

# Fashion trends and body ornamentation in the Upper Palaeolithic of southwestern Germany

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## Zusammenfassung

### Modetrends und Körperschmuck im Jungpaläolithikum Südwestdeutschlands

Das Jungpaläolithikum in Südwestdeutschland wird zwischen 42 000 und 12 000 vor heute datiert. Die drei übergreifenden Kulturphasen sind das Aurignacien (42 000 bis 35 000 Jahre vor heute), das Gravettien (35 000 bis 30 000 Jahre vor heute) und das Magdalénien (17 000 bis 14 000 Jahre vor heute). Die Fundstellen, die vor den Beginn des letzten glazialen Maximums (LGM) datieren, sind vor allem auf die Schwäbische Alb konzentriert. Jede der erwähnten Kulturphasen zeichnet sich durch die Fertigung von andersartigen persönlichen Schmuckelementen aus. Im Aurignacien sind die archäologischen Inventare von doppelt durchlochenden Perlen aus Mammutelfenbein geprägt. Trotzdem gibt es schon in dieser frühen Phase des Homo sapiens in Mitteleuropa Perlentypen, welche auf Modetrends und die Existenz von besonders beliebten Formen hindeuten. Die Jäger-Sammler-Gruppen des Gravettien bevorzugten tropfenförmige Perlen aus Mammutelfenbein, während nach dem letzten glazialen Maximum Schmuck mehrheitlich aus Gagat und Muscheln gefertigt wurde. In allen Perioden nutzten die Menschen durchlochte Karnivoren-Zähne als Schmuckstücke.

Auch bei der Herstellung der für die jeweiligen Kulturphasen typischen Artefakte, wie Lochstäbe und Geschosspitzen, lässt sich ein Wechsel der bevorzugten Rohmaterialien beobachten. Während des Aurignaciens wurden mehrfach durchlochte Elfenbeinstäbe wohl zur Herstellung von Seilen aus Pflanzenfasern verwendet. Pflanzenfasern waren auch für die Herstellung von Kleidung wichtig. In den nachfolgenden Perioden wurden Lochstäbe aus Rentiergeweih verwendet und ihre Formen veränderten sich. Zu Beginn des Jungpaläolithikums wurden spitze Werkzeuge wie Ahlen aus Mammutelfenbein und Knochen hergestellt, während im Gravettien Ahlen aus Knochen verwendet wurden. Im Magdalénien sind Nähnadeln aus Knochen besonders oft belegt, ebenso wie ein Knopf. Daraus kann geschlossen werden, dass die Menschen damals genähte Kleidung trugen, und generell gut gekleidet waren.

Die figürlichen Kunstwerke sind eine Besonderheit des Schwäbischen Aurignaciens. Die Frauenstatuette aus Elfenbein aus der Höhle Hohle Fels bei Schelklingen, Alb-Donau-Kreis, gilt weltweit als eines der ältesten figürlichen Kunstwerke. Sie weist am ganzen Körper tiefe und bewusst platzierte Ritzungen auf. Das Fragment einer zweiten Statuette stammt ebenfalls aus dem Hohle Fels, und weitere Darstellungen von Menschen oder Mischwesen aus Mensch und Tier wurden aus diversen Fundstellen der Schwäbischen Alb ausgegraben. Alle Objekte weisen Verzierungen und Ritzungen

## Summary

The Upper Palaeolithic of southwestern Germany dates from 42 000 to 12 000 cal BP. The three major cultural phases were the Aurignacian (42 000 to 35 000 cal BP), the Gravettian (35 000 to 30 000 cal BP) and the Magdalenian (17 000 to 14 000 cal BP), the latter two separated by the Last Glacial Maximum (LGM). Sites preceding the LGM are concentrated in the Swabian Jura. Each specific cultural phase delivered characteristic personal ornaments. Double-perforated beads made from mammoth ivory dominate the archaeological inventories of the Aurignacian. Nevertheless, even from this early phase of Homo sapiens's presence in Central Europe, we know of bead types that hint at fashion trends and stylistic choices. During the Gravettian, the hunter-gatherers typically made tear-drop-shaped beads from mammoth ivory. After the LGM, the choice of raw material for carving personal ornaments changed to mainly jet and molluscs. During all periods, people used perforated carnivore teeth.

We also observe shifts in raw material choices for producing other characteristic artefacts of the respective periods, including perforated batons and pointed tools. During the Aurignacian, perforated batons with multiple holes, made from ivory, may have been used for making ropes from plant fibres. Fibres may have been important for producing clothes. In the subsequent periods, craftspeople used perforated batons in different shapes made from reindeer antler. At the beginning of the Upper Palaeolithic, pointed tools like awls were made from mammoth ivory and bone; during the Gravettian, people used awls made from bone; and during the Magdalenian, bone sewing needles with eyelets were frequently used. Even a button is known. All this means that people sewed clothes and dressed well.

Aurignacian figurative artworks are a speciality of the Swabian Jura. The female figurine from Hohle Fels Cave near Schelklingen, Alb-Donau-Kreis District, is made from ivory and counts amongst the oldest artworks worldwide. The entire body bears deep and deliberately placed incisions. A fragment of a second figurine was also found at the site, and human and human-animal figurines have been discovered at other sites in the Swabian Jura. All the artworks bear decorations and incisions. These incisions may well depict clothes, tattoos or body painting. The finds provide important clues as to the appearance of our ancestors.

**Keywords** Upper Palaeolithic, southwestern Germany, personal ornaments, figurative artworks

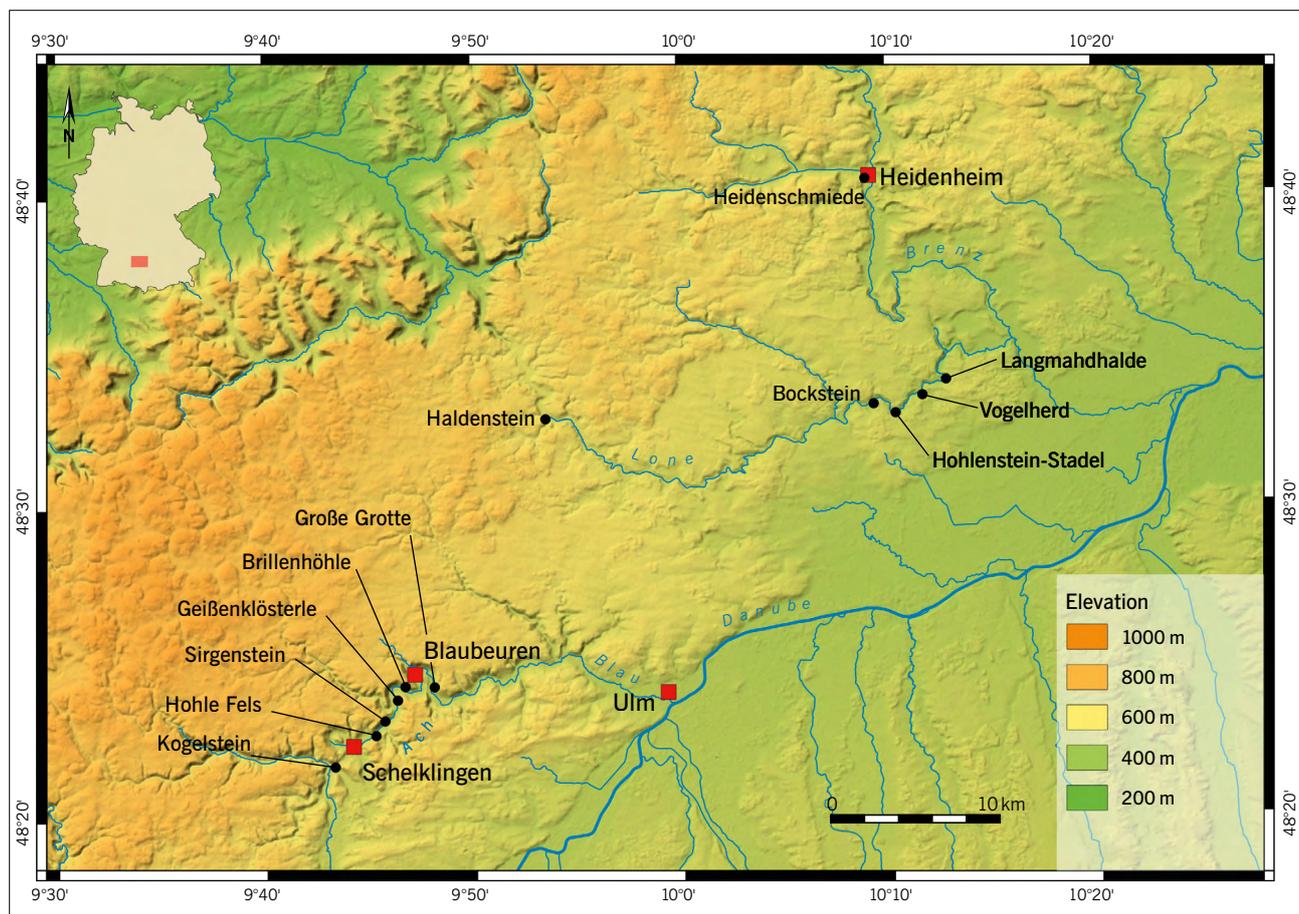
auf. Diese werden als Kleidungsstücke, Tätowierungen oder Körperbemalungen interpretiert. Die Funde geben Hinweise auf das Aussehen unserer Vorfahren

**Schlagwörter** Jungpaläolithikum, Südwestdeutschland, persönlicher Schmuck, figürliche Kunstwerke

## Introduction

Personal ornaments are a frequent subject of research in Palaeolithic archaeology. M. Haidle (2003) argues that ornamentation serves primarily as a means of communication, and objects are perceived as decorative and ornamental in a subjective way. When such objects are worn on the body and presented to the environment, either sewn on clothing or used as jewellery, they may reflect an expression of a person's individuality. For the individual and within a group, personal ornaments can be arranged in a specific manner to convey a special meaning. Such displays can then be

perceived, interpreted and understood by the others. The purpose of wearing the pieces is multifaceted<sup>1</sup>. Personal ornaments are used to express diverse conventions or to distinguish an individual from a group. Alternatively, personal ornaments can help to integrate individuals within their social context. The wearing of ornaments thus always creates meaning (Kehnel 2011). Prehistorians, for example, can use these artefacts to argue for the existence of cultural units within the European Early Upper Palaeolithic (Vanhaeren/d'Errico 2006; Baker et al. 2024) and to demonstrate vast social networks, evidenced by the distribution and use of carefully selected, specialised beads (Stiner 2014). Body



**Fig. 1** Map of the Swabian Jura (Southwest Germany, Ach-, Brenz- and Lone Valleys) with major sites that yielded prehistoric remains. Four sites provided Aurignacian figurative art: 1 Vogelherd Cave, Heidenheim District; 2 Hohlenstein-Stadel, Alb-Donau-Kreis District; 3 Geißenklösterle, Alb-Donau-Kreis District; 4 Hohle Fels, Alb-Donau-Kreis District.

