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Reprinted from BEFORE LASCAUX: THE COMPLEX RECORD OF THE EARLY UPPER PALEOLITHIC, CRC Press, Boca Raton, FL

Chapter
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Nonflint Stone Tools of the Early Upper Paleolithic

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1. INTRODUCTION

Among the remains recovered from Paleolithic living surfaces, an entire category of stone objects is rarely studied in detail. This category consists of blocks, cobbles, and plaquettes, which were used in a rough state and which display traces of use such as use-polish or impact-marks from percussion; objects fashioned by techniques other than knapping (pecking, hammering, scraping, abrasion) have been neglected as well. Some of these objects played roles as passive support pieces: anvils, grindstones, mortars, palettes. Others could have played active roles: hammerstones, mulling stones, pestles, etc. These implements could have been used in tool manufacture (anvils, mallets, whetstones, etc.); in the treatment of vegetal materials and in food preparation (mortars, pestles, grindstones, mulling stones); in storing various ingredients (containers); in the preparation of pigments (ocher bowls, palettes, color grinders); in the treatment of hide or leather (smoothing tools); and in illumination (lamps). It is apparent, therefore, that these implements, although not very numerous at Paleolithic sites, probably played a fundamental role in the daily life of Paleolithic people.

An exhaustive study of these pieces has been presented elsewhere (de Beaune 1989a). In this chapter, I will present a list of the different objects classified by type of percussion (Table 1) and by presumed or inferred activity (Table 2), in part determined by experimental replication. Each of these tools displays a characteristic morphology, and shows evidence of the use of particular techniques (Tables 3 and 4).*

As far as the Early Upper Paleolithic (EUP) is concerned, two questions may be posed, at least initially: (1) Are there nonflaked stone tools that exist exclusively during this period? (2) If so, can one determine the precise moment at which they appeared (Chatelperronian, Aurignacian, or Upper Périgordian)? Due to space limitations, it is not possible to present every example attesting to the use of cobbles, blocks, and plaquettes during this period. Therefore, only the particularly significant objects will be presented.

*Some of the categories of tools mentioned in the tables are not discussed in the text because they were unknown during the Early Upper Paleolithic (EUP). This is the case, for example, with "saddle-querns."

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Table 1. Principal utensil types and their mode of percussion.

Mode of Percussion		Utensil Type	
		Passive	Active
Thrusting*	Punctiform	Anvil	Hammerstone
			Retoucher
			Mallet
		Centrally-pitted cobble	
	Diffuse or Multiple-Punctiform	Nutting stone (pitted block)	Crushing muller
	Diffuse	Mortar	Pestle (=hand-held mortar)
Thrusting and Posed*	Diffuse	Grindstone-mortar	Pestle-grinder
Posed*	Diffuse	Seed grindstone (=saddle-quern)	Grinder
		Vegetal grindstone (=dish grindstone)	Mulling stone
		Palette	Color grinder
			Smoothing-tool (=currying muller)
		Polisher	
		Whetstone	
No percussion (container)		Container	
		Ocher bowl	
		Lamp	

* These terms are the best English equivalents that the translators could find for the terms "percussion lancée" and "percussion posée".

For each category of implement, I sought to determine whether it was present during a given cultural period. My goal was not an exhaustive inventory, but rather a chronological list of the presence/absence of the various tools. Obviously, the absence of an implement does not indicate that it did not exist. These important implements, which often are not very spectacular and have been neglected during excavation and in publication,* are listed below according to presumed function.

2. DEBITAGE AND FLINTKNAPPING

Anvils, hammerstones, and retouchers (i.e., hammerstones for retouch flaking) exist during all periods beginning in the Lower Paleolithic. These tools were already known by

*The author has relocated some of these pieces, notably at the Musée des Antiquités Nationales (M.A.N.), the Musée National de Préhistoire (M.N.P.), and the Musée d'Aquitaine (M.A.).

Table 2. Principal utensil types and their hypothesized functions.

Function	Utensil Type	
	Passive	Active
Flint debitage and retouch	Anvil	Hammerstone
		Retoucher
Stone, bone, or ivory polishing	Polisher	
	Whetstone	
Bone or ivory shaping		Mallet
Leather and hide work		Smoothing-tool (=currying muller)
Food preparation	Mortar	Pestle
	Grindstone-mortar	Pestle-grinder
	Nutting stone	Crushing muller
	Grindstone	Grinder Mulling stone
Pigment preparation	Palette Ocher bowl	Color grinder
Storage of diverse substances	Container	
Lighting	Lamp	
Unknown function	Centrally-pitted cobble Disk	
	Pitted block	

the Australopithecines in South Africa (Dart 1965), the makers of the Oldowan in Tanzania (Leakey 1976:432, 441), and the Acheuleans in the Transvaal (Mason, 1962a:113). Anvils and hammerstones are abundant in all Mousterian sites. They are perhaps even more numerous in the Middle Paleolithic than in the Upper Paleolithic, since soft-hammer percussion flaking was not yet widely practiced. These objects are ubiquitous; noteworthy EUP examples are the granite cobbles used as anvils or hammerstones from the Typical Aurignacian of the Grotte de Saint-Jean-de-Verges (Ariège). These large quartzite objects weigh as much as 20 kg (Vézian and Vézian 1966:105, 1970:45).

3. POLISHING STONE, BONE, OR IVORY: POLISHERS AND WHETSTONES

Polishers and whetstones are blocks with an abrasive quality. A polisher displays a polished surface of a form corresponding to the imprint of the object it was used to polish. Whetstones exhibit small, flat, or long facets or grooves that have a polished appearance.

Table 3. Principal identification criteria of passive objects.

	Form and Size	Traces of Manufacture	Traces of Use
Anvil	Large stone with more or less flat, horizontal, or convex superior surface.	Sometimes trimmed to reduce size.	Traces of impact on superior surface.
Nutting Stone	Stone with one or more circular depressions.		Pitted, regular circular depressions produced by use.
Mortar	Container with a depth of at least 10 cm.	Pitted; sometimes polished.	Traces of percussion and crushing in the cavity.
Grindstone-Mortar	Container with a depth of 5-10 cm.	Pitted; sometimes polished.	Traces of percussion and polish.
Seed Grindstone (Saddle-Quern)	Large block with plano-concave superior surface (max. depth of 4-5 cm).	Surface sometimes prepared by roughening and trimming.	Traces of hammering on superior surface, concavity formed by use.
Vegetal Grindstone	Superior surface slightly concave from use wear.	Roughened during manufacture (never trimmed).	Surface completely or partially polished; concavity formed by use .
Palette	Flat superior surface.		Surface completely or partially polished; traces of colorant.
Polisher	Block with abrasive qualities.		Imprint of the polished object (groove, depression); imprint has a polished appearance.
Whetstone	Block with abrasive qualities.		Small flat facets or long grooves with a polished appearance.
Container	Bowl-shaped.	Natural or produced by pecking and polishing.	
Ocher Bowl	Bowl-shaped.	Natural or produced by pecking and polishing.	Traces of colorant; sometimes traces of scraping produced while mixing colors.
Lamp	Bowl-shaped or plaquette-like.	Natural or worked.	Traces produced by fire (carbon and/or reddening).

Polishers and whetstones seem to be rare at the beginning of the Upper Paleolithic, but they have also been confused with blocks and plaques with surfaces polished by use and considered to be grindstones. Needle polishers seem only to appear in the Solutrean, and larger grooved polishers are exceptional. While polishers and whetstones seem to be known in rather limited numbers, they have a wide geographic distribution.

3.1 Saint-Géréon (Loire-Atlantique)

This surface site yielded, in addition to a Mousterian assemblage, some pieces that indicate one or more Aurignacian occupations (Allard and Gruet 1976:1309). Associated with this Aurignacian material is a sandstone polisher with a groove with semicircular

Table 4. Principal identification criteria of active objects.

	Form and Size	Traces of Manufacture	Traces of Use
Hammerstone	Cobble or other stone with regular spherical or ovoid form.		Marks of blows or crushing on surfaces, extremities or ridges.
Retoucher	Globular cobble or stone; smaller than hammerstone.		Traces of crushing from contact against an edge or a surface.
Mallet	Straight, elongate cobble with depressions near one or both extremities.		Traces of repeated pecking abutting a depression.
Crushing Muller	Cobble with flat extremities.	Surfaces may be hammered or polished.	Flat or slightly convex extremities with traces of pecking.
Pestle	Elongate, cylindrical or tri-conical cobble.	Natural, pecked or sometimes polished.	Traces of percussion and use facets on one or both extremities.
Pestle-Grinder	Oblong cobble with circular, triangular or oval section.		Use polish on surfaces and extremities; sometimes traces of percussion.
Grinder	Oblong stone with circular, triangular or oval section.	Obtained by hammering and trimming by roughening to make the surfaces abrasive.	Surfaces flattened by use; the rest of the piece retains some traces of hammering.
Mulling Stone	Squat cobble; often circular.	Sometimes roughened; traces later obliterated by use polish.	Use-polish on the surfaces and extremities.
Smoothing Tool (Currying Muller)	Cobble of hard stone.	Traces of manufacture obliterated by traces of use.	Surfaces and extremities smoothed, lustrous, shiny.

cross-section. According to Gruet, this implement probably served in the manufacture of *sagaies* or *baguettes* (Gruet 1947:188).

