" [129].

The architect M.Russeva expresses a different opinion: "The material from the end of the II century AD which was found in the tomb gives rise to two interpretations. Except for the idea about repeated use of building No.2 there is another possible hypothesis: tomb was built in I century AD as a late reminiscence of the earlier traditional Thracian constructions, forms and techniques" [19]. Later M.Russeva clarified her position as follows: "We tend to accept that this tomb was built in V-IV century BC, and the presence of later archaeological finds originating from the II century AD may been caused by the **multiple use of the construction**" [130]. "Based on the finds from the late II century AD building No.2 can be dated to this period. According to its architectural peculiarities it belongs to an earlier type of buildings and it can be dated to the **late V - early IV century BC**" [131]. "Although the architecture is completely consistent with Thracian cult structures under tumuli originating from V-III century BC, **maybe, the tomb itself originates from an even earlier period**" [132].

4. Description of building No.3 in the locality "Mishkova niva", Strandzha Mountain, South-Eastern Bulgaria

4-1. Registration and location

The mound "Golyamata tumba" (="The big tumulus") in the area "Mishkova Niva", created to cover the remains of building No.3 which was destroyed in antiquity, was identified in 1979-80 by the expeditions in Strandzha Mountain under the leadership of Professor Alexander Fol. The location of the monument was already shown in Figs. 11,12,13. Its geographic coordinates are as follows: N 41° 57' 28.24"; E 27° 30' 02.24" (Google Earth values).

4-2. State of the construction at the time of registration

The mound was not damaged by treasure-hunters. According to the description of P.Delev [133] the mound was of irregular shape; beside him, on the earth's surface several arcuate processed marble pieces were spread, originating, probably, from the round fence with a diameter of over 20 m; several damaged stone troughs were observed there too. A group of small mounds was spotted to the West of the big mound. Numerous votive inscriptions as well as plates with reliefs of the Thracian horseman (kept now in the Historical museum in the town of Malko Tarnovo) were found in this site [134], [135] [136].



Fig.31. *Mound* "Golyamata tumba" over building No.3 before excavation, view from South [137, p. 213].

4-3. Archaeological excavations. Representations of the construction

Main archaeological excavations were carried out in the period 1981-1982 under the guidance of P.Delev [138], [139], [140]. In the following photographs one can see that the mound was created of earth and not of stone blocks, like the dolmen mounds. After removing the upper soil layer it was found that the building was completely destroyed in antiquity already and then covered with the mound. Marble elements were disscattered in the lower layer of the mound [141], [142].

Engineer Zl.Petrov made a full photogrammetric plan of the site containing the building No.3 (Fig.34). This site is much more complex in an archaeological sense than buildings No.1 and No.2. It includes several elements: (i) central sacral building No.3 - including chamber, roof and dromos; (ii) inner fence made of broken pieces of granite; (iii) external fence with a diameter of 23 m of well-crafted marble elements; (iv) rectangular lateral chamber in contact with the West wall of the dromos. Main building No.3 lies offset to the South from the common center of both circular fences. The entrance to the dromos is formed as a beautiful facade with pediment placed in the southern-most point of the outer fence.





Fig.32. Mound over building No.3 after removing the upper soil layer. Situation in the winter of 1981-2, view from North. The photo was taken using short focus lens [143, p. 83].

Fig.33. Mound over building No.3 after removing the upper soil layer [144, p. 105]. Visible are the entrance pediment and two triangular cover slabs of building No.3.



Fig.34. Photogrammetry of building No.3 [145, p. 97]. Dromos is pointing South with a slight deviation to the South-West.

With respect to the architectural design building No.3 is similar to building No.2, because it also consists of **three parts, which are based on two fundamentally different technologies**: (1) cylindrical chamber implemented by dry masonry of quadras; (2) pyramidal vault of megalithic nature; (3) dromos with an entrance pediment (now in the Museum of the city of Malko Tarnovo). The technical specificity of building No.3 (in comparison with No.2) lies in the gradual transition between the lower and upper part of the cylindrical building and in the smaller slope of the pyramidal cover. Due to these two characteristics the roof of building No.3 becomes closer to the true, i.e. to the spherical vault.



Fig.35. Building No.3 - technological scheme by L.Tsonev.

Architect M.Russeva proposed reconstruction of building No.3 by the method of anastylosis, which is illustrated in Fig. 36 [146].



Fig.36. Reconstruction of building No.3 proposed by architect M.Russeva [147, p. 30]. Chamber diameter 2.7 m, chamber height 2.9 m, dromos length 2.3 m, dromos width 1.5 m, original height of the dromos 2.3 m [148].

In the period between 1983 and 2003 her proposal has been implemented only partially (Fig.37).



Fig.37. Cylindrical chamber of building No.3. Photo L.Tsonev, 2003.

The rectangular lateral chamber to the West of the dromos is made of broken stone pieces with primitive plaster. This technology significantly differs from building No.3 and from the outher fence of the entire site. The purpose of the lateral chamber remains unclear. According to the description given by P.Delev [149], [150] **the lateral chamber was covered with two large plates (material not reported)** that were thrown out of their beds long ago in antiquity, when the whole site was completely destroyed. In another publication [151] P.Delev specified that **the mentioned cover plates were made of marble**.



Fig.38. Rectangular side-chamber at the dromos 2.10 x 1.40 m [152, p. 98]. Free distance of 1.5 m between the Southern wall of the chamber and the big external fence of the site.



The internal fence is executed also very rough, similarly to the lateral chamber (Fig.39).

Fig.39. Both fences around building No.3, 1982, photo from [153, p. 213].

P.Delev formulated his overall impression after the excavation of the site including building No.3 as follows [154]: "The inner fence made of rough granite blocks indicates an earlier period of building activities on the site of the mound. Some traces were discovered showing that **a more ancient tomb of large granite blocks and slabs** existed here **before the later marble tholos** was created". The archaeologist does not specify exactly which blocks or slabs at site No.3 he suggests coming from the primary tomb.

In publications [155] and [156] P.Delev fills up the picture: in the site Mishkova Niva, not far from building No. 3, several cist burials of the Roman era were discovered - similarly to the situation around building No.2. The materials of these cist graves have not been published.

At the end of this general description we present two photos of the entire site No.3 after the first stage of excavation.



Fig.40. Site around building No.3 in 1982 [157, p. 32].



Fig.41. Site around building No.3 in 2004 [158, p. 91].

Fig.40 gives a view from the South-West. At the right end we see a small mound in contact with the side chamber, which was not excavated during the first stage.

Fig.41 represents a view from the East. In the left end we notice the same small mound an also **a pair of plates** that covered the lateral chamber before its destruction in the antiquity; they did not allow to finish the complete excavation of site No.3 up to 2005. In the center of Fig.41 we observe **a second pair of large plates**, placed immediately to the main cylindrical building No.3; their origin and purpose remained unclear for the archaeologist as well as for the architect.

The second stage of excavation was carried out in 2005 under the guidance of P.Delev [159], [160]. The whole site was cleaned up and the restoration of building No.3 was continued. The result is shown in Fig.42. According to P.Delev the examination of the rectangular lateral chamber yielded no useful new artifacts; the finds, although not very important, were never published.



Fig.42. Site around building No.3 in 2008, after the second stage of excavations¹.

4-4. Foundation of the construction

According to the description of M.Russeva [161]: "The floor of the dromos and the cylindrical chamber is composed of large marble slabs of irregular shape and thickness of 25-30 cm. The plates covering the floor of the cylindrical chamber penetrate under the wall and go outside of its contours". In this manner the floor plates create a stable foundation of the entire structure – the same technique is used in constructions No.1 and No.2.

¹ http://www.malkotarnovo.yes.bg/bg/?&itype=18&isubtype=31&info=116



Fig.43. Floor construction of the chamberFig.44. Floorand the dromos at the beginning of theand the dromosanastylosis of building No.3. View from North.Photo L.Tsonev.Photo Chavdar Stoychev [162].Photo L.Tsonev.



Fig.44. Floor construction of the chamber and the dromos in 2003. View from South. Photo L.Tsonev.

4-5. Chamber walls

Besides the dry masonry of good quality we should mention here another interesting design feature. In their upper section the walls are rounded inward, creating in this way a good support for the triangular cover plates [163], [164]. This approach adds stability and elegance to the structure and approximates the shape of the dome to a spherical one better when compared to buildings No.1 and No.2.





Fig.45. Chamber of building No.3. Photos D.Kolev, 2006.

4-6. Roof

The original triangular cover plates were 10, but only 3 of them survived. The original vault had the form of a 10-sided pyramid [165], [166]. Unlike the construction No.2, however, the cover plates of building No.3 are flat on both sides, so that their combination gives the pyramid not only from the outside but also from the inside.



