TRAPEZIODS AND DOUBLE TRUNCATIONS
IN THE EPIGRAVETTIAN ASSEMBLAGES
OF NORTHEASTERN ITALY

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Abstract

Trapezoids represent a significant category of tools among the innovative geometric implements in the lithic assemblages of European late glacial complexes, particularly those late Epigravettian industries from the Mediterranean region to the southern Ukrainian plain. The recent recovery of several artifacts from two excavations in the Venetian Pre-Alps (northern Italy) prompted a large-scale examination of the chronological, and geographical distribution of trapezoids as well as the first study of their techno-morphological features. Results show an evident variability in those morphological and dimensional parameters investigated and seem to suggest that the preparation of different shapes of blanks to obtain microliths might have occurred in the ambit of economical behaviors. Specifically, these economic choices involve an investment in the manufacture of microliths and this is evident in the intensive retouch of the tools.

INTRODUCTION

Trapezoids are well known from the Mesolithic and Early Neolithic technocomplexes. These geometric implements, produced by double transverse truncation from laminar blanks, were identified at the end of nineteenth century, when G. Chierici (1875) and A. de Mortillet (1896), described the Trapezes and Rhomboïdes. In the twentieth century, many scholars addressed the typological definition and classification criteria of these artifacts (Heinzelin de Braucourt, 1962; Daniel and Vignard, 1953; Barrière, 1956; Böhmers and Wouters, 1956; Tixier, 1963; Laplace, 1964a; Rozoy, 1967; G.E.E.M., 1969; Hinout, 1973; Broglio and Kozlowski, 1983), giving rise to a more and more detailed spectra of types and varieties that, in some cases, were obviously linked to the regional context. While recent studies seem to support the morphological distinction of principal types from the in classifying lithic artifacts, some scientists are at variance about the position of the so-called bi-truncated bladelets. These were included in a group of geometric microliths known as Divers (Daniel and Vignard, 1953), and distinct from the trapezes in their ratios of length to breadth (lamelles à deux troncatures, G.E.E.M., 1969; flèche tranchante, Barrière, 1956; Escalon de Fonton, 1953; Trapèze étiré, Daniel and Vignard, 1953), or by the orthogonal disposition of both the truncations in respect to the blank axis (Rectangles, Heinzelin de Braucourt, 1962; Daniel and Vignard, 1953) and were therefore considered as belonging to the truncated-pieces category (Tixier, 1963; Laplace, 1964a).

At the end of the nineteenth century the microburin method had been identified among the lithic complexes (Siret, 1893; Breuil, 1921) and was considered implicit in typological classifications in the following years (Heinzelin de Braucourt, 1962). Truncation, by contrast, does not require systematic blade fragmentation through such a method, since truncation can be produced
by transverse fractures obtained by means of flexion or percussion.

Initially classified as points, and successively defined as armatures microlithiques, arrowheads, or projectile points, trapezoids were the subject of hypotheses concerning their functional significance (de Mortillet, 1883; Déchelette, 1924; Friis-Johansen, 1919). In the last few decades interest in improving traceological analyses and experimentation peaked, as did debates on whether these were multifunctional tools, or transverse, oblique, or piercing arrowheads, with or without various barbs and edges hafted on projectile weapons (Barton, 1992; Nance, 1971; Rozoy, 1978 and, recently, Nuzhnyj, 1989; 1993; 2000).

Regarding these two latter possibilities, the finds recovered in European Paleolithic and Mesolithic sites like Stellmoor, Holmegaard IV, Loshult, Tvaerkose, Vinkel Mose, and Shikaevka II in western Siberia, provided an essential contribution to the investigation of hafting methods. Finally, traceological evidence tends to indicate use in hunting tasks for these pieces (Tringham et al., 1974; Odell, 1978; Lemorini, 1997; Winiarska-Kabacińska, 1992) but revealed improper use too (Odell, 1978).

Widespread in Europe from the second half of ninth millennia cal. B.C. during Late Mesolithic, the presence of these geometries among the late glacial cultures has always been neglected due to their very low frequency and geographical discontinuity. Both the studies of lithic assemblages and the detailed fieldwork reports count, describe, and classify trapezoids as rare or occasional pieces but have elicited minimal interest for a large-scale examination in defining Late Upper Paleolithic cultural phases.

In northeastern Italy, few trapezoids have been recovered during research in the last forty years from late glacial Epigravettian sites excavated at the foot of the Pre-Alps, or in the mountain region (Ferrari, 2000–2001). Such a scarce number of implements is associated with very rare geometric pieces, like triangles and lunates, and with the imperceptible appearance of morphologically defined microburins. This method was systematically adopted at the end of the Epigravettian, when a dramatic increase in the frequency of microliths occurred. Concerning the Recent Epigravettian and in particular the Younger Dryas period, excavations of two mountain sites conducted by the Trento Natural Science Museum and the Ferrara University both devoted to investigating human occupation at the prealpine fringe provided insights. Since the lithic assemblages recovered from the extensive excavation at the Bus de la Lum site on the Cansiglio Plateau (Peresani et al., 1999–2000) and from a test trench at La Cogola Rockshelter on the Carbonara Pass (Dalmeri et al., 1995) yielded tens of trapezoidal pieces, we considered these assemblages viable for assessing the general spread of this particular type of artifact.

As a basis for further research devoted to the functional significance of trapezoids among the late glacial technocomplexes and for the special purposes of this article, we conducted a large-scale re-examination of the evidence reported in the literature about the occurrence of similar pieces. Cultural and chronological extra-regional affinities, techno-typological features, chronology, and the environmental contexts of northern Italian implements are presented below and considered in relation with the site settlement system of the eastern Italian Alps.

**TRAPEZOIDS IN THE LATE GLACIAL EUROPEAN CULTURES**

A broad, preliminary overview of the literature concerning Europe and its neighboring regions revealed a wide distribution of trapezoids from the end of Last Glacial Maximum up to the beginning of Holocene. By focusing on the sites that have been 14C dated or the lithic industries with undoubted cultural attribution, it is possible to show how the utilization of this implement concerned both a large temporal interval and geographic area, from the Near East to the Great European Plain. We arbitrarily subdivided the overall evidence into two main chronological steps, the older one coinciding with the Oldest Dryas including the end of the Last Glacial Maximum, and the later one including the late glacial interstadials up to the Pleistocene/Holocene boundary, in order to assess the chronological occurrence of these geometric microliths.

**End of the Last Glacial Maximum and the Oldest Dryas**

Trapezoids were documented during this pe-
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In the Near East, the Kebaran culture shows a significant increase in trapezès à dos (Cauvin and Coqueugniot, 1988; Kaufman, 1988), as well as the presence of trapezoids at Umm el Tlel (layer 5: 16,520±200 B.P.; layer 5: 14,650±70 B.P.), El Kown (Syria), and Neve-David (13,400±150; 12,610±130 B.P.). Northward, in Transcaucasia, such implements are part of the Shan-Koba Culture that occupies the ecological zone of the northern slopes of Caucasus and Crimea (Kozlowski, 1977). The data is scarce for the Balkan Peninsula, and only the site of Kadar I in Bosnia, which dates back to the end of the Last Glacial Maximum (TL dates: layer IE/2b, 17,200±1,400; layer IE/2a, 16,200±1,050), yielded some pieces.

