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The Path to UNESCO World Heritage
Caves and Ice Age Art in the Swabian Jura

Abstract On July 9, 2017 in Kraków, Poland, the World Heritage Committee of the United Nations Educational, Scientific and Cultural Organization (UNESCO) designated the landscape of parts of two valleys in the Swabian Jura of southwestern Germany as a World Heritage (WH) site. The idea and initial planning for nominating the serial site which comprises the Ach- and Lone Valleys dates to the late 1990s when the Outstanding Universal Value (OUV) of this site began to come into focus in connection with a series of new excavations and new scientific results. Here, we give an overview of the process by which the Lone Valley with the archaeological sites of Vogelherd, Hohlenstein and Bockstein caves as well as the Ach Valley with Geißenklösterle, Sirgenstein and Hohle Fels caves became a WH site. These two river valleys provide a rich record of human settlement in a unique Ice Age landscape, but they are best known for early figurative artworks and musical instruments from the Aurignacian period dating to roughly 40,000 years ago. These finds count among the earliest examples of figurative, mobile art and musical instruments known worldwide.

Keywords UNESCO World Heritage, Swabian Jura cave sites, Aurignacian, Figurative artworks, Musical instruments

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Introduction

The UNESCO awards the title of World Heritage (WH) site to places that are world-renowned for their state of conservation, their uniqueness, authenticity and integrity. To be inscribed in the WH list the site has to fulfill one or more of ten criteria (i–x) defined in the UNESCO WH Convention (https://whc.unesco.org/en/criteria/). The WH status of the Swabian cave sites is based on criterion (iii) *to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared.* The caves of the Ach- and Lone Valleys are the first Palaeolithic World Heritage sites to be inscribed in Germany.

Four caves of the Swabian Jura of southwestern Germany are known for early figurative artworks and musical instruments that date to the Aurignacian period 42,000 – 35,000 years ago and count among the oldest of their kind worldwide. These sites are Hohle Fels and Geißenklösterle in the Ach Valley and Vogelherd Cave and Hohlenstein-Stadel in the Lone Valley (Fig. 1). Together with finds from two other cave sites, Sirgenstein in the Ach Valley and Bockstein in the Lone Valley, researchers have reconstructed the Ice Age landscape and its dynamic ecosystem during that period in detail. Over more than a decade, the State Office for Cultural Heritage Baden-Württemberg (LAD) and the University of Tübingen (UT) have jointly developed a strong portfolio for the serial nomination of these cave sites and the surrounding landscape as a WH site under the name of "Caves with the oldest Ice Age Art". In July 2017 in Kraków (Poland), the WH Committee of the UNESCO asserted the authenticity and integrity. Each successful nomination for WH status must also meet

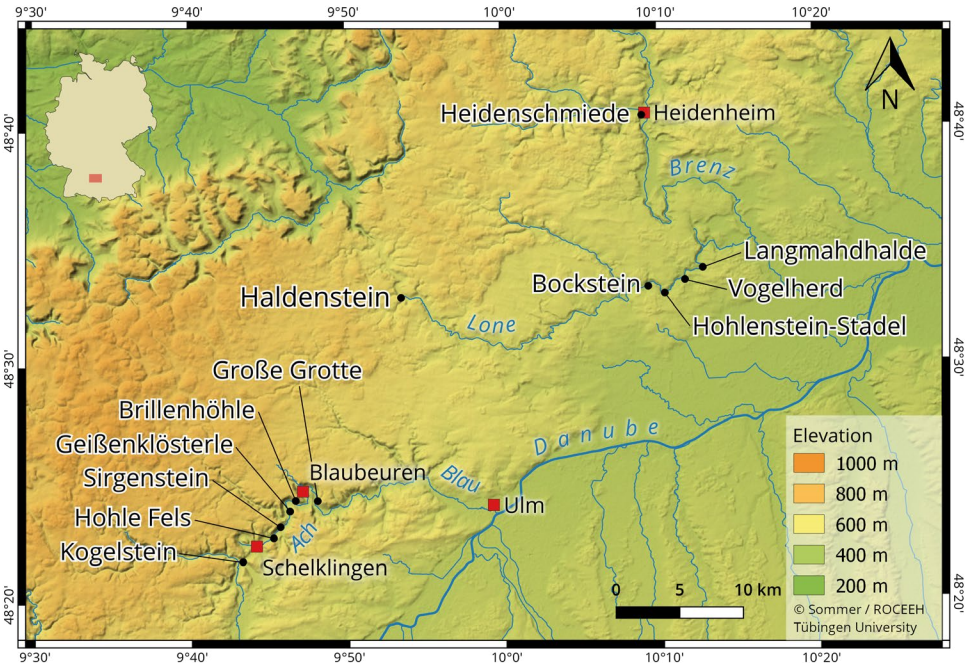


Fig. 1 | Map of the Swabian Jura (southwest Germany, Ach-, Brenz- and Lone Valleys) with major sites that yielded prehistoric remains. Four sites provided Aurignacian figurative art: 1, Vogelherd Cave; 2, Hohlenstein-Stadel; 3, Geißenklösterle; 4, Hohle Fels. (Map: C. Sommer, ROCEEH).

