

## PROPOSAL FOR A CULTURAL ROUTE IN THE TOWN OF GREVENA: "THE STONE BRIDGES OF GREVENA"

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*"You see ...we up here from the stone we were born ... With the stone we strolled ... and the stone we claimed ... My son! What was made that time, it cannot be made again now. The old men did their cross and built. They believed there was a saint inside every stone. And they put it on the building site, with a warm heart. Like they were praying .... With fear of the Lord ... ".  
(G. Lyberopoulos, Mountainous and Frontiers, Athens 1972)*

### **Abstract**

*The area of Grevena is located in a very beautiful natural environment with exceptional forests and many waters in rivers and streams. The residents of the area in order to be served with their transportation and cross the rivers and streams safely, they made old bridges. Many of them have been preserved up to date and became monuments of folk culture. They are bridges built with solid materials of the area, with passion and plenty of artistic folk sensitivity. These are the well-known stone bridges of Grevena that were made during the Ottoman domination during the 18th and 19th centuries.*

*The present research proposes the exploitation of these stone bridges through a specific cultural route. The route starts from above, from the springs of the Venetian River, the tributary of Aliakmonas, over which, as well as its tributaries, are situated the most stone arched bridges of Grevena. The route suggests the most important of them, since 17 of them have been designated as historic and preserved monuments.*

*It is noted that it is not random the choice of stone bridges in order to signify the peoples' communication with the Euro currency. The stone bridges on the back of the euro symbolize communication between the peoples of Europe and between Europe and the rest of the world.*

**Keywords:** *Cultural route, stone bridges, Prefecture of Grevena, historical and preserved monuments*



Cultural route to the stone bridges of Grevena

## **Introduction**

The Prefecture of Grevena is one of the 4 prefectures of the Region of Western Macedonia. It is located at the western end of Macedonia and in the northwestern part of Greece. It is a mountainous county where the occupation of the inhabitants it' s mainly agriculture, livestock farming, processing, trade and provision of services (administrative and tourist).

The area occupied by the present Regional Unit of Grevena has always been characterized as a region of great strategic importance and transit to and from Macedonia, Epirus, NW Thessaly and southern Albania through the road arteries - paths that crossed the area. During the historical development of the area and according to the circumstances each time, along these important roads - paths have been developed many settlements, knowing sometimes great prosperity and sometimes extinction.

The relief of the area with the many mountains, rivers and ravines made it significantly difficult for the inhabitants (mostly farmers, agriculturalists and traders) to travel and communicate, as well as for travelers on the inhospitable and inaccessible ridges of northeastern Pindos, and in particular Smolikas, Vasilitsa and Valia Calda.

These large mountainous masses of Grevena, precisely the largest mountainous masses of Western Macedonia, used to supply and continue unceasingly to supply, the longest river in Greece, Aliakmonas (297 km), the main tributaries of Venetikos and Grevenitis in the region of Grevena, as well as the most and great tributaries of Venetikos, such as Velonias, Stavropotamos and Smixiotikos.

Undoubtedly, in Western Macedonia, the region with the overwhelming majority of water resources in Greece, and in Grevena, the rivers have been and continue to be the determining factors of communication, as they cross-open communication channels in the mountains. Consequently:

- the geographical location of the Grevena area, through the passage of important roads, such as the Roman "Basilica Stratas" to Thessaly, as well as the derveni of Ioannina - Grevena (from the Turkish word "derven" which means narrow passage through mountainous masses, as well as gate entry or exit to the wider area) towards Northern Greece and Thessaloniki, combined with

- the rugged - mountainous relief of the area with the largest river network of Western Macedonia imposed the overflow of water barriers (rivers, torrents and small or larger streams) with the construction of stone arched bridges in order to facilitate the transport and communication. Most of the Grevena bridges that continue to exist till today were built during the Ottoman domination, as many of the residents of the area moved to more mountainous areas in order to escape from the dangers and lootings of the conquerors.

At this point, it must be underlined that the flourishing that occurred, especially in the 18th and 19th centuries, to both Epirus and several regions of Western Macedonia in their trade with the Balkans, Vienna, Turkey and Egypt, further signified the need to rebuild and optimize living conditions in the wider region. The construction of a bridge was a project of paramount importance for a region, since it would bring people, cultures, knowledge and goods while it would contribute substantially to the region's development.

The stone arched bridges of Grevena were built with sponsorships either of wealthy Turkish officials or with donations of affluent inhabitants of the area, they were built by craftsmen with a simple style of life, respect for nature and genuine passion for their art,

whose only criterion and measure was always human and his real needs. The technique of construction of the bridges of Grevena competes with the technique of the bridges of Epirus. The local craftsmen come mostly from the villages of Grevena that are neighboring the area of Voio (Dasyllio, Trikorfo, Kalloni, Kyparissi, Agios Kosmas, Ekklisies, Kydonies, Dasaki, etc.), as well as the neighboring mastorohoria villages of Epirus, and were therefore affected by the craftsmen of these areas. The craftsmen of Grevena, in cases where they worked for the construction of a bridge, undoubtedly gave their best self.

In their majority, the stone arched bridges of Grevena were built on great trails and strategic points of the prefecture, which proves that their construction and building were not accidental. From these bridges, were passing daily the inhabitants of the nearby communities, the flocks of the local breeders during their transfer from the mountain pastures of Grevena, to the overwintering areas of Thessaly during the autumn period and vice versa in the spring, as well as a number of travelers, merchant caravans, migrated to Central and Eastern Europe, craftsmen, travelers and others.

Among the varied vegetation and over the once foamed and sometimes calm waters of the rivers, the stone bridges revive legends and beliefs and are combined harmoniously with nature.

Most of the stone arched bridges of Grevena are located in the Venetian River, Aliakmon's largest tributary, which gathers the waters from the streams and small rivers from Dotsikos, Smixi, Samarina, Krania and Perivoli. The Venetian waters are so rich that the inhabitants of the area say that Venetic also gathers more water than Aliakmonas. Along the way through the Grevenian Pindos, the Venetian River, with thirteen (13) of the nineteen (19) most important bridges that continue to exist today, passes through canyons, vertical coniferous rocks and endless beauties, natural beauties that the visitor would never have known unless the stone arched bridges existed. ("Stone Bridges in Venetiko Potamos - Elements of Folk Culture", Environmental Education Center of Grevena, 2014).

