Virtual 3D Reconstruction of the East Pediment of the Temple of Zeus at Olympia

A brief history of research

The main problem of the reconstruction concerns the relative position of the five figures in the centre of the pediment (Fig. 1) and results from the following facts:

1) The fragments themselves can be arranged in four substantially different ways.
2) Each reconstruction can be easily presented in drawings or miniature plaster models.
3) There are no other obvious clues for choosing the most probable reconstruction.

At the end of the 19th century in Dresden, plaster models of the fragments were produced on their original scale and lost body parts, arms, etc. were reconstructed in plaster as well. After several years of experimenting with these plaster models, Georg Treu the archaeologist, who published the sculptures of Olympia, claimed in 1897 that one of the four conceivable arrangements is physically impossible, because the left hand of figure K and the spear in the right hand of G would run across each other in the limited space (Fig. 2). To support this argument, Treu added that with the help of the plaster models, anyone could verify his statement. During the following decades, several archaeologists exploited this possibility and experimented with the life-size models: they concluded that the reconstruction proposed by Treu had to be modified at some major points, but no one advocated the option excluded by him.

After World War II, the results of these experiments have been largely ignored and an absurd situation emerged: nowadays the most widely accepted reconstruction is precisely the one (open Type A), which was deemed technically impossible by Treu (Fig. 2).

The new approach

Instead of the expensive and troublesome experimentation with plaster casts and models, highly accurate virtual 3D models of the statues were produced by scanning the original fragments and then modelling the missing parts virtually. Inserted in the virtual model of the pediment, these 3D models can be easily used to test the technical feasibility and aesthetic effects of the different reconstructions.

Results

In the case of both “open” arrangements, one can observe, that the spears fit the available space only if both heroes grip the shaft directly under the spearhead. (Fig. 3)

In the other two “closed” cases, we have no such problem with the spears. (Fig. 4)

The 3D models created during the project and the full documentation can be consulted on the multimedia documentary CD-ROM ISBN 978-963-284-196-0.

Conclusions

1) The reconstruction, which is most widely accepted today (open Type A), is technically the most difficult to realize and therefore highly improbable (Fig. 2).
2) Both open arrangements would be feasible only, if we ignored a general pictorial convention of ancient Greek art (i.e. the way spears are shown in similar cases). The closed arrangements should be therefore preferred (Fig. 3 and 4).

It must be stressed, however, that the virtual reconstruction does not enable us to establish the right arrangement, i.e. the one actually realized in antiquity, but only to exclude two options. Considering every piece of available evidence, the closed arrangement Type A can be regarded as the most probable reconstruction (large picture above Fig. 1).