**Abb. 1** Karte der Schwäbischen Alb (Südwestdeutschland, Ach-, Brenz- und Lonetal) mit den wichtigsten Fundstellen prähistorischer Funde. Vier Fundorte lieferten figürliche Kunst aus dem Aurignacien: 1 Vogelherdhöhle, Lkr. Heidenheim; 2 Hohlenstein-Stadel, Alb-Donau-Kreis; 3 Geißenklösterle, Alb-Donau-Kreis; 4 Hohle Fels, Alb-Donau-Kreis.

<sup>1</sup> Kuntzsch 1978; Hauser-Schäublin 1988; Morris 1994; Lock/Symes 1999; Vanhaeren 2010.

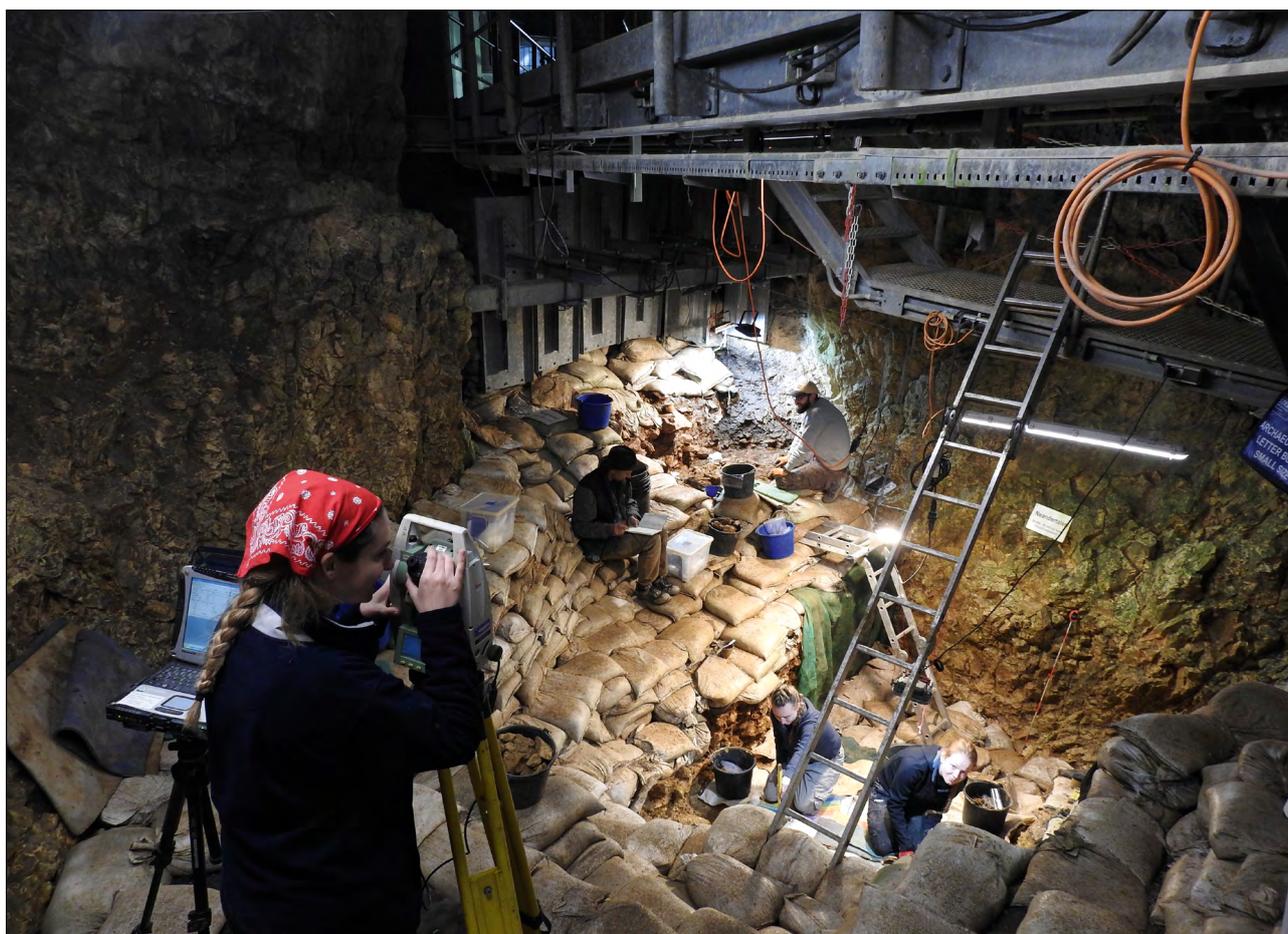


Fig. 2 Hohle Fels. Excavation 2022.

Abb. 2 Hohle Fels. Ausgrabungssituation 2022.

ornamentation can be interpreted as a medium or technology for communication and a testament to social interaction (Kuhn/Stiner 2007). Over recent decades, numerous studies have examined the form, function, and standardisation of prehistoric beads (e.g. Heckel 2015), as well as their diverse meanings<sup>2</sup>.

## Material

The Palaeolithic ornament assemblages of the Swabian Jura sites comprise objects made from mammoth ivory, animal teeth, molluscs, soapstone, jet, and fossils (Conard 2003a). The Upper Palaeolithic of southwestern Germany dated from 42 000 to 12 000 cal BP, comprising the early Upper Palaeolithic Aurignacian (42 000 to 35 000 cal BP), the mid-Upper Palaeolithic Gravettian (35 000 to 30 000 cal BP) and the late Upper Palaeolithic Magdalenian (17 000 to 14 000 cal BP)<sup>3</sup>. The variability of different ornament shapes is remarkable (Wolf 2015; Wolf 2019). This especially holds true for the Aurignacian and Magdalenian objects from different cave sites.

This chapter presents ornaments from the following cave sites of the Ach and Lone Valleys, each presented according to the beginning of the research history (Fig. 1): Hohle Fels, Sirgenstein, Brillenhöhle, and Geißenklösterle as well as Bockstein, Vogelherd, and Hohlenstein-Stadel. Furthermore, the ornaments from the sites Petersfels and Gnirshöhle in the Bruder Valley near the city of Engen, Konstanz District, are discussed.

## Presentation of the sites and the artefacts

### Ach Valley

Hohle Fels, near Schelklingen, Alb-Donau-Kreis District, is a large cave located 7 m above the Ach River. Excavations at the site began in 1870 with O. Fraas and T. Hartmann, followed by R. R. Schmidt, G. Riek, and J. Hahn in the early to mid-20<sup>th</sup> century (Fraas 1872; Schmidt 1912; Conard 2002). Since 1997, N. Conard has directed annual excavation campaigns (Fig. 2)<sup>4</sup>. The Upper Palaeolithic layers are attributed to the Aurignacian (Vb, Vab, Vaa, Va, IV, IIIb, IIIa, and IIe;