Fig.46. Triangular plates from the pyramidal roof of building No.3. Photos D.Kolev, 2006.

4-7. Entrance to the main chamber

The entrance hole to the cylindrical chamber was formed by the gap between the quadras of the chamber walls; no vertical pillars of marble were used. It is impossible to determine how the upper part of the entrance has been constructed – by a lintel or by another technical solution.



Fig.47. Entrance opening to the chamber of building No.3. Photo D.Kolev, 2006.

4-8. Dromos

During the second stage of excavations in 2005 anastylosis was applied not only to building No.3, but also to the walls of the dromos. The walls of the dromos are rounded towards inside, like in the main chamber. The roof of the dromos remains not restored. It is unclear whether the dromos has been covered with a false barrel vault or in a quasi-megalithic style – by several large pieces of marble with a cylindrically processed bottom surface, like the dromos of building No.2.



Fig.48. Dromos before the beginning of the second phase of excavation. Photo L.Tsonev, 2003.



Fig.49. Dromos - photo 2006 [167].



Fig.50. Dromos of building No.3 after the second phase of excavations 2005: **a** - general view², **b** - longitudinal perspective (Photo D.Kolev, 2006).

4-9. Entrance to the dromos

The entrance to the dromos was especially majestically decorated – a true pediment with antefixes (the plate is kept now in the History museum of the city of Malko Tarnovo) was mounted on the arched portal. The big outer fence of the site was built by rustic dry masonry for aesthetic effect - Fig.51. Large quadras were processed very carefully and ordered in three layers. Quadras of the most upper layer have a non-traditional form: all surfaces are flat, except for the top surface, which has a semi-cylindrical shape.

The artistic design of the arch, pediment and quadras of the outer fence of the site No.3 give me the reason to believe that in the authentic state the entrance with pediment and the outer fence remained uncovered, outside of the mound – Fig.52. The mound covered, probably: /1/ the central cylindrical vaulted building No.3, /2/ the rectangular lateral chamber, /3/ the dromos without its entrance and /4/ the crude internal fence. In the sacred open ring-shaped area between the mound and the outer fence the priests performed rituals, and the pilgrims leaved gifts dedicated to the gods. Similar opinion is shared by V.Fol [168].



² http://www.infotourism.net/index.php?t=31961&m=1



Fig.51. Details from building No.3 and reconstruction of the main entrance: a - entrance to the dromos with pediment, reconstruction of M.Russeva [169, p. 102]; b – pediment preserved in History museum of the town of Malko Tarnovo, photo L.Tsonev, 2006; c - detail of the arch supporting the pediment. Photo L.Tsonev, 2003.



Fig.52. *Reconstruction of site No.3 in the locality Mishkova Niva proposed by L.Tsonev [170, p. 48].*

Similarly to building No.2 we must pay attention here to the image in the tympanum of the pediment: a shield and spear. We notice also an additional symbolical element: two open and raised up palms, calling, probably, to respect the Holy place.

P.Delev questioned the Thracian origin of building No.3 and believed that it was built by the Greeks, who developed the iron mines in the vicinity. However, the arguments expressed by me regarding the entrance to the dromos of building No.2 are fully applicable to building No.3. The combination of the shield and spear plays the role of an ethnic marker-identifier about the Thracian origin of building No.3 and also the role of argument for dating it to the Roman period in Thrace – about II-III century AD.

4-10. Comments on building No.3 from engineering point of view

Let's discuss four specific plates that differ significantly from the well-crafted marble elements of building No.3 and from the quadras of the outer fence of this site.

In the first stage of excavations 1981-2, a small hill between the lateral dromos chamber and the outer fence of the site remained unexplored because two large plates were plased on its top. They formed the flat horizontal cover of the rectangular lateral chamber before its destruction. Publication [171] reports that **the cover slabs of the lateral chamber were made of marble**.

Figure 53 shows the entrance to the lateral chamber in the beginning of the excavations in 1981, in the left edge we notice **one of the first pair of plates originally covering the camera**. Fig.54 and Fig.55 show the lateral chamber after completion of the first stage of excavations 1982.



 Fig.53. Photo of the side-camera in 1981 [172, p. 216].
 Fig.54. Photo of the side-camera in 1982 [173, p. 216].

In the center of Fig.55 both plates of the **first pair** are visible (one above the other).



Fig.55. Two cover plates of the side-camera. Photo L.Tsonev, 2003.

Excavations in this area were carried out in 2005. Figure 56 shows the rectangular sidechamber in its final condition after the secondary stage of excavations 2005 [174]. **The first pair of plates is already absent**.



Fig.56. Side-chamber in 2006. Photo K.Kouyumdzhiev [175].

In the center of the photograph Fig.57, made before the second stage of the excavation, **second pair of large plates** is visible near to the cylindrical chamber of building No.3. According to my own observations, **they are also made of marble**.



Fig.57. Building No.3 [176, p. 214]. Both pairs of specific plates in site No.3 are visible.

Figure 58 shows that in 2006 **the second pair of plates** remained on its place even after the secondary stage of excavations.

Comparing, however, the photo in Fig.58 from 2006 with the photo in Fig.42 from 2008 we notice that after 2006 **the second pair of plates disappeared**, similarly to the first pair of plates. No one knows where are removed all 4 plates of megalithic type today.

According to the opinion of P.Delev the site No.3 included **blocks and slabs of granite**, which belonged to a more ancient monument. P. Delev never specified exactly which blocks and plates he had in mind: the 4 plates just described (P.Delev asserts that they are made of marble, not of granite) or some other elements. In Strandzha Mountain marble and gneiss prevail

and granite is virtually absent; in addition granite is more difficult to handle. Most plates for cist graves and dolmens in Strandzha Mountain are of marble. The rest of them are of gneiss.



Fig.58. Specific plates in the center of site No.3. Photos D.Kolev, 2006.

The **four "strange" plates**, which attracted my attention, differ sharply not only from quadras and other elements of the central vaulted building No.3, but also from the quadras of the outer fence by their ill-treatment and improper, irregular form. In form and size they resemble

the typical megalithic slabs in Strandzha Mountain. This can be seen on the example of two dolmens in the vicinity of the village Zabernovo (Fig.59), one dolmen near the village of Zvezdets (Fig.60) and numerous cist graves near building No.2 (Fig.61).









b

Fig.59. Typical dolmens made of marble slabs at the village Zabernovo: a - dolmen A in the village of Zabernovo. Photo and drawing L.Tsonev, 2003. b - dolmen B in the village Zabernovo. Photo and drawing L.Tsonev, 2003.



Fig.60. Dolmen near the village Zvezdets. Photo L.Tsonev, 2003.



Fig.61. Cist burials in the vicinity of building No.2. Photo L.Tsonev, 2003.

Expressing the assumption about a more ancient building on the site No.3, P.Delev speaks about a **"destroyed burial structure" of granite** [177], [178], [179] without a specific description. He rejects the hypothesis about a dolmen, but in the same time he does not use the term "cist burial". Similar opinion is shared by the architect M.Russeva [180].

The answer to the question – whether the specific four plates orifinate from a cist or from a dolmen preceding the complex vaulted building No.3 – is important in so far as to estimate how long the sacred site Mishkova Niva was used by the local people. Cist graves appeared in Thrace as far as in the Roman era, and the dolmen building was practised earlier, in the period XII-VI century BC. The appearance (visible on the photographs) and the size (which were never published!) of the mysterious "four plates" do not allow judging categorically what kind of building they originate from. Today, 35 years after the excavations, it is impossible to bring the analysis to a convincing conclusion for the excavation archive is unavailable, excavations have changed the original situation of the site in an irreversible way and the plates have disappeared.

4-11. Inventory found inside the building and around it

On the site No.3 almost no artifacts were found, except for a few pieces of ceramics from the Roman era [181], [182], [183], [184]. No drawings or photographs of artifacts were published by archaeologist P.Delev [185].

4-12. Dating

P.Delev dates building No.3 to the period II-III century AD based only on the similarity between buildings No.3 and No.2 and on the fact that in the site of building No.2 materials from the Roman era were found [186], [187], [188], [189], [190]. In my opinion, the existence of a real pediment at the entrance to the dromos as well as the emblematic image placed in the tympanum confirm additionally such dating.

Doubts and other arguments expressed by the architect M.Russeva concerning the dating of building No.2, apply to the dating of building No.3 too: she attributes building No.3 to the period IV-III century BC [191].

