Chrono-cultural Considerations of Middle Paleolithic Occurrences at Manot Cave (Western Galilee), Israel

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Abstract

Manot Cave is situated within the Levantine Mediterranean region. The site has an extensive Upper Paleolithic sequence, also manifesting the presence of a Middle Paleolithic occupation. This study will present the Middle Paleolithic assemblage from the cave. One of the Levallois centripetal cores from the assemblage exhibits, what seems to be non- utilitarian engravings on its cortex covered dorsal face. These incisions were performed prior to the last removals from the flaking surface. The Levallois techno-typological traits of the artifacts indicate their resemblance to other mid-late Middle Paleolithic techno-complexes present in the region.

Keywords

Manot cave • Levallois technology • Engraved artifact • Mediterranean • Levant

4.1 Introduction

The Mediterranean region was extensively occupied during the Middle Paleolithic, with a probable increase in population size in the later part of the period (Lieberman and Shea 1994; Hovers 2001; Shea 2003; Meignen et al. 2006). The lithic technologies varied from unidirectional convergent methods with short Levallois points (Bar-Yosef and Meignen 1992) to similar reduction strategies exploited to produce elongated Levallois points (Hovers 1998; Henry 2003; Groucutt 2014; Sharon and Oron 2014). Industries exhibiting more of a bidirectional and centripetal method of Levallois production are also present (Gilead 1980; Gilead and Grigson 1984; Marks and Volkman 1986; Hovers 2009; Malinsky-Buller et al. 2014). Behavioral variability among Middle Paleolithic people of the Mediterranean is also expressed via the high diversity of hunting areas exploited (Hartman et al. 2015), varied subsistence strategies utilized (Malinsky-Buller et al. 2014), and use of shells, ochre and other symbolic artifacts (Bar-Yosef Mayer et al. 2009; Hovers et al. 1997, 2003). It has been postulated that the differences between human groups in the Middle Paleolithic, reflected in their technological skills and preferences,

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allowed for the growth of technological innovations in the Initial and Early stages of the Upper Paleolithic (Hovers 1998; Belfer-Cohen and Goring-Morris 2007, 2009; Belfer-Cohen and Hovers 2010).

The recent discovery and dating of Manot 1 calvaria is an important contribution to the ongoing debates concerning modern human dispersalsout of Africa and their contemporaneous inhabitants of the Levantine Mediterranean region with Neanderthals (Hershkovitz et al. 2015). The crusts on the skull were dated by U/Th to a minimum age of 54.7 ± 5.5 ka (arithmetic mean ±2 standard deviations) (Hershkovitz et al. 2015). The partial skull was found in a side chamber of the cave resting on a flowstone ledge. Thus, the minimum age closely reflects the true age of the skull. The Manot 1 calvaria date places it close to the supposed transition between the Middle and Upper Paleolithic periods (Rebollo et al. 2011; Bosch et al. 2015). The current contribution focuses on the Middle Paleolithic artifacts found at different locations in the cave. The aim of the paper is to characterize (technologically and typologically) the Middle Paleolithic industry at Manot Cave and discuss its reference in comparison to other assemblages from the Mediterranean region.

4.2 The Site and Its Setting

Manot is an almost sealed karstic cave, located 5 km east of the current Mediterranean shoreline, some 40 km north east of Qafzeh Cave, and almost 50 km northwest of the Mt. Carmel sites (Fig. 4.1). Manot Cave is situated on the southern slope of a limestone hill at 220 m asl and >100 m above the local water table. Today, the surrounding landscape presents Mediterranean woodland, with mean annual precipitation of 600–700 mm.

Seven excavation seasons took place at the site (2010–2016) and 12 areas were excavated (Fig. 4.2; Areas A-L; Barzilai et al. 2012, 2014, 2016; Marder et al. 2013, 2017). During the excavation, in some of the areas, a few Levallois artifacts were encountered in Upper Palaeolithic contexts (Areas A, C, D, E and G). The majority of Middle Paleolithic artifacts originate from Areas C and D. The assemblage presented was retrieved from the 2011–2014 excavation seasons including 70 artifacts of which 11 are cores.

In this study we present one aspect of the overall lithic assemblage from Manot Cave, focusing on artifacts that complied with the definition of the Levallois technology