Venetikos owes its name either to the Venetian passage or its blue waters (Vlach's word "vintos": blue). It is also known as "Polytsaris" or "Trivias", while at foreign sightseers it is also known as Rhedia.

Today, the bridges of Grevena are among the largest and most impressive bridges of Macedonia. In 1995, following the actions of the Prefecture of Grevena, the 11th Ephorate of Byzantine Monuments (Veria) declared according to a decree of the Ministry of Culture the most (17) of the bridges of the prefecture "preserved monuments".

Every bridge in Grevena has its own unique identity and the particular features that make it stand out in the visitor's memory. Among the stone arched bridges that we meet along the Venetian River, on a high-low path, are:

- The bridge of Dotsikos. It is the only bridge of the prefecture that is built in a village and became known to the general public through the film "Alexander the Great" by Theodoros Angelopoulos, as many scenes of the film were shot in the village.
- The bridge at Nidrouzi, between the villages of Alatopetra and Prosvoro. It stands out for the significantly large size of stones with perfect carving and placement. It is speculated that these stones were supplied to them by the ruins of an ancient royal palace located in the place of Kastri, near the position of the bridge, which was built with large carved stones, as evidenced by the excavations carried out there by the Aristotle University of Thessaloniki.

- The bridge of Ziakas, part of the former Basilica Stratas, from where the merchant caravans passed by in order to travel from Macedonia to Thessaly. It is also associated with the fights of the region's fighters for the liberation from the Turks.
- The bridge of Portitsa, outside the village of Spilaio, in perfect harmony with the wild canyon, stands impressive and gathers every year large crowds of visitors, who photograph and invite the world to get to know it through the internet.
- The bridge of Aziz Aga, imposing, having one of the largest open and high arc in Greece.
- The Spanos Bridge, connecting Epirus with Macedonia, is the largest in the prefecture of Grevena and one of the most important bridges of strategic importance. ("The Stone Bridges of Grevena", Prefecture of Grevena - Egnatia Odos SA, 2000 and "Searching the Stone Bridges of Greece", Evi Beligiannis, Livani Publishers, 2007).

Below in the text are recorded the manufacturers of these bridges and their places of origin.

### **The Mastorohoria and the Masters of Grevena**

During the difficult years of the Ottoman domination, and especially from the 16th century onwards, the lives of the inhabitants of several settlements of the Greater Grevena region, especially in the northern parts of the area, became increasingly difficult due to many political, social and geographic factors, the main ones of which were:

- the behavior of the Turks with the imposition of unbearable taxes and the exploitation of the property of the inhabitants,
- the raids of the Turk-Albanians,
- the infertile and barren land in the mountainous settlements of eastern Pindos due to the climatic conditions,
- the continuous population movements, mainly from neighboring areas (e.g. Epirus).

The above factors forced many of the inhabitants of these areas to abandon livestock farming and agricultural crops and turn to other occupations such as building art and stone processing. These occupations they considered that they were more lucrative and at the same time they could practice them away from their homes and villages.

Following consistently, with commitment and passion these professions, they have managed to become prominent foremanstars, stalks and great pelicans - stone carvers (buds, from the Turkish word "kudas", meaning stone). The succession of the building art and the processing of the stone that passed from the father to the son constituted a dominant feature in many settlements - villages and wider village regions, which, just as in other specific regions of mainland Greece, became known as Mastorohoria. Therefore, together with:

- the famous craftsmen villages of Konitsa and the area around Mount Grammos and the river Sarantaporos, and in particular Vourbani, Pysogianni, Chionades, Pyrgos (Stratsiani), Kastaniani, Drosopigi (Kantsiko), Plagia (Zermi) Kerasovo, etc.
- the craftsmen villages of Tzoumerka (Pramanta, Agnanda, Raftanaii et al.) and
- the craftsmen villages of Chouliarades (Houliarades, Michalitsi, Vastavetsi etc. in the south of Ioannina, were known to the ends of the earth also the craftsmen villages of Western Macedonia, both in the area of Voio Kozani (Pentalofos or Zoupani, Vithos, Avgerinos etc.) and in the west of the Prefecture of Grevena, most famous of which are Kalloni, Kyparissi, Dassilios, Klimataki, Kydonias, Diakos, Dasilios, Agios Kosmas, Dotsikos, Filippias etc. Consequently, it is certain that the bridges of Grevena, for the most part, were built by craftsmen from Epirus, Voiotis and locals from Grevena. The last mentioned come from the

mastorohoria of the prefecture of Grevena, that are above analysed, which are often included by scholars in the wider region of Voio Kozani, in view of the appropriate division of the West-Macedonian area into bridges and architecture in general. In any case, we can safely assume that the local craftsmen of the Grevena mastorohoria were heavily influenced by the masters of the neighboring regions, both Voio Kozani and Epirus in general. ("Macedonian Bridges", Georgios P. Tsotsos, 1997).

### **The Bouloukia of the Masters - the Kioproulides**

As mentioned above, most of the local craftsmen of the Grevena's craftsmen villages were educated and influenced to a large extent by the masters of the neighboring areas, both Voio Kozani and Epirus in general. They built in their turn monasteries, churches and bell towers, iconostases, houses and magnificent mansions, stone fountains and wells, cobblestone streets, mills, bakeries, but also magnificent one arched and multi arched stone bridges.

All of them were builders, folk builders, craftsmen of the stone (buzzards) and the secrets of their art passed from generation to generation, from father to son. The apprenticeship started at the age of 12-14 years, where there was work (in the workshops, in the under construction areas, on the banks of the rivers etc.), always under the supervision of the first master, while at the same time the apprenticeship formed the spiritual treatment. Emphasis was placed on the understanding of the elements of nature, the optimal utilization of the materials from the natural environment of each region and consequently the adaptation of the works to the natural environment and the real needs of the human being. Their only measure was human and his needs.

From these folk builders, the bridge-makers in particular were called Kochadrai Kioproulides from the Turkish word "köprü" or "kipri" which means a bridge or a stone bridge. The works of the buckwheat masters, one arched, two arched, multi arched stone vaulted bridges, characterized by an astonishing variety of forms, highlight the virtues of these masters, the diligence, the empirical knowledge, and the faith and love that they have fought for their art. It should be noted that the Kioproulides enjoy the respect of both the people and the Turkish conquerors, who in fact called them "the Friends of God".