During this first chronological step, the frequency of trapezoids in assemblages appears rather uniform, numbering two or three pieces per site, except for the Near East assemblages, where such occurrences tend to be more important.

Late glacial interstadials and the beginning Holocene

During the late glacial interstadials and especially after the fourteenth and fifteenth millennia B.P., there is an increasing number of assemblages containing trapezoids, as well as a spread of this implement in many regions of Europe. The presence of this artifact is characterized by high numerical and morphological variability.

In the Near East, sites like Kharaneh IV record geometries at 10,620±125 B.P. (layer D) with the development of the Kebaran Culture and an increasing microlith production that was a prelude to the appearance of the Natufian. By comparison, the evidence for Crimea (Buran-Kaya III, layers 6.8 and 6.9, dated to 11,900±150 B.P., 11,950±130 B.P.), and the central and southern Ukraine, show a different world represented by Postgravetian cultures that, for Osokorivka and Shan-Koba, includes trapezes and some large triangles in their lithic tool sets (Zaliznyak, 1999).

In southern Europe, we see the production of these geometric implements during the final Epigravettian, both in the Balkan and Italian peninsulares, Sicily included. Westward in Dordogne, trapezoids are reported in Late Magdalenian assemblages (i.e. at La Gare de Couze, layers from G to B, layer C dated to 11,730±310 B.P.; Bordes. De Sonneville-Bordes, 1979), while in Aquitania, some bitruncated pieces were found within the Laborien complex (between 10,350 B.P. and 9870 B.P.; Le Tensorer, 1981).

An important area for their occurrence is Middle Europe, where Ahrensburgian sites provided evidence of use for this microlithic implement later on at ca. 10,320±250, 9810±100 B.P. (Bohmers, 1960; i.e. Stelmoor). Complexes from Belgium to western Poland show a step of development with microliths (Dewez, 1979; Kohusiewicz and Kabaciński, 1992; Otte, 1983).

Italy

In Italy, trapezoids were noted at several Late Upper Paleolithic sites in Sicily and along the Adriatic and Tyrrenian coastal belts (Fig. 1). The oldest evidence was recorded in southern Italy (Table 1): Sicily, and the Apulian and Latium Regions. Some sites in western Sicily, Nebrodi Mounts, and Egadi Islands (Acqua Fitusa Cave, San Teodoro Cave, Levanzo Cave) show a cultural succession that includes a bipartite Late Epigravettian, from the Oldest Dryas to the Boling chronozones. Drawing on one of the main aspects in the oldest phase, the geometric implements seem to disappear at one of the northernmost sites. Rare isosceles, scalene, and rectangular trapezoids have been recovered at the Acqua Fitusa Cave, levels 3 to 5 (Bianchini and Gambassini, 1973), Giovanna Cave in the Siracusa Province (Cardini, 1971), and San Teodoro Cave, levels D1 and C (Lo Vetro and Martini, 1999–2000).

Concerning the Apulian Region and the lower-middle Adriatic coastal belt, Paglicci Cave in the Gargano Region (Mezzena and Palma di Cesnola, 1967; Palma di Cesnola et al., 1983) shows a detailed record. The thick and culturally rich stratigraphic succession explored at this site yielded the oldest trapezoid from level 8, dated to the end of the Last Glacial Maximum. Specifically in the Apulian region, the late glacial evidence is represented by the very rare implements found at Santa Croce Cave (Dryas II/Allerød) and at Zinzulusa Cave, while in the Romanellian phase at the Youger Dryas–Preboreal transition, a few pieces were found at Romanelli (Laplace, 1964b) and Cavallo (Laplace, 1964b) caves.
Moving northward, the numerous Bertonian industries in the Abruzzi Region (Bisi et al., 1983) lack double-truncated pieces that, on the contrary, were recovered in the Marche Region (Broglio and Lollini, 1981). The Grotta del Prete record marks the last step of the cultural evolution that occurred during the Allerød–Preboreal interval and that also seems to have affected the technological background. While the oldest phase is characterized by the blade and microblade production at Ferrovia Cave with geometric pieces, during the latest one it is possible to observe a decrease in the microgravette content and the appearance of trapezoids.

Moving northward along the Tyrrenian coastal belt and inland, few late glacial sites contained trapezoids in their lithic assemblages. At Polesini Cave at Ponte Lucano near Tivoli (La­tium; dated to the end of Younger Dryas; Laplace, 1964b; Bietti et al., 1985) one isosceles trapeze and one rhomboidal piece were recovered from layer 7. Attributed to the same final cultural phase, the assemblages recovered in layers 11 and 12 at the Salvini Rockshelter in Latium, included few double-truncated bladelets (Bietti, 1984).

Similar artifacts have been documented at Pale­doro Cave in sections 1 and 8 within layer B (dated to the Oldest Dryas; Bietti, 1976–77). Further north in inland Tuscany, sites like Fredian Rockshelter (Boschian et al., 1995), Pianali di Montalbano (Martini, 1991), and Castagnina (Galiberti, 1997) contained evidence dated to the Younger Dryas (Fredian), or has been culturally attributed to the end of the Evolved Epigravettian. Finally, among the numerous late glacial sites of the upper Tyrrenian coastal belt, only one rectangle trapeze was found at the Arene Candide Cave in layers 1–2 (Bietti, 1994; Laplace, 1964b).

The spread of these implements is clearly characterized by very low frequencies in the earlier sets and, in some cases, by their difference in size relative to those recorded for the younger contexts. For this reason, we point out that the two trapezoids found in the Oldest Dryas/Bolling level 10 at Tagliente Rockshelter (Fig. 4: 37, 38) because of their notable size, have been excluded from the analysis of the Recent Epigravettian set.

