

VISUALIZATION OF CLASSICAL SITES BY 3D COMPUTER GRAPHICS Landscape Analysis of the Sanctuary of Apollo at Delphi

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ABSTRACT

The Sanctuary of Apollo at Delphi is one of the famous classical sites in Greece with full of buildings like Apollo Temple, treasuries, monuments, etc. However, for visitors and even for researchers it is very difficult to imagine how the site looked like in antiquity, because they are completely in ruin. The authors restored, by computer graphics, the buildings on the steeply sloped site of Delphi, and tried to analyze its unique landscape of the site which is united with its environment.

1. INTRODUCTION

1.1 Problems and Object

3D computer graphics (CG) is now in use in every field of science and technology. As for architectural design it is used to show final views, exterior or interior, of buildings. It is very convenient tool for architects to check and correct their design in advance, and for clients to be able to have would-be views to be constructed. As well, concerning archaeology, especially classical archaeology, most of the sites are almost in ruin and it is fairly difficult to have vivid images of what they looked like in antiquity, especially for visitors who are not specialists it is almost impossible without help of reconstructed drawing. That is a reason why visualization of archaeological sites by 3D CG draws public attention recently.

Perspective drawings in traditional way have been drawn to show how the sites looked like on the whole. As far as concerns Delphi, a classical site in central Greece, there are some perspective drawings of the site, academic or non-academic, but they are drawn from one view point sometimes from in the air, because to show the site explanatorily on the whole. For the analysis of the landscape or townscape, three dimensional expression is definitely necessary to show the actual views from human viewpoints. Visualization of the ruined sites by 3D CG helps people to understand much better together with the use of drawings and photographs of the sites.

The objective of this paper is to analyze the landscape of the site using computer graphics. The site is on the steep

slope and it is difficult to draw the perspectives precisely in usual way. However, because of its marvelous location it is very important to analyze this site from the viewpoint of landscape. In addition, around the Apollo temple are scattered the buildings like small treasuries in jumble and its sacred way turns right and left through them, and the views on the way change quite variably as the visitors proceed through the sanctuary. So, it is definitely necessary to make dynamic analysis of the landscape and 3D CG is extraordinarily effective for this purpose.

1.2. Modeling

The authors tried to model most of all the buildings in Apollo Sanctuary at Delphi. The hardware for the modeling is Sun Microsystem IPX and the software Sigmarris. The base map for the topography is from the archaeological report of French Archaeological School. The buildings are already in ruin as known, and the base drawings of the plans and elevations for the modeling are from the study reports of each building.

2. SITE

2.1 Location, History and Buildings

Delphi is a well-known classical site in Greece together with the Acropolis in Athens and the sanctuary at Olympia. It was especially known as a place of oracle in antiquity. It is located in central Greece against the mountains of