5. Comments on the specific roof of buildings No.1, 2 and 3 from engineering point of view

Buildings No.1, 2 and 3 are quite complicated from a constructive point of view. Therefore, it is convenient to analyse their roofs and chambers separately.

The roofs of the buildings No.1, 2 and 3 show an extraordinary similarity:

First, they are complete or truncated pyramids, assembled from large triangular or trapezoidal plates (7, 8, or 10 pieces); the diameters of all the roofs are about 2.5 m.

Secondly, they are megalithic constructions, as the plates touch each other only on the periphery, by their edges and not by the planes, i.e., they do not lie on top of another like the quadras in classic masonry.

Third, in order to get stability the roof construction needs neither a key stone (tube), nor a supporting post in the center of the dome, because the plates mutually support each other by the lateral edges like wedges in an arch - this is an ingenious engineering solution.

Fourthly, the pyramidal megalithic roof is unique in the world.

Fifthly, all buildings No.1, 2 and 3 are located within distinct dolmen areas where megalithic technical methods of construction were practiced during several milleniums.

Sixthly, the dolmen areas surrounding the buildings No. 1, 2 and 3 are very closely situated, they are adjacent.

The roof No.1 was not commented from technological and engineering point of view by the Russian archaeologists.

Similarly, the archaeologist P.Delev does not discuss the technology of the roof No.2. Architect M.Russeva argues that the stability of the pyramidal roof is realized only by the so-called key stone (tube), which accumulates the radial pressure of the inclined trapezoidal plates [192], [193]. Key-stone was not discovered during the excavations, but this fact did not lead to any conclusions.

The same opinion architect M.Russeva expresses about the roof No.3 where key-stone was also not found [194].

In my opinion, these assertions are incorrect. The originality of the roofs No. 1, 2 and 3 consists exactly in the fact, that a pyramid assembled from several trapezoidal or triangular monolithic plates ensures its own stability itself, without any key-stone. By this feature megalithic roof constructions No. 1, 2 and 3 fundamentally differ from all the other famous microlithic domes in antique world that use: (a) false arch (masonry of stones or bricks arranged in horizontal layers one above the other), (b) Roman arched vault (from stones or bricks, arranged radially in the form of an arc and contacting by their side planes) or (c) supporting pillar in the center of the dome [195].

The existence of such amazing technical similarities in the roofs No. 1, 2 and 3, originating from very distant epochs still remains without a convincing explanation.

On the one hand, building No.1 should be attributed to 2300 BC, and buildings No. 2 and 3 were created in II-III century AD. It is very difficult to imagine and to prove that some kind of interaction, exchange of ideas between the builders of these structures was realized in this long time span. The occurrence of technically identical pyramidal megalithic roofs No.1 in Caucasus (XXIII cent.BC) and No.2 and 3 on Balkan Peninsula (II-III cent.AD) seems to be an accidental coincidence between the achievements of two independent megalithic architectural schools.



Fig.62. Megalithic (red) and microlithic (green) areas in Eurasia. The objects discussed in this article are marked by blue squares 1,2,3,4.

On the other hand, this "accidental coincidence" looks a bit strange, since it is implemented

(1) in only two geographic regions

(2) and both regions are adjacent and in the same time

(3) they are megalithic regions;

(4) moreover, no analogous coincidence has been observed in other megalithic areas of the world.

Even more strange looks the above coincidence in light of an additional argument:

(5) except for the roofs No.1, 2 and 3, several additional technical coincidences exist between the Balkan and the Caucasian megalithic constructions that cannot be found in any other megalithic area of the world.

Let's explicate the last argument (5) in detail.

Caucasian dolmen region

In the classification of Caucasian dolmens proposed by Marcovin we observe a specific building called "tiled dolmen" (Fig. 63) or "composite polyhedral dolmen of the second kind".

A more detailed description of this quasi-dolmen is given in the paper [197], where the original drawing of the discoverer Veselovsky is published (Fig. 64). The building consists of two chambers which are covered with a **gable roof** of two large monolithic slabs – a typically megalithic technical solution. Pediment is missing here; the roof is supported by the triangular upper edges of the transverse orthostats. Dating is not specified.

In respect to the second dolmen a discrepancy exists between the figure and the text of Veselovsky. "According to the description, the roof consisted of two horizontal plates. The former and shorter chamber, called by N.I.Veselovsky *avantchamber* (from the French word "avant" = "before"), was not closed by any orthostatic face plate as painted in the figure" [202].



Fig.63. Detail from Markovin's classification of dolmens [196, p. 10].



Fig.64. Drawing of a dolmen at village Tsarskaya (now Novosvobodnaya) with gable roofing by Veselovsky [198]. See also [199, p. 62].

Near the village Tsarskaya (now Novosvobodnaya) another two-chamber dolmen existed, but with a flat roof, made of two horizontal plates (Fig. 65).



Fig.65. Drawing of a flat roofed dolmen at village Tsarskaya (now Novosvobodnaya) by Veselovsky [200]. See also [201, p. 62].

Safronov [203] also mentioned two-chamber dolmens in Caucasus near the village Novosvobodnaya: "The rite of burial – *'stone house under a mound'* – finds literal parallels only in the dolmens near village Novosvobodnaya, where already **two dolmens** in the form of *'stone house'* with a gable roof were registered". Safronov made a mistake here: the two-chamber dolmen with a gable roof discovered by Veselovsky is **unique** in the entire Caucasian megalithic area.

Balkan dolmen region

Archaeologist D.Agre found a similar structure with a gable roof of monolithic plates in the necropolis around building No.2 in Bulgaria [204] – Fig.66 (the location is shown here in Fig.15 by the number "2"). It is **also unique** in the Balkan megalithic area. Taking into account the artifacts found, D.Agre dated the tomb to the Roman age. Both roof slabs were removed from their original positions in ancient times.

Gable roof rested partially on two transversal pediments and partially on both monolithic longitudinal walls of the tomb. In technical sense this construction represents a megalith, a quasi-dolmen.



Fig.66. Megalithic tomb with gable roofing from the Roman age near building No.2. Photo L.Tsonev, 2003.

The neighbour tomb (its location is shown here in Fig.15 by the number "3") of the same Roman necropolis demonstrates another surprise of megalithic character: the floor and the side walls of the dromos were carved in the mainland rock, and its cylindrical roof is made of several concavely carved large stone blocks - exactly the same approach was used to cover the dromos of building No. 2 (Fig.67). Obviously, the megalithic building techniques as well as the megalithic manner of religious thinking were amazingly resistent in the Balkan region. Although they appeared actively in the period XII-VI century BC they were not forgotten and were used by local builders even in II-III century AD!



Fig.67. Megalithic-type tomb of the Roman era in the vicinity of building No.2. Photo L.Tsonev, 2003.

Maybe it is worth remembering at the end of this section the comments of V.I.Markovin about **the striking "megalithic memory"** of the population of Western Caucasus [205, p. 318]: "By the end of the II Millennium BC the builders of the Caucasian dolmens were completely dissolved among the surrounding tribes. However, dolmens, like mounds, were used sometimes for intake graves - in their upper parts burial inventory of Scythian time, Meotian and antique pottery and coins can be found. On the territory of Western Caucasus dolmens were venerated by the local population of the Kuban river until XIX century". We observe the same megalithic memory also in the Balkan region.

The "accidental coincidence" discussed in the present study seems to be really so unusual, that it deserves a further profound analysis.

6. Comments on the chambers of buildings No.1, 2 and 3 from engineering point of view

The chambers of all the three buildings No.1, 2 and 3 have solid foundations. They lie on one huge monolithic plate (No. 1) or on a combination of several plates of medium size (No.2 and 3). The foundation penetrates under the chamber walls and ensures the stability to the whole structure.

The prismatic camera of building No.1 is unique all over the world. This is a prismatic room of purely megalithic character. It is created by assembling 11 huge orthostatic plates, contacting

inbetween only along their vertical side edges. Analogues of this constructive solution exist neighter in Western Europe nor in the Balkans and in Caucasus [206].

The chambers No.2 and 3 were created in the frames of microlithic architecture in dry masonry from well processed quadras. They are cylindrical structures. Only two similar cases are known both in the sense of architectural project, and in the sense of technical implementation. Remarkably, we find them again in a neighboring dolmen region - in West Caucasus - and nowhere else in the world.

(1) composite round dolmen near the village Lazarevskoye



Fig.68. Composite round dolmen near the village Lazarevskoye [207, p. 41].

(2) composite round dolmen at the river Zhane near the village Gelendzhik – Fig.69,70,71.



Fig.69. Composite round dolmen at river Zhane near Gelendzhik. Photo: The Great Sovjet Encyclopaedia. III edition, Moscow 1972, volume 8, p. 416. Drawing: [208, p. 142].



