NEW APPROACHES TO THE PROTECTION AND PRESENTATION OF ARCHITECTURE IN THE ARCHAEOLOGICAL PARK *VIMINACIUM*

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Summary: *Viminacium archaeological park is located near the mouth of the Mlava and the Danube river, near present-day Kostolac, 12 km from Pozarevac. Viminacium was the largest town in Upper Moesia and an important military centre. Roman military camp and the town were built in the first century and lasted until the beginning of the seventh century; it was one of the most important legion camps on the Danube, and for a time the capital of the Roman province of Upper Moesia. A great number of restored structures, monumental as well as various adjoining ones which were later added or they intersect and overlay them, testify on intensive building activities. The purpose of the work is to indicate, through the critical analysis and evaluation, the advantages and disadvantages of certain approaches of protection and presentation of the remains, the integration of the old - new at the archaeological site Viminacium, as well as at other sites in our surroundings, but also to identify the elements which should be incorporated into the future conduct of protection and presentation of archaeological sites in order to change and improve certain approaches. New approaches have to follow more consistently recent international charters and recommendations, and should be based on contemporary trends in protection, revitalization and presentation of archaeological sites, which is particularly reflected in the adoption of the Master Plan as a prerequisite for action, more liberal application of new materials and new constructive structures in protection and reconstruction, application of modern technologies (3D animation) in the presentation of the sites and the like. This research will be a significant contribution to the objective and critical analysis of the main modern methodological approaches and the achieved results in the sphere of protection, revitalization and presentation of Viminacium archaeological park, as well as to future approaches in other archaeological sites in Serbia and in the region.*

Keywords: *Archaeological Park, integrative protection, modern presentation, preservation of authenticity, improvement of approaches*

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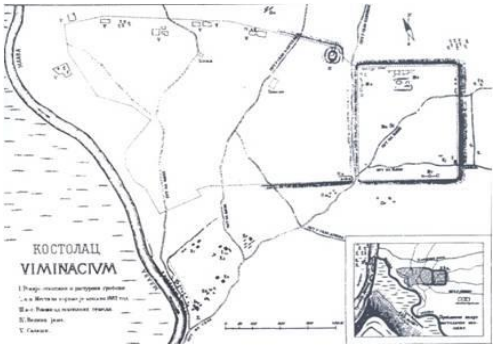
1. THE HISTORY OF EXPLORATION AT THE ARCHEOLOGICAL SITE OF VIMINACIUM

The first archaeological excavation of Viminacium were carried out by the founders of archaeological science in Serbia, Mihajlo Valtrović and his student Miloje Vasic, in the late 19th and early 20th century. The architect Mihajlo Valtrović first began archeological excavation of Viminacium in 1882 and presented the plan of military camp and town. His plan represents a valuable data, and the dimensions of the military camp 430x350m which he gave, today have been confirmed as the most precise.
Miloje Vasić, a student of Valtrović, continued his tremendous work in the field of archeology. Twenty years later, Vasić came do Viminacium and started new archeological excavations in 1902 and 1903. In the course of these two years, he significantly improved excavation of Viminacium. Vasić, as Valtrović, believed that the camp was rectangular, but its dimensions were somewhat different. Based on *cardo* and *decumanus*, he believed that the dimensions of the legion camp in Viminacium were 442,70 (cardo) x 385,60 m (decumanus). [1]



Picture 1 – The base of military camp according to M. Valtrović
(Source: http://viminacium.org.rs/viminacium/istorijat-istrazivanja/)

After archeological excavations of Mihajlo Valtrović and Miloje Vasić, almost three quarters of century passed without excavation works on Viminacium. Archeological Institute of the Serbian Academy of Sciences and Arts undertook great protective archeological excavations of Viminacium under the leadership of Ljubica Zotović. In the period from 1972-1975, she started a project with Vladislav Popović and Vladimir Kondić and from 1976 to 1997 she independently supervised protective archeological excavation in Viminacium. Over the course of 500 years of life in this area, along with the town and military camp, a great number of necropolises was formed of which Valtrović also spoke. After war excavations, started in 1973 and chance excavations of graves, confirmed the existence of Roman necropolises east from the military camp and north and south from the camp and settlements which were founded along with the camp. Necropolis on the west side has not been confirmed because no archeological excavations have been carried out in that area. [2]