2 E.g. Taborin 1995; Rigaud et al. 2015; White 2007; Wolf/Conard 2015.

3 Conard/Bolus 2003; Conard/Bolus 2008; Conard/Rots 2024; Bataille/Conard 2018; Schürch et al. 2024.

4 Conard/Uerpman 1999; Conard/Malina 2010; Conard/Malina 2016; Conard/Wolf 2020.

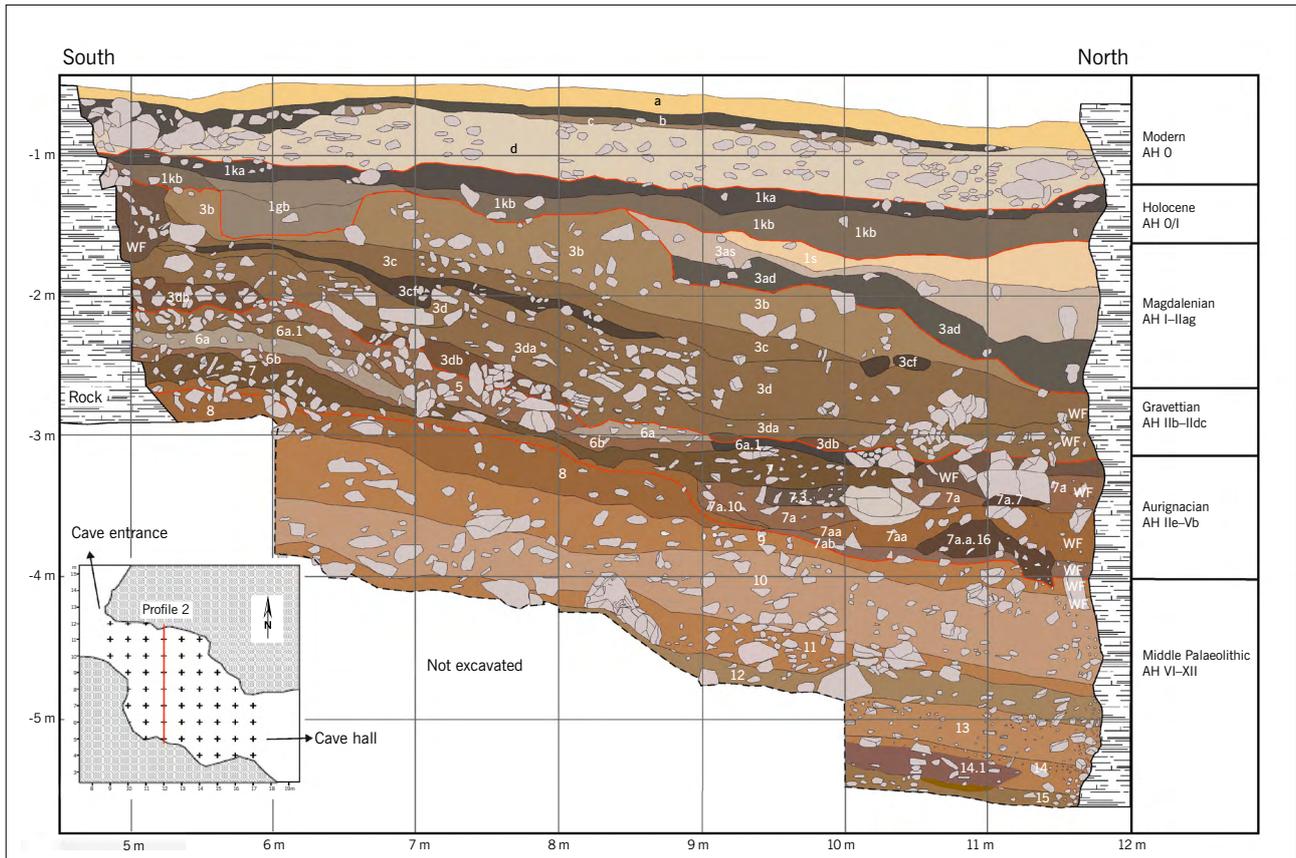


Fig. 3 Hohle Fels. North-South Profile. Geological and archaeological horizons ranging from the Holocene to the Middle Palaeolithic. State of the art 2023.

Abb. 3 Hohle Fels. Nord-Süd-Profil. Geologische und archäologische Horizonte vom Holozän bis ins Mittelpaläolithikum. Stand 2023.

Conard/Bolus 2008; Bataille/Conard 2018); the Gravettian (IIId, IIc, IIc, and IIb), and the Magdalenian (IIa and I; Fig. 3; Taller 2014; Taller/Conard 2016). Extraordinary artefacts found at the site include a diverse array of personal ornamentation (Kölbl/Conard 2003; Wolf 2015; Wolf/Heckel 2018), ivory figurines<sup>5</sup>, the earliest known flute made from bird bone (Conard et al. 2009), perforated batons (*Lochstäbe*) and chisels made from mammoth ivory (Conard/Rots 2024; Wolf et al. 2025a), as well as evidence of pigment processing alongside painted stones (Wolf et al. 2018; Velliky et al. 2018). The published Aurignacian ornament assemblage comprises 242 items. Of these, 217 mammoth ivory beads have been analysed, and more than half of the artefacts (127 objects) are double perforated beads in all stages of production (Fig. 4). So far, 44 Gravettian tear-drop-shaped beads (Vercoutère/Wolf 2018; Velliky et al. 2021) and 48 perforated animal teeth have been unearthed from both periods (Kölbl/Conard 2003; Walter et al. 2024) (Fig. 5–7). The Magdalenian ornaments derive from layers 0–IIa. The ornamentation includes 34 reindeer teeth. In addition, eight molluscs and seven *dentalia* were found. Five pieces are made from jet, and three pieces are made from ivory.

The unperforated figure-of-eight-shaped beads made from mammoth ivory are not listed here (see Conard 2003a), as the dating of this particular type of ornament is open to debate.

#### The female depictions

In 2008, in the lowest Aurignacian horizon Vb, nine fragments of a female figurine were excavated and refitted to a 6 cm high figurine (Fig. 8; Conard 2009; Conard 2010). E. Dutkiewicz et al. (2024) describe the figurine as follows:

»The figurine is almost completely preserved, only the left arm and shoulder are missing. The posture is somewhat asymmetrical, with the right shoulder slightly raised. There is no head; instead, there is a loop above the left shoulder. Below the broad shoulders, the large breasts protrude noticeably forward. Both arms are held close to the body. The carefully designed hands rest below the breasts on the upper abdomen. The oversized vulva is shown with the labia open. The thighs are slim and stand out from each other and the legs end below the knees. The figure bears markings everywhere except for the legs and buttocks. On the front, ten nearly parallel lines that are long and deeply

<sup>5</sup> Conard 2003b; Conard 2009; Dutkiewicz 2021; Dutkiewicz et al. 2018.

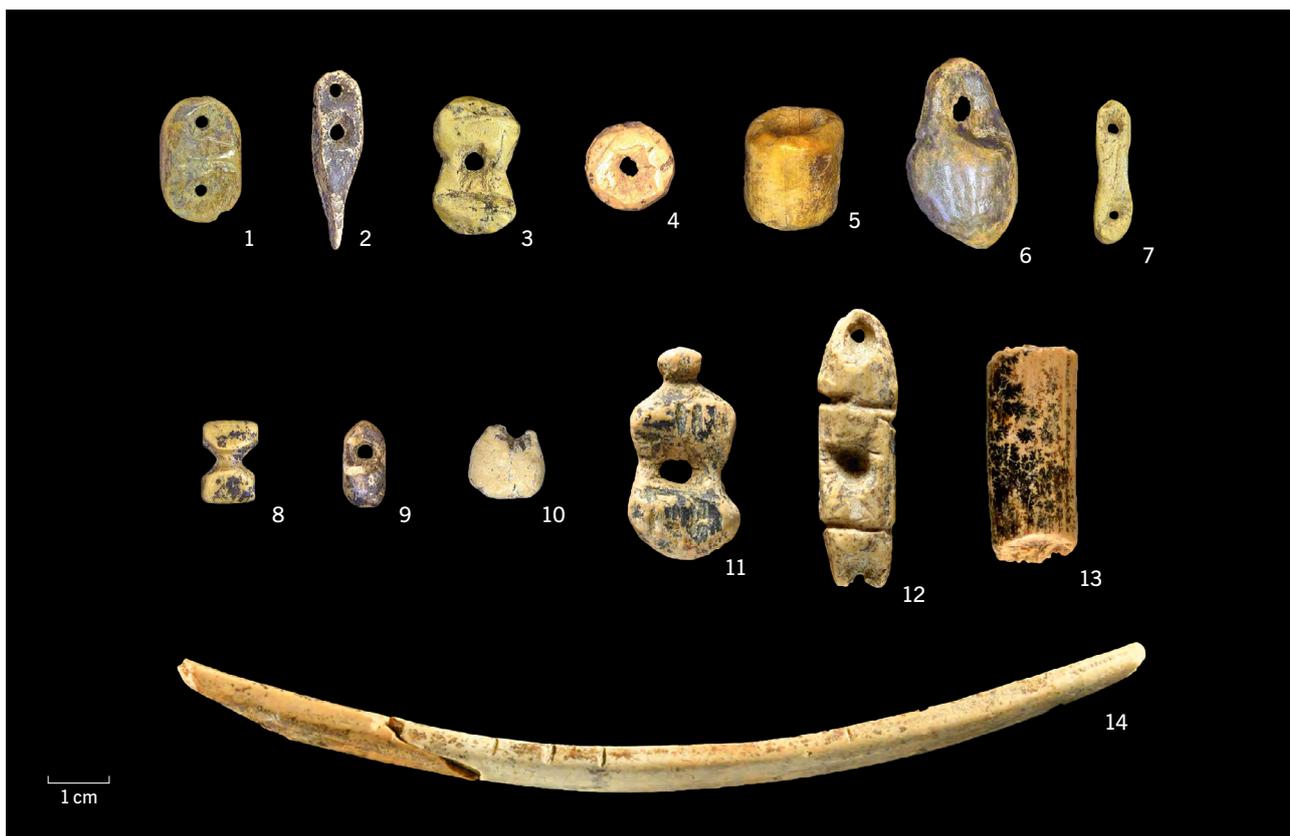


Fig. 4 Personal ornaments carved from mammoth ivory from the Swabian Aurignacian. 1 Double perforated bead; 2 double perforated bead with wedge-shaped extension; 3 single perforated bead; 4 discoid bead; 5 ring-shaped bead; 6 basket-shaped bead; 7 figure-of-eight-shaped bead; 8 unperforated, constricted bead; 9 elongated bead; 10 globular bead; 11 single perforated bead with round extension; 12 incised, triple perforated bead; 13 preform of a bead; 14 bandeau. Hohle Fels: 4, 5, 7, 8, 11–14; Vogelherd: 1–3, 6, 9, 10.