Unfortunately, in most cases it is not known the name of the first master of a bridge, and the written testimonies about the origin of the craftsmen are minimal. It is certain that these people, people of measure, did not seek their posthumous fame. But the value of the stone bridges, of these unique works of art, highlights their grandeur and is our own cultural heritage.

### **The Organization of the craftsmen in their gagles**

The craftsmen of the stone were organized into groups called "bullocks" or "shinaphia" (essentially small-scale moving crews of folk builders, also referred to as "daifades" or "tsourmo" or "isnafia" or "guilds") names that differ from place to place. Most of the times the craftsmen who used to be the gaggle were relatives, usually brothers or cousins of the master (or the kalfa - practical architect), who was also the team leader. It is reported that when the bunch was not filled by relatives (or kamaros), they would also hire some others, usually fellow villagers, and if it was necessary (depending on the job) would take a child

from the neighboring village, then they would ask from him only auxiliary work, like carrying stones from the dam, making and carrying mud, etc.

Despite the predominant feature of the affinity of the members of each craft of the craftsmen, it operated on the basis of unwritten and strict rules, respecting the hierarchy of its members. Leader of the gaggle was the first master (master mall or chalcedon) who was usually an excellent craftsman of the stone (pelican). The role of the first master was literally multidimensional, since he was both a contractor and an employer and partner. He was responsible for:

- the closure of the agreement (finding work and signing the relevant contracts with sponsors - owners) of a project, e.g. house, church, bridge, which included the relative "bargaining" of the work.,
- the design of the construction of the project, based on its experience, its artistic instinct and imagination and, on the other hand, the requirements of the sponsor or the owner of the work,
- the supervision and the "general command" of the project, from the construction of the foundations, the angles (which "locked" the angons) and the facades, until its completion and delivery. His ingenuity and intelligence were the sufficient and necessary features for the successful completion of the difficult projects (bridges, church domes, etc.),
- the successful completion of the work of each of the craftsmen of the gaggle and the whole team,
- the fixing and payment of the fees of craftsmen and other members of the workshop, always in proportion to their value and their contribution to the project. Among them there were no written contracts of employment (most of them were illiterate), while their "contract" was the word of the foreman,
- their nutrition, ensuring the necessary conditions for their stay in the project area; and
- the general management of the tools and animals, with which the work and movement of the team took place.

Apart from the first master, the usual composition of a group of stone bridges, in a hierarchical order, was as follows:

- One or at most two Pelicans, excellent craftsmen in the stone pendant. Knowing the whims of the material they were working at once, they knew they had to adapt it to building the difficult parts of the project. The Pelicans worked slowly and steadily, and it is said that they used to sing and whistle in the kalekmama in order to be forgotten and not to hurry, since "a bad kalema, added more hours of work",
- two experienced craftsmen, builders for exterior building (working with camaroliths and angiolites),
- two or more Keyless Masons (less skilled masons) to build the interior of the walls,
- a lime or mud, which made the plaster and the tire for the bridle fitting,
- a carpenter making the wood for the woodcut (eg in the arches)
- two Damarzis or Mandemedes, who after the stone mining of the dam had helped the craftsmen in the inner building,
- one or two Chalcedons (or craftsmen - apprentice masters) as well
- one or two small males (masrotulai or otherwise "mopopadida"), usually young boys were carrying mud with the special wooden craft ("clay") as well as stones and sand with the animals from the dam.

Generally, minions were unskilled laborers and did the auxiliary work, while watching and learning art near the craftsmen.

The stages of the apprenticeship were started from a little craftsman responsible for the transfer of the stone, then responsible to make mud, stone cutter, craftsman - interior builder, craftsman - exterior builder, master craftsman, scholar - hewer or pelican. According to the oral testimonies of the masons, the pelican (or stone sculpture) was the last stage in learning art - a period of conventional time that lasted less than 6 - 7 years ("Kozani and Grevena, The Space and the People", 2004 , Section: Lithographic sculpture VV Nikita - Houliara).

Consequently, all the work of any project, from the extraction of the stone till the completion of the work, was made entirely by the "gaggle". Their basic materials were stone, sand, wood and mud. They used, always with respect, the materials of the area (both the stones and the woods of the forests of the area for the woodcuts), where they undertook the construction of a work.

Especially for the construction of the bridges they made a binding mortar the so-called "kurasani", whose main components were the removed lime, water, soil and tile. Often, other materials such as pumice stone, dried grass, straw, egg yolks and egg whites and animal bristles (goldfish) were often used to enhance its binding capacity. Kourahan was differentiated from area to area and from bridge to bridge, while the proportion of its materials was a sealing secret that passed from one generation of craftsmen to the next generation. ("Stone Bridges in Venetiko Potamos - Elements of Folk Culture", Environmental Education Center of Grevena, 2014).

### **Basic ways to create stone bridges**

Bridging as an art has been especially important for man and has played a vital role in improving his living conditions. The operative cause for the construction of the bridges was, as mentioned above, the facilitation of the inhabitants' movements and the overcoming of the natural obstacles (rivers, streams and torrents) that the geomorphology of each region presented.

The bridges, originally made with tree trunks that touched the bank or on large stones - rocks, were gradually replaced by simple wooden structures to follow the bridges from simple stonework and then the stone bridges with the really arched (or vaulted) construction.

Even today, there are many bridges that are built on older Ancient Greek and Roman ones, which were used in the past by the Byzantines alongside the new ones they were building. It is estimated that probably the 3rd, but certainly the 2nd millennium BC, was also devised the genuine turbidity, which later opened the way for the vaulted bridges whose joints, radially arranged, contribute to the center. During the 16th and 17th centuries, the Ottomans also contributed to the development of bridging, characterized by the pseudo-Islamic arc of their new constructions (A. Petronosis, 2001). The stone bridges of the wider region of Epirus and Western Macedonia were built during the Ottoman domination (most of the mid 18th to the middle of the 19th century), many times over the ruins of older ones, and are included in the way of their support, in the category of arched (or vaulted) constructions.

The stone bridges of Grevena, as well as the Epirus, are divided into two main categories, the lowlands and the mountain bridges. Lowland bridges, unlike mountain bridges, usually have more bows and therefore longer, and almost always these bridges have the greatest difficulty in founding.

In any case, however, all the bridges are unique monuments of our architectural culture, which, after centuries, continue to identify the identity of the area in which they are located, to highlight their historical and cultural heritage and to integrate harmoniously into nature. ("Bridge and Epirus", Sp. Mantas, 1987).