3.2 Abri des Roches, Pouligny-Saint-Pierre (Indre)

This site yielded four polishers that date to the Aurignacian II. Two, with rather large dimensions, are in amphibolic schist, and the two others, which are smaller, are in sandstone. One of the two large ones has fine, longitudinal grooves (Septier 1905:267–268).

3.3 Grotte d'Isturitz, Saint-Martin-d'Arberesue (Pyrénées-Atlantiques)

Among the Gravettian assemblage are several small fragments of grey dolomitic limestone with natural grooves on one of their faces. These grooves are the imprint left from the dissolution of calcite veins (Saint-Périer, R. de and Saint-Périer, S. de 1952:113). Some

of these, however, seem to have been regularized, as if the natural grooves were used to sharpen bone tools, such as points or awls.

3.4 Abri Pataud, Les Eyzies-de-Tayac (Dordogne)

Movius mentioned the discovery, in the Périgordian VI (level 3) of several polishers. This level yielded some 60 fragments of bone or antler tines and 10 fragments of ivory. Therefore, the presence of polishers is not surprising (Movius and Vallois 1959:219; Movius 1960:380).

3.5 Grotte du Trilobite, Arcy-sur-Cure (Yonne)

The Abbé A. Parat (1902:11) mentioned a small polisher in soft yellow sandstone with several grooves, probably for the polishing of awls from level 3 (Gravettian).

3.6 Abri du Petit-Puyrousseau, Périgueux (Dordogne)

This site is Upper Périgordian with Gravette points, Noailles burins, and truncated elements (Sonneville-Bordes 1960:211). Féaux (1878:43) mentioned the discovery there of a polisher used, according to him, in hide preparation or in the manufacture of bone needles. His alternative hypothesis was that the block had grooves obtained through use.

3.7 Grotte d'Engis, province de Liège (Belgium)

Fraipont (1936:17, 21) mentioned the discovery of a small sandstone polisher in the upper ossiferous bed (Upper Périgordian with numerous backed truncated elements) (Otte 1979).

4. WORKING BONE OR IVORY: MALLETS

Mallets are flat, elongate cobbles commonly called *"compresseurs"* or *"retoucheurs"* in the literature. They show, on one or two extremities of their flat faces, numerous pit-like traces of impact. These pits are well defined and localized, often skewed toward the right side of the cobble. A thorough study of these implements by observation of traces of use and experimental reconstruction leads us to consider them to be small mallets that functioned by repeated light percussion in precision working of bone, ivory, or antler (de Beaune 1990; in press).

The small cobbles used as mallets seem to have made their initial appearance only with the Aurignacian. For the Chatelperronian, none of these objects has an incontestable stratigraphic provenience. Among the sites occupied in the Aurignacian I that have yielded this type of implement are La Ferrassie, La Grotte de la Barma-Grande, and Abri Castanet. For the Aurignacian II, III, and IV, these implements are attested to at La Ferrassie, and, for the Aurignacian II, at Isturitz (levels V and SII). Cobbles of this type are numerous during subsequent periods, up to and including the Mesolithic. For the Gravettian, there are examples in limestone from La Gravette (Lacorre 1960:329). Grotte d'Enlène, Abri de la Bergerie, La Ferrassie, Laussel, Abri Pataud, Laugerie-Haute Ouest and Est, Le Blot, and Isturitz. Outside of France, these objects are known from Engihoul in Belgium, El Castillo and Cueva Morín in Spain . . . (de Beaune, in press). It seems then, that this type of implement appeared during the Aurignacian, became considerably more widespread in the Gravettian, and must reflect a very common activity during this period.

4.1 Grotte de Pair-non-Pair, Marcamps (Gironde)

This site has yielded the only example that could be Mousterian, but of which the chronological attribution is doubtful. François Daleau mentions *"un petit galet plat (retouchoir)"* discovered in level F at the exterior of the cave, attributed to the Mousterian by A. Cheynier (Daleau 1897). Unfortunately, this piece was not found in the existing collection, and no further observations are possible. In any case, there is little to confirm its Mousterian attribution, as Lenoir (1983:107–108) has clearly demonstrated internal mixture in the lithic series from the Daleau excavations.

4.2 Grotte d'Isturitz

Two cobbles of this type come from level SIII (collection Saint-Périer). This level corresponds to a Typical Aurignacian occupation, with some Chatelperronian remains at its base. The pieces marked SIII, therefore, may just as well be Aurignacian as Chatelperronian, since the presence of these small cobbles in the Basal Aurignacian is incontestable.

4.3 Abri Castanet, Sergeac (Dordogne)

D. Peyrony found one example in the Aurignacian I level. This broken yellow limestone cobble was used on only one face, but on two extremities. Numerous traces of longitudinal scraping on a portion of its surface are evidence of another use, distinct from that which generated the formation of noncentral and lateral zones of impact (Figure 1.1). D. Peyrony (1935:422–424, Figure 15 no. 1) viewed this implement as a *"cousoir"*.

5. LEATHER AND HIDE WORKING: CUTTING PLATFORMS AND SMOOTHING TOOLS

One can reasonably suppose that Paleolithic people possessed at least two types of implements for working hide and leather: (1) supports for cutting and smoothing the hide and leather and (2) smoothing tools for smoothing the hide and eventually for smoothing down seams.

5.1 Cutting Platforms

Cutting platforms are rather difficult to distinguish from anvils, which often show (in addition to the characteristic traces of impact) stigmata that could have been acquired by use as a cutting platform. In any case, cutting platforms seem rare; it may be that wood was preferred.

5.1.1 Grotte de Saint-Jean-de-Verges (Ariège)

In the Typical Aurignacian, Vézian and Vézian (1966:105, 1970:45) discovered a quadrilateral-shaped schist plaque that has two flat faces covered with fine incisions, that they view as a "cutting board". It could be that this object was used as a platform for cutting hide, leather, or meat.

5.2 Smoothing Tools

Small cobbles of which all the faces were used, or of which a portion of their sides and extremities form a lustrous and polished bevel are rather frequent.

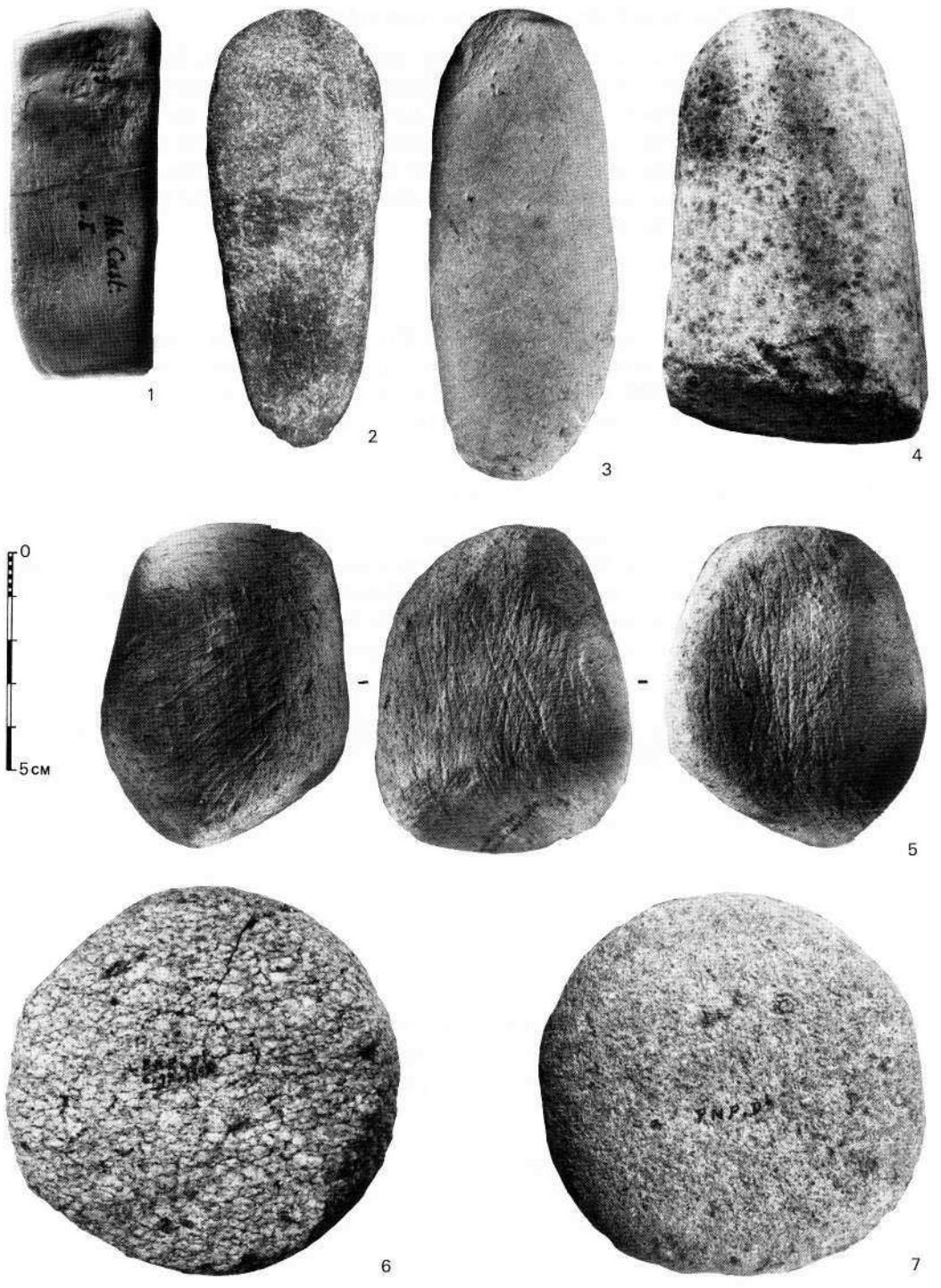

Figure 1. (1) Abri Castanet; (2, 3, 6, and 7) Pair-non-Pair; (4) Isturitz; (5) Petit Abri de Laussel.

