



Identification of a possible engraved Venus from Předmostí, Czech Republic

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ABSTRACT

One Gravettian feminine representation – the schematic Venus of Předmostí – is so different from all the others that it has always been regarded as unique. The engraving, which was closely examined for the purpose of comparison in this study, represents a woman composed of geometric shapes, including a triangular head with interior lattice-work, concentric ellipses for the breasts, belly and pelvis, a double ladder for the remaining arm, hatch marks, and a thigh made up of parallel vertical lines. This article presents the discovery and discusses the authenticity of a second, feminine anthropomorph engraved on a bone shaft fragment, which is labelled as coming from the same site and is highly similar to the one described at the end of the nineteenth century. The modern history of Předmostí reveals that the site was used as a quarry for the extraction of loess and limestone, and that tons of mammoth bones were extracted to produce spodium. Remarkable objects that were found both during early archaeological excavations and the site's commercial exploitation went towards private collections. The history of the piece under study traces it back through a succession of owners to the collection of René de Poilouie de Saint-Périer (b.1877–d.1950) and Raymonde-Suzanne de Saint-Périer (b.1890–d.1978). The engraving is on the periosteal surface of a limb bone from a very large mammal, probably a proboscidian. Microscopic analysis of the bone surface and engravings identify the chronology of the grooves and their relations to the stages of the bone's alteration and fracturing, starting with: 1) heavy weathering of the bone surface that produced longitudinal cracks, which probably led to its breakage, 2) engraving of the feminine representation, 3) intense mechanical and chemical attacks that smoothed all of the bone's surfaces and wore down the engravings, 4) covering with a consolidation agent, and, most recently, 5) some abrasion, which resulted in the creation of a few straight lines. Since no evidence is found to suggest that the highly worn appearance of the engravings composing the feminine representation resulted from modifications that were meant to artificially age the periosteal surface of the bone, we conclude that the engraving can be plausibly attributed to the Gravettian and that further analyses are warranted.

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1. Introduction

The corpus of Aurignacian and Gravettian feminine statuettes represents the first example in the history of humanity of the diffusion of three-dimensional representations, which seem to conform to largely shared aesthetic and formal canons, over a vast zone (Absolon, 1949; Abramova, 1962; Leroi-Gourhan, 1965; Delporte, 1979; Kozłowski, 2002; White and Bisson, 1998; Caldwell, 2010a). This is quite surprising considering that the

images were produced over many millennia and in an area covering several million square kilometers, which stretches from the Atlantic to the Russian plains. Several researchers have made an effort to show that, on closer examination, these representations reveal differences in content, style and posture, which, may indicate regional styles (Gvozdozer, 1989; Delporte, 1993), membership in different social groups (Soffer et al., 2000), different ages and physiological states (Rice, 1981; Duhard, 1993a, 1993b, 1995; Trinkaus, 2005), variations on a theme involving women's mediation between hunters and their prey – especially during pregnancy (Caldwell, 2009, 2010a, b), sexually-oriented realism without any symbolic intention (Guthrie, 1979, 2005), or the self-portraits of Gravettian women (McDermott, 1996). None-the-less, despite differences among the representations, the vast majority of them

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Fig. 1. Schematic female representation engraved on a mammoth tusk from Předmostí, Kříž excavation (Photo K. Jursa, courtesy of Brno Museum). Scale = 1 cm.

have a family resemblance that has never stopped fascinating prehistorians. If the notion of tradition (Willey and Phillips, 1955; Binford, 1965) has a sense in archaeology, the early Upper Paleolithic Venuses seem to represent one of the first cases when an iconographic tradition and its variants can be determined in space and time.

A single feminine representation from this period clearly differs from all the others (Delporte, 1979; Marshack, 1972) – the Schematic Venus of Předmostí (Fig. 1). Found in 1895 by Kříž (1896), this engraving represents a woman composed of geometric shapes, including a triangular head with interior lattice-work, concentric ellipses for the breasts, belly and pelvis, a double ladder for the remaining arm, hatch marks, and a thigh made up of parallel vertical lines. Although the engraving has been seen as unique in Gravettian art, its abstract elements bear a resemblance to motifs on several other objects made of mammoth bone from Předmostí (Valoch, 1975) and to a lesser extent from Dolní Věstonice and Pavlov (Klíma, 1990; Oliva, 1997b; Svoboda, 1997; Farbstein and Svoboda, 2007).

A comparison has also been made between the way the head of the Předmostí figure is rendered and a few lines engraved on the heads (Abramova, 1991) of figurines from Dolní Věstonice I and

Mezin (Soffer et al., 1997) as well as between the Schematic Venus's geometric components and motifs covering Mezin's feminine figurines. Geometric patterns like those painted on mammoth bones and used to compose the Schematic Venus may have been influenced or linked both to herring-bone, zig-zag and other architectural patterns formed by tusks and bones in the construction of cabins and to patterns created by three technologies that are known to have existed at the Pavlovian complex of sites – netting, stitching and weaving (Pringle, 1997; Soffer et al., 1997, 2000; Caldwell, 2009, 2010a). However, it must be admitted that none of these motifs is identified in an un-ambiguous manner with a figurative representation at any of the other Czech sites.

Marshack (1972) speculated that the image may have been so different from other Gravettian anthropomorphs because of its having an equally distinct use. Unlike other Gravettian female representations, Marshack thought that the Předmostí engraving may have been used in a group ceremony, perhaps to individualize and personalize a shaman within the East Gravettian decorative tradition or to serve as the image of a “mythical” female beyond time and place (whose abstract body and face were also removed from reality). Others have interpreted the geometric motifs composing this figure as evidence that Paleolithic people experienced hallucinations induced by sensory deprivation or ingestion of psychotropic drugs (Pokorný, 1975; Budja, 2004).

The objective of this study is to present the discovery and discuss the authenticity of a second feminine figuration (Fig. 2), which every indication suggests was found at Předmostí and which is similar in many respects to the one discovered by Kříž (1896). Předmostí was the object of numerous and successive excavations at a time when exchanges and purchases were common practices among professional archaeologists and museum curators. This site was also the object – as a result of its easy access and commercial exploitation of its loess and limestone – of repeated uncontrolled digs, which resulted in the dispersal and sale of archaeological materials (Oliva, 1997a). These vicissitudes make it utterly conceivable and even highly probable that characteristic pieces, like the one that is the subject of this study, were sent abroad.

But this recognition does not provide any assurance of the authenticity of the piece in question. Instead, a study aimed at verifying the authenticity of such a piece is necessary before it can be accepted by the scientific community.

Just as the production of fakes continues to this day (ex. Altuna et al., 1992; Feder, 2008; Groenen, 1996; Normile, 2001), the production of fake prehistoric objects and fake human remains was a common practice at the end of the nineteenth and during the first half of the twentieth centuries (Vaysson de Pradenne, 1932; Cohen, 1999; Bahn and Vertut, 1997; Barandiaran, 1995). Upper Paleolithic portable art was particularly affected by this counterfeiting, as has been demonstrated, for example, by the identification of numerous false engraved and painted Azilian pebbles (Couraud, 1980; Bahn, 1984; D'Errico, 1995), forged Creswellian and epi-Gravettian engravings (Giacobini, 1995; D'Errico et al., 1988), and even fake Mousterian engravings done without any apparent profit motive at the Molodova site (Nowell and d'Errico, 2007).