Fig.70. Composite round dolmen at Zhane river – scheme and photo after restoration [209].



Fig.71. Restoration of the dolmen near Zhane river [210].

A striking similarity of the construction techniques of these two Caucasian dolmens with the technology of the cylindrical chambers No.2 and 3 in the Balkans: dry masonry of quadras; the outher surface of each quadra is convex and the internal surface is concave. From a technical point of view the cylindrical walls of the dolmens near the river Zhane and near the village Lazarevskoye in the Caucasus are almost identical with the chambers No. 2 and 3, denoted on the Balkan Peninsula by the term "domed tombs".

7. Comparison of buildings No. 1, 2 and 3 in the context of history of architecture

In South-Eastern Europe people were building undertumular constructions consisting of tolos, dome and dromos by dry masonry of parallelepiped quadras (so-called false domes) for more than one Millennium: at Mycenae (XVI-XII century BC), in Crete (XIV-VIII century BC) and later in Etruria (VII-VI century BC), in Thrace (V-III century BC) and on the Kerch Peninsula (IV century BC – Tzarsky kurgan, Zolotoy Kurgan etc.).

In Thrace building of microlithic undertumular constructions begins in the heyday of the society and economy in V-III century BC after the cessation of dolmen construction. About 30 of these sacred monuments have been preserved in different degree. They are located in Southern Bulgaria (near the towns of Plovdiv and Kazanlak), and in North-Eastern Bulgaria (near the town of Razgrad), and also in the European part of Turkey [211]. According to prominent researchers [212], [213] these structures represent a reminiscence of the Mycenaean originals with a thousand years delay. In this period some Mycenaean sacral and architectural ideas, partly modified in the framework of the Thracian culture experienced a Renaissance in Thracian region. In some of these monuments excellent mural paintings have survived which express the interaction between Thracian and Hellenistic concepts (Kazanlak tomb [214]; Ostrusha tomb near the town of Kazanlak [215]; tomb near the village Alexandrovo, Haskovo region [216]; Sveshtari tomb near the town of Razgrad [217].

In the period II century BC – II century AD Thracian economy, culture and religion decline due to the Roman conquest in the Balkans. To take possession of Thrace, Roman Empire needed three centuries. No tombs or temples of this period are found until now.

In III-IV century AD a second, late economic and cultural bloom was registered in Roman Thrace. In the field of sacred architecture it was expressed in the creation of three new undertumular buildings consisting of tholos, dome and dromos: (i) temple No. 2 in locality "Propada", (ii) temple No.3 in locality "Mishkova niva" near the town of Malko Tarnovo and (iii) the beautiful temple of brick masonry near the town of Pomorie on the Black sea coast [218]. Concerning their main characteristics these buildings resemble Mycenaean undertumular constructions again, but in the same time they demonstrate some own, specific differences. Pyramidal domes of building No.2 (7-sided pyramid) and of building No.3 (10-sided pyramid) as well as the megalithic semi-cylidrical vault of the dromos of building No.2 represent an exceptionally original attempt to imitate the domes of the microlithic tombs from the Mycenaean times and from Thracian classics using concepts of megalithic technology although the last dolmens in Thrace were built in VI century BC. This specificity cannot be explained by Mycenaean influence, because the megalithic architecture was practised on the Balkan Peninsula for nearly one Millennium only in Thrace, but never in Mycenae. Therefore, this specificity could be explained only as a result of local, Thracian architectural tradition. The combination of Mycenaean architectural ideology and Thracian megalithic technology demonstrates exceptional survivability in the Balkan region.



Fig.72. Megalithic-type objects on Balkan Peninsula and directions towards neighbor megalithic areas with possible interactions. L.Tsonev.

The situation in West Caucasus differs from the situation on the Balkan Peninsula.

Caucasian builders realized more than 2,300 dolmens (i.e. structures with a flat roof of one or, more rarely, of two horizontal or inclined plates), monolithic or composite, and only one single time they created a vaulted undertumular structure, which is megalithic in all its components – building No.1.

As early as in the middle of the II Millennium BC Caucasian people try to buid dolmen chambers of rectangular and circular plan by means of microlithic technology - dry masonry of quadras forming the so called composite dolmens. Such technology is non typcal for this region and in this epoch. Composite dolmens are quite sparce (about 1.5% of all registered monuments), but their appearance indicates that local builders decided to experiment with new technologies differing from the usual megalithic concept. Since these structures are **synchronous** with the undertumular tolos tombs in Mycenae, they cannot be considered as an imitation or reminiscence of the Mycenaean models.

Neither building No.1, nor composite cylindrical dolmens in Caucasus can be considered as precursors or as imitations of the microlithic undertumular structures that emerged as late as in IV century BC in the Bosporan Kingdom in the region of Crimea and Kuban, when Mycenaean and Thracian culture and building technology disseminated in North-East direction towards the sea of Azov. More plausible seems the assumption that building No.1 as wel as the sparse composite dolmens in Caucasus are manifestation of an original process in the frames of the strong local millennial megalithic tradition which did not find a wide and durable expression in the following centuries.

We can conclude that the presence of megalithic elements in the temples No.2 and No.3 is undoubtedly connected with the local tradition of the Balkan megaliths. However, the roots of their specific realization in the form of a pyramid cannot be found among the monuments on the Balkan Peninsula. Megalithic pyramidal vault has been created (only one time!) more than two millennia earlier by the dolmen builders in West Caucasus (building No.1).

In order to complete our analysis let us mention **another exotic object** corresponding with the topic of the present paper.

The most ancient attempt to cover a large cylindrical chamber in megalithic manner (with large monolithic slabs, contacting inbetween only along their peripheral edges but not by means of dry masonry of quadras), is observed on the island Menorca (Balearic Islands, Spain), near the center of the entire huge West European megalithic region: this is the Hall with columns *En Goumés* near the village of Alaior, dated to II Millennium BC, Fig.73.

We shall denote this object as **building No.4** (its location is shown here in Fig.62). The attempt to create a megalithic roof was not entirely successful – the builders were forced to place a column (menhir) in the center of the cylindrical chamber to support the vertices of the triangular roof plates. Either the development of the local megalithic tradition did not invented the idea of a real megalithic pyramidal roof, or the diameter of the chamber was too great to withstand the pressure of a megalithic pyramidal roof.



Fig.73. Cylindrical megalithic hall with columns supporting the megalithic roofing in Alaior³, *Menorca, Spain.*

Columns as real supporting element were used in megalithic constructions extremely rare. In addition to Menorca, I found in the literature only two other references about the use of columns in roofing structures of the megaliths. Both both objects of this kind are registered in Caucasus.

V.I.Markovin [219] gives following information: "Overcoming such a complex task as the creation of vaulted building with conical cross section, the masters were afraid she might crumble under the weight of the cover plates. It was necessary to support the roof by a column. Indeed, in the centre of the dolmen under serial number 528 (located in the basin of Kizinka river) fragments of stone pillars in the form of a stele were found. It has supported the roof of the dolmen, because this dolmen, like the structures near to village Guzeripl, once had the camera covered by stone plates".

V.Trifonov [220] mentions another similar construction, discovered by Rezepkin: "The ceiling of one of the large dolmens (at village Novosvobodnaya, Klady, 40/1) was supported by a circular-sectioned, 3 m high stone column (Rezepkin 2000)". Here are the full bibliographic data about the original study of Rezepkin: *Rezepkin, A. D., 2000. The frühbronzezeitliche cemetery of Klady and the Majkop culture in Nordwestkaukasien. Rahden/Westf.: Verlag Marie Leidorf GmbH.*

The architectural idea of one axial column in the center of tolos finds wide application later, in microlithic constructions of the postmegalithic epoch. For example: some of the tombs in Etruria (VIII-VII century BC), in classical Thrace (V-III century BC) and in Roman Thrace (II-III century AD) Fig.74. In such cases, in addition to its real supporting role, the column performs

³ http://bs.cyty.com/menschen/e-etzold/archiv/img/gaumes5.jpg;

http://www.spain.info/en/que-quieres/arte/monumentos/menorca/torre_d_en_goumes.html; http://www.artehistoria.com/v2/obras/17680.htm

also a symbolic role, because the creation of a false dome in the above mentioned periods and regions would not have been too difficult.



Fig.74. Various undertumular tolos temples containing a central supporting column. Examples from Europe: a - tomb in Etruria⁴, VII century BC, **b** - tomb in Thrace⁵, Kazanlak, IV century BC, **c** - tomb in Thrace⁶, Pomorie, III century AD (Photo E.Dinev).

