

RECONSTRUCTION AND LANDSCAPE ANALYSIS OF THE JUPITER SANCTUARY AT BAALBEK USING 3D CG

J. Ito*, S. Sueyasu**

*Prof., Dr. Eng., **Student,
Graduate School of Science and Technology,
Kumamoto University, Kumamoto, Japan
itoj@arch.kumamoto-u.ac.jp

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ABSTRACT:

The Jupiter Sanctuary at Baalbek, Jordan, is one of the most grandiose sanctuaries of the Roman antiquity. Its architectural magnificence must have been the last phase of the development which the ancient Mediterranean civilization had sought for. The gigantic building complex of the Propylon, courts, surrounding stoas, and the temple itself were laid around a single axis, forming the symmetrical layout and landscape with screens of colonnades. However, the complex was completely ruined after the long history of political, economical, racial and religious struggles of the area. Most of all the columns of the colonnades fell down and only six columns of the temple have been remaining. In this situation of the ruins, it is very difficult for most of the visitors to imagine how magnificent the sanctuary looked.

The author tried to reconstruct and visualize the sanctuary complex using 3D CG to analyze the landscape of the sanctuary with the eyes of visitors. All the architectural information about the monument is based on the academic sources of excavation reports by German archaeological mission. All the modelling and surface mapping were done by using AutoCad. With this visualization of the 3D CG, we show here the architectural appearance of the ancient building complex and people will be able to experience the grandeur of the monument.

1. INTRODUCTION

3D CG is one of the most convenient tools to visualize things in this modern time of digitalization. It is especially suitable to visualize the ancient ruins where the most of the architectural remains are in destruction, because it is very difficult for visitors or general people to imagine the appearance of the buildings how they looked like in antiquity.

The advantage of 3DCG for archaeological sites is that we can change the viewpoints and view angles so easily and that we can analyze the landscape or townscape of the sites. With this function of 3D CG, we can also animate the images of the site.

The objective of this short paper is to reconstruct the monuments of the great Sanctuary of Jupiter at Baalbek in 3D CG and analyze its architectural and spacial composition, because its gigantic scale and magnificence caused by axial and symmetrical planning is the last phase of the sanctuary planning in classical antiquity which the ancient people had long sought for from Hellenistic to Roman period.

2. HISTORY AND OUTLINE OF THE SANCTUARY

The great temple complex of Jupiter at Baalbek, Lebanon, has long attracted man as a symbol of the architectural culmination of the Roman civilization. Its gigantic scale, the usage of huge

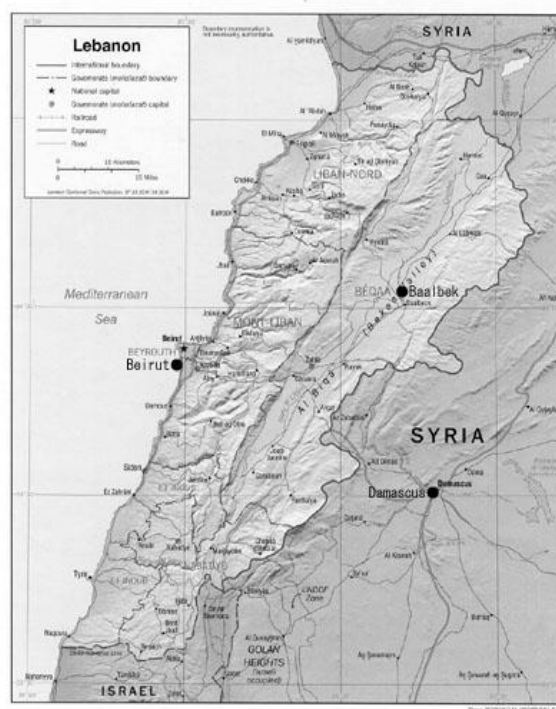


Fig.1 Location of Baalbek

stone blocks, elaborate architectural ornament, and ingenious composition of mass and space have been esteemed as one of the greatest achievements of Roman architecture. It is a masterpiece of Roman baroque style and comparable with the Temple of Artemis at Gerasa, Jordan, and the Temple of Bel at Palmyra, Syria, etc., but it is much superior to them due to its grandiosity and architectural elaboration.

The site of the sanctuary was almost thoroughly excavated by a German archaeological expedition during the end of the last century to the beginning of our century, and its report, edited by Wiegand, was published in 1921 in three volumes. The result of the excavation of the temple complex is reported in the volume III, which includes detailed plans, maps, illustrations and photographs of the site. All the archaeological and dimensional information which is used in this paper depends on the descriptions of the report.