The problem also applies to Gravettian statuary. A case in point is a male ivory head that was allegedly found at Dolní Věstonice, which does not present any compelling evidence of being a genuine Gravettian carving (Marshack, 1988; Valoch, 2008; Valoch and Láznicková-Galetová, 2009). Some of the so-called Paleolithic Venuses have also fallen under suspicion. For example, a number of local and foreign specialists either examined Venus II from Dolní Věstonice (Franz, 1930; Bayer, 1931; Schirmeisen, 1931) or were asked for their opinions, as was the case of the Count Bégouën (1932a, b). The same is true, for example, for the Moravany Venus, which was brought to Henri Breuil at the Institut de



Fig. 2. Large limb bone fragment bearing the schematic female representation analysed in this study.

Paléontologie Humaine in Paris to resolve the question of its authenticity (Dvořák, 2004). Suspicions have even been raised on several occasions about the authenticity of some of the Grimaldi statuettes and the Lady of Brassempouy, although micro-wear analyses seem to have laid those to rest (White and Bisson, 1998; White, 2006). So the authentication of portable art objects which may come from Předmostí requires extra circumspection. Our archival research indicates that several Czech prehistorians between the World Wars were aware of the clandestine sale of objects by workers at Předmostí and even suspected that some of them produced forgeries (K. Absolon, personal archives).

2. History of research at the Předmostí site

Together, the sites of Předmostí, Dolní Věstonice and Pavlov, which are located on the right bank of the Bečva, at the southern entrance to the Moravian Gate in Moravia, compose the most important complex of Paleolithic reference sites in the Czech Republic. According to a 16th century writer named Jan Blahoslav, Předmostí was already known by 1571 as the place where one found "...the bones of a giant, with teeth as big as fists or even as big as a man's skull..." (Skutil, 1951). The site's

wealth of vestiges led to a long series of archaeological excavations starting in the second half of the 19th century, which were led during the years listed after their names by J. Wankel (1880–1882, 1884, 1886) (Svoboda et al., 1994), K. Maška (1882–1884, 1886, 1889–1895) (Svoboda et al., 1994), M. Kříž (1894–1897) (Svoboda et al., 1994), K. Absolon (1924–1935) (Svoboda et al., 1994), B. Klíma (1971–1973, 1975–1976, 1982–1983) (Svoboda et al., 1994) and, most recently, Svoboda (Svoboda, 2006, 2008; Oliva, 2007; Svoboda et al., 1996). This sequential open-air site, which has delivered traces of Acheulian and Mousterian occupations (Moncel and Svoboda, 1998), is best known for its rich Gravettian layers, which include habitation features, marked by several thousand mammoth bones, a necropolis (Velemínská and Brůžek, 2008), portable art, and rich organic and lithic industries.

In addition to mammoth remains representing more than 1000 individuals (Musil, 1958) and 72% of the faunal assemblage, the fauna in the Gravettian strata includes wolf (7.42%), fox (6.92%), hare (6.20%), reindeer (2.59%), bear (0.72%) and a few horse and bison bones. The dates obtained from these Gravettian layers (Svoboda et al., 1994) place the occupation around 26 ky uncal BP $26,870 \pm 250$ (GrN 6801), $26,320 \pm 240$ (GrN 6852), $25,040 \pm 320$

Table 1
Material from Předmostí kept in Czech (*) and foreign institutions.

Museum	Material	Collection & Reception Date
Moravian Museum, Brno*	Fauna, bone industry, art	J. Maška, M. Kríž, K. Absolon
Institute of Archaeology, Czech Academy of Sciences, Brno*	Fauna, bone industry, art	B. Klíma
History and Geography Museum, Olomouc*	Fauna, bone industry	K. Wankel
Prostějov Region Museum*	Fauna	
History and Geography Museum, Varnsdorf*	Fauna	
Logan Museum of Anthropology, Beloit, WI, USA	Bone, ivory, antler artifacts	K. Absolon, 1926
Field Museum, Chicago, IL, USA	Bone, ivory, antler artifacts	1931
Naturhistorische Museum Wien, Austria	Not confirmed	J. Maška
Institut de Paléontologie Humaine, Paris, France	Lithics	H. Breuil, 1924
Museum für Vor- und Frühgeschichte, Berlin, Germany	Not confirmed	M. Bartels, 1902

(OxA-5971) – representing calibrated dates, respectively, of 28,997 ± 329, 28,504 ± 453, and 26,534 ± 948 cal BP (CALPAL-2003; Jöris and Weninger, 2004).

Because of the richness of its faunal remains and the earliness of the first excavations, the site played a primordial role in the debate over the contemporaneity of prehistoric humans with extinct species such as mammoths. As a result, once their contemporaneity was accepted, Předmostí became known as the habitation site par excellence of mammoth–hunting humans (Maška, 1889; Steenstrup, 1889). Because of its excavation during the great debate over the authenticity of Paleolithic art, Předmostí's portable art also contributed to demonstrating that symbolism and aesthetics existed during the Paleolithic (Wankel, 1884, 1890).

Unfortunately, the site's potential for providing further information was severely diminished by a set of unfavourable circumstances. Most of the site was excavated with methods that were excellent for their time but far from those applied in modern excavations (Svoboda et al., 1994). To make matters worse, parallel to the “official” excavations, the site served as a quarry for the extraction of loess and limestone. Hundreds of wagonloads of mammoth bones were also extracted to produce spodium (carbon used for the whitening of sugar) or were ground to produce fertilizer (Skutil, 1951; Wankel, 1890). Remarkable objects that were found during such commercial exploitation went towards private collections.

The fate of archaeological collections derived from the official excavations was no better. The material from the digs directed by Wankel from 1880 to 1882 was given to the Anthropology Society of Vienna (Klíma, 1972), sold to various museums including the the Regional Museum in Olomouc and Moravian Museum in Brno, where the pertinent artifacts were acquired during the 1884–1886 period, and otherwise widely dispersed (Table 1). Maška also revealed in his notes (Maška, výkopové deníky I–IV.) that he had sold or given objects from Předmostí to thirty different institutions or individuals, most of whom were located abroad (Oliva, 1997a).

As a result of the accessibility of the quarry face, Předmostí was also the object of indiscriminate pillaging, which went on parallel to the “official” excavations for many years. During the nineteen-twenties, an offer by the Moravian Museum to purchase all the pieces from the site from the region's private collections paradoxically stimulated trafficking in such objects and the probable apparition of fakes (K. Absolon, personal archives) while resulting in the purchase of 14 collections and the acquisition of more through inheritances. Part of the assemblage, which was thus re-united, was destroyed at the end of the Second World War during a fire at Mikulov Castle, where the collection was stored (Simek, 1948). According to Oliva (1997a), pieces from Předmostí are also to be found in collections of American, German, French and Austrian museums (Table 1).

