



Same as it ever was? The Aurignacian of the Swabian Jura and the origins of Palaeolithic art



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ABSTRACT

The Aurignacian of the Swabian Jura constitutes a key region for the understanding of the behaviour of the first populations of modern humans in Europe. The region has yielded works of figurative art and musical instruments that are among the oldest in the world. The objects are evidence for the existence of a new type of society distinct from those known in previous phases of human prehistory. This article highlights the innovations intrinsic to the beginning of the Upper Palaeolithic and contests the idea of a gradual evolution, which erodes the clear distinction between the Middle Palaeolithic and the Upper Palaeolithic at some point in the transition.

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1. Paradigms and ideologies

Our understandings of Palaeolithic art are subject, since the early days of prehistoric research, to the idea of a continuous evolutionary trajectory along which art developed from the simple toward the complex, from the crude to the sophisticated, and, yes, from the primitive to ideal beauty. This mode of thinking, which has its roots in the works of Henri Breuil and Annette Laming-Emperaire, reached its apex in the 1960s, with the structuralist movement of that time and particularly represented by the main publication of André Leroi-Gourhan (1965), who subdivided Palaeolithic art into different styles, if not different stages. These ideas, in large part dated by today's standards, presented obstacles to the recognition of the full antiquity of works of art that were at the same time very old and highly aesthetically developed.

Another current of thought, more contemporary, supported a model according to which the basic elements of all of the characteristic facets of Upper Palaeolithic culture, associated with anatomically modern humans (AMH), would have already existed among Neanderthal populations who, thusly rehabilitated, experienced an unparalleled renaissance and became the true inventors of art, music and human culture, quite simply. Hence, the transition between the Middle Palaeolithic and the Upper Palaeolithic,

recognized and established by our academic predecessors with great knowledge and discernment, would be eroded at some given moment in prehistory.

2. Solutions

Caught between two competing ideologies, the sensible prehistorian today must try to form his or her own vision of the past that most closely reflects the reality of events in prehistory. This point of view leads us to the following observation: the Aurignacian, certainly in the form of an extensive mosaic but nonetheless the first pan-European culture of AMH (Hahn, 1977; Bolus and Conard, 2001), marks a new type of society that differed in numerous aspects from those of the preceding era, the Middle Palaeolithic, a product of Neanderthal populations. The first AMH on the European continent are distinct from preceding populations on the basis of a different social structure, a highly diversified social network (White, 2006), new shared traditions and numerous innovations intrinsic to the period in the realms of technology and social life (Heckel, 2009; Münzel et al., 2016), as well in the symbolic and religious worlds (Hahn, 1986; Floss, 2009b). The material culture of this period is concretely characterized for the first time by unambiguous examples of figurative art, both parietal and mobiliary, musical instruments (Hahn and Münzel, 1995; Conard et al., 2009b), sculpted personal ornaments, representations of hybrid figures (therianthropes), and the generalized use of

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previously rarely-exploited materials such as ivory, antler, and certain lithic raw materials such as soapstone.

To be sure, the nature of a society cannot be directly inferred from the elaborateness of its material culture, and the current discussion is not an evaluation of this complexity. Nonetheless, resemblance or contrast between different elements of material culture leads the archaeologist to note similarities or differences and to deduce from them either rupture or continuity in traditions, customs, practices, and rites.

In the present case differences predominate, and they cannot be explained by differential preservation of artefacts deriving from older periods. Unfortunately, use of the highly vague term of “cultural modernity” has largely masked the very concrete cultural realities that hide behind it. The study of older series, for example from the European Middle Palaeolithic or the African Middle Stone Age, confirms an absence of certain types of objects in durable as well as perishable materials. The dogma “Absence of evidence is not evidence of absence” is appealing. But for the archaeologist, notably, it amounts to no more than a safety net, offering protection against future discoveries that in this specific case, and at the risk of overconfidence, will probably never occur.

A recent key analysis (Floss and Hussain, 2015), unambiguous in its methodology, statistical foundations, and results, clearly demonstrated real differences between the world of the Middle Palaeolithic and that of the Upper Palaeolithic. This study also demonstrated that in this moment of prehistory, there was not a gradual evolution, but a sudden and vertiginous one. Furthermore, the results show that the observed differences cannot be explained by differential preservation or by variations in the longevity of the cultural periods relevant to the transition.

The differences so clearly observed also cannot be explained, at least not largely, by a fundamental cognitive difference between the different types of humans concerned. In Africa, for example, AMH populations existed already for 150,000 years before the advent of the European Upper Paleolithic, and we find in this archaeological record nothing that parallels the exceptional and unequalled foundations of Upper Palaeolithic parietal art (so-called “Ice-Age art”) in Europe. Certainly, human beings must possess certain basic capacities, intellectual and physical. But these basic and widely-shared capabilities do not explain the varied cultural and social achievements that exist on earth. To take a contemporary and popular-athletic example, such an explanation would amount to trying to account for Paris Saint-Germain and its supporters by appealing to the leather and turf of the Paris Basin.

But if it is not pure biology that explains the crucial events that unfolded in Europe 40,000 years ago, what is it? We consider here that it was a particular confluence of circumstances, including probable contact between Neanderthal and AMH groups (a perspective recently supported by the work of our colleagues in the field of genetics), which precipitated a novel demographic and social situation that, for its part, shifted the behaviours and solutions of societies, who resorted to methods self-signification in contrast to an *other*.