Abb. 4 Aus Mammutelfenbein geschnitzte Schmuckstücke aus dem Schwäbischen Aurignacien. 1 Doppelt durchlochte Perle; 2 doppelt durchlochte Perle mit keilförmigem Fortsatz; 3 einfach durchlochte Perle; 4 scheibenförmige Perle; 5 ringförmige Perle; 6 körbchenförmige Perle; 7 achtförmige Perle; 8 knieförmige Perle; 9 längliche Perle; 10 kugelförmige Perle; 11 einfach durchlochte Perle mit rundem Fortsatz; 12 eingeschnittene, dreifach durchlochte Perle; 13 Vorform einer Perle; 14 Bandeau. Hohle Fels: 4, 5, 7, 8, 11–14; Vogelherd: 1–3, 6, 9, 10.

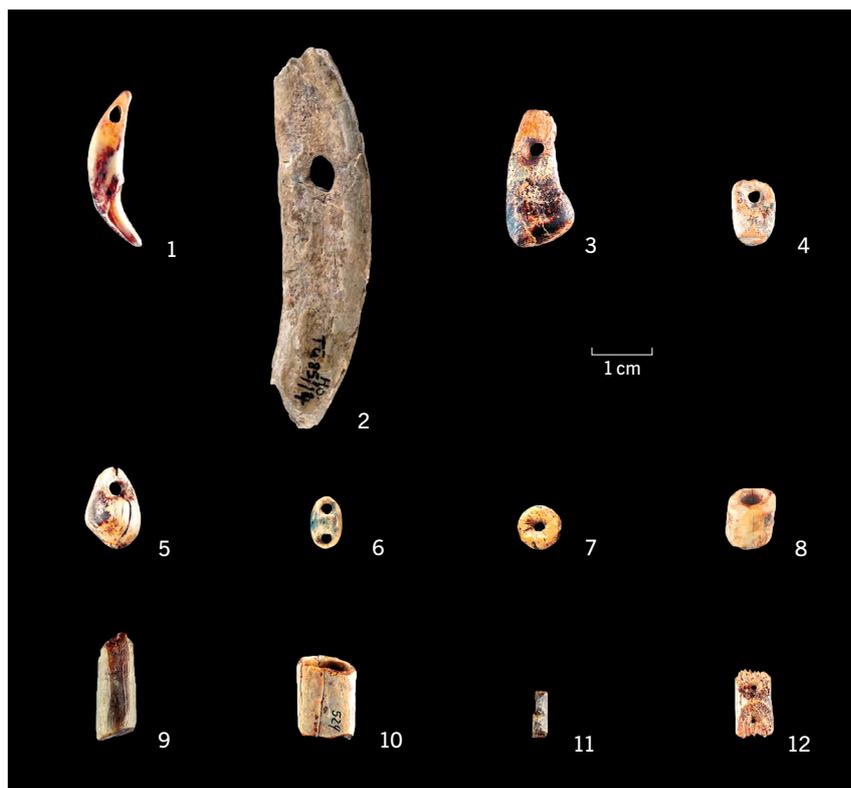
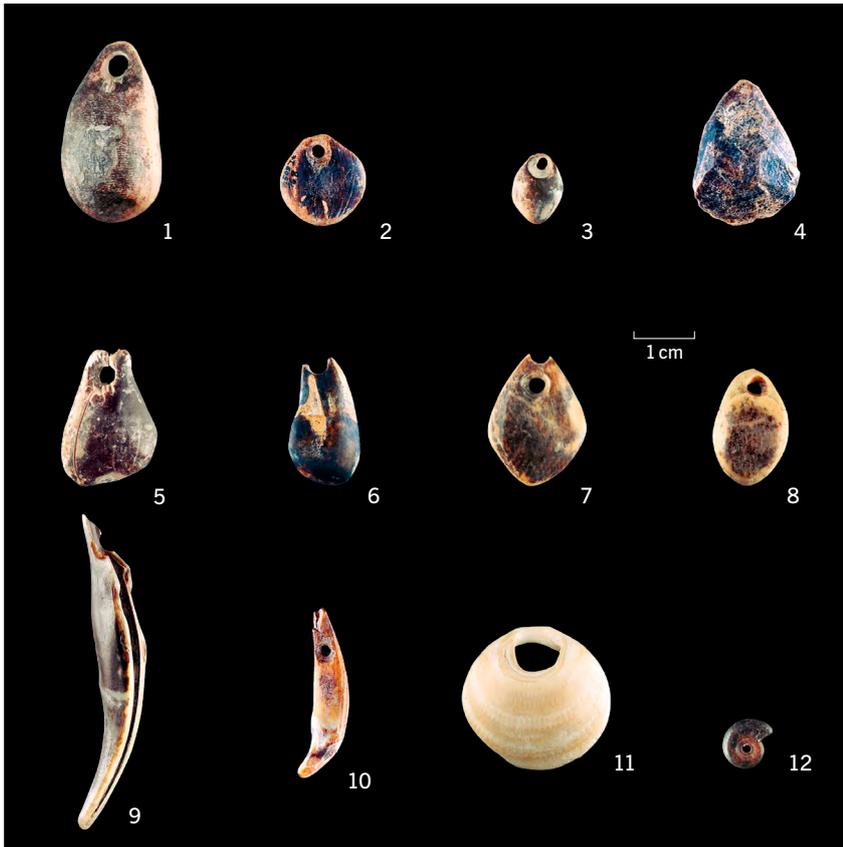


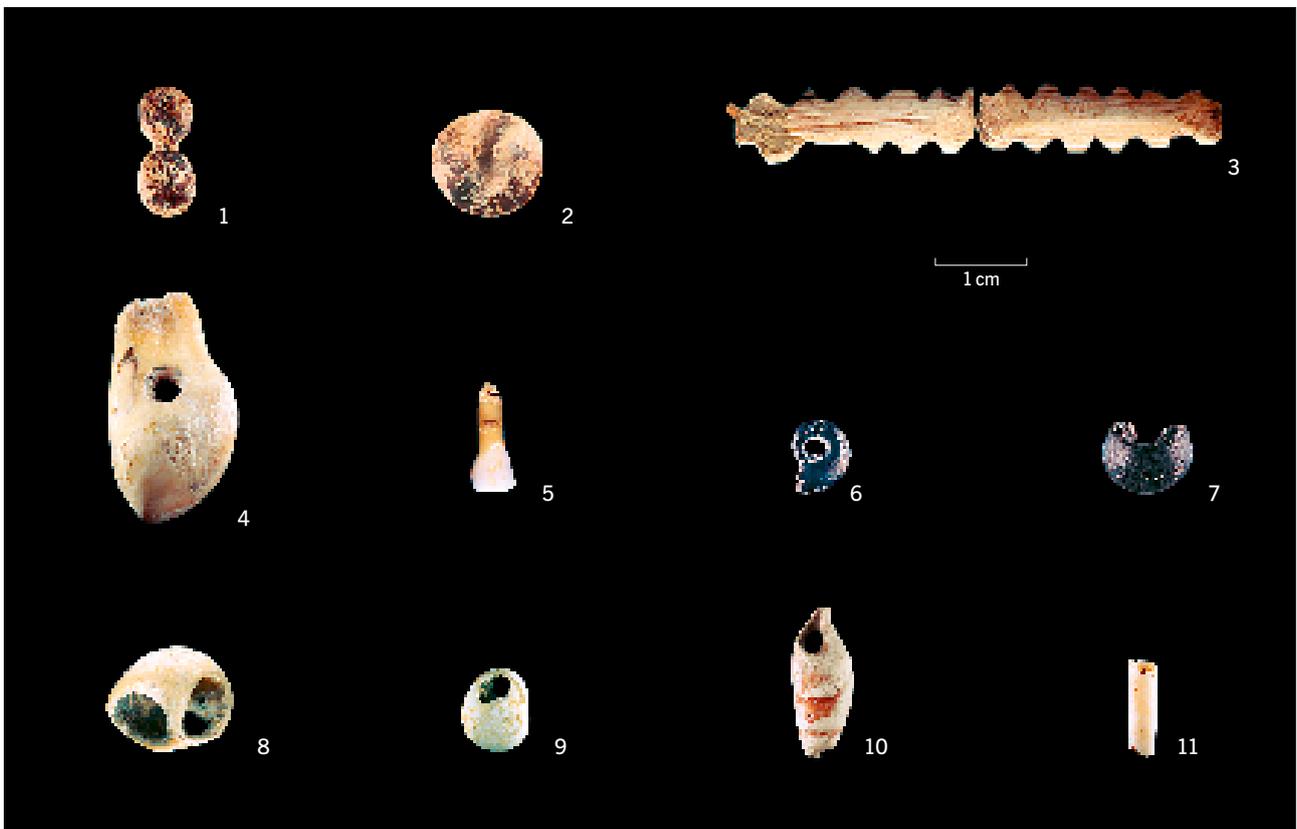
Fig. 5 Personal ornaments of the Aurignacian of southwestern Germany. 1 Fox canine; 2 horse incisor; 3 deer canine; 4 elongated bead; 5 basket-shaped bead; 6 double perforated bead; 7 disc-shaped bead; 8 tube-shaped bead; 9 raw form of a bead (soapstone); 10 tube-shaped bead (bone); 11 rod; 12 half product double perforated bead. 4–8, 11, 12 made from mammoth ivory. Hohle Fels: 1–3, 5–8, 11, 12; Geißenklösterle: 4, 9, 10.

Abb. 5 Schmuckstücke des Aurignacien aus Südwestdeutschland. 1 Fuchseckzahn; 2 Pferdeschneidezahn; 3 Hirscheckzahn; 4 längliche Perle; 5 körbchenförmige Perle; 6 doppelt durchlochte Perle; 7 scheibenförmige Perle; 8 röhrenförmige Perle; 9 Rohform einer Perle (Speckstein); 10 röhrenförmige Perle (Knochen); 11 Stab; 12 Halbfabrikat einer doppelt durchlochten Perle. 4–8, 11, 12 aus Mammutelfenbein. Hohle Fels: 1–3, 5–8, 11, 12; Geißenklösterle: 4, 9, 10.