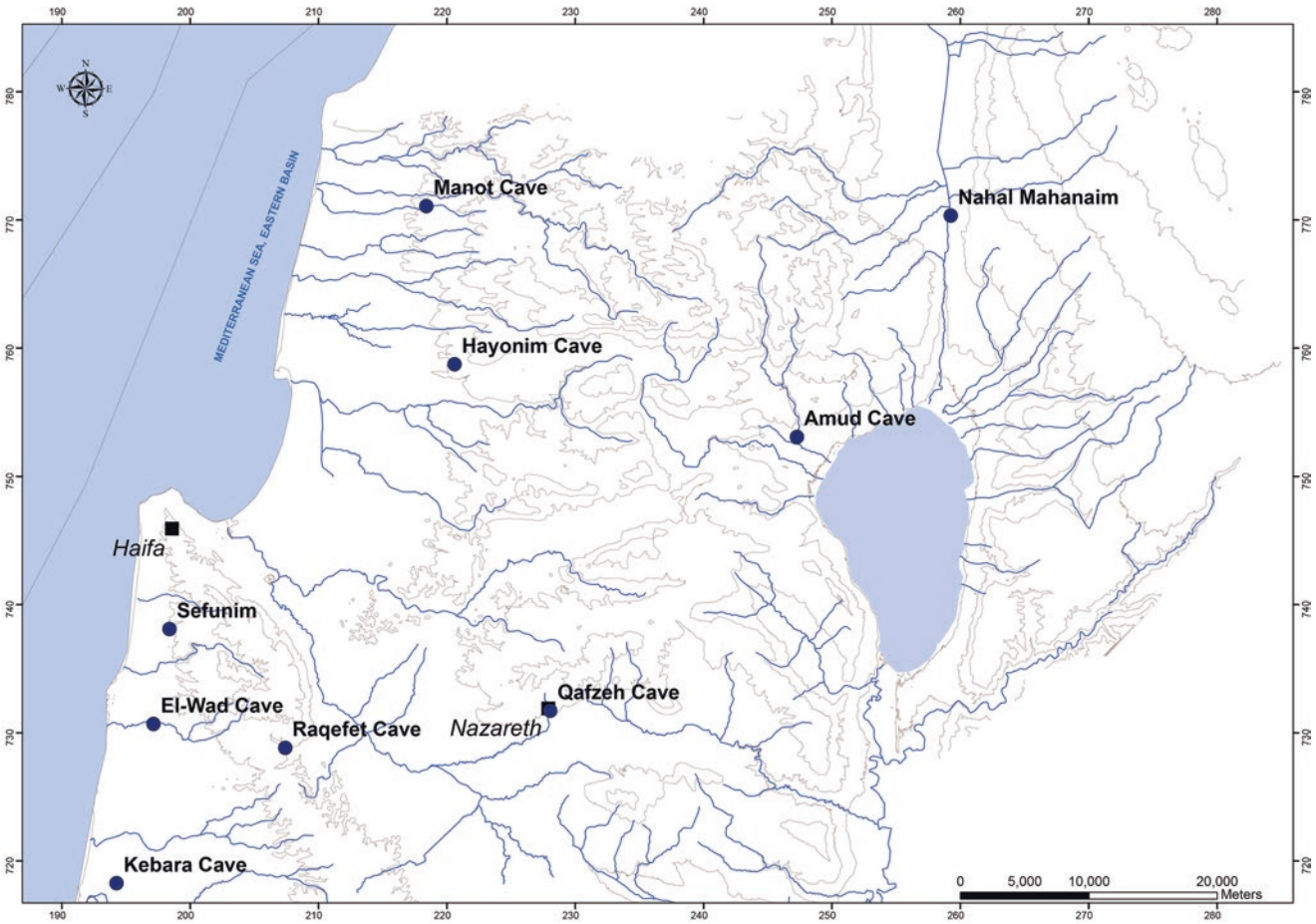

Fig. 4.1 Location map of sites mentioned in the text

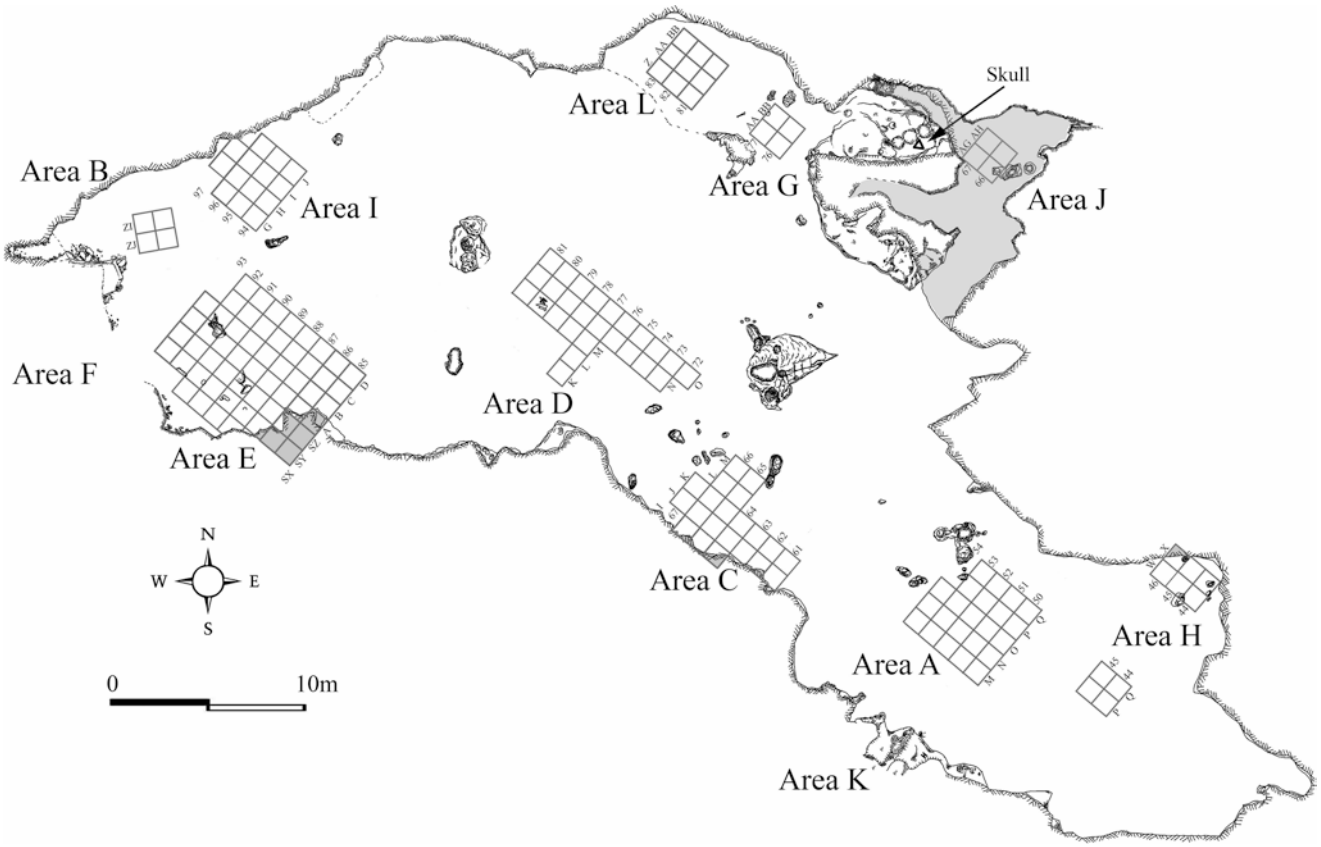

Fig. 4.2 Manot Cave excavation areas

(Boëda 1988, 1995). Debitage artifacts, which are usually found within Middle Paleolithic assemblages but are not Levallois, were not included in this study as it was difficult to securely differentiate between them and those of the Upper Paleolithic assemblages. Tools that may be assigned to the Middle Paleolithic due to their morphology and retouch, such as specific side scrapers, were included with reservations. These sidescrapers differ by raw material used, blank selection, type of retouch and platform preparation from the Aurignacian retouched blades found at the site.

4.2.1 Area C

This excavation area is located at the base of the western talus. To date, eight stratigraphic units (assigned numbers: 1–8) were recognized (Fig. 4.3). These units are rich in archaeological finds, including large amounts of flint artifacts, animal bones, bone tools, charcoals, ochre and several groundstones made of basalt.

All Area C units are comprised of dark brown to reddish brown sediments of loose clay to silty clay loam. Several Middle Paleolithic artifacts (N=33) were identified within Units 4–8. The upper units (Units 1–4), contain few pebble size angular stones whereas the lower units (Units 5–8) present a large number of limestone pebbles, cobbles and even boulders (Fig. 4.3). Units 6 and 7 are separated by a thin (~1 cm thick) unconformity layer, that divides the units sedimentologically, stratigraphically and culturally (Tejero et al. 2016). The archaeological assemblages from Units 2–4 are dominated by an Aurignacian lithic component, while Units 7–8 are composed almost exclusively by an Ahmarian component. The archaeological assemblages from Units 5 and 6 include both Ahmarian and Aurignacian elements (Tejero et al. 2016; Marder et al. 2017). A large group of Middle Paleolithic artifacts were found in Units 7 and 8 (Table 4.1) and are most abundant in Unit 8 (Fig. 4.4). These artifacts are well preserved in comparison to other Middle Paleolithic finds found at the site.

