A hard look at the "Levantine Aurignacian": how real is the taxon?

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ABSTRACT In the last 30 years the Levantine Upper Paleolithic has undergone a gradual process of decoupling the automatic association of the "Upper Paleolithic" with the "Aurignacian". Nevertheless, there is still a long way to go in acknowledging the wide range of Upper Paleolithic material culture variability present in the region. Otherwise, the taxon "Aurignacian" will continue to represent a veritable *pot-pourri* receptacle incorporating diverse industries whose only common denominator is the fact that they cannot be called something else from amongst the current, rather limited selection of Upper Paleolithic prehistoric entities.

Introduction

Until some 30 years ago all of the Upper Paleolithic occurrences postdating the Middle to Upper Paleolithic transition and predating the Epipaleolithic in the Levant were related in one way or another to various stages of the "Aurignacian" (e.g., Copeland, 1975). In other words, virtually every assemblage recognized (techno-typologically or chronologically) as belonging to the Upper Paleolithic sequence was considered "Aurignacian" *sensu lato*[1] (Fig. 1).

This approach reflected the pioneering research in western Europe, where the earliest Upper Paleolithic industry had been defined as "Aurignacian". This Aurignacian "package" supposedly involved a change in human types, together with the appearance of evidence for "modern human behavior" (for a history of European research see Davies, 2001). Since the pioneers of Near Eastern prehistoric research were European-trained scholars, it was only natural that they would interpret their research in the Levant within a general Eurocentric paradigmatic framework. Accordingly, they initially reconstructed the Levantine Upper Paleolithic sequence as a unilinear evolution of Aurignacian variants or their local counterparts, the "Antelian" and the "Atlitian" (Garrod, 1953, 1954, 1957; Garrod and Bate, 1937; Neuville, 1934, 1951; Rust, 1950). The search for the familiar (i.e., European) type fossils in the various assemblages was sometimes accompanied by ignoring "new", (i.e., absent and hence unknown in Europe) lithic elements or associations. Indeed, one can follow Garrod's growing unease with the situation: "... the small, sharp Font-Yves point, which is the special feature of Upper Paleolithic III [i.e., the Levantine Aurignacian of today], is **hardly known in the West**". (Garrod, 1953, p. 25, our emphasis). And, furthermore: "... the Upper Paleolithic III represents the stage at which an incoming Aurignacian group made contact with the natives, adopting and developing the Font-Yves point, which was missing from their original tool-kit, and which in any case rather soon went out of fashion again" (idem, p. 33).

Actually, it is quite obvious that, from the very beginning of systematic research, differences were observed between the local Levantine Upper Paleolithic industries and the Aurignacian of western Europe, i.e. the "classic" French Aurignacian. One can but blame the underlying Eurocentric attitude, and the attendant umbilical cord (i.e., "Aurignacian" = "Upper Paleolithic")

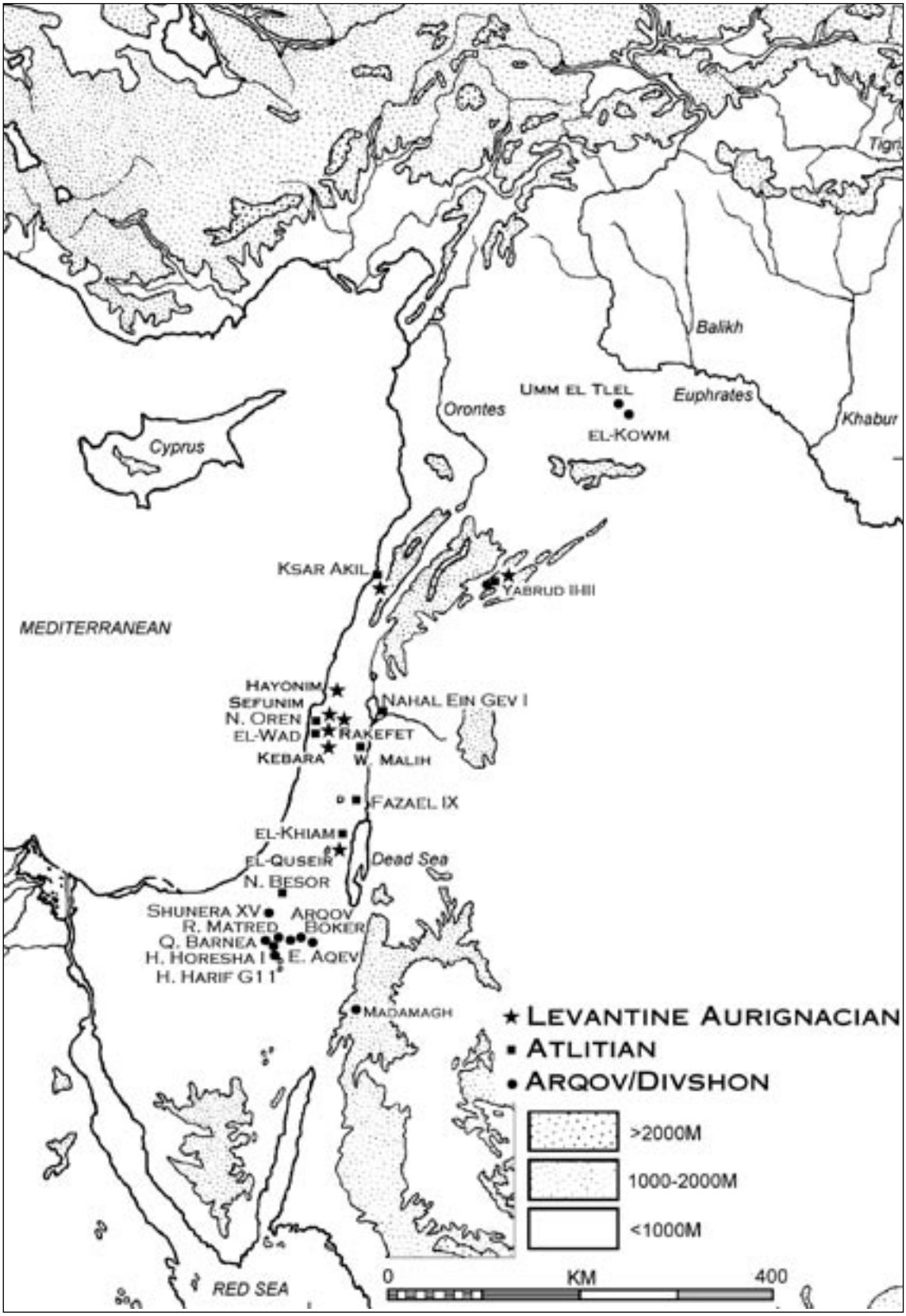

FIG. 1 – Map of the Levant showing the location of Levantine Aurignacian, Atlitian and "Arqov/Divshon" sites.