5.2.1 La Ferrassie, Savignac-de-Miremont (Dordogne)

In Aurignacian level A, Peyrony noted a flat fragment of fine sandstone with one face polished by use that could have served to smooth hides (Capitan and Peyrony 1912:40; Figure 8).

5.2.2 El Pendo, Santander (Spain)

Level III yielded a Final Aurignacian apparently mixed with Typical and Middle Aurignacian, and showing notable Gravettian influences. Bernaldo de Quirós Guidotti (1982:110) mentions the presence in this level of several schist smoothing tools.

5.2.3 Grotte de Pair-non-Pair

Several small elongate cobbles with use-traces on one or two extremities in the form of a bevel were noted by Daleau. Two examples (M.A.) are presented here: (1) A small, flat, greenish cobble, perhaps in schist, that has traces of dulling and luster on its widest extremity (Figure 1.2); noted by Daleau (1889:VIII:22), this could be the same object mentioned by Cheynier as coming from level D and dating to his "Proto-Gravettien I" (Cheynier and Breuil 1963:64). However, Cheynier's chronological attribution must be taken with a large degree of reservation (Lenoir 1983). (2) The second smoothing tool from Pair-non-Pair is a flat, elongate cobble in clear grey rock that is facetted on its two extremities (Figure 1.3). It seems to come from level B, which is Gravettian according to Cheynier (Daleau 1889:VII:172–173; Cheynier and Breuil 1963:65), but the lithic series attributed to this level contains Gravette points as well as Chatelperronian knives (Lenoir 1983:192, 205). Therefore, it can be stated only that this cobble dates to the Chatelperronian or the Gravettian.

5.2.4 Grotte d'Isturitz

The collections of Saint-Périer and Passemard (M.A.N.) include several examples of cobbles with use-polish on their flanks or use-facets on one of their extremities. They are more abundant in the Gravettian than in the Aurignacian. One Gravettian example is an ophite or diorite cobble used as a hammerstone at the extremity opposite the facet (Figure 1.4).

5.2.5 Laussel, Marquay (Dordogne)

The Upper Périgordian of Laussel has yielded several small cobbles with traces of use in the form of a bevel on one or two extremities (M.A.). All are in fine-grained rock; five are white limestone, three are schist, and the last is basalt.

5.2.6 Grotte de la Forêt, Tursac (Dordogne)

This site has yielded an important series from the Périgordian V with Noailles burins. According to E. Peyrony (1934:429), a piece of very hard sandstone served as a mulling stone and polisher on its flat faces, and was used to regularize the surface of the cave ceiling or of blocks prior to execution of paintings.

5.2.7 Laugerie-Haute, Les Eyzies-de-Tayac (Dordogne)

From the Périgordian VI of Laugerie-Haute (level B), D. Peyrony and E. Peyrony (1938:15; Figure 5, no. 2) mention the discovery of small, flat, or cylindro-conical limestone cobbles with traces of use *"pour abattre les coutures des peaux en les lissant."*

5.2.8 Central and Eastern Europe

Outside of Western Europe, small serpentine cobbles used in such a way that a bevel was formed at one of their extremities are present in the Pavlovian of Předmostí (Czecho-

slovakia). Breuil indicated that these small cobbles were also frequent in the Gravettian of Willendorf (Austria). To him, they were *"brunissoirs"* used to soften hides (1924:520–522, Figure 2).

6. FOOD PREPARATION

6.1 Grindstones and Various Supports

Stone blocks are fairly widely known on Paleolithic sites, but they were often abandoned in the back dirt during older excavations, and studies of possible use-traces were thus rendered impossible. Therefore, objects recognized as grindstones are rare. True grindstones for which use as such is incontestable do not seem to exist prior to the Upper Paleolithic, but their seeming absence during the Middle Paleolithic may well be explained by poor conditions of conservation. Of interest is Kraybill's (1977:495) mention of several cases of active and passive grinding stones prior to the Upper Paleolithic. Two of them, from Florisbad (South Africa), were true grinding slabs, large in size. They date to 48,900 B.P. (Meiring 1956:pl. V, no. 4). This type of implement seems exceptional in the Middle Paleolithic, and the nature of these grinding traces must be verified before calling them grindstones. If these slabs did actually serve as grindstones, it is difficult to explain the hiatus that separates them from the more recent examples dated to 15,000 B.P., found in the Cave of Hearths, Transvaal (Mason 1962b:257–259). For Europe, Kraybill cites large Mousterian grindstones from Cueva del Castillo and Cueva Morín, Spain (Freeman 1964 cited by Kraybill 1977:498).

If it is true that these slabs or plaques with use-traces on a portion of their surface served to grind certain vegetable substances, they remain rare prior to the Upper Paleolithic. On the other hand, they are consistently represented from the Chatelperronian on.

6.1.1 Grotte du Renne, Arcy-sur-Cure (Yonne)

In the Chatelperronian (levels X to VIII), A. Leroi-Gourhan mentions the discovery of three flat granite grindstones (one of which is 30 cm in diameter) that are polished, even lustrous, from use. Another grindstone was found near a grinder worn by abrasion (Leroi-Gourhan 1964:36; 1965:77). According to Leroi-Gourhan (1965:77), while these grindstones might well have been used as palettes, it is equally possible that they served in food preparation, grinding of minerals, milling of wild grains, or treating softer substances such as dried meat.

6.1.2 Cueva del Conde or El Forno, Asturias (Spain)

Level B, which yielded an Aurignacian rich in denticulates, contained several grindstones (one quartzite and the rest sandstone) (Bernaldo de Quirós Guidotti 1982:48).

6.1.3 La Ferrassie

From level H (Aurignacian II), a flat piece of limestone, measuring 40 × 35 cm, displays a large, oval hollow inside which the surface is regular and polished. According to D. Peyrony (1934:53, Figure 52), this implement served to sharpen and polish certain objects. However, the presence of grooves is not mentioned, and the described morphological characters are those of a grindstone.

6.1.4 Grotte de Pair-non-Pair

A stationary grindstone in limestone is mentioned by Daleau (Cheynier and Breuil 1963:65). It comes from level B (Gravettian) according to Cheynier. The piece is similar

to two Gravettian grindstones from Cirque de la Patrie and Laussel. Although precise chronological attribution of the material from Pair-non-Pair is impossible, we can at least attribute this grindstone to the EUP (either Aurignacian or Périgordian).

6.1.5 Grotte de Fontenioux, Saint-Pierre-de-Maillé (Vienne)

A large, trapezoidal block of flint from the Périgordian IV was reduced and retouched with a deep notch at one extremity. Its precise use is unknown, but it could be a stationary piece used for grinding or for splitting bone or wood, in the manner of a large fixed chisel (Donici 1931:7-9, Figure 1).

6.1.6 Cirque de la Patrie, Nemours (Seine-et-Marne)

The grindstone from the Périgordian VI may be, according to Cheynier et al. (1963:110), exactly like Neolithic grindstones. This sandstone grindstone was worked by pecking. They suggest that it may have served to grind pigments, but no trace of color is explicitly mentioned.

6.2 Mulling Stones

Mulling stones seem to have made their appearance very early, but they only acquired a characteristic form, circular with two flat, parallel faces, in the Chatelperronian. In any case, as far back as the Mousterian, some cobbles of roughly globular form served to crush or grind, as is indicated by blunted ridges and clear traces of use-polish and luster on their faces. The presence of this type of mulling stone expanded during the second half of the Upper Paleolithic and became widespread in post-Paleolithic periods when it is associated with the characteristic grindstones used in the treatment of grains. The appearance of these mulling stones as early as the beginning of the Upper Paleolithic is remarkable, being that they are not associated with the domestication of grains.

6.2.1 Petit Abri de Laussel

From the Typical Mousterian, there is a small cobble of volcanic rock on which the ridges are very blunted, and on which one face seems to have been flattened by use (M.A.). Numerous quasi-longitudinal traces of scraping cover the entire surface (Figure 1.5). One can well imagine the use of this cobble as a mulling stone moved in a back-and-forth, rocking motion.

