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A new seriation and chronology for early Italian metalwork, 4500-2100 BC

Supplementary data

HOW TO USE THE SUPPLEMENTARY DATA

The supplementary data detail the classification of copper-alloy axes, daggers and halberds underpinning the new chronology discussed in the article. The criteria utilised to categorise all objects are outlined under ‘Research Methodology’ (Step 1: Object classification). Further details on classification criteria, nomenclature, and object provenance are discussed under ‘Early Italian Metalwork: A New Classification’ (plus Figures 2-4 and tables 3 and 11). These sections should be read before consulting the supplementary data.

In the supplementary data, plates 1-11 should be consulted alongside tables I-XIV. The plates contain a selection of objects by class/type. The tables contain the full list of objects discussed in the article; they are organised thus: Lefthand column: object class, type (the two occasionally coincide), and variant, where present; centre column: object findspot and bibliography (see article bibliography for full references); righthand column: sources of the illustrations shown in the plates. Neolithic axes are listed in tables I-II (plate 1). These cover the whole of Italy. Eneolithic axes are listed in tables III-IX (plates 2-7). The sample is split regionally (i.e., northern and peninsular Italy) and then typologically based on macro-classes (e.g., flat axes), classes (e.g., trapezoidal), subclasses (e.g., plain-sides, biconvex side profile), types and, if applicable, variants.

Eneolithic daggers and halberds are classified in tables X-XIV (plates 8-11). Unlike axes, the sample is not split regionally but solely based on object morphology including classes, subclasses, types and, if applicable, variants. Whereas the classification of axes is entirely original (including nomenclature), the classification of daggers and halberds is in many respects akin to that proposed by Bianco Peroni (1994) and de Marinis (1994). For this reason, we have often maintained their findspot-based nomenclature of object types, adding new type names (or altering the tally of objects belonging to each type) when we felt there was a need for it. These changes are detailed in tables X-XIV.

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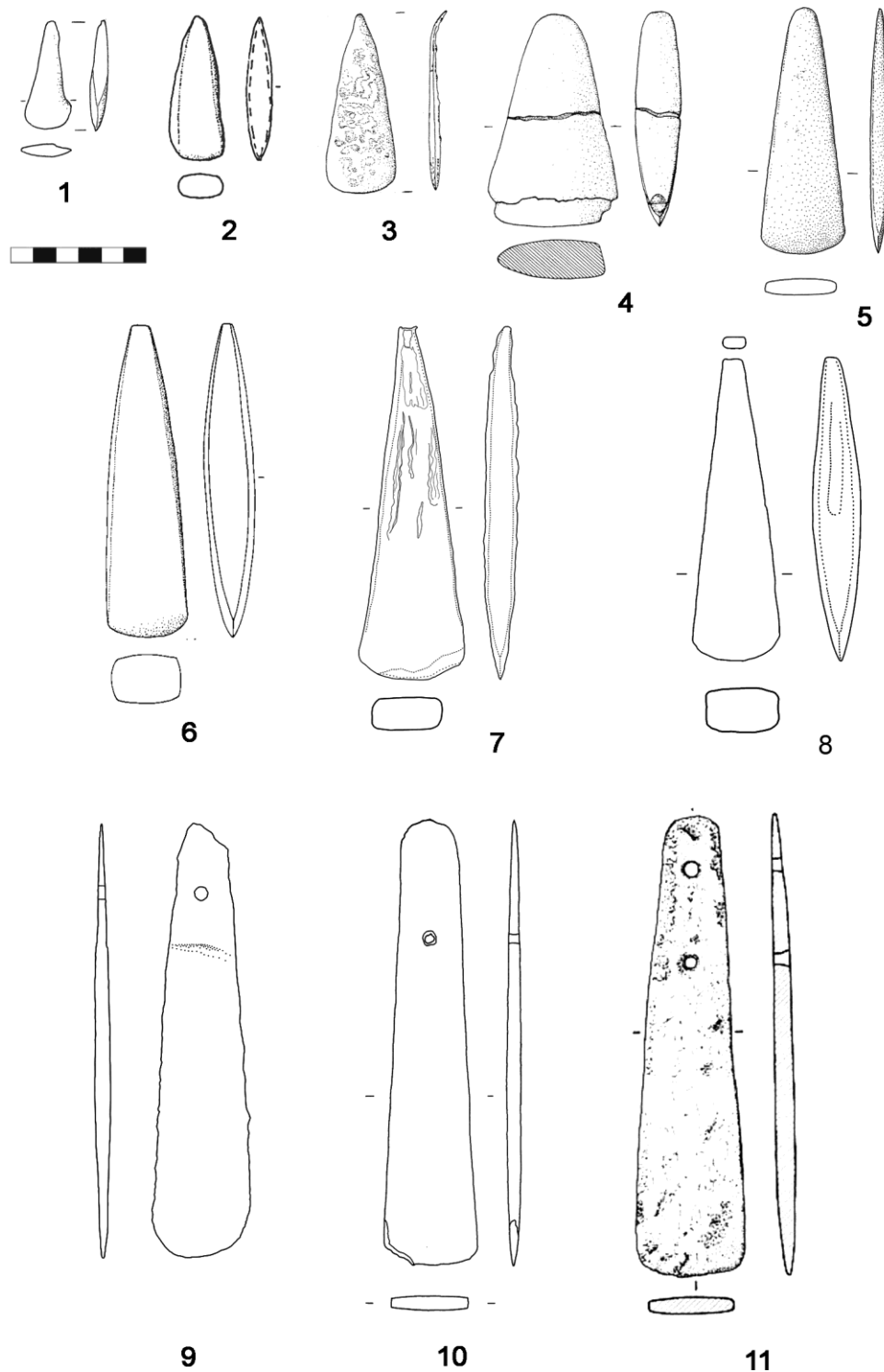


Plate 1 - Objects 1-8: northern and peninsular Italy, triangular axes. Objects 9-10: peninsular Italy, elongated axes with perforated butts. See *Axe Typology*, tables I-II, for details.

Oggetti 1-8: Italia settentrionale e peninsulare, asce triangolari. Oggetti 9-10: Italia peninsulare, asce allungate con talloni perforati. Per i dettagli si veda la Tipologia delle asce, tavole I-II.

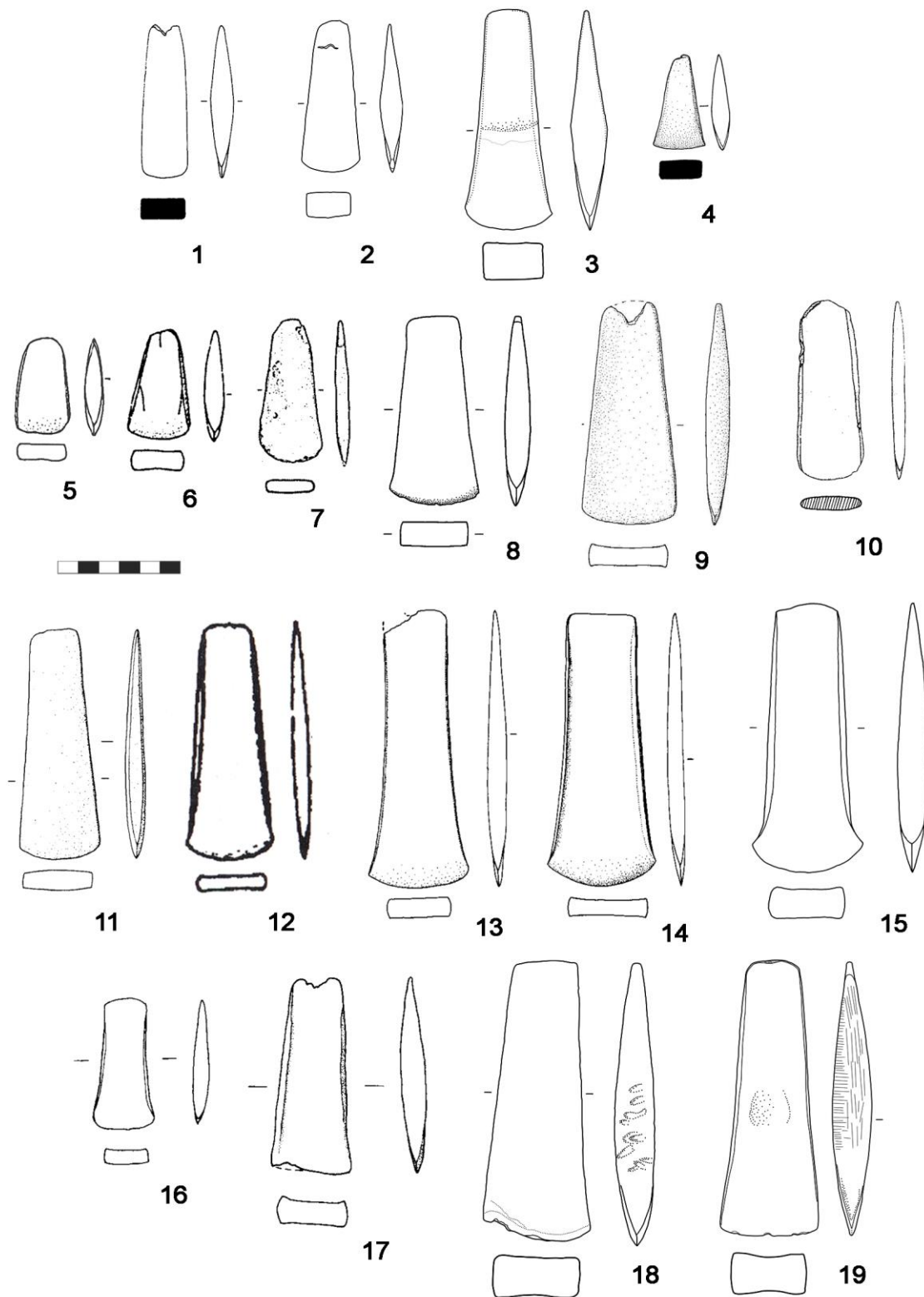


Plate 2 - Objects 1-19: peninsular Italy, flat trapezoidal axes. See *Axe Typology*, tables IV-V, for details.
Oggetti 1-19: Italia peninsulare, asce piatte trapezoidali - Per i dettagli si veda la Tipologia delle asce, tavole IV-V.

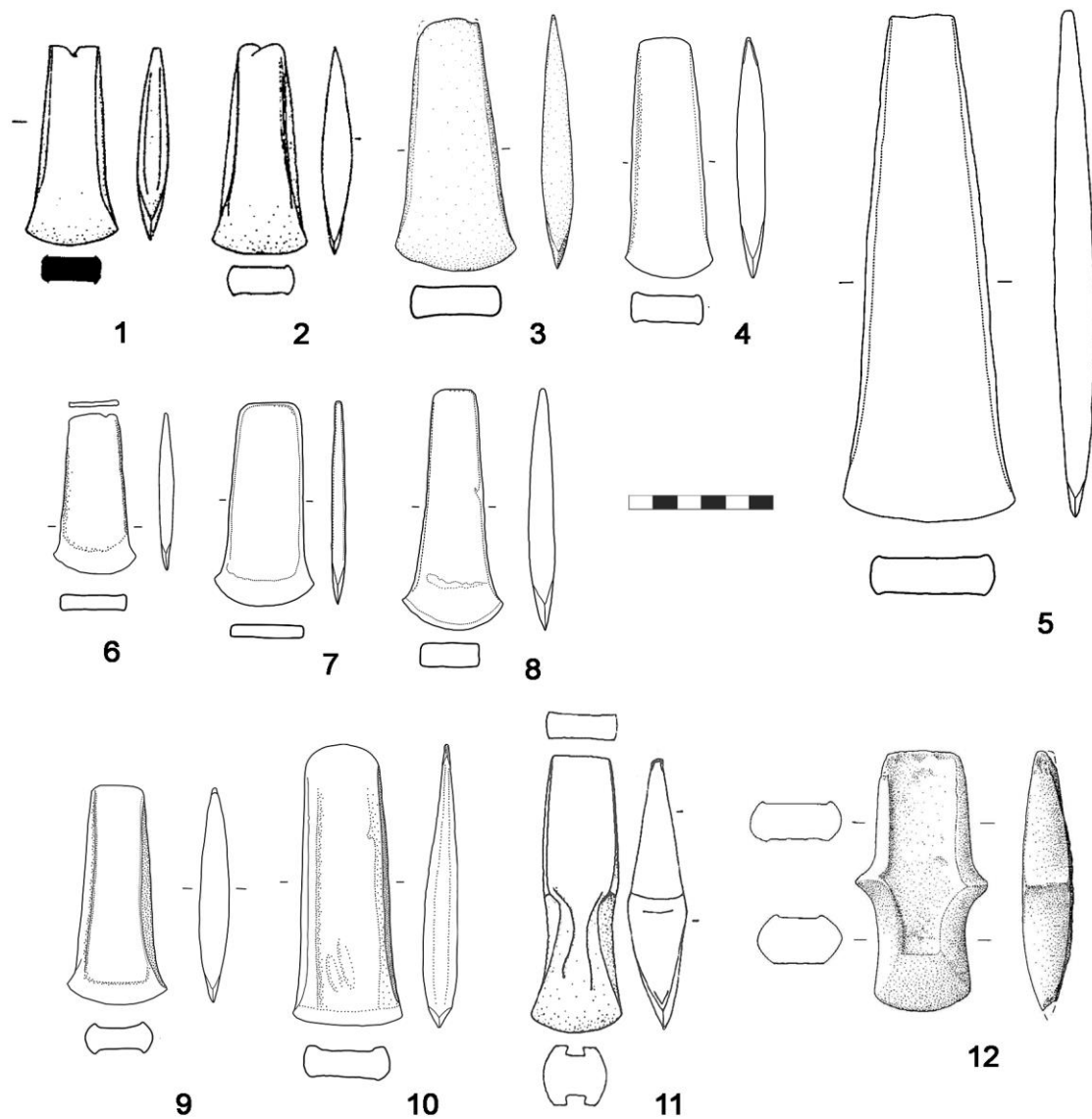


Plate 3 - Objects 1-10: peninsular Italy, flat trapezoidal axes. Objects 11-12: peninsular Italy, butt-axes. See *Axe Typology*, tables V-VI, for details.