NORTHEASTERN ITALY AND THE RECENT EPIGRAVETTIAN

The context and its modifications: chronology, environment, site distribution, main cultural outline

The late glacial period in northeastern Italy corresponds approximately to the Recent Epigravettian as A. Broglio (1980), and Bisi et al. (1983) stated when they presented the chronological and cultural layout of the Tagliente Rockshelter succession and those of other sites previously discovered in this region. After more than 20 years of research in the Eastern Italian Alps, this definition is still largely acceptable, even if some aspects regarding the internal subdivision and the position of the upper limit are under discussion and remain to be clarified (Bartolomei et al.,
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Occurrence of trapezoidal implements and their frequency in the totality of microliths recovered at the Recent Epigravettian sites of northeastern Italy

<table>
<thead>
<tr>
<th>Site</th>
<th>Altitude m</th>
<th>Field unit</th>
<th>Microliths</th>
<th>Trapezoids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soman Shelter¹</td>
<td>100</td>
<td>U.T.B.</td>
<td>195</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L.T.B.</td>
<td>473</td>
<td>1</td>
</tr>
<tr>
<td>Tagliaste Shelter</td>
<td>250</td>
<td>10c</td>
<td>529</td>
<td>2</td>
</tr>
<tr>
<td>Vilabruna Shelter²</td>
<td>500</td>
<td>5-4</td>
<td>75</td>
<td>4</td>
</tr>
<tr>
<td>Bus de la Lum</td>
<td>950</td>
<td>2</td>
<td>253</td>
<td>26</td>
</tr>
<tr>
<td>Val Lastar³</td>
<td>1060</td>
<td>3</td>
<td>679</td>
<td>3</td>
</tr>
<tr>
<td>La Cogola Shelter</td>
<td>1070</td>
<td>16</td>
<td>73</td>
<td>3</td>
</tr>
<tr>
<td>Val Dalmeri</td>
<td>1240</td>
<td>14/26</td>
<td>2566</td>
<td>4</td>
</tr>
</tbody>
</table>

Notes about the provenance of the pieces: 1 – lower thermoeelastic breccia, unit 160; upper thermoelastic breccia, units 110A, 4/124, 133, 5/21, 158; 2 – pieces equally distributed between layer 5 and 4; 3 – two pieces from unit 3; one from its arbitrary cut 3E; 4 – pieces recovered from units 14a, 14b, 22, 26c (data on La Cogola and Dalmeri shelters have been provided by A. Cusinato and G. Dalmeri).

1977; Broglio, 1992; 1997; Guerreschi, 1983; Palma di Cesnola, 1993; Cusinato et al., in press). Currently, a technological study of some lithic assemblages recovered at both valley bottom and mountain sites (Montoya et al., in press) is providing new perspectives for investigating Epigravettian behavior and culture, above all whether these are correlated with the geographical and biological modifications that occurred in the alpine southern margin during the late glacial. In this region, the history of human colonization is supported by numerous sites, some of which have been systematically investigated, and by various interdisciplinary data that illustrate the ecological contexts in which the Epigravettians lived from Last Glacial Maximum to the beginning Holocene.

The studies conducted in the Belluno Area demonstrate that after the Last Glacial Maximum (ca. 17,000 B.P. in the northern Treviso area, Bondesan, 1999) the glacier withdrawal from the prealpine fringe was accompanied by intermorainic lake formation and influenced indirectly the occurrence of several landslide events responsible for the formation of other lacustrine basins (Pellegrini and Surian 1994, 1996). In some sites, the late glacial beginning is marked by the occurrence of open larch stands (Casadoro et al., 1976), from which the conifer forests expanded during the Bolling and the tree line reached about 1,500 m altitude or even higher in the inner Italian Alps (Schneider, 1985; Kofler, 1994). Consistently, a recently discovered late glacial–Early Holocene paleobotanical and archaeological record, the Palughetto basin on the Cansiglio Plateau (Avigliano et al., 2000), shows that tree line was well over 1,050 m at the end of the Bolling. Many pollen records at the southern alpine margin suggest a mass tree expansion at 12,300/12,200 B.P. and provide evidence that the start of peat accumulation at low and middle altitudes is close to the age of forest expansion during a short time interval during the second part of Bolling (Cavallin et al., 1997; Gehrig, 1997; Wick, 1996).

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Forest expansion and the stabilization of mountain slopes during the Bolling–Allerød permitted the peopling of the eastern Pre-Alps and the Dolomites. This process is evident in the number of camps (more than 40) lying on the karst plateaux (Lessini, Tonezza, Asgialo, Cansiglio, Piancavallo) at altitudes ranging from 1,000 to 1,500 m, and in the main valleys crossing the
prealpine fringe (Broglio, 1992; Broglio and Lanzinger, 1996) and peaking at 1,870 m in the Dolomitic Region (Avanzini et al., 1998), near rock cliffs, peat-bogs, sheets of water, or under rockshelters sometimes very close to flint sources. Sites at valley bottoms usually lie near lakes or under rockshelters close to a stream.

Regarding the Younger Dryas, the impact of this climatic event on the prealpine landscape is known through palynological diagrams (Schneider and Tobolski, 1983; Wick, 1996) that show a moderate retreat of forest vegetation at the prealpine border (300-500 m). While at higher altitude (1,000 m) this main environmental change has not been macroscopically observed, in the way that the Paughetto conifer record documents (Avigliano et al., 2000).

From this perspective, while open air sites close to the Trento Basin (Viotte del Bondone, Andalo, Terlago; Bagolini and Guerreschi, 1978; Bagolini and Dalmeri, 1983; Guerreschi, 1984) must receive a more reliable chronological attribution going beyond that suggested by their pedo-stratigraphic layouts (Cremaanschi and Lanzinger, 1983; 1987), the dates provided at Bus de La Lum (Peresani et al., 1999–2000) and La Co-gola shelter (Dalmeri et al., 1995) indicate that mountain human occupation certainly occurred during the Younger Dryas, and that it fits the evidence from Soman shelter (Battaglia et al., 1992), although its position is in a valley bottom at the prealpine fringe (Fig. 2).

The main cultural outline of the Recent Epigravettian has been illustrated traditionally on the basis of typological features of the lithic assemblages recovered in open air and sheltered sites.
Other aspects regarding subsistence, site organization, production, utilization of non-flint tools, and art, are less well known due to the strong dishomogeneity and general dearth of archaeological records. According to Broglio and Lanzinger (1990), in the settlement system different site types can be distinguished.

**Residential sites in valley bottoms at the prealpine fringe**

These are sheltered sites at the base of cliffs, in cave openings, or on steep slopes; a few have been found in the open too. Currently, the main bulk of information comes from the excavations conducted at Soman shelter in the Adige Valley (Battaglia et al., 1992; Tagliacozzo and Cassoli, 1992); Tagliente shelter at the foot of the Lessini Mountains (Bartolomei et al., 1982; 1992; Cilli and Guerreschi, 2000; Cilli et al., in press; Liagre, 2006–2001); Biarzo shelter at the base of an alluvial terrace in the Natisone Valley, eastern Friuli (Guerreschi, 1996). All of these sites show evidence of repeated human occupation, paleo living floor organization, and subsistence economy and show that a variety of activities took place in the inhabited area including: flint tool manufacture, bone tool manufacture, butchering, hearth construction and maintenance, modification of living areas, cleaning tasks in the sheltered area, and refuse evacuation. Fishing was a significant task too: at Biarzo it occurred all year long (Cassoli and Tagliacozzo, in Guerreschi, 1996). The spectra of hunted mammals reflects the paleoecological evolution at site surroundings: at Tagliente, ibex and bovids appear to be dominant during the Oldest Dryas (Bartolomei et al., 1982), while during the Bolling red deer, wild boar, roe-buck, and chamois predominate. Similar prey was hunted at Soman and Biarzo too, during the Allerod, but during the Younger Dryas at Soman there is a decreasing frequency of wild boar, red deer, and roe-buck.