of Garrod and Neuville that, while seeing the differences, could not resist the attraction of familiar terms — and thus their adherence to the "Aurignacian-of-a-kind". This invoked the implicit "excuses" of Neuville's use of "phases" instead of "named cultures", together with Garrod's later substitution of the terms "Antelian" and "Atlitian" for "Aurignacian".

Some order was brought to bear in 1968, when it was decided to incorporate all pre-Last Glacial Maximum (LGM) Upper Paleolithic variants in the Levant under the term "**Levantine** Aurignacian", enumerating the specifics of its particular characteristics. This enabled Copeland (1975), while describing the Lebanese sequence, to largely revert to Garrod's original terminology (albeit with minor modifications), so that the "Levantine Aurignacian A", "B" and "C" now replaced "Antelian I", "Antelian II" and "Atlitian" (and see discussion below).

Nevertheless, and notwithstanding the subsequent definition of a quite separate and distinct strand (see below), the problem of the automatic association and coupling of the Early Upper Paleolithic with "Aurignacian" still hovers today over much of Europe and the Near East. Recent examples of o owmít)

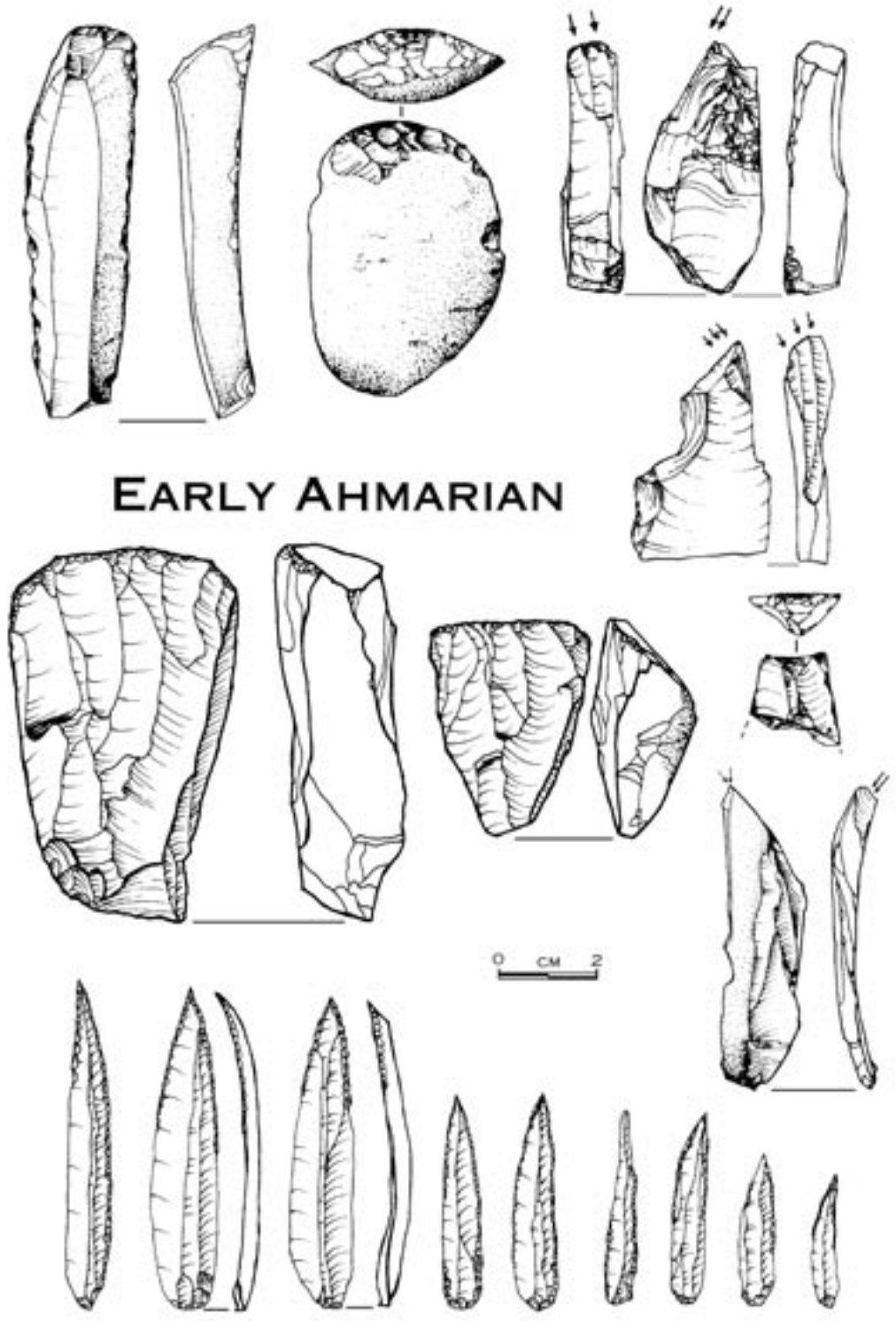

FIG. 2 – A typical Early Ahmarian lithic assemblage. Single platform narrow fronted cores, cortical endscrapers, dihedral burins, truncated blade, el-Wad points, pointed retouched bladelets.