These distinct behaviours created the differences in the archaeological record of the periods concerned (the Middle and Upper Palaeolithic), and these differences are not imagined, they are quantifiable:

With the beginning of the Aurignacian, a culture was established that was characterized by distinct behaviours and material foundations (Niven, 2006). Let us take the example of ornaments, always a good indicator of the complexity of a social system. In certain regions of Europe, for example, the Périgord, Belgium, and the Swabian Jura (Conard, 2003a; Wolf, 2013), we know hundreds, if not thousands, of highly varied objects attributable to the category of Aurignacian adornment. Let us take also the example of

parietal art (Valladas et al., 2004) and mobiliary art: nearly four dozen European sites dated to the Early Upper Palaeolithic have yielded paintings, engravings, and sculptures that represent animals, humans, therianthropes, and graphic signs. The works present, as much in their foundations as their form, techniques and subjects comparable to those known in later, more evolved, Palaeolithic art.

In order to convince the incorrigible, we have conducted an in-depth study that is quantitative as well as qualitative in approach (see above, Floss and Hussain, 2015). But honestly: is it really necessary to explain the differences between a morsel of manganese recovered from a Neanderthal site and the Grotte Chauvet, the latter of which achieves in beauty, depth of technical achievement, complexity, and aesthetics, the uncontested apogee of humanity? Is it really useful to compare the object dubiously identified as a “mask” from La Roche-Cotard to the filigreed ivory statuettes of the Swabian Jura? Does it truly follow that an isolated engraving, barely discernable from taphonomic phenomena at a Middle Palaeolithic site, must be compared to the extensive *artification* of the Aurignacian landscape known in the valleys of the Swabian Jura and the *vallon* of Castel-Merle in Dordogne (Delluc, 1991; Mensan et al., 2012)? What end does it serve to seek homologues to the hybrid beings of Hohlenstein-Stadel, Fumane, and Chauvet in a Mousterian context?

3. Evidence from the Swabian Jura

No, none of this is necessary, but we find it nonetheless beneficial to offer some few points of evidence in light of recent debates. The argument for a particular Aurignacian genius that we wish to make here rests on the art of the Aurignacian of the Swabian Jura. Four caves in this region of south-western Germany, have yielded an altogether remarkable and unique Aurignacian assemblage. Geißenklösterle and Hohle Fels in the Ach Valley near the city of Ulm, as well as Vogelherd and Hohlenstein-Stadel in the Lone Valley near Heidenheim (all in the administrative department of Baden-Württemberg) (Fig. 1) provide what are currently the oldest examples of figurative art and musical instruments in the world. The Swabian Jura is a plateau of a medium-sized mountain range oriented southwest-northeast, 200 km long by 40 km wide and reaching a maximum altitude of around 1000 m. Geologically speaking, the Swabian Jura is part of the Jurassic formation that extends from France in the west to Switzerland and Bavaria in east. Petrographically speaking, it is a formation of Jurassic limestones that has been altered by karstic phenomena and is therefore rich in rockshelters and caves (Fig. 2). Like many other regions of Europe, the Swabian Jura has a long history of prehistoric research that began in the mid-19th Century. Oskar Fraas conducted the first systematic excavations on a Palaeolithic site in Central Europe in 1856 and began to explore the caves of the Lone Valley (Bärenhöhle) in the 1860s. Other key figures in the archaeological history of the region, in which the University of Tübingen has always played an active role, include: Ludwig Bürger, Robert Rudolf Schmidt, Robert Wetzlar, Otto Völzing, Gustav Riek, Eberhard Wagner, Joachim Hahn and Hansjürgen Müller-Beck. Current research on the Palaeolithic art of the region is largely led by Nicholas J. Conard and the present author.

The first discovery of elements that suggested the existence of Aurignacian mobiliary art were discovered in 1931, when Gustav Riek excavated the cave of Vogelherd over the course of a few months (Fig. 2). The site had remained unknown up to that point because the infilling deposits had concealed and limited access to the cave chamber. The most spectacular objects are a dozen small figurines in mammoth ivory recovered from Aurignacian layers IV and V (Riek, 1934; Floss, 2000), including the famous Vogelherd