Since 2000, a multidisciplinary team of young researchers led by Miomir Korać from the Archeological Institute of the Serbian Academy of Sciences and Arts in Belgrade has been working on the excavation. Beside archeologists, mathematicians, electrical engineers, geophysicists, geologists, petrologists, there are researchers dealing with remote sensing, 3D modelling and formal analysis as well as artificial intelligence in this group. Their wish is to unearth squares and temples, theatres and hippodrome, baths, streets and quarts of the city from the arable lands where for centuries they lain, so they could become part of world and our cultural heritage. For several years, a group of researchers from the Centre for New Technologies has been taking part in the Viminacium archeological project where they develop and apply methods of non-destructive field exploration. This involves the application of modern geophysical methods adapted to the requirements of archeology. The methodology of exploration of a big archeological site such as Viminacium includes the processing and interpretation of satellite and aerial photographs, the application of geophysical methods such as geoelectric, geomagnetic and geo-radar measurements, as well as the use of the cutting edge geodetic equipment (optical and GPS total stations) for global satellite and land positioning. As a result, all the information registered in the field becomes a part of a unified databank, which makes it possible to consider each new result in a much more comprehensive context. The application of geophysical methods in archeology is based on the study of variations of certain physical fields which are being observed. Since the registered anomalies of a physical field (gravitational, magnetic, electric, electromagnetic, etc.) are mainly of low intensity, sophisticated modern equipment is required to isolate such phenomena. Current advances made in the development of instruments and computers makes it possible to apply various new methods in archaeological research. The application of new technologies on the archaeological site such as Viminacium has definitely made it possible to get a picture of a vast area within a comparatively short period and by non-destructive methods. Based on obtained results, planning of archaeological excavations with great precision and effectiveness has been enabled. In addition to this, it is now possible to identify archeological objects even before the excavation thanks to the 2D and 3D analyses. [3]

The northern gate of the military camp – *Porta praetoria* was excavated after 2000 by systematic archeological excavations. The remains of the entrance gate, with massive pavements and richly decorated architectural elements, indicate that the camp was a part of the powerful defense system on the northern border of the Empire. [4]

Picture 2 – The remains of the northern gate of the military camp (photo: M. Nikolić)

The baths can be specifically distinguished in Viminacium not only by its splendor but also by its architectural design. The archaeological excavations have shown that there were five conchs, four of which were the so-called tepidaria and the fifth one was a frigidarium. The baths have been preserved to the level of the hypocaust, which shows evidence of several stages of construction. The remains of fresco paintings testify to the luxury of the baths. [5]

Pic 3 – The protection and presentation of the baths (photo: M. Nikolić)

The third very important building excavated on the site is **the mausoleum**. The mausoleum is square in plan and it measures 20x20 meters. It is built of stone blocks and ashlars and decorated with columns. In the middle part of the mausoleum there is a central building of dimension 5x5 m built of green schist bonded by mortar. There are stone pedestals which carried columns at the corners of the building. In the central part of this building there is a tomb. The mausoleum probably ended in a triangle. [6]

Pic 4 – The protection and presentation of the mausoleum

(photo: M. Nikolić)

Roman aqueduct has been excavated in about 1000 m. Geophysical methods showed another 1,800 meters, while remote sensing found an additional 1,350 meters of it. The Aqueduct was built of stone bonded by lime mortar. The sides of the aqueduct were first covered by water resistant mortar and then by lime one. The bottom of the aqueduct is made of fire-baked bricks with stamps of the Roman legions that built this aqueduct. The aqueduct is 10 km long in total length and it brought drinking spring water into the ancient city and military camp of Viminacium. It is a remarkable civil and engineering undertaking. [7]

Over 10.000 graves dating from 4th century BC to 6th century AD have been uncovered during excavation carried so far. There are several variants of these grave forms: common rectangular grave pits, sometimes with a cover made of fire-baked bricks laid flat or in two sloped roof, with a plank or longitudinal half of an amphora as a cover, and graves a étage which could have inner floor built in.