In considering all of the above we shall confine ourselves in the present article to those issues pertaining to the central, main bulk of the pre-LGM Upper Paleolithic sequence in the Levant, namely the Ahmarian/Aurignacian conundrum. Reference will be made to the Middle Paleolithic/Upper Paleolithic transition, the Initial Upper Paleolithic (IUP), or the final stages of the Upper Paleolithic only when the cultural entities pertaining to those time slots are relevant to the main topic of the present discussion.

The Aurignacian/Ahmarian conundrum

The intensive research efforts in the Levant since the beginning of the 1970s have focused primarily upon its arid margins. They have provided a wealth of basic data concerning the Upper Paleolithic (see papers and references in Goring-Morris and Belfer-Cohen, 2003). These studies triggered reconsideration of the previously accepted traditional unilinear developments. In consequence the dichotomy of parallel phyla (or the two-tradition) model was proposed, whereby blade/let-oriented assemblages were defined as "Ahmarian", in contrast to the supposedly flake-oriented "Aurignacian" (and see above)[4]. That model has been widely accepted and adopted by most researchers working throughout the Levant, albeit with various modifications, through to the present (e.g., Boëda and Muhesen, 1993; Coinman, 1990, 1998, 2003; Coinman and Henry, 1995; Kerry, 2000; Ploux, 1998; Ploux and Soriano, 2003).

In its most recent manifestation the relevant terminology has been modified to define the "Leptolithic lineage" that incorporates the Ahmarian, which has currently been downgraded to the status of an industry forming but one of "... at least, four distinct (Upper Paleolithic) industries and one complex of related industries during the Epipaleolithic" (Marks, 2003, p. 253). The duration of the Levantine "Leptolithic lineage" thus stretches from the transitional (MP/UP) Emiran right through to the onset of the Late Epipaleolithic Natufian. This Leptolithic lineage comprises:

1. Emiran;
2. An as yet unnamed industry beginning in Boker Tachtit 4 and passing unto;
3. The Early Ahmarian;
4. The Late Ahmarian or the Masraqan;
5. The Pre-Natufian Epipaleolithic complex.

The Early Ahmarian is actually subdivided into two phases, comprising two geographic facies:

1) "Early Ahmarian southern facies" (Negev, Jordan and Sinai), with early (ca. 37-30 000 BP) and late (ca.27-25 000 BP) "sub-phases".
2) "Early Ahmarian northern facies" (northern Levant — Ksar Akil, Üçağızlı, Umm el Tlel and Qafzeh).

Similarly, the Aurignacian has also been downgraded to become an industry, "... with possibly two phases and two facies" (Marks, 2003, p. 251), which unfortunately are not detailed in that text. Another subdivision of what was previously called Levantine Aurignacian *sensu lato* is offered by Williams (2003a, 2000b) incorporating three distinct entities (or, according to Williams, "cultural groups"). These are:

1) The so-called "Noncarinated Flake-Blade-Scraper" variety, the only one that actually retains the designation as "Levantine Aurignacian" (Williams, personal communication).
2) A "Carinated" variety incorporating most of the assemblages previously assigned to the southern facies of the Levantine Aurignacian (e.g., Gilead, 1991). It is of interest to note that similar assemblages are reported from Umm el Tlel, where they are considered as the "non-classical Aurignacian facies of Umm el Tlel sect - 2" (Ploux and Soriano, 2003).