**Fig. 6** Personal ornaments of the Gravettian of southwestern Germany. 1–3 Tear-drop-shaped beads; 4 raw form of a tear-drop-shaped bead; 5 facsimile of a deer canine; 6 deer canine; 7 reused bead; 8 bead with lateral decoration; 9 split wolf canine; 10 cave bear canine; 11 mollusc *Glycymeris pilosa*; 12 ammonite. 1–5, 7, 8 made from mammoth ivory. Hohle Fels: 7–9, 11; Geißenklösterle: 1–6, 10, 12.

**Abb. 6** Schmuckstücke des Gravettiens Südwestdeutschlands. 1–3 Tropfenförmige Perlen; 4 Rohform einer tropfenförmigen Perle; 5 Faksimile eines Hirscheckzahnes; 6 Hirscheckzahn; 7 wiederverwendete Perle; 8 Perle mit seitlicher Verzierung; 9 gespaltenen Wolfseckzahn; 10 Höhlenbäreckzahn; 11 Molluske *Glycymeris pilosa*; 12 Ammonit. 1–5, 7, 8 aus Mammutelfenbein. Hohle Fels: 7–9, 11; Geißenklösterle: 1–6, 10, 12.



**Fig. 7** Personal ornaments of the Magdalenian from Hohle Fels. 1 Toggle-shaped bead; 2 button; 3 notched bandeau; 4 deer canine; 5 incised reindeer incisor; 6 ammonite; 7 bead (jet); 8 mollusc *Littorina obtusata*; 9 mollusc *Cyclope neritea*; 10 mollusc *Melanopsis kleini*; 11 dentalium. 1–3 Made from mammoth ivory.

**Abb. 7** Schmuckstücke des Magdaléniens des Hohle Fels. 1 Knebelförmige Perle; 2 Knopf; 3 gekerbtes Band; 4 Hirscheckzahn; 5 eingeschnittener Rentier-Schneidezahn; 6 Ammonit; 7 Perle (Gagat); 8 Molluske *Littorina obtusata*; 9 Molluske *Cyclope neritea*; 10 Molluske *Melanopsis kleini*; 11 Dentalium. 1–3 Hergestellt aus Mammutelfenbein.



Fig. 8a–b Hohle Fels. Female figurine made from mammoth ivory. Length 6.0 cm.

Abb. 8a–b Hohle Fels. Weibliche Figurine aus Mammutfelßenbein. Länge 6,0 cm.

cut run horizontally across the entire abdomen. There are twelve thin radial lines on the lower abdomen, which radiate out roughly from the navel. On the backside of the figure, a long and curved line runs along the shoulder girdle. Along this line, vertical parallel notches are placed, only nine of which are preserved; the sequence could have included one to three additional notches along the missing left shoulder. A few lines are loosely scattered across the entire back with a concentration in the waist area. A pattern of four U-shaped, concentric long lines runs over the flat upper breast from the tip of one breast to the other. The outside of the right breast bears two sequences of six and four parallel, vertical lines, respectively. There are another four parallel, vertical lines on the outside of the left breast and three on the inside. On both shoulder parts, there are three long parallel lines mirrored on each side. Starting at the shoulder on the right arm is a pattern of a sloping line with two parallel lines directly below it. There are six parallel lines along the upper arm and four more on the forearm. At the wrist, there are two rows of four and two dots. It can be assumed that the left missing arm was also decorated with markings since the patterns on this figurine are applied symmetrically« (Dutkiewicz et al. 2024, 181–182).

Other fragments of female figurines have been recovered in AH Vb and AH Vaa that bear similar markings or decoration patterns and are therefore interpreted as possible parts of female figurines (Fig. 9; Conard/Malina 2015; Dutkiewicz 2021; Dutkiewicz et al. 2024).

### Interpretations

Instead of a head, the carver created a ring through which a cord could be threaded. Several explanations for this exist. The head of the figure may have been intentionally omitted, perhaps symbolically represented by the ring itself or being perceived as analogous to the head of a female figurine. The wearer her- or himself becomes the figure by wearing it on a cord around the neck – the human head thus becomes the head of the female figure (Fig. 10). Another possibility is that the head was made from a more perishable material than ivory and was attached to the figurine (Stannard/Langley 2021). A further option is that a head was originally present but later broke off or was intentionally removed, with the resulting surface then reworked to its current state. Finally, there is the obvious assumption that the figurine was intentionally designed in its current headless form. The patterns on the arms, chest, shoulders, and back may represent body decoration. This could have been painting, tattoos, or scarification (Wadley 2016). The clearly visible navel on the female figurine suggests that these patterns are on bare skin. They follow the anatomical details of the body, emphasising the abdomen and breasts. Both cultural traditions and personal preferences likely influenced the composition and selection of these patterns. It is reasonable to assume that the patterns on different body parts convey deeper symbolic meaning. The emphasis on the female body's anatomical details may relate to aspects of fertility. The irregular lines on the back could depict decora-



Fig. 9 Hohle Fels. Fragment of a female figurine made from mammoth ivory. Length: 2.5 cm.

Abb. 9 Hohle Fels. Fragment einer weiblichen Figurine aus Mammutelfenbein. Länge: 2,5 cm.



Fig. 10 Reconstruction of an Aurignacian woman.

Abb. 10 Rekonstruktionsvorschlag einer Frau aus dem Aurignacien.

tion, wrinkles, or stretch marks. The lines in the waist area resemble skin folds like those found in corpulent women. They might also represent a belt, but the short lines are not connected to a single, distinct form, and the pattern does not continue on the front. Nevertheless, the indicated belt as

well as the slightly slanted lines on the stomach could indicate a baby sling. In this case, the protruding breasts would be the backs of the heads of two babies carried side by side in the sling, facing the wearer<sup>6</sup>. This assumption seems legitimate in a hunter-gatherer community, and a garment

<sup>6</sup> Consideration expressed by H. Müller-Beck 2009, discussed with S. Wolf.

would be implied. However, the anatomical details of the large breasts, the open vulva, and the relaxed abdomen are all characteristic of a woman's body shortly after childbirth (Conard 2010). N. J. Conard (2010) does not assume that the figurine represents a specific actual individual. Rather, the figurine depicts a woman just after birth and a more general concept of reproduction and fecundity. He sees the figurine as belonging within a female social realm in connection with reproduction and birth, and perhaps in the context of Palaeolithic midwifery. The figurine could also have been passed between mothers and daughters over generations. M. Porr (2010) shares aspects of this view. G. Morris-Kay (2010) supports the idea of a depiction of a woman shortly after giving birth. However, she sees the figure as a self-portrait of a young mother confronted with her changed body. According to G. Morris-Kay, this woman would have worked and worn the pendant for her own purposes. The markings on the female figurine also suggest a connection with pregnancy (Dutkiewicz 2021; Dutkiewicz 2023). The twelve radial lines emphasise the lower abdomen, and the ten horizontal, deeply incised lines across the stomach are particularly striking. Before ultrasound technology, fundal height – the position of the uterus in the abdomen – was used to determine the stage of pregnancy (Beazley/Underhill 1970; Morse et al. 2009). Instructional diagrams often illustrate the fundal height with horizontal lines on the abdomen, corresponding to the weeks of gestation. At the end of pregnancy, the fundus reaches just below the breasts. These horizontal lines on the figurine's abdomen, in conjunction with other signs of postpartum, may reflect these uterine positions. This interpretation is supported by the fact that the ten lines correspond to the ten months of a lunar pregnancy (Dutkiewicz 2021; Dutkiewicz 2023). The markings of the vulva, however, are quite different. Unlike the clearly defined markings on the upper body, the incisions in this area are rather imprecise, appearing quickly and roughly executed. They fill the entire pubic triangle, culminating in the vulvar cleft. This, in contrast to the static markings on the upper body, suggests action, as if this area was repeatedly modified. The continuous incisions suggest an ongoing activity, emphasising the process of cutting. E. Dutkiewicz et al. (2024) identified three distinct zones of markings on the Hohle Fels female figurines. The first zone represents the body with its specific characteristics, likely depicting body decoration such as painting, tattooing, or scarification. All aspects may have been integral to a woman's appearance in the Swabian Aurignacian society. In any case, a specific individual is not depicted (Conard 2010). The second zone reflects numerical, calendric, and potentially medical significance, likely representing the notation of a pregnancy's progression over ten lunar months. The third zone, the vulva, shows evidence of repeated working, even after the figure's initial completion. The notation of pregnancy progression, the focus on the abdomen, and the 'opening' of the vulva all support the argument that this figure is directly related to fertility, specifically pregnancy

and childbirth. The fact that it was also a pendant suggests its use as a personal amulet or apotropaic object during that crucial time for an expectant mother. The fact that the perforation is polished and was used over a long time speaks in favour of passing on this object from generation to generation and its value to the Aurignacian users.

### Sirgenstein

The cave entrance area and the terrace of the Sirgenstein were excavated by R. R. Schmidt in 1906. The sequence of layers with archaeological remains was about 2.20 m. It ranges from the Middle Palaeolithic to the Magdalenian (VIII–I; Schmidt 1912; Bolus/Conard 2012). When examining soil samples of the Aurignacian layer IV, R. R. Schmidt found a double perforated bead that was broken lengthwise so only one half is preserved.