Pic 5 – The protection and presentation of certain tombstones within the Mausoleum (photo: M. Nikolić)

The **memoria** marked as **G-4816** is one of the most representative structures of its kind in Viminacium. It has a form of a cross and contains 11 burial places. It is north-south oriented. The entrance is on the south side. It was built of fire-baked bricks bonded with lime mortar. One could enter through a 5 metre long hallway of which 3.70 m were stairs. These stairs led down to a depth of 3m where the floor of the structure was located. A vault in the shape of a cross was placed over the rectangular area. The walls were covered with lime mortar containing parts of pounded bricks.

The mortar was painted with frescos. At a distance of 1.5 meters from the south-east corner of memoria G-4816 there is another **memoria G-4815** and it contains nine burial places. It is north-south oriented. This structure was greatly damaged and plundered by quarrying

of building materials. It is built of fire-baked bricks bonded with lime mortar. The walls are plastered within and traces of red, green and blue colour are visible.
During archeological excavation in 1985, **a crypt with sarcophagi** was uncovered. The crypt is of rectangular base, oriented west-east with the entrance on the west. It was built of fire-baked bricks bonded with lime mortar. All the walls, except western one, were destroyed by plunderers. The crypt was covered by a barrel vault and painted. Red, black, blue, green, ochre and white colour were used in painting. Geometric and floral motifs are represented. The sarcophagi were richly decorated. [8]
Archeological explorations of the **Amphitheatre** have been in progress nowadays. It is located in the north-east part of the town and 50 metres from the legion camp. The first excavations were carried out at the end of 19th century, and after geophysical survey, systematic archeological excavation of this structure began in 2007. [9]

2. APPLIED MEASURES OF TECHNICAL PROTECTION ON THE REMAINS OF ARCHITECTURE

Certain measures of technical protection in the structures within the site directed by Ljubica Zotović were carried out in the second half of the 20th century, in the period from 1976-1997, these being connected to two memorias (memoria marked as G-4816 and memoria marked as G-4815) and the crypt with sarcophagi. Memorias have been conserved at the level of low excavated walls and certain parts of memorias to which a measure of technical protection - restoration has been applied have been presented The memorias have been presented within the object on the premises of the thermo-electric power plant Kostolac B. Temporary protective roofing structure over both memorias have been built. During archeological excavation in 1985 a crypt with sarcophagi was uncovered. The object has been conserved and it is accessible to visitors on the premises of the thermo-electric power plant Kostolac.
No protective structure has been built. [10]
A multidisciplinary team composed of extraordinary experts from different fields led by dr Miomir Korać from the Archeological Institute of SASA has worked on exploration of the Roman town and military camp. **Northern gate, the Baths and the Mausoleum**, three most significant buildings on the Viminacium site, have been conserved and covered by permanent protective roofing structures and in the case of baths a partial reconstruction of certain parts of excavated conchs has been carried out. During the conservation of the baths and the mausoleum, stone and fire-baked bricks from the very site were used. The mortar used during the conservation was made from the cement brought from Italy. In the case of northern gate, only covering by a permanent protective structure has been done without conservation of the excavated walls.
Above mentioned archeological remains of the buildings have been covered by a light lamellar structure and a special covering sheet so called French awning. The use of such materials makes it possible to bridge large spans without any support in the monument itself. What is especially important, the setting up of such roofing structures does not involve any damage to the archaeological layers. The objects have been set on big concrete blocks and they are bounded to the roofing by anchors. The Northern gate of the military camp and the baths have been covered by transparent awnings made of special material