4.2.2 Area D

This area is located at the centre of the western talus (Fig. 4.5), where 28 square meters were excavated from north-west to south east along the talus (Barzilai et al. 2014).

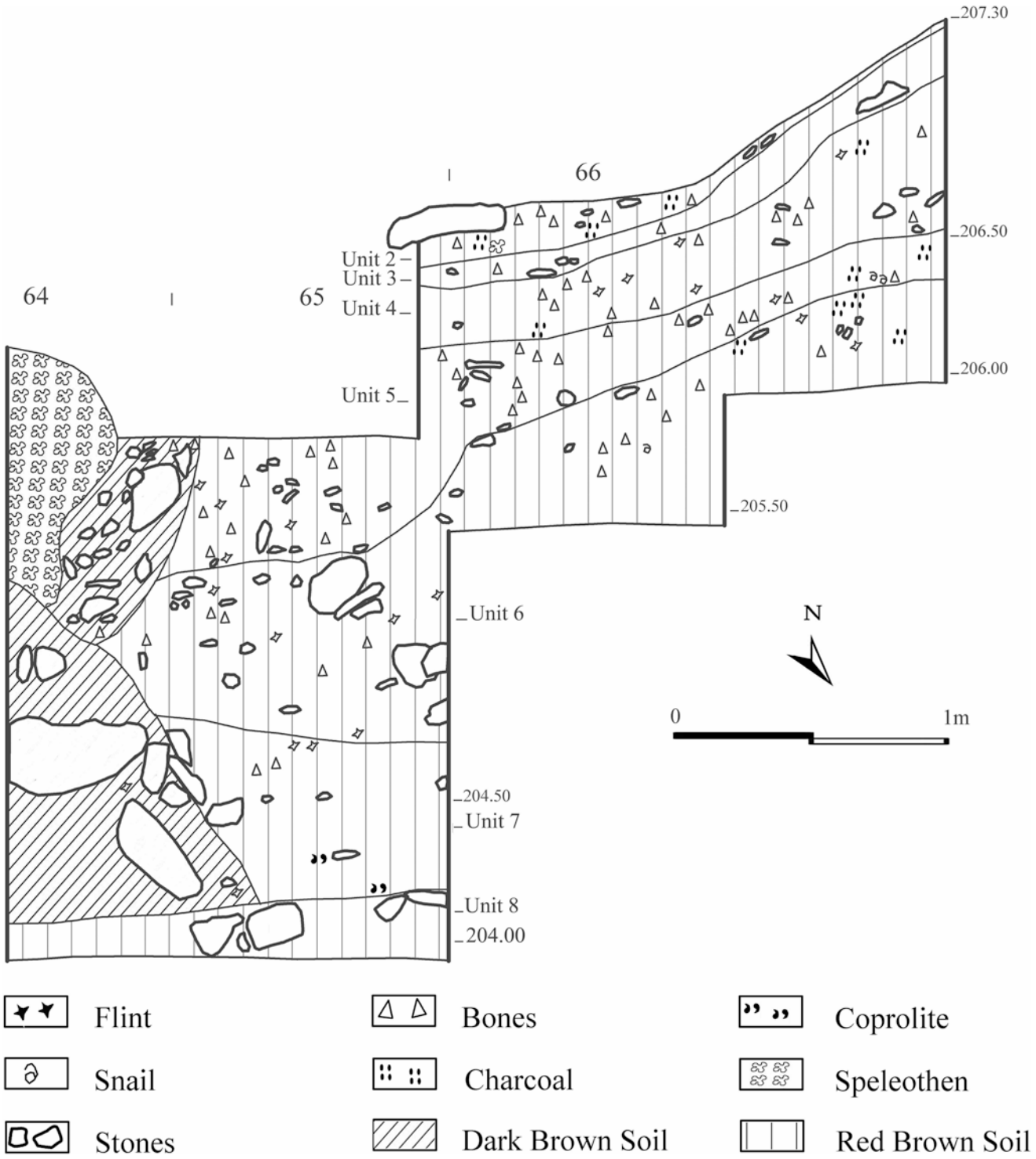

Fig. 4.3 Area C, western talus, section I64–66, Unit 1 does not appear in this section

Seven sedimentological units were identified (Fig. 4.5). These units are mainly composed of dark brown to reddish brown, loose clay to silty compact clay loam. In the northern section the sediments were highly disturbed as a result of post depositional digenesis processes and other agencies, i.e., rodents activity, presence of bats, and penetration of tree roots.

Area D contains large numbers of flint artifacts, biogenic material (bones and coprolites), bone tools and basalt groundstones (none of which were found in primary con-

Table 4.1 Area C; Complete assemblage of artifacts >2 cm from squares J65 and J66 and the number of artifacts attributed to the Levallois technology

Unit	Assemblage >2 cm (N)	Levallois (N)
4	968	2
5	3598	5
6	2156	5
7	1399	11
8	130	8

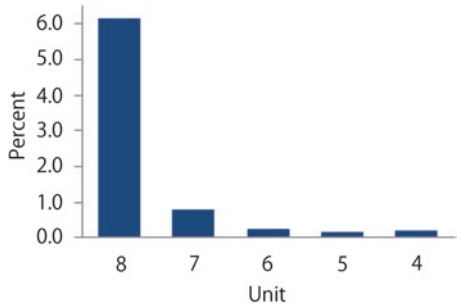

Fig. 4.4 Area C, percent of Levallois artifacts in each unit (from the complete assemblage >2 cm) in squares J65 and J66

text). The lithic assemblage includes mainly Aurignacian and Ahmarian components. Several Middle Paleolithic artifacts were found within Units 4–7 (N=33), the majority of which derive from Units 5–6 (N=22).

Unit 5 is composed of sediments varying from thick loose clay to compact silty clay loam, reddish brown in color (60–70 cm). Embedded within this unit is a lens of angular limestone fragments (3–15 cm long), a relic of an old channel (Fig. 4.5). This unit is rich in coprolites and animal bones, with relatively few flint artifacts. Unit 6 is characterized by a thick horizontal breccia (ca. 40 cm) situated along the southern part of the talus, and is rich in flint artifacts and large bones. This unit terminates at the cave center (Fig. 4.5). Unit 7 consists of a thin layer of amorphic compact orange clay (ca. 20 cm) with small angular nodules directly above the bedrock (Fig. 4.5). It is the most ancient sedimentological unit found at the cave center (F. Berna personal communication). Noticeably, few Middle Paleolithic artifacts (N = 5) were found just above the bedrock.