6.2.2 Pair-non-Pair

From couche D', Daleau mentions a flat cobble worn around its entire circumference (Cheynier and Breuil 1963:147). Lenoir (1983:192) attributes the assemblage from this level to a Chatelperronian occupation. In addition to its circumference, the faces of this circular mulling stone of gneiss (M.A.) were worn; the piece is perfectly regularized by use (Figure 1.6). From the same level, another mulling stone of microcrystalline rock, a kind of dolorite, shows, in addition to faces flattened by use, some traces of hammering around its entire circumference, perhaps due to preparation or stippling of the surface — frequent operations in more recent periods (Figure 1.7).

6.2.3 La Ferrassie

Several cobbles with much-used rounded surfaces that served as mulling stones came from the Aurignacian level A (Capitan and Peyrony 1912:40; Figure 7). Level F (Aurignacian I) yielded some ferruginous sandstone of which a portion of the surface is flattened (Capitan and Peyrony 1912:94; Peyrony 1934:48).

6.2.4 Abri du Roc de Combe-Capelle (Dordogne)

D. Peyrony (1943:7, 9) notes the presence of mulling stones in the Typical Aurignacian level C and in level E, which corresponds to a classic Périgordian IV.

6.2.5 Grotte d'Isturitz

There were several mulling stones in the Gravettian of Isturitz. One is a quartzite cobble that was worn on its two perfectly flat faces and around its entire circumference, which is facetted and lustrous (Figure 2.1).

6.2.6 Abri de Fongal (Dordogne)

Although the site was excavated by Hauser, D. Peyrony provided evidence of the presence of the Upper Périgordian at the site. This was mixed with a Typical Aurignacian level by Hauser's workers (Sonneville-Bordes 1960:97). Peyrony (1941:8) indicates the presence of several mulling stones at the site.

6.2.7 La Ferrassie

Upper Périgordian level C yielded two rounded stones of ferruginous sandstone with well-worn surfaces that served as "molettes" according to D. Peyrony (Capitan and Peyrony 1912:46; Figure 14).

6.2.8 Abri de Laugerie-Haute

D. Peyrony and E. Peyrony (1938:Figure 5, No. 3) mention several mulling stones, some in fine ferruginous sandstone, others in hard limestone, from the Périgordian VI (level B). These have *"leur champ aplati par usure,"* and were found in association with large flat, hard cobbles that served as stationary grindstones (D. Peyrony and E. Peyrony 1938:15).

6.2.9 Cirque de la Patrie

The excavations of the Périgordian VI level yielded, in the central sector (habitat), 18 circular sandstone mulling stones that were found in association with the grindstone mentioned above. While Cheynier et al. (1963:110) propose a use in conjunction with grinding coloring materials, they do not explicitly point out traces of pigment on the surface of these pieces.

6.3 Grinders

Grinders are differentiated from mulling stones by their form (generally elongate and not too circular or oval) and by their mode of use (the lateral faces are the working parts). It can be presumed that these objects were used as hand-held tools worked directly against various materials *("percussion posée")* in a back and forth movement, probably using two hands (de Beaune 1989a:56–57, Figure 13).

There is some evidence for grinding and mulling activities in the Middle Paleolithic. Kraybill (1977:495) cites a few cases of grinding stones from African sites. At Florisbad, several "pounders" date to 48,900 B.P. (Meiring 1956). Some grinders/pestles have been discovered at Molodova I (Ukraine) in Mousterian levels dating to 44,000 B.P. (Klein 1966 cited by Kraybill 1977:497). These are sandstone cobbles, sometimes spherical, sometimes flat and oval, from 8 to 10 cm in length. During the Gravettian, these implements were already very widespread and diverse.

6.3.1 Abri Blanchard, Sergeac (Dordogne)

This site yielded Aurignacian I and II assemblages, but Didon did not keep the industries from the two levels separate. He mentions the discovery in one of the levels of *"trois gros*

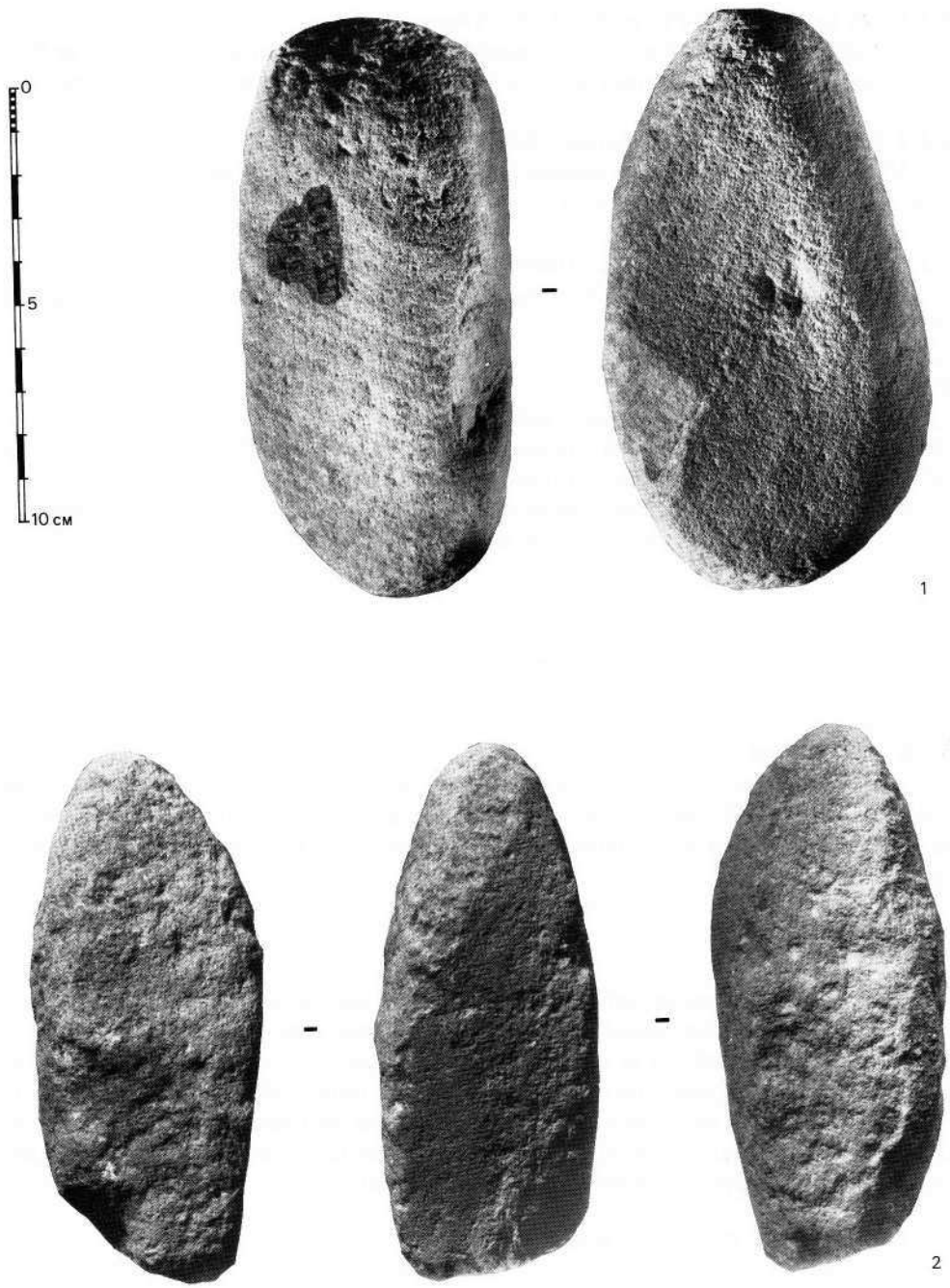

Figure 2. (1) Isturitz; (2) Laussel.

galets plats portant des traces de polissage et ayant pu être utilisés pour le broyage ou le malaxage de l'ocre'' (Didon 1911:345).

6.3.2 Grotte de Saint-Jean-de-Verges

Two rolled cobbles from the Typical Aurignacian, one of quartzite and the other of schist, seem to have served as grinders (Vézian and Vézian 1966:102; 1970:41).

6.3.3 Les Cottès, Saint-Pierre-de-Maillé (Vienne)

Breuil (1906:55) mentions the presence of several cobbles of quartzite or other hard rocks used as grinders or hammerstones in the Basal Aurignacian with split based points.

6.3.4 Grotte des Enfants, Grimaldi (Italy)

Villeneuve mentions several cobbles having been used for grinding in the Aurignacian with split based points (Villeneuve et al. 1906:II:270; Figures 80–82).

6.3.5 Abri de la Gravette, Bayac (Dordogne)

Some small elongate cobbles used as grinders were found in the Gravettian (Lacorre 1960:142).