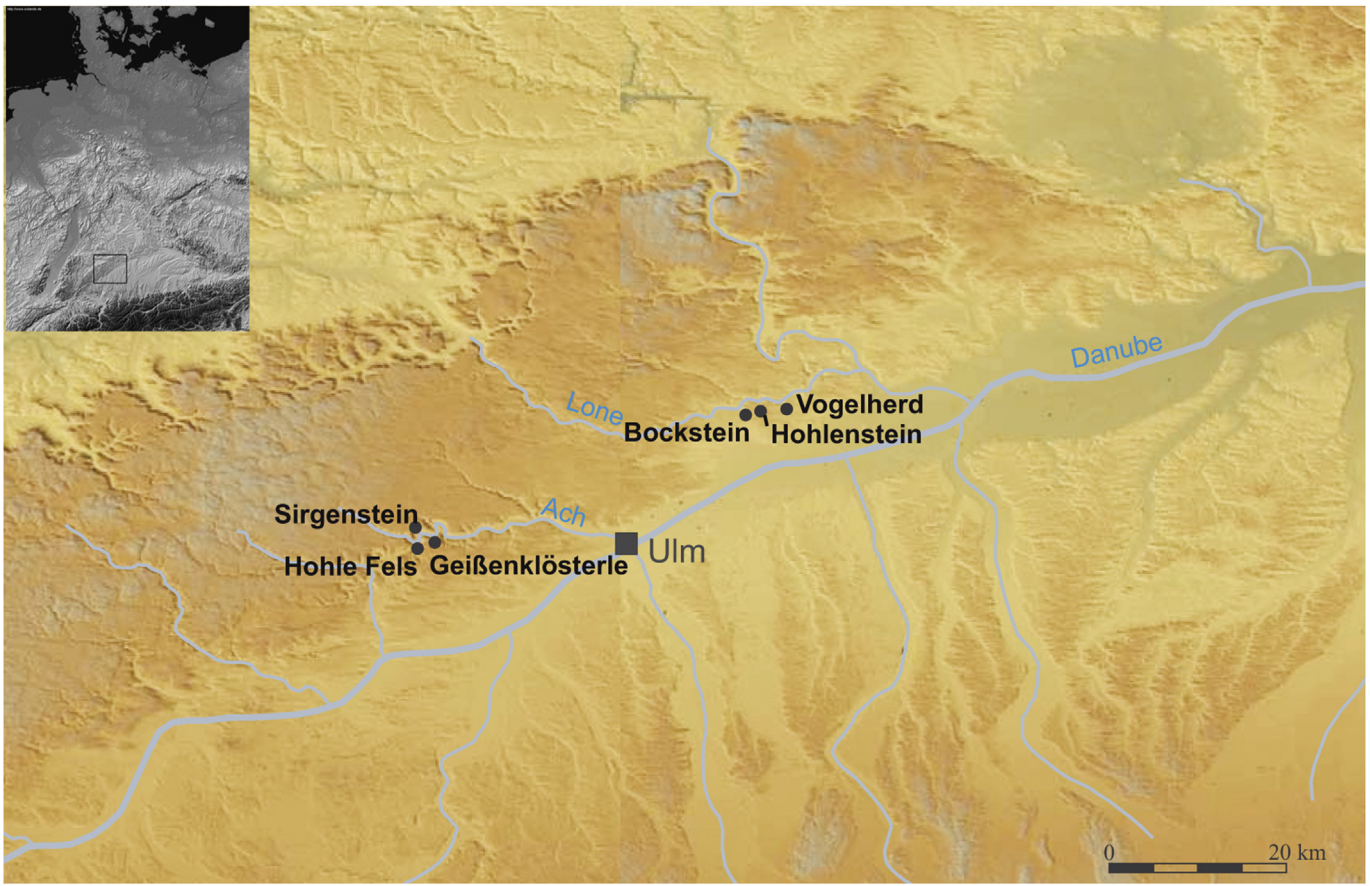


Fig. 1. The Swabian Jura and the most important Palaeolithic sites in the region, with the Aurignacian cave-sites that have yielded works of art.

horse (Fig. 3). In recent years and in parallel with excavations at Hohle Fels, renewed research has been undertaken under the direction of N. Conard on the backdirt from Riek's excavations at Vogelherd, which emptied the site completely. New figurines in ivory have been discovered, including one complete figurine, a mammoth, as well as less commonly represented animals like a hedgehog and a fish.

Just before the Second World War, R. Wetzell and O. Völzing recovered numerous fragments of ivory at the back of Hohlenstein-Stadel that, some thirty years later, J. Hahn refit into the famous "Lionman" (Wehrberger, 1994). The particular place that this object holds is due to both its iconographic value (the representation of a human/lion hybrid) and its size (at over 30 cm tall, it far surpasses the size of the other figurines known from the region). Recently, renewed excavations at the site under the direction of Claus-Joachim Kind led to the recovery of new fragments belonging to the Lionman! As a result, the figurine now stands slightly taller than it once did and has two arms and shoulder blades. The male sex of the figurine also appears to be confirmed (Ulmer Museum, 2013).

After the discoveries of the 1930s, forty years passed before J. Hahn recovered four more statuettes at the site of Geißenklösterle near Blaubeuren (Hahn, 1986, 1988): a human figure with arms raised, called "the Worshiper" a mammoth; a standing bear; a small bovid. The questions of Aurignacian paintings and musical instruments were also addressed for the first time by Hahn (1986, 1988) and his discoveries at Geißenklösterle.

The fourth site to enter the pantheon of those to have yielded Aurignacian mobiliary art in the region is the cave of Hohle Fels,

near the town of Schelklingen. In a narrow passageway leading to the large central chamber of the cave, the head of a horse in ivory was discovered (Conard and Floss, 2000, 2001), followed by a waterfowl of some kind, a miniature of the Lionman (Conard, 2003b), and, finally, a female figurine that is now the oldest known in the world (Conard, 2009a, 2010) (Fig. 6).

4. Research history and primary interpretations

A first milestone in the history of these objects was reached when G. Riek, a year after their discovery, presented part of the Vogelherd discoveries to the public, first in German (Riek, 1932) and shortly thereafter in French (Riek, 1933). A monograph on the site was published in 1934. Riek interpreted the Vogelherd figurines as a reflection of the preoccupations of a society of hunters. As an example of his *Style II* in *La Préhistoire de l'Art Occidental* (Leroi-Gourhan, 1965), A. Leroi-Gourhan grouped the Vogelherd figurines with the rock engravings from the French site of Pair-non-Pair. In a purely stylistic chronology, the comparison of these two sites served to position the representations of Vogelherd in a more recent phase than the Aurignacian of Périgord (Leroi-Gourhan, 1965: 151). Based on the stylistic resemblance of the Vogelherd figurines to small *ronde-bosse* figurines of the Moravian Gravettian, other others also argued in favour of a more recent chronological attribution for the art of the Swabian Jura (Delporte, 1979). It was not until the meticulous research of J. Hahn at Geißenklösterle that a multitude of stratigraphic observations and direct dates put to rest any doubts about the Aurignacian attribution of the figurines (Bosinski, 1982). The theory developed by Hahn (1986) in *Kraft und*



Fig. 2. The southwest entrance of Vogelherd Cave (photo: Wolfgang Burkert).