8. Conclusions

The present study describes three distinctive ancient stone structures in Eastern Europe No. 1, 2 and 3. The analysis shows that their pyramidal roofs are megalithic constructions which are unique because they do not exist in any other megalithic area of Europe. The objects are located in two adjacent megalithic areas on Balkan Peninsula and in Caucasus. They are very close in space but far too distant in time.

Prolonged practising of megalithic principles in both mentioned neighboring regions still does not permit us to conclude definitely that the builders of structures No.2 and No.3 in Thrace, II-III century AD, have borrowed the engineering idea about a megalithic pyramidal roof from building No.1 in Caucasus, 2300 BC. Our current knowledge permits us to maintain that **this archaeological situation manifests a unique case of remarkable technological coincidence in the development of two neighboring megalithic traditions**.

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⁴ http://www.canino.info/inserti/monografie/etruschi/tombe_etrusche/tholos.htm

⁵ http://traciantombs.blogspot.com/2013/07/mogila-shushmanetc.html

⁶ http://stock.evgenidinev.com/20824d2/

References

1. Markovin, V.I. Dol'meny Zapadnogo Kavkaza. Sovetskaya arxeologiya, 1973, tom 1, 3-23.

2. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

3. Trifonov, V.A. Chto my znaem o dol'menax Zapadnogo Kavkaza i chemu uchit istoriya ix izucheniya. V *Dol'meny – svideteli drevnix civilizacij*; Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 2001.

4. Megality Urala, red. S.A.Grigor'ev, L.V.Ivas'ko, Ekaterinburg 2010.

5. Fergusson, J. Rude Stone Monuments in all Countries; their Age and Uses, John Murray, London 1872.

6. Trifonov, V.A. Chto my znaem o dol'menax Zapadnogo Kavkaza i chemu uchit istoriya ix izucheniya. V *Dol'meny – svideteli drevnix civilizacij*; Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 2001.

7. Megalitite v Trakiya, Nauka i izkustvo, Sofiya, Chast I (1976) i Chast II (1982).

8. Blanché, R. L'Axiomatique, Presses universitaires de France, Paris 1965.

9. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

10. Megality Urala, red. S.A.Grigor'ev, L.V.Ivas'ko, Ekaterinburg 2010.

11. Fergusson, J. Rude Stone Monuments in all Countries; their Age and Uses, John Murray, London, 1872.

12. Cles-Reden, S. von. *The Realm of the Great Goddess. The Story of the Megalith Builders*, Thames and Hudson, London 1961.

13. Eric Peet, T. Rough Stone Monuments and their Builders, Harper & Brothers, London & New York, 1912.

14. Cope, J. *The Megalithic European. The 21-st Century Traveller in Prehistoric Europe*, Harper Collins Publishers, London 2004.

15. Megality Urala, red. S.A.Grigor'ev, L.V.Ivas'ko, Ekaterinburg 2010.

16. Eric Peet, T. Rough Stone Monuments and their Builders, Harper & Brothers, London & New York, 1912.

17. Trifonov, V. What Distinguishes Caucasian Megaliths from European Ones?, In: *Counterpoint: Essays in Archaeology and Heritage Studies in Honour of Professor Kristian Kristiansen*, ed. S.Bergerbrandt, S.Sabatini, BAR International Series 2508, Oxford 2013.

18. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

19. Megalitite v Trakiya, Nauka i izkustvo, Sofiya, Chast I (1976) i Chast II (1982).

20. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

21. Megality Urala, red. S.A.Grigor'ev, L.V.Ivas'ko, Ekaterinburg 2010.

22. Trifonov, V.A. Chto my znaem o dol'menax Zapadnogo Kavkaza i chemu uchit istoriya ix izucheniya. V *Dol'meny – svideteli drevnix civilizacij*; Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 2001.

23. Safronov, V.A. *Indoevropejskie prarodiny*, Volgo-Vyatskoe knizhnoe izdatel'stvo, Gor'kij, 1989, Glava 13.

24. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

25. Eric Peet, T. Rough Stone Monuments and their Builders, Harper & Brothers, London & New York, 1912.

26. Fergusson, J. Rude Stone Monuments in all Countries; their Age and Uses, John Murray, London, 1872.

27. Trifonov, V.A. Chto my znaem o dol'menax Zapadnogo Kavkaza i chemu uchit istoriya ix izucheniya. V *Dol'meny – svideteli drevnix civilizacij*; Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 2001.

28. Markovin, V.I. *Ispun — doma karlikov: Zametki o dol'menax Zapadnogo Kavkaza,* Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 1985.

29. Trifonov, V. What Distinguishes Caucasian Megaliths from European Ones?, In: *Counterpoint: Essays in Archaeology and Heritage Studies in Honour of Professor Kristian Kristiansen*, ed. S.Bergerbrandt, S.Sabatini, BAR International Series 2508, Oxford 2013.

30. Trifonov, V.A. Chto my znaem o dol'menax Zapadnogo Kavkaza i chemu uchit istoriya ix izucheniya. V *Dol'meny – svideteli drevnix civilizacij;* Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 2001.

31. Oxford Advanced Learner's Dictionary of Current English, Oxford University Press, 1987.

32. Blanché, R. L'Axiomatique, Presses universitaires de France, Paris 1965.

33. Fergusson, J. Rude Stone Monuments in all Countries; their Age and Uses, John Murray, London, 1872.

34. Eric Peet, T. Rough Stone Monuments and their Builders, Harper & Brothers, London & New York, 1912.

35. Ruseva, M. Problemi na trakijskata grobnichna arxitektura v b"lgarskite zemi prez V-III v.pr.n.e., *Godishnik na Nacionalniya institut za pametnicite na kulturata*, 1984, tom 3, 11-22.

36. Megality Urala, red. S.A.Grigor'ev, L.V.Ivas'ko, Ekaterinburg 2010.

37. Tsonev, L.V., D.Z.Kolev, Y.D.Dinchev. Thracian megaliths: typology, construction, state. In: *Proceedings of the First International Symposium "Ancient Cultures in South-East Europe and Eastern Mediterranean – Megalithic Monuments and Cult Practices"*, October 11-14 2012, Blagoevgrad, Ed. by V. Markov, Neofit Rilski University Press, Blagoevgrad, pp. 182-193.

38. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

39. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

40. Markovin, V.I. Dol'meny Zapadnogo Kavkaza. Sovetskaya arxeologiya, 1973, tom 1, 3-23.

41. Bol'shaya Sovetskaya E'nciklopadiya, III izdanie, tom 11, Sovetskaya e'nciklopediya, Moskva 1973.

42. Lavrov, L.I. Dol'meny Severo-Zapadnogo Kavkaza, *Trudy Abxazskogo instituta yazyka, literatury i istorii im. D.I.Gulia*, Suxumi, 1960, tom 31, str.121.

43. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

44. Lavrov, L.I. Dol'meny Severo-Zapadnogo Kavkaza, *Trudy Abxazskogo instituta yazyka, literatury i istorii im. D.I.Gulia*, Suxumi, 1960, tom 31, str.121.

45. Trifonov, V.A. Chto my znaem o dol'menax Zapadnogo Kavkaza i chemu uchit istoriya ix izucheniya. V *Dol'meny – svideteli drevnix civilizacij*; Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 2001.

46. Popova, T.B. Dol'meny stanicy Novosvobodnoj. *Trudy Gosudarstvennogo istoricheskogo muzeya*, Vyp. XXXIV (Pamyatniki kul'tury), 1963, Sovetskaya Rossiya, Moskva.

47. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

48. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

49. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

50. Popova, T.B. Dol'meny stanicy Novosvobodnoj. *Trudy Gosudarstvennogo istoricheskogo muzeya*, Vyp. XXXIV (Pamyatniki kul'tury), 1963, Sovetskaya Rossiya, Moskva.

51. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

52. Popova, T.B. Dol'meny stanicy Novosvobodnoj. Trudy *Gosudarstvennogo istoricheskogo muzeya*, Vyp. XXXIV (Pamyatniki kul'tury), 1963, Sovetskaya Rossiya, Moskva.

53. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

54. Trifonov, V.A. Chto my znaem o dol'menax Zapadnogo Kavkaza i chemu uchit istoriya ix izucheniya. V *Dol'meny – svideteli drevnix civilizacij*; Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 2001.

55. Popova, T.B. Dol'meny stanicy Novosvobodnoj. *Trudy Gosudarstvennogo istoricheskogo muzeya*, Vyp. XXXIV (Pamyatniki kul'tury), 1963, Sovetskaya Rossiya, Moskva.

56. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

57. Trifonov, V.A. Chto my znaem o dol'menax Zapadnogo Kavkaza i chemu uchit istoriya ix izucheniya. V *Dol'meny – svideteli drevnix civilizacij*; Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 2001.

58. Popova, T.B. Dol'meny stanicy Novosvobodnoj. *Trudy Gosudarstvennogo istoricheskogo muzeya*, Vyp. XXXIV (Pamyatniki kul'tury), 1963, Sovetskaya Rossiya, Moskva.

59. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

60. Trifonov, V.A. Chto my znaem o dol'menax Zapadnogo Kavkaza i chemu uchit istoriya ix izucheniya. V *Dol'meny – svideteli drevnix civilizacij;* Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 2001.

61. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

62. Trifonov, V.A. Chto my znaem o dol'menax Zapadnogo Kavkaza i chemu uchit istoriya ix izucheniya. V *Dol'meny – svideteli drevnix civilizacij;* Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 2001.

63. Popova, T.B. Dol'meny stanicy Novosvobodnoj. *Trudy Gosudarstvennogo istoricheskogo muzeya*, Vyp. XXXIV (Pamyatniki kul'tury), 1963, Sovetskaya Rossiya, Moskva.

64. Lavrov, L.I. Dol'meny Severo-Zapadnogo Kavkaza, *Trudy Abxazskogo instituta yazyka, literatury i istorii im. D.I.Gulia*, Suxumi, 1960, tom 31, str.121.

65. Popova, T.B. Dol'meny stanicy Novosvobodnoj. *Trudy Gosudarstvennogo istoricheskogo muzeya*, Vyp. XXXIV (Pamyatniki kul'tury), 1963, Sovetskaya Rossiya, Moskva.

66. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

67. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

68. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

69. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

70. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

71. Ruseva, M. Trakijskata kupolna grobnica kraj Malko T"rnovo. *Muzei i pametnici na kulturata*, 1982, tom 22, № 3-4, 47-50.

72. Delev, P. Megalithic Thracian tombs in South-Eastern Bulgaria. *Anatolica*, 1984, Vol. 11, 17-45.

73. Delev, P. Arxeologicheski prouchvaniya v rajona na Malko T"rnovo. V *Strandzhansko-Sakarski sbornik*, 1984, tom II, kniga 2, 45-50, Programa za nauchni izsledvaniya Strandzha-Sakar, Malko T"rnovo (Dokladi ot II interdisciplinaren simpozium 1980g.).

74. Delev, P. Two Tholos Tombs at Malko Tirnovo. V Thracia Pontica II, 1985, 74-84, *D"rzhavno obedinenie Kulturno-istorichesko nasledstvo*, Yambol.

75. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

76. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

77. Ruseva, M. Trakijskata kupolna grobnica kraj Malko T"rnovo. *Muzei i pametnici na kulturata*, 1982, tom 22, № 3-4, 47-50.

78. Ruseva, M. Trakijskata kupolna grobnica kraj Malko T"rnovo. *Muzei i pametnici na kulturata*, 1982, tom 22, № 3-4, 47-50.

79. Delev, P. Trakijskite grobnici kraj Malko T"rnovo. Turist, 1985, tom 83, № 7, 8-9.

80. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie,* kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

81. Delev, P. Arxeologicheski prouchvaniya v rajona na Malko T"rnovo. V *Strandzhansko-Sakarski sbornik*, 1984, tom II, kniga 2, 45-50, Programa za nauchni izsledvaniya Strandzha-Sakar, Malko T"rnovo (Dokladi ot II interdisciplinaren simpozium 1980g.).

82. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

83. Delev, P. Trakijskite grobnici kraj Malko T"rnovo. Turist, 1985, tom 83, № 7, 8-9.

84. Ruseva, M. Trakijskata kupolna grobnica kraj Malko T"rnovo. *Muzei i pametnici na kulturata*, 1982, tom 22, № 3-4, 47-50.

85. Delev, P. Arxeologicheski prouchvaniya v rajona na Malko T"rnovo. V *Strandzhansko-Sakarski sbornik*, 1984, tom II, kniga 2, 45-50, Programa za nauchni izsledvaniya Strandzha-Sakar, Malko T"rnovo (Dokladi ot II interdisciplinaren simpozium 1980g.).

86. Agre, D. Arxeologicheski razkopki na mogili v m.Propada kraj Malko T"rnovo prez 2004 g. V *Arxeologicheski otkritiya i razkopki prez 2004 g.*, AIM-BAN, Sofiya 2005.

87. Agre, D. Semejni grobni s"or"zheniya ot teritoriyata na Centralna Strandzha (I xil.pr.Xr. – IV v. sl.Xr.). V Zemite na B"lgariya – lyulka na trakijskata kultura, tom II, AIM-BAN, TEMP, Izdatelstvo na SU "Sv. Kl. Oxridski", Sofiya 2005.

88. Ruseva, M. Trakijskata kupolna grobnica kraj Malko T"rnovo. Muzei i pametnici na kulturata, 1982, tom 22, № 3-4, 47-50.

89. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

90. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie*, kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

91. Ruseva, M. *Trakijska grobnichna arxitektura v b"lgarskite zemi prez V-III v.pr.n.e.*, Ya, Yambol 2002. (PhD disertaciya na M.Ruseva, 1983g.)

92. Ruseva, M. Kupolnite grobnici v Strandzha. V *Strandzhansko-Sakarski sbornik*, 1984, tom II, kniga 2, 51-58, Programa za nauchni izsledvaniya Strandzha-Sakar, Malko T"rnovo (Dokladi ot II interdisciplinaren simpozium 1980g.).

93. Ruseva, M. Trakijskata kupolna grobnica kraj Malko T"rnovo. Muzei i pametnici na kulturata, 1982, tom 22, № 3-4, 47-50.

94. Ruseva, M. Trakijskata kupolna grobnica kraj Malko T"rnovo. Muzei i pametnici na kulturata, 1982, tom 22, № 3-4, 47-50.

95. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

96. Delev, P. Trakijskite grobnici kraj Malko T"rnovo. Turist, 1985, tom 83, № 7, 8-9.

97. Ruseva, M. *Trakijska grobnichna arxitektura v b"lgarskite zemi prez V-III v.pr.n.e.*, Ya, Yambol 2002. (PhD disertaciya na M.Ruseva, 1983g.)

98. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

99. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie,* kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

100. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie*, kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

101. Ruseva, M. Trakijskata kupolna grobnica kraj Malko T"rnovo. Muzei i pametnici na kulturata, 1982, tom 22, № 3-4, 47-50.

102. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

103. Delev, P. Arxeologicheski prouchvaniya v rajona na Malko T"rnovo. V *Strandzhansko-Sakarski sbornik*, 1984, tom II, kniga 2, 45-50, Programa za nauchni izsledvaniya Strandzha-Sakar, Malko T"rnovo (Dokladi ot II interdisciplinaren simpozium 1980g.).

104. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

105. Delev, P. Trakijskite grobnici kraj Malko T"rnovo. Turist, 1985, tom 83, № 7, 8-9.

106. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie,* kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

107. Ruseva, M. Trakijskata kupolna grobnica kraj Malko T"rnovo. Muzei i pametnici na kulturata, 1982, tom 22, № 3-4, 47-50.

108. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

109. Ruseva, M. *Trakijska grobnichna arxitektura v b"lgarskite zemi prez V-III v.pr.n.e.*, Ya, Yambol 2002. (PhD disertaciya na M.Ruseva, 1983g.)

110. Ruseva, M. *Trakijska grobnichna arxitektura v b"lgarskite zemi prez V-III v.pr.n.e.*, Ya, Yambol 2002. (PhD disertaciya na M.Ruseva, 1983g.)

111. Ruseva, M. Trakijskata kupolna grobnica kraj Malko T"rnovo. Muzei i pametnici na kulturata, 1982, tom 22, № 3-4, 47-50.

112. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

113. Ruseva, M. *Trakijska grobnichna arxitektura v b"lgarskite zemi prez V-III v.pr.n.e.*, Ya, Yambol 2002. (PhD disertaciya na M.Ruseva, 1983g.)

114. Ruseva, M. *Trakijska grobnichna arxitektura v b"lgarskite zemi prez V-III v.pr.n.e.*, Ya, Yambol 2002. (PhD disertaciya na M.Ruseva, 1983g.)

115. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

117. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

118. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

119. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

120. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

121. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie*, kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

122. Conev, L. Kulturniyat areal St"lpishhe (Dikilitash) pri s.Mechka, Rusensko, - svidetelstvo za vr"zkite mezhdu Trakiya i Frigiya v antichnostta. V *Dokladi ot konferenciyata "P"tuvane k"m B"lgariya*", Shumen, maj 2014 (pod pechat).