6.3.6 Grotte d'Isturitz

In the Gravettian, several cobbles, most often in sandstone, served as grinders (M.A.N.). One of the cobbles has four worn faces, of which one seems to have been prepared by stippling of the surface. The faces display scattered traces of percussion in addition to use-polish, indicating its supplemental use in some sort of percussion work, perhaps during the course of the same activity that produced the smoothed areas (Figure 2.1).

6.3.7 Laussel

An unpublished grinder (M.A.) from the Upper Périgordian is a fragment of local limestone, elongate in form, with a quadrangular section at its base. Three of its faces have clear traces of use-polish, and seem to have been prepared by stippling (Figure 2.2).

6.3.8 Abri Pataud

Movius notes the presence of several grinders in the Périgordian VI (level 3) (Movius and Vallois 1959:219). Many river cobbles with traces of fire action were found in the same level. According to Movius (1960:380), their use was probably associated with culinary activities.

6.4 Pestles

Pestles, also of elongate form, were used, not on their faces, but on their extremities, which are therefore characterized by the presence of impact-traces and use-facets.* These cobbles are either cylindrical or in the shape of truncated cones reminiscent of Polynesian pestle-paddles that are used to crush the pulp of certain fruits. Cylindrical pestles appear in the Aurignacian; they are fairly widespread, especially in the Upper Périgordian. Pestles of the other subtype, in the shape of truncated cones, seem to be rarer than cylindrical ones, and do not seem to appear before the Upper Périgordian.

6.4.1 Grotte de la Font-Yves, Brive (Corrèze)

Five or six elongate cobbles from the Typical Aurignacian have a heavily worn extremity that is flat in section (Bardon and Bouyssonie 1920:12). While, according to the authors, these stones were probably *''broyeurs d'ocre''*, they do not explicitly state the presence of pigment on the worn surfaces.

6.4.2 Grotte d'Isturitz

The site yielded several examples of pestles in the Aurignacian and Gravettian (M.A.N.).

*There is also a tool that is intermediate between pestles and grinders. These are pestle-grinders that are more squat than pestles and were used indifferently on their extremities (like pestles) and on their faces (like grinders). Pestle-grinders dating to the beginning of the Upper Paleolithic have been observed, notably at Isturitz (M.A.N).

6.4.3 Grotte de Fontenioux

From the Périgordian IV, a cobble in volcanic rock has the form of a large pestle and displays some use-traces on two extremities and on one side. According to Donici, this piece served as a hammer and as a pestle. It undoubtedly is the active complement of the flint anvil (see Section 6.1.5 in this chapter) that was found nearby, and was perhaps used for breaking bone, wood, or other materials (Donici 1931:9–10, Figure II).

6.4.4 Grotte de l'Observatoire

A limestone cobble of very elongate form and with its two extremities faceted and flattened by use came from hearth A (Upper Périgordian) of the upper stratigraphic group (Barral 1959:103; Boule and Villeneuve 1927:101, Pl. XXIV, No. 14).

6.4.5 Grotte Lacoste, Brive (Corrèze)

From the Upper Périgordian, an elongate cobble that was heavily used transversly at one extremity is similar to the examples from Font-Yves (Bouyssonie and Bardon 1910:25).

6.4.6 Laussel

At least two cobbles in the shape of truncated cones, dating to the Upper Périgordian, could have served as pestles. One of them (Figure 3.3), in limestone (M.A.), has significant use-traces at its base (de Beaune 1989a:53, Figure 12, No. 3). It was associated with a plaque that could have served as a grindstone (Lalanne and Bouyssonie 1946:122; Figure 80). I could not locate another small block of comparable form reported by the excavators (Lalanne and Bouyssonie 1946:152, Figure 116).

6.4.7 Cirque de la Patrie

In the central sector (habitat) of the Périgordian VI were found some conical, pecked *''broyeurs''* in sandstone (Cheynier et al. 1963:110).

6.4.8 Molodova I (Ukraine)

The middle horizon, excavated by Botez and attributed to the Gravettian, has yielded *''un pilon en grès avec son mortier, une plaque rectangulaire de marne''* (Morosan 1938:97). The author points out several grinders that come from Gravettian sites concentrated on the right bank of the Dniestr, but he does not describe their precise form (Morosan 1938:86, 88).

7. PREPARATION OF PIGMENT: PALETTES, OCHER RECEPTACLES, AND PIGMENT GRINDERS

Palettes form a subset of the objects classified as grindstones. They are differentiated by the presence of traces of pigment that permit their association with an activity tied to the preparation of colors (kneading, mixing, etc.). Ocher receptacles represent a particular category of container. The traces of pigment in their concavity imply that they served in the storage and preparation of pigment.

It is known that some pigments already were used during the Mousterian. Pigment was even prepared by reduction to powder, as is attested by the ocher receptacle discovered by Combier in the upper stratum III of the Grotte de Néron (Ardèche) attributed to the Ferrassie Mousterian and dated to 30,000 years ago. This limestone receptacle, which is regularized at its base, has a central pit tinted with pulverised hematite (Combier 1989:65). As noted above, Kraybill cites several examples of grinding stones prior to the Upper Paleolithic, of which some are tinted with pigment (Kraybill 1977:495). Among others are those from

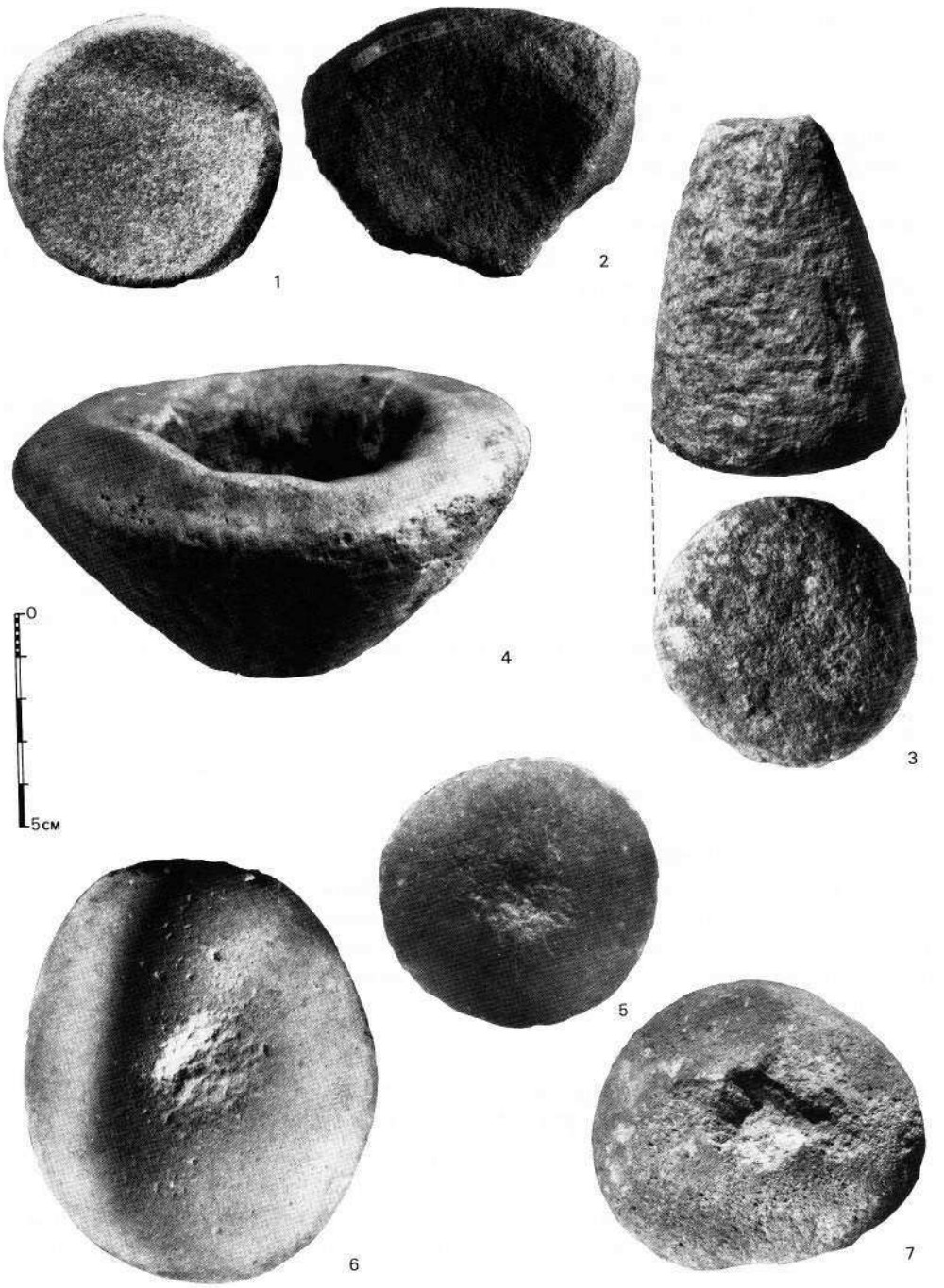

Figure 3. (1, 6, and 7) Isturitz; (2) Laugerie-Haute Ouest; (3 and 4) Laussel; (5) Pair-non-Pair.