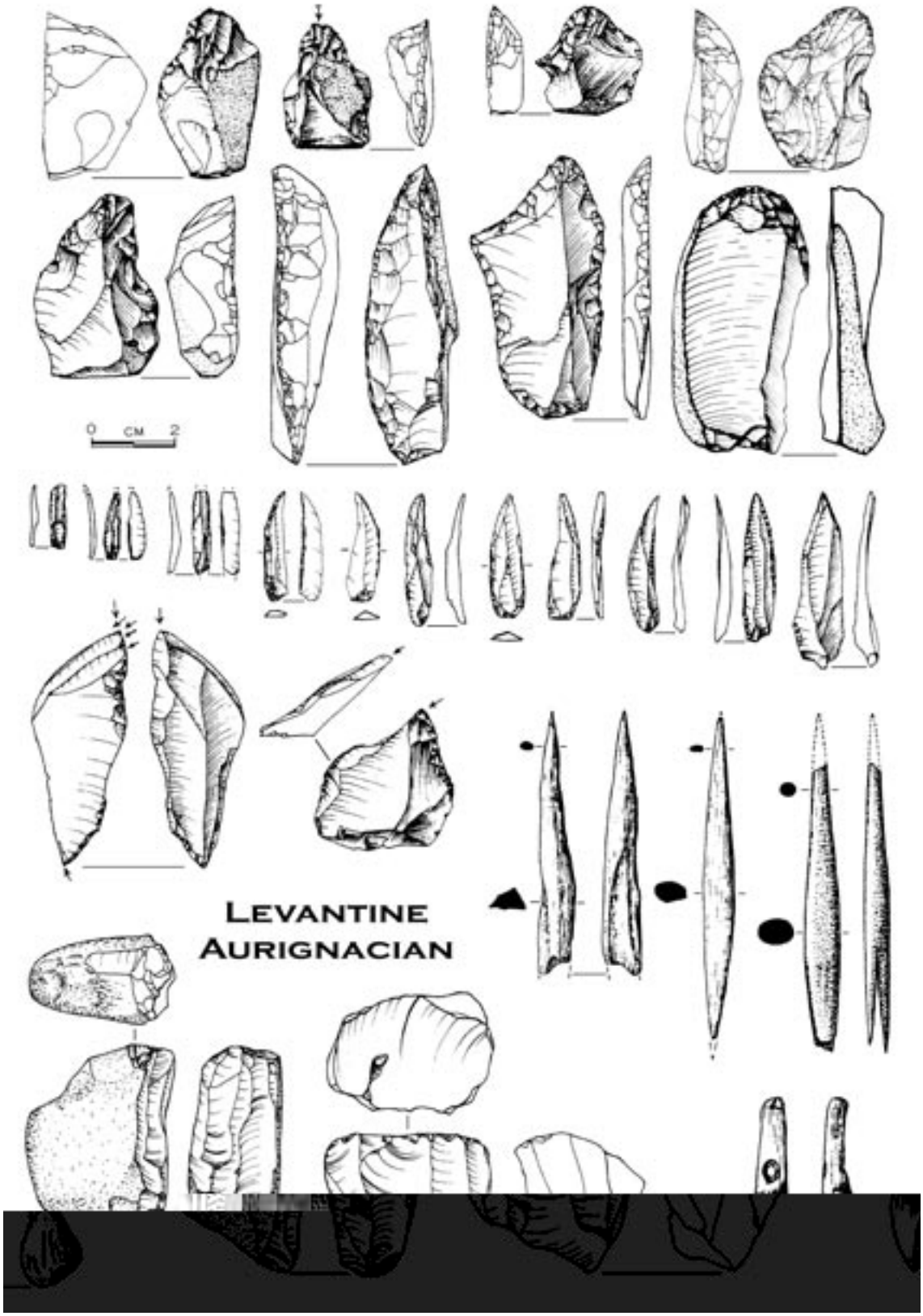

FIG. 3 – A typical Levantine Aurignacian assemblage. Cores (opposed platform blade and single platform varieties), broad shouldered and nosed carinated scrapers, endscrapers, Aurignacian retouched blade, dihedral and truncation burins, Dufour bladelets (some twisted, some incurvate), and (small) el-Wad points. Bone tools include a point/awl, a bipoint (on antler), and a split base point (also on antler), and perforated and polished bovid tooth pendant.

1) A transitional (MP/UP) entity ("Ksar Akil Phase A", XXV-XXI).
2) A heavy duty initial UP blade industry which evolves (at least judging by the incremental nature of the appearance of techno-typological features) into an Early Ahmarian facies ("Ksar Akil Phase B", XXI-XV).
3) Assemblages comprising both Aurignacian and Ahmarian elements, as well as unique characteristics such as twisted blade/bladelets (formerly called "Levantine Aurignacian A", XIII-IX).
4) Classic Aurignacian levels ("Levantine Aurignacian B", VIII-VII).
5) As well as later UP levels predating the (LGM) Early Epipaleolithic ("Levantine Aurignacian C", VI-IV; and more research is underway, see references in Belfer-Cohen and Goring-Morris, 2003a).

It should be pointed out that research in Europe has conclusively demonstrated that, techno-typologically the "Aurignacian" is rich in tools on blade and bladelet blanks as well as blade/bladelet cores (e.g., J.-G. Bordes, present volume). By contrast, in the Levant, the local Aurignacian (past and present definitions) was and widely continues to be considered primarily as a flake-based industry (e.g., Gilead, 1981, 1991). Nevertheless, there **are** considerable numbers of blade/lets in those assemblages assigned by us to the Levantine Aurignacian *sensu stricto* (see note 5 and Bar-Yosef and Belfer-Cohen, 1996), which were fashioned into scrapers, burins, retouched blades and bladelets. Thus the Levantine Aurignacian *sensu stricto* actually does correspond in this respect, amongst others, to the Aurignacian in western Europe (see also Williams, 2003a, 2003b).

Also notable is the presence of elaborate and varied bone (and antler) tools in those particular assemblages, though researchers have tended to ignore this particular characteristic in their speculations, claiming that the presence or absence of organic materials is primarily influenced by taphonomic factors (Marks, 2003). Still, this argument was resolved once it became clear that the presence or absence of worked bone and antler in the arid zone assemblages is of lesser importance, since all those lithic assemblages differ significantly in their techno-typological characteristics from those assigned to the Levantine Aurignacian *sensu stricto* (or, in Williams' [2003a, 2003b] unwieldy parlance, termed as the "Noncarinated Flake--Blade-Scraper industry" to add to the confusion, and see below).

Ultimately, the distinctive lithic characteristics of the Levantine Aurignacian *sensu stricto* comprise a dominance of endscrapers and burins, with the prominent presence of thick varieties of both classes (nosed, shouldered, frontal broad carinated, polyhedral), and Aurignacian retouch (Fig. 3). There is also a high percentage of blades among the tool blanks as compared to their percentage in the debitage, some points (including el-Wad types), as well as a moderate percentage of bladelets (especially the Dufour variety — and see discussion below). The latter purportedly derive from a secondary reduction sequence involving the laminar removals that shaped the thick endscrapers/burins/carinated items. Accordingly (and with the introduction of more meticulous excavation procedures and wet sieving the percentage of bladelets rose sharply), it is now argued that most of the thick endscrapers/burins should be considered as cores for the aforementioned bladelets (Chazan, 2001a, 2001b; Lucas, 1997, 1999; and see also the term *nucléus de type "burin caréné plan"* as used by Ploux and Soriano [2003]), an argument that may be resolved only through use-wear studies, if at all).

Most authorities concur with the characteristics enumerated above. Unfortunately though, there are still contentious issues concerning terminology and the differential use of some definitions. Besides the issue of the point class, most especially the el-Wad varieties, there are

also the inter-related questions of "carination" per se, and the "Dufour bladelets," which are presumed to derive from the process of carination. It is important to note that, amongst those assemblages that have been assigned at one time or another to the Levantine Aurignacian *sensu lato*, carination (with no discrete specifications) has frequently been considered as a diagnostic feature, whether referring to the carinated items as either cores or tools (compare Figs. 3-5). At the present stage of research, when there is a growing consensus concerning which assemblages should be called Levantine Aurignacian and which should not, a matter to be resolved concerns the differences between narrow, **lateral** carination and the "classic", i.e. **broad**, carination.

Carination

It seems to us that the issue of 'carination' has been a major bone of contention in discussing Levantine Upper Palaeolithic cultural developments and that much confusion has derived from different understandings of the term. In their original definitions and descriptions of carinated items Sonneville-Bordes and Perrot (1954) emphasized **flat** (i.e., broad) carination, together with shouldered and nosed items[6].