3. Provenance

The piece under study has been traced back through a succession of owners to the collection of René de Poilhoüe de Saint-Périer

(b.1877–d.1950) and Raymonde-Suzanne de Saint-Périer (b.1890–d.1978), who were known as the Comte and Comtesse de Saint-Périer. The Musée d'Archéologie Nationale at Saint-Germain-en-Laye acquired 100 objects through the same intermediary, M. Favre, from the same collection at the beginning of the 1990s – of which 60 came from Isturitz (Mohen, 1991). Other components of the de Saint-Périer assemblage acquired by the museum at the time were listed as a series of bifaces from the north of France and the Parisian basin (Inv. MAN 86685a), a series of Neolithic pieces from “Brittany, the Massif Central and Parisian Basin” listed as “polissoirs, axes, elements of jewellery, etc” (inv. MAN 86685b), and several “Séries d'archéologie comparée” (comparative archaeology artifact series) from “Denmark, Switzerland, the Sahara, pre-dynastic Egypt, and Oceania” inventoried under “Inv. MAN 86685c. Achat”. Four sources – three with antique stands at the Clignancourt flea-market adjacent to Paris, and a fourth from Lyon, have told one of the authors (D.C.) the same story. Around 1989 or 1990, the heirs to the Comte and Comtesse de Saint-Périer offered a trunk filled with prehistoric artifacts to a Lyon antiquities dealer (D. Fuselier). Fuselier himself told Caldwell with regret that he had told the sellers that the contents were only worth ten thousand francs. After hearing his bid, the heirs went to Paris, where they asked another dealer, Michel Favre, who sold artifacts and minerals with his father, Norbert Favre, at Stands 159 and 160 in the Marché Vernaison at Clignancourt, for another appraisal. By total coincidence, Favre offered the heirs the same amount, persuading them that they would not get more, so they sold the entire trunk to him for said sum.

The new owner then sold a few fragments and pieces from abroad that he did not feel would interest French museums as much as complete or local artifacts. A friend of the dealer (H. Bouraly) was thus able to purchase a small assemblage, including the fragmentary object in question, a set of tertiary fossil shell beads on a length of wire, which was also marked as coming from Předmostí and was considered inseparable from the engraving, a segment of a decorated half-round rod from Isturitz (*baguette demi-ronde*), and a few other objects.

Interestingly, the five fossil *Pleurotoma* or *Crassispira* and six tubular *Dentalium* shells on the curved wire are identical, according to an expert at the Moravian Museum, Oldřich Kroupa, who analysed them on the basis of a photograph, in species to shell beads that are known to have been found in Gravettian strata in the complex of associated Pavlovian sites. While we did not find any *Pleurotoma* shell beads among the surviving ones from Předmostí in the Moravian Museum, one was found in the museum's assemblage from Dolní Věstonice. Also, although one or more of the tubular shells may be *Dentalium sexangulum*, which has not been identified yet at the Gravettian sites, many of the *Dentalium* from the sites are simply classified as *Dentalium* sp. because their external layers are often eroded away, making exact determinations problematic. The museum's small assemblage of shell beads from Předmostí that survived destruction during the Second World War contains the following identifiable species: 31 specimens of

Dentalium badense, 2 of *Cypraea leporina*, and a single representative each of *Cardiopsis partschi* and *Terebralia lignitarum*, the last of which was suspended in the same way as *Pleurotoma*.

Returning to the engraving's provenance, soon after his sale of the objects, Mr. Favre approached the Musée d'Archéologie Nationale about buying the remainder of the collection, which included the more complete French artifacts. The museum agreed to buy all the de Saint-Périer pieces in his possession for a reported two million francs, net of taxes, and the obligation for the dealer to stop dealing in prehistoric artifacts. Some of the pieces acquired in this transaction were described in 1991 in the *Revue du Louvre*, without any details about their intermediary provenance (Mohen, 1991).

One of us (D.C.) first saw the purported Czech artifacts in the Bouraly collection, where they remained until 1998, when Mr. Bouraly sold them to a French "expert" in transactions involving prehistoric artifacts, François Bigot, who told Bouraly that he was acquiring the pieces to resell to a wealthy French client. When Caldwell noticed the objects' absence from Bouraly's collection and learned that they had re-entered the commercial circuit, he realized that the potentially important assemblage could disappear from view without being studied and acted quickly to prevent that eventuality by offering Mr. Bigot an exchange. Bigot accepted. As soon as Caldwell took possession of the shells and engraved fragment of mammoth bone, he contacted another of the authors (F.D.) and brought the pieces to the Institut du Quaternaire, University Bordeaux 1, for d'Errico's inspection. At the latter's suggestion, Caldwell also showed the pieces to the third author of this article (M.L.-G.), who was then working on her doctorate at the Musée de l'Homme in Paris. Finally, Caldwell used the engraving to illustrate a hypothesis about Paleolithic feminine imagery (Caldwell, 2010a) and has continued to curate the assemblage while awaiting analytical proof that will guarantee that the objects will be recognized as being worthy of care and display in an institution.

René de Saint-Périer (1877–1950) and his wife, Raymonde-Suzanne de Saint-Périer (1890–1978), are remembered both for their discovery of the Lespugue Venus in the Grotte des Rideaux near Lespugue in the Haute-Garonne in 1922 – which they gave to the Muséum National d'Histoire Naturelle in Paris – and for their excavations at Isturitz starting in 1928, which Raymonde-Suzanne continued for eight years after René's death in 1950. Given their fame as passionate collectors and prehistorians throughout the first half of the 20th century, it is likely that they acquired the pieces in question as a result of purchases or exchanges with one or more notable Czech counterparts. The Comte de Saint-Périer is known to have corresponded with K. Absolon at least 5 times in 1925, 1926, 1927 and 1934, (personal correspondence of K. Absolon) but none of their letters, which all concern exchanges of replicas – including one of a mammoth sculpture and a figurine carved from a mammoth metatarsal or metacarpal – mention a gift, purchase or exchange of actual artifacts. For example, after discussing the exchange of "casts of the Lespugue statuette and those that you recently discovered in Czechoslovakia" when Absolon visited their excavations at Lespugue during the summer of 1925, René de Saint-Périer wrote a letter on January 1st, 1926, thanking Absolon for sending "the very interesting cast" – adding that "I would be very happy to receive casts from you of other pieces from your beautiful sites and particularly of your statue, the sister of ours, if you can obtain it..." He ended the letter with the words "... in the hope that we will be able to visit your admirable sites..." Such transactions are known to have continued at least until 1934, when Saint-Périer thanked Absolon after another "reception of a beautiful cast".

Although it is not known whether either of the Saint-Périers actually visited any of the Czech sites, the correspondence is important because it shows René de Saint-Périer's acute interest in

Předmostí and prolonged contact with at least one person with access to the site.

4. Material and methods

The object was photographed under incident light oriented in different directions and angles. Digitised images were imported into Adobe Illustrator © to produce a tracing of the engravings, which was subsequently verified by comparing it to the original, using a M3C Wild stereomicroscope equipped with a photographic camera. The location, extent, nature, chronology and state of preservation of natural and anthropogenic modifications, and the presence of preservative and soil residues were recorded on the tracing. The engraving techniques used, the type of tool involved, the direction of the lines and the identification of lines produced in a single session by the same tool were established, whenever possible, on the basis of experimental criteria identified by D'Errico (1995) and Fritz (1999).