### **Sponsors - Financiers and Naming of the bridge**

The construction - erection of a stone bridge was characterized as a project with a great contribution to the local community but at the same time it was expensive, since usually the cost of the stone bridge required "... many pounds and thousands of grosia...". As a result, donor sponsors for the construction of bridges were usually:

- rich, philanthropists, benefactors Greeks (usually merchants): the former emigrants, who on their return from abroad benefited their village, either gratitude for their ancestors or for psychological reasons, since many of them wanted to be redeemed because they really felt badly that they went abroad and left their family and their villagers, and sometimes Greek natives, pre-eminent, eminent, great-shepherds and dignitaries, namely people with wealth and superior social status and power. Usually, these people have been enriched in their land by trade, livestock farming etc., and they used to undertake the finance of the construction of a stone bridge. According to the tradition, the financing of the Pramorica bridge was made by a great-shepherd from the mountains of Pindos, who lost his precious daughter from the rushing waters of the river and then gave the money to build the bridge.
- Several times is mentioned as donor-financier and the owner of the fields or an adjacent mill, since in this way the mill became more accessible to the inhabitants of neighboring villages.
- A religious person, such as an abbot of monasteries in the area, a monk, a metropolitan, a priest or an ecclesiastic man. As relevant cases are mentioned the contribution of Papa-Nikolas Christidis and the metropolitan of Sissiani-Shiattis Ierotheos Anthoulides in the case of the bridge of Dasyllio of Grevena that belonged religiously in his jurisdiction.
- Ottoman officials or Pasadas - Aggates, such as Aziz Agas, Mustafa Pasha or Spanos and Mahmut Pasha in Grevena, as well as
- a thief or armatolos, as in the case of Klefti (or Liatissa) bridge in the village of Spileo of Grevena, after making a vow and escaping from the Turks.

Rarely, they are referred to as sponsors:

- One or more (neighboring) villages among the residents of which there was made fundraising in order to build a bridge that would serve the needs of travelling to and from their area, as was the case - to a very large extent - the financing of the Dassylion Bridge in Grevena, while also the bridge of Dotsiko.
- Monasteries or Institutions, as in the case of the Holy Monastery of the Assumption of the Virgin Mary of Spileo in Grevena, which financed the construction of the Portitsa bridge, as well as
- women, mainly spouses of wealthy expatriates or Turkish officials, such as the bridge of Pasena (Aeshe, wife of Suleiman pasha of Ioannina), built in 1732 in Grevena in the Grevenitis river, but today it is not preserved.

It should be noted that most of the times, both in gratitude and as a sign of recognition to the person-financier, the bridge finally took his name.



However, the naming of the bridge by its financier is not a rule. Several times the bridge took its name from the place name of the nearest settlement (as in many cases in the area of Grevena - bridge Dotsikou, Ziaka, Kastro (Megaro), Dassylliou etc.) or from the place name of the rural area or location or the name of the mountain (such as the bridge at Nidrouzi in Alatopetra, Grevena), the name of the river or even the name of the gorge (like Portitsa bridge in Spileo in Grevena), in the wider area of the bridge.

Other times the bridge was named after the church or the monastery, the source or accidental event or a legend according to the tradition of e.g. a drowning, a struggle, etc. that existed or happened in the wider area respectively. Sometimes the bridge took the name of the owner of the land on which it was built (as in the case of the bridge at Mylos or in Floros the field, in the area of Ziaka of Grevena) or the name of the miller or the tenant who had his mill near the bridge (as in the case of the Katsogianni bridge, in the area under the Spileo in Grevena), without necessarily being the sponsor of the bridge.

Finally, rarely in the bibliography are mentioned cases in which the bridge took the name of the first master or the name of the financier of later repair - reconstruction.

In any case, the predominant naming of each stone bridge was the one that was finally formed by the inhabitants of the surrounding settlements - villages after several years of the use of the bridge. ("Stone Bridges in Venetiko Potamos - Elements of Folk Culture", Environmental Education Center of Grevena, 2014).

### **Selection of the position of the bridge**

Before the construction of the stone bridge began, the choice of the most suitable point for its erection was first to be taken.

Many times, as mentioned above, the stone bridges were built on the ruins of older bridges and therefore in these cases there was no question of choosing the location of the bridge. The oldest bridges and consequently the existing road, walker or passage dictated, in any case, the location of the new bridge.

Other times, usually when designing a new stone bridge, existing paths or passages could be modified more or less (extending them - building access to the bridge) in order to connect the two sides at the most appropriate location - point of the riverbed (or the canyon). In order to find this position, the first master along with the sponsor or the neighbors of the neighboring settlements were systematically walking and researching along the riverbed. The criteria for selecting the erection of the stone bridge were:

- the stable, preferably rocky, soil for foundation (not sandy or loose soil),
- the narrowest passage of the river (or ravine), in other words the point with the smallest riverbed width), while often taking into account the smallest depth of the river.

Typically, the first masters preferred rock and mountain extensions, as well as steep rocky slopes and rough paths, while avoiding flat muddy surfaces due to fixing problems. The foundations of the bridge should under no circumstances be precipitated either by the cargo of the bridge (goods, people, caravan animals) or due to natural phenomena. The first masters had in mind that the foundation level (both at the hillocks and the gullies) must be deeper than the erosion of the river's waters in order to lift the stone bows.

In general, in the mountainous - rocky areas, such as most of the part of Grevena is, the two (2) first criteria were those that mainly determined the location of the bridge.

On the contrary, in the lowlands, the existing roads and paths were the ones that mainly determined the erection of the bridge. In cases where rocky soils and narrow river passes could not be identified, the bridge was eventually built into sandy soils.

It is, therefore, perceived that the road often dictated the position of the bridge, and once again the position of the bridge was determining the road. The relationship or dependence of these two factors, the bridge and the (existing) road, was ultimately interdependent.

Immediately afterwards, the gaggle that took over the work was preparing the "damari", the area from which they would take the stones to crawl and build the bridge. The position of the dam was directly related to the erection of the bridge. The dam would must have the appropriate type and quantity of stone, and on the other hand it was desirable to be higher than the point of erection of the stone bridge, so that the stones would be moved more easily.

No bridge was the same to any other. Each bridge was a new project and each time the first master had to build it, taking into account the position and the morphology of the terrain, as well as the art and the potentials of its gaggle. ("Macedonian Bridges", Georgios P. Tsotsos, 1997).