As stated above, these carinated items, together with the presence of "Aurignacian" retouch, were amongst the most distinctive Aurignacian features as defined from a primarily (west) European perspective. Assemblages characterized by similar features have been documented in several Levantine sites, including Ksar Akil VII, Yabrud II/3-4, Hayonim D, Sefunim D/8, Rakefet IV, Kebara I-II, and el-Quseir, (Bar-Yosef et al., 1992, 1996; Belfer-Cohen and Bar-Yosef, 1981; Bergman, 1987; Dortch, 1970; Lengyel, personal communication; Perrot, 1955; Ronen, 1984; Rust, 1950). With the addition of Upper Paleolithic assemblages deriving from the more arid regions of the southern and northern Levant (Fig. 1), it was noted that some were dominated by items (*cum* cores) featuring a distinctive and quite different form of lateral carination (Ploux and Soriano's [2003] *nucléus de type "burin caréné plan"*). Nevertheless, since both forms involved carination, usually on flake blanks, all such assemblages were lumped together and united under the banner of the "Levantine Aurignacian tradition" taxon (Gilead, 1981; and see above).

Our point here is that it is by no means proven that "broad" and "lateral" carination should necessarily be viewed as part of the same phenomenon (i.e., *chaîne opératoire*). Indeed, there is actually a tendency for the lateral carinated varieties to converge with some "Ahmarian tradition" assemblages, in that the systematic setting-up of narrow or "N--fronted" cores for bladelet production often results in pieces that superficially resemble laterally carinated items (and see reduction sequence schemes illustrated in Davidzon and Goring-Morris, 2003; Ploux and Soriano, 2003). Carination is also a distinctive feature of many early Epipaleolithic (LGM) entities (e.g., the Kebaran assemblages from Ein Gev, see Bar-Yosef, 1991). All of the above is not simply a somewhat semantic and barren theoretical discussion — for example, in some recent literature those assemblages rich in nosed and frontal carinated endscrapers are assigned to "non-carinated" entities, since the term "carinated" is reserved only for the **lateral** carinated items (e.g., see Williams, 2003a). Accordingly, for the sake of clarity, we urge scholars to adhere to the traditional, well-worn and accepted terminologies, or else to be very specific about shifting and using the same term for different phenomena.

Dufour bladelets

The issue of the Dufour bladelets has implications far beyond the realm of the Aurignacian, since it also relates to the characteristics of bladelet assemblages in later Levantine Upper Paleolithic and Epipaleolithic industries (Belfer-Cohen and Goring-Morris, 2003; and references therein). Still, we confine ourselves herein primarily to their role within Aurignacian assemblages. The definition of Dufour bladelets as provided by Sonneville-Bordes and Perrot (1954, p. 554; their type 90) was actually very broad[7]. Basically, it included **all** bladelets with complete or partial, inverse or obverse, marginal fine or semi-abrupt retouch. These derived from carinated items, yet the twisted profile, per se, was not a criterion for defining an item as a Dufour bladelet.

In practice, in many assemblages where **broad** carination is prevalent, the resulting bladelets commonly tend to be slightly squat and distally convergent. If somewhat offset and detached from around the side of the removal surface they sometimes also have a tendency to be twisted, although this is not a requirement (or indeed even referred to) in the original definition[8].

Research in the Levant from the 1970s onward has documented a series of assemblages featuring large quantities of finely retouched bladelets deriving from narrow-fronted cores and **laterally** carinated items. Many of these bladelets tend to be delicate and elongate, with blunt distal tips and marginal, fine-abrupt through nibbled retouch. For a variety of historical and other reasons comparisons for these assemblages were drawn primarily with sites in North Africa and the Nile Valley, where somewhat similar features had been included within the 'Ouchtata' category (Tixier, 1963; but see also Tixier and Inizan, 1981)[9].

Following these comparisons there has often been a tendency in the Levant to differentiate between:

1. the shorter, convergent and more twisted comma-shaped 'Dufour' bladelets, which often tend to inverse or semi-abrupt retouch, and
2. the elongated nibbled or 'Ouchtata' retouched and/or backed items (see Marks, 1976; Ferring, 1977; Goring-Morris, 1980).

Still, this issue does not appear to have been systematically discussed to date, and it clearly warrants more detailed treatment. In consequence there are few, if any, broadly accepted criteria to distinguish between those bladelets predominant in the flake-oriented industries, from those recovered from within the "N-fronted" Early Ahmarian (and the later Masraqan, i.e., Late Ahmarian) blade/bladelet contexts.

Perhaps, with regards distinctions between Dufour and Ouchtata bladelets in the Levant, at least, we are facing again a conundrum similar to that concerning the el-Wad point, which was initially considered as a hallmark of the Levantine Aurignacian, but which subsequently was discovered to be far more prevalent (and standardized) within the Ahmarian tradition. These are issues that one should at least be aware of...

So, what about those Dufour bladelets exhibiting flat profiles that have been recovered from every Levantine Aurignacian assemblage, e.g., Hayonim D, and Kebara Units I-II (Belfer-Cohen, 1994)? While it is true that there have been *ad hoc* modifications to the original definitions of the Dufour bladelet, we need to be more explicit in our endeavors, in order to avoid finding ourselves on a terminological "merry-go-round".

Concluding remarks

After more than 30 years of dispute there is finally a modicum of consensus that assemblages defined as "Levantine Aurignacian" from the central parts of the northern Levant (i.e. el-Wad E-D; Sefunim 8; Hayonim D; Ksar-Akil VIII-VII) are **unrelated** to other, non-Ahmarian Upper Paleolithic assemblages reported **mainly** from the southern and northern, arid areas of the Levant (but see also the northern assemblages of Ksar Akil XIII-IX) (Marks, 2003; Williams, 2003a, 2003b). It is thus acknowledged that more than two complexes represent the Levantine Upper Paleolithic and that the designation as "Levantine Aurignacian", if one adheres to the original definitions of an Aurignacian entity, should be retained only for the assemblages enumerated above.