and have curtains designed in such a way as to provide good ventilation in the summer months. Roofing structure over the mausoleum consists of supports made of bonded lamellate wood (BLW). The base of the structure has eight curved and four straight BLW supports. The other elements of the wooden structure are made of bonded lamellate and solid wood, while the metal structure is anchored between the BLW supports. The bond between BLW supports of the base structure are joint and screwed.
The bond between elements of solid wood which forms the pyramidal apex is tight, achieved by metal connectors. The curved supports have a span of 20 meters and their base is in the form of a square with rounded angles. The structure covers an area of 32 x 32 meters. It is set on concrete foundation walls which enclose the area of necropolis underneath the structure. The area of the necropolis is square in form with several concrete extensions for the graves of large dimensions.
The roofing structure follows the form of the space it covers. The biggest, central grave in the necropolis is lit directly through the top part of the structure. Thus the central part in the necropolis is highlightened. [11]

Pic 6 – The protective structures over the northern gate of the military camp (left) and over the mausoleum (right) (photo: M. Nikolić)

Because of its economy, protective structures made of bonded lamellate wood are increasingly replacing traditional roofing structures. The large span and the materials of this structure imparted elegance and warmth to the site.
However, a question of the unreliability of such structures emerges, in particular due to the effects of natural phenomena, such as atmospheric precipitation (rain, snow, and hail), temperature changes (effects of frost and humidity), and entry of birds, insects and others.
A part the Roman aqueduct was relocated because it was endangered by the work of strip mine Drmno.
Parts of the aqueduct were cut precisely in 1 metre long segments and transferred to a protected zone by specifically designed lead sarcophagi. A part of aqueduct was presented at the site right next to the mausoleum.
One of the problems with applied procedures of technical protection at the archeological site of Viminacium refers to the permanent protective structures and their reliability. It has already been pointed out that the questions of the reliability of these structures against natural phenomena represent a significant problem in the protection.

A major problem in protection of some remains of buildings is non-existence of protective structures in the applied procedure of conservation (the crypt with sarcophagi and a part of the Roman aqueduct).

3. APPLIED MEASURES OF MONUMENT PRESENTATION ON THE REMAINS OF ARCHITECTURE

During the presentation of archeological remains of architecture, there was a general attitude that Viminacium should be a model for all archeological sites in our surroundings. Archeological park of Viminacium represents a model for economic development of the local community which in turns leads to regional development. Development of the local and regional model is considered as prerequisites for the creation of cooperation model with Europe.

In the period from October 2003 to October 2004, four great and significant buildings with remains in site were covered and presented: Paleochristian memorie, Northern gate of the military camp, Roman baths and mausoleum. Paleochristian memorie was excavated and presented in its entirety. A temporary protective structure was built. The northern gate of the military camp was just roofed, but the presentation of the parts of this building has not been done. Roman baths were excavated, protected and roofed. Presentation of some parts, ex: hypocaust was carried out but the presentation of the floor and the equipment was not. The work of the greatest scope was realized within the mausoleum. The mausoleum has been presented in its entirety as well as some tombs. The 138 metre long path leads to the basement where three tombs have been presented. The first tomb is dedicated to Cupid. The second tomb is Christian, and it is painted with earth heavenly rider with the representation of paradise. It is a circular way of narration. The third tomb is pagan and is dedicated to a young woman. During the presentation of all three tombs, lighting, which is cold and dim, was taken into account, infra-red camera was set as well as the glass over the frescoes for the purpose of protection. Two frescoes are poster copies, while only one is the original fresco. The authenticity of the frescoes was disregarded by presentation of copies.