The ink markings on the object were also photographed microscopically and magnified to study the morphology of the letters and figures. The known engraved Venus of Předmostí and other bone and ivory objects with engravings that are kept at the Moravian Museum in Brno were also photographed and subjected to microscopic analysis to identify the engraving technique and traces produced by taphonomic agents.

5. Results

5.1. Taxonomic and taphonomic identification

The support on which the engraving (Fig. 2) was made is 174 mm long, 70 mm wide, and 30.7 mm deep. It is a fragment of a long bone from an extremely large, class 5 mammal. Because of the thickness of the compact bone (approx. 30 mm), its fibrous aspect, and remnants of spongy bone in a diaphyseal zone (Amprino and Godina, 1947), we attribute the fragment to a proboscidian. The morphology and, in particular, the cross-section of the periosteal surface indicates that it is probably a femoral fragment. The compact texture of the bone on the periosteal face seems to indicate that it came from an adult animal (Ezra and Cook, 1959).

In the following description, the fragment will be oriented in the same way as the engraving and writing, and the lateralization of the left and right edges refers to the bone's engraved face.

Four different surface conditions are observable on this piece, which correspond to four successive stages in its fragmentation and alteration. The first concerns the whole of the periosteal surface, the edge of the right fracture and the medullary surface. These surfaces have undergone significant chemical and mechanical alterations, which were accompanied by prolonged heavy weathering. These phenomena have had different consequences depending on the zone of the bone and the bony tissue concerned. On the periosteal face, this produced the localized detachment of lamellae of primary bone, followed by a wearing of the ridges created by desquamation, which gave the surface of the bone a mounded aspect under a microscope. This same process also blunted the right edge with the complete disappearance of the fracture ridges. On the medullary face, this process engendered the almost complete disappearance of the spongy bone, the digging of cupules caused by a localized chemical attack and the opening of fine longitudinal cracks typical of bone exposed to the action of meteorological and weathering agents (Behrensmeier, 1978; Lyman and Fox, 1989; Lyman, 1992; Tappen, 1994). Such modifications are common in periglacial environments (Todd and Frison, 1986; Todisco and Monchot, 2008).

The second stage of the surface is observable on the surface of the proximal fracture. This does not present the alteration that characterized the earlier phase. Its smooth surface and concave morphology evoke a fracture produced on a fresh bone or on a bone that had maintained, or acquired by fossilization, an isotropic structure.

The third surface state concerns the left edge of the piece and, in particular, the fracture that is visible on the right in the photo of the medullary face (Fig. 2). This has clean edges and a rough aspect. This fracture is probably the result of the opening of one of the fine cracks which longitudinally cross the fragment's medullary face. The fourth surface state concerns the distal fracture. Its frayed profile and lighter color bear witness to a more recent origin, no doubt after the exhumation of the piece. The scaling that affects the center and right half of the periosteal surface also seem to belong to this last phase in the alteration.

5.2. The engraving

Two types of anthropogenic modification were identified on the periosteal surface: traces of intensive longitudinal scraping, produced by a stone tool along the left edge, according to notes made by one of the authors (F.D.) during his first analyses, and the engraving proper (Fig. 3). The latter is composed of two groups of grooves, with very different aspects, one of which is partially superimposed over the other. The first group forms the representation that evokes the already known Venus of P \acute{r} edmost \acute{r} . The second is composed of groups of fine sub-parallel grooves, which cross the first ensemble at the upper extremity of the representation and close to the right edge of the fragment (Fig. 3, 4b,c).

The figure itself is composed of four graphic elements. From the top to bottom, we distinguish a cross-hatched equilateral triangle with its summit oriented towards the bottom, two groups of incomplete concentric ellipses, engraved on either side of the lower

apex of the triangle, and, separated from these ellipses, another group of concentric ellipses, which are oriented horizontally. Two grooves curve away from the left ellipse, to sketch an arm.

The microscopic analysis of the engraved zone allows the identification, to a certain degree, of the chronology of the grooves and their relation with the stages in the alteration and fracturing of the bone.

The schematic figure was engraved first: the fine grooves or lines alluded to above systematically reach the depths of the broader incisions that compose the figure and sometimes change direction in exiting from their furrows (Fig. 4b,c), which proves, without ambiguity, that the fine grooves were made later in time. No well-preserved points of contact between the graphic elements that compose the figure exist, which makes it difficult to establish their chronology. The engraving of the figure was made on a bone that was already altered. This is indicated by the frayed morphology of the edges of the best-preserved grooves (Figs. 2, 4 and 5). This morphology, produced by the localized and continuous detachment of lamellae of primary bone during the passage of the point, is typical of engravings on altered bone (Giacobini, 1995; D'Errico and Villa, 1997; D'Errico et al., 1988). This diagnosis is confirmed by the fact that the course of the grooves is slightly modified when they enter discontinuities in the surface (Fig. 3). These discontinuities generally correspond to the detachment of lamellae of primary bone whose edges were smoothed by the action of small abrasive particles. This seems to indicate that the bone had already undergone drying, desquamation and superficial wear by the time of the engraving. Later, a more intense abrasive process affected both the periosteal surface and incisions. This abrasion is responsible for the disappearance of certain segments of the incisions composing the ellipses (Fig. 4d, 5e–f), as well as the “planing” of the bony surface and of the rest of the grooves that compose the figure. Often the only thing that remains of them is their bottoms or phantoms that are barely visible in