### **General construction principles - Main design features of the bridge**

The design of the bridge was chosen by the first master (master mall). He accurately calculated both the shape and the dimensions of the bridge (number and opening of the arches, length and width of the deck), as well as the materials and stones necessary for its construction (the number and shape of the stones to be chiseled). He always designed the length of the bridge, the length between the banks of the river, the shape of the riverbed and the soil composition, and measured using the size of the palm.

To the extent that the criteria for choosing the position of erection of the bridge referred above permitted it, the master builders preferred to construct many arches (two, three or more - semicircular or acute) to avoid both high heights and large openings arches.

The construction operations of the stone bridge started from its foundations. On the rocky banks, the foundation of the extreme pedestals was made easily and securely on the rocks, as the craftsmen chiseled the rock in places and made "stairs" to adapt the foundation stones properly and to keep the thorns more stable. However, in the cases where the banks were not rocky or even the river was too large, then the foundations of the basement of the bridge (both the middle pedestals - bridges for bridges with two or more arches and the extreme pedestrian platforms) needed each time the deflection of the river water. For this reason, the craftsmen have always chosen to start foundation works during the summer months in order to have the less possible waters in the river.

It should be certainly emphasized that in areas such as Grevena, Voio and Epirus, the waters of many rivers and tributaries flowed unceasingly and explosively even in the summer period, resulting that the diversion of the waters is almost always significantly difficult and also dangerous.

After completing the deflection of the river water, then they proceeded to digging in or at the edge of the riverbed at a depth of up to 5 meters, immediately afterwards they "nailed" vertically thick wooden piles and then started to build the foundations of the pedestal with large stones on the piles. The above works were repeated for each podium of the bridge. The craftsmen were giving special care for the terraces, since they knew that these would be exposed to the greatest erosion, both by the humidity and by the hydrostatic pressure and

swirling of the river's momentum. In order to protect them, they were building stone supports or, otherwise, triangular projections, on the front and back of the pergolas.

The foundations were followed by the construction of the arches, always with the help of an appropriately shaped formwork (wooden skeleton - mold). The craftsmen were making indentations (or protrusions) in the pedestals, in or on which the carpenters supported the beams of the formwork very precisely. There were not only few times when the carpenters, due to the circumstances, were risking by putting the woodcut in the deep river bed.

The construction of each arc started at the same time on both sides and was gradually formed from the bases to the top. The craftsmen of the stone chose and waved with a unique art and precision of the turquoise, namely the arc stones that would be the first row of the arc (wreath or frieze). Tholites should have a wedge-shaped and equal dimension between them in order to be built in one or two layers simultaneously on both sides of the arc. At the top - center of the arc they placed the last central stone (swollen) called "key". It was the most important stone ("sacred stone"), since it "tied" all other stones in place and virtually "locked" the structure, shifting the weight of the bow to the bases of the bridge.

The craftsmen knew that the identity of the stone bridge, its unique beauty and its harmonious matcing with nature were largely due to the material - the type of stone from which it was made. The stones that were used in order to build the bridges in Grevena area were usually limestones, clay shale or sandstone, while in other areas harder rocks such as granites were used. The stone had to be compact, free of cracks and damages, and especially resistant to water and air.

In many bridges, besides their main arches, the craftsmen also built one or more smaller arches or arches (usually above the middle), so-called relieving arcs or pseudo-arches. The purpose of these constructions was twofold: on the one hand, to alleviate the construction of the bridge and, on the other hand, in cases of flooding (downslope) of the river to pass quickly through the water so that the pressure exerted on all the gorges to be extinguished and therefore "relieved" the body of the bridge.

After the completion of the construction of the main and the relieving arches, the craftsmen proceeded to fill the bridge on the bow and the side walls and at the end they formed the deck of the bridge (cobbled path), patching well-crafted stones and making large terraces to avoid the passers-by and the waggles that had the dragons and the caravans.

At the edges of the deck (cobbled) of the bridge once they were putting vertical stones standing on its surface, known as arcades, and sometimes low barrages, in order to protect the passers by the fall of the river. In any case, however, these constructions did not adequately protect the passers-by, especially in bad weather and strong air, and are therefore considered to be primarily for psychological or aesthetic reasons.

When the bridge was completed, the carpenters undertook to carefully remove the formworks in a row opposite to that of its original construction, that is, from the top to the bottom of the formwork. The piece of the formwork that supported the largest open-to-high arc of the bridge was the last one to be unripped. Shortly before this was removed, the first master stood on the scaffolding and hung on the inside of that bow an iron bell ("Cyprion") so as to strike and alert the passers-by when the wind blew loud and the passage of the bridge became dangerous.

Then they proceeded to remove the last part of the formwork. Everyone in the gaggle knew the importance and the danger of this work, since there were several cases of bridges

that had been collapsed in such cases and made vows in order to settle and definitively bind the stone bridge.

Finally, very often, on the tallest arch of the bridge or somewhere else on its body, he placed plaques or master inscriptions with information about the date of construction of the bridge and the name of the sponsor. Many times there were decorative themes on these plates, but rarely there were inscriptions with information about the first-master who built it. ("Stone Bridges at Venetiko Potamos - Elements of Folk Culture", Environmental Education Center of Grevena, 2014 and "Macedonian Bridges", Georgios P. Tsotsos, 1997).

### **A brief reference to the bridges of the area**

From the preserved stone arched bridges of Grevena 17 were listed as historical monuments with decrees of the Ministry of Culture. So, we have:

- With the Ministerial Decision DF / B1 / Φ36 / 35065/787 / 8-8-1985 - Government Gazette 629 / B / 18-10-1985 the bridge of Dotsiko was declared as a historic and preserved monument, since it is a remarkable example of the folk architecture years of Ottoman domination. It was actually the first of the stone bridges of Grevena, which was declared a historic monument.

It is the homonym bridge located in the center of the village of Dotsiko (old Dotsiko) of Grevena. It is built at the highest altitude (1,060 m) of all the stone bridges of Macedonia and the only one in the area, located in a settlement. It bridges Dotsikiotiko river (tributary of Venetiko) and allows communication between the two neighborhoods of the village, Tsigel Mahala and Kiadsavik Mahala.