Aggression (Power and Aggression) is based on the fact that the animals represented did not correspond with those that were hunted, but rather with the most dangerous species. The Lionman of Hohlenstein-Stadel occupies a unique place in the history of this research due to the famous controversy surrounding the sex of the figurine that followed its reconstitution (Hahn, 1971, 1986; Schmid,

1989; Wehrberger, 1994). The idea of shamanism has also been evoked in reference to this object (Clottes and Lewis-Williams, 1997: 45). Martin Porr has adopted the position that the motifs decorating the figurines are related to a trance state (Dowson and Porr, 2001). Current approaches are oriented primarily toward the most recent discoveries, and largely share the aim of identifying the



Fig. 3. Horse, in ivory, from G. Riek's excavations at Vogelherd (photo: Juraj Lipták).

sociocultural factors that led Aurignacian populations of the Swabian Jura to invest so greatly in the production of what we call today “works of art.” Another principal objective of the current Tübingen research team is to raise the mobiliary art of the Aurignacian of southwestern Germany to the height of international renown that it deserves (Wagner, 1981; Conard 2009a,b,c,d, 2010; Conard et al., 2009a; Floss, 2005, 2006b, 2009a,b; Floss and Conard, 2010; Conard and Floss, 2013).

5. The evidence

In the scope of the international colloquium at Aurignac in 2005 (Floss and Rouquerol, 2007) an inventory of the relevant artefacts was published (Floss, 2007). Following recent discoveries, we now know of more than fifty works of art (counting fragments) from these four sites in the region in the category of mobiliary art. We can add to this ensemble numerous artefacts, such as organic projectiles and tools that bear incised decorative motifs. Finally, the Aurignacian of the Swabian Jura has produced an unparalleled record of musical instruments with, in total, eight flutes in bone and ivory (Conard, 2009b) (Fig. 7). The majority of statuettes were made in mammoth ivory (Fig. 5), though a few were made in bone and sandstone. Most are also figures in “ronde-bosse”, but there are some representations in relief (Fig. 4). In addition to the statuettes, a fragment of limestone painted in three colours completes the range of works of mobiliary art attributed to the Aurignacian of the Swabian Jura (Hahn, 1988; Floss and Conard, 2001).

Among the animal sculptures, about two dozen could be identified to genus or species. Mammoths and felids dominate; other

species include bison, horse, and bear. The recent discovery of animals like the waterfowl and fish alter the previous model according to which the Aurignacian bestiary was comprised of the most imposing and dangerous animals (Hahn, 1986). Representations of human-animal hybrids are also fairly numerous. In addition to the Lionman, we count the anthropomorph of Vogelherd (from the Riek excavations), “the worshiper” from Geißenklösterle, and the miniature Lionman of Hohle Fels (Conard, 2009a, 2009d, 2010). In September of 2008, the female figurine from Hohle Fels was discovered in several fragments that were refit, all in close proximity in the Aurignacian layer Vb of the site. The mammoth-ivory figurine, 6 cm in height, is nearly complete with the exception of the left arm and shoulder. It is decorated with the same style of incisions that cover the majority of animal figurines from the Swabian sites. In the place of a head, there is a small ring for suspension. The most pronounced features of the figurine are the large breasts and equally accentuated vulva.

6. The context

Regarding the context and spatial distribution of works of art from the sites concerned here, there are some notable differences. Vogelherd Cave presents three converging galleries (two of these are about 10 m in length; the third is closed by debris) that meet in a central chamber, forming a Y-shape. According to the excavation notes and drawings (Riek, 1934), which do not provide detailed spatial information, a few of the statuettes appear to have been concentrated at the intersection of these three galleries. At Hohlenstien-Stadel, the only work of art (the Lionman) was found



Fig. 4. Mammoth in relief, on bone, from G. Riek's excavations at Vogelherd (photo: Juraj Lipták).



Fig. 5. Mammoth, in ivory, from N. Conard's excavations of the backdirt at Vogelherd (photo: Juraj Lipták).



Fig. 6. The mammoth-ivory "Venus" figurine from Hohle Fels bei Schelkingen, recovered during the recent excavations directed by N. Conard (photo: Juraj Lipták).

in a deep recess of the cave chamber in an area where the artefacts of daily activities had become less concentrated. This position calls

to mind the sanctuaries of parietal art, where the most impressive scenes tend to be removed to deep locations of the cavities. At



Fig. 7. Flute fashioned from the long bone of a vulture, from the recent excavations at Hohle Fels bei Schelklingen directed by N. Conard (photo: Juraj Lipták).

Geißenklösterle (Hahn, 1988) the spatial repartition of the symbolic artefacts appears to be less structured within the overall occupation surface. This is also the case at Hohle Fels, though it is perhaps worth noting that the two principal works from the site, the vulture-bone flute (22 cm in length) and the afore-mentioned female figurine, were found in the same archaeological layer only 70 cm apart (horizontally).