Oggetti 1-10: Italia peninsulare, asce piatte trapezoidali. Oggetti 11-12: Italia peninsulare, asce a tallone. Per i dettagli si veda la Tipologia delle asce, tavole V-VI.

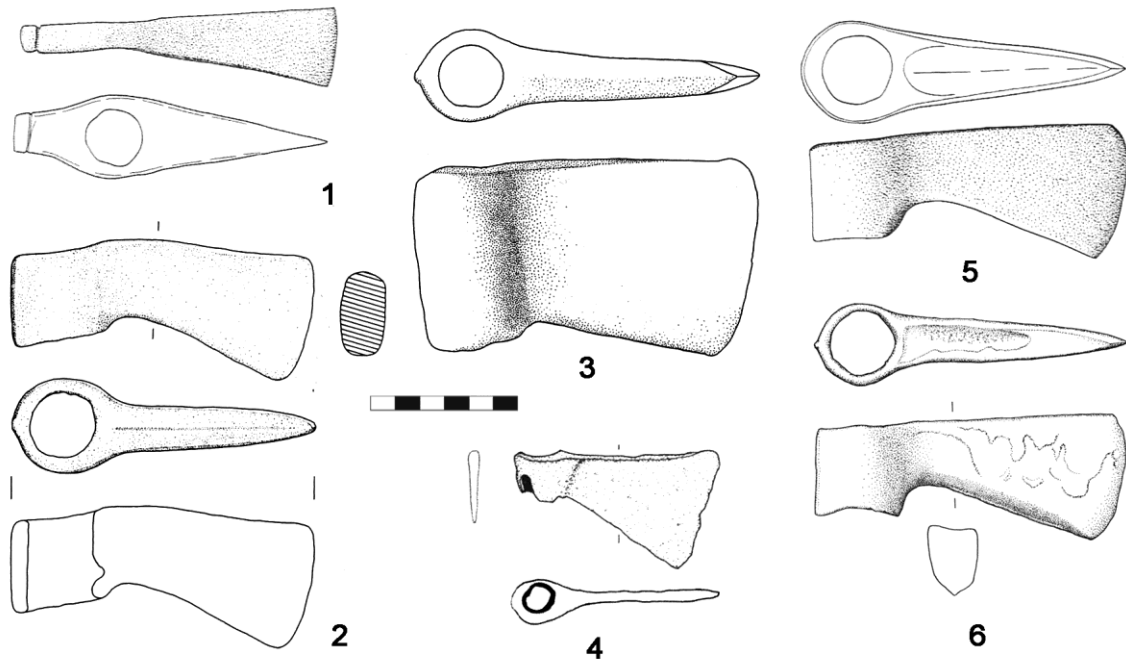


Plate 4 - Objects 1-6: northern Italy, shaft-hole axes. See Axe Typology, table VII, for details.

Oggetti 1-6: Italia settentrionale, asce ad occhio. Per i dettagli si veda la Tipologia delle asce, tavola VII.

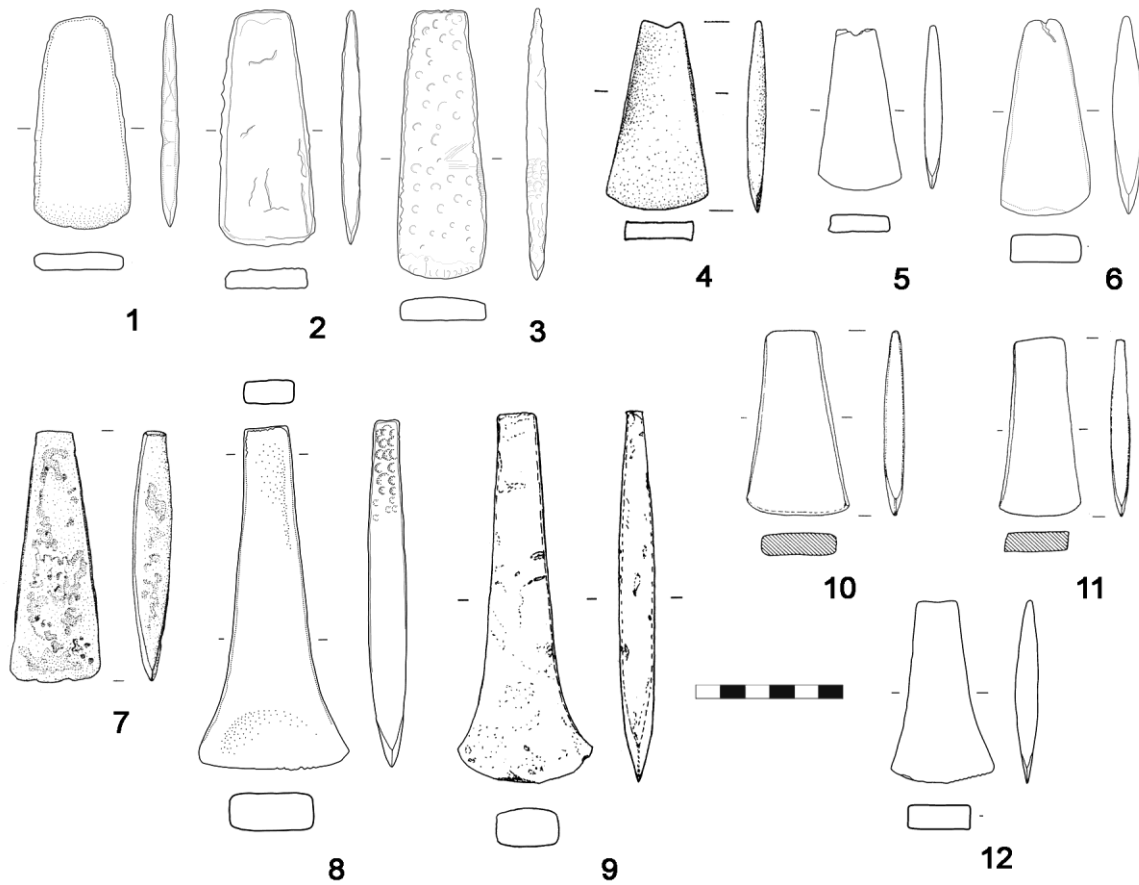


Plate 5 - Objects 1-12: northern Italy, flat trapezoidal axes. See *Axe Typology*, table VIII, for details.
Oggetti 1-12: Italia settentrionale, asce piatte trapezoidali. Per i dettagli si veda la Tipologia delle asce, tavola VIII.

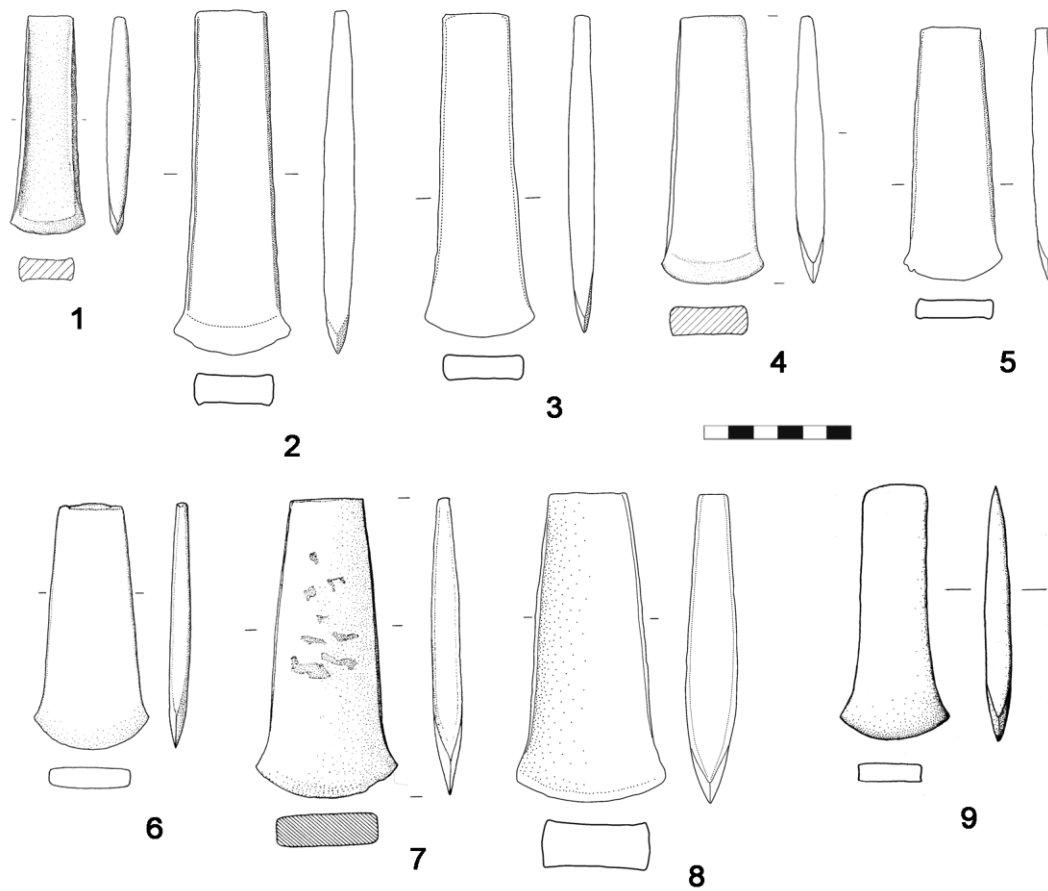


Plate 6 - Objects 1-9: northern Italy, flat trapezoidal axes. See *Axe Typology*, table VIII, for details.
Oggetti 1-9: Italia settentrionale, asce piatte trapezoidali. Per i dettagli si veda la Tipologia delle asce, tavola VIII.

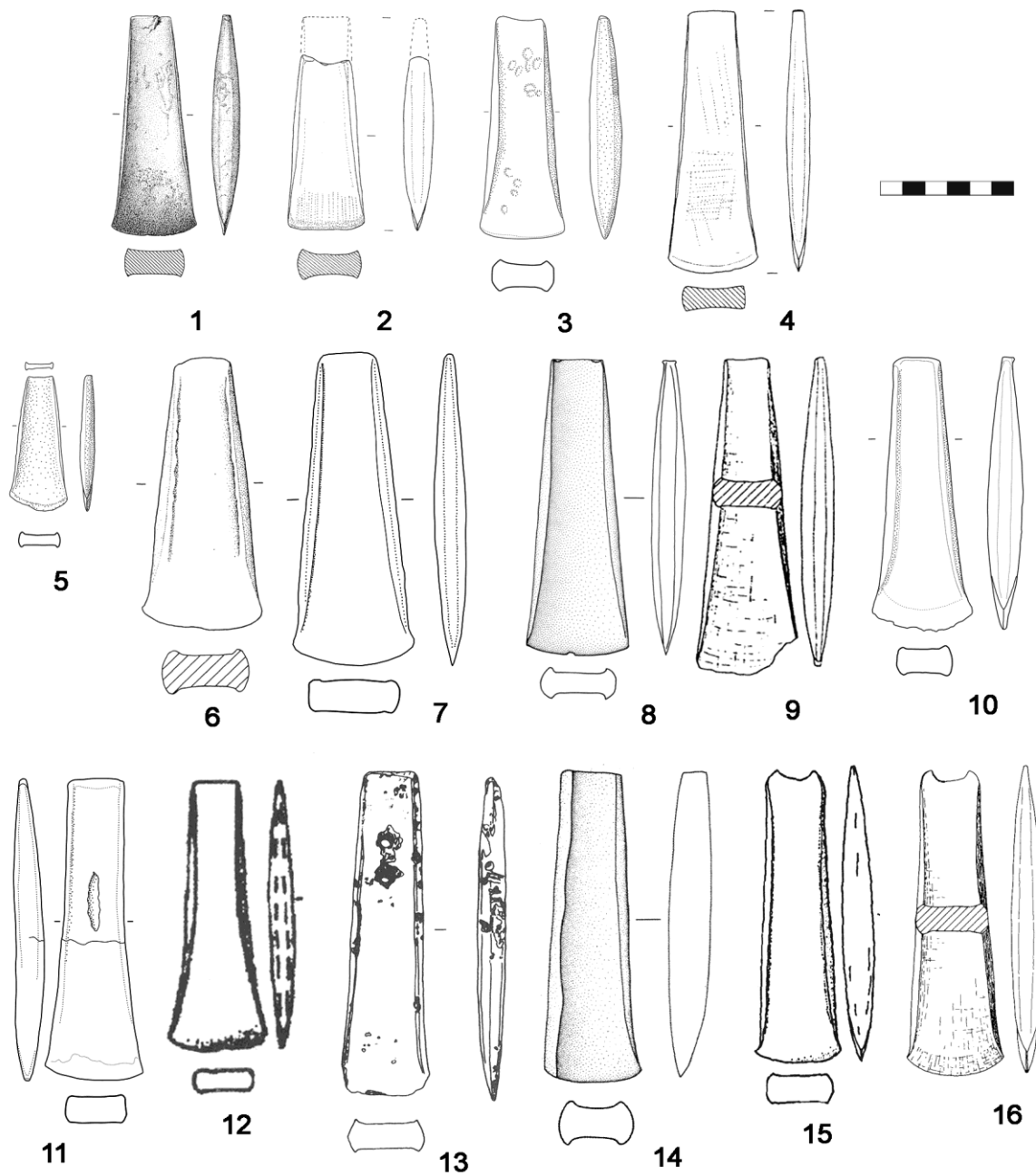


Plate 7 - Objects 1-16: northern Italy, flat trapezoidal axes. See Axe Typology, table IX, for details.
 Oggetti 1-16: Italia settentrionale, asce piatte trapezoidali. Per i dettagli si veda la Tipologia delle asce, tavola IX.