The sanctuary consists of four main buildings; the temple itself, the rectangular forecourt, the hexagonal court and the Propylon. The width of the sanctuary is around 120 m and the E-W axis is 400 m long. According to the Wiegand's report, no column remains in situ except on the south side of the temple peristyle, where there still stand six columns at full height, and some column bases on the front of the temple and on the front of the Propylon. We can restore the interaxials of the columns by traces of the bases on stylobate blocks, most of which still remain. The wall remains are in better condition than the columns. They mostly stand to such a height that we can recognize how the interior of exedrae looked like. The broad staircase in front of the Propylon is almost completely gone, maybe because the whole sanctuary was transformed into an Islamic citadel in later time.

The erection of the temple possibly began during the time of Augustus with an imperial initiative. Enlargement and improvement of the sanctuary continued until the 3rd century A.D. The main court of the peristyle in front of the temple dates from the 2nd century A.D. During the 3rd century, the Propylon was added, and the square court was remodelled into a hexagonal peristylar court.

1st century B.C.: The temple started to be built.

2nd century A.D.: The fore court was built.

3rd century A.D.: Addition of the Propylon and remodelling of the forecourt adding the hexagonal court.

3. ARCHITECTURAL OUTLINE

3.1 Propylon

The Propylon is the long hall of entrance on the east front, and is 71.40 m long in total and 11.60 m deep. The colonnade in the middle is 51.20 m long and it is raised by staircase with the same width and with three flights of steps. The height of the staircase is 7.5 m and the colonnade stands on it with 12 m-high Corinthian columns. The colonnade was flanked by two towers on either side. The colonnade had a widest central interaxial of 7.0 m which support the central arch of the front façade and side interaxials of 3.95m and 3.65 m for 12 columns in total. The widths of the towers are 10.1 m.

3.2 Hexagonal court

The hexagonal court was erected in the mid 3rd century A.D., two centuries later than the erection of the temple and a century later than that of the main court. The hexagonal court is very unusual as a sanctuary court form in comparison with other Roman sanctuaries in the Near East. It leaves us with an exceptional and unique impression and makes the whole temple complex extraordinary. The axial length of the hexagonal colonnades is 17.74 m. Its east and west colonnades have different interaxials; each central one is 5.34 m and the rest are 3.10 m. The other four colonnades have five equal interaxials of 3.548 m. The axial depth of the colonnade is ca. 7.75 m and that of the exedrae is 7.74 m.

3.3 Forecourt

The forecourt is surrounded by pi-shaped colonnade on three sides except the temple side. In the middle of the court was the great altar for Jupiter, and behind it continued the staircase of two flights of steps. The dimensions of the colonnades are as

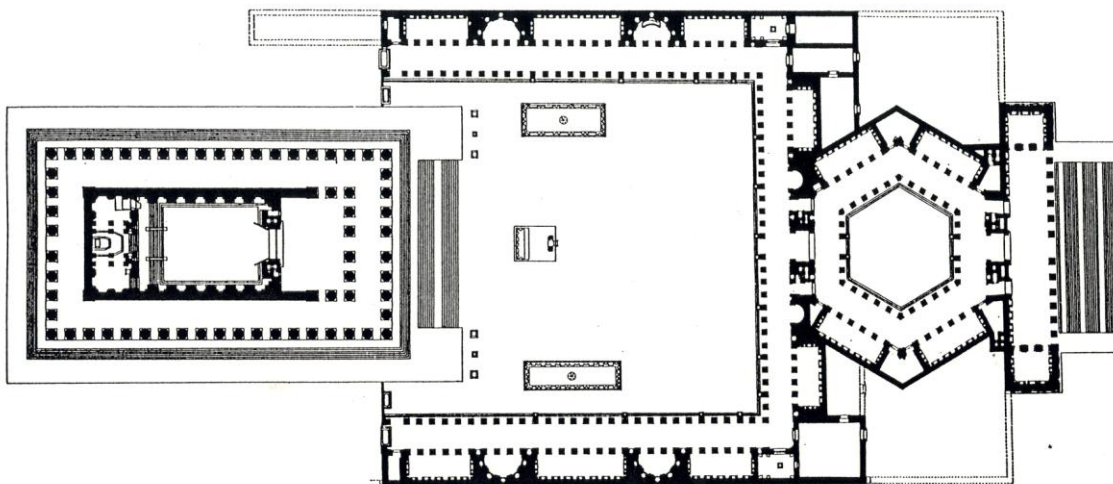
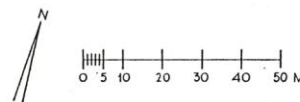


Fig. 2 Plan of the Sanctuary of Jupiter at Baalbek



follows.

N and S colonnades

Axial length: 96.65 m

Interaxial: 3.2967 m

E colonnade

Axial length: 87.63 m

Interaxial: 3.17 m

Middle interaxial: 5.34 m

Whole axial width: 118.6 m

Lower column diameter: 0.894 m

Height of column: 8.4 m

Depth of colonnade: 7.75 m

Depth of exedra: 7.74 m

3.4 Temple

The temple itself was built in high podium because the level of the sanctuary was raised by two staircases in front of the Propylon and by that in front of the temple, and additionally the temple building was surrounded by some steps of platform. Thus, the temple was built on the high massive podium with the height of 12.4 m, which consists of three courses of huge blocks. The Corinthian temple was in pseudo-dipteral style and had 10 columns on the ends and 19 on the sides.