It is a single arc 24 meter long bridge with a length of 2,40 meters and a height of 4 meters, with a very large arc opening (about 13 meters) in relation to its small height. It is, for example, an arc with a section of a circle (abducted) or abtschaka, as it is typical of the traditional technical terminology of the Macedonian masons (and in particular of Voio), which is not considered common in the popular bridges.

- With the Ministerial Decision of / Apx / B1 / Φ36 / 6303/149 / 25-4-1990 - Government Gazette 358 / B / 18-6-1990 the Passa bridge was declared as a historic and preserved monument with a protection zone of 200 meters around this.

The Ministerial Decision recognizes that it is a monumental work earlier than the 19th century.

The ruins of the Passa bridge, which was the largest bridge in Macedonia and the most important passage of the Aliakmonas River, are now at the "Gefyria" site of the Kokkinia Community of Grevena, under the village, to the west, about 5 km, Prefecture of Grevena and Kozani.

This bridge was a passage that facilitated the communication of the caravans of Epirus, Siatista, Kastoria and Kozani to the northwest Thessaly, as well as the immigrants from the region to Europe, where they traveled searching sometimes for work and sometimes for new markets and ideas.

The bridge of Passa had six (6) uneven arches and stretched from the west to the east. Its length is reported to have exceeded 100 meters, while the height of its upper middle arc exceeded 15 meters. It is said that under this arch there was a bell (called Cyprion) hanging warning of the caravans for the dangerous passage of the bridge when the weather broke, the wind was blowing with the wind and the momentum of the river was great. The above

features are impressive and in any case justify the reputation of the bridge of Passa as the longest but also the highest stone bridge of Macedonia. On the side of the bridge there is a Turkish outpost.

Both in its current form and in its old photographs available, it follows that:

Of the seven (7) total pedestals of the bridge, its five (5) terraces had openings - windows (except from its two edges) to channel the great momentum of Aliakmon's waters without threatening the static of the bridge. In most of the pedestals on both the west bank and the east bank, triangular protrusions are distinguished in order to smooth the flow of the river.

The bridge was built with thick sand, thick lime mortar, all of which gave a strong cohesive material, a kind of "kourasani" (sandstone) other than that of the Byzantines with a powdered tile. The stones, others extracted from the riparian rocks and others transported from the surrounding area.

Based on the information on the date of construction and the bridge's funding, it is clear that the bridge was built in 1680 by Mahmoud Passa (according to I. Lambridis in his book "About the Ecumenical Ages" 1880, Part Two , p. 152) at the place of Soubino - today's Kokkinia of Grevena). Consequently, the Passa bridge is one of the oldest, if not the oldest, bridge in Western Macedonia. Unfortunately, on April 14, 1941, it was cut off by the English to prevent the Germans from passing through. The legend of its construction resembles that of the bridge of Arta, where he wants the first master to bury his wife to the foundations of the bridge.

15 stone bridges of the area with the Ministerial Decision of the Ministry of Agriculture and Rural Development / APX / B1 / Φ36 / 29028/69 / 30-6-1995 - Government Gazette 632 / B / 18-7-1995 have been designated as historic and preserved monuments and are as follows:

- Katsougianni bridge of the early 19th century. It is located near the village of Spileo, on the Venetian River. It is a three arc bridge.
- Aziz-Aga Bridge, near the village of Trimoomo in the Venetian River. It is a three arc bridge and is characterized by the wide arc of the middle arc. It is probably dated in the 18th century.
- Pramoritza Bridge, at the borders of Grevena and Kozani. It is located in the tributary of Aliakmonas Pramorica, between the settlements of Klimataki and Anthohori. It was built in the early 19th century.
- Stavropotamos bridge. It bridges near Stavropotamos the tributary of the Venetian River near Kipourio. It could be dated in the first half of the 19th century.
- Papatakis bridge between the villages of Kyparissi and Agios Kosmas. A arc is saved. It dates back to the 19th century.
- Stone Bridge between the Communities of Alatopetra and Prosvoro. Of the oldest probably bridges. Below the arc there are stalactite formations of 20-30 cm long. It is built on the Venetian River.
- Bridge Portitsa, at the beginning of the canyon of Spileo village on the Venetian River. It was built in the 19th century. Its name is due to the proximity to the gate of the historical settlement of Spileo.
- Stambeki Bridge, near the village of Krania, at the springs of the Venetian River. It was built in the first half of the 18th century.
- Matsagani bridge, with one arc, at the edge of the Krania village, at the springs of the Venetian River. It probably belongs to the 19th century.

- Ziaka Bridge. A three arched bridge of 19th century on the Venetian River next to the settlement of Ziaka.
- Kastro Bridge. One-arched bridge between the villages of Megaro and Kastro, in Grevenitis river. It can be dated in the 18th century.
- Liatisa Bridge of early 19th century. It is located near the canyon of Spileo, in the Venetian River.
- Dassilio Bridge of 19th-century, located between the villages of Kalloni and Dassilio.
- Spanos Bridge, between the villages of Kosmati and Kipourio in the Venetian River. Bridge of 19th Century. It was built by Mustafa Passa or Spanos in the ruins of an older one.
- Kagelia Bridge, near Trikomo, in the Venetian River. A three arched bridge of the late 18th or early 19th century.

The above bridges, works of anonymous masters who knew perfectly the static behavior of these sensitive constructions, constitute a remarkable set of road works of the 18th and 19th centuries and provide important information on the passageways of the era. ("The Stone Bridges of Grevena", Prefecture of Grevena - Egnatia Odos SA, 2000 and "Macedonian Bridges", Georgios P. Tsotsos, 1997).

### **Special reference to the most important bridges in the area**

#### **- The Bridge of Spanos**

It is the largest bridge in the prefecture of Grevena and the largest preserved stone bridge in Macedonia. It bears the name of Mustafa Passa or Spanos from Argyrokastro, who was the sponsor of its construction.

It is located between the villages of Kosmati and Kipourio. Previously the bridge facilitated the communication not only of the neighboring villages but also of the inhabitants of North-Eastern Pindos with Thessaly in general.

Particular reference is made by the researchers to the morphology of the area and the specific point where the craftsmen chose to build the bridge. Despite the fact that there are much more narrow passages in the surrounding hills, which would allow the construction of a much smaller bridge, the craftsmen chose this location for two reasons:

- on the one hand, because in this position the rocky and uneven bottom of the river is ideal for foundation, unlike the relatively loose clayey soil in the hills and
- on the other hand, because of the great width of the Venetian River in this position, which is a significant catches the flow of the river.