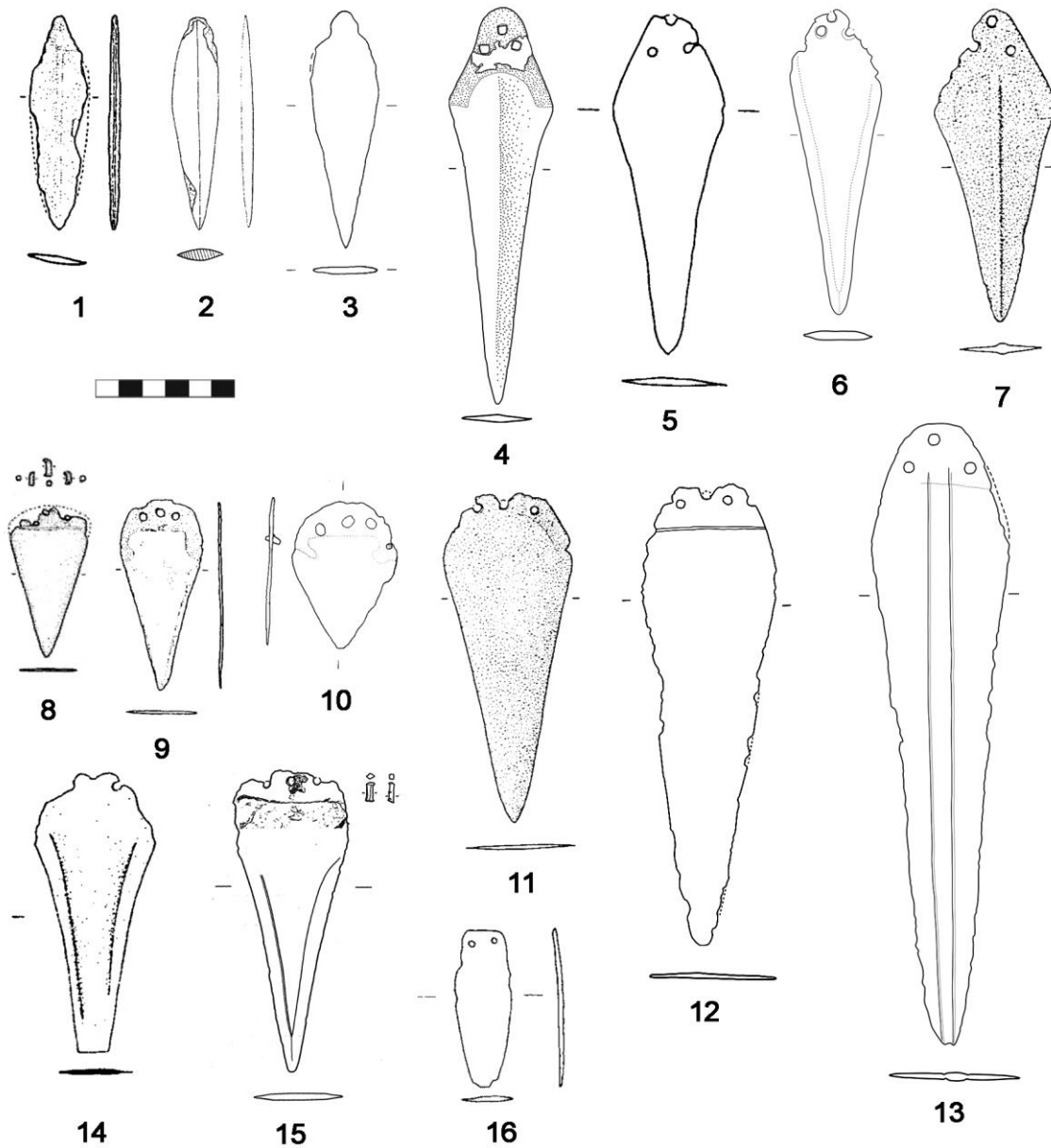
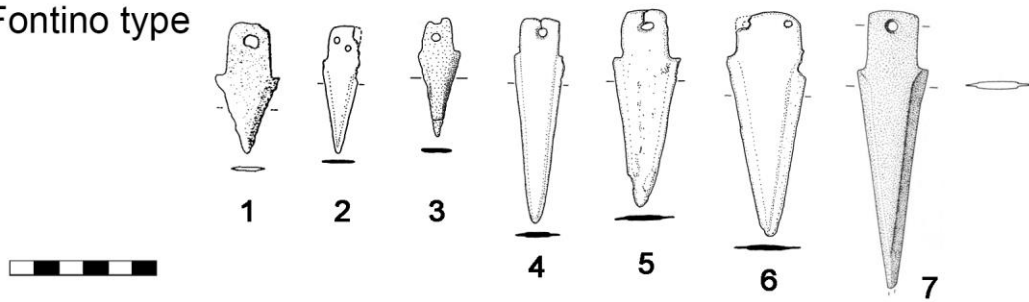


Plate 8 - Objects 1-3: leaf-shaped blades without rivet holes. Objects 4-16: blades with hafting plates and rivet holes. See Blade Typology, tables X-XI, for details.

Oggetti 1-3: lame foliate senza fori per ribattini. Oggetti 4-16: lame con piastre di immanicatura e fori per ribattini. Per i dettagli si veda la Tipologia delle lame, tavole X-XI.

Fontino type



Remedello group

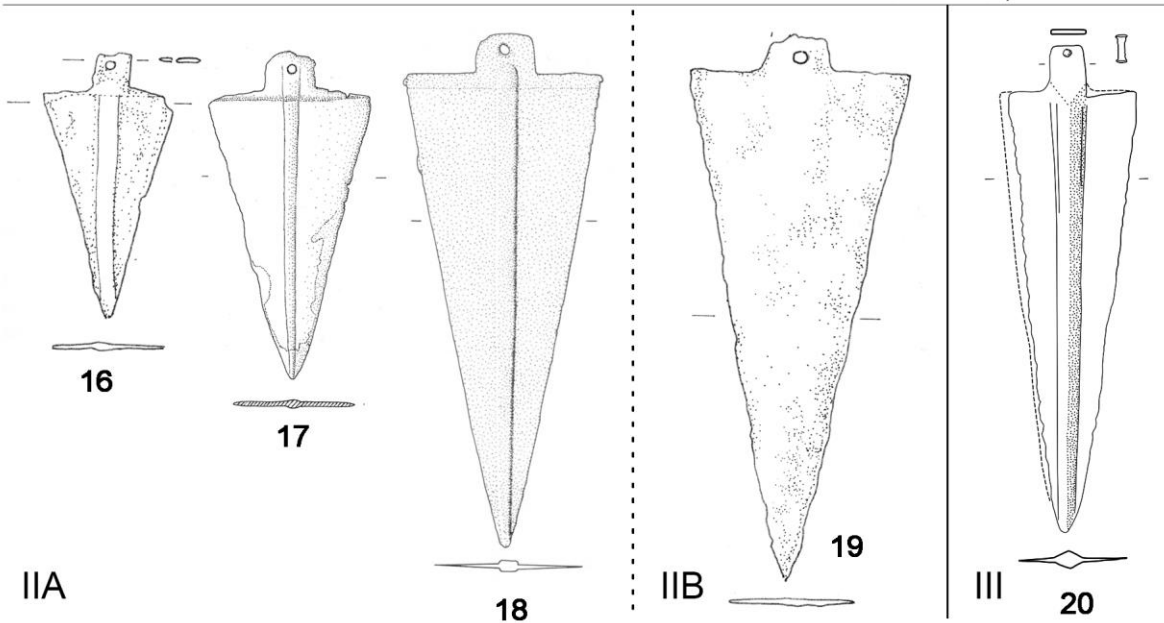
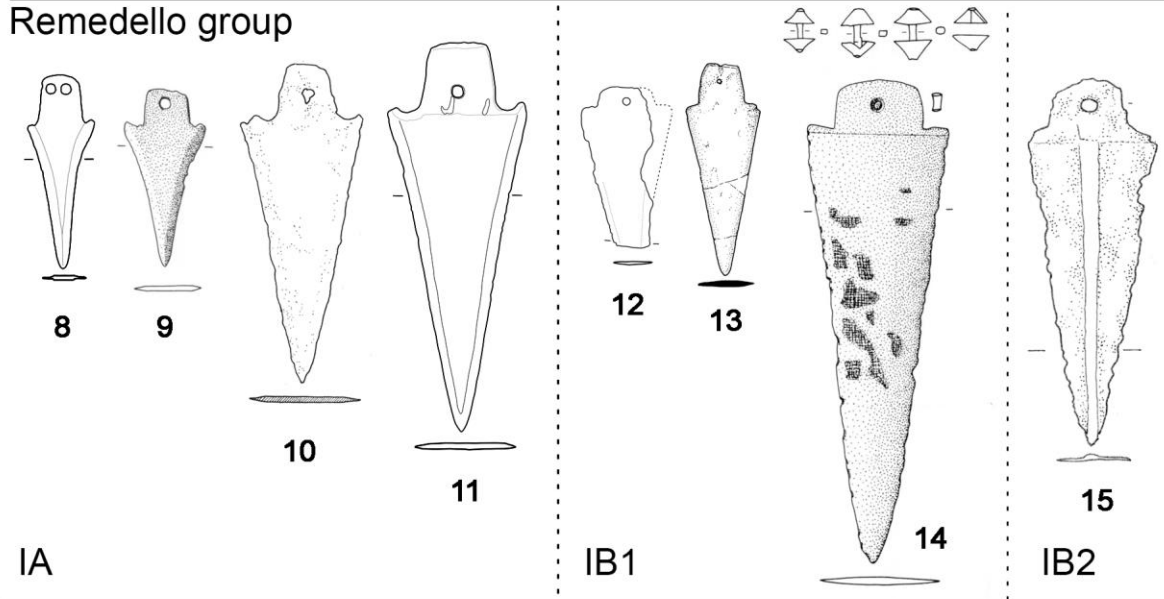


Plate 9 - Objects 1-7: blades with hafting tangs and rivet holes assigned to the Fontino type. Objects 8-20: blades with hafting tangs and rivet holes assigned to the Remedello group, types I-III. See Blade Typology, table XII, for details.

Oggetti 1-7: lame con codolo di immanicatura e fori per ribattini attribuiti al tipo Fontino. Oggetti 8-20: lame con codolo di immanicatura e fori per ribattini attribuiti al gruppo Remedello, tipi I-III. Per i dettagli si veda la Tipologia delle lame, tavola XII.

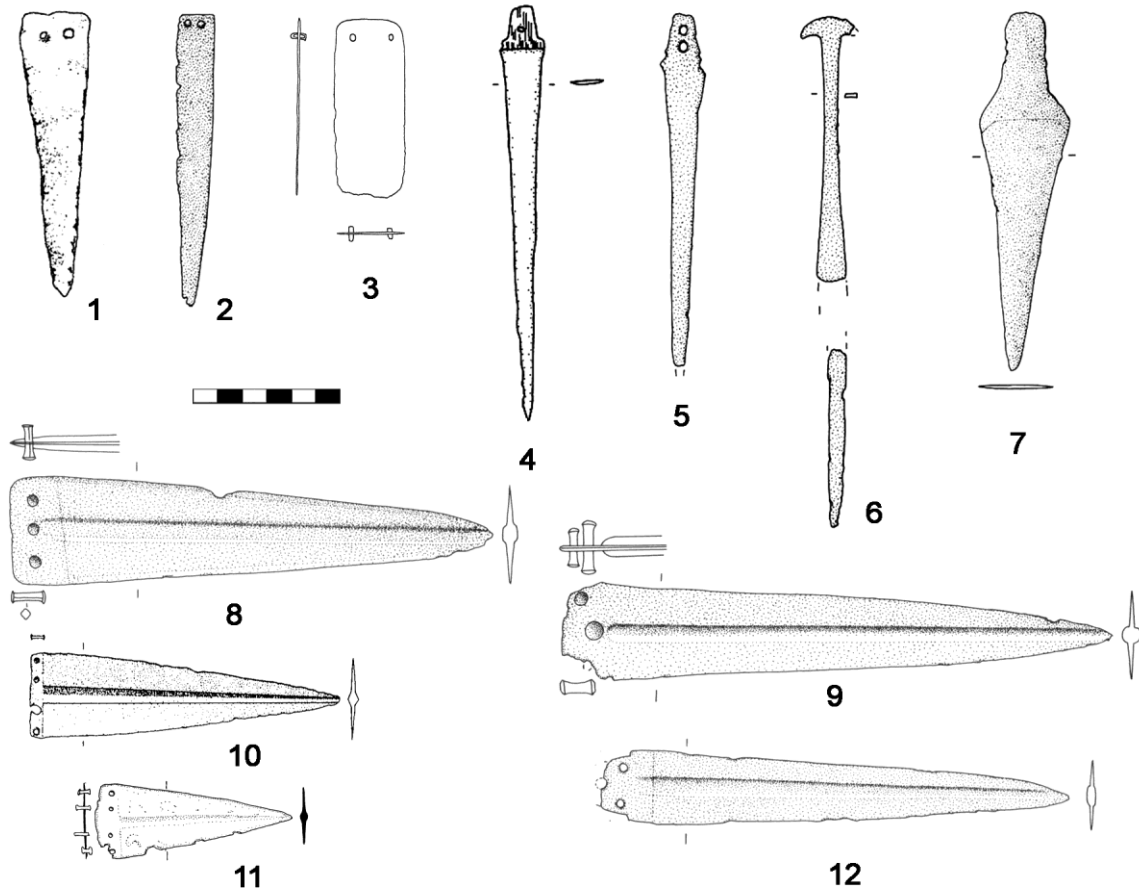


Plate 10 - Objects 1-3: blades with hafting plates and rivet holes. Objects 4-5: blades with tangs and rivet holes. Object 6: blade with a solid hilt. Object 7: blade with a tang and no rivet holes. Objects 8-12: daggers/halberds with hafting plates and rivet holes. See Blade Typology, tables XI, XIII-XIV, for details.

Oggetti 1-3: lame con piastra di immanicatura e fori per ribattini. Oggetti 4-5: lame con codolo e fori per ribattini. Oggetto 6: lama con elsa fusa. Oggetto 7: lama con codolo senza fori per ribattini. Oggetti 8-12: pugnali/alabarde con piastre di immanicatura e fori per ribattini. Per i dettagli si veda la Tipologia delle lame, tavole XI, XIII-XIV.