Table 1 | Time table for Caves and Ice Age Art in the Swabian Jura becoming World Heritage

March 2009	**UNESCO-HEADS meeting on Human Evolution in Burgos, Spain**
April 2009	Representatives decide to start the candidature process of the cave sites for World Heritage
September 2009	Opening of the Major State Exhibition of Baden-Württemberg on Ice Age Art
February 2012	Start of work on the World Heritage application in the LAD
December 2012	Submission of the tentative list proposal to the Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany
February 2013	International UNESCO meeting: Human Origins in Eurasia and the World Heritage Convention in Tübingen
February 2014	Appraisal by a committee of experts of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany
June 2014	The „Caves with the oldest Ice Age Art" are placed at number 1 of the German tentative listing for World Heritage
September 2014	Meeting of all stakeholders with State Secretary Ingo Rust MdL in Rammingen near the Hohlenstein in the Lone Valley for the coordination of the further procedure
June 2015	Meeting of the stakeholders, information event in Ulm
September 2015	Official submission of the candidature to the World Heritage Center in Paris
January 2016	Submission of the final application including the management plan
August–September 2016	ICOMOS expert commission evaluates the application locally at the Swabian Cave sites
July 2017	The World Heritage Committee of UNESCO decides on July 9, 2017, to inscribe the Caves and Ice Age Art in the Swabian Jura in the World Heritage List

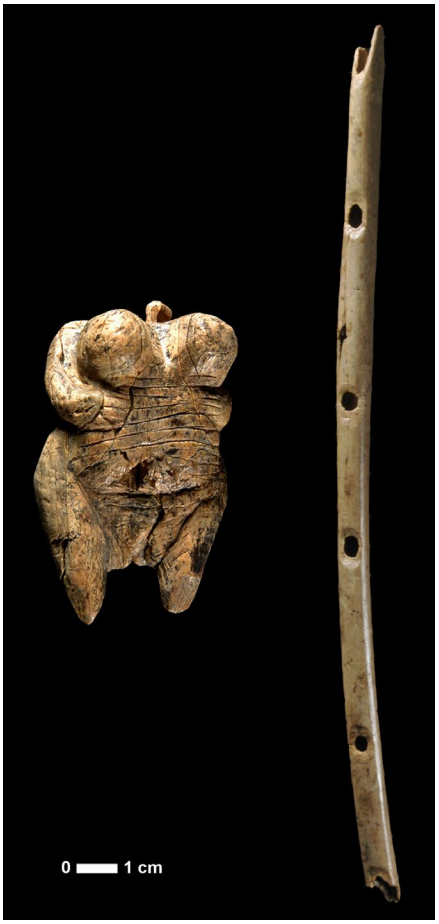
the central criterion of being of Outstanding Universal Value (OUV) for all people worldwide. Of this ensemble of landscape and caves, the WH Committee granted the respective sections of the valleys the status of WH site. Table 1 presents some of the main landmarks on the road to become WH.

Ach- and Lone Valleys – Brief Research History of Six Cave Sites

Ach Valley

The first scientific excavations at Hohle Fels Cave near Schelklingen were conducted in 1870 and 1871 by Oscar Fraas (Fraas 1872; Desor 1872). After these initial archaeological investigations, further smaller excavations were carried out at Hohle Fels. Gustav Riek from the UT and Gertraud Matschak from Schelklingen excavated the site from 1958–1960. A team headed by Joachim Hahn from the UT excavated Hohle Fels from 1977–1996 with short interruptions, and since 1997 Nicholas Conard from the UT has led annual excavations (Blumentritt and Hahn 1991; Conard et al. 2000; Hahn 1989) (Fig. 2). At this site, the Aurignacian layers have provided calibrated radiocarbon dates between 42,000 and 35,000 years BP (Conard and Bolus 2003; 2008; Conard 2009; Bataille and Conard 2018). The cave is internationally known for a female

Fig. 2 | Ach Valley between Hohle Fels and Geißenklösterle. (Photo: C. Meister).



depiction carved from mammoth ivory (Conard 2009) and the perhaps earliest musical instrument known worldwide, a flute made from the radius of a griffon vulture (Conard et al. 2009) (Fig. 3), both of which were excavated in 2008. In addition, a depiction of a Lion Man, a sculpture of a waterfowl, and an animal figurine that probably depicts a cave bear, all carved from mammoth ivory (Conard 2003) (Fig. 4, 5), and numerous other finds such as lithic artifacts or tools made from bone and ivory have been recovered at this site (Conard and Wolf 2020).

Robert R. Schmidt excavated Sirgenstein Cave, which is located in the Ach Valley between Hohle Fels Cave and Geißenklösterle Cave, in 1906 (Schmidt 1907; 1912) (Fig. 6). The Aurignacian layers here are designated IV, V and VI. Calibrated radiocarbon dates obtained from finds of these archaeological layers fall in the range between

Fig. 3 | Hohle Fels. Female figurine. length: 6.0 cm, and griffon vulture bone flute, length: 21.8 cm. (Photos: H. Jensen, © University of Tübingen).

Fig. 4 | Hohle Fels. Figurative art found between 1999 and 2002: 1, animal head; 2, waterfowl; 3, miniature Lion Man. (Photos: H. Jensen, J. Lipták, © University of Tübingen).

Fig. 5 | Hohle Fels. Refitted figurative fragments into a bear figurine in 2023 (animal head, excavated 1999 and rump part, excavated 2022). Length: 7.6 cm. (Photo: R. Litzenberg).

Fig. 6 | Sirgenstein Cave. Main entrance. (Photo: C. Meister).

Fig. 7 | Geißenklösterle. Flute made from a swan radius. Length: 12.7 cm. (Photo: H. Jensen, © University of Tübingen).