4.2.3 Dating of the Archaeological Assemblages

A series of ^{14}C dates suggest intensive occupation of the cave during the Early Upper Paleolithic period. Based on archaeological assemblages from Area C and Area E, and their dating (Hershkovitz et al. 2015; Tejero et al. 2016; Barzilai et al. 2016), three archaeological phases were identified; a post-Aurignacian industry thought to be younger than 34 kcalBP, a Levantine Aurignacian industry dated between 38–35 kcalBP, and an Early Ahmarian one dated between 46–42 kcalBP. One date of 49 kcalBP was retrieved from the lowest unit in Area C, together with the U-Th dates of Manot 1 suggesting that an earlier occupation exists in the cave (Hershkovitz et al. 2015; Barzilai et al. 2016).

4.3 The Lithic Collection

The majority of artifacts at Manot Cave were made from a fine-grained flint, very homogeneous and almost free of inclusions. They range in colour from pale yellow to pale brown, using the Munsell chart as reference. Few artifacts display a brown to light black color, and have a glossy shine to them. Two of the artifacts are burnt. The flint sources used by the caves inhabitants are yet to be defined.

4.3.1 Technology

Amongst the cores (Table 4.2), several Levallois reduction methods were recognized, the centripetal (Fig. 4.6: 1,3,5; Fig. 4.7: 1) the unidirectional and unidirectional convergent (Fig. 4.6: 2; Fig. 4.8: 1, 2), of which one is a core on flake (Fig. 4.7: 2). The presence of these reduction strategies at the cave is also indicated by the scar patterns (Table 4.3A) on tools, debitage and core trimming elements (Fig. 4.8: 3). The Levallois cores are mostly flat (thickness range 11.5–29.7 mm) and small (length range 28.0–68.9 mm; width range 24.1–65.0 mm), and were exploited in the recurrent (Fig. 4.6: 1, 3, 4; Fig. 4.7:1, 2; Fig. 4.8: 1) and preferential modes (Fig. 4.6: 2, 5; Fig. 4.8: 2). This core collection resembles Middle Paleolithic assemblages from Tabun B (e.g. Garrod and Bate 1937, Plates XXXIII: 9, 10 and XXXIV: 9, 10), Qafzeh (e.g. Hovers 2009, Plates 11: 4, and 21: 9), and Ein Qashish (Malinsky-Buller et al. 2014, Fig. 2: 1, 3).

4.3.2 Levallois Flakes and Points

This collection of artifacts presents a wide range of variability including Levallois broad based points (Fig. 4.9: 2, 3), elongated points (Fig. 4.9: 6), a retouched point (Fig. 4.11: 7) as well as blades and flakes (Fig. 4.9: 4, 5,7–10, Fig. 4.10). Of the eight Levallois points, six have a unidirectional convergent scar pattern (Table 4.3a), while amongst the flakes

Fig. 4.5 Area D, central talus, section M78–81

Table 4.2 Middle paleolithic core types and flaking methods from Manot Areas C and D

	Centripetal	Unidirectional	Unidirectional convergent	Undefined
Levallois cores for flakes preferential	1	2		
Levallois cores for flakes recurrent	3			2
Levallois cores for points			1	
Core on flake for flakes			1	
Levallois core for flakes				1
Total	4	2	2	3

(N=26), less than half have a unidirectional convergent scar pattern (showing both unidirectional and bidirectional patterns). Two of the flakes and one Levallois point have *Chapeau de gendarme* striking platforms (Table 4.3B). The points resemble those from Kebara Cave (e.g. Bar-Yosef and Meignen 1992, Fig. 12.5: 1–3; Meignen 1995, Fig. 25.7: 4, 5), as well as those from Qafzeh Cave (e.g. Hovers 2009, Plates 26: 1–6).

4.3.3 Tools

The tool assemblage consists of sidescrapers, endscrapers, burins and a notch (Table 4.3C). Sidescrapers (N = 11) comprise the largest group of tools, made on a variety of blanks (Fig. 4.11: 1–3, 5, 6). Three of the sidescrapers portray a *Racloir* like retouch (Fig. 4.11: 1–3). Sidescrapers with *Racloir* like retouch are known from Tabun Cave (e.g. Garrod and Bate 1937, Plate XXXIV: 1, 2, 7), Qafzeh Cave (e.g. Hovers 2009, Plates 31: 1 and 37: 9) and Quneitra open-air site (e.g. Goren-Inbar 1990, Fig. 45: 4 and Fig. 46: 3). Two of the sidescrapers are worth mentioning: one is a convergent sidescraper with an impact fracture on the tip (Fig. 4.11: 6), the other is double patinated, reflecting a single sidescraper which was subsequently retouched down the right lateral edge, converting it into a convergent sidescraper (Fig. 4.11: 3). Another tool with double patina is an endscraper (Fig. 4.11: 4); suggesting that a Levallois blade was recycled and transformed through abrupt retouch into an endscraper.

4.3.4 Engraved/Incised Artifact

A unique find found in Unit 6 of Area C is an engraved Levallois centripetal recurrent core (Fig. 4.7: 1 and Fig. 4.12). The raw material from which the core is made of differs from that of other Middle Paleolithic artifacts at the site and is characterized by a very dark greyish-green color. The core dimensions (53 × 47 × 17 mm) are within the range of other