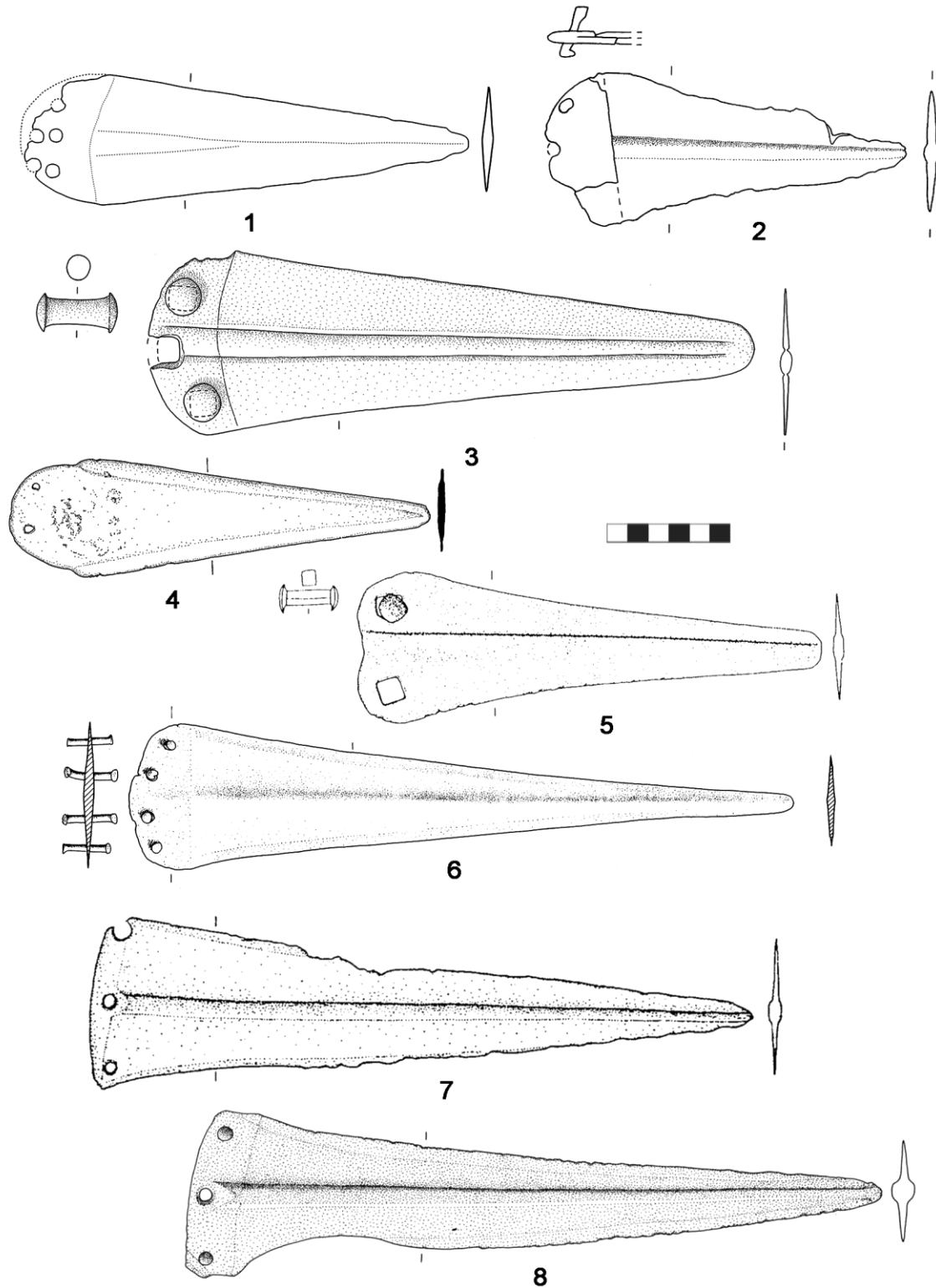


Plate 11 - Objects 1-8: daggers/halberds and halberds with hafting plates and rivet holes. See Blade Typology, table XIV, for details.

Oggetti 1-8: pugnali/alabarde e alabarde con piastre di immanicatura e fori per ribattini. Per i dettagli si veda la Tipologia delle lame, tavola XIV.

Table I - Peninsular Italy. Elongated axes with perforated butts (plate 1).
Italia peninsulare. Asce allungate con tallone perforato (tavola 1).

CLASS/TYPE	PROVENANCE - LITERATURE	PLATE SOURCES
<i>Axes with thin and slender outlines and perforated butts</i>	Cerreta di Stroncone, trench grave: Colini 1912: tav. II; Filippi 2020: 767, fig. 2.7.14.1. Vetralla: Dolfini <i>et alii</i> 2020: fig. 4.71. Ballstädt, east-central Germany: Klassen-Dobes-Petrequin 2008-2009: 28, abb.15.	1.9: Vetralla, drawing A. Dolfini. 1.10: Cerreta di Stroncone: drawing A. Dolfini. 1.11: Ballstädt, Klassen-Dobes-Petrequin 2008-2009.

Table II - Northern and peninsular Italy. Triangular axes (plate 1).
Italia settentrionale e peninsulare. Asce triangolari (tavola 1).

CLASS	PROVENANCE - LITERATURE	PLATE SOURCES
<i>Axes with near-triangular outlines</i>	Pizzo di Bodio: Banchieri 1999: fig. 4.2. Unknown provenance, Bergamo: de Marinis 1992: 389, fig. 1.2; Pietre degli Dei: 200, n. 46, fig. 130.1. Valle Fontega: de Marinis 1992: 390, fig. 1.1; Pearce 2007: 41 (table and comment). Carancini 1993: 126, n. 3. Campegine: de Marinis 1992: 389, fig. 1.3. Campania, British Museum: Bietti Sestieri and Macnamara 2007: 31, n. 1, pl. 1. S. Gimignano: Giardino 2013: 19, figs. 2, 3. Casali, Sgurgola: Carboni 2002: fig. 11.1; Giardino 2013: 20, fig. 4. Badiola: Carancini 1993: 126, n. 1, fig. 2.1. Collelongo: Colini 1898-1902: 232, 246, fig. 120. Panicarola, Castiglione del Lago: Carancini 1993: 126, n. 3, fig. 2.3.	1.1: Pizzo di Bodio, Banchieri 1999. 1.2: Badiola, Carancini 1993. 1.3: Campegine, de Marinis 1992. 1.4: Valle Fontega, de Marinis 1992. 1.5: Campania, British Museum: Bietti Sestieri and Macnamara 2007. 1.6: Collelongo, drawing courtesy G.L. Carancini. 1.7: S. Gimignano, drawing C. Iaia, courtesy Museo delle Civiltà Roma. 1.8: Casali, Sgurgola: drawing C.Iaia, courtesy Museo delle Civiltà, Roma.

Table III - Peninsular Italy. Lugged axes (fig. 2).
Italia peninsulare. Asce a spuntoni laterali (fig. 2).

CLASS	PROVENANCE - LITERATURE	FIGURE SOURCES
<i>Flat axes with protruding spurs or 'lugs' on either side of the body</i>	Pozzuoli: Bietti Sestieri and Macnamara 2007: 32, n. 10, pl. 2.10. Terni: Carancini 1993: 130, n. 33, fig. 3.a. Siena: Carancini 1993: 130, n. 33.	Fig. 2 in the main text. Pozzuoli, Bietti Sestieri and Macnamara 2007.

Table IV – Peninsular Italy: flat axes.
Italia peninsulare: asce piatte.

CLASS: TRAPEZOIDAL

SUBCLASS: BI-ANGULAR SIDE PROFILE

TYPE	VARIANT	PROVENANCE - LITERATURE	PLATE SOURCES
<i>1: Near-rectangular to moderately trapezoidal body</i>	<i>1A: nearly rectangular</i>	Garavichio, t. 1: Aranguren <i>et alii</i> 1987-88: fig. 3.4. Unknown Museo di Perugia: Carancini 1999: fig. 3.6; Chiusi: Carancini 1999: fig. 3.9.	2.1: Garavichio, t. 1, Aranguren <i>et alii</i> 1987-88.
	<i>1B: trapezoidal</i>	S. Quirico d'Orcia: Cocchi Genick and Grifoni Cremonesi 1989: fig. 29.3. Garavichio t. 1: Aranguren <i>et alii</i> 1987-88: fig. 3.3. Castiglion Fiorentino: Cocchi Genick and Grifoni Cremonesi 1989: fig. 22C.4.	2.2: Castiglion Fiorentino, drawing C. Iaia, courtesy Museo delle Civiltà, Roma.
<i>2: Trapezoidal body with slightly concave sides</i>		Casetta Mistici, t. 10, n. 2: Anzidei and Carboni 2020a: 419, fig 2.5.138, n. 1. Sovana: Carancini 1999: fig. 3.11. Selvena, Castell'Azzara: Carancini 1993: 130, 30. Marciano della Chiana: unpublished. Museo Archeologico Nazionale, Arezzo. Territorio di Rieti: Carancini 1999: fig. 3.12. Orvieto: Carancini 1999: fig. 3.3.	2.3: Casetta Mistici, t. 10, redrawn after Anzidei and Carboni 2020a.
<i>3: Small axes with a markedly trapezoidal body</i>		Grotta del Fontino: Zanini 2002: fig. 50.2. Bastia Umbra: Carancini 1993: fig. 3.29.	2.4: Grotta del Fontino, Zanini 2002.

Table V - Peninsular Italy: Flat axes.
Italia peninsulare: Asce piatte.

CLASS: TRAPEZOIDAL (PLATES 2-3)			
SUBCLASS: BICONVEX SIDE PROFILE			
TYPE	VARIANT	PROVENANCE - LITERATURE	PLATE SOURCES
1: <i>Very small axes with a moderately trapezoidal body, convex sides and an amygdaloid profile</i>	1A: <i>near-rectangular</i>	Central Italy: Carancini 1993: 128, 8. Pila: Carancini 1993: 128, 8A, fig. 2.8a. Contrada Delfico: Colini 1898-1902: tav. XIV.5. Territorio di Terni: Bietti Sestieri and Macnamara 2007: 16. Cava Solvay di San Carlo: Fedeli and Galiberti 2016: fig. 92. Crine di S. Barbara: Pellegini 1981-1992: fig. 3.5.	2.5: Pila, Carancini 1993.
	1B: <i>trapezoidal</i>	Valfabbrica: Carancini 1993: 128, n. 7, fig. 2.7. Palazzo d'Assisi: Carancini 1993: 128, 5 e fig. 2.5. Casacastalda, Valfabbrica: Carancini 1993: 126, 4, fig. 2.4.	2.6: Palazzo d'Assisi, Carancini 1993.
2: <i>From moderately trapezoidal to near-rectangular body with slightly concave sides; nearly flat or slightly curved profile</i>	2A: <i>rounded butt and thin cross-section</i>	Lunghezza, t. 4: Anzidei and Carboni 2020a: 751, fig. 2.6.1, n. 10. Agro Falisco: Colini 1898-1902: tav. XV.3. Tolfa: Carancini 1993: 128, 12, fig. 2.12.	2.7: Lunghezza, t. 4, Anzidei and Carboni 2020.
	2B: <i>rectilinear butt and massive cross-section</i>	Rinaldone t. 3, two specimens: Dolfini 2004: tav. III.22, tav. III.23. Il Teso, Marciano della Chiana: Carancini 1993: 129.6. Tarquinia: Bietti Sestieri and Macnamara 2007: 5. Monte dei Ferrari: Carboni 2020: 483, 7, fig. 5.1.2., n. 3.	2.8: Rinaldone, t. 3, Dolfini 2004. 2.9: Tarquinia, Bietti Sestieri and Macnamara 2007.
	<i>Most specimens show casting defects (e.g. blowholes and shrinkages)</i>	<i>Uncertain attribution:</i> Poggio delle Sorche t. 3: unpublished, Museo Archeologico Scansano, inv. 265510. Grotta del Leone di Agnano: Cocchi Genick and Grifoni Cremonesi 1989: 32, fig. 13.17.	
3: <i>Sub-elliptical body, thin cross-section, and a moderately curved profile</i>		Pianetti, Ortaccia t. 4: Falchetti 1982: fig. 7. Rinaldone t. 4: Dolfini 2004: tav. V.53. Grosseto: unpublished, Museo Archeologico Grosseto.	2.10: Pianetti Ortaccia, t. 4: Falchetti 1982.
4: <i>Elongated body with straight, slightly divergent sides. The cross-section is mostly flat or slightly convex</i>		Terni province: Bietti Sestieri and Macnamara 2007: 15. Spedaletto t. 1: Carancini 1999: fig. 3.35. Pianacce, Acquapendente: Bertolani <i>et alii</i> 1993: fig. 17. Bolgheri: unpublished, Museo delle Origini, Rome, Inv. 9522. Firenze: unpublished, Museo Archeologico Firenze.	2.11: Terni province, Bietti Sestieri and Macnamara 2007. 2.12: Spedaletto, t. 1: Carancini 1999.

5: Long body with near-parallel and slightly concave sides, slightly splayed blade, thin cross-section, and moderately curved profile

Many specimens show sharpened cutting edges without a perceptible bevel between body and blade

6: Body with parallel sides and slightly splayed blade, moderately curved profile, and a slightly curved butt

Most specimens had their margins thickened by hammering

7: Moderately trapezoidal body with rectilinear to slightly concave sides and a markedly curved profile

Several specimens show slightly thickened margins. The blades are often asymmetrical due to sharpening and show traces of heavy use

7A: small size

7B:
medium/large
size

Guardistallo, tomba a fossa, 2 specimens: Carancini 1999: figs. 3.26, 3.34. **Poggio la Sassaiola:** Metta 2014: fig. 11.1. **Siena province:** unpublished, Museo Archeologico Siena. **Terni province:** Bietti Sestieri and Macnamara 2007: 17. **Il Teso, tombe a fossa:** Cocchi Genick and Grifoni Cremonesi 1989: fig. 22A.1.

2.13-14: Guardistallo, tomba a fossa 2, drawings courtesy G.L. Carancini.

Spedaletto, t .1: Cocchi Genick and Grifoni Cremonesi 1989: fig. 23B.3. **Querciola:** Sarti 1997: fig. 77.1. **Palazzone:** Carancini 1999: fig. 3.37. **Partena:** Carancini 1993: 130, 31. **Poggio Capanne:** Negroni Catacchio 1994: fig. 45.