**Middle-low mountain seasonal camps, mostly settled in the open**

Except for Dalmeri and La Cogola shelters, the archaeological records of these sites were affected by several postdepositional agents that dismantled the living floors, dissolved bones and other perishable remains, dispersed or concentrated flints, charcoal, and other remains both vertically and horizontally, and weathered artifact surfaces (Angelucci and Peresani, in press; Angelucci et al., 1995). Nevertheless, important material was obtained from a few recently discovered sites: La Cogola shelter at the Astico Valley head (Dalmeri et al., 1995), Dalmeri shelter on the Asiago Plateau (Bassetti et al., 1998; Fiore et al., 1998), and Villabruna shelters (A, B, C) in the Cismon Valley (Aimar et al., 1992). All of them, and in particular Dalmeri, show well-preserved occupation layers and subsistence economies during the Allerod–Younger Dryas interval. Evidence of seasonal ibex hunting was uncovered at Dalmeri, where bone remains were discarded and accumulated on the ground both inside and outside a dwelling structure show the time of slaughter between summer and autumn (Curci and Tagliacozzo, 2000; Fiore et al., 1998). The occasional presence of other ungulates as well as various carnivores has also been reported. Fishing is documented too. At a lower altitude, the Villabruna A shelter revealed varied game that might reflect the surrounding environment and its evolution: in lower levels (17-10) ibex comprises more than 50% of total ungulates (red deer and chamois), while in upper levels (9-4) the dominance turns in favor of red deer and roe-buck (Aimar et al., 1992).

The functional significance of these open air sites has yet to be analyzed for use-wear and lithic technology. The lithics are characterized by an equilibrated rate between retouched tools and various implements used to make arrowheads or barbs. Excavations performed at the Val Lastari site (Broglio et al., 1992) exposed flint workshops, a flint tool cache, and thousands of flaking by-products that were the result of various reduction sequences aimed at obtaining blades, bladelets, and laminar flakes to be used, shaped or exported outside the investigated area (Peresani, 1992; Montoya and Peresani, in press).

**Seasonal hunting camps at middle-high altitude**

Lithic assemblages recovered at these sites are both scarce and dominated by types intended for hafting onto weapons: backed points, backed bladelets, truncated backed bladelets, and some types of geometric microliths. At present, only two sites show this type of evidence, Pian dei
Laghetti (an open air site at 1,488 m; Bagolini et al., 1984), and Tschonstoan Rockshelter (at 1,870 m in the Susi Alps; Avanzini et al., 1998). Due to a dearth of archaeological remains in both sites they remain radiometrically undated and their chrono-cultural status has been assigned based on the typological features of the lithic artifacts.

For retouched implements, the Tagliente succession is uniquely useful for typologically defining the first of three phases in which the Recent Epigravettian has been divided (Bisi et al., 1983) because this succession covers a chronological span from the Older Dryas to the beginning Alled. In fact, the tool sets recovered from levels 16-11 are dominant in elongated frontal endscrapers on short types that, inversely, predominate in the overlying levels (10-4) during the second phase. The second phase is well represented in many other sites in addition to Tagliente levels 10-4 (Broglio, 1992): endscrapers prevail as very short, thumbnail, sub-circular, semicircular, and fan shapes; truncations show variable frequency, sometimes higher at mountain sites than at low altitude sites; backed knives are present only in the Alled; like the microgravettes, the backed points form a large typological variety including implements with truncated bases and proximal points with natural base, rare lunates, triangles, and trapezoids occur. Except for trapezoids which disappear, these microlithic geometric implements abruptly increase during the third, final Epigravettian phase, concurrently with the massive adoption of the microburin method and the appearance of truncation-points and double backed points.

Chronologically, these phases approximately fall into the late glacial chronozones in accordance with the 14C dates obtained from many different sites (Broglio and Improta, 1994–1995): the first phase being included in the Older Dryas, the second one covering the late glacial interstadials and the main part of the Younger Dryas, while the third one is of uncertain position, and might be placed around the Younger Dryas–Preboreal boundary. The attribution of sites to one or other of these phases, nevertheless differs among scholars (Broglio, 1992; Guerreschi, 1996).

According to A. Broglio (Broglio and Improta, 1994–1995; Broglio, 1997), the lithic industry of the first phase derives from a development of the Early Epigravettian, because this technological tradition seems to be discernable in the flaking procedure, typology, and size of the lithic implements. On the other hand, the two following phases mark the appearance of technological and typological innovations giving a signature to the lithic assemblages that, in the author’s opinion, exclusively come from the Epigravettian entity. In fact, the spread of particular types of short end-scrapers, backed knives, and geometric implements obtained through the microburin method as well as trapezoids, is a complex phenomenon that goes beyond the Epigravettian area and points to the establishment of connections among different cultural entities. It seems likely that this situation was favored by the ameliorated environmental conditions.

Sites with trapezoids in a multi-differentiated landscape: stratigraphic layout and basic information

The Recent Epigravettian industries that contain trapezoids are from some prealpine sites that vary in location, environment, and site preservation. In accordance with their geography and altitude – the mountain foot to the middle altitude plateaux – information is presented about the stratigraphy, environmental data, archaeological layout, and archaeozoological data (when available), and techno-typological data extracted from the Tagliente, Sonian, Villabruna, La Cogola and Dalmeri shelters, and the open air sites of Bus de La Lum and Val Lastari. All of these sites have been radiocarbon dated (Fig. 3) and, the shelters in particular, have preserved stratigraphic successions that provide feasibility for analyzing their lithic assemblages. The open air Epigravettian site of Terlago, settled at 414 m in altitude (Bagolini and Dalmeri, 1983), was disregarded for the purposes this study, due to the suspicion that the sequences have been polluted with culturally younger geometric implements.