### Brillenhöhle

The Brillenhöhle in the Ach Valley near Blaubeuren, Alb-Donau-Kreis District, is located 80 m above the Ach River (Riek 1973). G. Riek conducted the first excavations there between 1955 and 1963, and excavations have continued since 2021 under the direction of Y. Tafelmaier (2023). The Upper Palaeolithic layers include a small Aurignacian assemblage (AH XIV), a Gravettian inventory (AH VII to V) and a Magdalenian component (AH IV). G. Riek noted 33 characteristic tear-drop-shaped beads from the Gravettian layers (Riek 1973). The Brillenhöhle is also well-known for Magdalenian human remains, which provide evidence of secondary burial practices and/or cannibalism (Orschiedt 2002; Sala/Conard 2016). The Magdalenian horizon IV revealed five notched ivory bands (Riek 1973), the function of which is still unclear (Fig. 3,1–3; Tally 2014). However, these can be considered as ornaments.

### Geißenklösterle

Geißenklösterle Cave, located a short distance from Hohle Fels near Blaubeuren, is a partially collapsed cave situated 60 m above the Ach River (Hahn 1988). Discovered in 1958, the site has been excavated in multiple campaigns by E. Wagner (1973), J. Hahn (1974–1991), and N. Conard (2001–2002). The Upper Palaeolithic layers consist of the Lower Aurignacian (AH III), the Upper Aurignacian (AH II), the Gravettian (AH I), and a very small Magdalenian component (AH I<sub>o</sub>; Richter et al. 2000; Higham et al. 2012). Like Hohle Fels, Geißenklösterle contains abundant evidence of symbolic material culture, including ivory figurines, bone and ivory flutes, personal ornamentation, and a painted stone<sup>7</sup>. As Aurignacian ornaments, three perforated fox teeth, two pendants, a minimum of 13 beads made from mammoth

<sup>7</sup> Hahn 1982; Hahn 1986; Hahn 1988; Floss 2015; Wolf 2015; Dutkiewicz 2021.



Fig. 11a–b Geißenklösterle. Adorant, made from mammoth ivory. Length: 3.8 cm.

Abb. 11a–b Geißenklösterle. Adorant, geschnitzt aus Mammutelfenbein. Länge: 3,8 cm.

ivory (therefrom ten double perforated beads) and three ivory bandeaux are known. From the Gravettian layers, 65 tear-drop-shaped beads are published (Scheer 1985). No Magdalenian personal ornaments were excavated.

#### **Adorant**

In 1979, Hahn discovered the so-called ›Adorant‹ in Geißenklösterle Cave (Fig. 11; Hahn 1982). This rectangular, thin ivory plate measures 3.8 cm in length. One side features a relief depicting a human figure in a symmetrical frontal pose. The arms are slightly bent and raised, with the head extending above the upper edge. The legs are slightly bent, and the feet point outwards. Between the feet is an elongated appendage that hangs down. This feature is particularly interesting, as it has been interpreted as an animal's tail (Hahn 1986). G. Rücklin (1995), however, interprets the depiction as a birth scene. The Adorant's arms are marked with three lines on the right and seven on the left. Four lines are visible on the top of the head, possibly representing hair (Dutkiewicz 2023). Dutkiewicz suggests these markings are directly related to the human figure, reflecting features such as hairstyle and body decorations like tattoos, scarification, or paint. The edges of the Adorant bear notches: 13 on the sides, seven at the top, and

six at the bottom. On the back of the plate are four rows of dots, numbering 13, 10, 12, and 13, respectively. The numbers of notches and dots are often associated with observations of lunar phases and lunar calendars (Dutkiewicz 2023).

#### **Lone Valley**

##### **Bockstein**

L. Bürger first excavated the Bockstein Cave in 1883/84. Later, R.R. Schmidt also excavated in the cave in 1908 (Schmidt 1912; Wetzel 1958). The artefacts derive from mixed layers, but they range from the Middle Palaeolithic to the Mesolithic, with a focus on the Aurignacian artefact types (Hahn 1977). Two perforated cave bear canines are known, which are of an Aurignacian age. In the Bockstein-Törle, the original entrance to the Bockstein Cave, layers VIII to II revealed archaeological remains from the Middle Palaeolithic to the Neolithic (Wetzel 1954). Here, three personal ornaments made from clay shale, as well as two mammoth ivory pendants, one preform, and one broken item are known that probably date to the Aurignacian (Wolf et al. 2013).

## Hohlenstein-Stadel

The Hohlenstein complex is located in the municipality of Asselfingen, Alb-Donau-Kreis-District. The complex contains two caves, the Bärenhöhle (Bear Cave) and the Stadel. The Abri Kleine Scheuer is situated between these two caves, and the Ostloch (East Hole) is located to the east, above the Stadel. In 1861, O. Fraas began the first research into the Prehistory in the Bärenhöhle. Between 1937 and 1939, R. Wetzel conducted excavations in the Stadel, employing a system of arbitrary layers (German: *Hieb*), where each layer, approximately 20 cm thick, was excavated using a hand pick. In the 20<sup>th</sup> m, 6<sup>th</sup> *Hieb*, nearly 300 fragments of worked ivory were discovered. Later on, these fragments were refitted to the Lion Man figurine, the first hybrid creature – half man, half lion – in human history<sup>8</sup>. After World War II, from 1953 onwards, R. Wetzel continued his work in the Lone Valley, excavating at and within the Hohlenstein between 1954 and 1961 (Wetzel 1961). Under the direction of C.-J. Kind, renewed excavations began in 2009 in the Stadel, focusing on the area above the 20<sup>th</sup> excavation metre from the 1939 excavations (Kind/Beutelspacher 2010). The remaining excavation metres from the 1939 campaign were documented, and *in situ* sediments were excavated and recorded (Kind/Beutelspacher 2010; Beutelspacher et al. 2011; Beutelspacher/Kind 2012). The Palaeolithic layers range from the Magdalenian to the Middle Palaeolithic (levels C to F). A new radiocarbon date from the Aurignacian layer (Au) yielded an age of  $35185 \pm 270$  BP (ETH-38797; Beutelspacher et al. 2011), roughly calibrated to ~40 500 cal BP. During the 1939 excavation, eight personal ornaments were unearthed near the fragments of the Lion Man figurine<sup>9</sup>. These are six fox teeth (one is currently unavailable for study) and two unique mammoth ivory pendants: a globular one and a basket-shaped form (Wolf et al. 2013). The backdirt excavations delivered eleven pieces of personal ornaments. These artefacts include one ivory bead, similar in shape to the globular one found in the 1939 excavation, as well as eight fox teeth, one wolf tooth, and a deer canine decorated with carvings on both sides (Wolf et al. 2013). The deer canine shows two short carvings on its upper half and four longer carvings on the opposite end, its lower half. The assemblage includes seven fox canines, three incisors, two premolars, and one root fragment. Using geometric-morphometric analysis, Ostermann identified five specimens suitable for species identification: two canines from red fox and three from arctic fox. F. Venditti et al. (2023) recently investigated the perforation methods used on all 13 fox teeth. The Aurignacians longitudinally scraped all 13 teeth to flatten and thin the roots, leaving visible long, irregular striations. The perforations were created using the same method: flattening the surface until perforation, and then widening the hole with bifacial semi-rotation, resulting in a bi-conical perforation. Of the teeth with complete perforations, five show well-developed rounding of their internal and external rims.

## Lion Man

The Lion Man figurine has been professionally restored twice: in 1988 at the Württemberg State Museum (Schmid 1989) and in 2012/13 at the State Office for Heritage Preservation of Baden-Württemberg (Kind et al. 2014). The characteristics of a lion, such as the short snout and cat-like ears, are unmistakable. The Lion Man stands upright with slightly parted legs. It is made from a whole mammoth tusk. While the head is clearly that of a lion, its position, combined with the upright posture, is that of a human. The muzzle is broad, marked by two deep lines defining the nose and mouth. The eyes, while positioned laterally, face forward. Also, the ears are characteristic of a lion. The neck is notably broad, merging almost seamlessly into the back and shoulders. The shoulder blades are clearly defined. The arms, terminating in lion-like paws, are slightly bent and held close to the body, not touching the torso. The torso is elongated, giving the figure a somewhat stretched appearance. The legs are spaced roughly shoulder-width apart and exhibit clearly human characteristics, including knees and curved calves, ankles, and heels. Notably, the feet are not horizontal, suggesting the figure is standing on tiptoe. Although much of the original surface is now lost, some areas remain along the head and neck, the collarbones, and the lower abdomen. These preserved areas include the large, deep navel and an extension in the groin area (Kind et al. 2014). The detached extension could represent either a stylised penis or a loincloth (Kind et al. 2014). Eight wide, deep notches are visible on the left upper arm. The final two notches near the elbow are partially preserved, with the last represented by only a few cuts (Dutkiewicz et al. 2024). Hatching on the rear left ear is also clearly visible. These incisions could be interpreted as tattoos or scarification.

The upright posture with the human lower body and navel, combined with the elongated upper body, lion's paws, and lion's head, suggests the depiction of a hybrid creature: the so-called Lion Man as it has often been described (e.g. Wehrberger 2013; Kind et al. 2014). However, given the proportions, it could also represent a human wearing a lion skin, including the head. In this interpretation, the visible lion's head would be a type of headdress, representing a Palaeolithic clothing element.

## Vogelherd

Vogelherd Cave is located in the Lone Valley near the town of Niederstotzingen, Heidenheim District. G. Riek and his team excavated the entire cave down to bedrock in 1931 (Riek 1934). The archaeological layers, numbered I–IX, range from the Neolithic (I) and Magdalenian (II–III) through the Aurignacian (IV–V) and Middle Palaeolithic (VI–VIII), down to the Last Interglacial (IX). The Aurignacian layers IV and V were the most prolific in finds (Conard/

8 Hahn 1986; Schmid 1989; Kind et al. 2014; Wehrberger 2013.

9 Hahn 1970; Schmid 1989; Wehrberger 2013; Kind et al. 2014.

Fig. 12 Vogelherd. Mammoth figurine, made from mammoth ivory. Length: 5 cm.