Yet there are still basic misunderstandings among the various researchers concerning the nature of non-Ahmarian Upper Paleolithic industries. Prominent are the issues discussed above, namely the definition criteria, the presence/absence of carinated items, and Dufour bladelets.

Thus a recent study by Williams (2003a, b), while largely contributing to the resolution of the conundrum of "not every/every non-Ahmarian assemblage is Levantine Aurignacian" threatens to raise a new point of confusion by calling the Levantine Aurignacian assemblages enumerated above as the "Noncarinated Flake-Blade-Scraper" industry. By doing this he ignores: a) the presence of bladelets in these assemblages; and b) that the original definition of carination applies (mostly! and see above) to **flat frontal** carination.

Moreover, the other non-Ahmarian Upper Paleolithic complex, which he calls the "carinated" variety (e.g. idem, p. 32) is defined as such through the presence of (laterally) carinated items considered by him to be mostly cores and the high percentages of bladelets deduced, not through the numbers of the **actual** items found, but through the counting of remaining scars preserved on the carinated items. These are rather shaky grounds, since one cannot count the scars on the laterally carinated items and consider their number as indicating the actual number of twisted bladelets so-produced, while ignoring the scars on the nosed and frontal carinated endscrapers in the Levantine Aurignacian assemblages! Indeed, an especially notable feature of the entire Umm el Tlel Upper Paleolithic sequence concerns the absolute predominance of bladelets, whether incurvate, straight or twisted, irrespective of cultural attribution (the "Ahmarian", "Aurignacian" or "Late Upper Paleolithic" as defined by Boëda and Muhesen, 1993; Ploux and Soriano, 2003). It is of interest to note that other elements characteristic of the respective entities elsewhere in the Levant ("Aurignacian" retouch, el-Wad points, etc.) seem to be remarkably rare, if not totally absent at Umm el Tlel.

Some can claim that this adherence to semantics, trying to retain the definition of the Aurignacian as strictly and rigidly as possible is petty, since by now everyone is aware of the great variability which probably existed in the past, and one cannot deny that archeologists are actually creating artificial definitions and boundaries whose validity in the "real" past is rather tenuous... Nevertheless, retention of the restricted definitions focuses the contours of the reconstructed past much more sharply, so that the details are highlighted; otherwise why should we bother defining and creating concrete sets of references?

Indeed by adhering to the original definitions of the Aurignacian in the Levant we can more readily observe the fascinating phenomenon of the appearance of a geographically (and chronologically?) limited cluster of assemblages of the classic Aurignacian variety. These are so similar to assemblages from southwest France at the other end of the Mediterranean, that one is tempted to view them literally as well as figuratively having just disembarked from the

boat! They appear, "out-of-the-blue", in the midst of other, endemic, Upper Paleolithic lineages (e.g. the Ahmarian) with few, if any, obvious ties to the preceding and succeeding Levantine industries.

Which brings us onto more philosophical grounds — people are still avoiding the thorny question of how come these Levantine Aurignacian assemblages are so similar to those reported from western Europe and, in particular, from the Périgord, France. Researchers are still reticent to acknowledge the existence of discrete groups bound by social and biological ties. Current explanations for the techno-typological differences among cultural groups, presently defined within the Upper Paleolithic chronological framework, are attuned to ecological/environmental circumstances and tend to ignore social issues. Thus Williams (2003a, 2003b) claims that the flaky, lateral carinated assemblages from the arid zone (previously incorporated within the Levantine Aurignacian taxon; see Gilead, 1981 and Marks, 1981) indicate a mobile existence which is advantageous during periods of harsh conditions. Yet, what of the appearance of lateral carination much earlier, in Levels XIII-IX at Ksar Akil, under different environmental circumstances? While one wants to detach oneself as far as possible from the committing terms of "ethos" and "culture", Williams' deliberations lead to the absurd notion that blady "Ahmarians" become carinated "Aurignacians" when the weather changed.

In the past, as now, cultural changes occurred through combinations of slow or rapid acculturation, total replacement, and intrusions from near or afar in addition, of course, to local *in situ* cultural evolution. There is no need to consider all/every local phenomena as representing a point on a progress line. There was most probably a dominant, local archeological lineage (the Ahmarian best fits the ticket). But it seems that all the other Upper Paleolithic entities of one sort or another ultimately represent influxes, intrusions, and pulses from elsewhere of greater or lesser impact, rather than parallel long-term lineages. There has been a tendency to artificially cluster early and later archeological entities into a single lineage (The Levantine Aurignacian). This "tradition" included, besides the few assemblages that genuinely accord with the original Aurignacian definition, a host of other named and un-named entities removed in time (and sometimes space), such as the Arqov/Divshon, the "Atlitian/Lisanian", etc., simply because they were "non-Ahmarian" in nature (Figs. 4-5).

One should bear in mind that the Levant is an open region and that Upper Paleolithic human groups were mobile, and could have wandered following those environmental conditions they were adapted to, joining or splitting off their respective marriage networks.

Upper Paleolithic populations in the Near East were sparse on the ground, and while some were tethered to specific localities, others may have roamed over considerable distances within the region and even beyond (e.g. how to explain the convergence of chamfered items in the Middle to Upper Paleolithic transition both in Lebanon and Cyrenaica?). Perhaps we should view the routes of such dispersions and movements not only by circum-Mediterranean land bridges but also, potentially, by maritime leapfrogging, as is suggested for the terminal Pleistocene and early Holocene (Runnels and van Andel, 1988; Bar-Yosef, 2002a, 2002b).

Thus, we believe, ends the story of the "Levantine Aurignacian" *sensu lato*. Instead of reflecting a long-term local archeological lineage, contemporaneous and competing (?) with the Ahmarian, rather it appears to comprise a *pot-pourri* of unrelated archeological entities that briefly intruded onto the scene. The few "real" Aurignacian assemblages recognized so far were restricted in both time and space, and either quickly moved on to better pastures, died out, or relatively rapidly assimilated with local Ahmarian populations, soon loosing their distinctive attributes. By the time another intrusion occurred (e.g., The Divshon/Arqov entity), the prior Aurignacian pulse was long past and forgotten.