Tagliente Rockshelter

Tagliente Rockshelter lies on the right bank of the Valpantena river, at the foot of a small rocky wall at 250 m in the Lessini Mountains. This shelter was initially investigated from 1962 to 1964 by the Verona Natural History Museum, and thereafter the Epigravettian deposits were
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Fig. 3. Conventional radiocarbon dates for the Epigravettian assemblages with trapezoids in northeastern Italy, arranged in chronological order: VL – Val Lastari (unit 3, arbitrary cuts 3D and 3B; 3D including structures SIII, SIV, SV; Broglio et al., 1992); TS – Taggiante shelter (layer 10 and 8–10; Alessio et al., 1970; Hedges et al., 1994); SS – Soman shelter (lower and upper thermoclastic breccia; Battaglia et al., 1992); DS – Dalmeri shelter (units 14/26c, 26b; Bassetti et al., 1995); LCS – La Cogola shelter (units 19 and 18, Dalmeri; pers. comm.)

largely excavated by the University of Ferrara (P. Leonardi) from 1967 to the present (A. Broglio, A. Guerreschi, C. Peretto). Partially disturbed in the medieval period, its thick stratigraphic succession dates back to the Upper Pleistocene and is formed by two sequences. The lowermost sequence, which has been attributed to the Middle and Early Würm, groups several lithological units of cryogenic clast-supported breccia with blocks of rock-fall; from the base, a partially rubified clayey matrix is progressively substituted by aeolian loams toward the top (Cremaschi, 1990). This sequence includes Mousterian assemblages (levels 52-31) and a few reworked Aurignacian remains (level 25). Above an erosional surface, the uppermost sequence dates back to the late glacial. It thickens considerably from inside to outside the shelter. From bottom to top, it includes conglomerates, gelification and solifluxion deposits, and alternating planar living floors (levels 18-4) containing structures, flint workshops, a burial, lithic artifacts, bones, and other remains. Moving outside, the parallel bedding shifts from horizontal to inclined.

This episode of Epigravettian human occupation lasted about 3,000 years from the Oldest Dryas to the Allerød (Capuzzi and Sala, 1980) during a considerable environmental change toward a more temperate and wooded landscape in level 12 (Cremaschi, 1990;). Presently, research is focused on the archaeozoology (Cilli et al., in press), lithic workshops (Guerreschi and Squintani, 1995), blade and bladelet manufacture (Lia- gre, 2001–2002; Montoya et al., in press), bone implements, and ornamental objects (Fiocchi, 1998). Regarding the lithic technology, Montoya et al. (in press) point out the relationship between the laminar end-products and the use of soft hammer throughout the entire sequence. Typological information was provided by A. Guerreschi (Bar-tolomei et al., 1982) who studied levels 16 to 4. Among the tools, the longer endscrapers prevail
in levels 16 to 11 with a majority being the shorter types such as thumbnail, semicircular, circular, sub-circular, and fan-shaped endscrapers. Backed points are generally small and straight, while various types of truncated backed bladelets prevail in levels 10 to 4. Rare triangles, lunates, and two trapezoids were recovered from level 10 to 4.

**Soman Rockshelter**

Soman Rockshelter lies at 100 m in the Adige Valley, three kilometers north of the Ceraino Gorge, and was investigated by A. Broglie and M. Lanzinger from 1984 to 1988 (Battaglia et al., 1992). Laid upon a gravelly bar and overbank deposits of the Adige River, the stratigraphic sequence consists from bottom to top of thermoclastic breccia including Late Upper Paleolithic layers, and of mainly colluvial and anthropogenic fine deposits with Mesolithic and Neolithic remains. Excavations took place in two sectors, the smaller excavation investigated the deposit partially disturbed by recent quarry activity, and the larger excavation revealed an Epigravettian living floor with bone accumulation. Stratigraphy, faunal remains, and 

The lower units, the two phases share the same typological features in their lithic assemblages. Tools account for ca. 30% of the whole set: short thumbnail, semicircular, circular, sub-circular, and fan-shaped endscrapers are more frequent than truncations and burins. Among the backed items, various types of truncated backed bladelets largely prevail on points, on a very few backed bladelets, and rare triangles, lunates, and trapezoids. Some microburins occur too. Truncated backed bladelets show a large typological variety mostly produced by single or double truncation: normally oriented or symmetrically or asymmetrically disposed, with oblique or obtuse angle. Points, appear mostly as microgravettes and small types with the base tapered by accessory bipolar retouch. Trapezoids are six: one from the lower complex, five from the upper.

**Villabruna Rockshelters**

Filled by a glacier ablation-tongue during the Last Glacial Maximum, the Cismon Valley in the Venetian Dolomites was inhabited by Epigravettians at the end of the Bolling interstadial. This evidence is provided by the Villabruna rockshelters, positioned at ca. 500 m at the foot of a limestone cliff and excavated in 1988–1989 by A. Broglio (Aimar et al., 1992). Explored at the top of the debris cone, the stratigraphic succession of Villabruna A consists of clast-supported cryogenic breccia with organic matrix accumulated during the human occupations. Units from 17 up to 10A are radiometrically dated back to the Epigravettian; unit 3 is of Mesolithic age. In unit 17, a burial with painted stones was found. The other shelters, B and C, yielded Epigravettian, Late Mesolithic, and Neolithic finds.

Partially destroyed by recent quarry activities, the anthropogenic deposits provided no detailed data on the settlement organization. Taphonomic and archaeozoological analyses proved that the bone accumulation was connected with the hunting of ungulates: ibex is the most represented species in the lower part (units 17-10) while, inversely, red-deer increases in the upper part (units 9-4). Few remains of wild boar, roe-buck, and small carnivores were found (Aimar et al., 1992; Aimar and Giacobini, 1995).

Recently, the lithic industry has been the object of a preliminary investigation, both from the
technological (Montoya et al., in press) and the typological standpoints (Aimar et al., 1992). Regarding flint supply, petroarchaeological studies carried out on geological and archaeological samples revealed some affinities with the gray flint sources in the Biancone limestones 4 km from the site (Benedetti et al., 1992). Flint was exploited in order to produce blades and bladelets. Among the retouched tools, frontal endscrapers are the most frequent with very short, thumbnail and semicircular outlines; other forms occasionally occur. On the other hand, some blades were shaped by abrupt bifacial retouch in backed knives and other retouched implements. Microliths are represented by microgravettes, commonly, backed truncated bladelets and very few geometric pieces (backed lunates and triangles). The unique four trapezoids were found in layer 5.

La Cogola Rockshelter

Recently discovered at the head of the Astico Valley by the Trento Natural Science Museum (G. Dalmeri), La Cogola Rockshelter was investigated in 1998, 1999 and 2002. Settled at 1,070 m altitude at the foot of a modest limestone cliff facing south, the site shows a well-preserved thin stratigraphic sequence formed by a clast-supported cryogenic deposit, ranging from the Final Upper Paleolithic (units 19 and 18) to the Early Mesolithic (unit 16; Dalmeri et al., 1995) in which abundant faunal remains, bone and flint artifacts have been recovered. The present-day research involves studies on the natural and cultural formation processes, wood charcoals, lithic assemblages, micro and macro-mammal remains, and birch (Dalmeri et al., in press). The Epigravettian assemblage includes bladelet cores, truncation and dihedral burins, frequent short and very short endscrapers, truncations, and several backed bladelets, microgravettes, and 37 trapezoids of which 13 were recovered in unit 19, 21 were recovered in unit 18, and 3 pieces were recovered in unit 16.

Dalmeri Rockshelter

Dalmeri Rockshelter is situated at 1,240 m on the northern slope of the Asiago Plateau at the head of a stream valley tributary of the Brenta river. This site is notable both for its geographic setting and its well preserved dwelling structures in the context of mountain environments, and a large area has been under investigation since 1991 by the Trento Natural Science Museum (Bassetti et al., 1998).

