

The geological and Geo-archaeological Observations on the Bosnian Pyramids in Visoko- Northwest of Sarajevo

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Visoko has a prominent position with many natural resources. Life has been continuous in Visoko as well as in the surrounding areas throughout all epochs. In the two-month period, the German expedition crew excavated 24,000 Neolithic artifacts in Visoko (Prof. Senad Hodovic, personal communication), which indicates that a lot of activities took place in that area during the prehistoric time. The known fact is that Visoko was an important intersection; it was an intersection of Roman roads. Logically, it is reasonable to assume that the recent routes replaced the routes from the ancient times, which means that Visoko is an old place with many old intersection routes.

The pyramids are interesting antiquities that brought hope to some civilizations. The number of the existing pyramids in the world that we know about is very small comparing to the actual number. Ancient people constructed pyramids for ambiguous purposes. Judging by the orientation, the cosmology is one of the most important purposes of the pyramids. The evidence is favoring that the ancient civilizations practiced cosmology for a long period of time, and mapped definite stars which are also found in the Prehistoric caves of France and Spain, that are dated back to 16,000 to 14,000 years BCE. The researchers

identified a group of thirty "complex structures" in Egypt, located in an area of about 500 meters long and 200 meters wide, on a high remnant of playa clays and silts, which is about one kilometer south of the large settlement. This archaeological area later revealed many cattle bones. Each of these structures consists of a group of large, elongated, roughly shaped or unshaped sandstone blocks set upright, forming an oval area of about five meters in length and four meters in width, oriented slightly from the north towards the west. They represent an astronomical observatory. The Stonehenge in The United Kingdom may also represent some sort of an observatory. All these features indicate that people started very early to study the universe. Pyramids all around the world reflect human experience in the universe.

This report represents the preliminary geological and geoarchaeological observations of the tunnel and the Bosnian Pyramids; the Pyramid of the Sun in particular.

The Tunnel:

There is a network of underground tunnels in Visoko that are mostly hidden by recent sediments. The accessible tunnel for observation is the one that is located north of Visoko Center. It runs through the contact between geologically older sandstones and geologically recent (Pleistocene/Holocene?), Continental Conglomerates. It is artificial in general, but it seems as if the natural caves were artificially connected. The tunnel in fact is not straight, and it is branched into different irregular directions. There are some interesting features in the tunnel (until now, there were no archaeological excavations in this tunnel), such as:-

1- Karastification feature which would determine the age of the tunnel (tunnel entry should also be scientifically researched, including the material lining of its walls).

2- There is evidence that humans left their traces on a few stones located in this tunnel.

3- A definite part of the tunnel contains vertical instillation of relatively large flint gravel.

4- Carved sandstone blocks.

There are signs and inscriptions on some of the sandstone blocks (some of them could be ancient, and some more recent).

5- A nice small artifact was found by Prof. **Dario Andretta**.

Although, there is a possibility of a connection between the tunnel and the pyramids, it is not clear due to the lack of available visibility for observations.

The general conclusion is that the ancient people were able to deal with natural material. This feature may be related to the cold ground surface and the climate in the area.

The Sun pyramid

The Sun Pyramid in Visoko Town is a real mystery. The pyramidal shape of this structure has been known for a long time. In 1982, one historian mentioned that this is a real pyramid-shaped hill. The argument now is about the origin of this pyramid, whether being originally shaped by natural processes or by human activity.

Geology of the pyramid area:

The area is made of Miocene succession (Geological map of Bosnia) of sandstone intercalated with shale and covered by breccia/conglomerate. The sandstone is fine to coarse-grained. The breccia/conglomerate is made of pebble-sized to cobble-sized fragments of different rocks. This area is occasionally mixed with thin layers of sandstone, dolomite, and clay (shale). These fragments are cemented by fine to coarse-grained carbonates with quartz sand. The succession had subjected to tectonic forces which led to a more complicated system of folds, faults, cracks and joints; later, the succession resulted in deep erosion. The erosion and the tectonic movements led to a narrow sandstone plateau and a nice isolated hill of breccia/conglomerate of about 200 m high.

However, the complex tectonic system of the site may be related to a rapid and extensive structural deformation of the exposed strata.

Natural Hill modified by Man:

The shape of the Pyramid of the Sun is somewhat confusing. It looks like a pyramidal shaped hill. Measurements indicate that the hill has only one regular side triangularly shaped (the northern face) followed by the eastern face, which is nearly regular. The southern face is partly blended into the eastern and western sides. The western faces are not regular. The slope of each face is different from place to place, but from a far distance, one can notice the pyramidal shape of this structure.

The possibility that natural processes created this shape is very weak. Natural processes can create hazards, but not such pyramidal forms as these. Such conclusions can be reached easily by investigating the surrounding hills, including those that show one side triangularly shaped. The creation of a pyramidal shape of a mass or a hill had required an acting of the natural processes on each face with the same rate and same period of time. The hard rock-like breccia did not respond

regularly to weathering, but appears as an irregular shape. Heterogeneous material like breccia/conglomerate shaped by natural processes appears mainly as an irregular shape. The natural processes mainly formed irregular rounded hills, which are not regularly shaped as in the case of the Pyramid of the Sun.