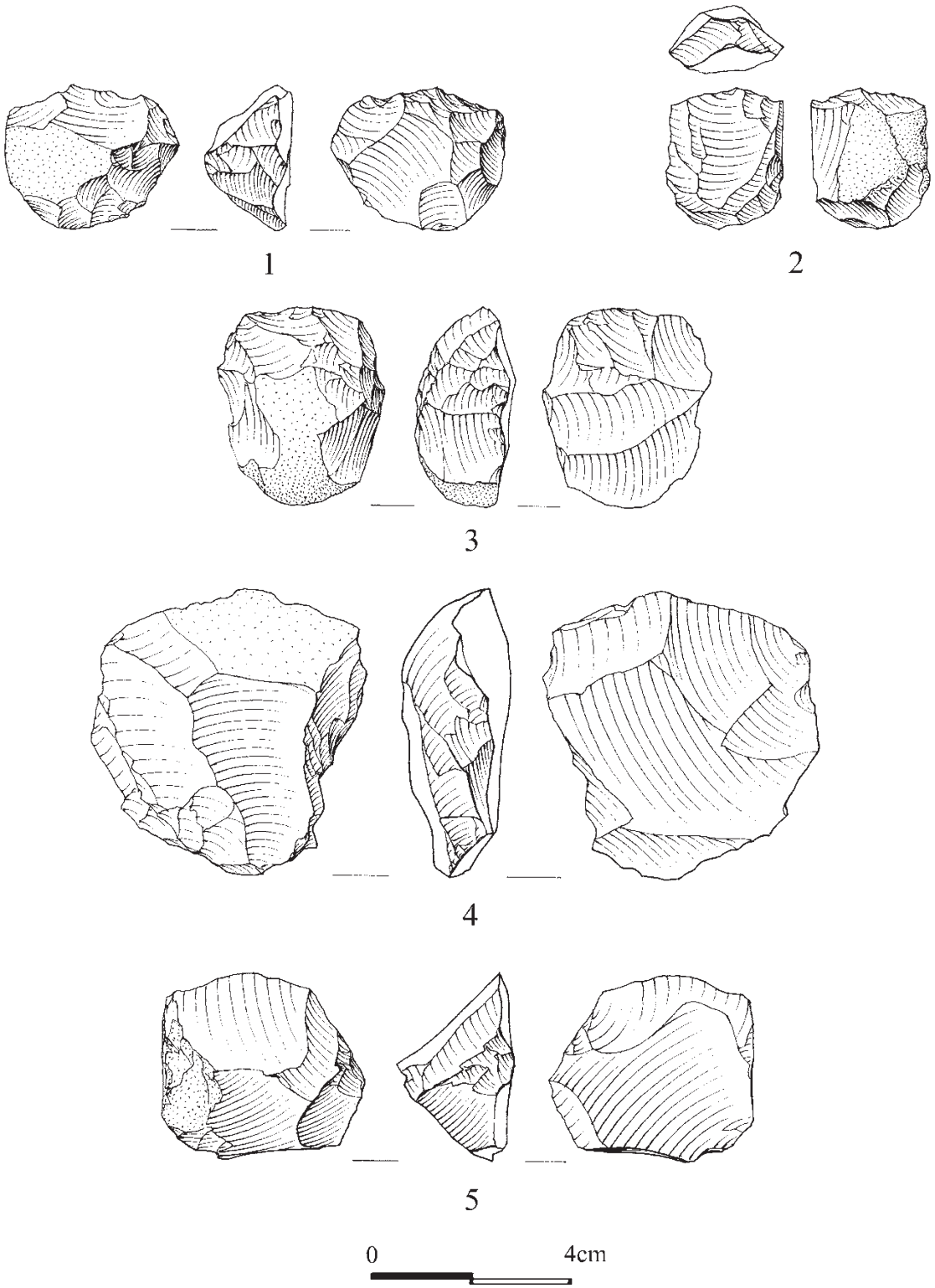

Fig. 4.6 Levallois cores – Area C, *1*,*3*, centripetal; *2*, unidirectional; Area D – *4*, undefined; *5*, centripetal

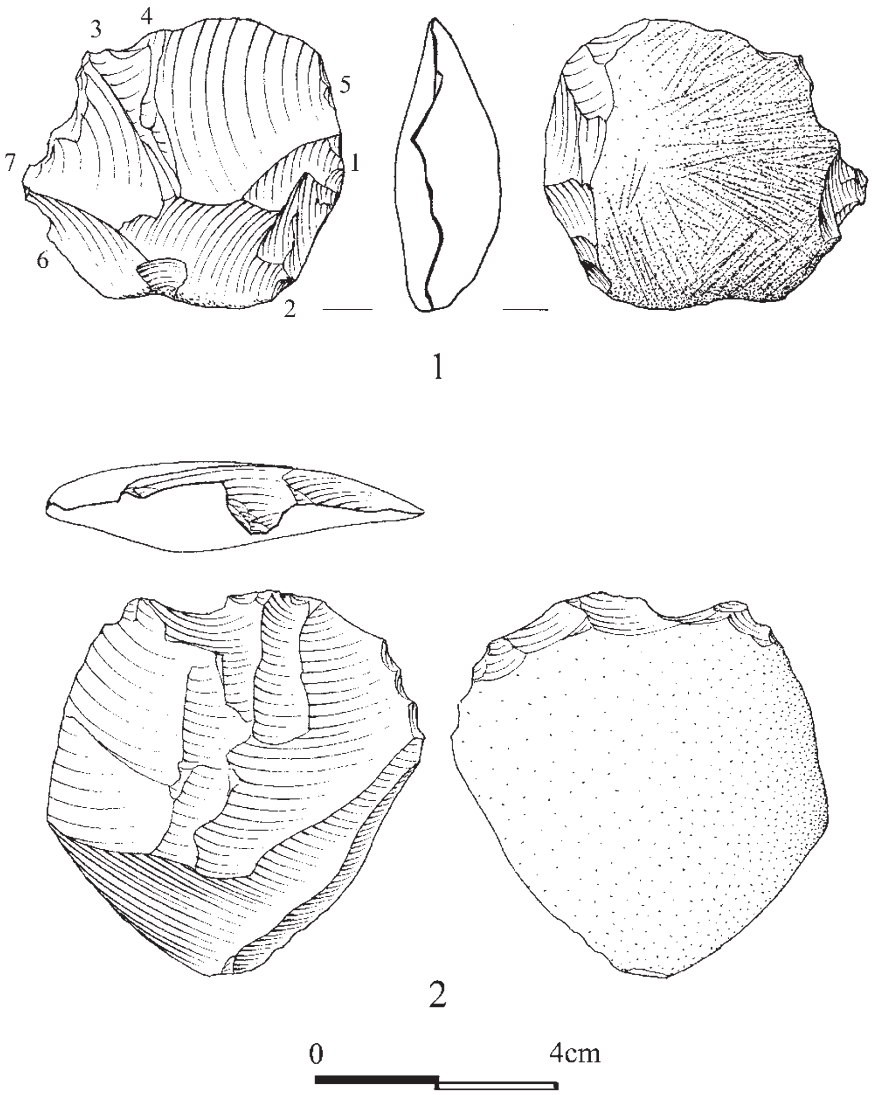

Fig. 4.7 Levallois cores – Area C, *1*, centripetal; *2*, core on flake, unidirectional convergent

Levallois cores. Most of the preparation surface is covered by cortex with one dominant striking platform. The incisions, covering most of the surface, are small and flat superficially incising the cortex in a super-positional structure without cutting through it. Their size and shape suggest that they were made by a delicate tool. The initial incisions radiate in a fan-shape from the centre of the core outward (Fig. 4.7: 1, 12) (N = 50). The second set of incisions run from the left lateral edge of the core towards the proximal (N = 14) and distal edge (N = 13) cutting through the first set of incisions.