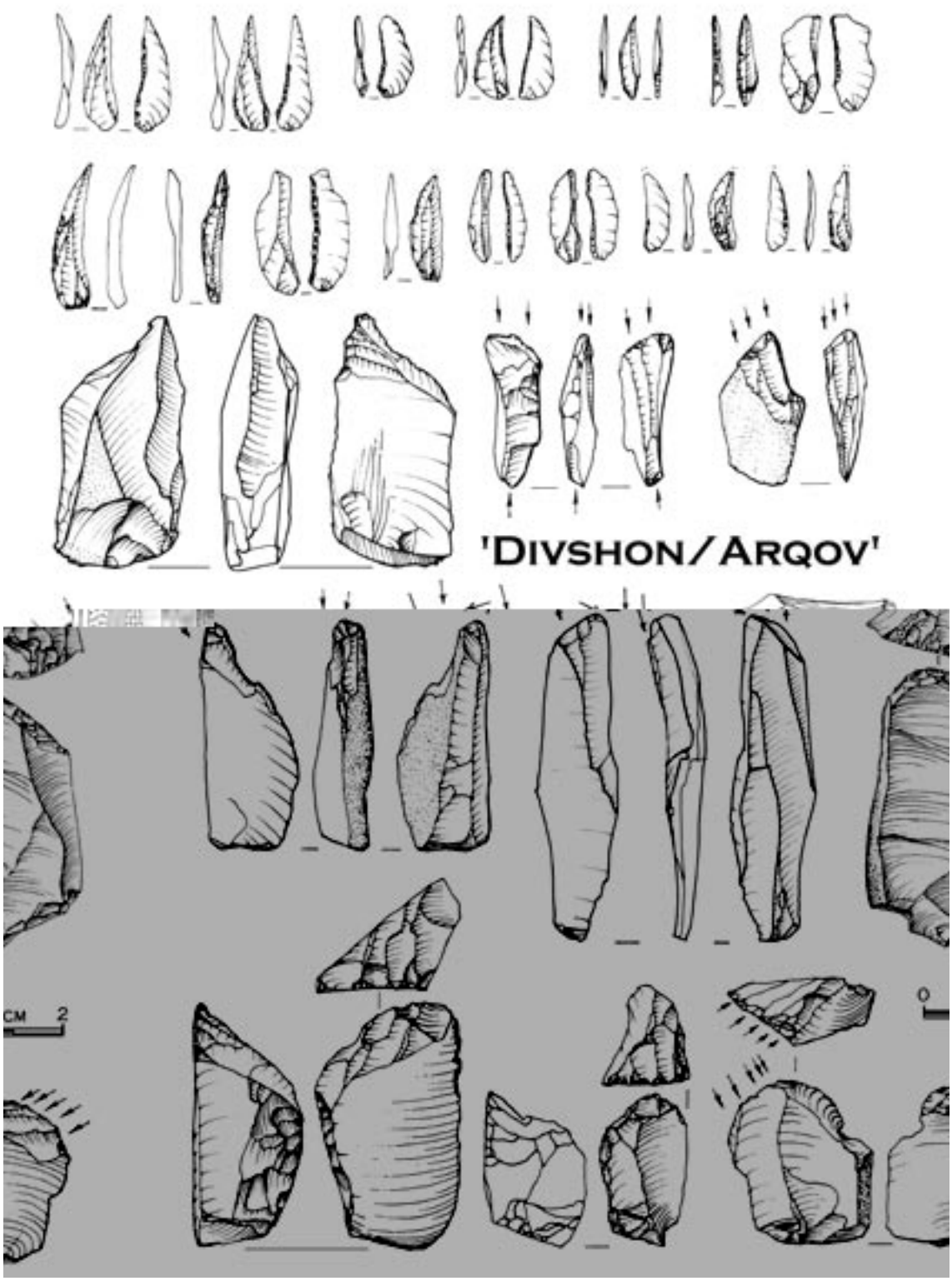

FIG. 4 – A typical "Divshon/Arqov" lithic assemblage. Lateral carinated scraper/burin/cores, endscraper, and Dufour bladelets (most, but not all are twisted).