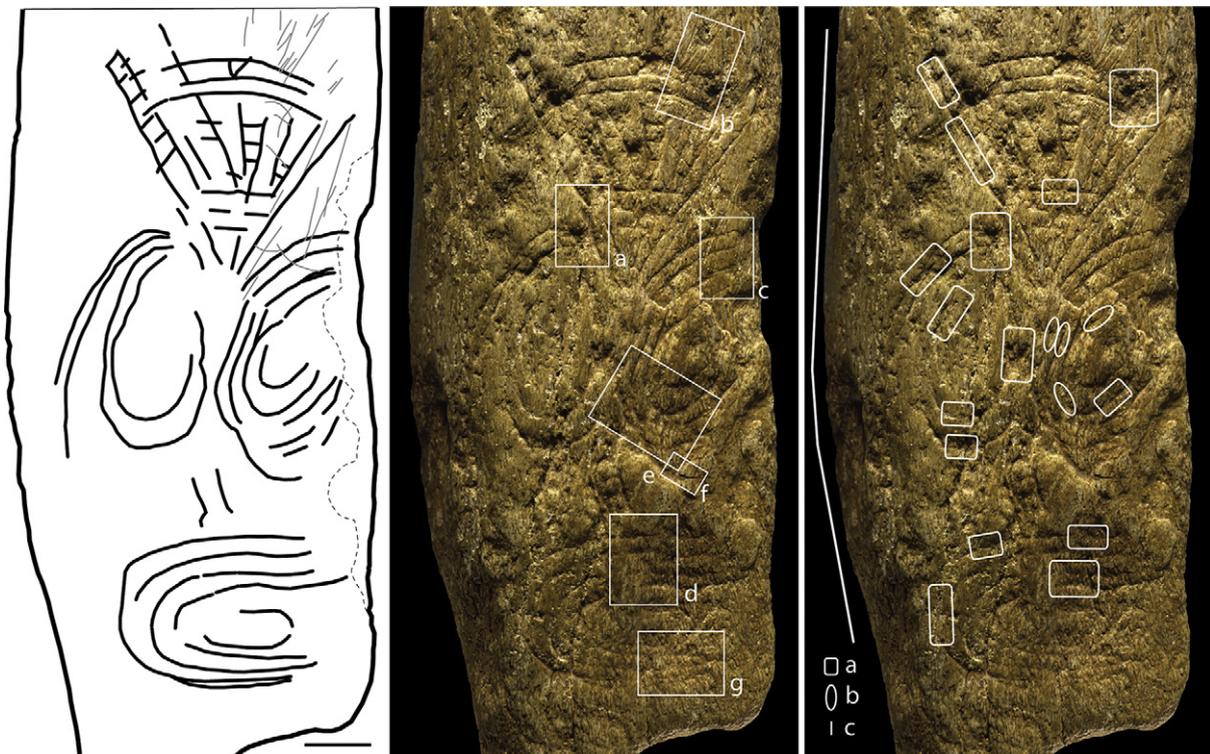


Fig. 3. Left: tracing of the lines engraved on the object analysed in this study; grey: recent thin lines; black: smoothed lines depicting the schematic female representation. Center: location of the micrographs presented in the Figs. 4 and 5. Right: a – area presenting scraping marks; b – area in which the lines penetrate concavities produced by weathering of the bone surface; c – lines with sediment residues. Scale = 1 cm.

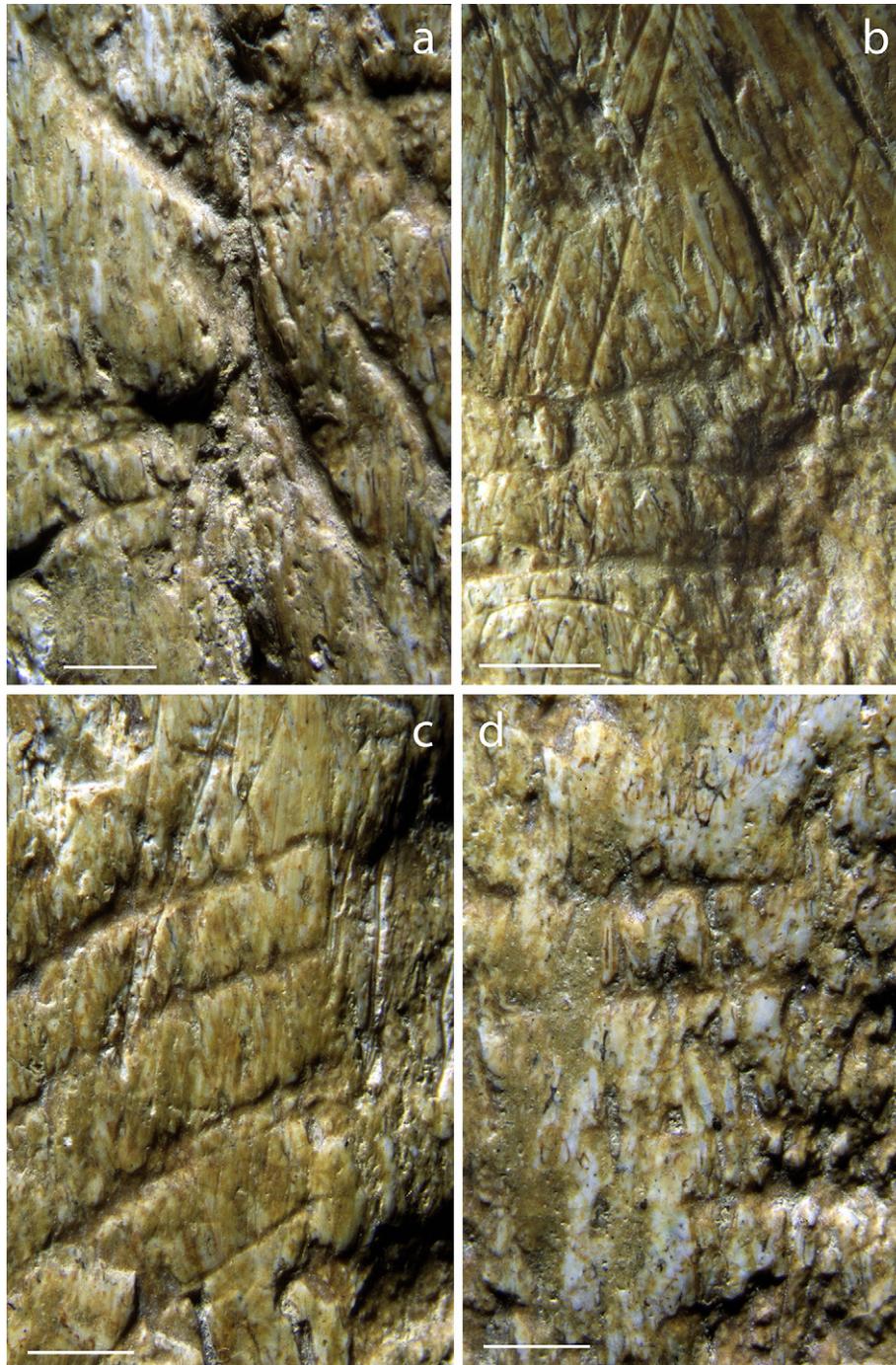


Fig. 4. Micrographs of selected areas of the engraving; see Fig. 3 for their location on the bone. Scale = 1 mm.

slanting light. This abrasion is also responsible for the highly worn aspect of micro-fractures along the grooves. These features suggest the prolonged action of microscopic abrasive particles, associated perhaps with weak chemical alteration.

These processes were followed by the application of a preservative that accumulated in the discontinuities of the bone and filled what remained of the grooves formed by the engraving (Fig. 4c–d, 5e–f). In places, this product encases residues of a fine beige-colored sediment, which changed to a light brown when it absorbed the product. These sedimentary residues were detected in several incised grooves (Figs. 3, 4a,d, 5e), although the antiquity of the deposits could not be judged. As the consolidation product

aged, it darkened, which prevented the analysis of the bottoms of the grooves in search of microscopic clues concerning the type and morphology of the point that made the engraving (Figs. 4 and 5f). Judging from the width and general morphology of the bottoms of the grooves, it must have been a robust but not particularly sharp point. No clues indicating that it was a stone point have survived but it would be difficult to prove the contrary. The presence of several bifurcations (Fig. 3) indicates that at least some grooves were the object of repeated passages by the tool. After the application of the consolidation product, the periosteal surface was subjected to new abrasion, which removed the preservative layer in places, creating white-colored islands. Based on their freshness, the