The units forming the sedimentary sequence are normally made of clast-supported breccia with a silty loam, quartzitic-micaceous matrix, and show evidence of different climatic phases, i.e. from relatively cold and humid, to a temperate period during the human occupation which dates back to the Allerød chronozone and, then to another cold context. A geoarchaeological study (Angelucci and Peresani, 1998) conducted by means of routine analyses and micromorphological investigations provided data for reconstructing the natural and cultural formation processes of the lower Epigravettian unit (unit 26). The results indicate that humans occupied a soil surface that was already stable and affected by soil formation. The human induced microfabrics derive from various activities: the preparation of structured occupation surfaces through the deposition of aeolian silt sediment that was collected outside the shelter; the disposal of organic refuse more than its accumulation; trampling, and manufacturing. Depositional and postdepositional modification processes have also been observed (organic and clay alluviation, organic soil bioturbation, degradation by cryoturbation of the structured occupation surface).

Faunal remains (Bartolomei, 1998; Fiore et al., 1998; Girod, 1998), flint and bone artifacts (Bassetti and Dalmeri, 1993; Bassetti et al., 1995; Cusinato, 1999), ornamental objects (Dalmeri and Fiocchi, 1998), and painted stones (Dalmeri, 1998; Dalmeri et al., in press) were found. As regards the above mentioned macromammal studies (Curci and Tagliacozzo, 2000; Fiore et al., 1998), they suggest that the shelter was inhabited during the summer or early autumn and that it was a specialized ibex hunting site.

A sample of the lithic assemblage was analyzed typologically and a first assessment has been proposed about the organization of lithic production (Cusinato, 1999; Bassetti et al., 1995; Peresani et al., in press). Detailed lithic technological, typological and functional analyses are in progress (Dalmeri, Cusinato, Montoya, pers. comm.). The local gray flint provisioned from the Biancone marly-limestones, and various exoge-
nous types have been exploited in order to obtain blades, bladelets, and some flakes (Cusinato, 1999).

Regarding the retouched tool set, a certain variety is represented by the most frequent implement endscrapers and by burins, retouched blades and truncations. Backed knives, points, and borers appear in low frequencies. Pièces esquilléès, denticulates, scrapers, and retouched flakes are rare. Endscraper typology is dominated by the short frontal, while the remaining types are subcircular, oval, thick or long frontal. Truncation burins in majority, and dihedral, multiple or on fracture. Truncations occur more on blades than on bladelets, and are equally divided into oblique and normally oriented types; most are straight and their retouch seems to show a proportional invasivity with reference to the linear extension (Peresani et al., in press). Marginal or invasive retouch occurs on blades.

Truncated backed bladelets and backed points largely prevail on backed bladelets and rare triangles, lunates, and trapezoids. Some microburins occur too. Truncated backed bladelets form a large typological variety depending on the truncation occurrence and arrangement: single or double truncation, normal or inclined, with an oblique or obtuse angle, symmetrically or asymmetrically arranged. The backed points are mainly microgravettes and other different types. There are four trapezes total.

Val Lastari

Val Lastari is an open air site that lies on the Asiago Plateau, in the Lastari Valley at the foot of the southern slope, near a shallow limestone wall at 1,060 m. Excavations managed from 1990 up to 1996 by A. Broglio and M. Peresani (Broglio et al., 1992) surveyed a 70 m² area, including two main sectors. Currently, research is focused on the organization of lithic production, by means of technological (Montoya and Peresani, in press) and functional analyses. Detailed studies on the retouched tools and microliths as well as spatial analyses will be the next step. Disregarding the large chronological interval, the set of radiocarbon dates indicate that site occupation mainly occurred during Allerød interstadial (more details are given in Broglio et al., 1992).

Four main units form the stratigraphic sequence: below units 1 and 2 which contain reworked Upper Paleolithic and Middle Paleolithic flint artifacts, there is a silty loam soil (unit 3, with arbitrary levels from 3A to 3F) with Epigravettian remains, mostly found on a living floor (levels 3D–3F); unit 4 is a coarser sterile deposit. Field data and micromorphological analyses performed in a geoarchaeological study (Angelucci and Peresani 1995) indicate that the soil profile developed from a loess cover resting on slope deposits, and that two late glacial pedogenetic phases, one of which related to the 3D–3F levels, occurred. Furthermore, the authors confirm (Angelucci and Peresani, in press) that various postdepositional processes acted in reducing the bulk of archaeological remains (dissolution of bones and other non-flint material) and distributing both vertically and horizontally the lithic artifacts.

The archaeological remains were found scattered inside the soil profile except on the lower floor, where they were grouped near the wall amid some boulders, suggesting the existence of flint workshops; moving beyond these, flints decrease abruptly. Unworked or tested blocks, various by-products, prepared cobbles, cores and large cortical flakes, flakes, blades, bladelets and a few stone hammers were recovered usually in heaps, the contemporaneity of which was proven by several refittings. At the base of the wall, some waste pits with an abundance of flaking by-products, unexploited cobbles, cores and pre­cores were connected with the workshop. In the second sector a few meters away from the foot­slope, a cache was found that contained unworked or tested flint cobbles that had been selected from the clay-with-flint deposits along the valley-bottom (Peresani, 1992; Peresani, in press).

The aims and modalities of toolmaking were identified by technological analyses (Montoya and Peresani, in press) that revealed the occurrence of three independent sequences largely performed on local flint: production of straight blades to be shaped into backed knives or to be used as unretouched pieces; production of blade­lets for obtaining two morphometric categories useful in shaping backed pieces; lastly, a few barely retouched blanks were obtained from a subordinate production of laminar flakes.

Regarding retouched tools, this assemblage was not polluted by Mesolithic and Neolithic
tools – both technologically and typologically diagnostically elements. Tools (mainly endscrapers, burins, truncations, backed knives, and other retouched blades) and microliths (backed points, bladelets, truncated bladelets) are recorded with almost the same frequency (Brogiolo et al., 1992). Usually obtained from flakes and various by-products, the endscrapers are frontal, very short, with thumbnail and semicircular outlines; other types occur with very low frequencies. Dihedral, truncation, on fracture burins were obtained from blades and thick flakes. On the other hand, regular blades were selected to be shaped into numerous truncations (Peresani et al., in press), backed knives and retouched implements. Among the microliths, many different types of backed points were recognized: microgravettes with direct or bifacial back and accessory retouches, types with proximal point and natural base, short and large or truncated pieces. Backed truncated bladelets display a large typological variety derived from the truncation number, arrangement and orientation. We point out the occasional evidence of the microburin method, as well as the presence of geometric pieces (triangles and three trapezoids).