41,000 and 34,000 years BP (Conard and Bolus 2003; Bertacchi et al. 2021). Sirgenstein represents part of the same settlement system documented for the Middle and Upper Palaeolithic at Hohle Fels and Geißenklösterle, although some aspects about the site are not well known, due to its early date of excavation (Conard and Bolus 2003; 2008). Schmidt's publications on Sirgenstein make it the first site within today's German borders in which the French terminology for prehistoric cultures was applied (Bolus and Conard 2012). The site also formed the basis for Schmidt's synthesis of cultural developments during what we today call the Middle and Upper Palaeolithic. Schmidt also deserves recognition for identifying an occupational hiatus separating the find horizons left by late Neanderthals and those left by early modern humans (Conard and Bolus 2003; 2008).

Building on work of Gustav Riek and Eberhard Wagner, Joachim Hahn conducted excavations in the Geißenklösterle Cave between 1974 and 1991 and documented a rich Upper Palaeolithic sequence and Middle Palaeolithic deposits (Hahn 1988; Conard et al. 2019). In 2001 and 2002, Conard continued the work at the site focusing on the deposits from the base of the Aurignacian until bedrock was reached (Conard and Malina 2002; 2003). Similar to the sediments of Hohle Fels, the Aurignacian layers II and III have been dated to ca. 42,000–35,000 years BP. These dates are based on calibrated radiocarbon ages that have been confirmed by a range of other radiometric dating methods (Conard and Bolus 2003; 2008; Higham et al. 2012; Richard et al. 2019; Richter et al. 2000). Four figurative artworks carved from

Fig. 8 | Geißenklösterle. Flute carved from mammoth ivory. Length: 18.7 cm. (Photo: J. Lipták, © University of Tübingen).

mammoth ivory are known from Hahn's excavations at Geißenklösterle. These are a therianthropic depiction known as the "Adorant" – meaning worshipper, a standing cave bear, a mammoth and a bison or muskox (Hahn 1986; Dutkiewicz 2021). The proportions of the therianthropic relief has proportions that are reminiscent of the Lion Men from Hohlenstein-Stadel and Hohle Fels. At Geißenklösterle, excavators recovered three flutes, two made from swan bones and one from mammoth ivory, that highlight the importance of the region for the study of the origins of music (Hahn and Münzel 1995; Conard et al. 2004) (Fig. 7, Fig. 8). Like the artworks from the Swabian Aurignacian, which are often both sophisticated and beautiful, the Aurignacian flutes point to a highly developed musical tradition during this period.

Lone Valley

The Lone Valley is also a valley of the Danube. The next larger city is Heidenheim at the Brenz River. The ca. 5 km long portion of the valley containing the sites of Vogelherd Cave, the Hohlenstein complex and the Bockstein complex is highly relevant in this context. During his excavation in the Vogelherd in 1931, Gustav Riek completely emptied the site of sediments in roughly 12 weeks, dumping the backdirt onto the slope adjacent to the cave (Riek 1934) (Fig. 9). The layers richest in finds were Aurignacian layers IV and V, dating between ca. 40,000 and 35,000 years BP (Conard and Bolus 2003; 2008). Riek worked quickly but carefully for the time, recovering ten figurative artworks made from mammoth ivory and one made from bone (Fig. 10). These artworks mainly depict animals from the Ice Age, but an anthropomorphic representation is also present in the assemblage. Between 2005 and 2012 as well as 2022 and 2023, teams from the Department of Prehistory and Quaternary Ecology at the University of Tübingen under Conard's direction re-examined the backdirt sediments

Fig. 9 | Lone Valley. View between Bockstein and Hohlenstein: (Photo: H. Schlaiß).