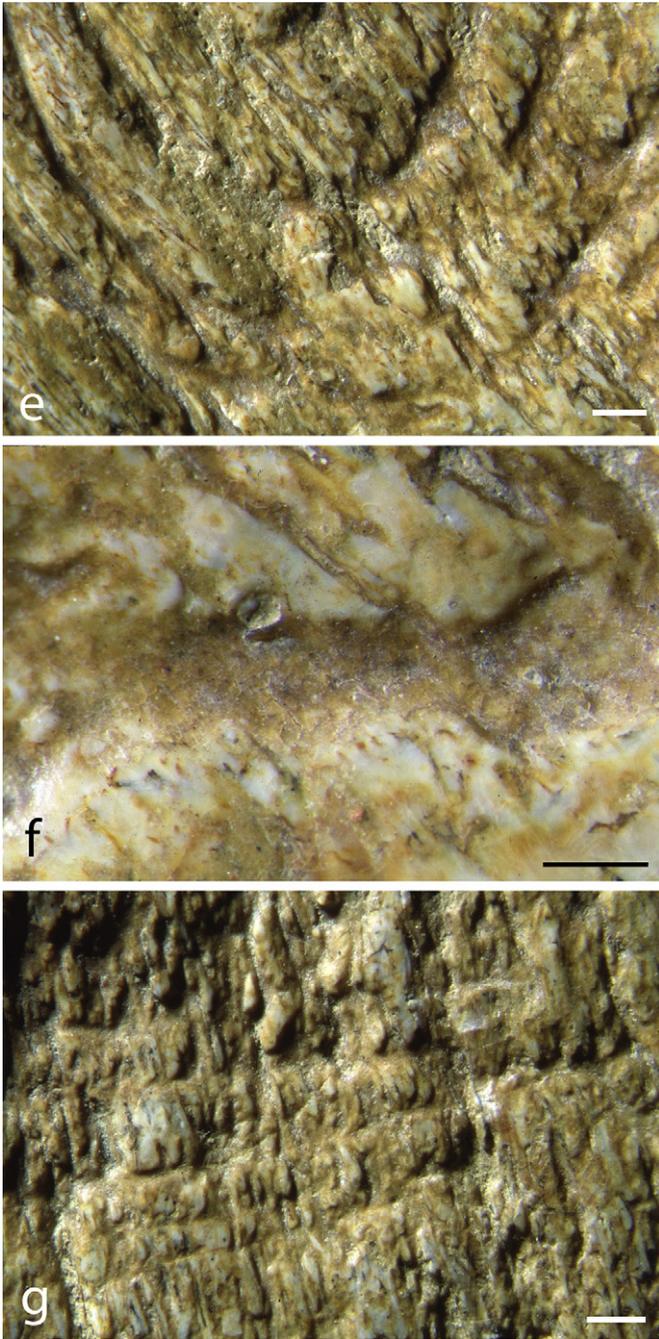


Fig. 5. Micrographs of selected areas of the engraving; see Fig. 3 for their location on the bone. Scale = 1 mm.

groups of fine lines mentioned at the start of this section probably constitute the most recent modification to the bone's surface.

5.3. The labeling

The label in India ink that is present between the figure and the distal edge of the fragment consists of the following notations: “Prëdmostí/MORAVIE/TCH./PAVLOVIEN/Juin 62/” (Fig. 6). Two letters of the word “Juin” are almost entirely effaced, which makes their decipherment uncertain. This marking is different from that found on the pieces from Předmostí in Czech museums. Depending on the collection, the latter are marked “P”, “Pr”, “Předmostí” or “Prdm.” A large number of pieces bear no labels whatsoever. The

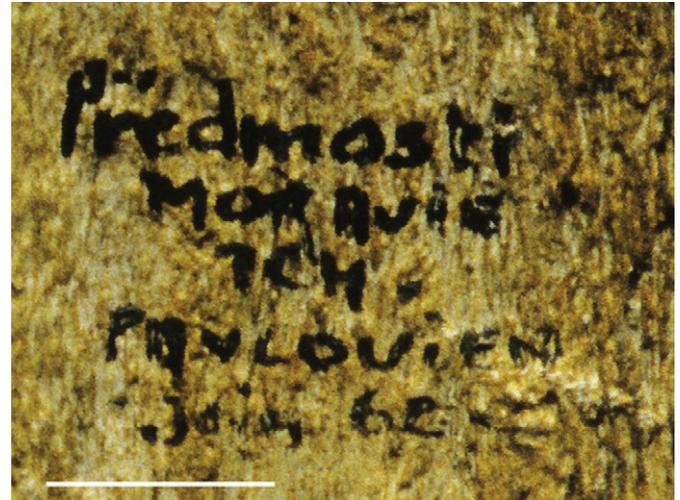


Fig. 6. Micrograph of the black ink marking on the bone. Scale = 1 cm.

inverted circumflex over the word Předmostí is written in an erroneous fashion, which suggests that the person who made the label was not Czech. The fact that the rest of the markings (Moravie, Tch., Pavlovién, Juin) are in French increases the probability that their author was French. The word “Pavlovién” was created for the first time in 1959 by Henri Delporte (1959) and was then accepted by B. Klíma (1967) and K. Valoch (1981). This indicates that the labelling cannot date to before 1959 and could well go back to the date 1962. If this is the case, the person who produced the markings must have had deep knowledge of the scientific literature of the period.

5.4. Předmostí mobiliary art

Předmostí delivered a relatively small number of mobiliary art objects compared to other Gravettian sites in Central Europe (Table 2). Its corpus of engravings included fourteen objects made of mammoth ivory, ten made of mammoth bone (9 ribs and 1 scapula) and one made from antler. With the exception of the figure of the Předmostí “Venus”, the graphic elements on the other pieces are all abstract in appearance. These patterns often consist of series of short parallel lines juxtaposed with other sets of differently oriented lines. The Venus of Předmostí (Fig. 1) that is engraved on a fragment of mammoth tusk is similar in size (12 × 5.5 cm) to the one we have analysed. It differs from the one on bone in the greater complexity of its representation and the greater care and precision of the engraving. Microscopic analysis reveals that the engraved objects from the site were subject to chemical attack, which has left their surfaces dotted with eroded, scalloped cupules (Fig. 7a), and that their prominent zones have undergone polish (Fig. 7b) both because of natural agents and attempts at restoration. Their grooves have trapped residues of modelling clay, consolidation products, and sediment. The dark red patina underlying these

Table 2

The raw material of engraved objects from Předmostí.