The bridge is five-arched and has a total length of 85 m, a width of 3.50 m, while the height of its largest arch is 10.40 m. Its arches extend in a straight line from north to south and their size increases in succession. The bases of the arches - pedestals are well built with larger and highly elaborate chipped stones, placed in the isodomous system (rectangular stones). The pavement of the bridge is almost flat and the passage is very easy. The bridge impresses the visitor with its volume and robustness imposed on the surrounding landscape as well as for the perfect construction, since it is still functional for pedestrians and vehicles to date. According to G. Tsotsos (1997), the French traveler Puechevil, who traveled in 1806 to the wider area of today's Spanos bridge, commemorates in his travel impressions "... the existence of debris (five arches) from a very large bridge that built the 14th century, the ruler of the Ottoman Turks, Vajazet II, called Yildirim (Keravnos), when he conquered Epirus. "

It is believed that the bridge of Mustafa Passa or Spanos was built on these ruins (reported by the English traveler Leake, 1805), and that the bridge was reconstructed in 1846, a date that is engraved on the northeastern side of the arch of the larger arc. The Epirus historian I. Lambridis mentions at his book (1880, Part Two, pp. 152-153) that the sponsor of the bridge is Mustafa Passa or Spanos and the amount of sponsorship was 50,000 grossia.

Spanos built next to the bridge a guesthouse where they spent overnight caravans going to Thessaloniki or Ioannina, from which 400 grossia per year were collected, part of his income was used for the maintenance of the bridge, while in a position adjacent to the bridge was his grave Mustafa Passa or Spanos.

Till today, the name of the first master or the names of the bridge masters has not been known. The tomb of the Mustafa Aga or Spanos (a small building with limestone with a tombstone) was saved until 1980, but unfortunately was destroyed by thugs who were digging in the area looking for a hidden treasure.

Over the last years, the bridge has been running a variety of events, most notably the "Manitarogorti" of August lasting for 3 days. In the context of this celebration concerts, mountain and river activities (ecotourism), a bazaar of local traditional products and free mushroom soups and mushroom pickers with wild mushrooms are offered to guests.

#### **- The bridge of Aziz-Aga**

It is one of the most popular and accessible stone bridges in the area of Grevena and is located east of the village Trikomo (3 km) between the villages of Trikomo, Kosmati and Kipourio, in a very beautiful narrow valley in the Venetian River, surrounded by oak and rocky forests slopes.

It is a three arched bridge that extends in a north-south direction with a total length of 71 meters, width of 3 meters, while the height of its middle - largest arch, under which the stream flows, reaches 15 meters and its opening about 30m. This middle arc has the highest height and opening of any other arc between the Macedonian stone bridges and is one of the largest stone arches in Greece, making the Aziz-Aga Bridge especially distinctive and imposing.

Its two auxiliary arches fill water only when the river floods and have an opening of 8m. and 5m. respectively. The pavement of the bridge has large slopes and its passage, especially at the end of autumn and winter, requires great attention despite the fact that along the length of the bridge there is a parapet. At the bases of the large - middle vault (tributary) there are triangular projections (to smooth out the flow of water) and two small relief openings (windows) just above each of them to channel the flow of the river and relieve the bridge, when the water level rises too high. In addition, a bell (Cyprion) is hung on the inside of the large - middle vault, which warned by the sound the danger to the travelers, in case of very strong wind (necessary due to the large height of the bridge).

According to Epirus historian Ioannis Lambridis (1880, Part Two, p. 153), the sponsor of the bridge was Aziz-Aga, wealthy official of the region. The bridge was built in 1727, according to a plaque that was built on the eastern side of the bridge.

The name of the first master of the bridge is not mentioned. However, from narratives of the inhabitants of the area became known the tradition - a legend that accompanies its building. According to this, the bridge proved to be a very difficult task, mainly because of its length and height, since its middle arch fell two times immediately after the molds were removed. Aziz - Aga then threatened the first master that if the bridge fell for the third time "it

will get his head". In the end, the bridge stood up and the first master, watching the deflection from a safe distance (resorted to "Rachi Scyfti", a hill south of the bridge towards Kipoureos, fearing the threat), escaped and went to collect his high payment.

From the book of Spyros Mantas "The bridge and Epirus" (1987), the testimony of Sotiris Vlachos, which we cite about the conditions and feelings of the high stone bridges of the time, is of special interest (mentioned, of course, in the bridges of Epirus ), like that of Aziz -Aga:

"... When we walked these stone, the bridges, the high, were very dangerous. He walked with caution. The bindings of the animals were all arranged. The special Samar, the ropes especially past, the shutters that say it, the pie, the ones that squeezed under and behind, all these things were arranged. Enough, downhill, ascend, I dropped, but they did not leave, either. I walked with caution ... ". "... If they blew up, on the top, on the bridges. .... .. It was sucked on you too, over the bridges. Do you know what a bunch of mules are loaded in mules, 100 or 120 o'clock to say, mules of beasts and take them over?

### **- The Bridge in Nidrouzi**

This bridge is built on the Dotsikioto River before it joins the Smyxian River, which comes west, from Pindos to form the river Velonias, a main tributary of the Venetikon. The bridge is located between the villages of Alatopetra and Prosvoro, on the great path that connects Grevena with Samarina and Konitsa and is named after the homonymous mountain of the region. The bridge is also called Petrenius, since it stands out for its large, perfectly carved stones that makes it a unique and special case among all the bridges of the Grevena area.

It is a one-arched, 20 m long and 3.50 m wide, with an arc opening of 11.50 m and a height of 7.50 m. It is made of rectangular sandstone stones. The bridge crossing consists of rectangular stones smaller in size than harder limestone.

The bridge is considered by bridges experts as the only sample of high technique among all Macedonian traditional stone bridges, since it stands out for:

- the large size of the stones used to construct it (with dimensions of 0.5-1m long and 0.5m wide), and even the stones in the arc have a much larger size than what was usual, and
- the shape of its stones (rectangular parallelepiped) and the unique editing in the pilekma and the way of building the faces of the bridge with the horizontal rows of equal thickness (isodomous system)
- its rare elliptical arch, as well as its flat floor - pavement.