2.15: Partena, drawing A. Dolfini.

Greccio: Carancini 1993: 130, n. 28, fig. 3.28. **Ponte S. Pietro, t. 24:** Miari 1993: fig. 12.2. **Naviglione, t. 6:** Carancini 1993: 128, 18, fig. 2.18.

2.16: Ponte S. Pietro t. 24, Miari 1993.

Palombaro tomb: Aspesi 2012: 230, n. 11, fig. 1B, n. 11. **Casetta Mistici t. 8, two specimens:** Anzidei and Carboni 2020a: 412, nn.1, fig. 2.5.133, nn. 2,3. **Casetta Mistici t. 6 ind. A:** Anzidei and Carboni 2020a: 408, n. 3, fig. 2.5.126, n. 6. **Corano tomb:** Minto 1914: fig. B. **Palazzone:** Carancini 1999: fig. 3.37. **Montalcino:** Carancini 1999: fig. 3.36. **Ponte S. Pietro t 20:** Miari 1993: fig. 6B.3. **Agro Falisco:** Colini 1898-1902: 235, tav. IV.7. **Agro Falisco:** Colini 1898-1902: tav. XV.1; Colini 1898-1902: 235. **Poggio Aquilone tomb:** Carancini 1993: fig. 2.20. **Abruzzo:** Bietti Sestieri and Macnamara 2007: 4. **Capua:** Bietti Sestieri and Macnamara 2007: 31, n. 7, pl. 1.7.

2.17: Ponte S. Pietro, t. 20, Miari 1993. 2.18: Casetta Mistici t. 8, redrawn after Anzidei and Carboni 2020a. 2.19: Poggio Aquilone, tomb, drawing C. Iaia courtesy Museo Civico di Bologna.

<p>8: Moderately trapezoidal body with diverging concave sides, slightly splayed blade with protruding tips and a markedly curved profile</p>	<p>8A: small/medium size</p>	<p>Passo dello Stonio, tomb: Carboni 2002: fig. 11.9. Near Perugia: Carancini 1993: 130, 35b, fig. 3b. Città di Castello: Carancini 1999: fig. 3.44. San Biagio della Valle, tomb: De Angelis 1995-96: fig. 2.5. San Lorenzo a Greve, US 939, two specimens: Aranguren and Perazzi 2011: fig. 3.a. Macchia di Marta: Persiani 2009: 60, fig. 11.MM01, tav. 2.1. Casetta Mistici, Via Esperide, t 1: Anzidei and Carboni 2020^o: 421, n. 2, fig. 2.5.143.1. Olmeto, Marsciano: Carancini 1993: 130, 36, fig. 3.36.</p>	<p>3.1: San Biagio della Valle, tomb, De Angelis 1995. 3.2: Near Perugia, Carancini 1993. 3.3: Casetta Mistici via Esperide t. 1, Anzidei and Carboni 2020a. 3.4: San Lorenzo a Greve, US 939, drawing C. Iaia, courtesy Sopr. Arch. Toscana.</p>
<p>Most specimens show slightly thickened margins and low flanges</p>	<p>8B: large size</p>	<p>Macchia di Marta, two stray finds: Persiani 2009: 60, fig. 11.MM02, tav. 2.1. Casale Somaini, tomb: Iaia and Dolfini 2020: 558, fig. 5.4.8; Anzidei and Carboni 2020a: 87, fig. 2.3.5b.</p>	<p>3.5: Casale Somaini, tomb, drawing C. Iaia, courtesy Soprintendenza Speciale Roma.</p>
<p>9: Body with straight sides and splayed blade; mostly thin cross-sections</p>	<p>9A: short body</p>	<p>Petrignano di Pozzuolo, tomba a fossa: Del Vita 1919: 46; unpublished, Museo Archeologico Nazionale Arezzo, Inv. 958. Casetta Mistici, via Esperide, t. 7: Anzidei and Carboni 2020a: 429, n. 2, fig. 2.5.155, n. 3. Grotta Fichina tomb: China <i>et alii</i> 1993: fig. 1. Casetta Mistici t. 10: Anzidei and Carboni 2020a: 418, n. 2, fig. 2.5.139, n. 2. Chiusa d'Ermini t. 1: Aspesi 2012: 236, fig. 2B, n. 4.</p>	<p>3.6: Petignano di Pozzuolo, tomb, drawing C. Iaia courtesy Museo Arch. Nazionale Arezzo. 3.7: Casetta Mistici, via Esperide t. 7, Anzidei and Carboni 2020a.</p>
<p>Most specimens show sharpened cutting edges and asymmetrical faces (due to monovalve casting?); no thickening or raising of margins</p>	<p>9B: long body</p>	<p>Siena province: unpublished, Museo L. Pigorini, Roma, inv. 55728?. Casetta Mistici t. 6 ind. A: Anzidei and Carboni 2020a: 408, n.2, fig. 2.5.126, n. 5.</p>	<p>3.8: Casetta Mistici t. 6 ind. A: Anzidei and Carboni 2020a.</p>
<p>10: Near-parallel sides, raised margins/flanges, and a widely splayed blade. Amygdaloid profile with a thick cross section</p>		<p>Battifolle, tomba a fossa: Carancini 1993: 132e, fig. 3e.</p>	<p>3.9: Battifolle, tomba a fossa: Carancini 1993. 3.10: Poggio delle Sorche, t 3, drawing C. Iaia, courtesy Sopr. Arch. Toscana.</p>
<p>Most specimens are heavily worn out (e.g. shortened and asymmetrical blades)</p>		<p>Monte Solaro, Capri: Giardino 2013: fig. 14. Belverde di Cetona: Carancini 1993: 132, 37, fig. 3.37. Umbertide: Carancini 1993: 132, 38d, fig. 3.d. Poggio delle Sorche, t 3: unpublished, Museo Archeologico Scansano, inv. 265509.</p>	

Table VI - Peninsular Italy - Flat axes.
Italia peninsulare - Asce piatte.

CLASS: BUTT- AXES (PLATE 3)		
<i>The body is markedly divided into a butt and a blade; the former has a trapezoidal or sub-rectangular outline, while the latter has a trapezoidal outline and features flanges of various description around the mid-body.</i>		
TYPE	PROVENANCE - LITERATURE	PLATE SOURCES
<i>Mirabella Eclano type (as defined by Carancini 1993)</i>	Madonna delle Grazie, Mirabella Eclano, T. del Capotribù: Carancini 1993: 130, n. 34.a, fig. 3.34a. Venafro: Barker 1971: fig. 11.b. Roma, Esquilino: Carboni 2002: fig. 11.11. Abruzzo: Carancini 1993: 130, 34B, fig. 3.34b. Monte Acuto: Carboni 2002: fig. 11.10. Unknown, Museo di Perugia, Umbertide, Offida, Piana del Tevere (Brufa), Rome, Aquilano: unpublished specimens cited in Carancini 1993: 130, n. 34.a.	3.11: Madonna delle Grazie, Mirabella Eclano, T. del Capotribù, Carancini 1993.
<i>Close to the Mirabella Eclano type</i>	Campania?: Bietti Sestieri and Macnamara 2007: 32, n. 12, pl. 2.12.	
<i>Close to the Mirabella Eclano type, with lateral spurs</i>	Terni: Carancini 1993: 130, 33, fig. 3.33; Bietti Sestieri and Macnamara 2007: 11.	3.12: Terni, Bietti Sestieri and Macnamara 2007.

Table VII - Northern Italy: Shaft-hole axes (plate 4).
Italia settentrionale - Asce ad occhio (tav. 4).

TYPE	PROVENANCE - LITERATURE	PLATE SOURCES
<i>Pločnik type</i>	Trento, via San Bernardino: Marzatico 1997: 360-366, figs. 149-157; Carancini 1984: 198, tav. 153, n. 4234.	4.1: Trento-via San Bernardino, Carancini 1984.
<i>Faisz type?</i>	Acquafredda, fiume Chiese: de Marinis 2014, 209, fig. 17. Col del Buson, hoard: Bianchin Citton 2013: 445-446, figs. 13-14.	4.2: Acquafredda, de Marinis 2014. 4.3: Col del Buson, hoard, Bianchin Citton 2013.
<i>Freisach type</i>	Pigloner Kopf - Dosso di Piccolungo, two hoards, 9 specimens: Oberrrauch 2014: 70, fig. 3; Oberrrauch 2019: abb. 5.	4.4: Pigloner Kopf, hoard, Oberrrauch 2019.
<i>S. Antonino - Kozarac type</i>	Elvas, Bressanone: Dal Ri and Tecchiati 1994: fig. 16.3. Tuenno: Carancini 1984: 4231. S. Antonino, Treviso, two specimens: Carancini 1984: 4229, 4233. Padova, territorio: Carancini 1984: 4230; Cupitò 2000: 99. Fornace, S. Daniele del Friuli: Tasca and Visentini 2009: figs. 1, 2.9. Aquileia: Carancini 1984: 4232; Tasca and Visentini 2009, fig. 2, n. 8. <i>Uncertain attribution:</i> Cascina Bertola, settlement: Baioni and Seragnoli 1996: 418, fig. 2.1.	4.5: S. Antonino, Carancini 1984. 4.6: Fornace, S. Daniele del Friuli, Tasca and Visentini 2009.

Table VIII - Northern Italy: Flat axes.
Italia settentrionale: Asce piatte.

CLASS: TRAPEZOIDAL			
SUBCLASS: PLAIN SIDES (PLATES 5-6)			
TYPE	VARIANT	PROVENANCE - LITERATURE	PLATE SOURCES
<p>1: <i>Sub-rectangular body with thin butt, slightly convex sides, and a moderately curved profile</i></p> <p><i>Most specimens show rough and bubbly surfaces with clumsy hammering marks on either side. Cutting edges are blunt or moderately sharpened</i></p>		<p>Kollman-La Colma: Dal Ri and Tecchiati 1994: 34, fig. 14.2; Carancini 1999: 36, fig. 4B.2. Nova Levante-Hirzsteig: Dal Ri and Tecchiati 1994: 34, fig. 14.1. Chiozza, Scandiano: de Marinis 1992: 389, fig. 15 (drawing, without cross-section). Carancini 1993: 128, n. 10c, fig. 2. Miega, Veronella: de Marinis 1992: 189, fig. 1.7. Salzani 2011: 51, tav. 2, n.2. Terrazzo di San Polo or Territorio di Reggio Emilia: Colini 1901: tav. I.5; de Marinis 1992: 394, fig. 2.</p>	<p>5.1: Kollman-La Colma, drawing G. Kaufmann. 5.2: Nova Levante-Hirzsteig, drawing G. Kaufmann. 5.3: Chiozza, Scandiano, drawing C. Iaia, courtesy Museo delle Civiltà Roma.</p>
<p>2: <i>Trapezoidal elongated body with rectilinear sides and a thick, flattened butt</i></p>		<p>Moltrasio: de Marinis 1992: 389, fig. 1.6.</p>	<p>5.7: Moltrasio, de Marinis 1992.</p>
<p>3: <i>Trapezoidal body with markedly divergent sides and a slightly curved profile</i></p> <p><i>The cutting edges are blunt or moderately sharpened</i></p>	<p>3: <i>short, rectilinear to convex sides</i></p> <p><i>Most specimens show shrinkages on the butt</i></p>	<p>Gabrovizza: Tasca and Visentini 2009: fig. 2.4. 60. Muina, Ovaro: Tasca and Visentini 2009: fig. 2, n. 4. Campo Servirola: Carancini 1993: 128, n. 11, fig. 2.11. Bergamo, territory: de Marinis 1992: 389, fig. 1.4. Cascina Boschetta, Camisano: Faccio 1995, 68, n. 3, tav. IV.3.</p>	<p>5.4: Muina, Ovaro, Tasca and Visentini 2009. 5.5: Campo Servirola, drawing C. Iaia, courtesy Civici Musei Reggio Emilia. 5.6: Bergamo, territory, drawing C. Iaia, courtesy Museo Civico Bergamo.</p>
	<p>3B: <i>Concave sides</i></p>	<p>San Venanzio, Cumarola, “tomba del 1860”: de Marinis 1992: fig. 5.11. de Marinis <i>et al.</i> 2013: fig. 1 (picture). Bergamo, territory: de Marinis 1992: fig. 5.10. La Mandria. Monte Castagneto: de Marinis 1992: 392, fig. 4. Carancini 1999: fig. 5.5.</p>	<p>5.10: Bergamo, territory: de Marinis 1992. 5.11: San Venanzio, Cumarola, “tomba del 1860”, de Marinis 1992 5.12: La Mandria. Monte Castagneto, drawing C. Iaia, courtesy Musei Civici Reggio Emilia.</p>
<p>4: <i>Narrow slender body with splayed blade, thick and flattened butt, slightly asymmetrical profile (one face convex, the other slightly concave), and rectangular cross-section. Same as the Bocca Lorenza type (as defined by de Marinis 1992)</i></p>		<p>Lana: Gleirscher 2007: 101, liste 1, abb. 3.9. Fondo Nazari, Marendole: de Marinis 1992: 392, fig. 3.3. Bocca Lorenza cave, three specimens: de Marinis 1992: 392, fig. 3.1-2. Pearce 2007: 42-46, fig. 3.2, a-c. San Briccio: de Marinis 1992: 392, fig. 3.4. Salzani 2011: 50-51, tav. 2, n. 11.</p>	<p>5.8: Lana, drawing C. Iaia, courtesy Museo Arch. Alto Adige, Bolzano-Bozen. 5.9: Bocca Lorenza Cave, after Pearce 2007.</p>
<p>5: <i>Close to type 4 but with markedly asymmetrical profile and a rounded cross-section. Same as the Gurnitz type (as defined by Mayer 1977)</i></p>		<p>Tominceva jama - Grotta Tominz. (Škocjan - S. Canziano), Slovenia: Tasca and Visentini 2009: fig. 2, n. 1.</p>	

