Introduction

More than 100 years ago, in 1894, the gallery-grave Züschen in Hesse, Germany, was discovered and excavated as early as 1894. It has become famous for its decoration showing bovines and cart-like signs. In addition, a motif known as the “Eye Goddess“ was found on the inside of the wall stones. Thus the grave is one of the most important Neolithic monuments in Germany. As environmental influences such as rain, frost and rising groundwater have damaged the grave and especially the decorations, there is reason enough to re-inspect the grave using modern documentation methods. With the help of optical three-dimensional measuring techniques, such as photogrammetry and optical profilometry, a new and improved documentation of the decoration is proposed, which can give us further insight into the total number of symbols, into the way they were carved onto the stone and into possible ornaments that overlap each other.

Fig. 1.
**State of Documentation – Ornamented Stones**

The current state of documentation of the grave is based mainly on the drawings and photographs of the individual decorated stones, which were published in 1898. In the last century additional monochrome pictures were taken and partially published. Latex copies were made, and replicas of some stones were produced. The drawings, sketches and photographs which have been the subject of earlier studies will form the basis of this treatment, which is why a concise summary of these resources is given in the next paragraphs.

In their publication “Neolithische Denkmäler aus Hessen” (Boehlau / von Gilsa 1898), scientists Boehlau and von Gilsa zu Gilsa, who were the first explorers of the Züschen gravesite, pointed out stones number a1, a5, b1–3, the capstone and the porthole slab as being “embellished”. A number of excellent drawings of all stones that showed any sign of treatment, except the capstone, can be found in this publication. Until 1978, only one monochrome picture of the capstone existed. I. Kappel published an exact drawing of this stone with its motifs as part of her paper “Steinkammergräber und Menhire in Nord-Hessen” (Kappel 1978).

In March 1961, H. Heintel found further pecked marks on stones b7, as well as on a3, a7, a8, a10, b5 and b6. In his essay, collected in “Fundberichte aus Hessen” (Heintel 1966), he only gives a few sample descriptions of individual elements, illustrated by some monochrome pictures. There are no further drawings of the newly discovered images.

Considering the extraordinary archaeologi-
cal significance, an up-to-date and internationally accessible documentation of the grave, and of its ornamentation in particular, is highly desirable. It is our aim to bring the Züschen grave into the focus of Western European research on or-
namented megalithic graves. Another reason to carry out this improved modern documentation is the fact that the grave, and the decoration in particular, are being damaged by environmental influences.

It is our plan now to undertake a detailed survey of the grave and its symbols with the help of new methods which were developed at the Laboratory of Biophysics at Münster University. These methods, based on photogrammetry and optical profilometry, are not presented in this paper. Here we only show the first results of the 3D measurements, which should give insight into the exact number of motifs, their distribution pattern and the technique used for engraving.

**Treatment**

The work in progress is carried out with the aim of securing a full documentation of the grave stones. In order to introduce some of the results of our research we will first deal with the question of whether the new technique can help reveal previously undocumented symbols.

Is it possible to find still unknown motifs on the stones? If so, such ornaments should be fully described, i.e. their type as well as their form, their situation on the stone and possibly its orientation. Possible overlaps of individual motifs are of particular interest.

**Examples**

The following paragraphs deal with some examples of how previously invisible ornaments were discovered. The porthole slab turned out to be especially interesting for this. The 1.4 m high and 2 m wide porthole slab with its porthole approximately 50 cm in diameter separates their main chamber from a smaller ante-chamber and forms the entrance into the grave (Fig. 2).

On this stone, the right upper area below the big zigzag line is of special interest. The stone does not only show the vertical lines beside the herringbone pattern, as they were known from the drawings published earlier, but also representations of
oxcarts, which feature on other stones in the grave (Figs. 3, 4). Unfortunately these complex patterns are hardly visible to the eye today. They are described in the following paragraph.

There are two oxcarts, consisting of two forked signs and additional lines.

The left figure (Fig. 4a) consists of two forked signs linked through a cross-line below the half-bows. From this line, usually interpreted as a yoke, another line comes off at a right angle. In its course it slightly arches to the left and meets an additional line. This latter line connects an ornament which can best be described as two almost complete rings. Another line comes off from the aforementioned line, running diagonally to the bottom right. Furthermore there is one line between the forked signs and what has previously been interpreted as a kind of drawbar. Both lines originate from the link between the “yoke” and the forked signs. They run in a slight arch until they meet the circular shapes on each side. This latter line connects an ornament which can best be described as two almost complete rings. Another line comes off from the aforementioned line, running diagonally to the bottom right. Furthermore there is one line between the forked signs and the drawbar. Both lines originate from the link between the “yoke” and the forked signs. They run in a slight arch until they meet the circular shapes on each side.

An almost identical figure can be seen to the right (Fig. 4d). This portion is more difficult to identify, and some parts seem to have vanished completely. Further research is necessary to supply additional information. The examples of forked signs men-

![Fig. 3.](image3.png)

![Fig. 4.](image4.png)
Conclusion

The example of the porthole stone described in this short paper shows that new 3D visualization technology as applied in Züschen opens up new possibilities in data collection and documentation. Although some of the ornaments on the rock-surface are in a very bad condition today and are no longer (or only partially) visible to the eye, the new technology allows the rediscovery of seemingly lost or still undiscovered ornaments.

Fig. 5.

Fig. 6.

Fig. 7.

eration raises questions as to the temporal sequence of the attachment of the individual ornaments and to the possible combination of several signs.

Also in this part of the stone surface, the zigzag line which is shown twofold in some parts intersects some elements of the oxcarts (Fig. 4c). It is also striking that it seems as if the line’s alignment has obviously been influenced by the orientation of the herringbone pattern (Fig. 3).

Now that we have found so much decoration on the side of the port-hole slab, which points towards the inside area of the grave, it will be interesting to see whether there are any symbols on its other side. With the naked eye it is impossible to see any decoration and even with the help of the new methods we still cannot find any symbols. The surface of its back side is quite flat and clean. It seems to be clear that there has never been any decoration on the side of the grave entrance (Fig. 6).

Another very important stone with a lot of decoration in this grave is stone b2. There you can find the well-known “Eye Goddess” ornament. Unfortunately, the part that surrounds this symbol is problematic. Here, as well as in other parts of the grave, the rock surface has been severely damaged. The Eye Goddess can be reproduced almost completely, but some areas around it cannot be interpreted any more, or at least remain rather debatable. However, it seems likely that there is only one half-circle above the Eye Goddess, instead of the two circles described in earlier studies (Fig. 7).
This conclusion may be a basis for further research on iconography and symbolism of the megalithic art of farming societies in Central Europe.

References

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