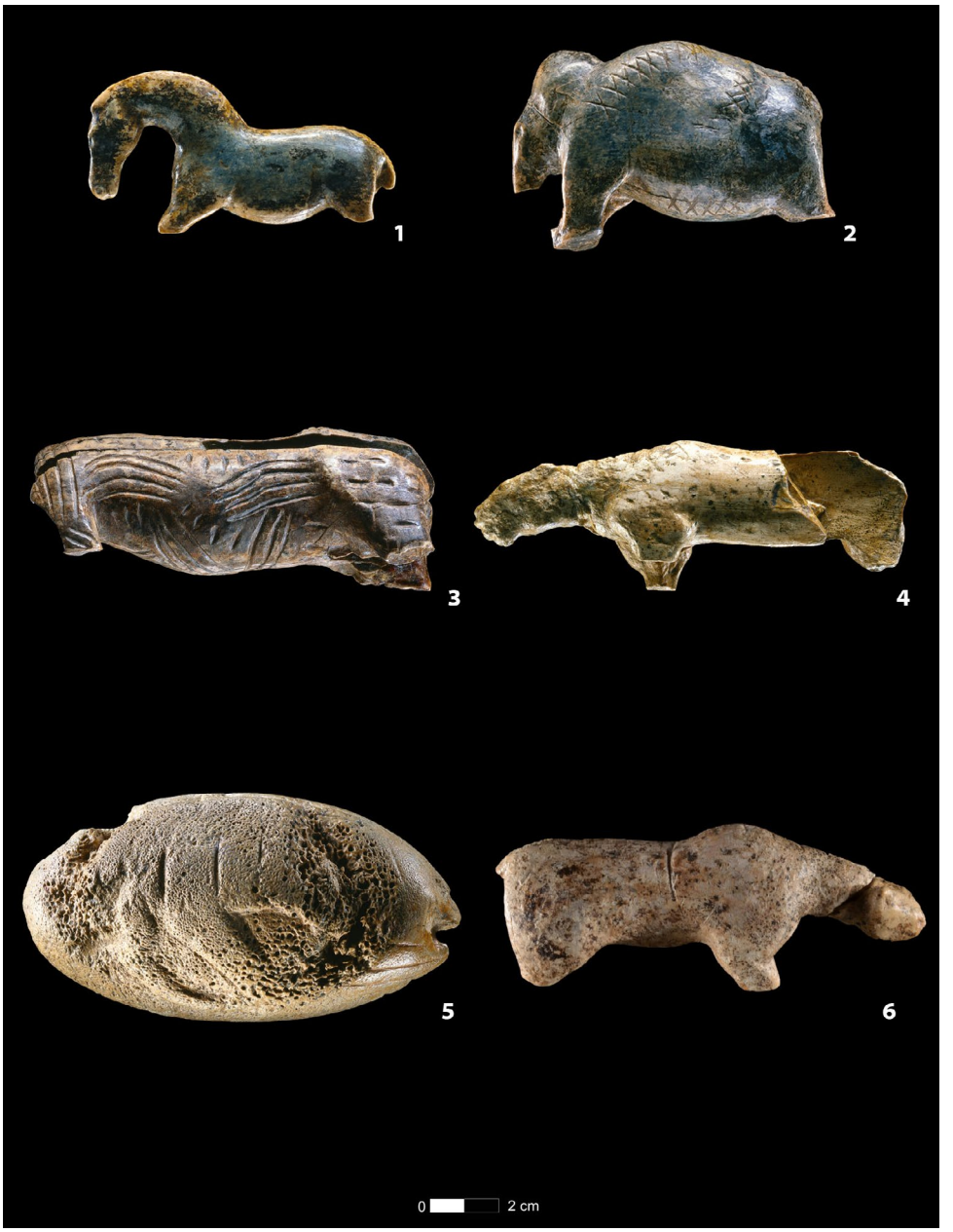


Fig. 10 | Vogelherd Cave: Figurative art discovered in 1931: 1, horse; 2, mammoth; 3, animal body; 4, cave lion; 5, mammoth; 6, cave lion or bear (head found in 2012). 1–4, 6, mammoth ivory, 5, bone. (Photos: H. Jensen, J. Lipták, © University of Tübingen).

of Riek's excavation. This work was begun in the context of the preparations for the Major State Exhibit on the Ice Age scheduled to open in September 2009. One goal of this phase of fieldwork was to determine if Riek's team had overlooked important finds in 1931. The new excavations succeeded in recovering a great abundance of artifacts, especially small finds that Riek's team had overlooked.

Fig. 11 | Personal ornaments carved from mammoth 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, eight-shaped bead; 8, not perforated, constricted bead; 9, pinecone-shaped 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. (Photos: S. Wolf: 1–10; H. Jensen, © University of Tübingen: 11–14. Montage: G. Häussler).

Aside from vast new collections of lithic and organic tools, the new finds from Vogelherd include hundreds of personal ornaments, many dozen fragments of figurative art and multiple fragments of bone and ivory flutes (e.g., Conard et al. 2007; 2010; Conard and Kind 2017; Wolf 2015). These artifacts from Riek's backdirt, however, have a poor stratigraphic context. Refits of both, lithic and organic artifacts help to link the old and new phases of excavation. When studied in tandem with finds from sites in the vicinity with well-documented stratigraphies, the shear wealth of material makes Vogelherd a key site for our understanding of the Central European Aurignacian. As with the finds from Riek's excavation, the great majority of the finds from the backdirt can be assigned to the Aurignacian, and numerous radiocarbon dates fall within that period. Additionally, the recovery of a remarkable richness of characteristic Aurignacian artifacts like double perforated beads that had been overlooked by Riek's team contribute to the site's unique scientific importance (e.g., Wolf 2015) (Fig. 11). Many fragments of figurative artworks and bone and ivory flutes count among the exceptional finds from the recent

Fig. 12 | Vogelherd Cave. Figurative art carved from mammoth ivory found 2006–2012: 1) bovid (?); 2) hare (?); 3) cave lion; 4) mammoth body; 5) animal body; 6) cross-section through a mammoth. (Photos: J. Lipták, © University of Tübingen).

Fig. 13 | Vogelherd Cave. Mammoth carved from mammoth ivory excavated in 2006. Length: 3.7 cm. (Photo: J. Lipták, © University of Tübingen).

excavations at Vogelherd (Fig. 12). Most prominent is a complete mammoth figurine carved from mammoth ivory (Fig. 13) (Conard and Seidl 2008; Conard et al. 2007).

Hohlenstein-Stadel contains Aurignacian layers dating to the same period as the other Aurignacian sites in the region. It is most known for its sole figurative artwork, the Lion Man, a therianthropic figurine that shares human and lion attributes, which the carver produced from a single mammoth tusk (Hahn 1986; Schmid 1989; Kind et al. 2014). Although the first excavations at Hohlenstein date back to Oscar Fraas' early palaeontological studies in the 1860s (Fraas 1862), the first significant archaeological investigations at Hohlenstein-Stadel took place between 1935 and 1939 under the direction of Robert Wetzel from the UT and his assistant Otto Völzing (Wetzel 1961). Between 2008 and 2013 Claus-Joachim Kind and Thomas Beutelspacher from the LAD led excavations in front of and inside the cave (Beutelspacher et al. 2011; Beutelspacher and Kind 2012; Kind et al. 2014; Kind and Beutelspacher 2010; Kind 2019). Ivory finds from the recent excavations facilitated a new reconstruction of the Lion Man (Ulmer Museum 2013) (Fig. 14), after it had already been restored twice in the past (Hahn 1970; Schmid 1989). Unlike the other finds of Aurignacian artworks from the region that have been found among rich domestic debris, the 31 cm tall Lion Man was discovered together with personal ornaments. The composition of the feature and the position in a cache in the rear of the cave is suggestive of ritual behavior (Wolf 2019). The Lion Man has often played a key role in discussions of early religious beliefs and shamanism (Lewis-Williams 2002). Hohlenstein-Stadel is also the only Swabian cave that has yielded Neanderthal skeletal material. The femur recovered by Wetzel and Völzing has been the focus of important novel studies on the genetic history of Neanderthals (Posth et al. 2017).