- 6: *Narrow elongated body with parallel sides, slightly splayed blade, moderately curved profile, and a truncated butt*
- The margins are always slightly thickened*
- 6A: *Rectilinear sides with a short cutting edge marked by a bevel*
- 6B: *Slightly concave sides*
- 7: *Large and sturdy body, slightly convex sides, and a slightly splayed blade*
- A few specimens show slightly thickened margins*
- 8: *Squat body with splayed semicircular blade and a slightly curved profile*
- Margins are mostly flat or moderately thickened*
- Close to the Campo di S. Cristina type (as defined by Carancini 1993) and the S. Cristina type (as defined by de Marinis 1992)*
- 8A: *Short body.*
- 8B: *Long body.*
- Campo Dovarese, Remedello Sotto, t. 78:** de Marinis 1992: 399, fig. 6.1; Carancini 1993: 136, fig. 4.8; de Marinis 2013: 329, fig. 25, a.
- Celletta dei Passeri, t. 25:** Miari-Bestetti-Rasia 2017: 162, fig. 12, R109. **Celletta dei Passeri, t. 40:** Miari-Bestetti-Rasia 2017: 169, fig. 17, R153.
- Celletta dei Passeri, t. 27:** Miari-Bestetti-Rasia 2017: 163, fig. 14, R140.
- Celletta dei Passeri, t. 47:** Miari-Bestetti-Rasia 2017: 173, fig. 21, R165. **La Sacca, Montecchio Emilia:** de Marinis 1992: 392, fig. 5.9.
- Provenance unknown, Galleria Estense Modena:** de Marinis 2014: 212, fig. 19.5. **Celletta dei Passeri, t. 75:** Miari-Bestetti-Rasia 2017: 187, fig. 27, R18. **Celletta dei Passeri, t. 74:** Miari-Bestetti-Rasia 2017: 186, fig. 27, R213. **Palude Brabbia:** de Marinis 1992: 401, fig. 7.2; Carancini 1993: 128, n. 22, fig. 2.22b. **Cremona, territory:** Colini 1898-1902: tav. XII.8; Barker 1971: fig. 2b. **Ponte Enza, Montecchio Emilia:** de Marinis 1992: 401, fig. 7.4. Carancini 1993: 128, n. 22, fig. 2, 22b.
- Sedulis:** Tasca and Visentini 2009: fig. 2, n. 5. **Colombare, Negrar:** de Marinis 1992: 401, fig. 7.3; Salzani 2011: tav. 2, n. 3. **Aquileia:** Tasca and Visentini 2009: fig. 2, n. 7. **Santa Cristina, Fiesse, Tomba Sud:** de Marinis 1992: 401, fig. 7.1. **Campo Dovarese, Remedello Sotto, t. 62:** de Marinis 1992: 396, fig. 6.2; de Marinis 2013: 329, fig. 25. **Grotta del Re Tiberio, cave:** Miari 2013: 434, fig. 4.
- Castione Marchesi:** Carancini 1993: 130, n. 27, fig. 3.27.
- Grotta dell'Antenna, Borgio Verezzi, burial cave:** Carancini 1993: 130, E, fig. 3E.
- 6.1: Campo Dovarese, Remedello Sotto, t. 78, de Marinis 1992. 6.2: Celletta dei Passeri, t. 25, drawing C. Iaia courtesy Soprintendenza Archeologia Emilia Romagna.
- 6.3: Celletta dei Passeri, t. 27, drawing C. Iaia courtesy Soprintendenza Archeologia Emilia Romagna.
- 6.4: Provenance unknown, Galleria Estense Modena, de Marinis 1992. 6.5: Celletta dei Passeri, t. 75, drawing C. Iaia courtesy Soprintendenza Archeologia Emilia Romagna.
- 6.6: Aquileia, Tasca and Visentini 2009. 6.7: Santa Cristina, Fiesse, Tomba Sud, de Marinis 1992. 6.8: Campo Dovarese, Remedello Sotto, t. 62, drawing C. Iaia, courtesy Civici Musei Reggio Emilia.
- 6.9: Castione Marchesi, Carancini 1993.

Table IX - Northern Italy: Flat axes.

*Italia settentrionale: Asce piatte.***CLASS: TRAPEZOIDAL****SUBCLASS: FACETED SIDES (PLATE 7)***The sides feature characteristically hammered facets on flat or raised margins, and occasionally on well-built flanges.*

TYPE	PROVENANCE - LITERATURE	PLATE SOURCES
<i>1: Moderately trapezoidal body with straight sides slightly diverging towards the blade, thickened margins, and a markedly curved profile. Similar to the type Similaun (as defined by de Marinis 1992)</i>	Similaun, Giogo di Tisa/Tiesenjoch: Egg 1992: 262, Abb. 1; Kaufmann 2014. Brescia territory: Barker 1971: fig. 2c; de Marinis 2013: 331, fig. 27.2. Lovere, flat tomb: de Marinis 1979: 45-69, fig. 35.1; Kaufman 2014: 76, fig. 11.13. Campo Dovarese, Remedello Sotto t. 102: de Marinis 1992: 392, fig. 5.1; de Marinis 2013: 328, fig. 24.	7.1: Similaun (Iceman), Egg 1992 7.2: Brescia territory, de Marinis 2013. 7.3: Lovere, flat tomb, drawing C. Iaia, courtesy Museo Civico Bergamo. 7.4: Campo Dovarese, Remedello Sotto t. 102: de Marinis 1992.
<i>Most specimens show accurately sharpened cutting edges</i>		
<i>Outlier, close to Type 1. The axe has a near-rectangular body with concave butt and a semi-circular blade</i>	Fondo Padovani, Borgo Panigale: Brizio 1898: 403-405, figs. 1,2; de Marinis 1992: 401, n. 32.	
<i>The margins are thickened by hammering</i>		
<i>2: Moderately trapezoidal body with markedly diverging sides</i>	Campo Dovarese, Remedello Sotto, t. 4: de Marinis 1992: 399, fig. 6.3. Carancini 1993: 134, fig. 4.6. de Marinis 2013: 329, fig. 25. Col del Buson, hoard: Bianchin Citton 2013: 445-446, figs. 13-14. Grotta della Tanaccia, Brisighella: Carancini 1996: fig. 4, n. 7; Massi Pasi and Morico 1997: 27, n. 9, tav. 2.	7.5: Campo Dovarese, Remedello Sotto, t. 4, drawing C. Iaia, courtesy Musei Civici Reggio Emilia. 7.6: Col del Buson, hoard: Bianchin Citton 2013. 7.7: Grotta della Tanaccia, Brisighella, redrawn after Carancini 1996 and Massi Pasi and Morico 1997.
<i>All specimens show raised margins or flanges</i>		
<i>3: Moderately trapezoidal and elongated body with straight, markedly diverging sides and a thick cross-section</i>	Serravalle di Ala (hoard?), two specimens: Tecchiati 1991: 11, nn. 1-2, tav. II.1-2. Remedello Sopra, hoard, two specimens: de Marinis 1979: fig. 30, n. 8, fig. 31, n. 8.	7.8: Serravalle di Ala (hoard?), Tecchiati 1991. 7.9: Remedello Sopra, hoard, de Marinis 1979. 7.10: Remedello Sopra, hoard, drawing C. Iaia, courtesy Soprintendenza Archeologia Lombardia.
<i>Most specimens show raised margins or flanges</i>		
<i>4: Flaring and slightly concave sides, low flanges, and a moderately curved profile</i>	Remedello Sopra, hoard, six specimens: de Marinis 1979: fig. 30, nn. 1, 6-7; fig. 31, nn. 2, 4, 6. Magenta: Carancini 1999: fig. 5, n. 33.	7.11: Remedello Sopra, hoard drawing C. Iaia, courtesy Soprintendenza Archeologia Lombardia. 7.12: Magenta, Carancini 1999.
<i>Certain specimens are comparable to the Neyruz type (as defined by Carancini, Peroni 1999)</i>		

<p>5: <i>Near-rectangular body with straight, near-parallel sides and flanges ranging from low to marked</i></p>	<p>Sabbione, San Martino Siccomario, or Carbonara al Ticino, two specimens: Pierce 2007: tab. 6.1, fig. 6.1b,c. Lagolo, Lasino: Tecchiati 1991: 7, tav. I.1. Riva del Garda: Dal Ri and Tecchiati 1994: 34, fig. 18.7. Castel Grande, Bellinzona, Canton Ticino (CH): de Marinis 2013: 331, fig. 27.1.</p>	<p>7.13: Sabbione, San Martino Siccomario, or Carbonara al Ticino, Pearce 2007. 7.14: Lagolo, Lasino: Tecchiati 1991.</p>
<p>6: <i>Elongated body with straight sides that are near-parallel in the mid-body but diverge towards the blade; the butt is concave</i></p>	<p>Corno di Sotto, lake-side settlement: Tizzoni 1982: fig. 27.17. Ledro, lake-side settlement, layers VII-VI: Carancini 1993: fig. 9.14; Carancini 1996: fig. 4.9. Remedello Sopra, hoard, nine specimens: de Marinis 1979: fig. 30, nn. 2-3, 5; fig. 31, nn.1, 3-5, 7,9. Castelnuovo Asolano: Carancini 1999: fig. 6.C. Villa Bagatta, Lazise, lake-side settlement: Salzani 2011: tav. 2, n. 63008.</p>	<p>7.15: Ledro, lake-side settlement, layers VII-VI: Carancini 1993. 7.16: Remedello Sopra, hoard, de Marinis 1979.</p>

Table X - Leaf-shaped blades without rivet holes (plate 8).

Lame foliate senza fori per ribattini (tav. 8).

TYPE	VARIANT	PROVENANCE - LITERATURE	PLATE SOURCES
<p><i>Pianetti-type daggers (as defined by Dolfini 2004); formerly Vecchiano type (Bianco Peroni 1994)</i></p>		<p>Pianetti, Ortaccia, t. 4: Falchetti 1982: fig. 6. Lunghezzina, t. 4: Anzidei and Carboni 2020a: 751, n. 3, fig. 2.6.41, n. 11. Rinaldone, t. 3: Dolfini 2004: 156, n. 25, tav. III.</p>	<p>8.1: Lunghezzina, t. 4, Anzidei and Carboni 2020a. 8.2: Pianetti, Ortaccia, t. 4, Falchetti 1982. 8.3: Rinaldone, t. 3, Dolfini 2004.</p>
<p><i>Foliate blade with a pointed heel and no rivet holes</i></p>		<p><i>Uncertain attribution:</i> Spedaletto, Pienza, t. 2: Bianco Peroni 1994: 44. Grotta del Castello, Vecchiano: Bianco Peroni 1994: 40.</p>	

Table XI - Blades with a hafting plate and rivet holes (plates 8, 10).

Lame con piastra di immanicatura e fori per ribattini (tavv. 8, 10).

TYPE	VARIANT	PROVENANCE - LITERATURE	PLATE SOURCES
<i>Guardistallo-type daggers (as defined by Bianco Peroni 1994, with updates)</i>	<i>A: without midrib</i>	Ponte S.Pietro, t. 20: Miari 1993: fig. 6B.2; Bianco Peroni 1994: 103. Ponte S. Pietro, t. 21, two specimens: Miari 1993: fig. 10.1-2; Bianco Peroni 1994: 101.27, 102. Valle Anagnina, Sgurgola, tomb: Bianco Peroni 1994: 123; Carboni 2020: 482, fig. 5.1.1.9. Casetta Mistici, t. 8: Anzidei and Carboni 2020a: 412, n. 4, fig. 2.5.133, n. 4. Casetta Mistici, t. 6 ind. A: Anzidei and Carboni 2020a: 406, n. 1, fig. 2.5.126, n. 1. Central Italy, Mus. Arch. Perugia, two specimens: Bianco Peroni 1994: 97, 100. Petrignano di Pozzuolo, flat tomb, two specimens: Bianco Peroni 1994: 98, 99. Montalto di Castro, tomb?: Bianco Peroni 1994: 114. Naviglione, t. 17, two specimens: Bianco Peroni 1994: 95-96. Guardistallo, flat tomb: Bianco Peroni 1994: 91. Solaia: Bianco Peroni 1994: 93. Gualdo Cattaneo: Bianco Peroni 1994: 92. Pozzo di Gualdo Cattaneo: Bianco Peroni 1994: 104. Cetona: Bianco Peroni 1994: 120. Rivotorto, Assisi: Bianco Peroni 1994: 105. Chieti: Bianco Peroni 1994: 106. Querceto, Casole d'Elsa: Bianco Peroni 1994: 116. Costano, Bastia: Bianco Peroni 1994: 125. Maremma: Bianco Peroni 1994: 124. Pozzuolo, Castiglione del Lago: Bianco Peroni 1994: 122. Casetta Mistici, t. 10: Anzidei and Carboni 2020a: 418, n. 3, fig. 2.5.138, n. 3. Partena: Bianco Peroni 1994: 126. S. Cristoforo delle Vertighe, tomb?: Buresta <i>et alii</i> 2006: 275, fig. 2.2. Marsciano: Bianco Peroni 1994: 117. Lucrezia Romana, t. 27: Anzidei and Carboni 2020a: 453, n. 1, fig. 2.5.203, n. 1. Central Italy, Museo Arch. Siena: Bianco Peroni 1994: 130.	8.4: Casetta Mistici, t. 8, Anzidei and Carboni 2020a. 8.5: Ponte S.Pietro, t. 20, Miari 1993. 8.6: Valle Anagnina, Sgurgola, tomb: drawing C. Iaia, courtesy Museo delle Civiltà Roma.
<i>Angular hafting-plate with 3 to 5 rivet holes and a triangular blade</i>	<i>B: with midrib.</i>	<i>Assigned to variant A, but with a single rivet hole: Orvieto:</i> Bianco Peroni 1994: 119. Guardistallo, flat tomb: Bianco Peroni 1994: 90. Vasoli, Marcellina: Carboni 2002: fig. 11.2. Central Italy, Museo Faina Orvieto: Bianco Peroni 1994: 111. Marcellano, Gualdo Cattaneo: Bianco Peroni 1994: 112. Montespertoli, tombs, two specimens: Bianco Peroni 1994: 128, 129. Chiusa d'Ermini, t. 1: Bianco Peroni 1994: 121; Aspesi 2012: 235, n. 3, fig. 2B. Garavichio, t. 3: Aranguren <i>et al.</i> 1987-88: fig. 6.3. Palombaro, t. 7: Aspesi 2012: fig. 1, n. 9. Palombaro, t. 8: Aspesi 2012: fig. 1, n. 10. Casetta Mistici, via Esperide, t. 1: Anzidei and Carboni 2020a: 421, n. 3, fig. 2.5.143, n. 2. Grotta Nisco, Cassano Murge,	8.7: Guardistallo, flat tomb, Bianco Peroni 1994.
<i>Tentatively assigned to the Guardistallo type</i>			