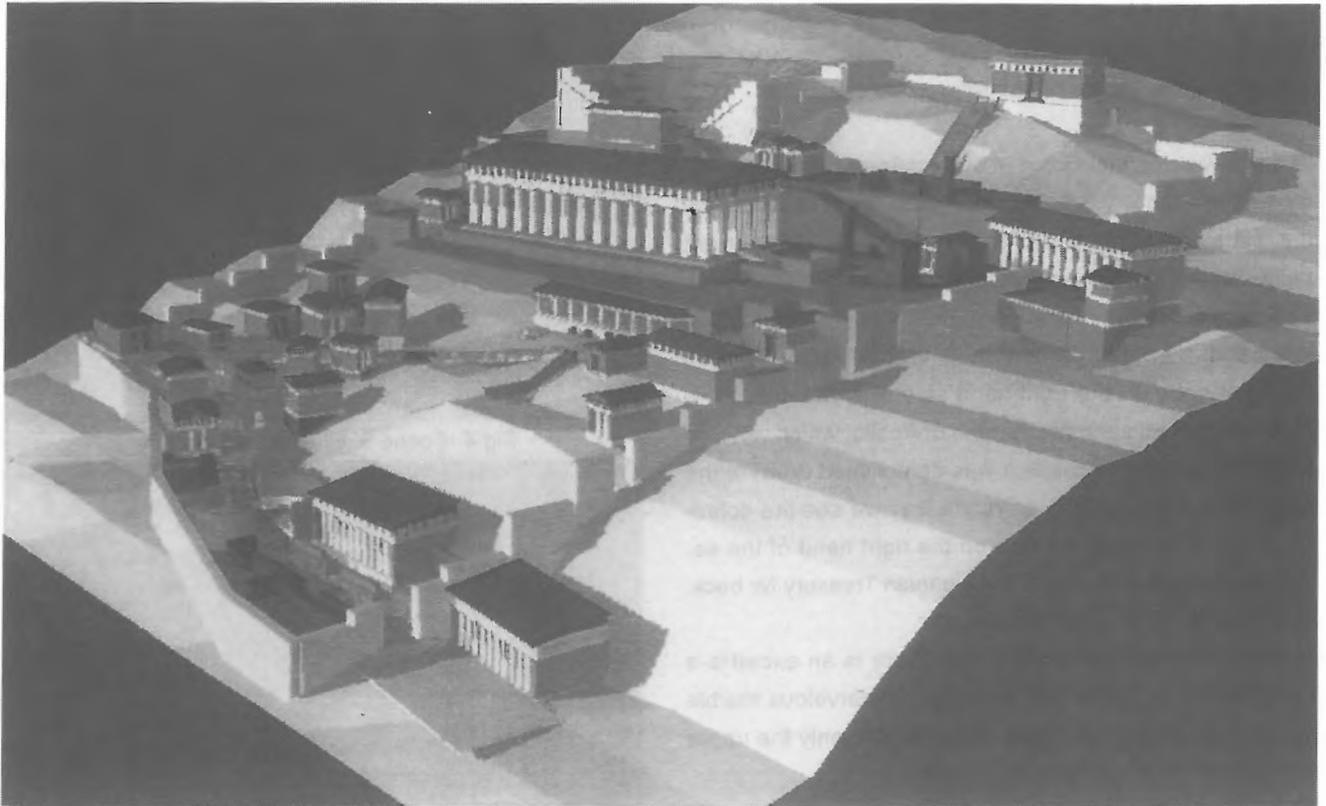


Fig.1 Reconstructed View of the Sanctuary of Apollo at Delphi by 3D CG

Parnassos. The site is on its south slope facing to the valley, which is open to the plain of Amphissa beyond which is the Corinthian Gulf. The history of the site goes back to the prehistoric period, but the ruins which we can see now is mostly from Archaic and classical period.

The site is surrounded by the temenos wall and its area is ca.180 m from north to south and ca.130m from east to west. The main building of the site is the Temple of Apollo which is 21.64 wide and 58.12 m long. The temple is located around the center of the site, being constructed on artificial ground supported by walls, and draws visitors' eyes. To reach the temple starts the sacred way from the southeast corner going up westward, turning eastward on the way after passing through the stoa, exedra, two treasuries, sculptural monuments, etc. It again ascends, passing by the Athenian Treasury and the Athenians' Stoa on the left hand side, the Cnidian Treasury and Corinthian Treasury on the right hand side. After passing by the Athenian Stoa, the road turns left straight forward to the front of the temple. Around the temple there used to be many sculptural and architectural monuments. Finally on the back of the temple was constructed the theater against the slope. There have been identified 18 treasuries which were dedicated by the cities like Athens, Siphnos, etc.