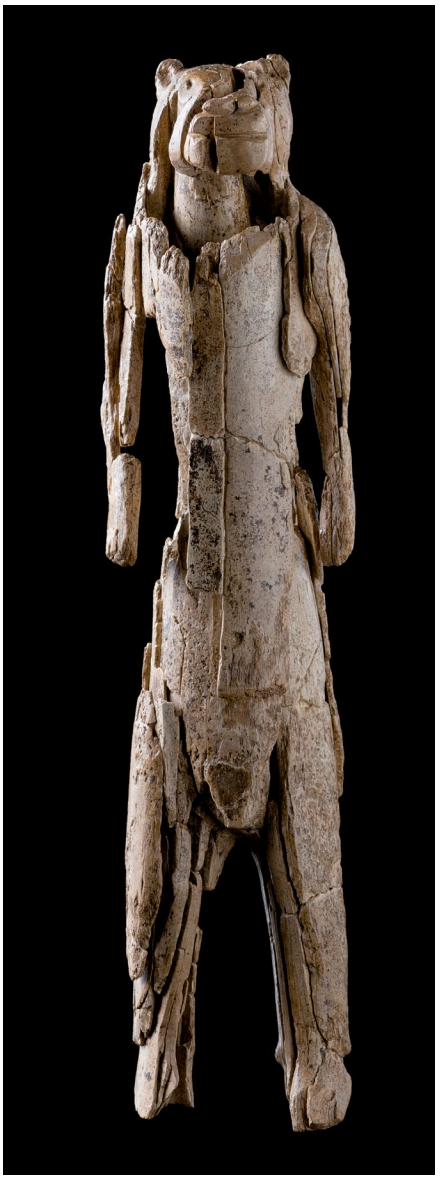


Fig. 14 | Hohlenstein-Stadel. Lion Man carved from mammoth ivory, fragments found in 1939 and between 2009 and 2013. Length: 31.1 cm. (Photo: Y. Mühleis © Museum Ulm).

Excavations at the Bockstein complex (Fig. 15) occurred on and off throughout the late 19th century through to the first half of the 20th century (Bürger 1892; Schmidt 1912; Wetzel 1954; Wetzel and Bosinski

Fig. 15 | Bockstein Cave. View from the inside over the Lone Valley. (Photo: H. Schlaiß).

1969). The finds recovered from Bockstein Cave by Ludwig Bürger's exacavations in 1883–1884 represent the first record of Aurignacian material from the Swabian Jura. The excavation of the cave and its entrance (Bockstein-Törle) delivered Aurignacian artifacts, however, the stratigraphic resolution of these early digs is poor (Wetzel 1954; Krönneck 2012). The radiocarbon dates obtained from archaeological horizons IV to VI vary considerably. However, we know from the diagnostic finds that these layers should be attributed to the Aurignacian (Conard and Bolus 2003; 2008). The sites from the Bockstein complex have yielded particularly rich cultural material from the Middle Palaeolithic that is intimately connected with Neanderthals lifeways in this region (Çep 2014).

Viewed together, the WH sites of the Ach- and Lone Valleys provide one of the best records of the archaeology of late Neanderthals and early *Homo sapiens* in Eurasia. The key finds of early personal ornaments, figurative art, mythical imagery, and musical instruments are inseparably connected with the archaeological sites and landscape. They provide an exceptional record of the origins of art, music and insights into a system of beliefs, especially during the Aurignacian. All of these features subsequently became universal aspects of cultural life of humans around the world. Thus, they constitute a perfect example of OUV, which is a prerequisite for the inscription of sites in the WH list.

The Path to UNESCO World Heritage Inscription

Since some of the most important sites for the investigating the Aurignacien in the Swabian Jura, Hohle Fels, Geißenklösterle and Sirgenstein, are located within the boundaries of the two towns Blaubeuren and Schelklingen, it is not surprising that

the interest in prehistoric research was considerable in these cities. Georg Hiller, who served as the mayor of Blaubeuren during the early phases of the nomination, and Reiner Blumentritt, the vice mayor from nearby Schelklingen, fully supported the WH nomination. However, interest in and support for the prehistoric research within the region has a long tradition. In 1965, the Urgeschichtliches Museum Blaubeuren (URMU) was founded in Blaubeuren by Gustav Riek, who, in addition to Vogelherd, excavated other important Palaeolithic sites of the Swabian Jura such as Hohle Fels, Brillenhöhle and Große Grotte. Today, the URMU represents the central museum for the Palaeolithic, exhibiting many examples of art and musical instruments in Baden-Württemberg. The great success of the URMU can be attributed to its administrative director, Stefanie Kölbl, its scientific director Nicholas Conard, many members of the UT, as well as the numerous local and regional supporters (Kölbl et al. 2014; Hiller 2015). The Urgeschichtliches Museum Blaubeuren, as well as other museums which exhibit figurative art from the Aurignacian period, such as the Landesmuseum Württemberg in Stuttgart, the Museum Ulm and the Museum der Universität Tübingen (MUT), have aroused great interest in the Palaeolithic through various exhibitions on the latest finds and research results.