- Large daggers/halberds akin to the Guardistallo type*
- Massa Marittima-type daggers (as defined by Bianco Peroni 1994, with updates)*
- Rounded hafting plate with 3 holes placed in a slightly curved array, and a triangular blade*
- Blade length may vary considerably due to re-sharpening*
- Ponte S. Pietro-type daggers*
- Rectilinear hafting plate with 2 rivet holes and a short oblong blade*
- Grotta Cappuccini-type daggers*
- Rectilinear hafting plate (mostly with two rivet holes) and a triangular blade*
- Laterza-type (dagger?) blades*
- Sub-rectangular or trapezoidal blade with a rectilinear hafting plate and 2 rivet holes*
- ambiente 5:** Venturo *et al.* 2011: 336, fig. 1.8.
- Ascoli Piceno:** Bianco Peroni 1994: 82. **Poggio delle Sorche, Magliano in Toscana, t. 3:** unpublished, Museo Archeologico di Scansano, inv. 265505.
- Passo dello Stonio, grave?:** Carboni 2002: fig. 11.8. **Romanina, t. 14:** Anzidei and Carboni 2020a: 51, n. 5, fig. 2.5.335, n. 6. **Porcareccia, t. 4:** Negroni 1992, fig. 4.11; Bianco Peroni 1994, 127. **Canalicchio, Collazzone:** Bianco Peroni 1994, 115. **Pianizzoli, Massa Marittima, burial cave, two specimens:** Bianco Peroni 1994, 133, 137. **Jesi:** Bianco Peroni 1994, 209. **Central Italy, Museo Massa Marittima:** Bianco Peroni 1994, 138. **Monterotondo, Livorno:** Bianco Peroni 1994, 134. **Near Chiusi:** Bianco Peroni 1994, 139. **Perugia:** Bianco Peroni 1994, 135. **Cortona:** Bianco Peroni 1994, 136. **Spedaletto, Pienza, t.1:** Bianco Peroni 1994, 108. **Poggio delle Sorche, Magliano in Toscana, t. 3:** unpublished, Museo Archeologico di Scansano, inv. 265521. **Selvicciola, t. 34:** Petitti *et alii* 2011, fig. 2.10; Conti and Persiani 2008, fig. 1.3. **S. Biagio della Valle, tomb:** De Angelis 1995-96, fig. 2.4. **Poggio degli Spiriti, Allumiere:** Giardino *et alii* 2014, 661, fig. 7. **Querceto, Casole d'Elsa:** Bianco Peroni 1994, 109.
- Assigned to the Massa Marittima type, but with only two rivet holes:* **Pianizzoli, Massa Marittima:** Bianco Peroni 1994, 141
- Ponte S. Pietro, t. 24:** Miari 1993, fig. 12.1. **Ponte S. Pietro, stray find:** Miari 1993, fig. 15.4.
- Gricignano Forum T. 6 Biblioteca:** Salerno, Marino 2011, fig. 1.6. **Laterza, t. 3, liv. XIII:** Bianco Peroni 1994, 50. **Laterza, t. 4:** Bianco Peroni 1994: 51. **Grotta Cappuccini, Galatone, burial cave, four fragmentary specimens:** Ingravallo 2002, 72, nn. 161-164. **Grotta Nisco, Ambiente 1, burial cave, two specimens:** Venturo *et alii* 2011, 336, fig. 1.9-10. **Tempio di Cerere, Paestum, t. 4:** Bianco Peroni 1994, 53. **Lavello, Casino, t. 402:** Bianco Peroni 1994, 28.
- Grotta da Prima Ciappa, burial cave:** Maggi and Formicola 1978, 201, n. 1, fig. 13a.3. **Buca di Spaccasasso, burial cave:** Pellegrini 2007, 183, fig. 1. **Grotta dei Sassi Neri, burial cave:** Cocchi Genick and Grifoni Cremonesi 1989, fig. 39.13. **Laterza, t. 3, livelli XII-XIII, three specimens:** Biancofiore 1967, fig. 27, 3,12,17. **Grotta Nisco, Ambiente 1, burial cave:** Venturo *et alii* 2011, 336, fig. 1.12. **Creta**
- 8.13: Poggio delle Sorche, Magliano in Toscana, t. 3, drawing C. Iaia, courtesy Soprintendenza Archeologia Toscana.
- 8.8: Romanina, t. 14, Anzidei and Carboni 2020a. 8.9: Passo dello Stonio, tomb, Carboni 2002. 8.10: Porcareccia, t. 4, Negroni 1992. 8.11: Pianizzoli, Massa Marittima, burial cave, Bianco Peroni 1994, 133. 8.12: Poggio delle Sorche, Magliano in Toscana, t. 3, drawing C. Iaia, courtesy Soprintendenza Archeologia Toscana. 8.14: S. Biagio della Valle, tomb, De Angelis 1995-96. 8.15: Selvicciola, t. 34, Petitti *et alii* 2011.
- 8.16: Ponte S. Pietro, t. 24, Miari 1993.
- 10.1: Grotta Nisco, Ambiente 1, burial cave, Venturo *et alii* 2011. 10.2: Tempio di Cerere, Paestum, t. 4, Bianco Peroni 1994.
- 10.3: Grotta da Prima Ciappa, burial cave: Maggi and Formicola 1978.

Daggers/halberds close to the Lussan type (as defined by Gallay 1981)

Rounded hafting plate, several rivet holes, a triangular blade, and a V-shaped decoration

Bianca, Cela, t. 1: Tunzi Sisto 2015. **Lavello, Casino, t. 402:** Bianco Peroni 1994.

Gaudello, Acerra, tt. 292, 307, 312, three specimens: Mancusi, Bonifacio 2020, 43, fig. 4.2; 45, 47, fig. 7.2; fig. 8.2. **Alba, via Bubbio-Le Ginestre, tomb:** Venturino *et alii* 2018, 17-18, fig. 4.

Gaudello, Acerra, **tt. 292, 307, 312**, fig. 9.2-5 (main text). Alba, via Bubbio-Le Ginestre, tomb: fig. 10.34 (main text).

Compare with the Lussan type: Gallay 1981, taf. 7.162-165.

Table XII - Blades with a hafting tang, with or without rivet holes (plates 9-10).
Lame con codolo di immanicatura, con o senza fori per ribattini (tavv. 9-10).

TYPE	VARIANT	PROVENANCE - LITERATURE	PLATE SOURCES
<i>Fontino-type daggers</i>			
<i>Slender, elongated triangular blade with a large rectangular tang and 1-2 rivet holes. Ratio base width vs tang width: 1.25-1.63 (table XV and fig. 4 within the article)</i>		Grotta Prato, Massa Marittima, burial cave: Bianco Peroni 1994: 18. Cava Solvay di San Carlo, San Vincenzo, settlement: Fedeli and Galiberti 2016: figs. 90, 91.1. Grotta del Fontino, Montepescali, burial cave, seven specimens: Zanini 2002: fig. 51.1-7. Unknown provenance, Museo Civico Asola: Bianco Peroni 1994: 78. Grotta S. Giuseppe, Rio nell'Elba: Cremonesi 2001: fig. 46.2. Germanignano, Bagnoregio: Bianco Peroni 1994: 241.	9.1: Grotta Prato, Massa Marittima, burial cave, Bianco Peroni 1994. 9.2, 9.4-9.6: Grotta del Fontino, Montepescali, burial cave, Zanini 2002. 9.3: Cava Solvay di San Carlo, San Vincenzo, settlement, Fedeli and Galiberti 2016. 9.7: Unknown provenance, Museo Civico Asola, Bianco Peroni 1994.
<i>Remedello group daggers</i>			
<i>Trapezoidal or sub-rectangular tang with 1-2 rivet holes and a long triangular blade. The Remedello group daggers are divided into types I-III (and variants) based on aggregated dagger total length vs maximum width ratio (A/B) and dagger width vs tang width ratio (B/C). Measures and ratios are reported in table XV, while the clustering of ratios is showed in fig. 4 within the article. It is noteworthy that the Remedello group and types defined here are different to those defined by Bianco Peroni (1994) and de Marinis (1994).</i>			
<i>Remedello I</i>	<i>IA. Long triangular blade with a sunken heel. Ratio base width – tang width: 1.37-2.00</i>	Grotta della Spinosa di Perolla, Massa Marittima, burial cave, two specimens: Aranguren <i>et alii</i> 2004: fig. 2.1. Aranguren 2006: fig. 2.1. Spilamberto, t. 9: Bagolini 1981: 134, figs. 70, 71; Bianco Peroni 1994, 21; Ferrari and Steffè 2009: fig. 373, t. 9d. Grotta delle Fate di Calomini: Bianco Peroni 1994: 17. Spilamberto, t.1: Bagolini 1981: 103, figs. 45-47; Bianco Peroni 1994: 4; Ferrari and Steffè 2009: fig. 373, t. 1. Poggio Spolverino, Santa Marinella: Giardino <i>et alii</i> 2014: 661, fig. 10.	9.8, 9.11: Grotta della Spinosa di Perolla, Massa Marittima, burial cave, drawing C. Iaia courtesy Soprintendenza Archeologia Toscana. 9.9: Spilamberto, t. 9, Bianco Peroni 1994. 9.10: Spilamberto, t.1, Bagolini 1981.
<i>Slender shape</i>	<i>Most specimens are still sharp or show sharpening traces</i>		
	<i>IB1. Rectilinear heel. Ratio base width – tang width: 1.55-1.61 All specimens but one are small</i>	Spilamberto, t. 5, bone specimen: Bagolini 1981: 112, fig. 59; Ferrari and Steffè 2009: fig. 372, t. 5. Remedello Sotto, t. 83: Bianco Peroni 1994: 15. Longhi 1994: 210, fig. 141.1. de Marinis 2013: 324, figs. 22-23. Grotta del Fontino, Montepescali, burial cave: Zanini 2002: fig. 50.7; Bianco Peroni 1994: 76. Grotta del Pugnale, Villa Collemandina, burial cave: Bianco Peroni 1994: 77. Poggio delle Sorche, Magliano in Toscana, t. 3: unpublished, Museo Archeologico Scansano.	9.12: Poggio delle Sorche, Magliano in Toscana, t. 3, drawing C. Iaia courtesy Soprintendenza Archeologia Toscana. 9.13: Grotta del Fontino, Montepescali, burial cave, Zanini 2002. 9.14: Remedello Sotto, t. 83, Bianco Peroni 1994.
	<i>IB2. Rectilinear heel. Long triangular blade with midrib, ratio base width – tang width: 1.68-2.62. Medium to</i>	Cumarola, San Venanzio, “Tomba dell'anno 1860”: Bianco Peroni 1994: 2. de Marinis-Gambari-Faudino 2013: figs. 2, 3, far left. Celletta dei Passeri, t. 27: Miari-Bestetti-Rasia 2017: 163, fig. 14.R141. Celletta dei Passeri, t. 25: Miari-Bestetti-Rasia 2017: 162, fig. 12.R109.	9.15: Celletta dei Passeri, t. 27, Miari-Bestetti-Rasia 2017.

long blade

Outlier close to Remedello variant IB2, but much longer

Remedello II

Squat shape with a small sub-rectangular tang

IIA. Squat triangular blade with midrib. Ratio base width – tang width: 2.92-3.89. Medium to long blade

IIB. Large blade without midrib. Ratio base width – tang width: 3.14-3.54

Remedello III

Small tongue-like tang, very elongated blade with angular midrib. Shape and size are close to the Remedello II type

Outliers: two fragmentary daggers with slender blades and hafting plates featuring narrow tangs riveted to the plates. Both blades feature a midrib

Buccino-type daggers (as defined by Bianco Peroni 1994, partly revised and updated)

Sub-rectangular tang with 1-2 rivet holes and a very long blade

Remedello Sotto, t. 62: Bianco Peroni 1994: 2; de Marinis 2013: 322, fig. 20.

Celletta dei Passeri, t. 47: Miari-Bestetti-Rasia 2017: 173, fig. 21.R 163. **Panesella/Panicella, Volongo, t. 1:** Odone 1994: 211, n. 80, figs. 142.8, 143; Bianco Peroni 1994: 7; de Marinis 2014: fig. 2.1. **Grotta del Castello, Vecchiano, burial cave:** Bianco Peroni 1994: 12. **Remedello Sotto, t. 79:** Bianco Peroni 1994: 1; de Marinis 2013: 321, fig. 19.a. **Sabbione, San Martino Siccomario or Carbonara al Ticino:** Pierce 2007: tab. 6.1, fig. 6.1.a; Bianco Peroni 1994: 3. de Marinis 2013, fig. 19.C. **Cumarola, San Venanzio, two specimens:** Bianco Peroni 1994: 5. de Marinis-Gambari-Faudino 2013: fig. 3. **Borgo Rivola, two specimens:** Bianco Peroni 1994: 8-9. de Marinis 2013: 325. **Mirabella Eclano, “Tomba del Capotribù”:** Bianco Peroni 1994: 13. **Mas des Gavots, Orgon (Bouches-du-Rhône, France):** Courtin and Sauzade 1975.

Celletta dei Passeri, t. 64: Miari-Bestetti-Rasia 2017: 181, fig. 25.R173. **S. Antonio di Buccino, tt. 1-2:** Holloway 1973: 22, n. 3, pl. 11 and 22.3. Bianco Peroni 1994: 3, n. 14, tav. 2.14. **Ardea, Casallazzara, tomb:** Carboni 2002: fig. 11.6.

Montebradoni, burial hypogeum, two specimens: Bianco Peroni 1994: 10-11.