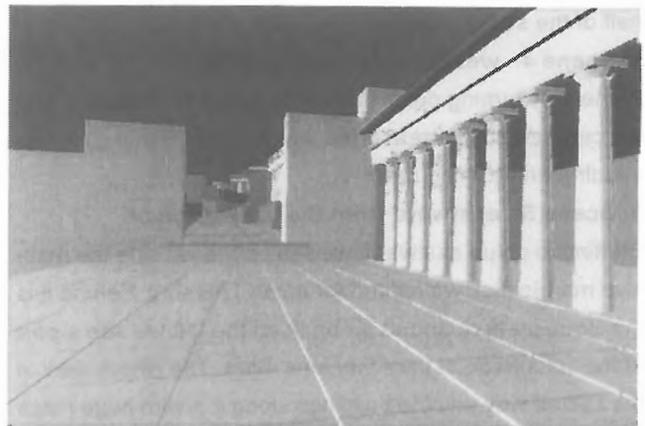


Fig.2 Scene 1: at the entrance



Fig.3 Scene 2: in front of the exedra

3. DYNAMIC ANALYSIS OF LANDSCAPE

3.1 Sequential views of the sacred street

The site was reconstructed at three different stages of 6th, 5th and 4th century B.C. in our project. Here is shown only the last stage of the site. The views at several important points on the sacred way are analyzed.

1) Scene 1: at the entrance

We stand in front of the entrance, that is, agora. We see the colonnade on the right hand side. Beyond the colonnade used to be seen the Temple of Apollo, which we cannot see any more because it was demolished down to the foundation. Through the entrance way we see the colonnade of the anonymous stoa on the right hand of the sacred way, and the facade of the Siphnian Treasury far back.

2) Scene 2: in front of the exedra

In the midway of the sacred way, there is an exedra—a round wall—in front of which were placed marvelous marble sculptures of Kings of Argos. Here we see only the upper part of the Temple beyond the exedra.

3) Scene 3: Sicyonian Treasury

After passing by the exedra, we reach the Sicyonian Treasury. Its facade of two-columns in antis is striking to the visitors and in fact it takes a role of eye-stop on the first half of the sacred way.

4) Scene 4: westward to turning point

At the very turning point stands the Boeotian Treasury, and we can see some treasuries which crowd behind it, ascending and turning right.

5) Scene 5: eastward from the turning point

Starting to go up eastward, we see on the left side the massive marble side wall of the Athenian Treasury. Behind it is the Bouleuterion, and at far back on the left we see a part of the colonnade of the Athenians' Stoa. The whole view of the sacred way and the buildings along it is with huge mass of Mt. Fediriadis as a background. The temple is not visible from around here.

6) Scene 6: in front of the Athenian Treasury

The Athenian Treasury also occupies very good place along the sacred way. It gives a strong impression to the visitors with its facade of two-columns in antis on the way back when they come down along the Athenians' Stoa.

7) Scene 7: in front of the Athenians' Stoa

Looking back on the way at the east end of the Athenians' Stoa, the visitors see a column screen of the Stoa, which is backed by the supporting wall of elaborate polygonal masonry from Archaic period. Behind it on the foundation wall are visible the south colonnade of the Temple