The reduction sequence consists of several independent stages: initial knapping removed at least four flakes from the striking platform and the right side of the core (Fig.4.7: 1 removals 1–4). Several small flakes may also have been struck from the striking platform at this stage. Subsequently, a relatively large hinged flake (Fig. 4.7: 1 removal 5) was removed from the cores striking platform cutting previous removals. Prior to the cores discard, a small striking platform was prepared on the distal edge from which two hinged flakes were knapped (Fig. 4.7: 1 removals 6, 7). While detaching these two flakes some of the cortical incisions were removed from the preparation surface, suggesting that the incisions were made during the Middle Paleolithic and do not result from Early Upper Paleolithic (Aurignacian) recycling activities as observed on isolated Upper Paleolithic tools from Areas C, D and E. Recycling of Middle Paleolithic artifacts during the Early Upper Paleolithic is known from other assemblages in the Levant (Belfer-Cohen and Bar-Yosef 2015 for a detailed discussion).

Table 4.3 Technological and typological attributes of Middle Paleolithic artifacts from Manot Areas C and D

A. Scar pattern for all artefacts

	Unidirectional	Bidirectional	Convergent	Centripetal	Indeterminate	Cortical	Total
Levallois flakes[a]	7	6	9	2	1		25
Levallois blades		1			1		2
Levallois points[b]			6	1	1		8
Sidescrapers		1	5		2	1	9
Endscrapers			2				2
Burin		2					2
Notch				1			1
Retouched flake		1					1
CTE		1	1		1		3
Total	7	12	23	4	6	1	53

B. Striking platform of all artifacts

	Plain	Facetted	Dihedral	*Chapeau de gendarme*	Cortical	Indeterminate	Total
Levallois flakes[a]	4	18	1	2			25
Levallois blades	1	1					2
Levallois points[b]	1	4	1	1		1	8
Sidescrapers	2	3	3			1	9
Endscrapers	2						2
Burin	1		1				2
Notch		1					1
Retouched flake		1					1
CTE		1			1	1	3
Total	11	29	6	3	1	3	53

C. Middle Paleolithic artifact composition

Artifact type	Area C	Area D
Typical Levallois flake	9	4
Atypical Levallois flake	10	1
Levallois point	3	2
Retouched Levallois point	1	1
Pseudo Levallois point		1
Single straight sidescraper		1
Single convex sidescraper		3
Double straight convex sidescraper		2
Double convex sidescraper		1
Double concave-convex sidescraper		1
Convergent straight scraper		2
Convergent convex scraper		1
Typical endscraper		1
Atypical endscraper		1
Atypical burin	1	1
Notch		1
Core Trimming Elements (CTE)	1	2
Retouched flake	1	2
Retouched blade		1
Cores	7	4
Total	33	33

[a]Including Pseudo Levallois point
[b]Including both retouched and unretouched

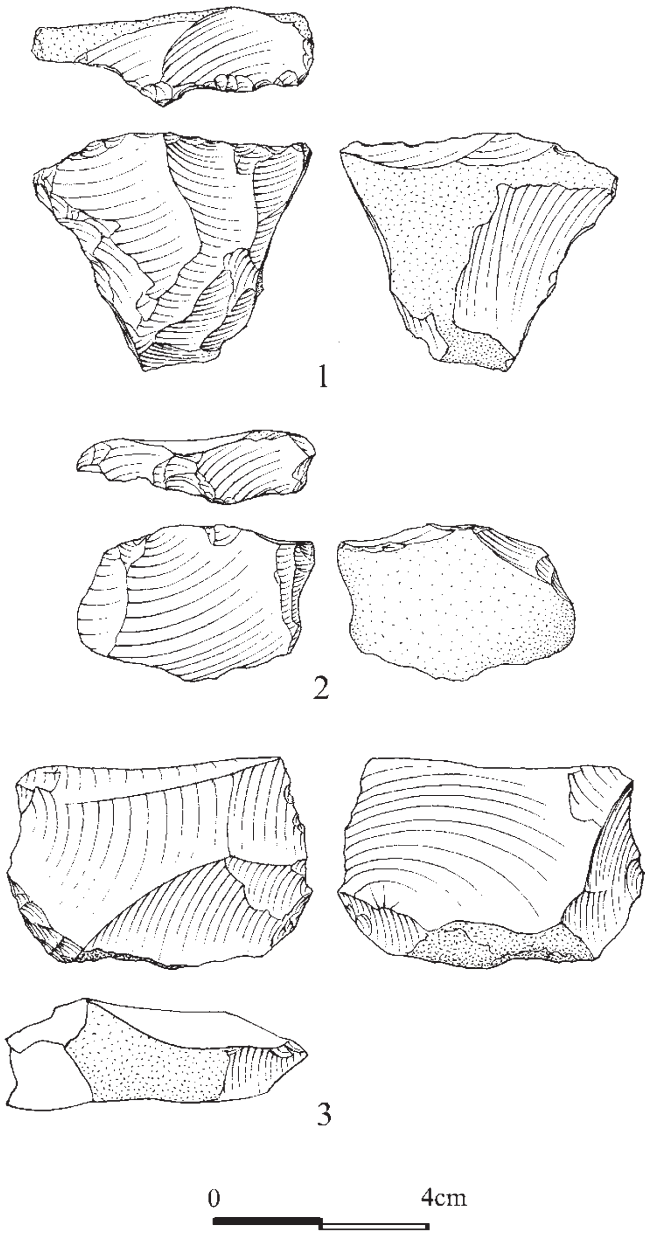

Fig. 4.8 Levallois cores and Core Trimming Elements – Area C, *1*, undefined; *2*, unidirectional convergent; Area D – *3*, Core Trimming Element

4.4 Discussion

The Middle Paleolithic artifacts assembled in Manot Cave represent a biased collection as most of them were found in Upper Paleolithic contexts. The majority of artifacts retrieved originate from the lower units in Areas C and D, with the largest group from Area C originating from the lower most unit. These artifacts were selected for study either because they complied with the Levallois definition (Boëda 1988, 1995) or they belonged to one of the predominant tool types of the Middle Paleolithic period (Bordes 1961).

The Middle Paleolithic artifacts demonstrate the use of both the Levallois unidirectional convergent and centripetal reduction strategies, alongside the presence of both broad based and elongated Levallois points. It is also clear from the analysis that there are no artifacts that can be associated with the Early Middle Paleolithic lithic industry (i.e. "Tabun D type"). The Levallois centripetal flaking mode, is most abundant in sites dating to ~120–90 ka, such as Qafzeh (layers XXIV–XV) (Valladas et al. 1988; Hovers 2009, pp. 267–273), Skhul (Garrod and Bate 1937, p. 111) and Nesher-Ramla (Zaidner et al. 2014). However, it is also present in significant quantities in younger sites dating to 70–50 ka, usually appearing alongside the Levallois unidirectional convergent mode including Quneitra, Amud, Kebara and 'Ein Qashish (Goren-Inbar 1990; Ziaei et al. 1990; Bar-Yosef and Meignen 1992; Hovers 1998, 2004, 2009, pp. 267–273; Valladas et al. 1999; Malinsky-Buller et al. 2014).