4. PRESENT SITUATION OF THE SITE AND RECONSTRUCTION IN 3D CG

4.1 Propylon

The most part of the Propylon has been destroyed, and houses of the present town of Baalbek are built packed in front of it. No body can see and imagine the grandiose view of the façade.

Only a few columns of the front colonnade remain and have been rebuilt at the site. The roof is certainly gone.



Fig.3 The present view of the Propylon..

As we see the reconstruction, the front colonnade on three flights of steps is the basic architectural composition, and the symmetry is emphasized with the high two storied towers which has engaged pillars around them and with projecting wings of the podium on either side. When the visitors walked up on the staircase, the front of the Propylon must have been overwhelming. In addition, the axuality of the whole plan is also emphasized with the arch on the central wider interaxial and the triangular pediment on it.

In antiquity, the sanctuary was controlled by the state and the buildings must have maintained properly. People in caravans who came along on the dessert for many days would have felt relieved and moved at a first sight of the architectural grandeur of the monument.



Fig.4 Front view of the Propylon.

4.2 Hexagonal court

The colonnade of the hexagonal court is almost gone except its stylobate, and only the exedrae or back rooms remain partially. We would feel a little peculiar because the form of hexagonal plan is inserted into a rectangular composition of the whole sanctuary. However, it gives a spatial transition between the Propylon and the great forecourt. It would give visitors effect of psychological change in this somewhat closed space before they enter the open forecourt and to see the temple in it.

4.3 Forecourt

The great forecourt would be the most important space of the sanctuary, because it is from here that the visitors could see the magnificent view of the temple. However, the most of the colonnades are destroyed and only some parts of them have been restored. The round and square exedrae or back rooms have been preserved well comparatively. The colonnades enclose three sides of the forecourt; east, north and south side, and the court is open to the west side where the temple was built. The temple was focused on the vanishing point of perspective view with the colonnades on the north and south sides, which form outline of the court.



Fig. 5 Present view of the Hexagonal court



Fig. 7 Present view of the corner of the Forecourt



Fig. 6 Reconstructed interior view of the Hexagonal court



Fig. 8 Reconstructed interior view of the Forecourt colonnade



Fig. 9 Reconstructed front view of the Jupiter Temple from the Forecourt

4.4 Temple

The most part of the temple was demolished except six columns on the south side. The present situation of the site allows us only to imagine the wonder of the great temple with these six columns and huge blocks of the eaves which fell down on the ground. The broad staircase in front of the temple still remains and shows us the high podium of the temple. The temple itself stood 33 m high up to the top of the pediment.

In architectural composition of the sanctuary, all other buildings served to show the grandeur of the temple. The view of the temple from the court was nothing but magnificence of ancient civilization. The gigantic temple was exactly on the axis which penetrates the whole sanctuary flanked by colonnades on either side.



Fig. 10 Remaining six columns of the Jupiter Temple

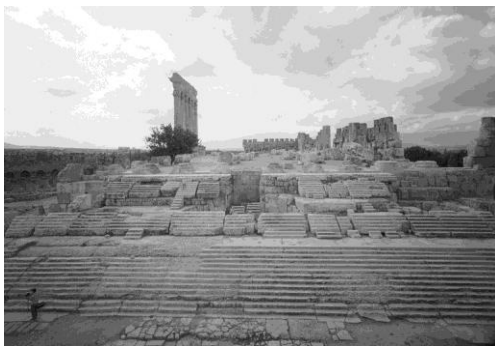


Fig. 11 Present view of the broad staircase and the Jupiter Temple on the back

5. SUMMARY

The grandeur of the temple complex of the Jupiter sanctuary at Baalbek was the final achievement of ancient Mediterranean sanctuary planning. It started in archaic period in Greece, however its organized spatial composition in symmetrical plan started in Hellenistic period at the Asklepieions in Messene in mainland Greece and Magnesia on the Maeander in Asia Minor from the 3rd or 2nd century B.C. onward, and fully developed in Roman imperial period as we can see in the Imperial Forum in Rome and especially in the sanctuaries at Gerasa in Jordan, Palmyra in Syria, etc. in the Middle East. The Jupiter sanctuary at Baalbek was the most grandiose one among these to show the dignity and authority of the Roman Empire. In that sense, it was

comparable to the Palace at Versailles in 17th century Baroque style which presented those of French dynasty of absolutism.

In this short article, we could visualize the organization of magnificent space and gigantic masses of the buildings of the Jupiter sanctuary, and we found that 3D CG is quite useful to visualize ancient architectural ruins. It can be utilized for the lectures of not only architecture but also ancient history, archaeology, etc., and certainly it helps general people to understand the ancient architecture.

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