Archaeology:

The archaeological history of this hill is not studied in detail yet. In 1993 a military digging camp on the top of the hill extracted a nice piece of a well-decorated artifact that was related to medieval age settlement (now it is exhibited in Visoko Museum). Based on the apparent evidence gained from surface observations, the medieval age settlement on the top of the hill is found to be mainly made of stones of the countryside's rock material of the hill itself. From my observations of the three nice-cut blocks of conglomerate on the plateau, we can conclude that there are at least two different periods in the area. Such blocks are uncommon in the medieval age settlement.

The most interesting features in this concern are the blocks of conglomerate that are found on the northern side of the hill. They represent a true piece of the construction work. The presence of these blocks is the reason for the regularity of this face, which is also found on the eastern side. Reorganization of these blocks is in fact difficult for experts, because the blocks are mixed with the underlying rock of the hill, caused by the effects of the natural processes.

Modification of the Hill:

The most regular faces of the hill are those that contain such conglomerate blocks which are recognized over the upper terrace of the hill. Such work required the flattening of the surfaces of the hill to be evened out with the blocks which were being added. We have to keep in mind that this construction represents only

traces of the previous covering stones. These stones used to cover this area much more than in the present day; an investigator can be able to recognize major modifications on the surfaces of the natural hill. Accordingly, one may conclude that the human hands modified this hill to give it a more regular/geometrical shape (artificial pyramid).

Sculptured Pyramid:

The nature of this pyramid indicates that human hands sculptured the body of the pyramid from top to bottom. The pyramid was a huge mass of breccia/conglomerate in the form of a high-rounded hill. Humans (for definite reasons) started to adapt the shape of this hill in the form of a pyramid; they then oriented faces following the N-S, E-W. At times, the shaping of the hill did not completely take place. The ancient men used the covering stones to adjust the imperfection of the original mass. The amount of work and the efforts spent to accomplish such a task varied, depending on the shape of the natural hill and the material used which were simpler e.g., wood, flint tools, etc. The flattened surfaces were covered by the blocks of stones.

This model of construction can be easily destroyed by natural processes, leaving the natural hill, thus only the traces of the covering stones may remain.

The problem of the Western Side of the Pyramid:

*The pyramids stand mainly as the isolated objects.

The western side of the Pyramid of the Sun is hidden within the natural sandstone plateau.

There are two possible different explanations for this situation:

- 1- The ancient people sculptured the exposed faces of the hill only.

2- The ancient people sculptured only the upper part of the pyramid (100) corresponding to the exposed part of the western side, ignoring the lower part of the hill.

Why this hill is a man- made pyramid?

The apparent reason is to protect these hills from the natural processes. The pyramidal forms are the more resistant shapes which avoid the destruction from hazards. This is just one of many other reasons.

Deformation of the pyramid:

Close examination of the pyramid indicates that there is a clear deformation in the mass of the pyramid. This feature confuses many experts. The destruction is related to natural processes, plants and human activities. The most important factor in this regard is the tectonic movement. This may be a reason why the southern side is blended with the western side and the natural cracks, which can be noticeable within the rocks. Erosion smoothed the edges of the faces and blended them together. The roots of the plants penetrated the rocks, which caused decaying of their upper parts of the surface.

Conclusion:

The observed hills (Visocica, Pljesevica, Buci) are most likely natural hills that were later modified in places by human activities, possibly during several historical episodes. The traces of such modifications have been either overprinted by later cultures, or by simple erosive tectonic processes, which are rather significant and far-reaching in a complex of the geographical, cultural and geological system, as seen in Bosnia and Herzegovina. Even though, there is a compelling evidence of the existence of the pyramid-shaped, man-made hill-

forms in Bosnia, the results are still inconclusive and require further detailed geological, geophysical, tectonic and most importantly, archaeological studies.

Recommendation:

Prof. Dr. Dario Andretta is leading the geological team of experts, and intends to construct detailed geological and tectonic framework which would help explain factors, influencing both natural and man-made forms. Only by understanding the complexities of the system, one could hope to decipher and delineate artificial from natural factors. Dr. Andretta has proposed an ambitious, careful and detailed plan to gather all of the facts and approach the matter with a forensic-like precision.

Dr. Amer Smailbegovic, the geophysicist, is carefully evaluating available geophysical and remote sensing data to aid Dr. Andretta and his geological team in establishing all of the structural and geological parameters, including the archaeological team in identifying potential anomalies. Dr. Smailbegovic emphasizes that remote sensing and geophysics are simply indicators, but explanation must be found from evidence in the ground, and be fully supported by detailed field labor.

The results from the remote sensing and geophysical analyses support Dr. Barakat's observations; however, it also calls for further detailed studies to be conducted in the field.

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