The unique engraved Levallois core from Manot cave cannot be interpreted as an anvil or cutting board based on the size and convexity of the incised surface. At the same time, it is unlikely that it represents an act of recycling during the Upper Paleolithic. In contrast to the incised objects from Quneitra and Qafzeh (Marshack 1996; Hovers et al. 1997), it seems that the core chosen to be incised at Manot Cave was not of a unique size or shape. The center point location from which the radial incisions diverge suggests that the artist was aware of the cores roundness and the knapping organization of the flaking surface. The incisions were engraved in between different knapping stages. The core shares some similarity with the object from Qafzeh in the incisions superimposition and evidence for several cycles of manipulation prior to its discard. This core adds to the growing evidence for symbolic behaviour among hominins during the Middle Paleolithic (Marshack 1996; Hovers et al. 1997, 2003; Bar-Yosef Mayer et al. 2009; Zilhão et al. 2009).

The techno-typological analysis of the artifacts from Manot Cave is consistent with technologies observed in other mid-late Middle Paleolithic sites. This study shows that the site was inhabited during the Middle paleolithic although the small size of the collection does not permit a precise chrono-cultural attribution.

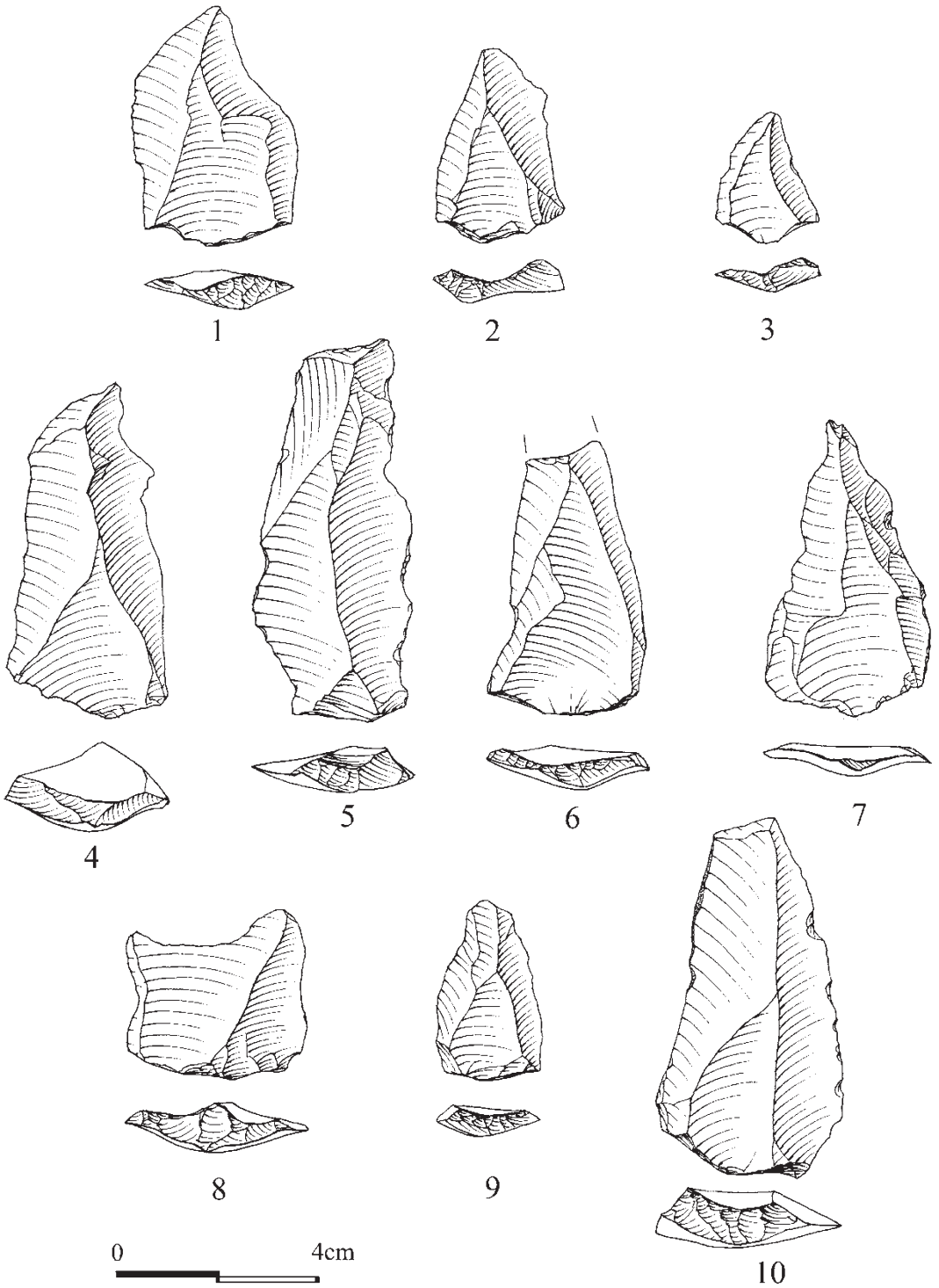

Fig. 4.9 Debitage – Area C – *1*,*4*,*6*,*8*–*10*, Levallois flakes; *2*,*3*,*7*, Levallois points; *5*, Levallois retouched blade