Bushman Rockshelter, Eastern Transvaal, that come from a level dating to 42,950 to 46,950 B.P. (Louw 1969:47). However, this type of implement remains exceptional during the Middle Paleolithic.

The use of ocher seems widespread at certain Chatelperronian sites. Palettes, ocher receptacles, and color grinders are abundant in the Aurignacian. During the EUP, the preparation of ocher was geographically widespread.

7.1 Grotte du Renne, Arcy-sur-Cure

From Chatelperronian levels X to VIII, numerous fragments of ocher and plaques of hematite form, at one and the same time, a source of pigment and palette (Leroi-Gourhan 1965:77). To Couraud (1988:54), the traces of rubbing, scraping, and polish observed on certain blocks of pigment might imply an intensive working of hides: degreasing, tanning, softening, burnishing. Other than the pigment itself, the site has yielded several cobbles stained with ocher that evidently served as pigment grinders (de Beaune, study in progress).

7.2 Grotte de la Barma-Grande, Grimaldi (Italy)

The Aurignacian I level has yielded several "grinders", some of which display traces of pigments. Octobon (1952:7, 10) also indicates the presence of a large limestone anvil with a use-depression reddened with ocher that could have served as a palette. He also mentions the presence of an ocher-reddened sandstone cobble that he describes as a container or mortar used to work ocher. He states elsewhere that this level yielded a considerable mass of red ocher and numerous tools reddened by ocher.

7.3 Grotte du Trilobite

From level 2, an Aurignacian level at the base of which there were some Chatelperronian traces, Parat mentions an ovoid cobble of hard limestone with two large striated facets partially reddened by pigment. He sees this as *"un pilon à triturer"* (1902:7).

7.4 Grotte de Pair-non-Pair

This site yielded a schist plaquette (M.A.) found in 1899 by Daleau in level KD'. Although Cheynier argued this to be an Aurignacian occupation, Lenoir (1983:191–192; 204–205) has shown that the industry contains some Chatelperronian knives and typical Aurignacian pieces associated with Gravette points. Therefore it corresponds to a mixed occupation of the EUP. This plaquette was used on its gently concave obverse surface which displays clear traces of red pigment (Figure 4.1). Level KD' yielded abundant evidence of pigment (Cheynier and Breuil 1963:60).

7.5 Abri des Roches

In Aurignacian II, Septier (1905) mentions the discovery of *"cailloux roulés"*, still covered with red color that indicates they are grinders, as well as schist plaques coated with a layer of blood-red color. The site also yielded numerous fragments of pigments and two receptacles with traces of pigment matter that could have served as *"mortiers"* (Septier 1905:267; de Beaune 1987a:223). Charbonnier (1962:476–477) also mentions, from the same level, several receptacles and cobbles covered with ocher, of which two are rounded by pecking. He also points out large, flat amphibolic schist cobbles that served as palettes, numerous remains of pigment, and some small plaquettes of fine sandstone and of marlacious limestone with traces of polishing.

7.6 La Ferrassie

The surface of a large block of limestone from the Aurignacian II (level H) (M.N.P.) is stained with traces of pigments (Figure 4.2). It may have served as a palette for colors (D. Peyrony 1934:53; Figure 53 No. 1; de Beaune 1987a:169, Pl. X No. 3). Another

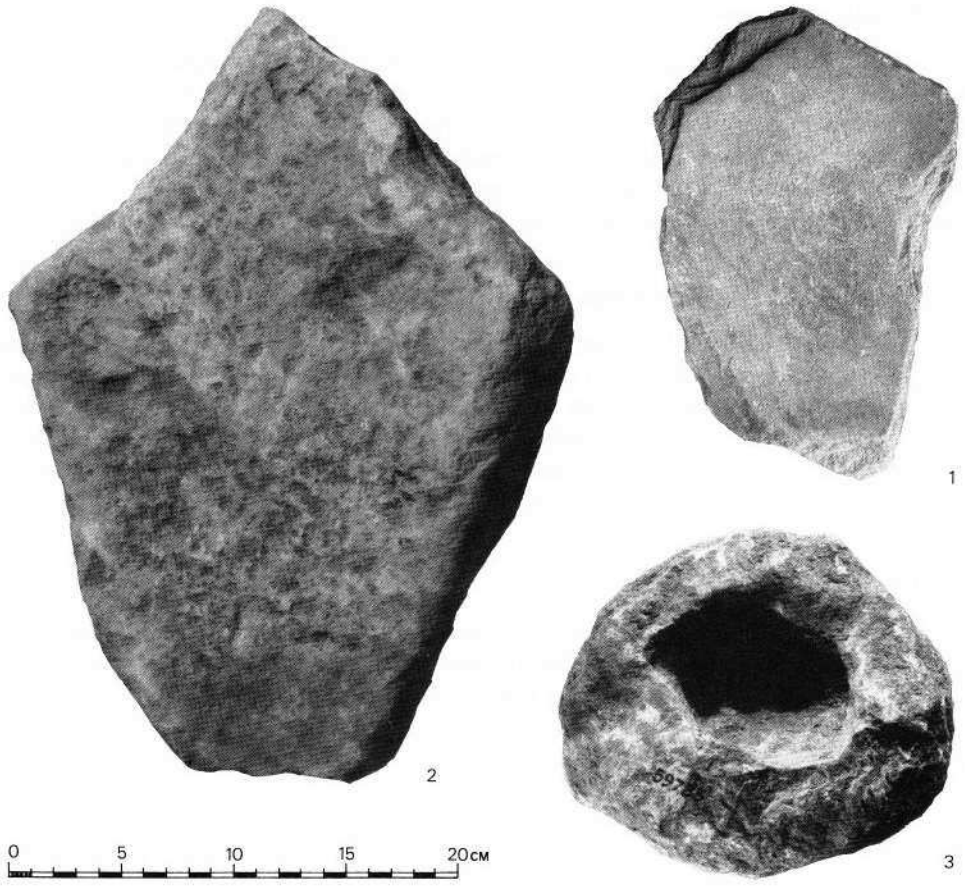

Figure 4. (1) Pair-non-Pair; (2 and 3) La Ferrassie.

quadrangular limestone block 30 cm across (level H', Aurignacian III) has a regularized surface with some large smears of pigment (D. Peyrony 1934, Figure 70).

7.7 Grotte d'Isturitz

In both the Aurignacian and Gravettian, Saint-Périer and Passemard found several cobbles and fragments of plaquettes with traces of pigment. One of them, a fragment of a fine-grained sandstone plaque dating to the Middle Aurignacian (level V), has been illustrated elsewhere (de Beaune 1989a:33, Figure 2 No. 1).

7.8 Grotte "164" Le Bouil-Bleu (Charente-Maritime)

This site yielded two blocks with polished faces and traces of red ocher of which one, in limestone, served as a "*meule à malaxer l'ocre rouge*" (Clouet 1927; 1934:178). I initially considered this implement to be an ocher receptacle, but, after comparison with other implements of which the use is associated with the preparation of colors (de Beaune 1987a:164, Pl. XII–3), it now seems more logical to consider it to be a palette. It was associated with tools characteristic of a Middle Aurignacian (Geay 1957). The second block also has one face that was polished by kneading red color (Clouet 1927:4).

7.9 Grotte "Chez Serre", Noailles (Corrèze)

In level B, securely dated to the Périgordian IV with Gravette points, was found a range of implements for the preparation of pigment: *"deux broyeurs à couleur, une plaquette de calcaire et une sorte de canif finement retouché en silex, avec traces d'ocre"* (Andrieu and Dubois 1966:CLXXVI–CLXXVII).

7.10 Grotte de Fontenioux

From the Upper Périgordian (see Section 6.4.3 in this chapter), Donici (1928–1929:190) mentions the presence of a polished schist plaque and a used cobble that still have traces of red ocher.

7.11 Roque-Saint-Christophe, Saint-Léon-sur-Vézère (Dordogne)

In level A, of which the occupation seems to correspond to the transition from Périgordian IV to V, D. Peyrony (1939:12) found a large, flat, reddened cobble that served as a *"meule à couleur"*, three small quartzite cobbles with ocher on a surface that perhaps were used to grind the colorant against the grindstone, and some bits of red and black colorants.

7.12 Abri Labattut, Sergeac (Dordogne)

Three small limestone receptacles came from the Upper Périgordian with Noailles burins. Two of them, partially shaped by pecking, have traces of use as ocher receptacles (de Beaune 1987a:176, Figure 77 No. 1, 3).

7.13 Grotte du Trilobite

Several color grinders and a concave plaque of hard sandstone that functioned, according to Parat (1902:11; Breuil 1918:317), as a mortar for crushing mineral pigments came from the Gravettian (level 3).

7.14 Grotte de la Betche-aux-Rotches, Spy (Belgium)

From the *"premier niveau ossifère"*, Loë and Rahir (1911:XLVI) indicate two fragments of sandstone plaques, of which one is lightly tinted red on one side. The level in which they were found corresponds to a northern facies of the Upper Périgordian Va, situated around 26,000 B.P. (Otte 1979:310). Otte also mentions four sandstone (psammite) plaquettes; two display traces of use, and another has one face impregnated with red ocher (1979:308) and probably served as a palette for colors. Two of these are probably the same ones mentioned by Loë and Rahir (1911).