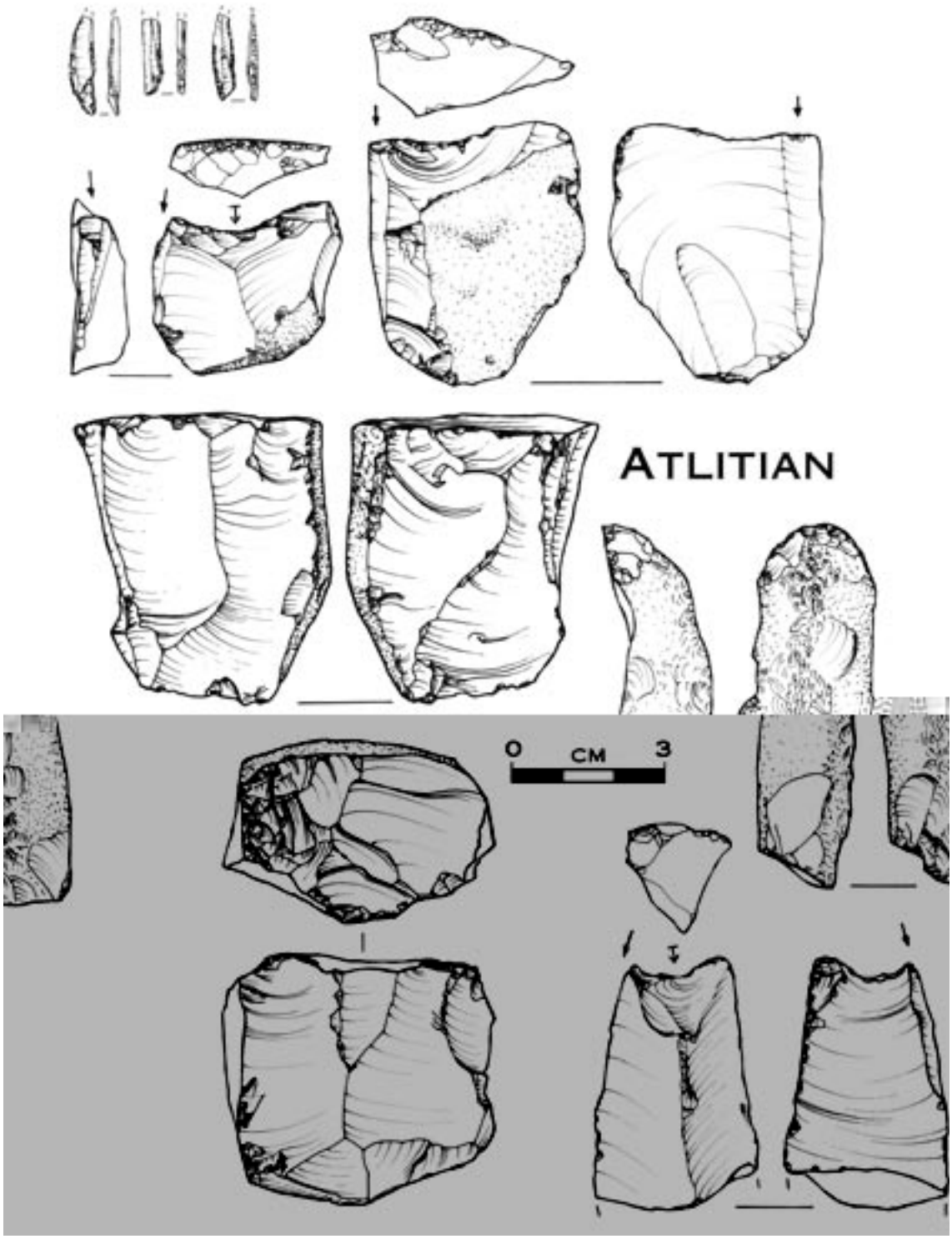

FIG. 5 – A typical "Atlitian" lithic assemblage. Single platform cores for elongated flakes, endscraper (cortical), burins on truncation (often concave Clactonian), backed microliths.

Acknowledgments

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NOTES

1 The observed divergences from the classic European Aurignacian (*e.g.*, a greater emphasis on el-Wad — sic Font Yves — points) were major reasons for using the prefix "Levantine", in much the same manner that modern *Homo sapiens* remains recovered by the early excavations of Mousterian levels in the Mt. Carmel caves were initially described under the rubric *Neanderthalensis palestinensis*. This followed the logic that Middle Palaeolithic industries were produced, by definition, by Neanderthals (see McCown and Keith, 1939).

2 The "Ahmarian tradition" (Gilead, 1981; Marks, 1981), or, in its most recent manifestation, the "Leptolithic lineage" (Marks, 2003) corresponded to Neuville's Erq el-Ahmar layers F-D. These subsequently became the type assemblages of the "Early Ahmarian" (Gilead, 1981).

3 Ronen's (1976) synthesis of the Upper Palaeolithic in the Mediterranean zone of the southern Levant is an excellent example of the confusion then current — all those assemblages that subsequently were assigned to the "Ahmarian" were winnowed-out from the "Aurignacian", but were not given a distinctive title, and even their chrono-stratigraphic position remained open. Indeed, the microlithic blade/let components tended to "pull" in the direction of a later, pre-Epipalaeolithic assignment (and see also Ronen and Vandermeersch, 1972).

4 It should, however, be noted that Gilead (1981) and Marks (1981), employed significantly different methodologies and criteria (i.e., typology as opposed to technology) in the definition of the Ahmarian, which led to some notable divergences (e.g., the assignment of Sde Divshon – D27B).

5 Assemblages that we believe should be included within this rubric comprise: Ksar Akil VII; Yabrud II/1-4; Hayonim D; Sefunim D/8; Rakefet IV; el-Wad D; Kebara D (I-II); and perhaps also el-Quseir.

6 However, one of their illustrated items is **laterally** carinated (Sonneville-Bordes and Perrot, 1954, Fig. 3:10). In the course of time the *grattoir nucléiforme* and *rabot* (their Types 15 and 16) have been widely relegated from the tool categories to the cores.

7 "*Lamelle à profile fréquement incurvé, présentant de fines retouches marginales continues semi-abruptes, soit exclusivement sur l'un des bords de l'une des faces, dorsale ou ventrale, soit sur les deux bords, et, dans ce cas-là, disposées de façon alterne.*"

8 The twisting reflects dexterity and is not simply just associated with a particular and distinct *chaîne opératoire*. Indeed the twisting occurs in both blade and flake oriented assemblages (see discussion in Bergman, 2003).

9 In describing the assemblages from his excavations at Ksar Akil, Tixier (1970) dispensed altogether with the terms "Dufour" and "Ouchtata" bladelets, opting instead for the neutral term "retouched bladelets". He does, however, describe very tiny "comma-shaped" twisted retouched bladelets *"... les lamelles retouchées ... dont un type inconnu jusqu'alors: très petit, "en virgule"* (Tixier and Inizan, 1981, p. 360). Bergman (2003) has also related to these short and stubby "comma-shaped" bladelets.

Elsewhere, Tixier (1974, p. 28) has stated that: "Ouchtata retouch... we may define as...direct retouch (very rarely inverse), the removals short or very short, never encroaching deeply into the edge it is worked on, semi-abrupt or slightly abrupt, never forming a back, sometimes a little irregular (but never forming true notches), nearly always well marked on the proximal part of the piece (especially on Ouchtata bladelets, see Tixier, 1963, p. 115), but on some bladelets may be thinly applied, in which case very close examination (even a binocular microscope) may be necessary to confirm its presence. In rare instances this retouch can approximate "*Dufour*" retouch... Since Ouchtata retouch shows fairly wide variability, it might be useful to create sub-types. Any attempt to do this will nevertheless present unquestioned difficulties: in addition to some barely perceptible variations, Ouchtata retouch can vary locally even on one edge of a piece that is continuously retouched."

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