The subject and the problem

The sculptural decoration of the temple of Zeus at Olympia is quite well preserved and fragments are depicted in practically every hand-book on Greek art or on ancient art in general, because nowadays they are generally considered to be one of the most important and most magnificent works of ancient Greek art. Perhaps the most difficult and the most distressing problem related to them regards the identity of the master(s) of these works. Despite the high artistic quality and their excellent workmanship, nobody really knows, who the sculptor (or the sculptors) of these pieces actually was (were) and where he (they) came from. (Fig. 1 and 2)

Aims and methodology

In order to determine the place of origin of the so-called “Olympia master(s)” a combination of the latest 3D scanning technologies with a traditional art historical method is proposed. The method developed may easily be applied or adapted to many other similar problems of classical archaeology and history of art in general.

The Morelli method

The method of detecting master-hands in different works of art by observing idiosyncrasies in the rendering of small details has been developed by Giovanni Morelli during the 19th century and is commonly referred to as master-hand attribution. Sir J. D. Beazley first used this method to identify attic black-figure and red-figure vase-painters (Figure 3) and thus revolutionized our understanding of ancient art.

Since the human eye cannot automatically and reliably extract characteristic features from 3D objects and photographs can not faithfully reproduce three-dimensional details (Figure 4), the use of the Morelli attribution method in the analysis of three-dimensional art was rather limited so far. The obvious biological and technological constraints may, however, be overcome by using virtual 3D models produced by 3D scanning.

Previous research

Classical archaeologists have tried since more than a century to identify the “Olympia master” with a local, an Athenian, a Spartan, North-Peloponnesian, Parian or other sculptor, but practically everybody arrived at different solutions. All the traditional methods have already been tried to solve the problem, but none has proved to yield convincing results. Even the basic question, whether there was one single master or several different ones, remained controversial.

The new approach: Morelli in 3D

The basic idea is to start from two commonly accepted and fully justified assumptions of the Morelli method:

1) that unconscious idiosyncrasies in the rendering of frequently occurring anatomical and other details do exist;

2) that the trained human eye is capable of detecting these traits in 2D, i.e. one can distinguish the individual characteristics of different artistic personalities.

Assuming in addition on the basis of the available evidence (Figure 4) that similar idiosyncrasies exist not only in two-dimensional but also in three-dimensional art, even if they can not always be identified by ordinary human observers, one can conclude that the detection of master-hands in three-dimensional art simply requires the extraction of reliable and thus (in contrast e.g. with normal photographs) really comparable 2D images from the existing 3D data. This task is perfectly feasible on the present technological level, (as apparently not exploited so far. The 3D analysis proposed here will focus on the stylistic idiosyncrasies (proportions, special renderings of individual anatomical or other features), which will become recognizable through the systematic extraction of certain 2D patterns.

Implementation

The well-preserved frieze of the Sphinix treasury at Delphi (dating ca. 530-525 BC) will be scanned and analysed, because in this case there is a sculptor’s signature preserved on the frieze, stating that some parts or figures were made by the same artist. This case study provides a test, because it can be reasonably assumed, that some figures were produced or at least designed by the same individual, while others were not. As the frieze is quite well-preserved, there are many possibilities for making comparisons concerning proportions, special features in anatomy and other details e.g. drapery or armor. Using these results, it will be determined, whether the pedimental statues and metopes of the temple of Zeus were made or designed by a single man/workshop or by two or more different ones.

The last step involves the scanning and analysis of the pedimental statues (Figure 5) and recorded the opinion of his local guides concerning the master sculptors of the pediments as follows:

“The sculptures in the front pediment are by Paonios, who came from Mende in Thrace; those in the back pediment are by Alkenenes, a contemporary of Pheidias, ranking next after him for skill as a sculptor.” (Description of Greece 5,10,7)

These ancient attributions are usually and most plausibly considered as erroneous (cf. Figure 6), but modern scholarship was equally unable to suggest better ones. Even if the names of the sculptors will most probably remain unknown, the methodology outlined above will at least enable us to determine their places of origin. In addition, the method can be applied afterwards to other similar problems and will contribute to our understanding of sculpture in general.

Conclusion

Pausanias, a Greek traveler during the 2nd century AD has described the temple of Zeus at Olympia in detail and recorded the opinions of his local guides concerning the master sculptors of the pediments as follows:

“The sculptures in the front pediment are by Paonios, who came from Mende in Thrace; those in the back pediment are by Alkenenes, a contemporary of Pheidias, ranking next after him for skill as a sculptor.” (Description of Greece 5,10,7)

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