Selvicciola, t. 15: Petitti *et alii* 2011: fig. 2.9; Conti and Persiani 2008: fig. 1.2 (picture). **Fontanella Grazioli, Casalromano, flat tomb:** Colini 1898-1902: 220, tav. XIII, 11. Bianco Peroni 1994: 20.

Torre della Chiesaccia, t. 15, ritual pit: Anzidei and Carboni 2020a: 241, n. 8, fig. 2.4.150.1. **Napoli, Materdei, t. 1:** Bianco Peroni 1994: 60. **Gaudo, t. ‘U:** Bianco Peroni 1994: 55. Giardino 2000: fig. 3.3. **Gaudo, t. F, chamber B, two specimens:** Giardino 2000: fig. 3.4-5. **Gaudo, t. 14, chamber A:** Giardino 2000: fig. 3.6. **Gaudo, stray find:** Bianco Peroni 1994: 59. Giardino 2000: fig. 3.12. **Pontecagnano, t. 6589:** Bailo Modesti and Salerno 1998: 78, n. 7, tav. 61, n. 7. Giardino 2000: fig. 3.12. **Pontecagnano, t. 6590, chamber B:** Bailo Modesti and Salerno 1998: 82, fig. 33, tav. 63, n. 3. Giardino 2000: fig. 3.14. **S. Antonio di Buccino, tt. 1-2:**

9.16: Celletta dei Passeri, t. 47: Miari-Bestetti-Rasia 2017. 9.17: Sabbione, San Martino Siccomario or Carbonara al Ticino, de Marinis 2013. 9.18: Mirabella Eclano, “Tomba del Capotribù”, Bianco Peroni 1994.

9.19: Celletta dei Passeri, t. 64, Miari-Bestetti-Rasia 2017.

9.20: Montebradoni, burial hypogeum, drawing C. Iaia courtesy Museo delle Civiltà Roma.

10.4: Pontecagnano, t. 6589, Giardino 2000. 10.5: S. Antonio di Buccino, t. 3: Holloway 1973.

Holloway 1973: 22, n. 2, pl. 22.2. **Bianco Peroni 1994: 54. S. Antonio di Buccino, t. 3:** Holloway 1973: 24, n. 1, pl. 24.1. **Bianco Peroni 1994: 58. Mirabella Eclano, “Tomba del Capotribù”:** Bianco Peroni 1994: 57. **Masseria Pane e Vino, Tursi, tomb:** Bianco Peroni 1994: 61.

Outlier close to the Buccino type

Selvicciola, t. 14, burial H sup.: Petitti *et alii* 2011: fig. 2.11.

Ciempozuelos-type daggers

S. Cristina di Fiesse, tomb: Odone 1994: 212, fig. 144.2; Bianco Peroni 1994: 69. **“Tra Brescia e Remedello”:** de Marinis 2014: 210, fig. 18. **Unknown provenance, Museo di Aquileia:** Bianco Peroni 1994: 72.

Trapezoidal tang without rivet holes; most specimens feature serrated tang edges and triangular blades

Uncertain attribution: **Spessa, Cologna Veneta:** Salzani 2007: 82, fig. 8.4. **Gubbio:** Bianco Peroni 1994: 70.

Table XIII - Solid hilted blades (plate 10).
Lame con elsa fusa (tav. 10).

TYPE	VARIANT	PROVENANCE - LITERATURE	PLATE SOURCES
<i>Montebradoni-type daggers (as defined by Bianco Peroni 1994)</i>		Montebradoni, funerary hypogeum, two specimens: Bianco Peroni 1994: 62.	10.6: Montebradoni, funerary hypogeum, Bianco Peroni 1994.
<i>Solid-hilted daggers with a moon-shaped hilt top and an extremely long and narrow blade</i>		Felette, Torre Le Nocelle, t. 2: Palermo Rossetti and Talamo 2011: 759, fig. 3. Piano di Sorrento, tomba Carotto: Bianco Peroni 1994: 65. Laterza, t. 3, liv. XII, two specimens: Bianco Peroni 1994: 63-64. Creta Bianca, Cela, t. 1: Tunzi Sisto 2015.	

Table XIV - Daggers/halberds and halberds with a hafting plate and rivet holes (plates 10-11).
Pugnali/alabarde e alabarde con piastra di immanicatura e fori per ribattini (tavv. 10-11).

TYPE	VARIANT	PROVENANCE - LITERATURE	PLATE SOURCES
<i>Gaudo-Arco type blades. Formerly known as Gaudo-type daggers (Bianco Peroni 1994) and Arco-type halberds (de Marinis 1994)</i>	<i>A: short ogival blade</i>	Montebradoni, hypogeum: Bianco Peroni 1994: 23. Grotta del Fontino, burial cave: Zanini 2002: fig. 50.6. Gaudo, t. M: Bianco Peroni 1994: 22. Giardino 2000: fig. 3.2. S. Antonio di Buccino, tt. 1-2: Holloway 1973: 22, n.1, pl. 11 and 22.1. Bianco Peroni 1994: 25.	10.8: S. Antonio di Buccino, tt. 1-2, Holloway 1973. 10.10: Montebradoni, hypogeum, modified after Bianco Peroni 1994: 23. 10.11: Grotta del Fontino, burial cave, Zanini 2002.
	<i>Rectilinear or slightly curved hafting plate with 3-4 rivet holes, ogival or triangular blade and a thick midrib</i>	<i>B: long and slender blade</i>	Mirabella Eclano, t. 4: Bianco Peroni 1994: 24. Mirabella Eclano, “Tomba del Capotribù”: Bianco Peroni 1994: 83. San Martino di Taurasi tomb 3/1: Talamo 2006: fig. 2B. <i>Uncertain attribution:</i> Gaudo, t. N (fragment): Giardino 2000: fig. 3.1.
<i>Outlier, halberd close to the Gaudo-Arco type. Slightly curved hafting plate with 4 rivet holes and a subtriangular blade lacking a midrib</i>		Grotta del Leone di Agnano, burial cave: Bianco Peroni 1994: 27.	
<i>Calvatone-type halberds (as defined by Bianco Peroni 1994, partly revised and updated)</i>	<i>A: without midrib</i>	Poggio Aquilone, tomb: Bianco Peroni 1994: 32. Olmo di Nogara, t. I: Salzani 2005: 33, fig. 34, tav. II.	11.1: Poggio Aquilone, tomb, drawing C. Iaia, courtesy Museo Civico di Bologna.
<i>Rounded hafting plate, mostly with 3 rivet holes, an elongated triangular blade with oblique hafting marks</i>	<i>B1: short blade with midrib</i>	Pomarance tt. 1-7: Bianco Peroni 1994: 89. Castelluccio La Foce: Bianco Peroni 1994: 85. Poggio delle Sorche, tomb: Rendini-Marianelli-Zanini 2001: fig. 3.1. S. Cristoforo delle Vertighe: Buresta <i>et alii</i> 2006: 275, fig. 2.1. Rinaldone, t. 3: Bianco Peroni 1994: 30 (incorrect drawing); Dolfini 2004: 156, n. 24, tav. III. Montalto di Castro, tomb?: Bianco Peroni 1994: 88. S. Biagio della Valle, tomb: De Angelis 1995-96: fig. 2.3. Central Italy, Mus. Arch. Perugia: Bianco Peroni 1994: 86.	11.2: Rinaldone, t. 3, Dolfini 2004.
	<i>B2: long blade with midrib</i>	Calvatone, stray find: Bianco Peroni 1994: 84; Bietti Sestieri and Macnamara 2007: 32, n. 14, pl. 3.14. Unknown provenance, Museo Poldi Pezzoli, Milano: Bianco Peroni 1994: 87.	11.3: Calvatone, stray find, modified after Bianco Peroni 1994.

Fontino-type halberds

Rounded or trapezoidal hafting plate with 2 rivet holes, 2 shoulders at the nexus between heel and blade, and a short triangular blade lacking a midrib

Outlier. Halberd with a trapezoidal hafting plate, 4 rivet holes, triangular blade and oblique hafting marks

Olmo di Nogara-type halberd (as defined by Salzani 2005)

Slightly rounded hafting plate with 4+ rivet holes close to the edge and a slender triangular blade

Montemerano-type halberds (as defined by Bianco Peroni 1994)

Sunken hafting plate with 2 square rivet holes, a blade with slightly concave cutting edges and a flat midrib

Villafranca-Tivoli type halberds (as defined by Bianco Peroni 1994)

Large size. Slightly rounded hafting plate with 3 rivet holes, elongated asymmetrical blade with a thick midrib and oblique hafting marks

Gambara-type halberds (as defined by Bianco Peroni 1994)

Large size. Slightly rounded hafting plate with 3 rivet holes, very long and slender asymmetrical blade with a slightly arched upper cutting edge and an S-shaped lower edge; thick midrib

Grotta del Fontino, burial cave: Zanini 2002: fig. 50.1. **Grotta S. Giuseppe, burial cave:** Cremonesi 2001: fig. 46.1. 11.4: Grotta del Fontino, burial cave, modified after Zanini 2002.

Foiano della Chiana: Bianco Peroni 1994: 132.

Olmo di Nogara, t. 516bis: Salzani 2005: 277, fig. 586, tav. XLI. **Lago di Garda, Collezione Carlotti:** Bianco Peroni 1994: 28. **Ciano del Montello, stray find:** Bianco Peroni 1994: 745. 11.6: Olmo di Nogara, t. 516bis, modified after Salzani 2005.

Pianizzoli, Massa Marittima, burial site, two specimens: Bianco Peroni 1994: 271-272. **Montemerano, stray find:** Bianco Peroni 1994: 270. 11.5: Pianizzoli, Massa Marittima, burial site, modified after Bianco Peroni 1994.

Villafranca Veronese, tomb: Bianco Peroni 1994: 35. **S. Stefano di Tivoli:** Bianco Peroni 1994: 36; Carboni 2002: fig. 11.5. 11.7: S. Stefano di Tivoli, modified after Bianco Peroni 1994.

Gambara: Bianco Peroni 1994: 33. **Unknown provenance, Museo Pigorini:** Bianco Peroni 1994: 34. **Spessa, Colonia Veneta:** Bianco Peroni 1994: 37. Salzani 2007: 82, figs. 8.3, 14. **Unknown provenance, probably from Italy:** Horn 2014: 344, taf. 1.k, n. 12.181 (unbekannt, Ireland). 11.8: Unknown provenance, Museo Pigorini, modified after Bianco Peroni 1994.

Close to the type: **Marche Mormanne, Roggiano Gravina, tomb:** Bianco Peroni 1994: 36.

Table XV - Blades with hafting tang of the Fontino type and of Remedello group. Measures and proportional ratios. Ratio A/B: total length vs max width; ratio B/C: maximum width vs tang width. Measures in mm. Clustering of ratios is shown in the scatterplot of fig. 4 (article). Literature in table XII.

Lame con codolo di immanicatura del Tipo Fontino e del Gruppo Remedello. Misure e rapporti proporzionali. Rapporto A/B: lunghezza totale vs larghezza massima; rapporto B/C: larghezza massima vs larghezza del codolo. Misure in mm. I raggruppamenti dei rapporti sono illustrati nello scatterplot di fig. 4 del testo. Riferimenti bibliografici alla tav. XII.

Site	Total length (A)	Max width (B)	Ratio A/B	Tang width (C)	Ratio B/C	Mid-rib	Type
Grotta Prato	52	31	1,68	19	1,63		Fontino
Remedello Sotto T. 79	135	62	2,18	28	2,21	X	Rem IB
Spilamberto T.9	70	32	2,19	18	1,78		Rem IA
Cumarola, Tomba 1860	132	50	2,64	25	2,00	X	Rem IB
Spilamberto T. 1	133	50	2,66	25	2,00		Rem IA
Cava Solvay, settlement	47	17	2,76	12	1,42		Fontino
Grotta Spinosa	156	56	2,79	32	1,75		Rem IA
Grotta del Fontino	90	32	2,81	21	1,52		Fontino
Celletta dei Passeri T. 27	147	52	2,83	31	1,68	X	Rem IB
Grotta del Fontino	84	29	2,90	18	1,61		Rem IB
Grotta del Fontino	80	27	2,96	18	1,50		Fontino
Grotta della Spinosa	78	26	3,00	19	1,37		Rem IA
Grotta del Pugnale	98	31	3,16	20	1,55		Rem IB
Grotta del Fontino	51	15	3,40	12	1,25		Fontino
Remedello Sotto T.83	194	56	3,46	35	1,60		Rem IB
Grotta del Fontino	85	22	3,86	15	1,47		Fontino
Unknown provenance, Museo di Asola	110	28	3,93	20	1,40		Fontino
Grotta del Fontino, T.83	82	20	4,10	15	1,33		Fontino
Sabbione, tomb (?)	131	65	2,02	21	3,10	X	Rem IIA
Celletta dei Passeri T. 47	105	52	2,02	15	3,47	X	RemI IA
Cumarola, stray find	152	73	2,08	25	2,92	X	Rem IIA
Grotta del Castello	125	57	2,19	19	3,00	X	Rem IIA
Panesella/Panicella T. 1	132	60	2,20	20	3,00	X	Rem IIA
Cumarola, stray find	145	65	2,23	19	3,42	X	Rem IIA
Ardea, Casallazzara	105	46	2,28	13	3,54		Rem IIB
Celletta dei Passeri T. 64	218	88	2,48	28	3,14		Rem IIB
Mirabella Eclano, T. del Capotribu'	206	78	2,64	24	3,25	X	Rem IIA

Site	Total length (A)	Max width (B)	Ratio A/B	Tang width (C)	Ratio B/C	Mid-rib	Type
Borgo Rivola, tombs	195	70	2,79	18	3,89	X	Rem IIA
Buccino TT. 1-2	265	90	2,94	26	3,46		Rem IIB
Montebradoni, hypogeum	109	34	3,21	9	3,78	X	Rem III
Montebradoni, hypogeum	195	54	3,61	14	3,86	X	Rem III
Grotta delle Fate	98	37	2,65	15	2,47		Rem IA
Celletta dei Passeri T. 25	166	55	3,02	21	2,62	X	Rem IB
Selvicciola T.15	127	35	3,63	12	2,92	X	Outlier
Remedello Sotto T. 62	248	64	3,88	30	2,13	X	Outlier