7.15 Grotte de la Font-Robert, Bassaler (Corrèze)

A. Bouyssonie, J. Bouyssonie, and Bardon (1920:12) point out an ocher grinder from the Upper Périgordian. It is similar to those of the Typical Aurignacian from the Grotte de la Font-Yves, except that the flattened extremity is very strongly colored in red.

7.16 Abri du Ruth, Tursac (Dordogne)

From the Upper Périgordian (level D), D. Peyrony (1909:174) recovered a large, flat quartzite cobble with one face completely stained with ocher; probably a palette. Not far away was another round cobble with traces of color that served, according to Peyrony, as a grinder.

7.17 Abri de Laugerie-Haute

D. Peyrony and E. Peyrony (1938:15–16) note the presence in level B (Périgordian VI) of schist plaques covered with red ocher that served as palettes. In addition, an ovoid quartzite cobble, that served as a hammerstone at one extremity, is entirely stained with red ocher, indicating that it also served as a grinder of pigments.

7.18 Laussel

A limestone rock from the Upper Périgordian has a hollow that contains ocher. On each side of this depression, two areas are polished and slightly crushed; this piece, therefore, seems also to have served as a polisher (Lalanne and Bouyssonie 1946:122, Figure 79). Another receptacle (M.A.) is made of a fossil polyper. The ovoid hollow seems natural, contrary to Lalanne's view (Lalanne and Bouyssonie, 1946:122, Figure 81). It has traces of pink pigment, that are particularly abundant on its sides (Figure 3.4). In addition, Lalanne and Bouyssonie (1946:122, Figure 80) note two plaques that probably served as *''meules à couleur''*.

7.19 Grotte Lacoste

In the Upper Périgordian, a large sandstone plaque with one face strongly colored red, was recovered by A. Bouyssonie, J. Bouyssonie and Bardon (1910:25).

7.20 Předmostí

During the EUP, the preparation of ocher was geographically widespread. For example, in the Pavlovian at Předmosti (Czechoslovakia), Breuil (1924) pointed out the presence of worn and striated schist plaques that *''ont servi à la trituration de l'ocre et à son malaxage''* (1924:522).

8. STORAGE OF VARIOUS INGREDIENTS: CONTAINERS

Stone containers seem to appear first in the Aurignacian, although there may be examples as early as the Middle Paleolithic; the ocher receptable from the Grotte de Néron, at Soyons, was discussed above (Section 7). Containers of undetermined function, sometimes too hastily interpreted as lamps, exist in small numbers at the beginning of the Upper Paleolithic. There is one Chatelperronian example (Grotte de la Roche-au-Loup, Yonne), one from the Aurignacian I (Abri Pasquet, Dordogne), two from the Aurignacian II (La Ferrassie), one from the Aurignacian IV (La Ferrassie), two others attributed merely to the Middle Aurignacian (La Boissière and La Ferrassie), two attributed to the Gravettian (level IV of Isturitz), and finally two Upper Périgordian examples (Abri du Rocher, Yonne) (de Beaune 1987a). I will provide detail on only one example from this series, La Ferrassie.

8.1 La Ferrassie

A receptacle (M.A.N.), published on two occasions by D. Peyrony (Capitan and Peyrony 1912:94–95; Peyrony 1934:48) and reproduced by me in 1987 (de Beaune 1987a:170, Figure 75 No. 2), disappeared and was rediscovered by J.-J. Cleyet-Merle in 1987 in the storeroom of the museum. It comes from level F of the Grand Abri (called level 6 in 1912), and dates to the Aurignacian I. This oval receptacle in local Coniacian limestone seems to have been slightly trimmed around its circumference (Figure 4.3). Contrary to D. Peyrony (1934), it does not display any hint as to its precise function. The irregular surface of its oval depression precludes the possibility that it served as a mortar, since this use would have left diffuse traces of percussion. There are only traces of pecking that correspond to the shaping of the receptacle rather than to its use.

9. LIGHTING: LAMPS

Lamps seem to appear rather late in the Upper Paleolithic, there being no incontestable examples prior to the Upper Périgordian. Several stones with depressions are known from the Aurignacian, but traces supporting their interpretation as lamps are tenuous. For the Mousterian, only one lamp has been claimed, but it has been shown elsewhere that its attribution to the Mousterian seems very doubtful (de Beaune 1987a:233–234). This is a stone receptacle from the open-air site of Puits Goyen, Sannois (Val-d'Oise). In addition to the doubts concerning provenience already expressed, one cannot rely on the thermoluminescence dating used to date this object because this method is only applicable to objects that were subjected to temperatures of at least 450° to 500°C (or to lower temperatures, but for an extended period of time). Experiments have shown that the temperature of this lamp did not exceed 195° (de Beaune 1987a:119).

According to criteria discussed elsewhere (de Beaune 1987a, 1987b), the objects from the beginning of the Upper Paleolithic capable of having served as lamps can be classed by degree of probability. It is doubtful that two are lamps: Saint-Jean-de-Verges and Pair-non-Pair. Six are possibly lamps: two from the Gravettian of the Abri de la Gravette, two from the Aurignacian II of La Ferrassie, one from the Upper Périgordian of Arcy-sur-Cure, and one from the Périgordian V with Noailles burins of Saint-Jean-de-Verges. Five were probably lamps: one from Pair-non-Pair; one from the Gravettian of Isturitz (level IV); and three from the Upper Périgordian (Abri du Flageolet I, Abri Labattut, and Grand Abri de Laussel) (de Beaune 1987a).

Only one object displays incontestable traces of use as a lamp. This is a fragment of a soft, ferruginous sandstone receptacle from level B of Laugerie-Haute Ouest that is well dated to the Périgordian VI (M.N.P.). It was entirely shaped and regularized by abrasion (Figure 2.2). In its hollow and on one portion of the curved edge, there are traces of blackening and reddening that were undoubtedly left when it was used (de Beaune 1987a:187; Figure 80 No 2; Peyrony and Peyrony 1938:16, Figure 5 No. 1). This is the oldest certain lamp for which there is a secure date.

10. MULTI-FUNCTIONAL OBJECTS

Cobbles or blocks with various use-stigmata revealing that they served several functions, either in turn or after reworking of the implement for a new function, appear very early in the archaeological record. This type of multi-functional use is well known ethnographically (de Beaune 1989b, 1991).

10.1 Les Festons, Brantôme (Dordogne)

The summit of the lower terrace of the site yielded a mixed industry named the *''Rebièrien''* by Pittard. This mixed assemblage is in fact certainly due to the tumbling of a part of the Typical Aurignacian level from the B terrace onto the C terrace situated beneath it and occupied during the Mousterian. From this terrace came a heavy, quadrangular cobble of very sturdy gneiss with battered sides. Its upper face, which is smooth but not polished, is hollowed out by a small pit, while the lateral edge was used for percussion (Pittard and Saint-Périer 1955:115, Figure 54 No. 4). According to Pittard, the central pit probably served to hold the thumb in place when the cobble was used as a hammerstone (regarding this point, see de Beaune 1989a:40).

10.2 Grotte de la Barma-Grande, Grimaldi

The thick occupation level attributed to the Aurignacian I with split based points has yielded numerous cobbles described by Octobon (1952:7) as *''broyons''* or *''broyeurs''*. Some of them have traces of pigment, while others display, in addition to traces of use in smoothing, stigmata of use as hammerstones, anvils, and, in one case, as a polisher.

10.3 Termo-Pialat, Saint-Avit-Sénieur (Dordogne)

This site yielded an Aurignacian industry characterized by a large number of thick endscrapers and denticulates and by the large size of the tools (Sonneville-Bordes 1960:117). According to Tarel (1914:7), the surface of one of the quartzite hammerstones is polished by use on two opposing surfaces and also served as a *''molette''*.

10.4 Abri de Téoulé, Cassagre (Haute-Garonne)

A very large, ovoid cobble probably dates to the Périgordian V with Noailles burins. Use as a grinder or mulling stone induced an artificial flattening of its two principal faces; it apparently also served as a hammerstone on its two extremities, as is evidenced by some traces of impact, and as an anvil on the intermediate zone as well as on the artificially flattened portion of its most bulging face (Robert et al. 1952:84).

10.5 Grotte d'Isturitz

The site of Isturitz produced a number of cobbles with multiple uses. One Gravettian example is a quartzite cobble that served, not only on the center of each of its faces (as an anvil or hammerstone as indicated by numerous pit-like traces of impact), but also at its two extremities and along the length of one of its flanks as a hammerstone (Figure 3.6).

10.6 Roc-de-Sers, Sers (Charente)

A rounded, flat, oval limestone block retouched around its entire circumference is among the Upper Périgordian assemblage. One of its faces was not only percussion damaged, but was also worn and smoothed (Favraud 1908:417). Presumably, this implement served as a support for several activities, for example, as a grindstone and an anvil.