Nearly all of the figurines bear decorative incisions that seem to represent a second order of symbolic communication, beyond that of language. Even so, detailed statistical analyses (Hahn, 1986) did not establish any clear relationship between certain decorative motifs and certain animals, or between certain motifs and parts of the body in these animals. A doctoral thesis currently in progress by Ewa Dutkiewicz (under the direction of N. Conard and the present author) is seeking to establish a deeper understanding of the logic, gestures, and techniques underlying the engraved decoration of these statuettes. In addition to the small size and portability of these objects, we can see that certain pieces, like the female figurine from Hohle Fels, are prepared for suspension through perforations and also belong technically to the category of personal

ornaments. A final characteristic of these artefacts that is worth noting here is their tactile quality. The highly polished surfaces of many of the pieces, which could not only be explained by polishing in the course of fabrication, suggest frequent handling. The experimental reproduction of these figurines has demonstrated the complexity and depth of the technological processes involved in their production and the enormous investment on the part of the artisans (Heckel, 2009; Hein and Wehrberger, 2010). If all stages are accounted for, the fabrication of a figurine would take the better part of an entire day, with that of the Lionman exceeding even this.

7. The figurines of the Swabian Jura – regional conventions and superregional connections

In the broader context of the Aurignacian, the mobiliary art of the Swabian Jura presents a strong regional signature. Following a phase of research history that long emphasized the pan-European unity of this technocomplex, attentions have more recently shifted toward the regional and diachronic idiosyncrasies and variations within the Aurignacian (ex. Teyssandier, 2007). Even so, there is an undeniable superregional unity in certain elements of Aurignacian material culture, particularly in the domains of lithic and osseous technologies. In the latter category, one thinks of the split-base points, and also retouchers on carnivore bones (personal communication, Jean-Michel Geneste). How do works of art fit into these patterns of similarity and variation? A comparison of artistic expressions first and foremost displays strong regional differences. The archaic-looking pictograms of Dordogne (Delluc, 1978) and the sculptures of the Swabian Jura, for example, present striking differences at first glance. But this contrast has been placed in new perspective in recent years with the discovery of certain new works of art of Aurignacian age at the sites of Stratzing in Austria (Neugebauer-Maresch, 2007), Fumane in Italy (Broglio et al., 2007), and Trou Magritte in Belgium (Lejeune, 2007), among others. Detailed analyses of the basic elements and the techniques of execution have revealed clear similarities that span regional boundaries: ovate forms in bone, unique to the Early Aurignacian and including the piece from Vogelherd decorated with a mammoth in relief, are documented in southwestern France (Leroy-Prost, 2002) as well as the Swabian Jura (Vogelherd and Geißenklösterle) (Floss, 2007); bone and ivory plaquettes decorated with punctiform motifs (that have been interpreted as notations of an astronomical nature) are known at Geißenklösterle on the opposite face of “the Worshiper” and at Abri Blanchard and Abri Lartet in Dordogne. Some marked similarities can also be observed in the underlying themes of Aurignacian art. The occurrence of human figures—and particularly human/animal hybrids—stands out. Examples of human and human/animal forms are known at Abri Blanchard, the sites of the Swabian Jura (Vogelherd, Geißenklösterle, Hohlenstein-Stadel, Hohle Fels), le Trou Magritte, Stratzing, Fumane, and the bison-woman of Chauvet (Chauvet et al., 1995; Clottes, 2001; Le Guillou, 2008). In spite of, or in addition to, the very apparent regional differences that can be observed in Aurignacian art, there are also clear similarities in conventions of representation that crosscut regional boundaries and may indeed be indicative of common underlying practices and even beliefs at the superregional level.

8. Chronology and dating

In spite of the convincing work of Riek (1934), the attribution of the Swabian statuettes to the Aurignacian and even the antiquity of the complex more generally were contested into the 1970s, and in some, albeit rare, cases remain so today. One did not predict, from a linear evolutionist perspective, that the works marking the origins

of art could be so aesthetically and technically refined. It wasn't until the absolute dates obtained from Geißenklösterle that the antiquity of the figurines from Vogelherd was confirmed. What is more, the recent excavations at Geißenklösterle, Hohlenstein-Stadel, and Hohle Fels provide high-resolution stratigraphic information. The female figurine at Hohle Fels, for example, was found in the lower-most Aurignacian layer (layer Vb) at the site and, based on a dozen ^{14}C dates, can be attributed to between 35,000 and 40,000 cal BP. Both radiocarbon and thermoluminescence dates (Richter et al., 2000) of the Early Aurignacian at the neighboring site of Geißenklösterle (Conard and Bolus, 2003; Higham et al., 2012) place the advent of the Aurignacian in the Swabia Jura at beyond 40,000 BP. These results support the hypothesis that the cultural innovations and artistic traditions that form the basis of the Swabian Aurignacian were established rapidly, present from its beginning and not, as some researchers have claimed, emerging in its final phases. Until very recently, the voluptuous female figurines known as “Venus figurines” were only known from the Gravettian and later. The example from Hohle Fels is, in a way of speaking, the predecessor of this ensemble of female figurines, and as the first representation of a woman known (or of a human form in general) in the world and pushes back their antiquity by at least 10,000 years. She stands at the beginning of the artistic, social, and ideological evolution of the Upper Palaeolithic. This discovery both bolsters the connection between the Aurignacian, even in its earliest phases, and subsequent periods of the Upper Palaeolithic and at the same time widens the gap between it and the preceding Middle Palaeolithic.