The date of construction of the bridge remains till today unknown. According to most reports, the bridge was built by the potter - the first master Vraggas (or Giorgos Lazos) (1867-1933) from Agios Kosmas (Tsiraki) of Grevena or of the same era and fellow-villager, Grigorios Siomos. So its building dates back to the late 19th and early 20th century. The sponsor of the bridge remains unknown.

### **- The Bridge in Kagelia, in the Venetian River.**

It is a two-arched bridge, with a main and auxiliary arc, total length 40.5 meters, width 2.80 meters, while the height of its largest arc is about 10 meters and its opening about 18 meters. It was built by the first master Stergios Lazos from Agios Kosmas of Grevena (old Tsiraki), one of the most famous masters villages of the region. The date of its construction



remains unknown, as well as the name of the sponsor. The most likely is that the bridge was built in the 19th century.

**- The Bridge of Ziakas**

Beneath the bridge passes Velonias river, tributary of the Venetikon. It is the homeland of the legendary hero Theodoros Ziakas, from where it took his name. Ziaka's stone bridge which was built during the Ottoman domination is 3 km away from the homonymous village. It was built before 1885 and is easily accessible. It is a double-arched with a significantly larger main (western) arch, reaching a height of 7.50 meters. The total length of the bridge is about 41 meters wide and 3,10 meters wide. According to historical traditions, there was a battle between Giannoulas Ziakas, brother of Theodore Ziakas, and the Turks. Tombs were found near the bridge.

**- The Bridge of Portitsa, in the Venetian River.**

The most popular of the stone bridges of the area of Spileo in Grevena is built right in front of the narrow-opening entrance of the canyon of Spileo, from which took its name. The river that passes under the arch of the bridge is the Venetian River, the tributary of Aliakmonas. The construction of the bridge is estimated in 1743 and according to sources it was built with offers from the Monastery of the Spileo. It is a double-arched with the opening of the large arc reaching 13.80 meters and the small one 5 meters. Its total length is 34 meters and its width is 2.70 meters, while its total height reaches 7.80 meters.

**- The bridge of Pramoritsa, in the Aliakmonas river.**

It is a beautiful bridge, a real work of art, located on the borders of the prefectures of Grevena and Kozani, on the river Pramoritsa, a tributary of Aliakmonas, between the villages of Klimataki and Anthochori. The bridge is four-arched, with as a main bow the northern one, free 15m wide and 9m high with a total length of 49m.

Oral tradition places the construction of the bridge around 1770-1780 with the funding of a great shepherd that lost its unique daughter from the rapids of the river. The tragic father considered this as a sign from God, who wanted to punish him for his greed.

## **Epilogue**

On April 24, 1997 Hellenic Post launched a commemorative stamp series titled "BRIDGES OF MACEDONIA". The four (4) first stamps depicted the elegant bridges of Grevena and circulated in 6 million pieces.

A very important project for the projection of the stone bridges and Grevena area is expected to be the interconnection of the bridges "Ziaka - Katsogianni - Liatissa (Klefti) - Portitsa - Kagelia - Aziz Aga - Kipoureio", as well as the formation of two places for recreation and rest, one at the beginning of the path of the paths at Ziakas Bridge and one at the Bridge of Spanos, with a total budget of 1,140,000 €. The services of the National Tourism Organization (EOT) completed at the end of 2011 the studies and the technical bulletin of this project, entitled "Ecotourism routes at the bridges of Grevena", and this is expected to be promoted to the Ministry of Development for evaluation and integration in the NSRF. Operator of the project is planned to be the Municipality of Grevena. However, due to

the financial difficulties that our country is undergoing, the project was temporarily postponed.

The purpose of this research was to propose the exploitation of stone bridges through a specific route, which would allow the story, the people who made them, the materials used in their construction, the legends and the beliefs surrounding them to be revealed.

The route chosen from above, from the sources of the Venetian River, the tributary of Aliakmonas, on which, as well as its tributaries, which are Velonia, Stavropotamos and Smixitikos, are found the most stone arched bridges of Grevena. The bridges that our route suggests are Dotsikos Bridge, Nidrouzi Bridge, Ziakas Bridge, Portitsa Bridge, Kagelia's Bridge, Aziz Aga's Bridge and Spano's Bridge. The selection of the bridges was made to signify the peoples' communication with the Euro currency. The stone bridges on the back of the euro symbolize communication between the peoples of Europe and between Europe and the rest of the world.



**Picture 1:** The stone bridge at Dotsiko (Source: <http://www.petrinagefiria.com/?q=content>)



**Picture 2:** The Bridge of Passa (<http://neatrapezounta.blogspot.gr/2015/04/45.html>)



**Picture 3:** The bridge of Spanos (Source: <https://www.spoudazo.gr/cityguide/grevena/item/4312-to-gefuri-tou-spanou>)



**Picture 4:** The Bridge at Nidrouzi (Source: <http://www.visit-grevena.gr/on-your-greece-while-tour-tourist/speed-baths/beach-pass-water-or-stone/>)



**Picture 5:** The Bridge at Kaggelia (Source: [http://trikomogrebenon.blogspot.gr/2011/12/blog-post\\_5180.html](http://trikomogrebenon.blogspot.gr/2011/12/blog-post_5180.html))



**Picture 6:** The Bridge of Ziakas (Source: <https://www.e-grevena.com/grevena-voltes-sti-skia-ton-manitarion/>)



**Picture 7:** The Bridge of Portitsa (Source <https://www.newsbeast.gr/travel/destinations/arthro/2625216/to-gefiri-stin-isodo-tou-farangiou>)



**Picture 8:** The Bridge of Portitsa (Source: personal file)



**Picture 9:** The bridge of Pramorica (Source: [http://3.bp.blogspot.com/-17MbwSnaiiw/VXddBReKmHI/AAAAAAAAAJrs/8zWw2V295X4/s1600/icon\\_template.jpg](http://3.bp.blogspot.com/-17MbwSnaiiw/VXddBReKmHI/AAAAAAAAAJrs/8zWw2V295X4/s1600/icon_template.jpg))



**Picture 13:** Geophysical Map of the Prefecture of Grevena (Source: [http://users.sch.gr/ntinos\\_psilop/index.php?option=com\\_content&view=article&id=329:xartes-ditiki-makedonia-grevena&catid=127:xartes-ditiki-makedonia&Itemid=377](http://users.sch.gr/ntinos_psilop/index.php?option=com_content&view=article&id=329:xartes-ditiki-makedonia-grevena&catid=127:xartes-ditiki-makedonia&Itemid=377))

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