10.7 Laussel

An elongate cobble of quartzitic sandstone from the Upper Périgordian has, in addition to numerous traces of use on its faces and extremities, an engraved decoration (de Beaune

1989c). Examination of the piece led to the formulation of the hypothesis of at least two different uses: (1) as an anvil or passive support, and (2) as a pestle or some form of active object.

11. UNKNOWN FUNCTION

11.1 Cobbles with a Central Pit

Whether cobbles that display a pit from use on one or two faces played an active or passive role is uncertain. Both modes of use are known, and it is even possible that certain cobbles of this type served as anvils, while others were used as hammerstones or hammers. This type of cobble is known among populations widely separated in time and as far afield as America, Africa, and Australia (de Beaune 1989a:35–38). These centrally pitted cobbles seem abundant in the Lower Paleolithic, then become rarer in the Middle Paleolithic. After a period of relative abundance at the beginning of the Upper Paleolithic (Aurignacian and Périgordian), they seem rare once more, and almost disappear in the Solutrean and Magdalenian and reappear in the Azilian and Mesolithic when they again become abundant. This might be viewed as supporting the idea that their use was associated with the consumption of nuts, whose presence corresponds to periods of warming (de Beaune 1989a:35–38).

11.1.1 Pair-non-Pair

One circular quartz cobble from this site is similar to the Brazilian cobbles that served as quebra-cocô (Figure 3.5). Small in size, it has traces of percussion around its entire circumference and in the center of each face where these traces form depressions (de Beaune 1989a:38, Figure 2 No. 5). It comes from level 1–2, and is dated by Cheynier to the Chatelperronian, although Lenoir (1983:191–192, 204–205) has shown that this level yielded some Chatelperronian knives in association with typically Aurignacian tools.

11.1.2 Hui, Beauville (Lot-et-Garonne)

Le Brun (1986:41–43, Pl. 2) notes two quartzite cobbles of this type from this Aurignacian I open-air site: one has a single pit; the other has a pit on each face.

11.1.3 Toulousette, Beauville (Lot-et-Garonne)

The Aurignacian I of this site has yielded two additional examples in quartzite, both with a pit on each face (Le Brun-Ricalens 1988:326,330).

11.1.4 "Lasgardes Haut", Granejouls (Lot)

This site, also Aurignacian I, yielded an example in quartzite with a pit on one of its faces, similar to those from Hui (Le Brun-Ricalens 1988:355).

11.1.5 Grotte de la Barma-Grande, Grimaldi

The Aurignacian I level yielded diverse pitted cobbles that often display additional traces of use (use-polish or traces of impact), suggesting they also served as hammerstones, anvils, grinders, and even as a palette in one case (Octobon 1952:7).

11.1.6 Grotte d' Aurignac (Haute-Garonne)

The Aurignacian I from this eponymonous site yielded a small cobble of this type, hollowed out in a pit on each face. Lartet (1861:250) thought that these depressions were designed to facilitate gripping of the object.

11.1.7 Les Cottés

In the Basal Aurignacian with split based points, a granulite cobble with a square cross-section of which the two extremities often served to hammer and to crush, has a pit-like depression obtained by pecking in the center of one of its faces (Breuil 1906:55).

11.1.8 Grotte d' Isturitz

The apparent chronological concentration of these different pitted cobbles at the beginning of the Aurignacian should be viewed with caution, since the site of Isturitz yielded numerous cobbles of this type from various levels. From just the Saint-Périer collection (M.A.N.), there are 5 Magdalenian, 15 Gravettian, and 6 Aurignacian examples. Illustrated here is a Gravettian example in quartzitic sandstone that, like a good number of these cobbles, also served as a hammerstone on its sides (Figure 3.7).

11.1.9 Grotte de Saint-Jean-de-Verges

From the Périgordian V, there are at least two cobbles of this type. An oval one in fine sandstone also served as a mulling stone or a smoothing tool on two extremities as is indicated by the formation of a bevel (Vézian and Vézian 1966:120, Figure 16 No. 1; 1970:65, Figure 16 No. 1). The other, which is discoid and of mineral iron, also was used for percussion on its extremities (Vézian and Vézian 1966:120; 1970:67).

11.2 Pitted Blocks

Blocks with multiple pits most often have been included with artistic remains on the basis of the association of pits with animal figures or signs. However, the existence of functional pitted blocks in modern or historic populations (de Beaune 1989a:40), leads me to include these blocks (of as yet undetermined use) in this chapter. It is, in fact, probable that artistic and functional blocks coexisted, and that they have been confused in publications. Some of them are certainly decorative supports, and others are supports on which functional activities (for example, the cracking of nuts) were executed. Pitted blocks are known as early as the Mousterian, the most famous example being that from La Ferrassie found in association with the burial of a Neanderthal child (D. Peyrony 1934:34). However, these blocks seem particularly abundant at the beginning of the Upper Paleolithic. These blocks seem rarer in the Upper Périgordian than in the Aurignacian. Pitted blocks also exist in the Magdalenian. In certain cases, as at Limeuil (Capitan and Bouyssonie 1924, Pl. X), the association of pits with engraved lines seems decorative. In other cases, as in certain examples from Abri Reverdit, the pits seem to have been created through use (de Beaune 1987a:197–198, 1989a:40).

11.2.1 Abri Castanet

Several pitted blocks were recovered from the Aurignacian I level of this site (Peyrony 1935:436).

11.2.2 Abri Blanchard

This site, neighboring and perhaps contemporary with Abri Castanet, also yielded some of these blocks, dated to the Typical Aurignacian or the Aurignacian I (Didon 1911:342–344).

11.2.3 Abri Cellier, Tursac (Dordogne)

Collie discovered two pitted blocks in his level II, dated to the Aurignacian I (Peyrony 1946:297–298; de Beaune 1987a:167, Pl. IX).

11.2.4 La Ferrassie

D. Peyrony (1934:67–69; 75–78) published several pitted blocks from the Middle Aurignacian levels, including the Aurignacian II (level H) limestone palette already presented that has a small, off-center pit of unknown use (Figure 4.2).

11.2.5 Laussel

This site has yielded several Upper Périgordian examples of pitted blocks (Lalanne and Bouyssonie 1946).

11.3 Disks

Stone disks (limestone or sandstone) of around 20 cm in diameter and with a large central perforation seem characteristic of Central Europe. Among the Moravian sites that have yielded these objects, are the Pavlovian site of Předmostí (Breuil 1924:520–523; Valoch 1960) and the Aurignacian (?) burial of Brno II (Makowsky 1892; Breuil 1924:520–523). One such object was also found at Pavlov (Klima 1984) and in the region of Zdánicky (Svoboda, *in litteris,* October 1989). According to R. White (1988), Dolní Věstonice has yielded identical disks. It may be of interest to note that Octobon (1952:21) found a small, flat limestone disk with beveled edges near a skeleton in the Périgordian of the Grotte de la Barma-Grande.

The use of these disks remains a mystery for the moment (were they even utilitarian?). I emphasize that their presence seems limited to the EUP — Aurignacian and Gravettian — and that they appear to be very rare in Western Europe. Bégouën (1930) mentions some pierced stone disks in the Grotte de Bédeilhac, but they are more recent — from the Magdalenian IV or the Final Magdalenian.

12. CONCLUDING REMARKS

What can we conclude from all of this? The transition from the Middle to the Upper Paleolithic is not so sharp as previously imagined, a sentiment evident in the most recent discussions of the subject (White 1982; Mellars 1989). The present study of a particular category of material remains confirms that almost all the technology of the Upper Paleolithic was already sporadically present, if poorly developed, as early as the Middle Paleolithic. While there are many technological innovations in the EUP, we need to recognize that this period is characterized by the development and intensification of a certain number of activities that were already present in the Middle Paleolithic.

Only two activities really seem to make their first appearance in the Upper Paleolithic: (1) On one hand, there is bone, antler, and ivory working which saw the appearance of a specialized tool kit. (2) On the other hand, there is the use of stone lamps that seem not to appear until the Aurignacian, perhaps even as late as the Upper Périgordian.

Inversely, it seems that the exploitation of vegetal resources existed as far back as the Lower Paleolithic, even if it was more intensive in the Upper Paleolithic. Tools related to flint-working certainly appear as early as the Lower Paleolithic. In some cases, there is even a diminution of certain implements in the Upper Paleolithic, such as in the decrease in hard hammers in favor of soft hammers between the Middle and Upper Paleolithic. Other types of activities, such as the preparation of pigments, while already present in the Middle Paleolithic, became more widespread and diverse in the Upper Paleolithic. For still other activities, in particular the working of leather and hide, the evidence is too sparse to allow us to monitor their first appearance. It is probably also the case that wooden implements

were used for such activities. The same can be said for containers; the use of containers of hide, wood, and other perishable materials is highly probable.

13. ACKNOWLEDGMENTS

I would like to extend my gratitude to the people who authorized my study of the collections for which they are responsible: Jean-Pierre Mohen for the M.A.N., Jean-Jacques Cleyet-Merle for the M.N.P., and Alain Roussot for the M.A.

I also want to thank Heidi Knecht who spent long hours, not only translating this text to English, but also adapting it for an Anglophone public.

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