Domvs Scientiarvm Viminacivm represents a newly constructed building which was built in seven months within the archeological park. Domvs Scientiarvm Viminacivm or the Centre of Viminacium has multisignificant role both in business and in the scientific sense. It is an integral part of the inseparable whole along with the Roman town and military camp. Viminacium Centre is designed as a place where business and intellectual elite would gather in a certain period, in the atmosphere of the exploration of the Roman town and military camp. The rest of time it would be dedicated to tourists. The Centre has several functions: scientific, educational, expert and marketing, with the aim of supervising the Centre as an attractive tourist offer. The function and purpose of the Centre certainly is raising the cultural and economic level of the region – District of Braničevo as well as the tourist part. The purpose is also the recruitment of a wider circle of local and regional population. The Viminacium Centre represents a replica of a Roman villa rustica, where the space is organized around seven atriums. It contains scientific research laboratories, accommodation part and the part for economic goods and services. [12]

Based on the results of archaeological excavations a reconstruction of the part of the Amphitheatre was carried out. The construction of the wooden stands and revival of this area opened the possibility of the Amphitheater becoming a place where again, after

several centuries, spectacles of various content (concerts, plays, etc.) but definitely of different character than those maintained during the Roman period could take place.
Three new free standing buildings have been erected on the site. These are ticket office with a souvenir shop, a café-restaurant and a sanitary block with toilets. A big parking lot for buses and cars has also been constructed. The placement of the parking lot and new buildings is not adequate, the architecture is not unified and it is not in accordance with the site and surroundings. Abundant advertising material in Serbian, English, German and Italian contributes to the presentation of archeological remains in Viminacium. A DVD TV movie *Viminacijum Lumen meum* and *CD Viminacijum* have been created. A monograph on Viminacum was also published.
General assessment of the presentation is that it is not in accordance with the principles of revitalization. The principle of preserving the authenticity and value of the monument was compromised. This is primarily related to the presentation of the frescoes within the Mausoleum, to a replica of the newly built Domvs Scientiarvm Viminacivm, which does not confirm the remains of a rustic villa by its position as well as to the reconstruction works of the Amphitheatre.
It can be concluded from the above mentioned that in the course of the presentation of the remains scientific research data that is the basis of modern methodology of protection, revitalization and presentation of architectural heritage was not generally used. One gets the impression that the presentation has been more focused on the popularity and the appeal to an average visitor, much less on education and training, which is contrary to the recommendations of international organizations.

Pic 7 – The reconstruction of Domvs Scientiarvm Viminacivm (left) and the reconstrucion of the Amphitheatre (right) (Source: http://viminacium.org.rs/arheoloski-park/domus-scientiarum-viminacium/ u http://viminacium.org.rs/arheoloski-park/amfiteatar/)

4. THE CONCLUSION

The main problem related to the methods of protection and presentation of archeological sites in Serbia, including Viminacium, is the question of attitude towards preservation of authenticity of monuments and their values. This basic principle has been considerably compromised in all archeological sites in Serbia. An important issue to be considered during the protection and presentation of archeological sites in terms of preservation of

authenticity is how to connect buildings that used to be part of a whole but are now in ruins.

The problem of preserving the integrity of a place, the state it has acquired over time, is also particularly evident in the remains of Viminacium architecture. Therefore, its protection and presentation is a complex and dynamic process which has to include all stakeholders in the planning and management. A certain balance between the current condition of the site and contemporary interventions related to its protection, presentation and use in modern conditions should be established.

The principle of preservation of authenticity is seen through the use of materials, construction techniques and contemporary structures. In the course of application of restoration methods on the remains of architecture in Viminacium archeological park, there is no clear separation of the new from the old, which leads to compromising of this principle. Modern age and the need for revitalization and the use of space, increasingly demand more active approach and partial or complete restoration of buildings, as well as construction of new buildings in order to facilitate their active use.

Educational importance and "authenticity" of area restored to its former appearance is achieved through a partial or complete restoration of structures. However, it is of great importance during the restoration to pay attention to the type of structure being restored, its design and architectural logic, as well as its shape characteristics since a bad interpretation of a former appearance can lead to a permanent loss of monument values of certain parts of structure, structure itself and the whole, which is the case with the reconstruction of Domvs Scientiarvm Viminacivm and of part of Amphitheatre within the archeological park of Viminacium. It is also necessary to find ways to highlight intangible aspect of authenticity related to the significance of the place and its purpose, tradition, rituals etc. as well as its natural characteristics and values.