9. Conclusion

The Aurignacian is not just any moment in prehistory. In terms of evidence for a broadly shared symbolic and/or ritual system, the Aurignacian is distinct from preceding periods (Floss and Hussain, 2015) and stands in contradiction to hypotheses of simple, linear, and uniform cultural evolution. In the Aurignacian, we indeed encounter a moment in time that constitutes a veritable “creative explosion” or “cultural big bang” (Floss, 2006a; White, 2006). « The artistic explosion of the Upper Paleolithic requires no prerequisite development » (White, 2006, p. 35, translated from original French). It appears that this creative explosion in art and material culture in general, as well as the new social complexity coincide neatly with the arrival of AMH in Europe (Bailey and Hublin, 2005; Trinkaus et al., 2003). The Aurignacian of the Swabian Jura reflects this arrival in the form of a homogenous and coherent material culture in which are firmly anchored a symbolic system and ritual traditions apparently very unlike any that came before.

Author's note

Given that publication of this article was refused under what I consider questionable circumstances by the Academy of Mâcon and that I presented a similar paper in the conference session A11f at the 2014 UISPP Conference in Burgos, I decided to submit the initial manuscript, with some minor modifications, for inclusion in this volume of *Quaternary International*.

References

Bailey, S., Hublin, J.-J., 2005. Who made the early Aurignacian? A reconsideration of the Brassempouy dental remains. *Bull. Mémoires de la Société d'Anthropologie de Paris* 17 (1–2), 115–121.

Bolus, M., Conard, N.J., 2001. The late Middle Paleolithic and earliest Upper Paleolithic in Central Europe and their relevance for the Out of Africa hypothesis. *Quat. Int.* 75, 29–40.

Bosinski, G., 1982. Die Kunst der Eiszeit in Deutschland und in der Schweiz.

Kataloge vor- und frühgeschichtlicher Altertümer 20, Bonn, 92 pp.

Brogli, A., Giachi, G., Gurioli, F., Pallecchi, P., 2007. Les peintures aurignaciennes de la grotte de Fumane (Italy). In: Floss, H., Rouquerol, N. (Eds.), *Les chemins de l'art aurignacien en Europe. Colloque International Aurignac, Éditions Musée-forum Aurignac, Aurignac*, pp. 157–170.

Chauvet, J.-M., Brunel-Deschamps, E., Hillaire, Chr., 1995. Grotte Chauvet. Altsteinzeitliche Höhlenkunst im Tal der Ardèche. Mit einem Nachwort von J. Clottes. Speläo 1. Sigmaringen.

Clottes, J. (Ed.), 2001. La Grotte Chauvet. L'art des origines. Éditions du Seuil, Paris.

Clottes, J., Lewis-Williams, D., 1997. Schamanen. Trance und Magie in der Höhlenkunst der Steinzeit. Speläo 2. Sigmaringen, 119 pp., 114 fig.

Conard, N.J., 2003a. Eiszeitlicher Schmuck auf der Schwäbischen Alb. In: Kölbl, S., Conard, N.J. (Eds.), *Eiszeitschmuck: Status und Schönheit*, pp. 15–49. Museumsheft 6. Urgeschichtliches Museum Blaubeuren.

Conard, N.J., 2003b. Paleolithic ivory sculptures from southwestern Germany and the origins of figurative art. *Nature* 426, 830–832.

Conard, N.J., 2009a. A female figurine from the basal Aurignacian of Hohle Fels Cave in southwestern Germany. *Nature* 459, 248–252.

Conard, N.J., 2009b. New flutes document the earliest musical traditions in southwestern Germany. *Nature* 460, 737–740.

Conard, N.J., 2009c. ... und noch mehr Tiere! Die neuen Kleinkunstwerke vom Hohle Fels und vom Vogelherd. In: Conard, N.J., et al. (Eds.), *Eiszeit, Kunst und Kultur. Große Landesausstellung Baden-Württemberg, Stuttgart, Thorbecke*, pp. 259–266.

Conard, N.J., 2009d. Die erste Venus. Zur ältesten Frauendarstellung der Welt. In: Conard, N.J., et al. (Eds.), *Eiszeit, Kunst und Kultur. Große Landesausstellung Baden-Württemberg, Stuttgart, Thorbecke*, pp. 268–271.

Conard, N.J., 2010. Die Venus Vom Hohle Fels. *Urgeschichtliches Museum Blaubeuren, Fundstücke* 1. 72 pp.

Conard, N.J., Bolus, M., 2003. Radiocarbon dating the appearance of modern humans and timing of cultural innovations in Europe: new results and new challenges. *J. Hum. Evol.* 44 (3), 331–371.

Conard, N.J., Floss, H., 2000. Eine Elfenbeinplastik des Hohle Fels bei Schelklingen und ihre Bedeutung für die Entwicklung des Jungpaläolithikums in Südwestdeutschland. *Arch. Korrbil* 30 (4), 473–480.

Conard, N.J., Floss, H., 2001. Une statuette en ivoire de 30.000 B.P., trouvée au Hohle Fels près de Schelklingen (Baden-Württemberg, Allemagne). *PALEO* 13, 241–244.

Conard, N.J., Floss, H., Barth, M., Serangeli, J., 2009a. *Eiszeit, Kunst und Kultur. Große Landesausstellung Baden-Württemberg, Stuttgart, Thorbecke*, 396 pp.

Conard, N.J., Floss, H., 2013. Early figurative art and musical instruments from the Swabian Jura of southwestern Germany and their implications for human evolution. In: Sachs-Hombach, K., Schirra, J. (Eds.), *Origins of Pictures*, pp. 172–200. *Anthropological discourses in Image Science*. Cologne, Halem.