Abb. 12 Vogelherd. Mammut-Figurine, geschnitzt aus Mammutelfenbein. Länge: 5 cm.



Bolus 2023; Conard/Bolus 2008). Recent radiocarbon dates suggest Magdalenian occupation of this site as early as 17000 years cal BP (Schürch et al. 2024). Within the Aurignacian layers, G. Riek unearthed eleven figurative artworks (Riek 1934; Hahn 1986; Dutkiewicz 2021), but no beads made from mammoth ivory. Interestingly, two artworks are also pendants or amulets. A mammoth figurine (length 5 cm) made from ivory as well as the half-relief of a mammoth made from bone bear perforations (Fig. 12): The mammoth figurine shows perforations between front and hind legs and if the trunk had not been broken, this would have been a third possibility for suspending this figurine and the half-relief has a broken eyelet at one end.

N. Conard conducted backdirt excavations between 2005 and 2012 and again in 2022–2023 (Conard/Malina 2006; Conard et al. 2007). This work resulted in the discovery of hundreds of personal ornaments, as well as fragments of figurative artworks and flutes (Conard et al. 2009; Wolf 2015; Dutkiewicz 2021). Between 2005 and 2012, as well as in 2021 and 2023, more than 400 personal ornaments in all stages of their production were recovered, with 346 mammoth ivory beads being analysed and published (Wolf 2015; Wolf/Conard 2015). Due to the similar morphology of personal ornaments from the Ach Valley sites with intact stratigraphies, the personal ornaments from Vogelherd could be

clearly linked to the Aurignacian. The double-perforated bead dominates the inventory with 219 items in all stages of manufacture. Eight pendants from animal teeth, such as deer, horse and cave bear, were also recovered at this site (Fig. 13; Wolf et al. 2025b).

### Bruder Valley

#### Petersfels

The Petersfels Cave site is located in the Brudertal Valley near the city of Engen. E. Peters excavated the site and its forecourt from 1927 to 1928 and again in 1932 (Peters 1930; Peters/Toepfer 1932). G. Albrecht conducted excavations between 1974 and 1979 on the valley floor (Albrecht 1979; Albrecht et al. 1983). E. Peters' campaigns yielded numerous lithic and osseous artefacts, examples of craftsmanship, and animal bones attributed to the Magdalenian, but lacked a reliable stratigraphy (Albrecht/Hahn 1991; Mauser 1970; Pfeifer 2016). Based on the archaeological material and faunal remains, the main occupation undoubtedly occurred during the Upper Magdalenian. The numerous jet pendants (n = 186) are present in all stages of production, from rough forms to finished or broken pieces (Fig. 14).



Fig. 13 Swabian Jura cave sites, ornaments made from animal teeth from the Upper Palaeolithic; no scale.

Abb. 13 Höhlenfundstellen der Schwäbischen Alb, Tierzahnschmuck aus dem Jungpaläolithikum; o. M.



Fig. 14 Petersfels. Magdalenian personal ornaments made from jet; no scale.

Abb. 14 Petersfels. Schmuckstücke des Magdaléniens, geschnitzt aus Gagat; o. M.

P.F. Mauser (1970, 78–79) identifies crescent-shaped to triangular, barrel-shaped and double-perforated, and oval to spectacle-shaped pendants as the primary forms. The 19 female jet figurines were also mostly pendants, as they exhibit a perforation in the upper third (described in detail

in Mauser 1970). P.F. Mauser suggests that the excavated figurines were worn as pendants, hanging upside down. In addition to these ornament pieces, »several pounds of raw material« (Mauser 1970, 74) were found in the immediate vicinity which included jet and lignite (Peters 1930; Mauser

Fig. 15 Examples of ornamental molluscs: *Glycymeris* from the Gravettian layers of Hohle Fels and Geißenklösterle Caves as well as the Magdalenian of Hohle Fels Cave (*Littorina obtusata*); no scale.

Abb. 15 Beispiele von Schmuckmollusken: *Glycymeris* aus den Gravettien-Schichten der Höhlen Hohle Fels und Geißenklösterle sowie aus dem Magdalénien vom Hohle Fels (*Littorina obtusata*); o. M.



1970). Furthermore, a total of »82 perforated mussel and snail shells [...], 43 unperforated mussel and snail shells [...], a dozen fossilized shark teeth [...], [and] over two kilograms of Jurassic fossils [...]« (Mauser 1970, 80) were excavated. It remains unclear whether these items were brought into the cave for further processing into ornaments. In total, 239 ornaments have been published (Wolf 2019). The holes in 71 of the perforated mussel and snail shells P.F. Mauser counted are likely of natural origin. The identified specimens originate from the Mainz Basin, the Steinheim Basin, and the upper Danube region. B. Schürch et al. (2021) investigated the *Glycymeris* of Petersfels Cave and it turned out that a minimum of 54 completely preserved items of more or less the same size exist from this site. Ochre adhered to many of them; they were likely used as ornaments (Fig. 15).

### Gnirshöhle

The excavations conducted by the University of Tübingen in 1977 in the Gnirshöhle Cave yielded a double-perforated bead made from jet, two molluscs of the species *Nucella lapillus* originating from the Atlantic Ocean, two fossilised molluscs of the genus *Sycum* from the Tertiary Paris Basin, and one mollusc, likely *Astarte montagui* (Albrecht et al. 1977). The origin of these molluscs differs from those found in the Petersfels site. Therefore, G. Albrecht et al. (1977) suggest that different groups occupied the nearby caves, possibly without close contact.

### Discussion

The full meaning of personal ornaments in the Palaeolithic will remain elusive since Upper Palaeolithic hunter-gatherers cannot share their motivations or explain how they used ornamentation. Some pieces, or ways of wearing them, were likely reserved for specific individuals, complicating our understanding of their significance. Even in contemporary societies, the meaning of personal adornment is sometimes revealed only through direct inquiry. However, within a society sharing common rules and conventions, individuals can generally grasp and interpret the meaning of another person's ornaments. The message conveyed by such adornments is often immediately understood, requiring no extensive explanation. Personal ornaments can serve practical functions, such as acting as a button or clasp. Nevertheless, they also possess ornamental value. Pendants might function as amulets believed to bring good fortune or offer protection. Ornaments commonly act as status symbols (Deimel 2005) and can be used in religious or ritual contexts<sup>10</sup>. The full complexity of the meaning of ornamentation is best understood by members of a community. This was also the case during the Upper Palaeolithic. Personal ornaments serve as a means of communication within a society (Taborin 1995). Societies are often stratified into different groups, and individuals may use personal ornaments to assert their own status and value or, conversely, to signal that others are excluded from the community because they are unable or forbidden to wear particular pieces (Camps-Fabrer 1990; Kasten 2009). Some personal

<sup>10</sup> For a synthesis of the diverse functions of ornaments in traditional societies, see Vanhaeren 2010.

ornaments, like rank badges, are earned and symbolise distinction. Ornaments can also be deeply personal, with their meaning understood only by the wearer. This is true of heirlooms, engravings, or seemingly insignificant keepsakes like locks of hair, which commemorate a person or event (Haidle 2003).

The emergence of diverse forms of personal adornment in Europe at the beginning of the Upper Palaeolithic, as evidenced by the discovery of numerous personal ornaments, suggests that self-perception and individual self-image were likely as important then as they are today. Creating and wearing personal ornaments likely required a strong sense of self and an awareness of form, which was then communicated to the group. We assume »that others not only perceive the object, but also recognize the extraordinary connection between the wearer and the object« (Haidle 2003, 13). Thus, personal ornaments also contribute to the creation of identity. The recurrence of a particular personal ornaments type within a site's artefact assemblage indicates its long-term popularity within a group and its consequent establishment as a marker of group identity. This standardisation over time reflects a stylistic and craft tradition. Furthermore, traditional personal ornaments attest to the social dynamics within a community. Ornaments help to create social identity and may imply group consensus, enabling individuals to consciously or unconsciously differentiate themselves from others.

Any discussion of Ice Age personal ornaments must consider the production and use of clothing. During the Upper Palaeolithic, people needed clothing for protection from the cold and damp. Clothing adapted to the prevailing climate was crucial for survival. The following discussion explores the hypothesis that clothing served as a medium for displaying personal ornaments, as well. During the Aurignacian, clothing was likely made from the skins and hides of various animals (Scheer 1984). Researchers like A. Scheer have conducted experiments to identify the materials available for working, tanning, and processing these hides (Scheer 1995). The process would have required stone tools, threads, cords, and sewing tools. Tanning could be achieved through either chemical or mechanical processes. Based on ethnological comparisons, mechanical methods such as scraping, stretching, chewing, or fulling are plausible for the Palaeolithic (Hatt 1969; Turcy 1986). Scraping, the simplest form of tanning, involves incorporating the animal's own fat into the hide. Once the leather was prepared, it could be dyed using substances like lime powder, hematite, or ochre, perhaps simply by rubbing the desired material into the leather. The production of rope from plant fibre was recently documented by N. J. Conard and V. Rots (2024) by examining a so-called *Lochstab* (perforated baton) from Hohle Fels. This indirectly shows that fibres were first made into threads, which were then twisted together to form a multi-strand rope. Cords and threads are, in turn, essential for the manufacture of clothing. Sinew, leather straps of varying thicknesses, plant fibres, or hair could have served as thread for sewing garments. Bone or ivory awls, common in the Aurignacian, could have been used to pierce leather or fur. It is important to determine whether and how the various ornamental pieces from the Swabian Aurignacian were attached

to clothing or otherwise worn. This discussion assumes they functioned as adornments, not as currency. It should be reiterated that multiple uses for individual artefacts cannot be ruled out (e.g. Owen 2005), which certainly applies to personal ornaments. The absence of burials that might provide information about how the personal ornaments were worn means that these pieces could theoretically have been sewn onto clothing, used as bracelets, necklaces, leg ornaments, or even woven into hair. They might also have adorned containers, blankets, boots, and other objects, and their function was not necessarily limited to personal adornment (White 2007; Castets 2008, 50–54). J. Hahn suggested that the pieces from the Swabian Alb were sewn onto clothing (Hahn 1992). This assumption is supported by the small size of, for example, the double-perforated beads, which are unsuitable for stringing as a necklace. Single-perforated pieces, such as the basket-shaped beads, could, however, have been worn on a necklace. The non-perforated, constricted beads from Hohle Fels are flatter on one side and more curved on the other. Significantly, the flat side of these pieces is consistently more polished than the curved side. This is not attributable to sediment wear but rather to rubbing against a substrate, such as clothing, during use. Constant rubbing would have polished the flat side. This same polishing would also occur when worn directly against human skin. Furthermore, the perforations of many finished beads are completely rounded. This rounding is not a result of taphonomic processes, as unfinished beads from the same deposits exhibit irregular and frayed perforations. The smooth edges of the perforations on the majority of finished products are, therefore, due to polishing during use (Wolf 2015).