The idea of pursuing WH status goes back to a large exhibition on Ice Age art in the late 1980s. Then in the late 1990s Hansjürgen Müller-Beck, the former director of the Department for Prehistory at the University of Tübingen and Nicholas Conard worked closely with the county commissioner of the Alb-Donau County, Wolfgang Schürle, to organize a traveling exhibit on Ice Age art (Müller-Beck et al. 2001; Conard 2017). This was about the time that the excavations at Hohle Fels, situated in Schelklingen in the Alb-Donau County, began to yield important finds of Ice Age art. These discoveries initially included examples of painted pieces of limestone from the Magdalenian (Conard and Uerpmann 2000), and the above-mentioned bear, waterbird and the smaller version of a Lion Man from the Aurignacian layers (Conard 2003). Commissioner Schürle lent his vigorous support to the goal of having the Ice Age art of the Swabian Jura be the topic of a Major State Exhibition, which opened with considerable fanfare in the autumn of 2009 (Archäologisches Landesmuseum Baden-Württemberg and Abteilung Ältere Urgeschichte und Quartärökologie der Eberhard Karls Universität Tübingen 2009).

Thus, while researchers in Tübingen were making progress with excavations and scientific research, the museums with Aurignacian art in Blaubeuren, Tübingen, Stuttgart and Ulm continued to generate more interest while updating their exhibits to keep up with the wealth of new scientific results. This in turn played a central role for the recognition of the importance of the archaeological findings in the Swabian caves in Baden-Württemberg and beyond.

The procedure for WH nominations in Germany is initiated by the 16 states and city states (Bundesländer), which may suggest sites with potential OUV for the WH list. Out of those sites put forward, the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany (Cultus Ministers Conference, KMK) agrees upon sites that will be placed on the German tentative list. This list is requested by the UNESCO in order to prioritize the sites of each country over a period of five to ten years. Thus, the first hurdle for achieving WH status is always at the state level. For Germany a tentative list had been agreed upon in 1998

by the KMK for the years 2001 to 2010 and beyond. Out of 21 proposals, the State of Baden-Württemberg was able to nominate three sites, Heidelberg Castle and Town, Schwetzingen Summer Residence and as a serial nomination in collaboration with the Netherlands and with the states of Hesse, Bavaria and Rhineland-Palatinate, the Upper German-Raetian Limes as part of the Frontiers of the Roman Empire (Decision of the KMK 1998). The latter was included in the list in 2005, while the Schwetzingen and Heidelberg nominations were not inscribed due to their lack of OUV. Further sites in Baden-Württemberg were induced in 2011 with the Prehistoric Pile Dwellings around the Alps as part of a multinational Swiss transboundary serial nomination and in 2016 with two buildings in the Weißenhof settlement in Stuttgart for the Architectural Work of Le Corbusier, a French transboundary serial nomination. By 2011 most of the nominations put on the German tentative list set in 1998 had been processed or rejected. A new list then needed to be assembled for the following decade. At the beginning of 2012, the KMK called upon the Federal states to submit, by December 2012, a maximum of three proposals each, for rounding off the German tentative list. During this process the "Caves with the oldest Ice Age Art" were included by the State of Baden-Württemberg, with a decision pending at the end of 2014 (Decision of the KMK 2014).

This nomination process put forward a very interesting conceptual discussion on how to overcome the false dichotomy between movable and immovable heritage when setting up the OUV of a site for a Palaeolithic nomination. Moreover, as the years passed, several developments occurred that gradually confirmed the OUV of the Swabian caves. These developments included at least three factors: 1) the dating of the Palaeolithic layers in the Swabian caves repeatedly showed that they counted among the oldest examples of figurative art anywhere in the world; 2) each year, new finds of Aurignacian artworks and musical instruments underlined the importance of the region's finds; 3) the State Exhibition on Ice Age Art in 2009–2010 under the leadership of the Archäologisches Landesmuseum Baden-Württemberg did much to draw attention to these sites as providing the earliest examples of mobile figurative art and music worldwide.

At a more tangible level, the discoveries from the new phase of excavation at Vogelherd between 2005 and 2012 generated a groundswell of support for this WH nomination from the Lone Valley communities and the County of Heidenheim, in which the site is situated. The region undertook a major effort to market these finds and particularly the newly discovered mammoth in 2006, which was exhibited across Baden-Württemberg starting in 2007 (Conard and Seidl 2008). This movement ultimately led to the construction of the Archäopark Vogelherd Niederstotzingen, which opened on schedule in 2013. The newly founded Society for Ice Age Art in the Lone Valley provided important financial support and helped to mobilize both political assistance and private funding for the research in the Lone Valley.

Much like the role played by the excavations in recent years at Vogelherd, Claus-Joachim Kind's excavations at Hohlenstein-Stadel made important contributions to the work relevant for preparing the nomination for the Swabian caves. His reinvestigation of Hohlenstein-Stadel led to the above-mentioned new reconstruction of the famous Lion Man. The excavation again highlighted the important finds housed in the Museum Ulm. These originated from the excavations of Robert Wetzel in the middle of the 20th century (Ulmer Museum 2013; Kind et al. 2014).

In the Ach Valley, discoveries in Hohle Fels and Geißenklösterle continued to generate momentum for discussion of a potential WH listing of the Swabian caves. The exceptional discoveries in 2008 of a female figurine (Conard 2009) and a well-preserved flute in Hohle Fels (Conard et al. 2009) represent particular highlights in the process of the caves gaining wide international recognition. The annual grants from Heidelberg Cement and the generous support from the Museum Society of Schelklingen and its chair, Reiner Blumentritt, should be noted here. This support together with ample funding from the Ministry of Science of Baden-Württemberg, the German Science Foundation and the German Academy of Sciences and Humanities created in ideal research environment for studying the Palaeolithic prehistory of the Swabian caves.