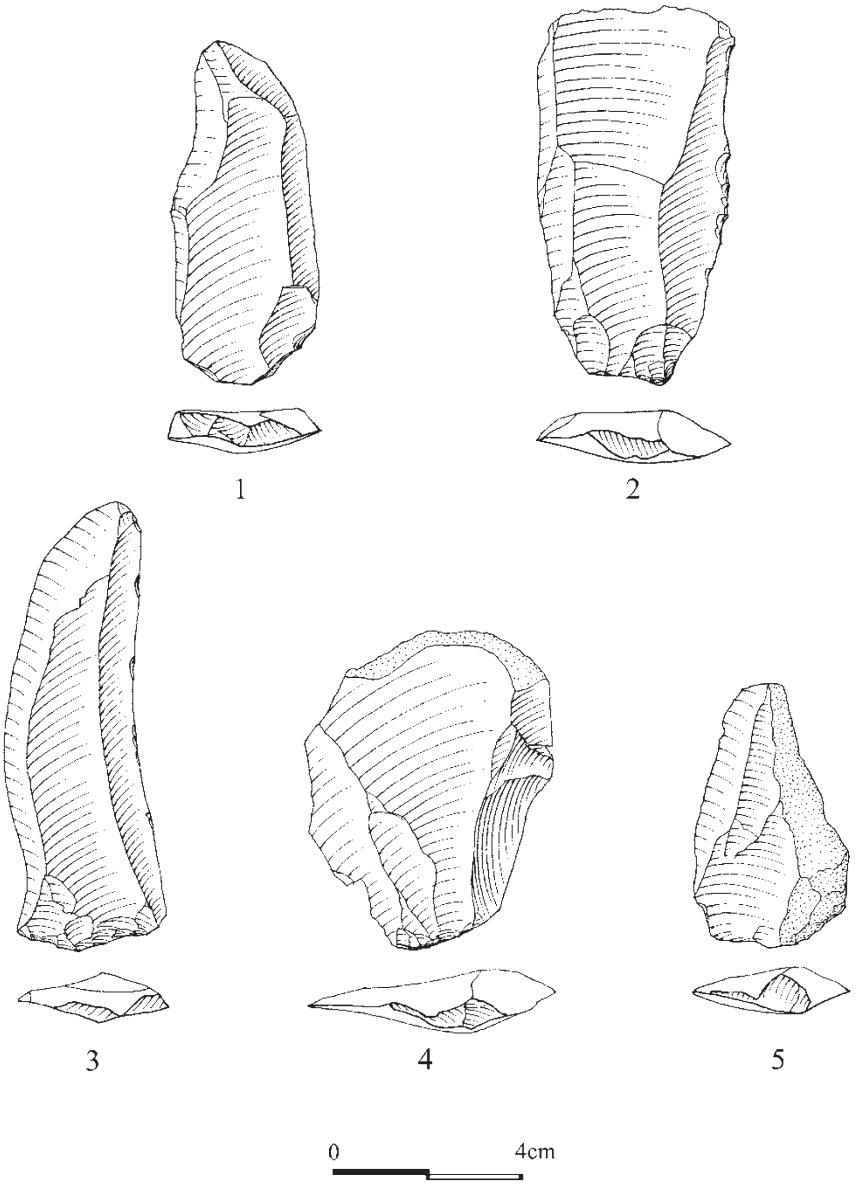

Fig. 4.10 Debitage – Area D – *1*,*3*, Levallois blade; *2*,*4* Atypical Levallois flakes; Area C – *5* Atypical Levallois flake

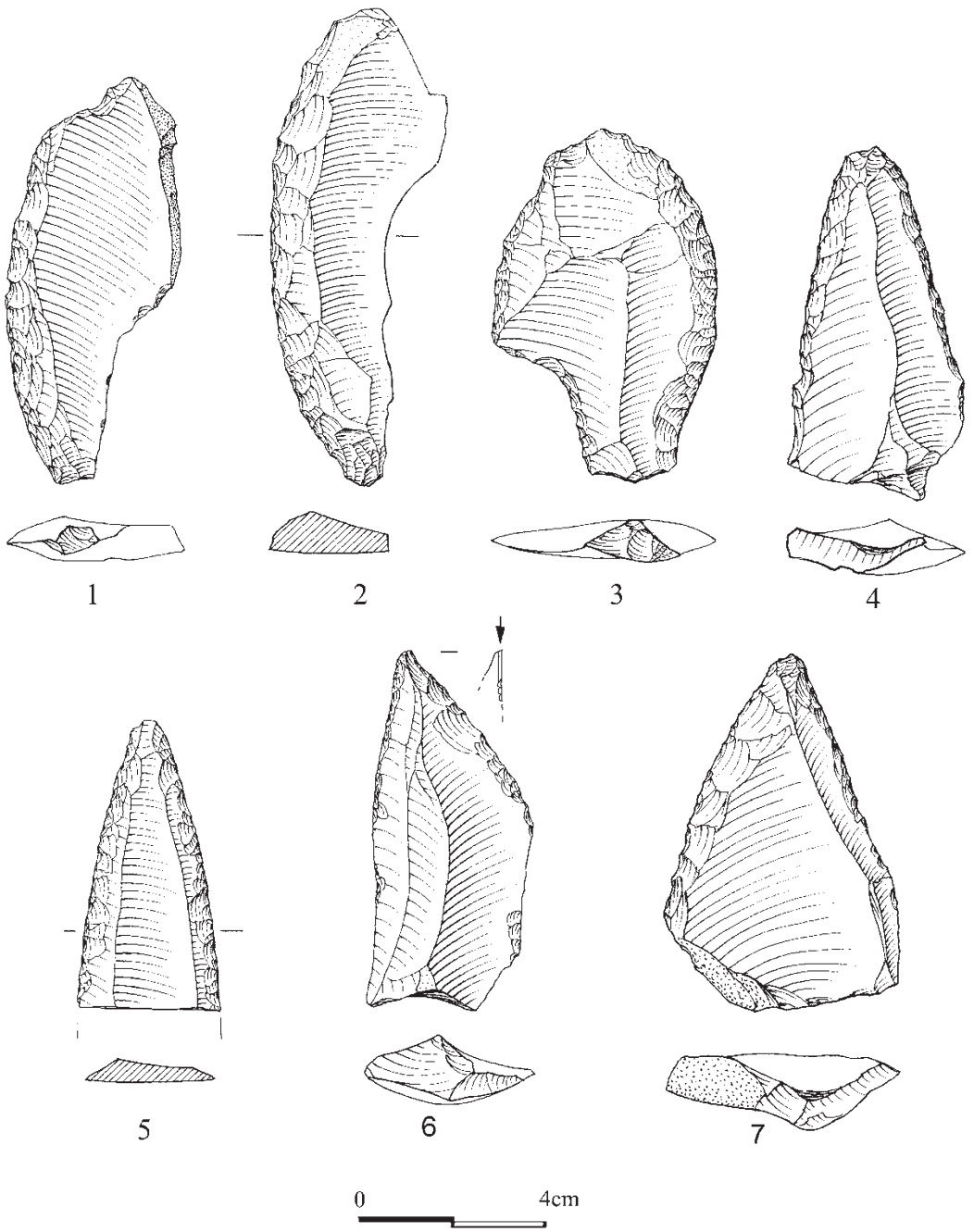

Fig. 4.11 Tools – Area D – *1*,*2*, Single sidescraper; *3*, Double sidescraper, retouch on right side occurred at a later stage creating a double patina; *4*, Endscraper; *5*, Convergent sidescraper; *6*, Convergent sidescraper with impact fracture on tip; *7*, Retouched Levallois point

Fig. 4.12 Levallois centripetal core with incisions

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