In general, the archaeological record provides little information about the specific patterns in which the beads were sewn. This brings us back to the challenge of being unable to make definitive statements about specific groups who might have defined themselves primarily through the arrangement of particular personal ornaments (White 2007). This is the case with various indigenous peoples and ethnic groups, which can determine a person's status based on a fixed arrangement of personal ornaments on the body (see, e.g. Deimel 2005). The present summary can only address the tradition of producing certain forms. While a fine-grained analysis and subdivision into paleo-ethno-linguistic groups is possible to some extent (Vanhaeren/d'Errico 2006; Rigaud 2011), it is clear that the human body functions as a signifier as soon as people wear personal ornaments (Collins/Nowell 2024).

The ornament assemblage of the Swabian Aurignacian is clearly dominated by double-perforated ivory beads (Fig. 16). The multiple creative expressions documented by the diverse ivory ornament forms are evident. Only a few similar types of beads are known from other Aurignacian regions in Europe. This suggests that the Swabian Aurignacians possessed a distinct group identity, characterised by the ornaments found in the Swabian cave sites (Wolf/Conard 2015). While connections with other regions through shared ornament forms have been demonstrated (Wolf et al. 2025b), a clear regional distinction based on the use of specific forms prevailed.

During the Gravettian, a change is evident. Tear-drop-shaped beads span the region from southwestern France to

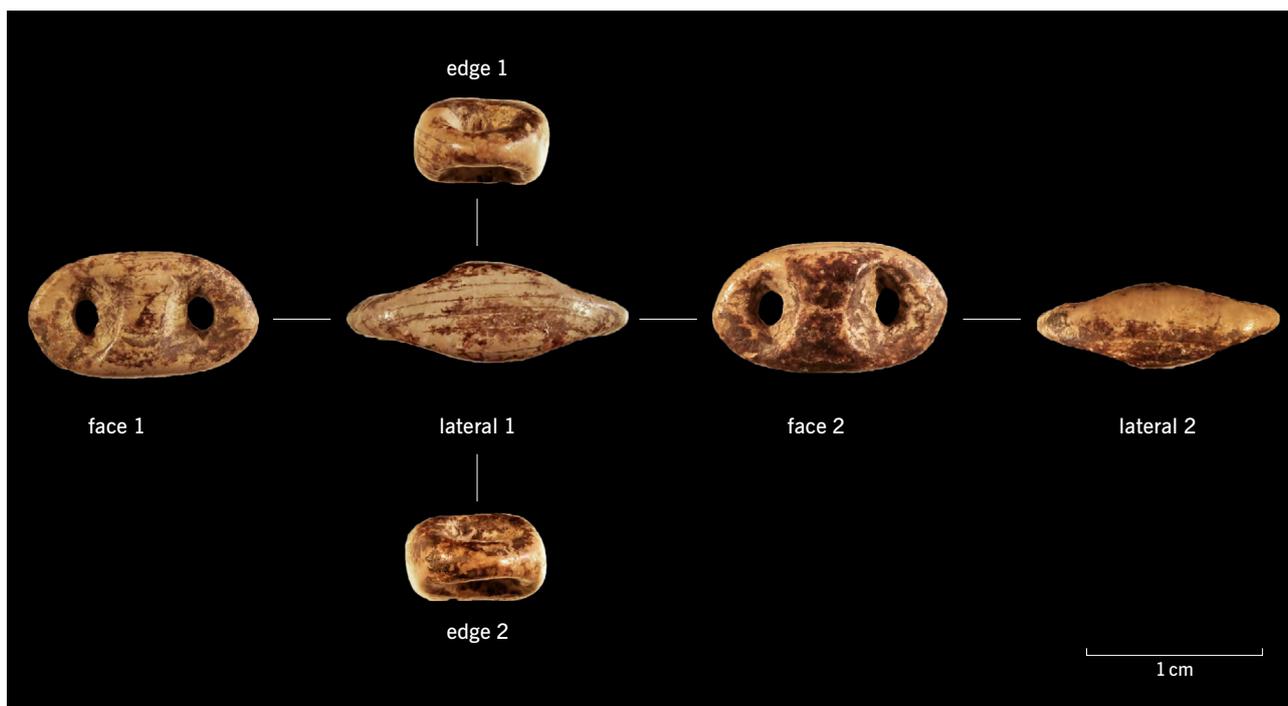


Fig. 16 Vogelherd. Double perforated bead made from mammoth ivory.

Abb. 16 Vogelherd. Doppelt durchlochete Perle aus Mammütelfenbein.

the Obłazowa Cave, Lesser Poland Voivodeship, in Poland (Vercoutère/Wolf 2018). The connections within Europe are clearly discernible through this shared bead form. Following the Last Glacial Maximum (LGM), Magdalenian hunter-gatherers developed new preferences for ornaments compared to earlier techno-complexes. The use of jet, reindeer teeth, and molluscs dominates the known ornament assemblages. The molluscs originate from the Mediterranean Sea and the Paris Basin, once again demonstrating the extensive networks and exchange systems that existed around 16 000 years ago (Wolf 2019). This behaviour aligns with the observation that the Magdalenian people differed genetically from pre-LGM hunter-gatherers in Europe (Posth et al. 2016; Posth et al. 2023) and that they had different priorities and preferences concerning raw materials (Maier 2015). Furthermore, with the reduced availability of mammoth ivory, the Magdalenian groups found other readily available raw material sources for their ornaments.

Throughout the Upper Palaeolithic, modified animal teeth consistently served as ornaments. While there are slight differences in the use of various animal species, these are not statistically significant due to the relatively small number of pendants overall, especially in comparison with the use of mammoth ivory and jet. Fox teeth and deer canines were used during the Aurignacian, Gravettian, and Magdalenian. Perforated horse incisors, however, prevail within the Gravettian. The use of bear teeth for ornaments slightly increases during the Gravettian. The tradition of wearing female figurines as pendants was a widespread phenomenon in the European Upper Palaeolithic (see Wolf 2015). In southwestern Germany, this tradition spans from the female figurine of Hohle Fels Cave to the more abstract female figurine pendants of Petersfels. Palaeolithic hunt-

er-gatherers used these figurines as pendants for personal adornment.

### Conclusion

Compared to the preceding Middle Palaeolithic of the Swabian Jura, during which convincing personal ornaments are not known, the Upper Palaeolithic is characterised by a great abundance of personal ornaments produced in numerous forms using multiple raw materials. This shift reflects a demonstrable need for these hunter-gatherers to present themselves. The abundance and diversity of ornaments testify to a sense of beauty, aesthetics and identity. Regional and temporal preferences for materials and forms reflect fashion trends and stylistic choices. Traditions are identifiable through distinctive personal adornments. Surprisingly, the different traditions remain largely constant within each Upper Palaeolithic cultural group; they reflect different social needs and expressions throughout the 30 000 years of the Upper Palaeolithic of southwestern Germany. A complex picture emerges of the use of ornaments in the Upper Palaeolithic, yet prehistoric finds offer only a fragmentary glimpse into the daily practices of these ancient people. We assume that Upper Palaeolithic humans adorned their clothing and bodies elaborately, placing great importance on their appearance. Discoveries such as the female figurine from Hohle Fels help to demonstrate how Aurignacian people used ornaments to represent themselves and their world symbolically while conveying stories, social positioning and status through these adornments. This holds true for the whole Upper Palaeolithic of southwestern Germany.

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## Source of figures

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| <p>1 C. Sommer, ROCEEH; map base: site coordinates after M. Malina, G. Toniato, and the ROAD Database; elevation from SRTM V3; hydrological Network from LUBW; country boundaries in the inlet are from Natural Earth; the Font is Open Sans; doi:10.5281/zenodo.3460300, CC-BY 4.0 licence</p> | <p>2 N. J. Conard, Tübingen<br/>3 A. Janas, M. Malina, © University of Tübingen<br/>4 1–10 S. Wolf; 11–14 H. Jensen, © University of Tübingen<br/>5–8 H. Jensen, © University of Tübingen<br/>9 J. Lipták, München, © University of Tübingen<br/>10 © URMU, T. Björklund</p> | <p>11 H. Zwietasch, Landesmuseum Württemberg<br/>12 H. Jensen, © University of Tübingen<br/>13–15 Y. Mühleis, Landesamt für Denkmalpflege Baden-Württemberg im Regierungspräsidium Stuttgart<br/>16 A. Fatz, SHEP Tübingen</p> |
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