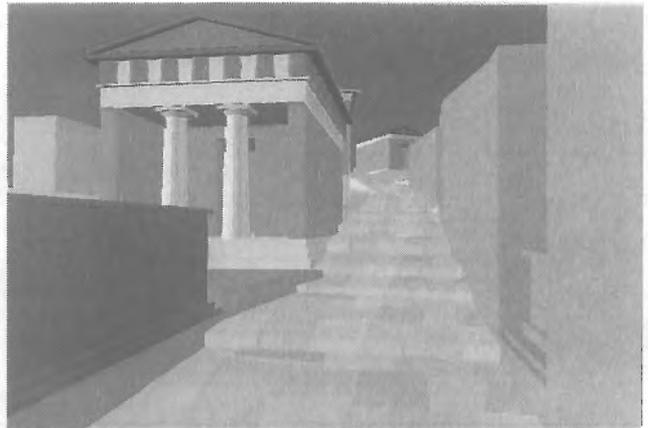


Fig.4 Scene 3: Sicyonian Treasury

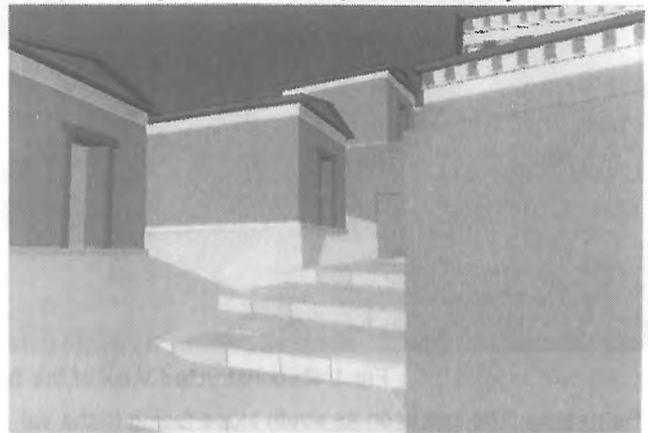


Fig.5 Scene 4: westward to turning point



Fig.6 Scene 5: eastward to turning point



Fig.7 Scene 6: in front of the Athenian Treasury

of Apollo which stands overwhelmingly against the high ragged cliff of Mt. Fediriades—it is strong contrast of natural rocky wall and artificial construction. This very contrast produces more sacred atmosphere around the sanctuary. It must be one of the most grandiose views from here. The visitors see on the far back the facade of Cnidian Treasury with two columns on the left and sober exterior of the Bouleuterion on the right, behind which the facade of the Athenian Treasury is concealed.

8) Scene 8: turning left toward the altar

The sacred way turns left at the southeast corner of the foundation wall and passes between terrace walls on both sides. The visitors cannot see the temple until they pass through them and reach the north end of the altar. On the high place straight ahead stands the Cnidian Ieschi.

9) Scene 9: Looking at the temple from the altar

The sacred way ends at the altar, and it is here and for the first time that the visitors see the whole view of the temple. The temple is viewed in diagonal direction as most of the Archaic and classical temples.

10) Scene 10: looking down from the theater

The present view from the theater is much different from that in antiquity, because we see the temple in front only its foundation. The temple itself functioned as a background of the orchestra or stage when it stood there.

4. CONCLUSION

1) It is clear that the 3D CG is very effective to understand the archaeological sites which are mostly in ruin. It helps not only the general visitors but also specialists comprehend of the site. In Delphi it is by far useful because the site is on the slope and it is difficult to draw perspectives in usual way.

2) The view of the Temple of Apollo could not be seen by visitors on the sacred way, it is only when they reached the altar that they could see the whole view of the temple.

3) The architects of Delphi knew very well how to utilize the environmental views for the site planning of the buildings. The change of sequential views which are caused by its location is striking and indispensable.

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Fig.8 Scene 7: in front of the Athenian Stoa

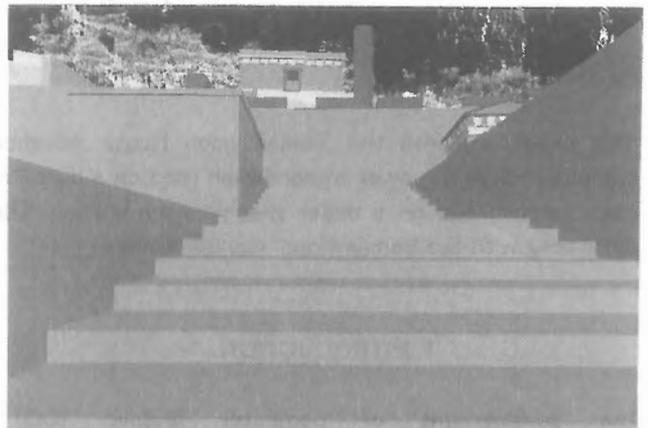


Fig.9 Scene 8: in front of the altar



Fig.10 Scene 9: looking at the temple from the altar



Fig.11 Scene 10: downward from the Theater