Material	Anatomy	Species	N.
Bone	Rib	Mammoth	9
Bone	Scapula	Mammoth	1
Ivory	Tusk	Mammoth	14
Antler	Antler	Cervid	2
Total			26

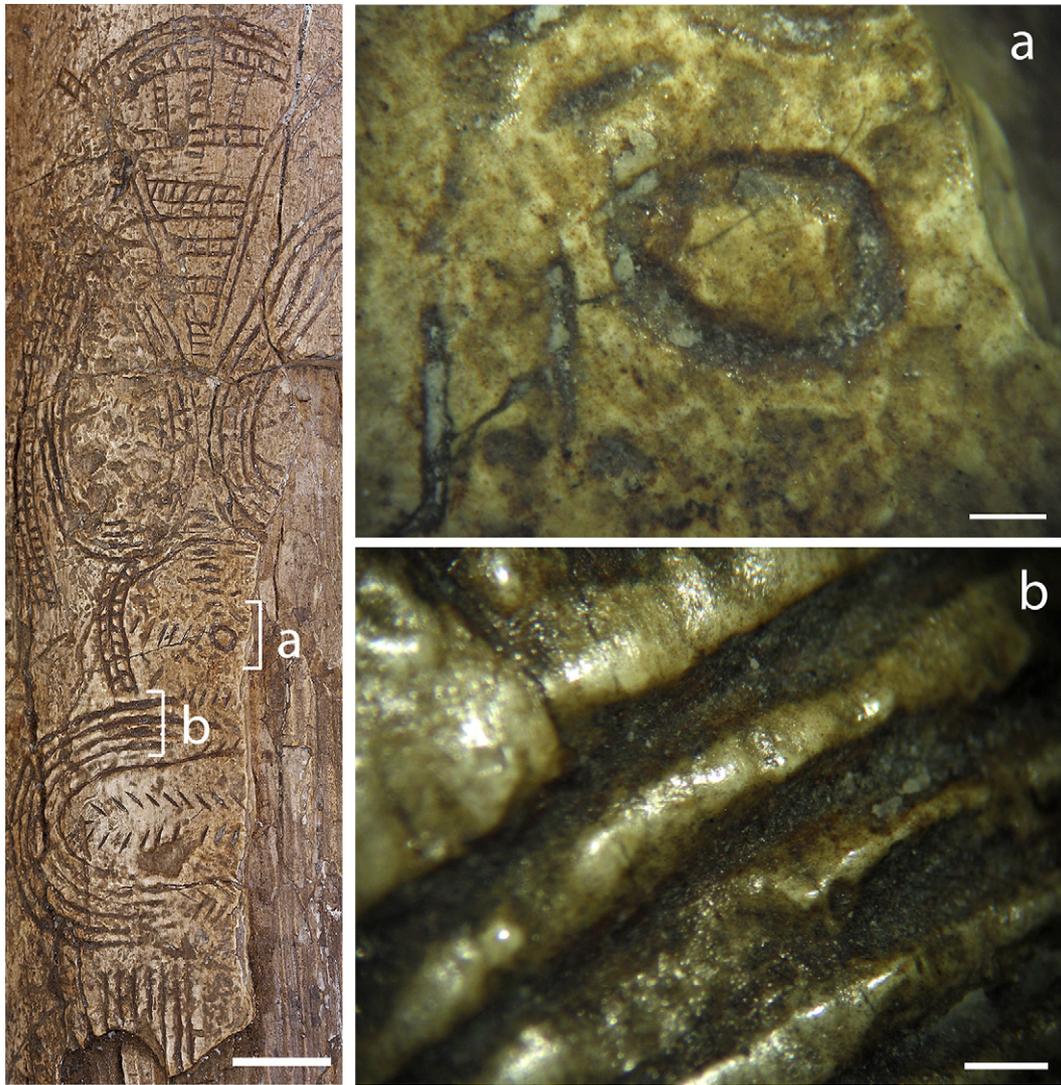


Fig. 7. Micrographs of two areas on the schematic female representation from Předmostí. Scale on the left = 1 cm; scale on the right = 1 mm.

residues may indicate the presence of a coloring material, which may have been used prehistorically to make engravings more visible.

6. Discussion and conclusion

The analysis of this object has not presented absolute proof that the engraving on its periosteal surface is Gravettian but it has highlighted some facts that make this hypothesis plausible. This justifies its publication and the pursuit of further analyses on it. The central argument in favor of attributing the engraving to the Paleolithic is the advanced degree of abrasion to the engravings. Microscopic analysis of these and the surrounding area has found no evidence to suggest that the worn aspect has resulted from modifications that were meant to artificially age this zone of the bone. On the contrary, one sees wear that attacked both the engraved and unengraved zones with the same intensity and in the same ways. Any study supporting the hypothesis that the engraving is of recent origin must find an explanation for this fact and successfully replicate the process. Other considerations may lean in the direction of the object's authenticity or forgery, but none is conclusive. The type and degree of the wear observed on our

piece is comparable to that observed on the acknowledged Venus of Předmostí and other engraved pieces from this site. This supports the hypothesis that the engraving on bone is authentic but does not constitute proof. The medium on which the engraving was executed, a fragment of one of the longer bones of a mammoth, could almost paradoxically lean against its authenticity because the known engravings on mammoth bone from the site were done on the animal's ribs or pelvises – not on long bones. This also applies to similarities between the formal elements of the two engravings. For example, the less precise aspect of the representation on our object could, once again, be used as an argument against its authenticity. The same logic could be applied to the figuration's specific state of fragmentation, since the fractures of the two pieces intercept the engraved lines at almost the same places.

It is clear for these reasons that complementary tests are needed before reaching a definitive diagnosis. A C14 dating of the object could show that the dating for the bone actually falls within the chronological range when the Předmostí site was inhabited. Considering the representation's highly particular character, a significantly later date would necessarily go against its authenticity. An earlier date could be explained by the use of an old mammoth bone at Předmostí. A date contemporary with the

habitation of Předmostí would lean in the direction of the object's authenticity but would not eliminate the possibility of a forger's use of a bone from the site. Other analyses that can be performed to verify that the bone comes from Předmostí include analysis by μ XRD and EDX of the residues of sediment present in the grooves, Raman and IR spectroscopy of the preservative present inside the grooves, and a non-destructive XRF analysis of the bone to seek the elementary components that assured its fossilisation by comparison to those of mammoth bones discovered at Předmostí. These tests could be accompanied by more extensive microscopic and roughness analyses that would better analyze the surface conditions of the engraved zone. It is possible that the application of these different techniques could bring together such a rich body of concordant evidence that a definitive diagnosis could be reached.

If the second Venus of Předmostí is really an authentic object, how could it have entered René and Raymonde-Suzanne de Saint-Périer's private collection? Our archival research has identified several possible paths. But first, we must emphasize that our microscopic examination of the engraving on the present object tends to bar the possibility of a modern enhancement of an ancient piece of bone, so this does not seem to be the kind of object that Absolon suspected was being fabricated by one of his workers in 1928 (K. Absolon, personal archives). Still focusing on worst-case scenarios, we know from the same letter to the worker, that Absolon also ordered him to stop selling authentic artifacts. But the fact that the engraving under study comes from the collection of two prehistorians, whose collections contained genuine artifacts from "Denmark, Switzerland, the Sahara, pre-dynastic Egypt, and Oceania" – to name but a few of their foreign acquisitions – and who participated in exchanges with counterparts, points to the common practice at the time of giving or exchanging objects among private curators to internationalize or "round out" each other's collections. Just as this generation of passionate semi-professionals helped establish many institutions with its gifts, the discipline's pioneers often showed generosity to one another.