Pic 8 – Modern protective structure with the presentation of architecture in the antique villa remains in Spain (photo: M. Nikolić)

A very significant issue in the methods of protection and presentation of archeological sites in Serbia is the lack of adequate strategy related to the presentation for the purpose of involvement of the site in contemporary life and development, and consequently the lack of strategy related to contemporary construction within the site (eg: three new buildings right next to the Mausoleum with graves). Therefore, it is necessary to use international charters and recommendations, as well as world's best examples from Italy, Germany, Spain, Greece (for example The Museum of New Acropolis in Athens – protective structure, eg. Badenweiler from Germany, Aquincum site near Budapest etc.) in order to develop a successful strategy for the future.

In the last few years, great attention has been paid to the designing and construction of visitor's centres within sites. Construction of visitor's centres which involves adequate attitude towards heritage, application of contemporary materials and structures in the preservation and presentation, inclusion of new media and technologies in presentation, makes it possible to involve sites into contemporary life and to develop cultural tourism.

Nowadays, archeological heritage has been regarded in integration with its natural surroundings as one of basic components of regional development plans and plans in general of some countries.

More significant involvement of archeological sites into contemporary development trends can be achieved by affirming the role they as elements of cultural landscape have within sustainable development of a region, and which will be based on balanced and harmonious relations between needs of small and large communities, industry activities and environment.

Therefore it is necessary to observe archeological sites not only on regional but also on the local level to influence and affirm local communities.

Creating non-governmental organizations which would deal with the protection and presentation of archeological sites could make way to raising the awareness of the local population towards cultural heritage.

It is exactly through the revival of archaeological sites and skilled science-based approach to the old and new, as well as their adequate involvement in contemporary life that the connection between cultural and natural heritage can be emphasized as the foundation of identity of a certain place.

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НОВИ ПРИСТУПИ ЗАШТИТИ И ПРЕЗЕНТАЦИЈИ АРХИТЕКТУРЕ У ОКВИРУ АРХЕОЛОШКОГ ПАРКА ВИМИНАЦИЈУМ

Резиме: *Археолошки парк Виминацијум налази се у близини ушћа реке Млаве у Дунав, код данашњег Костолца, 12 км од Пожаревца. Виминацијум је био највеће градско насеље у Горњој Мезији и значајан војни центар. Римски војни логор и град настали су у I веку и трајали су до почетка VII века, био је један од најзначајнијих легијских логора на Дунаву, а извесно време и главни град римске провинције Горње Мезије. О интензивној градитељској делатности сведочи велики број откривених грађевина, како монументалних, тако и разних грађевина које су уз њих касније прикључене или их пресецају и наслојавају. Циљ рада је да се кроз критичку анализу и валоризацију укаже на предности и мане појединих приступа заштите и презентације остатака, интеграције старо – ново на археолошком налазишту Виминацијум, као и на другим локалитетима у нашој средини, али и да се препознају елементи које треба уградити у будући однос према заштити и презентацији археолошких локалитета како би се поједини приступи променили и унапредили. Нови приступи морају доследније да прате новије међународне повеље и препоруке и да буду засновани на савременим тенденцијама у заштити, ревитализацији и презентацији археолошких локалитета, што се посебно огледа у доношењу Мастер плана као предуслова деловања, слободнијој примени нових материјала и нових конструктивних структура у заштити и обнови, примени савремених технологија (3D анимације) у презентацији локалитета и слично. Ово истраживање даће значајан допринос објективном и критичком сагледавању главних савремених методолошких приступа и достигнутих резултата у области заштите, ревитализације и презентације археолошког парка Виминацијум, као и будућим приступима на другим археолошким локалитетима у Србији и региону.*

Кључне речи*: Археолошки парк, интегративна заштита, савремена презентација, очување аутентичности, унапређење приступа*