**Bus de La Lum**

Excavated from 1997 to 2000 on a 80 m² large area, Bus de La Lum lies at 995 m on the Cansiglio karst plateau in an extremely uneven zone with sinkholes, ponor and limestone pavements, where the preservation of extensive level ground, like that which hosted the camp, is exceptional (Peresani et al., 1999–2000). The archaeological record was strongly reduced by karstic and pedogenetic processes, both of which were responsible for the dissolution of bones and non-flint artifacts and of a characteristic dispersion of lithics in the underlying Upper Pleistocene loess deposit (Angelucci and Peresani, in press). Presently, research is in progress and concerns study of natural depositional and postdepositional processes as well as spatial, technological, and functional analyses designed to reconstruct the modalities of human occupation(s) dated back to the Younger Dryas.

Apart from a few sandstone pebbles used as hammers or retouchers and two refitted hematite scales, more than 6,000 flint tools constitute the Epigravettian lithic assemblage. No evidence of Mesolithic or more recent occupations was detected. Blades and bladelets were chipped from blocks, pebbles and thick flake-cores: from the core technological features, it is not surprising that reduction involved more than one single sequence and that it was influenced by the properties and shapes of exotic and local raw material. Backed knives are absent. The other tools depict a large typological variety dominated by truncations and retouched blades, with a lesser presence of retouched flakes, short frontal endscrapers (with sub-parallel sides, thumbnail, or fan shapes), burins and scrapers. These were shaped on various flaking end- and by-products like cortical blades and flakes, trimming-core blades, strikingplatform rejuvenation flakes, and broken pieces. Even if highly fragmentary, the microliths include truncation-points, backed points, backed and truncated backed bladelets, retouched bladelets, rare scalene triangles, several (26) trapezoids and multiple truncations. Backed points make up the single largest component with different forms: Microgravettes, very finely retouched, with a thin or abrupt thick base, with additional truncation, with double back.

**The Analysis of Epigravettian Trapezoids and Comparisons with Late Mesolithic Implements**

**Materials and methods**

Overall, 82 implements have been recovered from the selected sites, (Table 1, Fig. 4): 27 of which are partially fragmentary or incomplete. Since the lithic sets from Bus de La Lum and La Cogola shelters make up the most consistent bulk of the collection (76.8%), they are likely to influence the main features of the overall technotypological aspect of the sample. Since the fieldwork at La Cogola is still in progress, trapezoids from the Younger Dryas sites will be the subject of a specific investigation in the future.

For the purposes of the present study, and taking into account the particular variability expressed by the Epigravettian specimens, we use the term trapezoid in a broad sense, that is to include all blanks that bear double truncation or, at least, one truncation opposite to one unretouched fracture which represents the characteristic geo-
metric shape to the artifact. Concepts and criteria of the analytical procedure are inferred by Böhmers and Wouters (1956) and, in keeping with the Mesolithic contexts of northeastern Italy, by Broglio and Kozlowski (1983). This latter analytical procedure was useful in making comparisons between the Epigravettian and Castelnovian implements in order to point out their main technological and typological differences.

Each structural element of the geometric microlith was recorded and analyzed: truncations (retouched or unretouched fractures), blank features (sides, sagittal profile, transverse section), retouched edges (truncation and accessory retouches), and size (length, breadth, thickness). Each specimen was oriented by placing its base on the right. In order to recognize the original blank manufactured for toolmaking, and to distinguish between flakes, blades, and bladelets, the general outline and the arrangement of scars on the dorsal face were documented. Other features like the sagittal profile, transverse section, thickness and breadth were retained as useful for determining which criteria blanks were selected. Truncations were evaluated on their degree of incline (in degrees, clockwise) and their outline. Finally, data about orientation, inclination and retouch invasivity, both on truncations and the sides, were documented. The lengthening index (l.i.) is calculated as the rate between the longest side (or the main base of the trapezoid) and its breadth. In addition to the truncation pattern, the lengthening index contributes to the identification and the definition of the specimen, in accordance with the typological protocol.

The technological and typological features of the Epigravettian geometries

All of the specimens exhibit similar conditions of preservation: patina is very light, edges are unabraded; only a few of them are affected by breakage and chromatic modification due to thermoclastism. In perfect accordance with the lithological composition of the corresponding industries, the trapezoids were manufactured on the same flint types.

Size and blank outline

Various types of blanks were shaped: blades, bladelets, and flakes. The geometric layout is one of the parameters that has been retained for distinguishing different types of blanks is breadth, even if width is affected by accessory retouch(es) that left the original size unmodified. By synthesizing the body of data that we accumulated from studies devoted to recognizing methods and variability in the Epigravettian laminar production of northeastern Italy (Montoya et al., in press; Montoya and Peresani, in press), we fixed the boundary between blades and bladelets around a breadth of 12 mm. Trapezoids have breadth values ranging from 6 to 20 mm and the majority of cases (52) are in the 6 to 12 mm interval (Table 2). Thickness varies from 2 up to 5 mm, the highest frequency being recorded in the lowest class. As concerns the original blank outline, pieces with straight sides are the most frequent (31%), but for the remaining 69%, we note a high variability due to almost all the combinations possible between straight, convex, concave, sinuous, being the straight/convex, straight/sinuous and straight/concave the most frequent. The sagittal outline is straight in the majority of cases too (80%), but different combinations (concave, straight, convex, sinuous) equally occur. Transverse section is variable: trapezoidal and triangular, the both symmetric and asymmetric, with regular or irregularly crossed dorsal ridges. In some cases no arris is present on the dorsal face.

The above data put into evidence several features: in addition to the blades (29.2%) and bladelets (58.8%) showing regular outlines, a few flakes with mainly convex sides and convex or sinuous sagittal outlines were used (6%). Finally, 2.2% of the sample still bears cortical portions.

Truncations

Both the upper and lower truncations define two value ranges: $10^\circ$–$70^\circ$ (14.8%) and $310^\circ$–

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Main morphometric features (in mm) of the trapezoids (total=82)</th>
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<td>length main base</td>
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<tr>
<td>length shorter base</td>
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<td>breadth</td>
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<td>thickness</td>
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Fig. 4. Trapezoids recovered at the Recent Epigravettian sites of northeastern Italy: La Cogola shelter (n. 1–4, 6, 8, 12, 15, 24, 29), Soman shelter (n. 5, 13), Bus de La Lum (n. 7, 9–11, 16, 19–23, 25–28, 30–34, 36), Dalmeri shelter (n. 14, 35), Villabruna A shelter (n. 17), Val Lastari (n. 18, 39, 40), Tagliente shelter (n. 37, 38) (drawings by G. Almerigogna, S. Ferrari, A. Paolillo)
Frequency distribution of the inclination values (in degrees, clockwise) for proximal (left) and distal (above) truncations

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<td>7</td>
<td>74</td>
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360° (85.2%) for the upper; 10°–60° (77%) and 310°–360° (23%) the lower (Table 3). Thus, it follows that the upper truncations are usually turned to the left and that the lower ones usually to the right. Additionally, data shows the occurrence of trapezoids with normal truncations to be 8.2%. As concerns the zenital outline, the frequency of pieces with both straight truncations is significant (33.3%) with respect to those with concave, convex or irregular edges. A few pieces have both concave truncations.