They were also among the principle buyers of pieces that appeared on the market, since they were among the few connoisseurs with the expertise to appreciate the nuances of often-fragmentary artifacts. If this small assemblage, consisting of the engraving and accompanying set of shell beads, was indeed the object of such a gesture or sale, the transaction could have occurred either in Czechoslovakia or abroad. In the former case, the set of artifacts could have been acquired at Předmostí itself by visiting curators or archaeologists. The seller could have been a worker participating in official or semi-official excavations, a worker involved in the commercial exploitation of the loess, limestone or bones, an amateur conducting wildcat excavations, or even one of the archaeologists excavating the site.

We have already raised the latter possibility in recalling the numerous shipments that Maška made to foreign recipients. Furthermore, it should be noted that Maška was an active collector himself, acquiring an important Magdalenian engraving called the "*Rangée d'individus marchant*" that was found in Gourdan Cave from its excavator, E. Harlé (Lázničková-Galetová, 2010), and participating in exchanges of Czech artifacts for French ones according to a 1932 letter from Count Bégouën that describes the "...exchange of the object from Gourdan for 2 painted pebbles, one flat harpoon..." etc. (K. Absolon, personal archives).

Předmostí was also visited by many of the most influential scientists of the era during an excursion by the Vienna Anthropology Society in 1889 (Anonymous, 1889). Another visit is recorded in an article by Maška, Obermaier and Breuil that appeared in 1912 (Maška et al., 1912) and the Abbé Breuil visited the site again in 1923 (Breuil, 1924). These visits were followed by those of many other researchers (McCurdy, Reynolds, Allyn, Thuner, Bond, Wickwire, Erich, Caroll,

Field, Riley, Jacobs, Jenks, Hrdlička, etc.) as well as the staffs of such American museums as the Logan Museum and National Museum in Washington, D.C.

There are several reasons to believe that the present engraving may have been found around the same time and in approximately the same part of the site as the Schematic Venus on the tusk. The first is that the two engravings are so similar and idiosyncratic in the Gravettian canon that they could even have been made by the same hand, suggesting that they come at least from the same occupation layer.

The second is that feminine sculptures from the phase are often grouped, when they are of similar manufacture and are found on the same site. At Gagarino, for example, ten equidistant niches around a semi-pit hut with a mammoth-bone superstructure each contained a female figurine (Zamiatnine, 1934; Tarasov, 1965; Abramova, 1995). To take an even closer example of spatial differentiation, at Dolní Věstonice, figurines of humans and carnivores were at the center of one hut while figurines of herbivores were found in another (Klíma, 1982, 1983; Bahn and Vertut, 1997).

A third reason for thinking that the present specimen was found, acquired and even put into storage by René or Raymonde-Suzanne de Saint-Périer by 1925, and probably several years before then, when he was already 48, is that there is no evidence that anyone in the family paid much attention to it until the early nineteen-sixties. It should be noted that René de Saint-Périer died in 1950, so he cannot be the person who marked the piece in 1962, if it was, in fact, marked at that time. Given the known collection provenance of the object and deep knowledge of prehistory shown by the author of the markings, it is likely that the label was made by Raymonde-Suzanne de Saint-Périer, who lived until 1978 and was a prehistorian in her own right, carrying on the excavations at Isturitz, as we have seen, for 8 years after her husband's death.

In short, until 1962, when the Comtesse may have found the piece in her husband's vast collection and marked it, the engraving under consideration may have been as misunderstood as the now well-known Venus on the tusk – which was illustrated upside-down at least three times – twice by its finder, M. Kríž (1896, 1903), and once by M. Much, in 1907, although it must be said that Much thought that the image represented a woman wearing a traditional costume and big hat (Much, 1907). The engraving was finally interpreted as a "drawing of (a) geometric female figure on a mammoth tusk" by K.J. Maška in 1912 (Maška, 1912), although it was not illustrated right-side-up until 1918, when it appeared correctly positioned in publications by K. Absolon (1918a, b). In the German article (1918a), Absolon spoke of it simply as a stylized woman, but his editor, Heilborn, added a commentary in which he explained that the image actually represented a naked woman covered with tattoos. In Absolon's somewhat later Czech article (1918b), he compared Much's hypothesis that the engraving represented a traditionally costumed matron wearing a big hat with Heilborn's that it showed a nude tattooed woman, and agreed with Heilborn. Finally, H. Obermaier's upright illustration of the tusk Venus in books that appeared both in Spanish and English in 1925 (Obermaier, 1925) was the first to bring the new reading to the attention of many foreign prehistorians, who had been cut off from publications that had appeared in enemy territory during the First World War. If either the Comte or Comtesse de Saint-Périer had already stored the assemblage among their thousands of specimens from around the world before 1918 or even 1925, when Obermaier's publication caught the attention of non-Czechs, one or both of them may have continued to think of the faintly incised and eroded bone, when it was remembered at all, as just another abstract central European engraving.

The Comte, and perhaps his wife, would not have been alone. The dawning recognition that the engraving on the tusk represented

a woman composed of geometric elements was probably inspired, in part, by a pair of artistic revolutions that had opened western eyes to tribal arts and the abstract elements underlying naturalism, a revolution begun by Cézanne. Ironically, Breuil's validation of Altamira in 1902 had amplified Cézanne's experiments by making some artists realize that there were European precedents for great works of art that used radically different compositional techniques. Within three years Georges Braque, Maurice de Vlaminck, André Derain, Guillaume Apollinaire and Pablo Picasso, who remarked on how Paleolithic artists would place "un bison" on "la bosselure d'une caverne" and kept replicas of the Lespugue Venus in both her more "Cubist" broken state and restored condition (Bahn, 2005), had begun collecting tribal art (Le Fur, 2006), which used comparable but portable and affordable aesthetic approaches, to widen their aesthetic lexicon. Already, in 1903, Kříž suggested that the upside-down figure might be figurative. By 1907, a combination of changing perceptions and his own insight may have allowed Much to interpreted the engraving as a feminine figure, even though he saw it in terms of Central European embroidery and coifs and continued to present her head downwards. When Absolon and his editor, Heilborn, finally showed the engraving with the head upwards in 1918 and spoke of it as a stylized woman or naked woman covered in tattoos, the recognition of the Schematic Venus on the tusk brought the visual revolution of Modernism and Cubism, which had been partly inspired by the discovery of prehistoric European art, full circle – allowing a geometrically composed work from prehistory to finally be recognized and appreciated.

However René and Raymonde-Suzanne de Saint-Périer acquired the engraving and shells, their acquisition may have ironically saved the specimens from the fate of other Předmostí specimens during World War II, at Mikulov Castle and elsewhere, when so many were lost.

Before closing, it is worth noting that the identical schematization of the two engravings may lend itself to a polysemic reading with multiple references, the most obvious one, now that associated beliefs have been lost, being to a woman's anatomy. But the short projections from the upper corners of both the heads are more suggestive of horns or an owl's "ears" than human ones.

Finally, the striking similarity of the present engraving to the previously known schematic Venus, the probability that they were both found at the same site, the uniqueness of the pair among early Upper Paleolithic anthropomorphic images, and the results of our microscopic examinations, which indicate highly similar engraving techniques and manufacturing gestures, all point, as we mentioned before, to the possibility that the two engravings are even by the same hand. If so, the pair may constitute the remaining oeuvre of the oldest known sculptural "master" – the Master or Mistress of the Schematic Venuses.

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