Conard, N.J., Malina, M., Münzel, S.C., 2009b. New flutes document the earliest musical tradition in southwestern Germany. *Nature* 460, 737–740.

Delluc, B.G., 1978. Les manifestations graphiques aurignaciennes sur support rocheux de environs des Eyzies (Dordogne). *Gall. Préhistoire* 21, 213–438.

Delluc, B.G., 1991. L'art pariétal archaïque en Aquitaine. In: CNRS (Ed.), 28. Suppl. à Gallia Préhistoire.

Delporte, H., 1979. *L'image de la femme dans l'art préhistorique*, Paris.

Dowson, Th. A., Porr, M., 2001. Special objects – special creatures: Shamanistic imagery and the Aurignacian art of south-west Germany. In: Price, N. (Ed.), *The Archaeology of Shamanism*. Routledge, New York, pp. 165–177.

Floss, H., 2000. Die Vogelherd-Figuren und die Anfänge der Kunst in Europa. In: Hansch, W. (Ed.), *Eiszeit. Mammut, Urmensch und wie weiter? Städtische Museen Heilbronn, octobre 2000–février 2001*, pp. 178–191.

Floss, H., 2005. Die Kunst der Eiszeit in Europa. In: Schürle, W., Conard, N.J. (Eds.), *Zwei Weltalter. Eiszeitkunst und die Bildwelt Willi Baumeisters*. Hatje Cantz Verlag, Ostfildern, pp. 8–69.

Floss, H., 2006a. Als der Mensch schuf, schuf er richtig – Europas kreativer Urknall vor 35.000 Jahren. In: Uelsberg, G., Loetters, S. (Eds.), *Roots/Wurzeln der Menschheit. Rheinisches Landesmuseum Bonn*, pp. 209–226.

Floss, H., 2006b. Le paléolithique supérieur en Allemagne méridionale (2001–2005). In: Noiret, P. (Ed.), *Le Paléolithique Supérieur Européen, Bilan Quinquennal, 2001–2006. U.I.S.P.P., XVe Congrès, Lisbonne, 4–9 Septembre 2006, Commission VIII, ERAUL* 115, pp. 71–80.

Floss, H., 2007. L'art aurignacien du Jura souabe et sa place dans l'art paléolithique. In: Floss, H., Rouquerol, N. (Eds.), *Les chemins de l'art aurignacien en Europe. Colloque International Aurignac, Éditions Musée-forum Aurignac, Aurignac*, pp. 295–316.

Floss, H., 2009a. Die frühesten Bildwerke der Menschheit. Das Phänomen Eiszeitkunst. In: Conard, N.J., et al. (Eds.), *Eiszeit, Kunst und Kultur. Große Landesausstellung Baden-Württemberg, Stuttgart, Thorbecke*, pp. 228–241.

Floss, H., 2009b. Kunst schafft Identität. Das Aurignacien und die Zeit der ersten Kunst. In: Conard, N.J., et al. (Eds.), *Eiszeit, Kunst und Kultur. Große Landesausstellung Baden-Württemberg, Stuttgart, Thorbecke*, pp. 248–257.

Floss, H., Conard, N.J., 2001. Malerei in der Eiszeitkunst des Süddeutsch-Schweizerischen Jura. In: Müller-Beck, H., Conard, N.J., Schürle, W. (Eds.), *Eiszeitkunst im Süddeutsch-Schweizerischen Jura, Anfänge der Kunst, Alb und Donau Kunst und Kultur* 28, exposition Landratsamt Ulm 2001, pp. 75–87.

Floss, H., Conard, N.J., 2010. L'art mobilier du Jura souabe. In: Otte, M. (Ed.), *Les Aurignaciens. Éditions Errance*, pp. 201–214.

Floss, H., Hussain, S., 2015. Substantiating the saltationist view of Aurignacian emergence in Central and Western Europe. In: *Abstracts 57th Annual Meeting*