**Retouch**

Most of the trapezoids were manufactured by means of retouched truncations (80%), while in the remaining pieces, a simple transverse fracture is visible. Five pieces from La Cogola show one unretouched fracture. Any fracture produced through the microburn method has been observed. The majority (65.0%) of the cases bear totally retouched truncations, while partial retouches usually affect more than half of the length. Retouching was direct (88.8%), alternate (9.7%) and inverse (1.5%). Invasivity has been observed on upper (87.9%) and lower (84.3%) truncations.

**Table 3**

The breadth and length scatter (Fig. 5) puts into evidence the high dispersion of values and shows a contraction in the length range at 12 mm, that is not related to a particular type of object or with a clear concentration of pieces from one site. Finds from new excavations probably will clarify the reasons for this. The length of the sides may be an useful parameter for the typological distinction of the trapezoids. Concerning the shorter side, the higher frequency falls in the 5–8 mm interval; the longer in the 11–17 mm interval (Table 2). An equal length was measured on 6 (7.2%) implements showing parallel, oblique or normal truncations. On 6 pieces, the length of one side was double that of the other side.

Trapezoids from La Cogola and Bus de La Lum show interesting accessory retouches: 15 finds bear retouch only on one of the two sides (9 on the shorter side); this retouch does not seem to be homogeneous in distribution, inclination or invasivity. Distribution may be total (7 pieces) or more limited in extension (the last fourth of the edge length).
Lengthening index and morphological differentiation

The lengthening index defines a continuous range of values, from 0.5 up to 3.5; the highest frequencies have been recorded in 0.5–1.0 and 1.5–2.0 intervals (76%), while 36.1% falls in the 1.0–1.5 class. This distribution gives rise to the following typological differentiation: 54.2% are very short trapezoids, 21.7% are short, and 24.1% are long (Fig. 6). Among the types, we record a predominance of symmetric forms (68.0%), 45.1% of which have straight both truncations), by comparison to the asymmetric (32.0%), the 10.0% of which are very short with décalée base. Among the long forms, asymmetric prevail (60.0%) on remaining symmetric, while on the contrary, among the short forms asymmetric are lightly predominant (52.9%) on symmetric. Very short pieces have asymmetric outlines.

Most differences between the Epigravettian and Castelnovian trapezoids by a sample comparison

From layers AB1 and AB2 of the Mesolithic series of Romagnano III Rockshelter in the Adige Valley (Alessio et al., 1978; Broglio and Kozlowski, 1983), we examined 94 artifacts with the intent to cover the widest typological variety. The sample illustrates the almost exclusive utilization of bladelets, and a very high degree of standardization (straight sagittal outline, parallel sides, and dorsal ribs, triangular or trapezoidal symmetric transverse section) that may be due to careful selection of the blank or well managed flaking procedures, as it was previously observed throughout the overall cultural sequence (Bisi et al., 1987). Concerning the procedure of blade fracture and segmentation, Castelnovian trapezes clearly bear the evidence of the microburin method, that is the presence of the piquant-triédre on one or both the truncations associated with a partial notch; moreover, there is a very high frequency of microburins in the assemblages. Furthermore, these implements shed light on the variability in the arrangement of both the truncations, i.e., the upper one systematically turned to the left, and the lower one variably inclined. As a result, Castelnovian trapezes are mainly asymmetric short (l.i.<2) and very short (l.i.<1.5).

CONCLUSION

Trapezoids are an important category of tools among the innovations in geometric implements in the lithic assemblages of the European late glacial complexes commencing with the temperate interstadials. Their presence in many late Epigravettian industries from Mediterranean region to the Crimea and Southern Ukrainian plain and
including Italy, is likely to be interpreted as the result of large-scale cultural renewals, as a consequence of the climatic and environmental amelioration that followed the Last Glacial Maximum. The widening of colonizable territories, favored by the ample reforestation of the eastern Italian Alps, was accompanied by the opening of the mountain passes making the crossing of this region easier. In accordance with the Broglio’s statement (1997), the occurrence of trapezoids fits in with the appearance of different retouched tools and various hunting implements as well as of some technological procedures used in toolmaking in relation to the settlement dynamics observed in Friuli, Trento, and Veneto.

In assessing the significance of such a massive renewal both in toolmaking and in lithic assemblage compositions during the late glacial interstadials, improvements are required from the techno-functional studies that, at present do not support tracing the main activities connected with the manufacture and use of the trapezoids. Parallels with similar Late Mesolithic implements seem to be inadequate due to the cultural, temporal and environmental distance between the two periods. As explained above, Castelnovian trapezes in northern Italy reveal a high degree of standardization both in blank procedures and tool manufacture, making the difference with the Epigravettian items evident. On the other hand, these latter implements show a large variability in all the morphological and dimensional features considered. The blanks shaped are usually bladelets, but we cannot neglect the use of blades, flakes and cortical blanks, whose sides are not parallel and straight in their sagittal outline. Truncations are also variable in their incinication and plane outline, which are mostly straight and convergent. Concerning their manufacture, it fits well what is known about the shrewd methods used for the formal tools of some Epigravettian sites (Peresani et al., in press): no application of microburin method; abrupt retouch, mostly invasive and complete, usually direct, and sometimes inverse.

The use of various types of blanks to manufacture microliths might have occurred in the ambit of economical behavior that involved a higher investment in manufacture by retouch. Especially after examining the Castelnovian specimens, it is evident that most techno-economical efforts were devoted to maintaining the same caliber and morphology of bladelets during the flaking procedures, to the disadvantage of retouching and shaping both the truncations. It is questionable whether the low frequency of standardized features observed in the Epigravettian bladelets represent the style of flaking or are the result of the use of flaking end- and by-products. For the Epigravettian bladelets, new information is available from the technological studies of the Epigravettian industries (Montoya et al., in press) which share with other late glacial cultural systems (Azilian, Feldmesser) in northern and southern France (Bracco et al., 1997) the exclusive adoption of soft hammer stones in order to obtain bladelets. The consequence of this dramatic technological shift – the abandonment of the organic hammer and use of soft hammer stones – was a complex innovation in the design of hunting implements and, obviously, in the system of hunting modalities (Pelegrin, 2000), that might have concerned also the trapezoids.

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Notes

1. The typological reference adopted for the analysis of Kebaran industries with geometrics, defines trapezoid implements as bi-truncated pieces or trapezes without a back, or as a trapezoidal outline lacking a back. The frequency of this latter type is part of the criteria for distinguishing the development phases of this culture (Bar-Yosef, 1976).

2. The chronology of the Tagliente succession, as well as the criteria adopted for the recognition of the above mentioned phases at this site, have been debated recently by Montoya et al. (in press) who points out the organization of lithic technology.

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