Around the same time, local and regional stakeholders, such as the mayors of the communities Asselfingen, Herbrechtingen, Niederstotzingen, Öllingen and Rammingen in the Lone Valley, and Blaubeuren and Schelklingen in the Ach Valley, the commissioners of the counties Heidenheim and Alb-Donau joined forces with the representatives of the Ministry for Economics and Finances, the State Office for Cultural Heritage, the directors of the involved Museums and the University of Tübingen. The working group "Caves" united the key players and official representatives across the region. This facilitated preparing the nomination and allowed the communities and other stakeholders to be fully integrated in the process.

As all these developments were happening, changes were taking place within UNESCO itself. With each year, it became evident that the WH list did not fairly represent the global contributions to human history and cultural developments. European countries were greatly overrepresented in the WH list, and churches, palaces, monasteries, European cities, and monuments from classical antiquity were far too numerous relative to other kinds of sites. As early as 1984 but with greater commitment since 1994, the WH Committee of UNESCO called for a more diverse and more comprehensive portfolio of WH sites (UNESCO World Heritage Convention 1995; Jokilehto et al. 2005). What also played a key role in this process was Nicholas Conard being asked to serve in an advisory role in UNESCO's search for new WH sites with OUV related to archaeology and human evolution. He first participated in the process in March 2009 in Burgos near the WH site of Atapuerca (Sanz 2011). The Spanish government under the leadership of its UNESCO ambassador María Jesús San Segundo funded a major initiative to create a more balanced representation of sites on the WH list. Nuria Sanz from the UNESCO office in Paris and later from the UNESCO offices in Mexico City and Cairo headed this project from the start. After considerable deliberation this program was named 'Human Evolution: Adaptations, Dispersals and Social Developments', more commonly known as HEADS. Along with Margherita Mussi from Sapienza University in Rome and François Sémah from Musée de l'Homme in Paris, Nicholas Conard has served as one of the main advisors to the project together with Robin Dennell from the University of Exeter, who represented ICOMOS. As part of this process the HEADS team, under Sanz's leadership hosted scientific meetings around the world with the goal of achieving a fairer distribution of WH sites. In this context, the HEADS conference hosted at Schloss Hohentübingen, Germany from February 25 – March 1, 2013 played an important role in advancing the prospects for the sites of the Ach- and Lone Valleys achieving WH status (Smith 2013). Representatives from 13 countries and 25 institutions came together to identify

palaeolithic sites with the highest priority and thus potential WH status in Eurasia. During the conference meetings, working groups addressed key issues in the Department of Early Prehistory and Quaternary Ecology at the University of Tübingen and later in the Heinrich-Fabri-Institut in Blaubeuren. Excursions took the participants to the caves of the Ach- and Lone Valleys. Analogous meetings of the HEADS group included earlier conferences in Addis Ababa, Ethiopia in 2011 (Sanz 2012) and in Jeongok, South Korea in 2012 (Sanz 2014) to identify the highest priorities for WH sites in Africa and East Asia. The goal for the gathering in Tübingen was to do the same for western Eurasia. The participants of the HEADS conference in Tübingen confirmed that the Swabian caves should be given the highest priority, a conclusion that had already been reached in Burgos in 2009.

The papers from the Tübingen meeting were published in two volumes in 2015, with one volume dedicated entirely to the unique significance and OUV of the caves of the Ach- and Lone Valleys (Sanz 2015a; 2015b). Since in Germany the importance of mobile heritage had been disputed and often rejected, the HEADS team focused on this point during the Tübingen conference and reiterated the key point that mobile heritage may contribute to the arguments for OUV and WH status. Internationally, this conclusion was nothing new, since WH sites from the Cradle of Humankind in South Africa to Atapuerca in Spain as well as many others are based primarily on the mobile finds of fossil hominins and artifacts, not solely on the caves or open-air sites that housed the finds. The support from HEADS and UNESCO played a critical role in facing the challenges of the candidature of the Ach- and Lone Valleys. When the Ach- and Lone Valleys were enlisted in July 2017, it was the first time in Germany that mobile heritage played a central role in the inscription of a WH site. The members of the HEADS team hope that this development will open the opportunity for a serial nomination for Neanderthal sites with fossil remains and for the nomination of the site of Schöningen in Lower Saxony, the latter having been recommended for the German tentative list (Decision of the KMK 2023).

Perhaps most importantly, the discussions about the criteria for achieving WH led to a competition within Germany to establish a new tentative list. Each German state was eligible to nominate up to three potential sites for inscription in the latter. The states prepared 31 sketches for new projects, which were evaluated by a commission with 11 members appointed by the KMK under the leadership of Marie-Theres Albert, professor of Intercultural Studies and UNESCO Chair in Heritage Studies at the University of Cottbus. The LAD prepared the preliminary application with support from the University of Tübingen, the five museums that display the key finds and the many state and regional bodies, municipalities and groups that were affected by the planned WH status. Claus Wolf and Claus-Joachim Kind from the LAD headed the team and submitted the dossier via the Ministry of Economic Affairs, Labour and Housing of Baden-Württemberg to the KMK and the evaluating commission for the German sites. Nicholas Conard and the researchers from the UT supported this work with a wealth of new scientific results. Nuria Sanz' publication series and additional materials provided the evaluating commission with the current UNESCO guidelines and recommendations as well as a statement underlining the role of mobile heritage in defining OUV and WH sites.