123. Conev, L. Kulturniyat areal St"lpishhe (Dikilitash) pri s.Mechka, Rusensko, - svidetelstvo za vr"zkite mezhdu Trakiya i Frigiya v antichnostta. V *Dokladi ot konferenciyata "P"tuvane k"m B"lgariya"*, Shumen, maj 2014 (pod pechat).

124. Conev, L. Otnovo za Madarskiya konnik, Domoplan, Sofiya 2012.

125. Kanic, F. *Album*, Centralna biblioteka i Nauchen arxiv na B"lgarskata akademiya na naukite, Sofiya 2004.

126. Delev, P. Trakijskite grobnici kraj Malko T"rnovo. Turist, 1985, tom 83, № 7, 8-9.

127. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

128. Delev, P. Arxeologicheski prouchvaniya v rajona na Malko T"rnovo. V *Strandzhansko-Sakarski sbornik*, 1984, tom II, kniga 2, 45-50, Programa za nauchni izsledvaniya Strandzha-Sakar, Malko T"rnovo (Dokladi ot II interdisciplinaren simpozium 1980g.).

129. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

130. Ruseva, M. Trakijskata kupolna grobnica kraj Malko T"rnovo. Muzei i pametnici na kulturata, 1982, tom 22, № 3-4, 47-50.

131. Ruseva, M. *Trakijska grobnichna arxitektura v b"lgarskite zemi prez V-III v.pr.n.e.*, Ya, Yambol 2002. (PhD disertaciya na M.Ruseva, 1983g.)

132. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

133. Delev, P. Arxeologicheski prouchvaniya v rajona na Malko T"rnovo. V *Strandzhansko-Sakarski sbornik*, 1984, tom II, kniga 2, 45-50, Programa za nauchni izsledvaniya Strandzha-Sakar, Malko T"rnovo (Dokladi ot II interdisciplinaren simpozium 1980g.).

134. Delev, P. Arxeologicheski prouchvaniya v rajona na Malko T"rnovo. V *Strandzhansko-Sakarski sbornik*, 1984, tom II, kniga 2, 45-50, Programa za nauchni izsledvaniya Strandzha-Sakar, Malko T"rnovo (Dokladi ot II interdisciplinaren simpozium 1980g.).

135. Ruseva, M. *Grobnica, xeroon ili svetilishhe?*, Muzei i pametnici na kulturata, 1987, tom 27, № 1, 30-33.

136. Shkorpil, K. *Opisanie na starinite v chernomorskata oblast* – Chast II: Svetilishha i pametnici s izobrazhenie na konnici, Sofiya 1926.

138. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

139. Delev, P. Trakijskite grobnici kraj Malko T"rnovo. Turist, 1985, tom 83, № 7, 8-9.

140. Ruseva, M. *Grobnica, xeroon ili svetilishhe*?, Muzei i pametnici na kulturata, 1987, tom 27, № 1, 30-33.

141. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

142. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

143. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

144. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

145. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

146. Ruseva, M. *Grobnica, xeroon ili svetilishhe*?, Muzei i pametnici na kulturata, 1987, tom 27, № 1, 30-33.

147. Ruseva, M. *Grobnica, xeroon ili svetilishhe*?, Muzei i pametnici na kulturata, 1987, tom 27, № 1, 30-33.

148. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

149. Delev, P., Ivanov, Ya. Spasitelni arxeologicheski razkopki na obekt «Antichna kupolna grobnica» v mestnostta Mishkova niva kraj gr. Malko T"rnovo, Burgaska oblast. V *Arxeologicheski otkritiya i razkopki prez 2005g.*, izd. Institut arxeologii Bolgarskoj akademii nauk, Sofiya 2006, 108-110.

150. Delev, P. Antichna kupolna grobnica v mestnostta Mishkova niva kraj gr. Malko T"rnovo, Burgaska oblast – *Publikaciya v Internete*

https://www.academia.edu/386174/%D0%9F%D0%B5%D1%82%D1%8A%D1%80_%D0%9 4%D0%B5%D0%BB%D0%B5%D0%B2_%D0%93%D1%80%D0%BE%D0%B1%D0%BD%D 0%B8%D1%86%D0%B0%D1%82%D0%B0_%D0%B2_%D0%BC%D0%B5%D1%81%D1%82 %D0%BD%D0%BE%D1%81%D1%82%D1%82%D0%B0_%D0%9C%D0%B8%D1%88%D0% BA%D0%BE%D0%B2%D0%B0_%D0%BB%D0%B8%D0%B2%D0%B0_%D0%BA%D1%88 %D0%B0%D0%B9_%D0%9C%D0%B0%D0%BB%D0%BA%D0%BE_%D0%A2%D1%8A% D1%80%D0%BD%D0%BE%D0%B2%D0%BE

(last accessed on 02.03.2015)

151. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie*, kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

152. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

153. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie*, kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

154. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

155. Delev, P. Trakijskite grobnici kraj Malko T"rnovo. Turist, 1985, tom 83, № 7, 8-9.

157. Ruseva, M. *Grobnica, xeroon ili svetilishhe?*, Muzei i pametnici na kulturata, 1987, tom 27, № 1, 30-33.

158. Fol, Al., Fol, V. Trakite, TaNakRa, Sofiya 2005.

159. Delev, P., Ivanov, Ya. Spasitelni arxeologicheski razkopki na obekt «Antichna kupolna grobnica» v mestnostta Mishkova niva kraj gr. Malko T"rnovo, Burgaska oblast. V *Arxeologicheski otkritiya i razkopki prez 2005g.*, izd. Institut arxeologii Bolgarskoj akademii nauk, Sofiya 2006, 108-110.

160. Delev, P. Antichna kupolna grobnica v mestnostta Mishkova niva kraj gr. Malko T"rnovo, Burgaska oblast – *Publikaciya v Internete*

https://www.academia.edu/386174/%D0%9F%D0%B5%D1%82%D1%8A%D1%80_%D0%9 4%D0%B5%D0%BB%D0%B5%D0%B2_%D0%93%D1%80%D0%BE%D0%B1%D0%BD%D 0%B8%D1%86%D0%B0%D1%82%D0%B0_%D0%B2_%D0%BC%D0%B5%D1%81%D1%82 %D0%BD%D0%BE%D1%81%D1%82%D1%82%D0%B0_%D0%9C%D0%B8%D1%88%D0% BA%D0%BE%D0%B2%D0%B0_%D0%BB%D0%B8%D0%B2%D0%B0_%D0%BA%D1%88% 00%B0%D0%B9_%D0%9C%D0%B0%D0%BB%D0%BA%D0%BE_%D0%A2%D1%8A% D1%80%D0%BD%D0%BE%D0%B2%D0%BE

(last accessed on 02.03.2015)

166. Ruseva, M. *Grobnica, xeroon ili svetilishhe?*, Muzei i pametnici na kulturata, 1987, tom 27, № 1, 30-33.

167. Delev, P. Antichna kupolna grobnica v mestnostta Mishkova niva kraj gr. Malko T"rnovo, Burgaska oblast – *Publikaciya v Internete*

https://www.academia.edu/386174/%D0%9F%D0%B5%D1%82%D1%8A%D1%80_%D0%9 4%D0%B5%D0%BB%D0%B5%D0%B2__%D0%93%D1%80%D0%BE%D0%B1%D0%BD%D 0%B8%D1%86%D0%B0%D1%82%D0%B0_%D0%B2_%D0%BC%D0%B5%D1%81%D1%82 %D0%BD%D0%BE%D1%81%D1%82%D1%82%D0%B0_%D0%9C%D0%B8%D1%88%D0% BA%D0%BE%D0%B2%D0%B0_%D0%BB%D0%B8%D0%B2%D0%B0_%D0%BA%D1%88 %D0%B0%D0%B9_%D0%9C%D0%B0%D0%BB%D0%BA%D0%BE_%D0%A2%D1%8A% D1%80%D0%BD%D0%BE%D0%B2%D0%BE

(last accessed on 02.03.2015)

168. Fol, V. Mishkova niva, Publikaciya v Internete

http://rock-cut.thracians.org/bg/s_m_mishkova.php

(last accessed on 02.03.2015)

169. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

170. Conev, L. Za xramovite kompleksi "Propada" i "Mishkova niva" do Malko T"rnovo, *Pametnici, restavraciya, muzei,* 2011, № 1-2, 40-64.

171. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie,* kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

172. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie,* kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

174. Fol, V. Mishkova niva, *Publikaciya v Internete* <u>http://rock-cut.thracians.org/bg/s_m_mishkova.php</u> (last accessed on 02.03.2015)

175. Fol, V. Mishkova niva, Publikaciya v Internete

http://rock-cut.thracians.org/bg/s_m_mishkova.php

(last accessed on 02.03.2015)

- 176. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s''vremie,* kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.
- 177. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

178. Delev, P. Trakijskite grobnici kraj Malko T"rnovo. Turist, 1985, tom 83, № 7, 8-9.

179. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie,* kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

180. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

181. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

182. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

183. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie,* kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

184. Delev, P. Antichna kupolna grobnica v mestnostta Mishkova niva kraj gr. Malko T"rnovo, Burgaska oblast – *Publikaciya v Internete*

https://www.academia.edu/386174/%D0%9F%D0%B5%D1%82%D1%8A%D1%80_%D0%9 4%D0%B5%D0%BB%D0%B5%D0%B2_%D0%93%D1%80%D0%BE%D0%B1%D0%BD%D 0%B8%D1%86%D0%B0%D1%82%D0%B0_%D0%B2_%D0%BC%D0%B5%D1%81%D1%82 %D0%BD%D0%BE%D1%81%D1%82%D1%82%D0%B0_%D0%9C%D0%B8%D1%88%D0% BA%D0%BE%D0%B2%D0%B0_%D0%BB%D0%B8%D0%B2%D0%B0_%D0%BA%D1%88 %D0%B0%D0%B9_%D0%9C%D0%B0%D0%BB%D0%BA%D0%BE_%D0%A2%D1%8A% D1%80%D0%BD%D0%BE%D0%B2%D0%BE

(last accessed on 02.03.2015)

185. Ruseva, M. Grobnica, xeroon ili svetilishhe?, *Muzei i pametnici na kulturata*, 1987, tom 27, № 1, 30-33.

186. Delev, P. Two Tholos Tombs at Malko Tirnovo. V *Thracia Pontica II*, 1985, 74-84, D"rzhavno obedinenie Kulturno-istorichesko nasledstvo, Yambol.

187. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

188. Delev, P. Arxeologicheski i epigrafski pametnici. V *Strandzha. Drevnost i s"vremie,* kniga 1, dyal 2, 1990, 159, Mezhdunarodna asociaciya Drevna balkanska zemya, Sofiya.

189. Delev, P., Ivanov, Ya. Spasitelni arxeologicheski razkopki na obekt «Antichna kupolna grobnica» v mestnostta Mishkova niva kraj gr. Malko T"rnovo, Burgaska oblast. V *Arxeologicheski otkritiya i razkopki prez 2005g.*, izd. Institut arxeologii Bolgarskoj akademii nauk, Sofiya 2006, 108-110.

190. Delev, P. Antichna kupolna grobnica v mestnostta Mishkova niva kraj gr. Malko T"rnovo, Burgaska oblast – *Publikaciya v Internete*

https://www.academia.edu/386174/%D0%9F%D0%B5%D1%82%D1%8A%D1%80_%D0%9 4%D0%B5%D0%BB%D0%B5%D0%B2_%D0%93%D1%80%D0%BE%D0%B1%D0%BD%D 0%B8%D1%86%D0%B0%D1%82%D0%B0_%D0%B2_%D0%BC%D0%B5%D1%81%D1%82 %D0%BD%D0%BE%D1%81%D1%82%D1%82%D0%B0_%D0%9C%D0%B8%D1%88%D0% BA%D0%BE%D0%B2%D0%B0_%D0%BB%D0%B8%D0%B2%D0%B0_%D0%BA%D1%88% 0%D0%B0%D0%B9_%D0%9C%D0%B0%D0%BB%D0%BA%D0%BE_%D0%A2%D1%8A% D1%80%D0%BD%D0%BE%D0%B2%D0%BE

(last accessed on 02.03.2015)

191. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

192. Ruseva, M. Trakijskata kupolna grobnica kraj Malko T"rnovo. Muzei i pametnici na kulturata, 1982, tom 22, № 3-4, 47-50.

193. Ruseva, M. Kupolnite grobnici v Strandzha. V *Strandzhansko-Sakarski sbornik,* 1984, tom II, kniga 2, 51-58, Programa za nauchni izsledvaniya Strandzha-Sakar, Malko T"rnovo (Dokladi ot II interdisciplinaren simpozium 1980g.).

194. Ruseva, M. Trakijska kultova arxitektura, Ya, Yambol 2000.

195. Shuazi, O. Vseobshhaya istoriya arxitektury, E'KSMO, Moskva 2012.

196. Markovin, V.I. Dol'meny Zapadnogo Kavkaza. Sovetskaya arxeologiya, 1973, tom 1, 3-23.

197. Trifonov, V.A., N.I.Shishlina. Dol'meny u stanicy Carskoj, raskopannye N.I.Veselovskim v 1898 g.: arxivnye materialy. *Izvestiya Gosudarstvennogo istoricheskogo muzeya*, tom 201, Moskva 2014, s.19-37.

198. Trifonov, V.A., N.I.Shishlina. Dol'meny u stanicy Carskoj, raskopannye N.I.Veselovskim v 1898 g.: arxivnye materialy. *Izvestiya Gosudarstvennogo istoricheskogo muzeya*, tom 201, Moskva 2014, s.19-37.

199. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

200. Trifonov, V.A., N.I.Shishlina. Dol'meny u stanicy Carskoj, raskopannye N.I.Veselovskim v 1898 g.: arxivnye materialy. *Izvestiya Gosudarstvennogo istoricheskogo muzeya*, tom 201, Moskva 2014, s.19-37.

201. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

202. Trifonov, V.A., N.I.Shishlina. Dol'meny u stanicy Carskoj, raskopannye N.I.Veselovskim v 1898 g.: arxivnye materialy. *Izvestiya Gosudarstvennogo istoricheskogo muzeya*, tom 201, Moskva 2014, s.19-37.

203. Safronov, V.A. *Indoevropejskie prarodiny*, Volgo-Vyatskoe knizhnoe izdatel'stvo, Gor'kij, 1989, Glava 13.

204. Agre, D. Semejni grobni s"or"zheniya ot teritoriyata na Centralna Strandzha (I xil.pr.Xr. – IV v. sl.Xr.). V Zemite na B"lgariya – lyulka na trakijskata kultura, tom II, AIM-BAN, TEMP, Izdatelstvo SU "Sv. Kl. Oxridski", Sofiya 2005.

205. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

206. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

207. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

208. Markovin, V.I. Dol'meny Zapadnogo Kavkaza, Nauka, Moskva 1978.

209. Trifonov, V.A. Chto my znaem o dol'menax Zapadnogo Kavkaza i chemu uchit istoriya ix izucheniya. V *Dol'meny – svideteli drevnix civilizacij*; Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 2001.

210. Trifonov, V.A. Chto my znaem o dol'menax Zapadnogo Kavkaza i chemu uchit istoriya ix izucheniya. V *Dol'meny – svideteli drevnix civilizacij*; Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 2001.

211. Ruseva, M. *Trakijska grobnichna arxitektura v b"lgarskite zemi prez V-III v.pr.n.e.*, Ya, Yambol 2002. (PhD disertaciya na M.Ruseva, 1983g.)

212. Kitov, G.; Agre, D. V"vedenie v trakijskata arxeologiya, Avalon, Sofiya 2002.

213. Bonev, Al. Ranna Trakiya. Poredica "Razkopki i prouchvaniya", Tom 31, AIM-BAN, Sofiya 2003.

214. Kitov, G. Mogili, xramove, grobnici, TEMP, Sofiya, 2008.

215. Kitov, G. Mogili, xramove, grobnici, TEMP, Sofiya, 2008.

216. Kitov, G. Aleksandrovskata grobnica, Slavena, Varna 2006.

217. Chichikova, M. *Carskata grobnica s kariatidite kraj selo Sveshhari*, Istoricheski muzej v Isperix, Isperix 2012.

218. Concheva, M. Xudozhestvenoto nasledstvo na trakijskite zemi, Nauka i izkustvo, Sofiya 1971.

219. Markovin, V.I. *Ispun — doma karlikov: Zametki o dol'menax Zapadnogo Kavkaza*, Krasnodarskoe knizhnoe izdatel'stvo, Krasnodar 1985.

220. Trifonov, V. What Distinguishes Caucasian Megaliths from European Ones?, In: *Counterpoint: Essays in Archaeology and Heritage Studies in Honour of Professor Kristian Kristiansen*, ed. S.Bergerbrandt, S.Sabatini, BAR International Series 2508, Oxford 2013.

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