- of the Hugo-Obermaier Society, Heidenheim.
- Floss, H., Rouquerol, N. (Eds.), 2007. Les chemins de l'art aurignacien en Europe. Das Aurignacien und die Anfänge der Kunst in Europa. Colloque International Aurignac, Éditions Musée-forum Aurignac, Aurignac.
- Hahn, J., 1971. Eine jungpaläolithische Elfenbeinplastik aus dem Hohlenstein-Stadel. *Fundberichte aus Schwaben*, Stuttgart, pp. 11–23. N.F. 19.
- Hahn, J., 1977. Aurignacien, das ältere Jungpaläolithikum in Mittel- und Osteuropa. *Fundamenta A* 9, Köln et Graz.
- Hahn, J., 1986. Kraft und Aggression. Die Botschaft der Eiszeitkunst im Aurignacien Süddeutschlands? *Archaeologica Venatoria* 7, Tübingen, 254 pp.
- Hahn, J., 1988. Die Geißenklösterle-Höhle im Aachtal bei Blaubeuren I. Fundhorizontbildung und Besiedlung im Mittelpaläolithikum und im Aurignacien. *Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg* 26. Stuttgart, 262 pp.
- Hahn, J., Münzel, S., 1995. Knochenflöten aus dem Aurignacien des Geißenklösterle bei Blaubeuren. Alb-Donau-Kreis. *Fundberichte aus Baden-Württemberg* 20, pp. 1–12.
- Heckel, C., 2009. Physical characteristics of mammoth ivory and their implications for ivory work in the Upper Paleolithic. *Mittl. Ges. für Urgesch.* 18, 71–91.
- Hein, W., Wehrberger, K., 2010. Löwenmensch 2.0. Nachbildung der Elfenbeinstatuette aus der Hohlenstein-Stadel-Höhle mit authentischen Werkzeugen. *Experimentelle Archäologie in Europa, Bilanz 2020*, pp. 47–55.
- Higham, Th., Basell, L., Jacobi, R., Wood, R., Bronk Ramsey, Chr., Conard, N.J., 2012. Testing models for the beginnings of the Aurignacian and the advent of figurative art and music: the radiocarbon chronology of Geißenklösterle. *J. Hum. Evol.* 62, 664–676.
- Le Guillou, Y., 2008. Autour de la première dame de l'art paléolithique. *Ardèche Archéologie* 25, 3–22.
- Lejeune, M., 2007. Le Trou Magrite et l'art mobilier aurignacien en Belgique: synthèse et problèmes. In: Floss, H., Rouquerol, N. (Eds.), *Les chemins de l'art aurignacien en Europe*. Colloque International Aurignac, Éditions Musée-forum Aurignac, Aurignac, pp. 131–144.
- Leroi-Gourhan, A., 1965. *Préhistoire de l'art occidental*. Paris, 482 pp.
- Leroy-Prost, Chr., 2002. Fiche objets sur meule de bois de cervidés. In: B.S.P.F. (Ed.), *Industrie de l'os préhistorique, cahier X compresseurs, perceurs, retouchoirs*, pp. 105–115.
- Mensan, R., Bourrillon, R., Cretin, C., White, R., Gardère, P., Chiotti, L., Sisk, M., Clark, A., Higham, Th., Tartar, E., 2012. Une nouvelle découverte d'art pariétal in situ à l'abri Castanet (Dordogne, France): contexte et datation. *Paléo* 23, 171–188.
- Münzel, S.C., Wolf, S., Drucker, D.G., Conard, N.J., 2016. The exploitation of mammoth in the Swabian Jura (SW-Germany) during the Aurignacian and Gravettian period. *Quat. Int.* <http://dx.doi.org/10.1016/j.quaint.2016.08.013>.
- Neugebauer-Maresch, C., 2007. La statuette de Stratzing et l'Aurignacien en Basse Autriche. In: Floss, H., Rouquerol, N. (Eds.), *Les chemins de l'art aurignacien en Europe*. Colloque International Aurignac, Éditions Musée-forum Aurignac, Aurignac, pp. 145–156.
- Niven, L., 2006. The Palaeolithic Occupation of Vogelherd Cave – Implications for the Subsistence Behavior of Late Neanderthals and Early Modern Humans (Tübinger Publications in Prehistory, Tübingen).
- Richter, D., Waiblinger, J., Rink, W.J., Wagner, G.A., 2000. Thermoluminescence, electron spin resonance and 14C-dating of the late Middle and early Upper Palaeolithic site of Geißenklösterle Cave in Southern Germany. *J. Archaeol. Sci.* 27, 71–89.
- Riek, G., 1932. Paläolithische Station mit Tierplastiken und menschlichen Skelettresten bei Stetten ob Lonetal. *Germania* 16, 1–8.
- Riek, G., 1933. Les civilisations paléolithiques du Vogelherd près de Stetten-ob-Lonetal (Wurtemberg). *Préhistoire* 2, 149–181.
- Riek, G., 1934. Die Eiszeitjägerstation am Vogelherd im Lonetal, vol. 1. Die Kulturen, Tübingen, 338 pp.
- Schmid, E., 1989. Die altsteinzeitliche Elfenbeinstatuette aus der Höhle Stadel im Hohlenstein bei Asselfingen. Alb-Donau-Kreis. Mit Beiträgen von J. Hahn und U. Wolf. *Fundberichte aus Baden-Württemberg* 14, pp. 33–118.
- Teyssandier, N., 2007. En route vers l'ouest. Les débuts de l'Aurignacien en Europe. *BAR, I. S.* 1638, 312 pp.
- Trinkaus, E., Milota, S., Rodrigo, R., Mircea, G., Moldovan, O., 2003. Early modern human cranial remains from Peștera cu Oase, Romania. *J. Hum. Evol.* 45, 245–253.
- Ulmer Museum, 2013. Die Rückkehr des Löwenmenschens. *Geschichte, Mythos, Magie*. Sigmaringen, Thorbecke.
- Valladas, H., Clottes, J., Geneste, J.-M., 2004. Chauvet, la grotte ornée la mieux datée du monde. *Dossier Le Temps des datations, Pour la science*, pp. 82–87.
- Wagner, E., 1981. Eine Löwenkopffplastik aus Elfenbein von der Vogelherdhöhle. *Fundber. Baden-Württ.* 6, pp. 29–58.
- Wehrberger, K., 1994. Der Löwenmensch. In: Ulmer Museum (Ed.), *Der Löwenmensch. Tier und Mensch in der Kunst der Eiszeit*, pp. 29–45.
- White, R., 2006. Un big-bang socio-culturel. In: *Recherche, La* (Ed.), *La naissance de l'art*, pp. 23–36.
- Wolf, S., 2013. Nicht nur schön. Schmuck vom Beginn jüngerer Altsteinzeit. In: Ulmer Museum (Ed.), *Die Rückkehr des Löwenmenschens. Geschichte, Mythos, Magie*. Sigmaringen, Thorbecke, pp. 90–95.