On February 22, 2014, the evaluation commission visited key sites, met with the main stakeholders and attended presentations by members of the State Office for Cultural Heritage and by the University of Tübingen at the Lindenau restaurant, Rammingen above the Lone Valley near Hohlenstein. This evaluation was the turning point on the path to WH status. After reviewing all 31 potential projects, the evaluating commission awarded the nomination "Caves with the oldest Ice Age Art" the highest ranking followed by the Jewish Cemetery Altona Königstraße, the Waterworks und Waterpower, Drinking Water and Artistic Fountains in Augsburg, and the Artist Colony Mathildenhöhe in Darmstadt. With the highest possible ranking, the path for the Swabian caves becoming a WH site was open. The earlier opposition to the nomination based in large measure on the debate about the role of mobile heritage for WH sites no longer block the path forward. From here on there was much work to do, but the path to WH status was clear.

Some of the last challenges were related to gaining support from the participating municipalities. The most sensitively issue remaining was to how best to preserve the landscape of the Ach- and Lone Valleys from technological superimposition, such as wind power plants or technological developments that might compromise the OUV of the site. Under the leadership of Claus-Joachim Kind and Claus Wolf, and with the support of Conny Meister and Stephan M. Heidenreich, the LAD and the Ministry of Economic Affairs, Labour and Housing of Baden-Württemberg prepared a prodigious three volume nomination file of 861 pages that formed the basis for the inscription in Kraków. One of the last phases of the application procedure was ICOMOS' evaluation of the project. Marcel Otte from the University of Liège, one of the most senior and most prolific Palaeolithic archaeologists, was named to conduct the review. The visit to the sites and participating institutes took place between August 29 and September 2, 2016. Prof. Otte was part of a commission of experts who assessed the review between September and December 2016. In early December 2016, ICOMOS invited Claus Wolf and Conny Meister from the LAD as well as Denise Beilharz from the Ministry to its headquarter in Paris and inquired about pressing management questions, such as the structural and economic development of the site and its environment. The ICOMOS expert commission that evaluated the Swabian caves formed part of the basis for ICOMOS' strong support for the project at the meeting of the World Heritage Committee in Kraków.

Thanks to the careful and prolonged work of the many people involved in the process, the WH Committee approved the "Caves and Ice Age Art in the Swabian Jura" in the record time of just under 13 minutes on July 9, 2017 (full info: UNESCO World Heritage Convention 2017) (Fig. 16). This step completed the long and complex process that had taken two decades. Without the support of scores of people and dozens of stakeholders, this achievement would not have been possible. Now the general public and all of the people involved in the project can enjoy the fact that the "Caves and Ice Age Art in the Swabian Jura" have been awarded the highest possible cultural recognition and are officially acknowledged for their OUV to all people in all nations. The Cultural Heritage Protection Act of Baden-Württemberg (1972) is the main legal enforcement to ensure the protection of the property. The State Office for Cultural Heritage of Baden-Württemberg administrates the property, and institutions including

Fig. 16 | Inscription of the „Caves and Ice Age Art of the Swabian Jura", 42nd German World Heritage site. Congratulations to the German delegation in Kraków on 7 July 2017 (right foreground: former Minister of State Maria Böhmer, center; former Head of the Permanent Mission of the Federal Republic of Germany to UNESCO Stefan Krawielicki, background: Claus-Joachim Kind, Conny Meister). (Photo: ©fot. P. Suder, Narodowy Instytut Dziedzictwa: media@41whckrakow.pl).

the UT may continue to conduct fieldwork and research in the Ach- and Lone Valleys to add to our knowledge of the region's remarkable Ice Age archaeology.

On November 29, 2017, Heiner Scheffold, the Commissioner of the Alb-Donau County, hosted the celebration in Ulm at which the German Minister of State Maria Böhmer presented the UNESCO World Heritage certificate to Governor Winfried Kretschmann and Nicole Hoffmeister-Kraut, the Minister for Economics, Labour and Housing of Baden-Württemberg (see also Conard and Kind 2017). With WH status in place there is much reason to be optimistic that ongoing excavations and research will continue to strengthen the case for the OUV of the caves. The international congress "European Year of Cultural Heritage 2018: People and places from prehistory to present – Perspectives on a sustainable management of Palaeolithic World Heritage sites" in Blaubeuren, October 16–18, 2018 represented another success. The LAD and the Ministry for Economics, Labour and Housing Baden-Württemberg organized this important meeting. Here, the partners from European prehistoric World Heritage Sites intensified their network and defined shared goals for the future. The sites of the Swabian Jura served as the key destinations of excursion for the international audience and seeing the artworks and musical instruments from the region represented highlights during the meeting. In keeping with our successful experience in the Swabian Jura, we hope to encourage Germany and other countries to nominate new prehistoric sites for a World Heritage inscription to help establish a more balanced record of the entirety of the human cultural achievements.

UNESCO World Heritage

As one of the most important instruments of the World Heritage Convention the list includes the most outstanding cultural and natural sites of mankind. The World Heritage Convention reflects the awareness of the international community towards solidarity-based responsibility for our shared heritage. The fundamental pillars of UNESCO – education, science, culture and mutual exchange – are firmly embedded in the basic idea of the World Heritage Convention.

The Federal Republic of Germany ratified the "International Convention on the Protection of the Cultural and Natural Heritage of the World" in 1976. Due to the autonomy of Germany's federal states in cultural and educational affairs, the latter are responsible for the implementation of the World Heritage Convention. Together, the monument protection authorities of Baden-Württemberg and their regional partners protect and maintain this universal cultural heritage and convey it to the public. In keeping with the recommendations of the HEADS team, we underline the need to maintain a rich tradition of research and outreach at WH sites, so they remain dynamic places or learning and education as well as remarkable witnesses of our share human history for many generations to come.

For World Heritage Sites in Germany see UNESCO World Heritage Convention. No date. States Parties: Germany. https://whc.unesco.org/en/statesparties/de.

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